Massachusetts Department of Conservation and Recreation

THE CITIZEN FORESTER

Urban & Community Forestry Program

SPRING 2024 | NO. 262

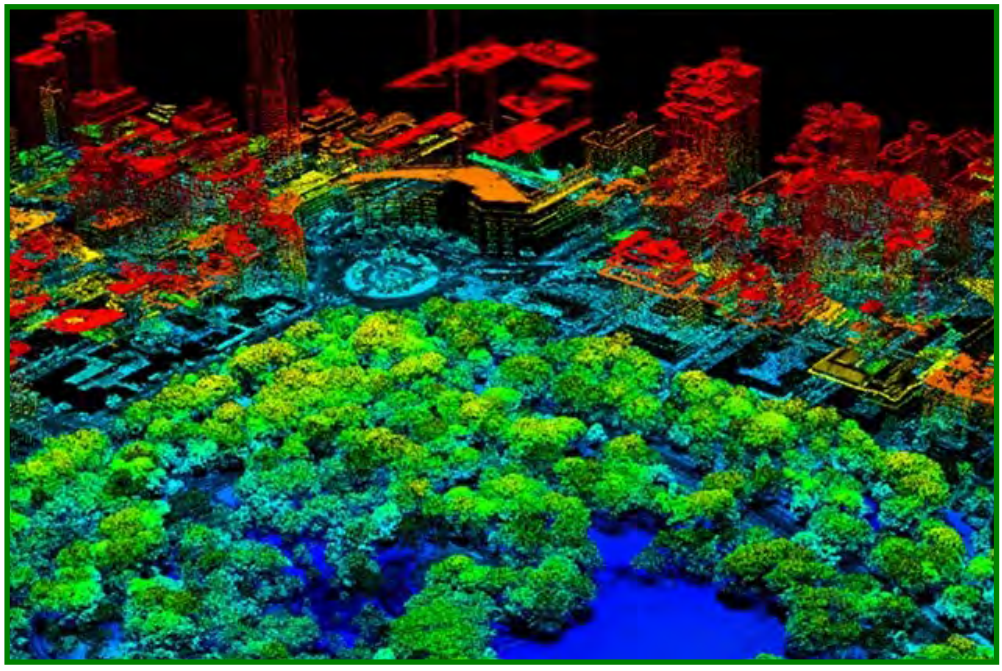
INSIDE THIS ISSUE:

dcr Massachusetts

Geographic Information Systems

The Intersection of Computers and Trees

Data is all around us. It is constantly collected, stored, analyzed, and distributed millions of times a day. From work, to sports, to social interactions, many parts of our lives are contributing to the ever-flowing ocean of data. Even natural resource professions, like Urban Forestry, are becoming more dependent on analyzing living systems in terms of data. Trees grow in their own way and in their own time, but arborists and urban foresters realize that having access to current tree attributes,



(Continued from page 1)

available at the touch of a button, can lead to savings in time, money, and even lives.

Foresters have come a long way from a solo worker with a Biltmore stick. As computers and devices have become faster and more powerful, they have found their way into nearly all aspects of the profession. Currently the most all-encompassing tool for managing urban trees, is a Geographic Information System (GIS).

What is GIS?

According to the US Geological Survey, "a Geographic Information System is a computer system that analyzes and displays geographically referenced information and uses data that is attached to a unique location."

The Environmental Systems Research Institute, Inc. (Esri) defines it as "a spatial system that creates, manages, analyzes, and maps all types of data." They go on to say "GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there). This provides a foundation for mapping and analysis that is used in science and almost every industry. GIS helps users understand patterns, relationships, and geographic context. The benefits include improved communication and efficiency as well as better management and decision making."

History of GIS

The story of GIS begins in the 1960's when the Canadian government commissioned Roger Tomlinson, to create a manageable inventory of its natural resources. He envisioned using computers to merge natural resource data from all Canadian provinces. Tomlinson created the design for automated computing, to store and process large amounts of data, which enabled Canada to begin its national land-use management program. This pioneering work to initiate, plan, and develop the Canada Geographic Information System resulted in the first computerized GIS in the world in 1963. Tomlinson is also credited with giving GIS its name.

(Continued on page 3)

(Continued from page 2)

Shortly thereafter, in 1964 Howard Fisher at Northwestern University created one of the first computer mapping software programs known as SYMAP (Synagraphic Mapping System). In 1965, Fisher was awarded a Ford Foundation grant resulting in the establishment of the Harvard Laboratory for Computer Graphics.

