



Massachusetts Department of Conservation and Recreation

THE CITIZEN FORESTER

Urban & Community Forestry Program

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dcr
Massachusetts



The Importance of Tree Protection Coexisting with trees for the long term

We protect things we care about, such as family and friends, but we also protect things that we value, like our cars, homes, and favorite souvenirs from the Big E. Fortunately, trees are finally being recognized for their value, by more and more communities. Cities and towns are starting to realize that the cost of protecting a mature tree is much less than removing the tree and starting over, compounded with the losses of benefits that the older trees provide. Trees are finally being seen as a vital public utility.



Protecting trees during construction. Photo: DCR

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Just as roads perform a necessary transportation function, wires provide our electricity, and pipes move water, roadside trees provide a host of community benefits. Community trees provide public health benefits, help reduce stormwater flows and mitigate flooding, filter the air, reduce heating and cooling costs, contribute to property values, add to community character, and beautify the landscape. Overall, trees strengthen the social and economic vitality of cities and towns.

With this in mind, it is crucial to implement best management practices for tree protection early on, to ensure trees remain healthy and continue to provide benefits long-term.

Trees are an important part of a community's infrastructure that can be damaged during construction and maintenance activities, leading to hazardous conditions and increased costs. Tree wardens and public works staff can work together to protect

trees, and minimize costs to the community.

A common requirement in tree protection ordinances is to establish a Tree Protection Zone (TPZ), which is an area around the tree in which no construction activity is to take place. The amount of space required to sustain tree health and stability varies from tree to tree, and variables include, species, age, size, health, structural condition and soil characteristics, to name a few.



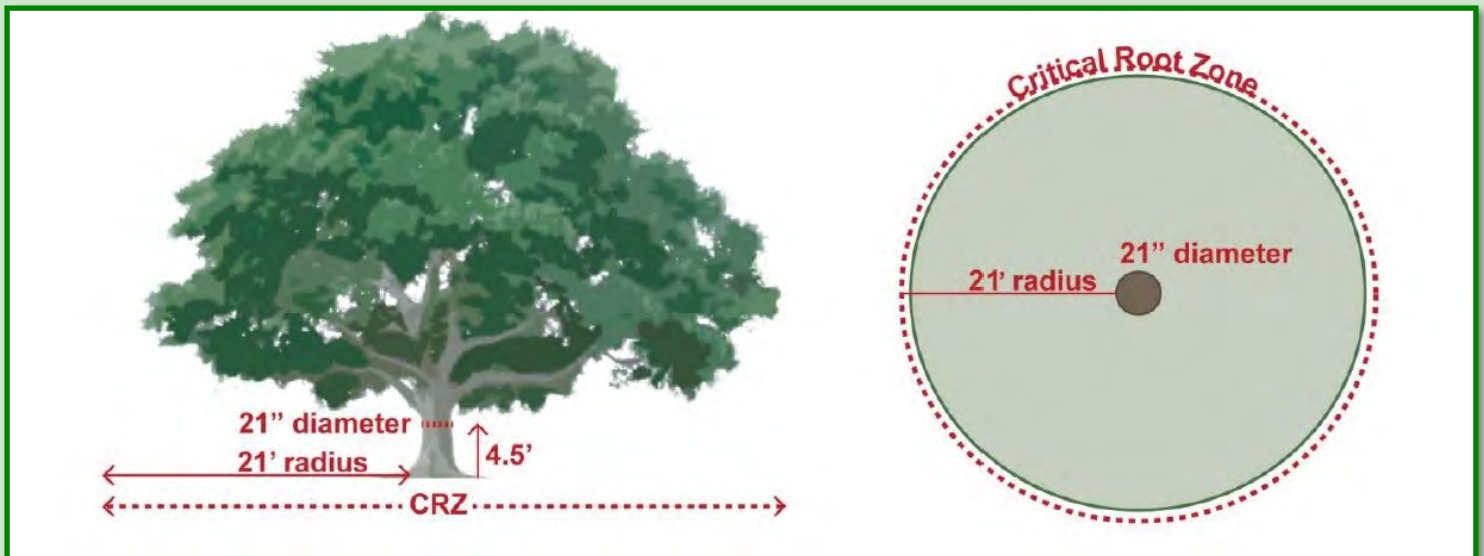
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Since tree roots are not visible to the naked eye, they are often crushed, cut and suffocated during construction. A healthy mature tree has stored energy resources within it and can sometimes withstand temporary disturbances to its roots. However, damage to tree roots and surrounding soils are often permanent and compromise tree health in the short- and long-term.

trunk diameter at 4.5 feet above ground. The TPZ can contain the CRZ of the tree, as well as an additional buffer zone, determined by the arborist.

