Massachusetts Urban & Community Forestry Program

The Citizen Forester

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The Practical Science of Planting Trees: Part I

By Rick Harper and Mike Davidsohn

As Extension Faculty, we are familiar with lecturing to students in the classroom, and more typically to audiences, large and small, comprised of adult practitioners. This fall I have had the chance to interact with some larger audience groups at the Canadian Urban Forestry Conference in Laval, QC, and the Tree Care Industry Association Conference in Baltimore, MD, and the Society of Municipal Arborists in Indianapolis, IN. I had the opportunity to interact with professionals from across North America and around the world. Throughout question and answer sessions, I was intrigued that even though we live in the information age, we are still very much in search of *good* information that can be easily interpreted and readily applied. Especially when it comes to the practice of selecting, planting, and getting the most of our investment in our urban trees. One guide that I found myself regularly referencing in relation to reoccurring questions and themes was the updated text: *The Practical Science of Planting Trees* by G.W. Watson and E.B. Himelick (2013, International Society of Arboriculture, Champaign, IL. 250 pp.).

This text (Watson and Himelick, 2013) has much to say about the proper evaluation of a plant before it is purchased. According to Cornell University's Urban Horticulture Institute (UHI), approximately 90% of urban trees that are planted in the Northeast are field grown, dug mechanically with a tree spade or manually by shovel, when the tree reaches the salable size of approximately 2.5 inches, and then wrapped to preserve the intact soil, with burlap, twine and wire basket (balled-and-burlap or B&B) (N. Bassuk, pers. comm.). Hence, here we will explore what Watson and Himelick report related to selection of B&B trees.

Up Ahead:

The origin of a tree at the nursery is important. While trees may be produced here in the Northeast under local climatic conditions, local nurseries also purchase large quantities of trees from nurseries located in the more southerly Mid-Atlantic states, the Midwest, and extreme Pacific Northwest. In addition to challenges adapting to our climate here in the Northeast, information pertaining to seed source (i.e., where the tree specifically came from) and root stock may be limited or unavailable. According to the USDA Plant Hardiness map, Massachusetts features a climate that ranges from a relatively moderate 7b to a significantly colder 5a. Utilizing trees grown under these local conditions may minimize plant adaptation time and increase the chances of achieving a healthy urban tree planting. Additionally, when selecting trees at a nursery, identifying the orientation of the tree (i.e., north) so that the tree may be placed in like manner at the time of planting is a recommended practice to help prevent sunscald.

Looking for the root flare

Concerning root location, quality, and formation relative to B&B-production method, it is of utmost importance that two or three main roots and the root flare be located so that the tree can be installed correctly.

(Continued on page 2)

The Practical Science of Planting Trees: Part I (cont'd)

According to a survey produced by a major tree company, 93% of the newly-installed trees inspected featured excessive soil (more than 3") covering tree roots. It has also been noted that a majority of trees leaving the nursery will also feature excessive soil on top of the tree roots. This is something that practitioners who will be installing trees need to consider. Although detection of root imperfections may not be practical,
spot-checking a select number of B&B trees (5% - 20%) can allow for a full visual inspection of the root system, where consideration should be given to inspecting for radial/lateral root production, the presence of a taproot (generally not desired), and other root-related imperfections. One key benefit associated with B&B production is that mechanical injury of roots often occurs less because of the volume of soil protecting the lower portion of the tree. A final perspective concerning B&B trees is the diameter of root ball associated with the trunk size. All too often, trees that I have dug up that have performed poorly or simply died have not had the volume of root material needed to support the above-ground portion of the tree. Though technical specifications exist from the American Standard for Nursery Stock concerning root ball diameter as the caliper of the trees increases by every 0.5", a *general rule of thumb* that can be used in the field is that for every inch of stem diameter there needs to be at least 10" of corresponding root ball diameter.

Inspecting roots growing through a fabric container. This tree was produced using the in-ground fabric method. (Rick Harper)

In terms of the above-ground portion of the tree, the better the branch structure, the less intervention, such as pruning, will be required after the tree is planted. Branches should be well-spaced (vertically and three-dimensionally) and feature strong, wide attachments that will foster sound growth and development. Trees with codominant leaders should not be selected or pruned. Foliage should be inspected for the presence of insects or disease or potential evidence of nutrient deficiencies (i.e., iron chlorosis, manganese deficiency). The principles that apply to B&B selection also apply to trees that are produced using differing methods, like container-grown, bare-root, or in-ground fabric systems.

