Massachusetts Department of Conservation and Recreation

THE CITIZEN FORESTER

Urban & Community Forestry Program

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dcr Massachusetts

Preparing for Change

Chelsea, MA taking action

The only thing constant is change. It's an idea that seems simple enough, until it encounters our daily lives. As much as we experience change every day, it still comes as a surprise to us. We are comfortable with the familiar, and change can be seen as something unpleasant or even frightening. While the age-old image of the ostrich with their head in the sand has served us

Preparing for climate change in Chelsea, MA
Photo: DCR

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well as an example of past generations deferring difficult decisions, it is now time to be active in dealing with climate change. One city in particular that is investing in new strategies is Chelsea, MA.

One of the densest cities in the state, Chelsea covers a small area (2.21 square miles) with an estimated 40,000 residents. The entirety of Chelsea is designated as an Environmental Justice area, with a high proportion of low-income residents, residents of color, linguistically isolated individuals, or a combination of these factors. A scarcity of open space, rampant development and gentrification pressures, and a proximity to Logan Airport and the Tobin Bridge, all have contributed to air, land, and water pollution, which have resulted in negative public health outcomes. Extreme urban heat has been a rising health concern as well, due to the high percentage of impervious surface throughout Chelsea, and lack of substantial urban tree canopy.

Over the past few years, Chelsea has been preparing for change. Facing not just one, but multiple threats in the form of urban heat islands, rising sea levels, and increased storm intensity, the City is implementing a variety of climate adaptation and mitigation measures.

According to NASA, Climate change is one of the most complex issues facing us today. It involves many dimensions – science, economics, society, politics, and moral and ethical questions – and is a global problem, felt on local scales, that will be around for thousands of years. Because we are already committed to some level of climate change, responding to climate change involves a two-pronged approach. Mitigation refers to reducing emissions of, and stabilizing the levels of, heat-trapping greenhouse gases in the atmosphere. Mitigation

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would include burning less fossil fuels, while planting trees to sequester more carbon from the atmosphere.
Adaptation refers to adapting to the climate change already occurring, such as hotter summer temperatures, and more intense rain events. Providing public cooling stations, updating infrastructure to cope with larger storm events, and even planting trees can be seen as adaptation measures.

Beginning in 2014, the city of Chelsea partnered with DCR to launch an ambitious tree planting goal of 2,400 trees over the next few years through the state sponsored Greening the Gateway Cities Program (GGCP). Since planting trees has the dual benefits of providing shade to lower urban heat island temperatures (adaptation), while removing CO2 from the atmosphere (mitigation), the initiative was a complete win-win.

As part of the GGCP grant program, the city applied for and was awarded additional funding in 2021 to install engineered stormwater tree pits.
Stormwater tree pits improve water quality of local waterways, reduce peak runoff flows, and improve the health of urban trees. Cities are beginning to augment traditional grey-infrastructure methods, since most do not take advantage of the stormwater utility benefits trees

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provide. Grey stormwater systems use curbs, gutters, drains, pipes, ponds, vaults, and outfalls to move water quickly to containment and/or treatment areas or to receiving waters. Alternatively, green stormwater systems manage stormwater on site with overflow ability, creating areas that mimic nature. Vegetation, swales, wetlands, buffer zones, and pervious surfaces capture, filter, and slow stormwater runoff. Volume is managed through evapotranspiration, infiltration, and soil moisture recharge.

To effectively use trees for the management of stormwater runoff, the site must be designed properly. Site design is critical to the success of any project, even when the project seems as simple as planting a tree. Urban trees require space, proper soil, drainage, and irrigation. Soil properties and soil volume are keys to growing trees in urban landscapes and using trees successfully as a means to manage runoff.

A soil's porosity (amount of available pore space), permeability (how interconnected pore spaces are), and infiltration rate (how quickly the water moves through the soil) are critical to the success of a street tree and its ability to absorb stormwater. These soil properties affect the amount of air, moisture, and nutrients that are available in the root zone and how much runoff is absorbed into the ground instead of flowing over the ground. Impervious surfaces and compacted soils in urban areas create challenges for both stormwater managers and urban foresters by

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preventing the infiltration of runoff into the ground. One way to address these problems, providing a solution for both, is to design tree planting areas to increase infiltration and limit compaction, and engineer them to receive and process street and rooftop runoff.