The most important part of establishing a TPZ is to be involved early. The tree warden should have a process for being informed of upcoming construction activities early in the planning stages. The tree warden and public works staff



The TPZ should contain the Critical Root Zone (CRZ) of a tree. The CRZ is defined as the area of soil extending from the tree trunk where roots required for future tree health and survival are located. This area can also be defined as a circle with a minimum radius of 1' for every 1" in

should meet on site to discuss the type of work to be completed and collaboratively develop strategies for protecting desirable trees and groupings of trees.

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The importance of roots and bark

Roots and bark are two vital organs for trees. Roots take up water, oxygen, nutrients, and provide stability. Bark transports water, food, and nutrients to the rest of the tree. If these are damaged, a tree will decline and may die.

- Most tree roots are in the top two feet of soil.
- A large portion of absorbing roots are outside the “dripline” of the tree.

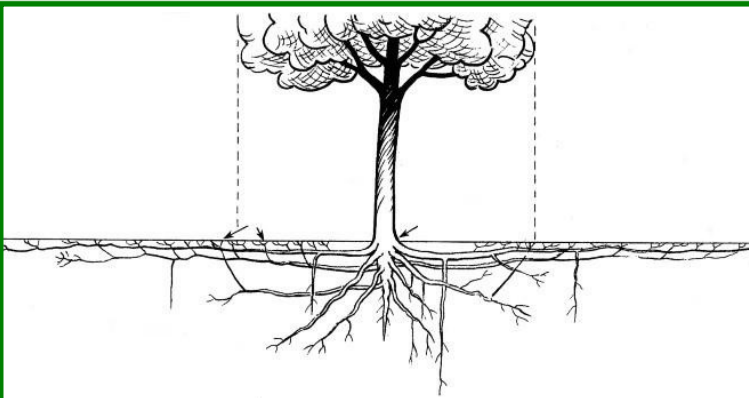


Image Credit: University of Maryland Cooperative Extension

- The inner bark serves as part of the vascular system for the tree.
- Roots are rarely observed under existing paved roads.

Protect roots

The TPZ should be delineated by placing hard fencing around the zone. Snow fencing is often moved. Within this protected zone, there should be no activity and no storage of vehicles, equipment, and supplies. These activities cause soil compaction. Avoid any kind of



trenching or soil disturbance close to the trunk of the tree. It may not always make sense to protect the full CRZ, especially for roadside trees. In these cases, the tree warden and highway staff should

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work together to establish a “zone of tree protection” that makes sense.

Protect the bark

If the CRZ is protected, then the bark should be protected. However, sometimes bark still gets damaged during construction and maintenance activities. Work with staff and

may want to additionally mark or flag trees that could be in danger of injury from equipment, including trees that may be damaged during routine snow removal.

Protect against changes in grade

Changes in grade can be as damaging to tree roots as cutting, trenching, or soil compaction, and may eventually lead to tree decline



contractors to be sure everyone understands the importance of bark and the need to protect bark from nicks, scrapes, and gouges. Fences and well-defined tree protection zones can help protect bark. You

and death. Make sure that the grade is not changed within the identified tree protection zone. You may want to inspect and restore changes in grade that result from normal road

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maintenance activities, such as snow removal and road re-grading.

Preventing damage to trees is the best, and most cost-effective way to sustain the cumulative environmental, social, and economic benefits that they provide. Planting new trees is always commendable, but we need to acknowledge that it takes many years for younger trees to provide the same benefits.

Mature trees have aesthetics that define the character of a place and have historical significance that link us to our communities. So let's keep what we have, grow our urban forests, and have well-planned development that works for everyone.

References:

- [ISA 3rd Edition - Managing Trees During Site Development and Construction.](#)
- [Penn State Extension 2017 - A Guide to Preserving Trees in Development Projects](#)
- [MA DCR - Protecting Trees Fact Sheet](#)
- [Texas ISA - Best Management Practices for Tree Protection](#)

Photos: Massachusetts DCR.