We will continue next time with Watson and Himelick's review of planting, guying, and transplanting a tree.

Rick Harper, UMass Department of Environmental Conservation

Mike Davidsohn, UMass Landscape Architecture and Regional Planning

Mass. Tree Wardens' and Foresters' Association 104th Annual Conference

January 10-11, 2017, Sturbridge
104th Annual Conference
January 10-11, 2017, Sturbridge, MA
featuring Dr. Erika Svendsen, U.S. Forest Service
Cultivating Civic Stewardship of the Urban Forest

Public shade tree committees and other urban forest groups can be a tree warden's biggest thorns or strongest advocates. At their best, they are a welcome source of civic participation, marshaling support for community trees and for the funding to help manage them. Dr. Svendsen will focus on urban natural resource stewardship as a means to strengthen social trust, enhance civic participation, and foster innovation in urban and community forestry. She will describe specific instances where communities have used urban greening as a catalyst to recover from different types of disturbances and will illustrate how data from such events can be shared with policy makers.

See the full schedule and register at http://masstreewardens.org/annual-conference/.

Species Spotlight—Dawn Redwood, *Metasequoia glyptostroboides*

By Mollie Freilicher, DCR Community Action Forester

Form (Mollie Freilicher)

Dawn redwood is a tree with a relatively recent history in the planted landscape. It was only known from fossils until the 1940s when a forestry professor, T. Kan, from the National Central University in China, noticed a tree in Wan Hsien that was locally known as "water fir." He had not seen it before and thought it might be something notable. It was several years before botanists collected samples and identified the tree as being in the genus *Metasequoia*, a genus previously known only from the fossil record. [For a full account of the discovery, see H.H. Hu 1998-1999]. Seeds of *Metasequoia* came to the Arnold Arboretum in 1946 and were distributed to institutions around the United States and around the world. Dawn redwood made its scientific debut in a February 1948 issue of *Science*, where E.D. Merrill wrote about *Metasequoia* in the wild, "It is clear, however, that this sole living representative of a very ancient genus is now apparently on the verge of extinction." While the species continues to be endangered where it naturally occurs in Chongqing, Hubei, and Hunan provinces in China, it now occurs in countries with temperate climes all around the globe, including right here in Massachusetts where you can go see a tree grown from one of the original seeds brought to the Arboretum. The tree from which the seed had been collected in the wild, grew along the edge of a rice field in Modaoqui in Hubei province. Now the seedling is a tree with a 91-inch diameter at breast height, along the Conifer Path.

Twig (John Seiler, Virginia Tech)

In its native area, in parts of Chongqing, Hubei, and Hunan provinces, dawn redwood grows in floodplains and occupies habitats similar to those baldcypress (*Taxodium distichum*) would occupy. Here in the United States, dawn redwood is hardy in zones 4-8 and grows in a variety of soil conditions in the landscape. It is a fast-growing tree and can reach heights of 70 to 100 feet, with a spread of 25 feet.

Leaves (Mollie Freilicher)

Similar to baldcypress, dawn redwood is a deciduous conifer, losing all its leaves in the fall. Unlike baldcypress, leaves of dawn redwood are opposite—a good way to distinguish these somewhat similar-looking trees. Leaves are flattened, ½-inch long, bright green above, paler below, and arranged pectinately. Buds are opposite, ovoid, with brown scales, and are often paired at the base of branchlets. Branchlets on dawn redwood can be deciduous or persistent. The persistent branchlets are reddish brown and have many buds, but only some leaves. Deciduous branchlets grow off of persistent branchlets and contain leaves. In the fall, leaves can turn orange-brown to red-brown, before becoming all brown in autumn, and falling off the tree.

