



Garden Myth Busting for Extension Educators: Reviewing the Literature on Landscape Trees

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Home gardeners and landscape professionals are a rapidly growing audience

for extension educators as they seek science-based information to support their activities. However, many are not familiar with current research and cannot assess whether the information they find in print, on the internet, or through social media is accurate. In addition, some products and practices are meant for agricultural production, not for maintaining home gardens and landscapes. The combination of misinformation and misapplied information means that this audience risks damaging their plants and soils through overuse of fertilizers, misuse of pesticides, and poor management practices.

The field of urban horticulture, including arboriculture, is expanding with new insights about plants and soils in residential and public landscapes. However, there are few Extension educators who have an academic background in environmental horticulture and may be as confused as the public about what constitutes sound, science-based recommendations.

The authors of this article are state Cooperative Extension educators and researchers with many years of experience in translating science for use by home gardeners and landscape professionals. Our goal is to assist other Extension educators by providing reliable information for them to share with the gardening and landscaping public.

The purposes of this literature review article are:

- to identify some common beliefs homeowners and landscape professionals have about managing landscape plants and soils;
- to provide a brief, science-based explanation on why these beliefs are not accurate;
- to provide links to published, peer-reviewed information that supports the explanation and can be distributed to clientele; and

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Figure 1. English ivy (*Hedera helix*) has invaded this remnant forest in Seattle, having escaped from a residential landscape.



Figure 2. While native to the Pacific Northwest, *Arbutus menziesii* performs poorly in urban settings.

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- to suggest strategies based on current and relevant applied plant and soil sciences for managed landscapes.

Myth #1: “Native trees and shrubs are superior to introduced species for wildlife habitat”

Many landscapes are overrun by exotic species deliberately introduced for ornamental or revegetation purposes. Research documents how exotic, invasive species can outcompete native plants and decrease the ecological and aesthetic value of landscapes (Figure 1; Reichard and White 2001). As a result, homeowner associations, communities and entire cities have adopted “native only” planting specifications. Such policies have the unfortunate side effect of eliminating any exotic, noninvasive species from planting consideration.

The rationale for native-only policies has centered on the belief that native plants have coevolved with native animals and are uniquely suited to providing food and shelter for them. What believers fail to consider is that urbanized landscapes are no longer natural (Figure 2).

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Construction activities include:

- vegetation removal;
- soil excavation and compaction;
- infrastructure development; and
- building development.

Landscapes planted after construction face a radically changed environment: many native species cannot tolerate the alterations in light, water, and temperature that come with urbanization. As a result, many native-only plantings suffer severe environmental stress and mortality.

Rather than limiting planting palettes to native species (which may be poorly adapted to urban conditions), noninvasive exotic species adapted to these harsher conditions should be considered. A robust body of research supports the use of introduced trees and shrubs in residential and public landscapes in addition to appropriate native species (Chalker-Scott 2018; 2015b). Not only do they tolerate urban conditions, they provide habitat for wildlife just as effectively as native trees and shrubs.

Additionally, there are other activities that will improve wildlife biodiversity in managed landscapes. These include:

- reducing lawns using a mixture of groundcovers;
- providing a permanent water feature;
- protecting soils with a coarse woody mulch, such as arborist wood chips; and
- reducing or eliminating the use of pesticides.

Myth #2: “Many trees are difficult to transplant because of their long taproot”

The landscape below ground is little understood by gardeners and landscape professionals, whose perceptions are shaped by “common sense” assumptions. Everyone has seen a germinating seed before, including the long, unbranched taproot that develops before significant above-ground growth occurs. Once leaves appear, little thought is given to what root systems are doing. Many people believe that the taproot continues to grow, resembling a giant carrot especially in excurrent trees (those with holiday tree forms). They also believe that decurrent trees (those with classic shade tree forms) develop a more branched root structure, much like a giant broccoli cluster. In fact, popular renditions of root system show startling symmetries between crown and root structure. We like symmetry and this perception of mirror-imaged roots and crowns is appealing. It’s not surprising that professional recommendations for irrigation and fertilizer application are based on the belief that the “dripline” (the outer edge of the crown from which rainwater drips) encompasses the majority of the tree’s roots.