CRZ Image: Texas ISA



Forester Focus

A deeper look into today's Urban Forestry topics



My Legacy Tree Journey

By Denise Lewis, UMass Grad Student

The MA DCR Legacy Tree Program is a formal initiative that acknowledges Massachusetts' most impressive trees, including those with botanical features, historical significance and unique importance. The project resonated with me when I initially learned about it, as it offers a platform for showcasing the remarkable trees around Massachusetts, and I have always had a passion for capturing photos of trees and showing how beautiful they are. What makes it even more special is that this program actively invites every person in Massachusetts to nominate their favorite trees and potentially having the nominated tree shown on DCR's Legacy Tree Program virtual tour so others can learn more about the tree. This notion of involving the community and allowing individuals to share their personal connections to these trees was a key factor that piqued my interest. To me, the human element



Denise Lewis photographing a Champion Tree on the UMass Amherst campus. *Photo: DCR*

and community participation makes this project so special and significant.

When the opportunity arose for me to become a part of this project and help bring it to life, I was eager to bring my creativeness and passion for trees to it. The Legacy Tree

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Program is meaningful to me because one of its primary goals is not just to introduce people to the diverse array of trees in Massachusetts but also to foster a sense of interconnectedness with these trees and learn about their importance and contributions to our communities. As I shared the concept of the program with friends, family, and peers, I found that it resonated with them as well. The idea of venturing out to find a tree they connect to, sharing it with the public, and having a dedicated platform to read about other nominated trees was an exciting idea to them.

One of the most rewarding aspects of my involvement in the Legacy Tree Program was reaching out to historical societies and museums across Massachusetts to gather valuable information about unique trees in their respective communities. I contacted over 100 of these organizations, and when I explained the significance of their nominations in contributing to the program's database of historical and cultural importance, they were universally interested and excited to participate. They shared with me heartwarming stories about historical trees within

their communities, along with vintage photos of trees that have withstood to this day. Discovering the stories behind these everyday trees, and glimpsing their appearance centuries ago, was nothing short of fascinating to me.

One story of particular interest, was told to me by the manager of the Rotch-Jones-Duff House Garden Museum in New Bedford. The story



Amelia Jones c. 1900
Photo: New Bedford Historical Society

was about the copper beech tree (*Fagus sylvatica* 'Purpurea') that was planted at that location in New Bedford, late 1880s, by the homeowner, Amelia Jones. Amelia Jones spent her life giving back to the citizens of New Bedford, and in 1923, Ms. Jones donated her family's 166-acre farm and \$1,000,000 for the creation of a children's hospital. When she died, her obituary headline

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read, "Miss Jones' Life, an Epitome of Nobleness." Learning about how this tree was brought into existence by such an exceptional person forged an instant connection between me and the tree.

Another cherished aspect of my role was the opportunity to travel across Massachusetts, capturing professional photographs of the nominated trees. I visited cities and towns that I had never explored before, and witnessed in person the amazing trees I had read about in the nominations. This was truly a thrilling experience. Over the course of about a week and a half and hundreds of miles of travel, I photographed approximately 15 trees.



One of my favorite trees I have photographed is the Ancient White Oak (*Quercus alba*) in Topsfield, MA. White oaks have always been my favorite tree, so I was really excited to photograph this tree. As the

project progresses, I eagerly anticipate capturing even more remarkable trees.

I am genuinely elated and grateful to be a part of the Legacy Tree Program. I look forward to enhancing its appeal and ensuring that the public can appreciate Massachusetts' exceptional trees even more profoundly.

Denise Lewis is an Environmental Conservation student at UMass Amherst with a deep passion for studying and caring for plants. She is dedicated to preserving and exploring our natural world, and teaching others how to feel connected to it.

For more information, visit:

<https://www.mass.gov/guides/massachusetts-legacy-tree-program>



CLIMATE RESILIENCY

Healey-Driscoll Administration Releases Readiness Plan to Protect Against Extreme Weather

Boston – The Healey-Driscoll Administration released its Statewide Hazard Mitigation and Climate Adaptation Plan, known as [ResilientMass Plan](#). In total, the ResilientMass plan details 142 actions across state agencies that are tracked publicly. Key actions include establishing an Office of Climate Science, making the state building code more resilient, and updating MBTA design standards.

“With ResilientMass, our administration is leading by example in preparing for mounting extreme weather events,” said **Governor Maura Healey**. “This summer brought dangerous weather impacts to our communities, and the impacts have been devastating. ResilientMass ensures that Massachusetts is well positioned for federal funds, while continuing our nation-leading work on climate.”