Flower (John Seiler, Virginia Tech)

Dawn redwood is monoecious, with both male and female flowers on a single tree. Male flowers are in clusters—racemes or panicles, while female flowers are solitary. Cones are pendulous and elongated or round, ½ to 1-inch long and mature in the fall. The structures that contain the seeds kind of resemble lips (a bit more so than the fruit of *Sequoia*, though that fruit is similar).

Fruit (John Seiler, Virginia Tech)

Dawn redwood does not have significant disease or insect problems, though the top can die back in extreme cold. Dawn redwood transplants well and does best in full sun, in moist, well-drained, acidic soil. Dawn redwood makes a great specimen tree for a park, campus, golf course, or other large area and multiple trees can be grouped for a dramatic effect or used for an alleé. New York, and here in Massachusetts, Springfield, (and other cities too), have used it as a street tree. New York City Parks approved the species for use in medians and narrow growing spaces because of its pyramidal form.

(Continued on page 4)

Species Spotlight—Dawn Redwood (Continued)

Resources

Approved Species List. NYC Parks. https://www.nycgovparks.org/trees/street-tree-planting/species-list.

Hu, H.H. 1998-1999. How Metasequoia, the "Living Fossil," Was Discovered in China. *Arnoldia*. 58:4/59:1 *Arnoldia*. Metasequoia after 50 Years. 58/4 59/1 1998-1999

http://arnoldia.arboretum.harvard.edu/pdf/issues/189.pdf
*Metasequoia glyptostroboides.*IUCN Red List. http://www.iucnredlist.org/details/32317/0.

Dawn redwoods as street trees in New York City (Alan Snow)

Tree City USA—2016 Applications Now Being Accepted

Also accepting Tree Line USA and Tree Campus USA Applications

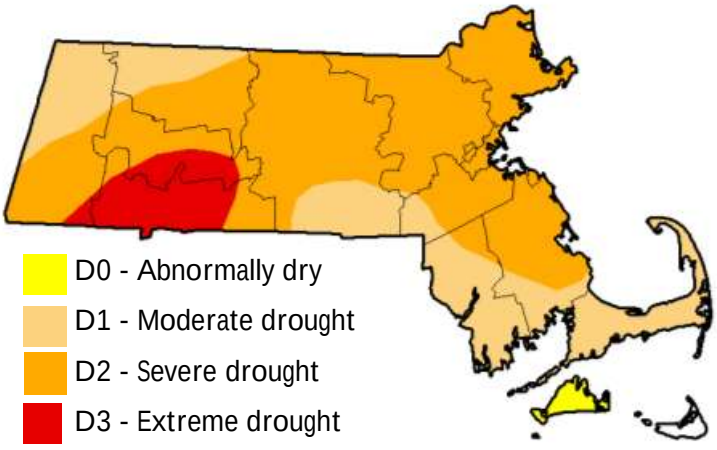
Apply online or use the paper application. Go to www.mass.gov/dcr/urban-and-community-forestry and click on "Branching Out" at right. Applications are due December 31.

Interested in having your community become a Tree City USA this year? Contact Mollie Freilicher, 413-577-2966 or mollie.freilicher@state.ma.us

TREE CITY USA®

Drought Monitor

Conditions as of January 3, 2017. Check out drought conditions in Massachusetts, New England, and the U.S. Almost all of Massachusetts is in drought, but the portion of the state in "extreme drought" has dropped to 8%. (That is down from 36% the week of December 27, 2016.)
http://droughtmonitor.unl.edu/
Massachusetts drought resources may be found here: http://drought.unl.edu/Planning/DroughtPlans/StatePlanning.aspx?st=ma



Growing on Trees

Grants

DCR Urban and Community Forestry Challenge Grants

Deadline: November 1 (Full Application)

Challenge grants are 50-50 matching grants (75-25 for environmental justice projects) to municipalities and nonprofit groups in Massachusetts communities of all sizes for the purpose of building local capacity for excellent urban and community forestry at the local and regional level.

The USDA Forest Service provides funding for the grant program, and DCR administers the grants with guidance from the Massachusetts Tree Wardens' and Foresters' Association. The DCR Urban and Community Forestry Program assists communities and nonprofit groups in their efforts to protect and manage community trees and forest ecosystems, with the ultimate aim of improving the environment and enhancing the livability of all of Massachusetts's communities. NOTE: The 2016 application contains new guidelines for strategic planting grants.