While some of the first computer map-making software was created and refined at the Harvard Lab, it also became a research center for spatial analysis and visualization.

In 1969, Jack Dangermond, a member of the Harvard Lab, and his wife Laura founded Environmental Systems Research Institute, Inc. (Esri). The consulting firm applied computer mapping and spatial analysis to help land use planners and land resource managers make informed decisions. Esri's early work demonstrated the value of GIS for problem solving. Esri went on to develop many of the GIS mapping and spatial analysis methods now in use. These methods and their results generated a wider interest in the company's software tools and workflows that are now standard to GIS.

What does GIS do for urban forestry?

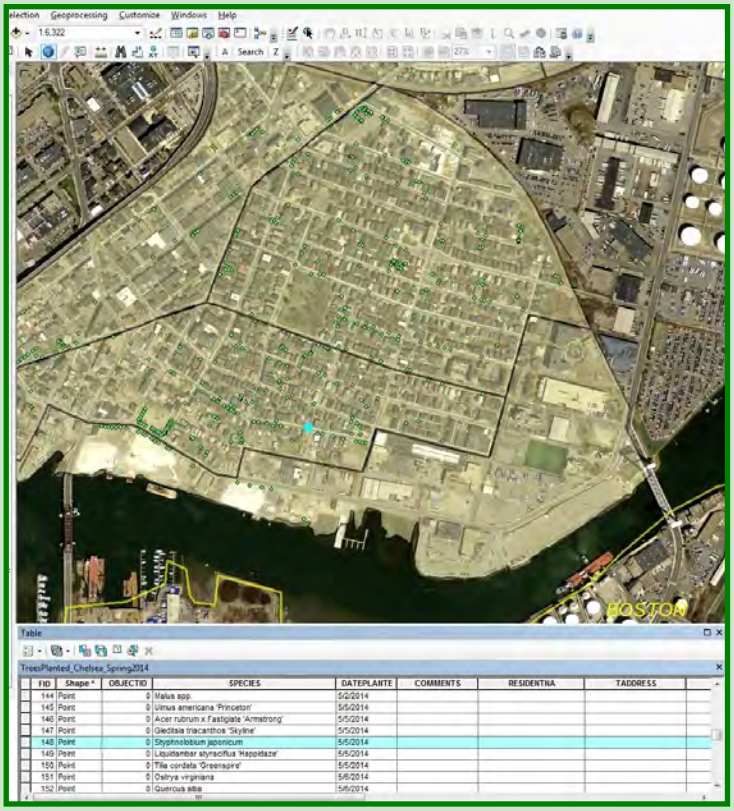
Urban forestry has always been about more than trees, it deals with the connection between trees and people. Since both sides of that equation change constantly, GIS provides a way to track those changes over time, and provide policymakers and the public with

(Continued on page 4)

(Continued from page 3)

clear, concise summaries of the nature of the urban forest and the management required for human well-being.

Comprehensive tree inventories are the first step in gathering information for your GIS. At its most basic level,



an inventory should include tree location, species, size, health, and condition. Before collecting the tree data, managers should define the goals and objectives. Once the information is collected, GIS can help identify the current potential benefits and risks of the urban forest. The collected data can help evaluate needs and opportunities, such as prioritizing tree removals, tracking future planting locations, and providing reports on existing tree species composition.

GIS can help urban forestry management by facilitating the monitoring and maintenance of the urban forest. Remeasuring trees to track their growth, condition, and performance gives urban foresters the data they need to make informed decisions. It also helps with scheduling and documenting pruning, watering, and removal activities. An actively managed GIS can even help detect and respond to threats and disturbances to the urban forest, such as pests and diseases, invasive species, and extreme weather events. Lastly, GIS can be used as a tool to help communicate and coordinate with stakeholders and partners involved in urban forestry, such as governments, utility companies, community groups, and volunteers.

(Continued on page 5)

(Continued from page 4)

As with most things, the tool is only as good as the user. Luckly for urban forestry, a new wave of computer professionals are joining the field. The DCR's Urban & Community Forestry Program has recently hired its first full-time GIS specialist, Gianna Hayes, to complement and enhance the Program's capabilities. She was interviewed by the Citizen Forester to get a first-hand perspective on the intersection of GIS and urban forestry.