“This is an important example of why our whole-of-government approach is critical to protecting communities from the harshest impacts of extreme weather,” said **Lieutenant Governor Kim Driscoll**. “More inland flooding,

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sea level rise, and extreme heat are on the horizon. Massachusetts is ready to meet that challenge. We have a strategy in place and make fiscally responsible investments now to prepare the state and our municipalities for the growing impacts of the climate crisis.”

“Massachusetts is tackling the climate crisis on two key fronts: we’re investing in innovative technologies and industries that will bring down emissions and foster tremendous economic development across the state. We’re also taking steps to prepare for extreme weather as global emissions rise,” said **EEA Secretary Tepper**. “That means taking a fresh look at our building codes, having sound emergency plans in place, and following the science to inform our decision making. I’m grateful to our partners at MEMA and other secretariats for joining us in the effort to combat the climate crisis.”



* Actions can address multiple risks.

“This plan represents a collaborative, forward-leaning approach to help ensure the Commonwealth is prepared to withstand, rapidly recover from, adapt to, and mitigate natural hazard events,” said **Massachusetts Emergency Management Agency Director Dawn Brantley**. “ResilientMass empowers emergency managers at every level of government with the data and information they need to develop plans and build resilience with a focus on lessening disproportionate impacts to environmental justice populations.”

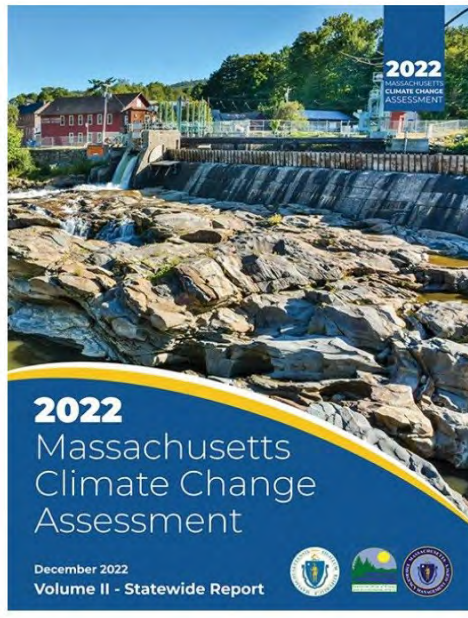
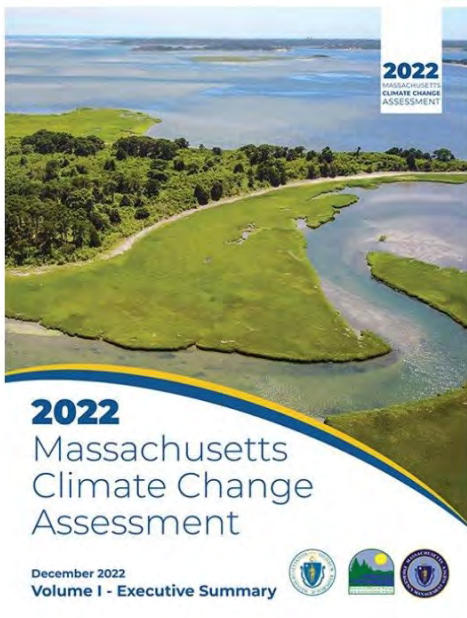
“This is the year that changed everything. We saw frosts, floods, extreme heat, and fires devastate our communities,” said **Climate Chief Melissa Hoffer**.

“These weather events are only expected to increase. ResilientMass represents a whole-of-government approach to ensure that every agency is

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working toward a more resilient, healthy future. With this plan, we see the power of collaboration in preparing for natural disasters.”



ResilientMass is based on the findings, science, and stakeholder engagement of the [Massachusetts Climate Change Assessment](#). Among the most significant hazards to Massachusetts are flooding from precipitation, coastal flooding and erosion due to sea level rise, and high heat. Actions that respond to these impacts will each be advanced by a designated lead agency, in collaboration with other state and community partners. ResilientMass is implemented by the inter-agency ResilientMass Action Team, and a new Office of Climate Science will support agencies and municipalities in integrating climate change information into their plans and projects.