Project areas include:

- Building and Strengthening Citizen Advocacy and Action Organizations
- Securing or Training Professional Staff
- Developing and Implementing Systematic Urban Forestry Management through tree inventory and analysis, resource assessment, and development of plans
- Attaining a Tree City USA Award, Growth Award, Tree Campus USA Award, or Tree Line USA Award
- Completing strategic community tree plantings and "heritage" tree care projects
- Other projects

Start planning for next year's round! Read the complete guidelines and download the news application at: http://www.mass.gov/eea/agencies/dcr/conservation/forestry-and-fire-control/urban-and-community-forestry-challenge-grants.html.

For more information on the Challenge Grants, including our National Grid Partnership Grants and Eversource Go Green grants, contact Julie Coop at 617-626-1468 or julie.coop@state.ma.us or Mollie Freilicher at 413-577-2966 or mollie.freilicher@state.ma.us.

EPA Environmental Justice Small Grants Program

Under this Request for Proposals, EPA will award grants that support activities designed to empower and educate affected communities to understand environmental and public health issues and to identify ways to address these issues at the local level. Approximately 40 one-year projects will be awarded at $30,000 each. Applications are due on January 31, 2017 by 11:59 PM (ET).

For more information go to: https://www.epa.gov/environmentaljustice/environmental-justice-small-grants-program and tune in to one of the pre-application assistance calls the EPA is hosting on December 8, 2016, January 12, 2017, or January 24, 2017.

Five Star & Urban Waters Restoration Grants

Now Accepting Proposals through January 31, 2017

The Five Star and Urban Waters Restoration Program seeks to develop nation-wide-community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. Projects seek to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development. Find out more: http://www.nfwf.org/fivestar/Pages/home.aspx.

Growing on Trees—Webinars

Urban Forestry Today Webcast Series

Diversity, Collaboration and Consensus: Managing Volunteers and the Urban Forest

January 12, 2017 | 12:00 – 1:00 p.m. ET

Emily Huff, PhD, Assistant Professor, Human Dimensions of Forestry, Michigan State University

Volunteers and tree boards are a valuable resource to cities and towns in terms of advocacy, coordination, and awareness about urban forestry issues. However, these boards are often comprised of individuals with varying, and often conflicting, viewpoints. This presentation will address common (and unique) challenges of viewpoint diversity and suggest best practices for managing conflict and making group decisions.

Visit: www.joinwebinar.com Code: 977-076-443

This broadcast is free and will offer the opportunity for arborists to earn 1.0 ISA CEU and 0.5 MCA credit. For those who are unable to attend the live broadcast, archived sessions will be available in the 'videos' section at www.urbanforestrytoday.org

For more information, contact:
Rick Harper, Department of Environmental Conservation, University of Massachusetts, Amherst
rharper@eco.umass.edu

The Urban Forestry Today 2017 Webcast Series is sponsored by the University of Massachusetts Department of Environmental Conservation, in cooperation with the USDA Forest Service, Massachusetts Department of Conservation and Recreation, University of Massachusetts Extension, and Massachusetts Tree Wardens' & Foresters' Association.

Arnold Arboretum Courses

Find out more about these and other programs: http://www.arboretum.harvard.edu/education/adult-education/

- Pruning in Winter, Jen Kettell (Jan. 28)
- Nature's Temples: Complex Old Growth Forest, Joan Maloof (Feb. 22)
- Pruning Shrubs, Jen Kettell (Feb. 25)
- Conservation by the Yard, Susannah B. Lerman (Mar. 2)
- The New American Chestnut, William A. Powell (Apr. 17)

USDA Natural Resource Conservation Service

Eastern Forest Pest Update

January 25, 2017 | 2:00 p.m. ET
Learn the status and sources of additional information for management of several key diseases and insect pests of eastern forests. Learn more...