Designing the tree planting to accommodate the largest size tree possible will increase its stormwater utility function. Big trees with their large, dense canopies manage the most stormwater, and should be considered where the location is appropriate.

Hilary Dimino, a Senior Planner and Project Manager for Chelsea's Department of Housing and Community Development, has been working on improving the city's adaptation and mitigation strategies through a series of recently acquired grants.

The City of Chelsea's Department of Housing and Community Development, in collaboration with the Department of Public Works recently secured an Urban and Community Forestry Implementation Grant, funded by the Executive Office of Energy and Environmental Affairs (EEA). The City intends to utilize this grant funding to increase the public urban tree canopy, by planting 200 trees throughout the city in the present fiscal year. Additionally, the City plans to utilize funds to provide training to DPW staff members, on proper tree planting, pruning and maintenance for all public trees. In the spring, selected DPW staff members will be tasked with planting trees, and then watering

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and maintaining newly planted trees to ensure their survival. Furthermore, the City aspires to create new public tree pits that are encapsulated by permeable pavement. The intention is to increase water permeability for newly planted trees, to enable better root development, which will in turn result in a healthier urban tree canopy.

The City also plans to create an 'Adopt-a-Tree Pit' Program, which will focus on bi-lingual community engagement, regarding citywide urban forestry. The intention is to engage residents about the importance of urban tree canopy, and promote tree care and maintenance via community members. The hope is to empower residents, to care for public trees near their homes and to educate residents about extreme urban heat islands, and the benefits that a robust urban tree canopy can provide for heat mitigation.

The City of Chelsea has implemented a variety of approaches to tackle the ongoing problem of extreme urban

heat that plagues the gateway community. In 2020, the City's Department of Housing and Community Development partnered with community-based organization GreenRoots and the BU School of Public Health to administer temperature sensors throughout the city, in order to identify neighborhoods that suffer from the urban heat island effect. Subsequently, the Department of H&CD secured an EEA Municipal Vulnerability Program Grant to pilot

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an urban heat mitigation project, dubbed the Cool Block Initiative. The intention of the pilot program was to combat extreme heat around Willow St and Maverick St, which surrounds the local Boys and Girls Club, and was identified as an urban heat island.

The Initiative saw the implementation of several heat mitigation strategies, including the installation of several shade trees and installation of bioswales and native plants, which will aid with the retention of excess stormwater runoff, as well as mitigate heat.

Additionally, a roadway blast treatment was administered to lighten the color of the surrounding asphalt and lightly colored aggregates were utilized when reconstructing the surrounding sidewalks.

Post treatment asphalt (Left) retains less heat than typical asphalt (Right)

These innovative techniques were implemented to aid in the reflection of solar radiation, which should sequentially lower ambient temperatures throughout the microclimate. Temperatures throughout this area will be monitored in the coming years, to assess the benefit of the urban heat mitigation project, and the City of Chelsea intends to use this pilot program as a model moving forward to mitigate extreme urban heat islands throughout the community.

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Climate change is a complex problem, but fortunately there is funding currently available for a variety of solutions. Many communities are following Chelsea's example and implementing these projects now, rather than waiting for conditions to worsen. Be an advocate for climate solutions in your community and together, cities, towns, states, and nations can create conditions that will make a difference for current and future generations.

References:

- *Stormwater to Street Trees: Engineering Urban Forests for Stormwater Management* U.S. Environmental Protection Agency, September 2013
- https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program
- https://www.mass.gov/guides/urban-and-community-forestry-challenge-grants

Photos: DCR and City of Chelsea

Forester Focus

A deeper look into today's Urban Forestry topics

DCR's Tree Stewards Training

Leominster— This year's annual Tree Steward Training class was held at the Leominster Emergency Management Center, and was the return to an indoor classroom setting for the first time since the start of covid.

The weather somewhat cooperated, with rain only in the morning. Our first session was on Improving Your Community Tree Board by Rich Parasiliti, Tree Warden for Northampton.

Attendees were able to learn about the development of Northampton's Tree Board and the award winning programs that they have enacted in their community.

This was followed by the Tree Pruning Workshop, with instructor Jen Kettell of Radiant Leaf Consulting. After learning important skills though classroom instructions, the participants were ready to head outside and start pruning!

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Photos: Mathew Cahill, DCR

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The afternoon sessions started with DCR's Forest Health Program Lead, Nicole Keleher providing an overview of current pests and disease effecting the trees and forests of Massachusetts.