Flooding from Precipitation

This summer has brought heavy rainfall and significant flood damages across Massachusetts. The farming sector has been hit especially hard. These impacts are only expected to increase with climate change. ResilientMass identified inland flooding as the most significant climate hazard in Massachusetts. By 2070, Massachusetts is expected to receive 12 to 42 percent more winter precipitation, and the frequency and intensity of

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precipitation events is also increasing. Environmental justice and priority populations living near commercial and industrial buildings are expected to have a 57 percent higher risk of flood damage than the rest of the state.

ResilientMass identified several priority actions to address this increased risk in flooding, including:

- EEA, Department of Conservation and Recreation (DCR), and Massachusetts Emergency Management Agency (MEMA) will develop a statewide floodplain management plan to coordinate agencies and partners across the Commonwealth.
- The Executive Office of Economic Development will lead efforts to evaluate flood resilient construction standards in the state building code and develop a guide for municipalities to take impactful zoning actions to strengthen resilience to flooding.
- The Executive Office of Housing and Livable Communities will conduct feasibility studies and implement resilience improvements to reduce flooding and heat risks at climate vulnerable state-aided public housing developments.
- The Massachusetts Department of Agriculture Resources will continue to expand its ClimateSmart Agriculture Program to support agricultural operations to proactively assess risks from climate change and implement practices to build economic and environmental resilience.

High Heat

According to ResilientMass analysis, the average summertime temperatures in Massachusetts will feel like those in Maryland in 2050, North Carolina in 2070, and Georgia in 2090. Environmental justice communities will experience acute impacts. Forests and other natural ecosystems will also experience significant strains.

ResilientMass will guide key initiatives to mitigate extreme heat equitably:

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- The Executive Office of Health and Human Services will coordinate a multiagency effort to develop and implement a new Heat Flag system to effectively communicate heat risk to the public.
- DCR will work to improve more shaded areas and cooling structures on its properties, with priority given to properties in environmental justice communities.
- EEA and DCR will also expand their successful Greening the Gateway Cities program in Barnstable, Malden, Taunton and Worcester. The team will be working towards planting 800 trees per year in these four priority environmental justice communities experiencing significant urban heat island effects and other climate impacts.



Coastal Flooding & Erosion

Massachusetts is planning for sea level rise of up to 2.5 feet by 2050 and 4.3 feet by 2070 (compared to 2008 mean sea level) if global emissions are not significantly reduced.

ResilientMass prioritizes the following actions to address coastal climate impacts:

- The Office of Coastal Zone Management (CZM) in partnership with many agencies will develop a coastal resilience strategy that considers climate-

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resilient development and standards in vulnerable areas and develops best practices for coastal adaptation.

- CZM will develop best practices for the redesign of seawalls and revetments considering climate change.
- MBTA will update its engineering design standards and emergency response plans to incorporate climate resilience and develop a GIS viewer for real-time storm response.

Key Initiatives

Office of Climate Science

EEA has launched an Office of Climate Science to increase access and understanding of statewide climate change projections and trends. It will also provide technical assistance and guidance to state agencies, municipalities and the public. The Office of Climate Science will convene a climate science advisory group of academics and researchers to share the latest climate research findings, identify research gaps, and inform best practices.

Financing

EEA, in partnership with the MEMA, awarded \$6.3 million in funding to agencies to implement key plan actions, building on the \$13 million awarded thus far. These include resilience improvements at state-aided public housing authorities, expanding the climate smart agriculture program, and updating environmental regulations to consider climate change impacts. EEA has also brought on a new Deputy Director of Climate Resilience and Finance to identify new funding and finance streams for state and local resilience projects.

For more information, visit:

<https://www.mass.gov/news/healey-driscoll-administration-releases-readiness-plan-to-protect-against-extreme-weather>

Species Spotlight

Kentucky Coffeetree, *Gymnocladus dioicus*

Kentucky coffeetree is finally becoming a more common tree in our urban forests. For many years, people were unsure of this species that is commonly referred to as “a stick” at the time of planting, but it is proving to be a tough, hardy tree for urban conditions. It is a large tree, growing to 75 feet tall (occasionally taller) and 40 to 50 feet wide. It often has a narrow, open crown and can be somewhat irregular.



In winter, its texture can be coarse, but still pleasant. In its native range, it grows in rich bottomlands, but it is tolerant of many conditions, including urban environments, drought, and heat. Its native range is from southern Minnesota to New York and southwest to Oklahoma, although it is rare in the wild and is listed as endangered in New York and threatened in Ontario. It is naturalized outside its native range, including in Massachusetts, and is hardy in Zones 3b-8.