CF: What got you interested in a career in GIS?

Hayes: "I began my undergraduate program thinking I would be a music teacher. My senior year of undergrad I needed to fill my schedule with electives. Geography had always interested me, so I spent a semester taking Geography courses. From my first introduction to GIS, I knew I was in the wrong major. I had always been a big fan of puzzles, and cartography is a lot like solving a puzzle – trying to get all the pieces to fit together in a visually appealing way to create a picture. My interest led me to a Master's program in GIS."

CF: What was your knowledge of Urban Forestry, prior to working at DCR?

Gianna Hayes (*right*) in the field. *Photo: DCR*

"I live in an urban area and enjoy spending time outdoors, but I did not know about the importance of urban forestry before I came to DCR. There are the obvious aesthetic benefits from trees in urban areas, but the other less

(Continued on page 6)

(Continued from page 5)

obvious benefits, like reduced energy costs, increased property values, decreased storm water runoff, and improved mental health are concepts that I learned after coming to DCR."

CF: Tell us how you feel GIS improves and expands urban forestry.

"There are so many ways GIS assists urban forestry! First and foremost, GIS allows a level of visualization that you just can't achieve through spreadsheets or any other kind of database. Being able to spatially visualize a tree inventory allows people to observe patterns, which in turn can improve tree equity.

GIS also provides foresters the ability to take stock of the entire urban forest in real-time, from anywhere and (almost) any electronic device.

Trees are unique from many other publicly owned assets in that their value increases over time, and they play a large role in helping to alleviate the effects of climate change. GIS is hugely beneficial in helping to calculate the real-world value of an urban forest. Being able to quantify and report to decision-makers on things like carbon storage, pollutants removed from the air, gallons of rainfall runoff avoided, and money saved on energy costs, provides an incentive to maintain, and hopefully improve, a community's urban forest.

Through GIS products like Web Map Applications and Story Maps, members of the community can explore the urban forest in their neighborhoods. When the public becomes more aware of the importance of the trees around them and the dangers that they face, we are all encouraged to become society's civic tree stewards!"

References:

- Mass GIS & Data
- USGS & GIS Data
- Esri GIS Overview

Forester Focus

A deeper look into today's Urban Forestry topics

Legacy Measurements

A busy winter yields new Legacy Trees

There is never an off-season when it comes to Urban Forestry. This winter, DCR Foresters have been busy traveling the state, finding and measuring all of the newest nominations for the Legacy Tree Program. Submissions are collected year-round, but tree measurements are done annually, from December to February.

The measurement process takes about 30 minutes per tree. After confirming the tree species using bark, buds and form, the foresters measure the tree. Trunk circumference, height and average crown spread are collected using tape measures, hypsometers and iPads equipped with GIS software.

Trees are ranked and recorded using the American Forests champion tree points system.

The Legacy Tree team in action measuring a potential Champion Tree. *Photo: A. Fuller*

DCR Urban Forester Dave Bresnahan reports from the field: "It has been great to get out to meet the proud nominators and owners of some very

(Continued on page 8)

(Continued from page 7)

magnificent trees. Some of the highlights have included tall tuliptrees on the North Shore, ancient oaks, and an unusually large cucumber magnolia (Magnolia accuminata) in Salem that qualifies as the new state champion.
The enthusiasm from the pubic, and the stories that accompany the trees, are as impressive as the trees themselves!“

The Champion and Legacy lists are updated once a year, so check the Legacy Program website each spring, to see if your nomination is the newest member to be included!

Did you know?

If you can't get to the trees, DCR can bring the trees to you! Check out the Virtual Tree Tour:

Click Here

DCR Urban Foresters Ian Briggs, Marc Ghen and Dave Bresnahan patrol the state in search of trees.
Photo: A. Fuller

For more information, visit:

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

CLIMATE RESILIENCY

Healey-Driscoll Administration Announces $50 Million Investment and Milestones for Forests as Climate Solutions Initiative

Boston – As part of its "Forests as Climate Solutions" Initiative, the Healey-Driscoll Administration released the Climate Forestry Committee's report containing recommendations to the Executive Office of Energy and Environmental Affairs (EEA) regarding enhanced climate-oriented forest management practices for Massachusetts based on the latest climate science. The 12-member Committee of scientific experts emphasized the importance of keeping forests intact by enlarging forest reserves, increasing permanent conservation efforts, and reducing the conversion of forests to other uses. Noting the critical role forests play in mitigating dangerous climate change, the Committee urged the state to sharpen its land management focus on climate change mitigation and adaptation.