In fact, the taproot structure in nearly all trees is a juvenile feature with specific functions important to young trees (Chalker-Scott 2015a):

- it anchors the young tree;
- it creates a vertical structure for lateral root development;
- it stores sugars transferred from the leaves; and
- it serves as the conduit for water and nutrients to the trunk and canopy.



Figure 3. Mature landscape trees have no tap root.

What it does not do is absorb significant amounts of water and nutrients. This function is provided by root hairs, which are fine, thread-like structures found at the growing tips of young roots. The taproot itself only has one growing point.

What determines where roots will grow in the soil?

Roots require three things to survive underground: water, nutrients, and oxygen. When one or more of these are missing from the root environment (also called the rhizosphere), root growth stops. For taproots, downward growth usually slows as oxygen becomes more limiting with soil depth. As the young tree matures, more lateral roots explore soil resources in the top 12-18” of soil (Figure 3).

Highly drained, sandy soils can have tree roots that extend far below the surface, because they are well-aerated and hydrated. This scenario is unlikely in most developed areas, where construction activities compact the soil, compressing pore space and driving oxygen out. Urban soils and slowly draining wetland soils do not have sufficient oxygen to allow for deep root establishment.

Thus, as a tree matures, its lateral root spread becomes greater. It is currently estimated that a tree’s functional root system extends two to three times the diameter of the crown at its widest point. These are the roots that are supplying the tree with water and nutrients. The juvenile taproot is subsumed by the rapidly developing lateral root system (Chalker-Scott 2015a).

Myth 3: “Mycorrhizal inoculants should be added to planting holes when installing woody ornamentals in landscapes”

Beneficial fungi called mycorrhizae associate with roots of woody plants in a mutualistic relationship that benefits each partner. Decades of research have shown how plants inoculated with mycorrhizae grow faster and larger than those without these fungal partners (Figure 4; Carpio et al. 2005). This knowledge has prompted entrepreneurs to market mycorrhizal inoculant products as planting amendments, claiming they will ensure establishment of

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landscape plants. Mycorrhizal inoculants are often seen in container (potting) media, organic fertilizers, or sold separately as growth promoting products, but their efficacy is often unproven, especially in landscape situations (Chalker-Scott 2017).



Figure 4. Mycorrhizal fungi are essential to healthy plants and soil.

Misconceptions about mycorrhizal products are common:

- *My soil is “poor” so I have to add the mycorrhizae to my garden.* Most soils are already inoculated with mycorrhizal fungi, so they do not need to be added. Plants will form mycorrhizal associations in most soils without additional inoculant. Soils where mycorrhizal inoculants have been effective in promoting plant growth responses are extremely disturbed or toxic, such as mine spoils or severely “cut” sites where all surface soil is removed and plants are being grown in subsoils.
- *Mycorrhizal inoculants will support my aging or dying tree.* While research shows that mycorrhizae play a role in plant defense from pathogens (Linderman 1988), there is no evidence to suggest that inoculants can provide additional benefit to previously inoculated plants.
- *Mycorrhizae will promote growth of my established trees.* There is no published work to indicate inoculation of established trees will promote their growth; Appleton et al. (2003) reported no effect from this application.
- *The mycorrhizal inoculant contains viable spores.* Biological products have limited shelf life. Research on commonly available inoculants showed that over 50% of the products available to consumers were not viable (Corkidi et al. 2003). Mycorrhizal fungi have naturally low viability of their spores so if a product does not have hyphal fragments included, it may not be viable.
- *If I inoculate with mycorrhizae I don’t need to fertilize my plants.* Mycorrhizae aid in nutrient uptake (especially phosphorus), but they do not cure nutrient deficiencies, especially when the soil is deficient in those minerals. Research indicates that mycorrhizae can enhance uptake of normally available soil nutrients, but the soil has to contain them in the first place (Corkidi et al. 2005).
- *If I add mycorrhizae I will bring life to my soil.* If a soil is devoid of microbial activity, it is likely an unsuitable soil for mycorrhizae to grow in. Just like plants, mycorrhizal fungi need good soil conditions in which to grow.

Compacted, flooded, or contaminated soils are also harmful to these fungi, so they will not cure a toxic or otherwise non-arable soil.