The gray-brown bark has deep furrows that form curved ridges, giving it an interesting look.

If you ever took a tree ID course, you may recall Kentucky coffeetree as one of the few trees in the Northeast with bipinnately compound leaves. The tree has



alternate leaves with bipinnate, ovate leaflets. Toward the base of the rachis, the leaflets are often simple. It can be late to leaf out in the spring, with new

leaves turning dark green in summer. Fall color tends toward yellow, but is not



regular. The flowers are dioecious or polygamo-dioecious, greenish, white, hairy, and have four to five spreading petals. They are borne on an upright panicle and bloom in late spring. Female flowers have been said to smell like roses.

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Species Spotlight—Continued

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Kentucky coffeetree is named for its fruit, a brownish-black, leathery pod that can be five to ten inches long. It



ripens in October, hangs down from stalks, and often persists on the tree through winter. Kentucky coffeetree has sometimes irked urban foresters for the litter from the

fruit, however there are varieties that are male clones that are fruitless.



It can be used as a street tree or as a specimen for large areas such as golf courses and parks.

It has no known serious insect or disease problems. Use of

Kentucky coffeetree in urban settings can help boost the diversity of the urban forest, which in many Massachusetts communities, could use improvement.

The name comes from its use by early settlers as a cheap substitute for expensive and hard to get coffee. The pods were roasted, ground up, and brewed, and although drinkable, real coffee was much, much better and became more available. The seeds themselves were prized and used as buttons or gaming tokens. The raw seeds and leaves are poisonous, possibly containing the alkaloid cytosine, a compound like nicotine. The wood has a grain that has been compared to ash and has been used for cabinets, furniture, building construction and other products. *Gymnocladus* means “naked branch” in Greek. *Dioicus* is related to dioecious (having separate male and female plants.)



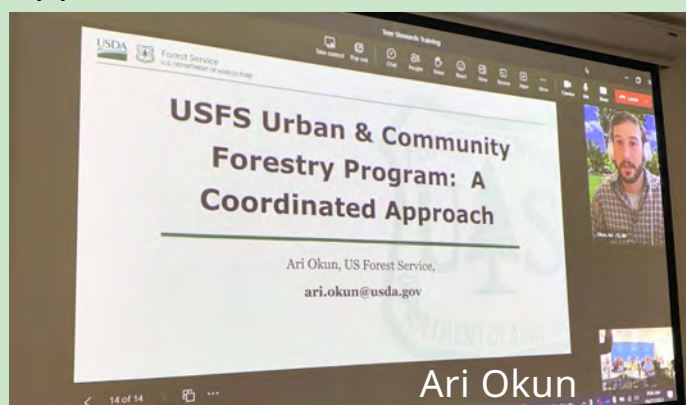
Photos:

From DCR, [Virginia Tech](#), and [UConn Plant Database](#)

Tree Stewards Training 2023

Amherst— This fall, the DCR Urban & Community Forestry (U&CF) Program expanded the ever popular Tree Stewards Training Program into multiple locations, to double the number of registered attendees. Classes were held at UMass Amherst in the West and UMass Mt. Ida Campus in the East.

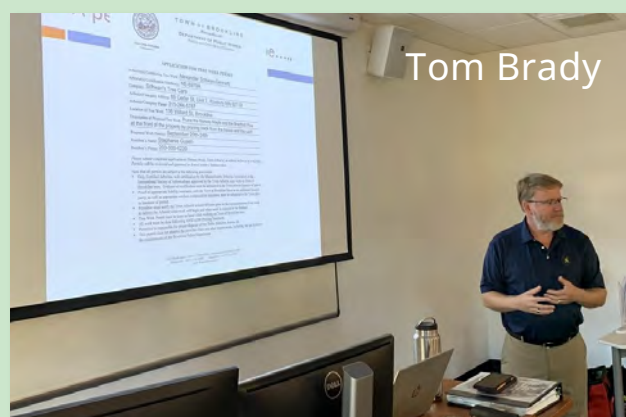
The trainings were similar in each location, with a full day's worth of speakers and hands-on learning opportunities.



Participants were introduced to the United States Forest Service (USFS) Urban Forestry Program by Ari Okun, who discussed the program and various funding sources that are currently available. DCR's Julie Coop followed up with information on the state's U&CF program, as well as resources for funding and education.