EEA is allocating $50 million to help communities conserve forested land and support forest-based businesses and local economies. EEA will invest this funding in forest conservation, including new forest reserves and incentives that encourage municipal and private landowners to adopt

(Continued on page 10)

(Continued from page 9)

climate-oriented management approaches. This funding will help the state reach its climate goals, as set forth in the Clean Energy and Climate Plan, conserving 40 percent of Massachusetts' natural and working lands by 2050.

EEA is now seeking public input on the Committee's recommendations to inform the state's implementation of management guidelines for forest lands held by the Department of Conservation and Recreation's (DCR) Divisions of State Parks and Recreation and Water Supply Protection, and the Department of Fish and Game's (DFG) Division of Fisheries and Wildlife (MassWildlife). As planned, the six-month temporary pause on timber harvesting projects is over. During the public comment period, the State will review the paused projects and apply the Committee's recommendations.

In June, the Healey-Driscoll Administration launched "Forests as Climate Solutions" to increase the focus on forests and climate by investing in forest conservation, enhancing a network of forest reserves, and developing forest management guidelines based on the latest climate science. EEA convened the Climate Forestry Committee, a group of scientific experts, to bring their expertise and recommend a climate-centered approach for state lands. The Climate Forestry Committee's report offers guidelines to optimize carbon storage and resilience of state forests in alignment with the 2050 Clean Energy and Climate Plan (CECP).

"We've done the review – now we're following the science. It is encouraging to see that Massachusetts has been proactive in many ways when managing our forests, but our work is not done yet," said **EEA Secretary Rebecca Tepper.** "With these funds, we will empower communities to invest in this critical resource while boosting local economies that rely on our forests. These investments will pay dividends in the long term as we confront extreme weather and make progress on our climate goals."

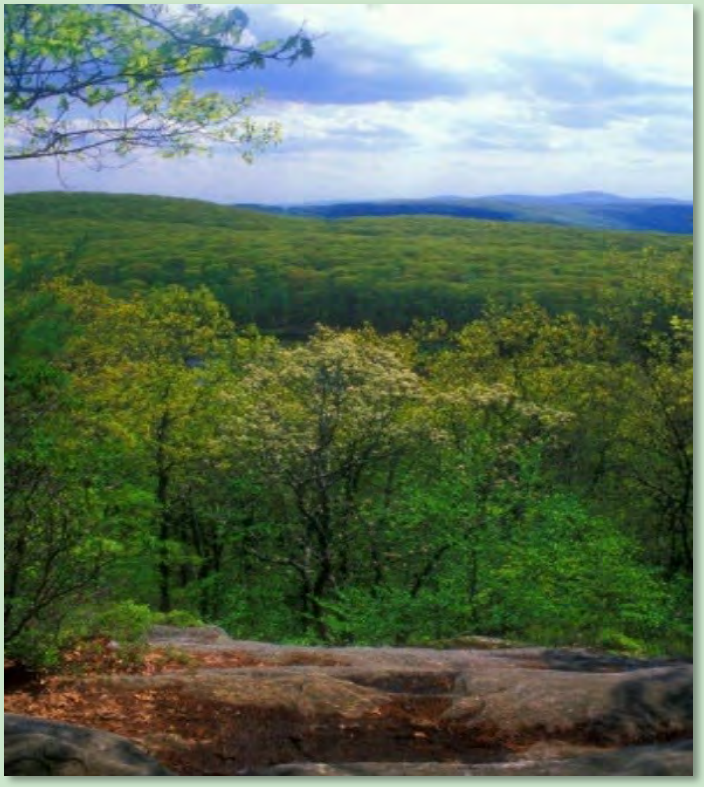
"Healthy forests and wetlands are our best defense against the increasingly dangerous impacts of climate change. Nature—our forests, wetlands, grasslands—sequester huge amounts of carbon; you can look out your window today and see the best direct air capture technology currently

(Continued on page 11)

(Continued from page 10)

available—trees. And they provide this service for free. But our forests are in danger—each year we lose more and more as forests are cut for other land uses and the forests themselves are experiencing the effects of more extreme climate impacts, including droughts, fires, heat waves, invasive species, and more intense storms. The Healey-Driscoll Administration made it a top priority to ensure our forest management practices and state policies guiding our forestry programs integrate the best and most current science," said **Climate Chief Melissa Hoffer.** "The policy choices and actions we take now will impact future generations. We look forward to incorporating these recommendations into our land management plans and strategies, and we are very grateful to the Committee members who collectively bring deep expertise on a broad range of forestry and climate science."