Presenters:
Noel Schneeberger, Forest Health Program Leader/Entomologist, USDA Forest Service, Northeastern Area, Newtown Square, PA
Linda Haugen, Plant Pathologist, USDA Forest Service, Forest Health Protection Staff, St. Paul, MN

Who should participate? Conservationists, Foresters, Land Managers, Land Owners, Others
*** Please join the session 15 minutes prior to the start of the webinar. ***
http://www.conservationwebinars.net/webinars/eastern-forest-pest-update

Urban Forest Connections

The USDA Forest Service's Urban Forest Connections webinar series brings experts together to discuss the latest science, practice, and policy on urban forestry and the environment. These webinars are open to all. Past webinar presentations and recordings are available here.

Wednesday, January 11, 2017 | 1:00 p.m.-2:15 p.m. ET

Integrating Experts, Communities, and Online Resources for Equitably Expanding Urban Tree Canopy

Using the case of Portland, Oregon, this webinar will provide context for assembling city-scale programs that enable community groups, researchers, and city staff to advance urban canopy management and expansion.
Angie DiSalvo, Portland, OR, Parks & Recreation
Vivek Shandas, Portland State University

Future Webinars

February 8, 2017 | 1:00 p.m.-2:15 p.m. ET
March 8, 2017 | 1:00 p.m.-2:15 p.m. ET

To access the webinar, go to: https://www.fs.fed.us/research/urban-webinars/.

Growing on Trees

Climate Change Workshops

Preparing Urban Forests in the Boston Region for Climate Change

January 24, 2017

Location: Massachusetts Institute of Technology Stratton Student Center, 84 Massachusetts Ave. Cambridge, MA

Urban and community forestry professionals face the tremendous challenge of developing and implementing management actions that help urban forests respond to climate change.

This session is geared to municipal foresters, planners, parks managers, consulting arborists, nursery professionals, and others who are interested in learning more about adapting urban forests to climate change.

Forest Adaptation Planning & Practices

January 25, 2017 (limited space available)

Location: Cambridge City Hall Annex, 344 Broadway, Cambridge, MA

This active, hands-on training will be held for a limited number of participants. Urban forestry professionals and planners will incorporate climate change considerations and identify actions for adaptation into their own real-world projects. To find out more about these sessions and to register, go to: http://forestadaptation.org/Boston-FAPP

New England Botanical Club

2017 Meetings, Various locations. For the complete schedule and additional information, go to: http://www.rhodora.org/meetings/upcomingmeetings.html

February 3, 2017 *Invasive Plant Risks and Advantages with Climate and Land Use Change*

Dr. Jenica Allen, Assistant Professor, Department of Natural Resources and the Environment, University of New Hampshire, Durham, NH.

March 3, 2017 *Creating and Leveraging a Virtual Herbarium of New England for Biodiversity Science*

Dr. Charles Davis, Professor of Organismic and Evolutionary Biology and Curator of Vascular Plants, Harvard University, Cambridge, MA.

From Tree to Shining Tree

This summer, the radio show RadioLab did an episode about world of the forest under our feet. Learn about the amazing web underfoot in this episode, "From Tree to Shining Tree."

Growing on Trees—for Students

DCR Arbor Day Poster Contest

"Trees are Terrific...from Berkshires to Bay!"

Each year, over 1,500 Massachusetts fifth graders participate in the Arbor Day Poster Contest. Each school holds its own poster contest and submits their winning poster to the DCR. Prizes include art supplies, ice cream, and a tree for the winner's school. Each year there is a theme to encourage students to think about trees in new ways, such as "Trees Grow with Us and for Us" (2016), "Trees are Champions in My Community," (2015), or "Celebrate a Tree" (2012.) The theme for 2017 is "Trees are Terrific…from Berkshires to Bay!"

The deadline for the 2017 contest is March 15, 2017.

2017 Arbor Day Poster Contest Instructions and Activities (PDF, 1 MB)

Growing on Trees—for Students

Mass Tree Wardens' and Foresters' Association Scholarships

The 2017 Scholarship Application is now available. This year the Massachusetts Tree Wardens' and Foresters' Association will award $6,300 in scholarships to students who are actively studying arboriculture, community forest management, urban forestry, or a related field.