Next was a workshop on iTree from Dave Bloniarz the Project Director for the USDA Forest Service Urban Natural Resources Institute. He demonstrated the ability to calculate your community's urban tree canopy cover, as well as calculating the value of individual trees. This was followed by a presentation by DCR Community Action Forester Mathew Cahill on Tree Selection and Planting. The practice of "Right Tree, Right Place" as well as maximizing the benefits received from trees were discussed, followed by the steps to take for a successful tree planting.

The training concluded with a summary of Urban and Community Resources from U&CF Program Coordinator Julie Coop.

Thank you to everyone who attended and especially to our presenters!

For more information on Urban & Community Forestry visit:

https://www.mass.gov/lists/picks-and-shovels-urban-and-community-forestry-resources

https://www.mass.gov/lists/urban-and-community-forestry-fact-sheets

CLIMATE RESILIENCY

Baker-Polito Administration Awards Over $32 Million in Climate Change Funding to Cities and Towns Bringing Total Investment to $100 Million

Boston – The Baker-Polito Administration announced $32.8 million in grants to cities and towns through the Executive Office of Energy and Environmental Affairs' (EEA) Municipal Vulnerability Preparedness (MVP) Program, continuing its historic investment in building climate change resilience throughout the Commonwealth. The grant program, which was launched in 2017 as part of Governor Baker's Executive Order 569, provides communities with funding and technical support to identify climate hazards, develop strategies to improve resilience, and implement priority actions to adapt to climate change. With this announcement, the Administration has now awarded $100 million to 97% of the Commonwealth's cities and towns through the MVP program.

"Since we started the program in 2017, the Municipal Vulnerability Preparedness Program has played a large role in helping cities and towns across the state fight climate change," said Governor Charlie Baker. "With

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this latest round of MVP funding, we are making the single largest investment in the program by directing nearly $33 million towards critical climate resilience projects throughout Massachusetts."

"This is the sixth round of MVP funding, and we are making a major push forward by funding more climate resilience implementation projects than ever before," said Lieutenant Governor Karyn Polito. "It has been rewarding to see projects move through the phases from planning to design to construction and implementation over the last five years, and we are starting to see the tangible difference these projects are making in our communities as we prepare for a changing climate."

The MVP Program pairs local leadership and knowledge with a significant investment of resources and funding from the Commonwealth to address ongoing climate change impacts, such as inland flooding, increase in storm events, sea level rise, drought, and extreme temperatures. Of the $32.8 million in grants announced, $32.6 million was awarded to 73 municipal projects that build local resilience to climate change in the Commonwealth's sixth round of MVP Action Grant funding. Additionally, $157,700 was awarded to six towns to pursue a community-led planning process to identify vulnerabilities to climate change and priority actions. When complete, these municipalities will be eligible for the next round of implementation funding.

"Every year the real need for climate resilience funding becomes even more important for our municipal partners, who have remained steadfast in their commitment to the hard work of preparing their communities for climate change," said Energy and Environmental Affairs Secretary Beth Card. "It is

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extremely gratifying to see more dollars than ever before being put towards local projects, such as drought mitigation, stormwater and culvert upgrades, and land acquisitions, which will have numerous positive impacts on the state's residents for many years to come."

As the MVP program reaches its five-year anniversary, EEA is formulating a process, trainings, and resources, called "MVP Planning 2.0," for updating MVP plans and the priority actions identified within them. EEA is seeking to develop an updated process that is inclusive, engaging, equitable, collaborative, and actionable. The update process will take into account newly available climate change tools and projections, the ongoing Massachusetts Climate Assessment, data from the first iteration of MVP planning grants, and feedback from the many MVP stakeholders who have made the program a success to date. The revamped process and resources are expected to launch in Spring 2023.

Furthermore, MVP supports the implementation of the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP), released in September 2018, which provided a national model of integrating hazard mitigation priorities with forward-looking climate change data and solutions. The plan is implemented within state government by the Resilient MA Action Team (RMAT), an inter-agency team led by EEA and the Massachusetts Emergency Management Agency, and staffed by designated Climate Change Coordinators from each Executive Office. The Resilient MA Action Team provides guidance and decision-making for plan implementation, further refines priority actions, and ensures actions are integrated into agency practice and policy. Recently, the RMAT launched the Climate Resilience Design Standards Tool to integrate

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best available statewide climate change projections to inform climate resilient planning and design of infrastructure, buildings, and natural resource assets. This tool was used in the 2022 MVP Action Grant and Community One Stop for Growth application processes.