The Western class was treated to Rich Parasiliti, the Tree Warden from Northampton, who discussed Tree Boards and Ordinances / ByLaws for communities.



The Eastern class heard on the topic from local Tree Warden, Tom Brady from Brookline.



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Tawny Simisky from UMass Extension, spoke to the class about diagnosing insect problems of trees and shrubs.



This was followed by Dave Bloniarz from the USFS who took the trainees on an insightful tour of the [iTree programs](#), to estimate the value of the benefits that the trees in their communities provide.

Luckily for the Tree Stewards in training, the weather for both classes was perfect, and the outdoor portions of the day included young tree pruning and training by Jen Kettell of [Radiant Leaf Consulting](#), where future Stewards got hands on exposure to pruning trees during their formative years.

Each class concluded with two tree planting demonstrations by DCR's Mathew Cahill which included "Right Tree, Right Place" selection, common issues with nursery stock, and proper planting practices. Trainees wrapped up their days sweaty and dirty, but left with skills that will help improve their communities for years to come.



For more information, visit:

<https://www.mass.gov/info-details/urban-and-community-forestry>



GREENING
THE GATEWAY CITIES
MA Urban Canopy Project

Tree Planting Continues Across MA

Greening the Gateway Cities Program plants over 2,000 trees in Fall of 2023

New trees continue to be planted in Cities across the commonwealth! DCR Foresters work with local communities, residents and non-profits to find new locations for trees on a daily basis. Be on the lookout for planting locations in your community, and contact the program today!



Malden crew finding new homes for trees, that will cool the community.



Malden crew busy at work, improving the city.



Everett/Revere crew finding the tree's root flare.



Crew adding a mini-TPZ around trees near a parking lot at Revere Housing Authority.



Everett/Revere crew planting Housing Authority properties.



New and Stories from the Northeast Region

The [Forest Service Urban & Community Forestry Program](#) provides *Urban Tree News in the Northeast*, a collection of articles published in the media that have relevance to urban forestry in the Northeast.

[Roots of a Movement; Tree Stewards of Oak Bluffs Dig in](#)

[Winners selected for \\$2 million mass timber competition](#)

[Springfield Announces \\$6 million Forestry Grant](#)

[A gift to future Northfielders: Tree50th project helps ensure a greener Main Street](#)

[White House shares 'playbook' for environmental justice](#)

[Best trees for wildlife: 10 varieties to provide food, shelter and seasonal interest](#)

[Holyoke Community and Smith colleges begin urban forest study in Holyoke](#)

[Green spaces in Boston: A growing oasis for community health](#)

On The Horizon

December 5	Webinar: EPA —Beech Leaf and Bark Diseases https://www.epa.gov/ipm/upcoming-integrated-pest-management-webinars
December 13	Webinar: Urban Forest Connections — Advancing the Management of Urban Forested Natural Areas. https://www.fs.usda.gov/research/products/multimedia/webinars/urbanforestconnections
December 14	Webinar: Urban Forestry Today— Tough Urban Trees for Tough Urban Sites (III). http://www.urbanforestrytoday.org/
January 9-10	Event: MTWFA — Annual Conference. Sturbridge , MA. https://masstreewardens.org/event/2024-mtwfa-annual-conference/
January 10	Webinar: Urban Forest Connections — Collaborations to Save Threatened Tree Species. https://www.fs.usda.gov/research/products/multimedia/webinars/urbanforestconnections
February 27-29	Training: New England ISA TRAQ Qualification—Boylston, MA Register here: http://events.r20.constantcontact.com/register/event?oeidk=a07ek28z5j8e024f039&llr=iwcbgpcab
February 1—May 10	Training: UMass — University Without Walls. Community Forestry Program NRC 310. Register here: https://www.umass.edu/uww/class/spring-2024/19380/community-forestry
	Podcast: This Old Tree — <i>Heritage trees and the human stories behind them.</i> Old trees are awe inspiring links to the past that fire our historical imagination. https://www.thisoldtree.show/



THIS YEAR'S THEME:

Healthy Trees, Healthy Towns

All 3rd, 4th, and 5th grade students in Massachusetts are invited to participate in this annual contest that combines art and science. For contest rules, information and how to apply visit:

mass.gov/guides/annual-arbor-day-poster-contest

Questions? Contact:

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