Climate Forestry Committee Recommendations



Over six months, the Committee deliberated on recent science about how forests can affect climate change and how they are best managed for carbon storage and sequestration. The Committee centered its recommendations around the idea that forest management ranges along a spectrum from the most passive, hands-off approach, where nature takes it course, to active management, where interventions are targeted to advance specific forest conditions. Its recommendations covered several areas, including carbon stocks and sequestration, soils, natural disturbances, and habitat management, offering climate-centered approaches for each.

(Continued on page 12)

(Continued from page 11)

In addition, the Committee discussed strategies for maximizing carbon storage. The Committee agreed that carbon storage is greatest in older forests, and the state should allow forests to grow old while balancing goals for active management. The Committee also recommended strategies for pursuing active forest management in a climate-focused manner, including updating Best Management Practices and encouraging EEA to implement its Healthy Soils Action Plan to preserve soil carbon. The Committee also recommended a reduction in habitat goals for species dependent on young forests, shrublands, and grasslands on MassWildlife lands to increase carbon storage and sequestration. Separately, as part of the Biodiversity Conservation in Massachusetts Executive Order, the Department of Fish and Game will evaluate and update habitat goals for 2030, 2040, and 2050 for Massachusetts.

Additionally, the Committee underscored the importance of natural disturbances for forests, and recommended, wherever possible, that dead trees be left on the ground for their biodiversity benefits – rather than removed.

Recognizing the impact pests, pathogens, and invasive plant species can have on natural and working lands, the Committee recommended that EEA evaluate each circumstance individually including the nature of the invasive pest or pathogen, the tree species impacted, the stage of the invasion, and the likelihood of successful intervention.

Overall, the Committee encouraged state agencies to be more specific about the rationale behind forest management projects and their carbon and climate implications, including for water supply protection and habitat management goals. It also called for more investment in data, science, and staffing resources for state forest lands. Forest and Carbon Data

(Continued on page 13)

(Continued from page 12)

Understanding the essential role of forests and carbon, the administration has also developed an outline and framework for a publicly available dashboard that will launch in 2024, highlighting forest carbon metrics and trends. Projects planned for 2024 include engaging an external contractor to investigate where and how wood from Massachusetts forests is being utilized and the impact on carbon storage of use in long-lived wood products.

Landowner and Business Incentives

Working directly with private forest landowners representing 60 percent of Massachusetts' forests and forestry business owners representing the state's $5.4 billion market sectors, EEA will expand its successful Working Forest Initiative program. In 2024, the administration will take actions to increase technical assistance, incentivize practices that protect or enhance forest soils and carbon stocks, and promote forest resilience across private and municipal lands in Massachusetts via technical assistance from licensed foresters to advance climate-oriented forestry practices. In addition, an annual climate forestry event will be launched for all forest landowners and related businesses to exchange ideas, best practices, and innovations.

For more information, visit:

https://www.mass.gov/news/healey-driscoll-administration-announces-50-million-investment-and-milestones-for-forests-as-climate-solutions-initiative

Species Spotlight

Thornless Honeylocust, *Gleditsia triacanthos* var. *inermis*

While naturalized in the eastern United States, honeylocust is native to the central region of the country, spanning from South Dakota, to Texas, and from to northwest Florida, to central Pennsylvania. In Massachusetts, we know the honeylocust from its presence in our urban forests, although it is possible to find it growing wild on uncultivated sites.

The preferred native habitat for the honeylocust is in river floodplains. The native honeylocust typically has one to four-inch thorns along its trunk and bark, but these are not found in the thornless cultivar commonly planted in our urban areas. Honeylocust, a member of the pea family, is hardy in USDA Zones four to nine and does well in Massachusetts. Honeylocust has an open-spreading crown that is often flattened at the top. It is a fast-growing tree and can reach heights of 30 to 70 feet, with a similar spread, although the trees can grow much taller in the wild.