QUICK FACTS TO KNOW

- The scholarship grants range from $500 to $1500 per student.
- An applicant must be a student at an accredited college or university in Massachusetts.
- An applicant must be enrolled in a program of arboriculture, community forest management, urban forestry or a related field.
- An applicant must have completed at least one college semester in one of these programs.
- Award decisions are based on financial need and an acceptable grade point average.
- Applications are due by February 1, 2017.
- The student must fill out the scholarship application.
- The application may be submitted via mail, or scan and email.
- Awards are presented in March at the UMass Amherst Community Tree Conference.

The downloadable application is a fillable document and may be filled in by computer or by hand.
Or, a scholarship application may be requested via email or phone 781-894-4759.

Garden Club of America Zone VI Fellowship in Urban Forestry

For Graduate Students and Advanced Undergraduates
Award: $5,000
Deadline: January 31, 2017
Purpose: To advance the field of urban forestry by encouraging students to study the planning, management, horticulture and ecology of urban forests and the effect of healthy urban forests on people and the environment.
Award: Funds one or more students annually at $5,000 for study and research that will advance the knowledge of urban forestry and increase the number of scientists in the field. A recipient may reapply for an additional year.
Eligibility: Open to graduate or advanced undergraduate students enrolled in U.S. institutions studying urban forestry, environmental studies, horticulture, forestry, or related courses of study with a special interest in the urban forest. Students must be enrolled during the academic year following the award decision.
To Apply: See application and instructions. Applications must be received at Casey Trees by January 31.
Selection: Selection is by a panel of people knowledgeable about research in the field of urban forestry, appointed by Casey Trees, and is approved by the GCA Scholarship Committee.
https://gcamerica.org/index.cfm/scholarships/details/id/22

Building the Next Generation of Climate Justice Leaders

The Educate, Motivate, Innovate (EMI) Climate Justice Initiative strives to engage the next generation of climate justice leaders and expand partnerships with Minority Serving Institutions and Tribal Colleges and Universities. The EMI Initiative has issued a Call for Student Climate Justice Abstracts for presentations at the EMI Workshop during the March 8-10, 2017 National Environmental Justice Conference and Training Program in Washington, D.C. The next generation of climate justice leaders will engage with environmental elders and activists as well as influential members of academia, government, and non-governmental organizations.
Read the Blog. Learn More.

Growing on Trees

UMass Summer College—Help Spread the Word!

There's a shortage of qualified workers in the tree care industry; many of you have probably experienced it firsthand. Training new employees who have no experience takes time away from production; hiring employees who have at least a basic understanding of arboriculture means the new hires can get up to speed on the crew more quickly. Not all new hires will have the benefit of a Stockbridge / UMass Arboriculture degree, but we can give them a good start. For the past three summers, UMass and Stockbridge have offered a "pre-college" course in Arboriculture & Urban Forestry for high school students. In the course, students get an overview of the Arboriculture & Urban Forestry curriculum that two- and four-year students at Stockbridge and UMass take. We hope to offer the course again this summer, but we need enough students to cover the costs. The course will run for one week (35 hours of training—in the classroom and in the field) in July 2017.

During the course, students learn the importance of safety, basic tree biology and soil science, how to identify trees, how to manage insect and disease pests, how to prune and fertilize, and of course, some basic tree climbing skills. Typically, we spend the mornings inside, in a classroom, and then the afternoons outside climbing and learning how to identify trees. In addition to the course itself, UMass provides a typical college experience for students, who live in dorms (unless they choose to commute from home), eat at the dining commons, and participate in supervised social activities with classmates. There are several other pre-college programs going on at the same time, so there are lots of other high school students to meet and make new friends.

All of the previous students who enrolled really liked their experience. We think the course is an excellent introduction to our profession, a way to attract young people to a great career, and a good way to recruit students to attend Stockbridge and UMass.

We need your help to reach out to high school students and encourage them to participate. Students don't have to have any experience or special skills, just a good attitude and an interest in learning about trees and being outside.

You can find more information by clicking on the link for "Urban Forestry," at this website: http://www.umass.edu/summer/precollege.html or by contacting Brian Kane bkane@eco.umass.edu. Thanks in advance for your help!