Currently, RMAT and EEA are developing the MA Climate Change Assessment, a statewide analysis detailing how Massachusetts people, environments, and infrastructure may be affected by climate change and related hazards through the end of the century. This assessment will directly inform the first five-year update to the SHMCAP, which will be released in Fall 2023.

To view press release, visit:

https://www.mass.gov/news/baker-polito-administration-awards-over-32-million-in-climate-change-funding-to-cities-and-towns-bringing-total-investment-to-100-million

Species Spotlight
Baldcypress, Taxodium distichum

We are fortunate in New England that baldcypress does well outside its native range of the southeastern United States. Though naturally occurring as far north as Delaware, this tree thrives in New England and is hardy in zones 4 to 11.

This deciduous conifer naturally occurs in wet areas, along rivers and streams and in swampy areas, sometimes in standing water where it develops those knobbly "knees" we love. Where it grows in stands, it often is the dominant cover-type. Baldcypress also does well in urban

areas as a park or specimen tree and even as a street tree so long as the soil is not too dry.

Baldcypress grows 50 to 70 feet tall and 20 to 30 feet wide. It has a pyramidal form, a light and airy canopy, with buttressed roots at the base. In wet areas, baldcypress will form "knees" at the base, but these do not generally occur in other growing situations.

The leaves are spirally arranged and are bright green during the spring, a softer green during the summer, and finally reddish-brown in the fall before they drop off the tree. The buds are alternate (dawn redwood, *Metasequoia glyptostroboides*, a species often confused with baldcypress, has buds that are arranged oppositely).

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Species Spotlight—Continued

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The bark is a stringy reddish brown and is attractive in the fall when the bark becomes a prominent feature of

the tree. The flowers are monoecious, with male flowers in the form of catkins and females as cones. The fruit is a cone that is green when immature, turning to brown at maturity.

Baldcypress transplants easily and is tolerant of many site conditions, so long as conditions are not too dry or too alkaline.

Baldcypress seeds provide food for wild turkeys, squirrels, evening grosbeaks, and wood ducks. Bald eagles and ospreys will nest in the tops of large baldcypresses. The wood is resistant to decay and it has been used in construction, docks, fences, boats, river pilings, furniture, and many other products.

Bald-cypress and its cultivars make a fine stand-alone specimen or accent planting. They can be clustered together to create a grove, or planted near water features or along shorelines.

Photos:

Photos from DCR, Virginia Tech, and UConn Plant Database

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Massachusetts

Federal Grant Funding

The Forest Service Urban & Community Forestry Program is a technical, financial, and educational assistance program, delivering nature-based solutions to ensure a resilient and equitable tree canopy where more than 84 percent of Americans live. By working with state partners and community tree groups, the program invests from the ground up in communities, improving more than 140 million acres of urban and community forest across the United States.

The Urban and Community Forestry Challenge Cost Share Grant Program is refocusing efforts to harness urban & community forestry for maximal benefit for all communities, and to combat the effects arising from extreme heat, high energy costs, and flooding. Urban & community forestry can provide clean air, natural disaster relief, green jobs, and more.

Countless campaigns have touted these benefits in an attempt to make the benefits of city trees plain and tangible to the widest audience possible. What they have lacked, however, is an effective appeal to historically underrepresented and disadvantaged communities; the very audiences who stand to benefit most from improved tree planting and maintenance efforts.

This year's grant program creates an innovative national messaging strategy for Urban and Community Forestry and a one that captures the voice of diverse youth around climate change. The two awardees identified innovative approaches to serve communities across the country that also addressed critical challenges identified in the National Ten Year Urban and Community Forestry Action Plan (2016-2026).

https://www.fs.usda.gov/managing-land/urban-forests/ucf

Tree City USA Application Portal Now Open!

It's that time of year again! The applications to apply for Tree City, Tree Campus, and Tree Line recognition are open.

Visit the program website to get started on this year's application. The awards are annual, and must be renewed at the end of each year. This year's deadline is December 31st 2022. Extensions are available, contact Mathew Cahill at mathew.cahill@mass.gov to request additional time, or for other program questions.

Why Become A Tree City USA Community?