Myth 4: “The crowns of transplanted trees should be pruned to compensate for root loss”

Earlier we mentioned that humans like symmetry. This bias seeps into the practice of pruning the crowns of trees and shrubs during transplanting. There is a widespread belief that the crown size should mirror the roots to avoid straining the root system for water uptake. Initially this practice does reduce water usage, but soon the plant responds with new shoots and leaves, requiring not only more water but nutritional resources for their development.

Understanding how plants work is useful in explaining this response (Bayala et al. 2004; Jones et al. 1998; Martin et al. 2010):

- cutting branches removes growth-regulating auxins and allows dormant buds below these cuts to grow;
- new branches and their leaves require nitrogen and other essential nutrients for their development;
- expanding leaves require high levels of water to maximize leaf size;
- directing water and nutrients to the crown reduces their availability to roots;
- root growth and establishment is reduced without sufficient water and nutrients;
- root growth is further inhibited by the lack of auxins, which stimulate new root development, and
- poor root systems are unable to take up sufficient water to support the crown.



Figure 5. Compensatory pruning is not recommended for newly transplanted trees and shrubs.

Gardeners see the tops of their transplanted trees growing and mistakenly think the tree is healthy, only to see the tree suffer or die in subsequent months. Instead, the crown should be left intact (Figure 5). Again, understanding what is happening below ground is important (Chalker-Scott 2015a):

- the tree’s first response after transplanting will be to grow new roots to establish into the surrounding soil;
- water and resources are directed to the roots, and above-ground growth will slow or stop during this time;

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- flowers or leaves on transplanted trees may wilt or die, particularly if they are young or conditions are hot and dry;
- once the roots have established, water and resources will be directed to dormant buds; and
- the emerging shoots and leaves are an indicator that roots are well established into the soil.

Myth 5: “Pruning cuts and other wounds should be sealed to prevent disease”

For many years, gardeners and tree care professionals covered wounds and pruning cuts with sealants such as asphalt emulsions or resin-based products. Sealing was recommended because treated wounds were thought to cover over more quickly than unpainted cuts, and that vulnerable tissues were isolated from decay fungi. Both of these suppositions were later disproven, and professionals soon abandoned an unnecessary and harmful practice (Shigo and Shortle 1983). Unfortunately, the practice lives on for home gardeners who can still purchase wound sealants from nurseries, and in countries such as those in Eastern Europe where painting wounds is practiced with religious fervor, despite obvious failures of the paints to prevent decay (Figure 6a-b).

Trees and other woody plants have a biochemical response to wounding that requires oxygen. Sealants isolate the tissues from the atmosphere, limiting the oxygen that’s needed for natural wound sealing. Furthermore, artificially sealing wounds can be counterproductive to the main objective of limiting development of wood decay. Wood decay spores in air can fall on pruning cuts immediately after branches are removed (Gauthier et al. 2015). Pruning sealants provide an impenetrable cover and maintain high humidity behind the paint, providing perfect incubation conditions for pathogens. Research indicates that beneficial fungi can also inhabit cut surfaces and that these organisms compete with and inhibit the development of wood decay



Figure 6a-b (R-L). Pruning paints did not prevent decay in this horse-chestnut (*Aesculus hippocastanum*) tree.

causing fungi (Schubert et al. 2008). Biological control fungi can be applied after a cut is made to protect the wound from subsequent decay fungus colonization. Tree paints prevent the deposition or application of biological control fungi on cut surfaces.

Research on branch removal shows that leaving the branch collar intact and avoiding flush cuts is more likely to limit decay than the use of pruning paints (Shigo 1984).

Myth 6: “Trees should be firmly staked at planting”

Nursery-grown shade trees are often rigidly staked to prevent blowdown and damage during cultivation. In some cases, trees are pruned to a long, untapered standard with a bushy top that requires a tight stake to hold it up. Nurseries often remove side branches from the young trunk and while this creates the illusion of a small tree, the practice actually inhibits the development of taper in the trunk (Harris 1984; Neel and Harris 1971). Trees without taper will not stand without staking. Poor culture of ornamental trees in nurseries necessitates staking once trees are planted into landscapes because they do not have the structural development in their trunks to stand on their own. Due to these cultivation errors, landscape installers frequently keep the nursery stake and add more stakes to firmly secure the tree in place and further prevent its movement in the landscape.

Staking takes three basic forms: rigid staking, guying, and anchoring. All methods of staking reduce development of taper, increase height growth, and decrease caliper of the developing tree relative to unstaked trees (Figure 7). Moreover, improper staking can result in increased tree breakage either during the staking period or after staking is removed (Figure 8a-b) (Thacker et al. 2018).