Leaves are alternate and pinnately or bipinnately compound, six to eight inches long, with 20-30 1/2 to 1/3-inch-long, oblong leaflets. The leaves are bright green in the summer, turning yellow in the fall. Leaves of honeylocust are often some of the first to come down in the fall. Because the leaflets are so small, they also don't require much raking and tend to blow away and dissipate from an area on their own. Lateral buds are small and somewhat sunken. Twigs are smooth, shiny brown, and have a zig-zag form. The distinctive bark is gray-brown and is fissured into long, platy ridges.

(Continued on page 15)

Species Spotlight—Continued

(Continued from page 14)

The yellow-green flowers are polygamo-dioecious (they have both imperfect and perfect flowers on the same tree) and are not showy when they bloom in late spring. Fruit of honeylocust is a brown pod, six to sixteen inches long, although there are non-fruiting cultivars that are typically planted in urban areas to avoid the issue of litter from pods. In the wild, the pods provide a source of food for deer, squirrels, rabbits, and opossums, as well as for domestic animals like goats and cattle.

Honeylocust transplants well and is tolerant of many urban conditions, such as compaction, drought, and salt. Because of the small leaflets, honeylocust casts a light shade and makes a great tree for seating areas or for areas where turf is desirable.

While it can withstand harsh urban conditions, honeylocust is susceptible to pests and diseases, including cankers, honeylocust borer, honeylocust plantbug, spider mites, honeylocust podgall midge, and mimosa webworm.

Some cultivars are less susceptible to some of these pests. The cultivar ‘Shademaster’ has shown some

resistance to honeylocust plantbug and mimosa webworm.

The wood of honeylocust is dense and resists rot and is often used for fenceposts, railroad ties, pallets, furniture, and tool handles.

Honeylocust is a great choice for areas where dappled shade is desirable, but urban foresters should use care when selecting this species since it has been overplanted in some areas.

Photos:

From DCR, Virginia Tech, and UConn Plant Database

Tree City USA, Observe Arbor Day!

STANDARDS FOR RECOGNITION

To receive recognition, a community must meet four core standards for its public trees:

Standard 1:
Form A Tree Board Or Department

Delegating responsibility for city- or town-owned trees is the first official step to becoming a Tree City. By forming a tree board or department, cities can create a more organized and effective urban forestry plan.

Standard 2:
Establish A Tree Care Ordinance

A public tree care ordinance assigns clear authority over public trees and provides clear guidance for planting, maintaining, and/or removing trees from streets, parks, and other public spaces.

Standard 3:
Maintain A Community Forestry Program With An Annual Budget Of At Least $2 Per Capita

Your community most likely already spends at least $2 per capita on the planting, care, and removal of trees. This is intended to demonstrate an ongoing investment into your public trees.

Standard 4:
Proclaim and Observe Arbor Day

Celebrating Arbor Day and passing an official holiday proclamation helps create pride for your city's entire urban forestry program.

Benefits of Recognition

By becoming a Tree City, your community will:

- Receive flags, signs, and other materials to proudly display your award
- Educate residents about the value of trees
- Gain national recognition for your commitment to environmental stewardship

Interested?

Learn more and apply today at: Arborday.org/treecityusa

TREE CITY USA®
An Arbor Day Foundation Program

MA Tree Wardens Conference 2024

Sturbridge— This winter, the DCR Urban & Community Forestry (U&CF) Program participated in the 111th Annual Conference of the Massachusetts Tree Wardens and Foresters Association. State Coordinator, Julie Coop, presented on the U&CF Program, and provided outreach and technical assistance throughout the two-day event.

The conference highlight was provided by the keynote speaker, Dr. Francesco Ferrini, professor from the Department of Agriculture, Food, Environment and Forestry at the University of Florence, Italy.

Dr. Ferrini spoke on a variety of his research, which includes:

- Impact of shrubs and hedges along the roads to reduce air pollution
- Physiological and growth aspects of different species as affected by different cultivation techniques after planting in the urban environment
- Effect of water stress on growth performance of newly planted trees and selection of drought tolerant species
- Biodiversity in the urban environment

The event was jam-packed with presentations, awards, panel discussions, and exhibitors. Chris Rosa, Malden's Cemetery Director, who also serves as Malden's Tree Warden was honored at the event, winning the 2024 Massachusetts Tree Warden of the Year award!