A thriving urban forest offers many advantages to communities. Publicly demonstrating your commitment to the environment is a great way to build pride among residents, as well as position your community as an attractive place to live. To help you share your award, the Arbor Day Foundation send signs, flags, press releases, and other materials after your acceptance.

Your community can receive annual Tree City recognition by meeting four overarching standards. They include:

1. Maintaining a tree board or department
2. Having a community tree ordinance
3. Spending at least $2 per capita on urban forestry
4. Celebrating Arbor Day

Every state has a dedicated Urban and Community Forestry Program Coordinator. These coordinators provide technical, educational, and financial assistance to communities in their state. They can also help you start your Tree City USA application.

UMass Amherst News

In July 2021, 18 experienced tree risk assessors—all with the ISA's TRAQ credential—assessed likelihood of stem failure due to decay in 30 trees on the UMass – Amherst campus. For each tree (25 oaks and 5 white pines), assessors made 5 likelihood of failure ratings following 5 different assessment techniques. The first was after a simple visual assessment; the second was after sounding the trunk with a mallet; the third was after looking at the output of resistance drilling that showed the thickness of sound wood around the circumference of the stem; the fourth was after viewing a tomogram of the stem; the last rating was made after consulting with a fellow assessor in the study.

Overall, likelihood of failure ratings were similar for all of the assessment techniques except the tomography assessment, which resulted in higher ratings. The ratings were also quite variable for some trees and more uniform for others, suggesting that despite the training received to obtain the TRAQ credential, certain trees, assessment techniques, and assessors all decreased consistency among the ratings. The grad student working on this project plans to defend his thesis in December; he and his committee hope to publish the research soon afterwards.

— *Brian Kane, Massachusetts Arborists Association Professor*

This winter, DCR U&CF Program will provide funding for a UMass Amherst graduate student to assist with the Legacy Tree Program. The goal of this project would be to expand the number of trees for the program by promoting the commonwealth's significant trees. The funding would enable the student to provide DCR U&CF Program staff with technical assistance, data collection and management, promotion of the program, and training for tree wardens and tree groups about the Legacy Tree Program.

— *Kristina Bezanson, Lecturer in Arboriculture and Urban Forestry*

DCR Forest Health Story Map Now Live!

The 2022 MA DCR Forest Health Aerial Survey Results

Lymantria dispar damage in the Berkshires 2021

The Massachusetts Department of Conservation and Recreation's Forest Health Program has posted the 2022 forest health aerial survey results in our MA Forest Health Story Map.

The forest health aerial survey is conducted each year at the end of June and provides a visual snapshot of our commonwealth's forest canopy. We work to identify any pests, diseases, or abiotic impacts that are causing notable damage. The map imbed in the story map is interactive, allowing the user to click on polygons for more information and zoom in and out.

The MA Forest Health Story Map went live in January 2022. The story map highlights some of the work the DCR Forest Health Program does throughout the year, as well as, providing information about major diseases and pests afflicting Massachusetts forests. Each pests/ disease has its own section with details on how to identify it, its lifecycle and host trees, and up to date detection maps. If you are interested in learning more about MA Forest Health, please visit our Story Map at https://arcg.is/j8TiD or try out our QR Code.

— Felicia Hubacz, MA DCR Forest Health Specialist

On The Horizon

December 6	**Webinar:** The Tree Fund— "Engaging underserved populations in community tree management activities" https://treefund.org/webinars
December 13-14	**Conference:** New England ISA Virtual Conference https://newenglandisa.org/news/isas-2022-virtual-conference-registration-open-now
December 14	**Webinar:** Urban Forest Connections Webinar Series: Climate Change Resilience and Adaptation https://www.fs.usda.gov/research/products/multimedia/webinars/urbanforestconnections
January 10-11	**Conference:** MA Tree Wardens and Foresters Association https://masstreewardens.org/annual-conference/
2023 Dates TBD	**Webinar:** UMass Extension — Invasive Insect Webinars, a series of FREE webinars focusing on the impact, monitoring, and management of invasive insects in Massachusetts. https://ag.umass.edu/landscape/education-events/invasive-insect-webinars
March 25, 2023	**Conference:** Mass Land Conservation Conference — More info visit: https://massland.org/
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. Ever wonder what their stories are? Seasoned arborist and amateur historian Doug Still interviews local experts, historians, and regular folks to celebrate the myths and uncover the real tales. https://www.thisoldtree.show/

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