Gleanings

EPA Releases the Environmental Justice 2020 Action Agenda

EPA finalized the EJ 2020 Action Agenda to help cultivate strong partnerships and chart a path forward for achieving better environmental outcomes in the nation's most overburdened communities. EJ 2020 has three overarching goals: to deepen environmental justice practice in EPA's programs that improve the health and environment of overburdened communities; to work with federal, state, tribal, community, and industry partners to expand our impact across the country; and to measure the progress we're making on our most significant environmental justice challenges.

View the Press Release. Read the Fact Sheet.
Read the Blog Post. Watch the Video by EJ Stakeholders.

Gleanings

Gypsy Moth Outbreak of 2016

by Joe Elkinton and Jeff Boettner

This article appeared in the No. 3, 2016 issue of Massachusetts Wildlife Magazine.
For the first time in 35 years, widespread and severe tree defoliation by gypsy moths surged across Massachusetts, Rhode Island and Connecticut. This came as a surprise to researchers whose subsequent investigations revealed the outbreak is linked to the recent and severe statewide drought. The authors describe the introduction, spread, and population ecology of gypsy moths, and the past and current efforts to battle this exotic invasive.

The gypsy moth (*Lymantria dispar*) is a native of Europe and its history in North America compared to many exotic species is unusual in that we know exactly when and where it was introduced. The culprit was Etienne Leopold Trouvelot of Medford, Massachusetts, an amateur entomologist who later became famous for his astronomical illustrations of celestial objects and phenomena. He was trying to hybridize gypsy moth with native silk moths for the silk industry. He imported gypsy moths from France and they escaped from his home in 1868 or 1869. The first tree defoliation by these moths started in Medford and spread to surrounding towns in the 1880s. In 1890, the Massachusetts legislature earmarked funds for gypsy moth control and eradication. These efforts did not succeed and gypsy moths continued to spread, but very slowly, because even though female gypsy moths have wings, they do not fly. Only males fly. Instead, the females devote all of their energy to egg production, averaging 600 eggs per moth. Recently hatched larvae (caterpillars) spread from tree to tree by dangling from silken threads blown by the wind. Much of the actual spread of gypsy moth in North America is caused by human beings, who transport the overwintering egg masses on firewood, lawn furniture and other objects in their yards to other locations. It took over 50 years for gypsy moth to spread across Massachusetts. In 1922, a barrier zone was created along the Hudson Valley in an attempt to prevent the spread further south and west, but that effort failed. The gypsy moth spread is continuing today, with the leading edge of the infestation ranging from Minnesota in the Midwest to North Carolina in the South. It has taken 148 years for gypsy moth to attain its current distribution in North America. Read the full story at MassWildlife.

The Forest Service Northeastern Area has a new web address

https://www.na.fs.fed.us/

Understanding Climate Change Impacts on Water Resources

The "Understanding Climate Change Impacts on Water Resources" training module is intended to increase water resource professionals' understanding of the causes of climate change, its potential impacts on water resources, and the challenges that water resource professionals face. The module describes how federal, state, tribal, and local governments and communities are working to make the United States more resilient to the impacts of climate. The 45-minute training is part of the EPA Watershed Academy Web certificate program.
Learn More and Take the Training.

Interview with Mitchell Silver on NYC's Game-changing Park System

By Jared Green
November 30, 2016—Check out this interview with the Commissioner of New York City's park system. Hear about some new initiatives like "Parks Without Borders," what happens when you remove chain link fencing around parks, and how parks can help protect the city from storms and floods.

"[…] park land represents 14 percent of the city's footprint. Streets and sidewalks represents another 26 percent. So in other words, 40 percent of New York City is within the public realm. We own it, yet the average citizen does not know where the parks department property ends and the department of transportation property begins. And guess what? They don't care. They want a seamless public realm." Read the full interview in *The Dirt*.

News

Spread By Trade and Climate, Bugs Butcher America's Forests

By Michael Casey and Patrick Whittle

December 7, 2016—Petersham, Mass. (AP) — In a towering forest of centuries-old eastern hemlocks, it's easy to miss one of the tree's nemeses. No larger than a speck of pepper, the Hemlock woolly adelgid spends its life on the underside of needles sucking sap, eventually killing the tree.