Congratulations Chris!

For more information, visit:

https://masstreewardens.org/

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

Newly Updated ANSI A300 is Now Available

Industry standards play an essential role in ensuring the quality, reliability, and safety of the services arborists and tree care workers provide, while also making it easier for companies to meet the needs of consumers. After an extensive review, the newly updated ANSI A300 is now available in a consolidated document, making it more efficient for tree care workers to maintain industry standards. The ANSI A300 delivers comprehensive standards for tree care practices and guidelines for writing tree care work specifications.

The updates to the standards include:

- New maintenance and monitoring recommendations to improve professionalism and defer maintenance responsibility away from companies and towards the tree owners
- Improved clarification around palm pruning with the latest standards for frond removal
- Updates around indiscriminate mechanized tree-cutting

The ANSI A300 equips individuals with work specification writing guides, facilitating effective communication, minimizing misunderstandings and ensuring the job is executed correctly and complies with codes, laws, ordinances, and regulations.

dcr Massachusetts

FOREST SERVICE U S DEPARTMENT OF AGRICULTURE

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.

Two new urban forests are coming to Worcester
Connecticut receives $2M to help grow urban forests, provide shade
Boston Urban Forestry Reflects on Successes of 2023

Gateway City Grant Opportunities for FY25 Now Available!

GREENING THE GATEWAY CITIES
MA Urban Canopy Project

FY 25 Non-Profit Partnership Grant

Grants to support non-profits in their work to communicate GGCP objectives, raise awareness of the benefits of urban trees, and encourage residents to participate in tree planting.

- Maximum Award: $35,000 / Application due date: March 21st, 2024
- Bid Document: Partnership Grant

FY 25 Tree Planting Implementation Grant

Grants will support tree planting, tree watering & maintenance, and other related activities that have a measurable impact on the urban canopy in Gateway Cities.

- Maximum Award: $150,000 / Application due date: April 4th, 2024
- Bid Document: Implementation Grant

More info: Hilary Dimino Hilary.M.Dimino@mass.gov

https://www.mass.gov/info-details/greening-the-gateway-cities-program

On The Horizon

March 13	**Webinar:** Urban Forest Connections — Mapping Tropical Urban Ecosystems: Challenges/Opportunities. https://www.fs.usda.gov/research/products/multimedia/webinars/urbanforestconnections
March 19	**Workshop:** Massachusetts Association of Conservation Districts—Working Group Meeting 9:30 am–12:00 pm (Zoom). Register Here.
March 21	**Webinar:** Urban Forestry Today— The Disease & Insect Pests of the 2024 Growing Season http://www.urbanforestrytoday.org/
March 23	**Conference:** Mass Land Conservation Conference — Amherst, MA https://massland.org/conference
April 11-12	**Workshop:** RI Department of Environmental Management Assessing Tree Decay — Providence, RI https://ritree.org/eventslisting/tree-risk-workshop-2024-april-11-12/
April 12	**Deadline:** MA Tree Wardens Seedling Sale! Proceeds benefit the MTWFA Scholarship fund. Order here: https://masstreewardens.org/wp-content/uploads/2024_Seedling_Brochure.pdf
March—May	**Workshop:** iTree Academy Spring 2024 — virtual learning series, one-hour virtual sessions over a six-week period https://www.itreetools.org/support/i-tree-open-academy-spring-2024
THIS OLD TREE PODCAST	**Podcast:** This Old Tree — *Heritage trees and the human stories behind them*. Old trees are awe inspiring links to the past that fire our historical imagination. https://www.thisoldtree.show/

***The Citizen Forester* is made possible by:**
A grant from the USDA Forest Service Urban and Community Forestry Program and the Massachusetts Department of Conservation and Recreation, Bureau of Forestry

Department of Conservation and Recreation – Bureau of Forestry
10 Park Plaza, Suite 6620
Boston, MA 02116

Julie Coop, Urban and Community Forester
julie.coop@mass.gov | (617) 626-1468

Mathew Cahill, Community Action Forester
mathew.cahill@mass.gov | (617) 626-1464

www.mass.gov/dcr/urban-and-community-forestry

Subscribe? Unsubscribe? You are receiving this because you have requested to receive *The Citizen Forester*. If this is an error or you do not wish to receive this newsletter, please email mathew.cahill@mass.gov