The bug is one in an expanding army of insects draining the life out of forests from New England to the West Coast. Aided by global trade, warming climate and drought-weakened trees, the invaders have become one of the greatest threats to biodiversity in the United States. Scientists say they already are driving some tree species toward extinction and are causing billions of dollars a year in damage — and the situation is expected to worsen. "They are one of the few things that can actually eliminate a forest tree species in pretty short order — within years," said Harvard University ecologist David Orwig as he walked past dead hemlocks scattered across the university's 5.8-square-mile research forest in Petersham. This scourge is projected to put 63 percent of the country's forest at risk through 2027 and carries a cost of several billion dollars annually in dead tree removal, declining property values and timber industry losses, according to a peer-reviewed study this year in Ecological Applications. That examination, by more than a dozen experts, found that hundreds of pests have invaded the nation's forests, and that the emerald ash borer alone has the potential to cause $12.7 billion in damage by 2020. Read the full story at the *Beaumont Enterprise*.

38th Annual

Community Tree Conference

March 7, 2017

UMass-Amherst

On the Edge: The Intersection of Forests And Developed Landscapes

December 19, 2016—Boston, MA– A new study shows that trees in the Boston region grow faster and store more carbon as biomass the closer they are to developed areas. As urban development spreads, patchy woods are increasingly the norm. "More and more of the landscape is becoming fragmented," says Andrew Reinmann, a biologist at Boston University. Forests are important asset in fighting climate change, absorbing an estimated 30 percent of the carbon dioxide we emit from burning fossil fuels. But those estimates come from big forests, says Reinmann, and we know relatively little about how patchy forests function, and whether they provide the same services that large forests do. A study published on Monday in PNAS by Reinmann and BU environmental scientist Lucy Hutyra shows that forest fragments in New England behave differently than intact forests in surprising ways: they may pull significantly more carbon dioxide out of the atmosphere than predicted. Read the full story at actrees or check out additional coverage at CityLab.

News Headlines in Brief

Program Lets San Franciscans Adopt Future Street Trees As Holiday Trees

More Than 100 Million Dead Trees in California From Drought

Emergence Of Winter Moths Has Scientist Worried About Another Spring Of Defoliation

How Do Trees Respond to Climate Change? Clues from an Arboretum

This Iowa Road Has a Massive Tree Growing In The Middle Of It

London Plane: A Tree with Gritty Roots

Deadly Oak Wilt Disease Found in Brooklyn and Several Towns in Suffolk County

Ash Tree Genome Aids Fight Against Disease

On the Horizon

Dec 31	Deadline for Tree City, Tree Line, and Tree Campus USA Applications, contact Mollie Freilicher, 413-577-2966 or mollie.freilicher@state.ma.us
Jan 10-11	Mass. Tree Wardens' and Foresters' Association 104th Annual Conference, Sturbridge, www.masstreewardens.org
Jan 11	Urban Forest Connections webcast, www.fs.fed.us/research/urban-webinars/
Jan 12	Urban Forestry Today Webcast, www.joinwebinar.com, enter code: 977-076-443
Jan 12	Weathering Change: Local Solutions for Strong Communities Webinar Series, Register Now
Jan 24-25	Preparing Urban Forests in the Boston Region for Climate Change, Cambridge, http://forestadaptation.org/Boston-FAPP
Feb 6	Aerial Lift Specialist (Arborist Safety Training Institute), Portsmouth, NH, www.tcia.org
Feb 8	Urban Forest Connections webinar, www.fs.fed.us/research/urban-webinars
Mar 7	UMass Community Tree Conference, www.umassgreeninfo.org
Mar 15-16	Certified Tree Safety Professional Two-day Workshop, Two-Day Advanced Safety/Behavioral Workshop and Certification Exam, Windsor, CT, www.tcia.org
Mar 14	Western Mass. Tree Warden's Dinner Meeting, Northampton
Mar 15	Deadline for DCR Arbor Day Poster Contest
Mar 22	Aerial Lift Specialist (Arborist Safety Training Institute), N. Franklin, CT, www.tcia.org

Save the Date
2017 Tree Steward Training
October 13-14, 2017
Petersham, MA

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

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.), please contact Mollie Freilicher or click here.

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