Decades ago, researchers discovered that movement of the trunk and branches is necessary for the development of trunk taper (Figure 9) (Neel and Harris 1971). Trees grown in a growth chamber without movement did not develop taper and instead grew taller, while trees in an identical chamber that were hand shaken each day developed significant taper and remained shorter.

Until trees are established in landscapes they may require some staking. In areas of high wind, guying (which involves cables staked to the ground) gives the greatest protection against main stem breakage or blowover (Alvey et al. 2009).



Figure 7. Rigid staking prevents development of a strong trunk, causes injury, and slows establishment in the landscape.

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Figure 8a-b. (R-L) Staking that is too high and tight results in tree breakage above the staking point. When staking has been left on too long, trunks often break after staking is removed.

Whatever system is used, any such hardware should be removed as soon as the tree can stand on its own:

- The traditional two stakes and ties system is the least harmful to trees staked in landscapes (Figure 10).
- Staking should be low and loose to allow trunk taper to develop naturally.
- Remove all staking material as soon as possible.
- If a tree is not established after a year of staking, it is unlikely to ever establish.

Myth #7: "Wood chip mulches will decrease soil nitrogen and spread pathogens"

With chronic drought and/or record-breaking summer temperatures making it increasingly important to conserve water, many gardeners and groundkeepers are using landscape mulches. The ideal landscape mulch not only moderates soil temperature and conserves water, but also:

- reduces compaction;
- provides nutrients;
- enhances plant growth;
- provides habitat for beneficial insects;
- helps control weeds, pests and disease; and
- reduces the need for pesticides and fertilizers.

In addition, landscape mulches should be readily available, affordable, and easy to apply and replace. A review of the

literature on landscape mulches (Chalker-Scott 2007) determined that organic mulches are overall the best choice, with deep layers of coarse woody material providing most or all of the above-listed benefits (Figure 11). Arborist wood chips (created from leaves and branches chipped up by tree service companies) are a particularly good option as they are generally inexpensive and easy to obtain anywhere trees are managed.

Unfortunately, many people have misconceptions about what arborist wood chips will and will not do. These misconceptions include:

- absorbing nitrogen from the soil;
- suffocating roots by depriving them of oxygen;
- transmitting pathogens to established landscape plants;
- lowering soil pH;
- killing plants through allelopathy; and
- harboring termites, rodents and other pests.

Fortunately, none of these concerns are validated by research. Here are some brief explanations (Chalker-Scott 2007) targeted to our audience:

- Wood chips will not draw nitrogen from the soil unless they are incorporated into it. When used as mulch, arborist chips have no effect on underlying soil nitrogen levels, except to increase them over time.
- Wood chip mulches, even those made from diseased trees, will not transmit pathogens to healthy plant roots. If diseased chips are incorporated into the soil they could infect plant roots, but field evidence of this is rare. Arborist chips that are stockpiled even for a few days undergo severe pathogen reduction through microbial attack within the pile (Downer et al. 2008).
- Wood chips, or any other organic mulch, will not change the pH of the soil. The soil volume is vast, and any



Figure 10. An appropriate staking method. Stakes and ties should be removed as soon as the tree can stand without support or be damaged from wind.



Figure 11. Wood chip mulches are beneficial for trees and shrubs growing under them.



Figure 9. Taper is the increase in diameter of the stem near the soil line.

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acidification would occur only at the mulch-soil interface where it would quickly be neutralized.

- Wood chips, even those made from black walnut or cedar, will not kill landscape plants. There is no reliable evidence that chemical inhibition from decaying wood actually occurs in a landscape situation.
- Wood chip mulches do not lend themselves to tunnel building like landscape fabric and other sheet mulches do: they collapse. Termites do not eat wood chips unless they have no choice; they are negatively affected by some of the chemicals wood contains. In fact, arborist chip mulches house a number of beneficial insects and other species that naturally control pests.

For arborist wood chip mulches to be the most effective (Chalker-Scott 2007), they should be:

- coarse – no less than ½" diameter – so water and air can move freely through them;
- applied as soon as possible after chipping both to maximize the materials available to microbes and to capture the nutrients released by their activity in the soil (Figure 12); and
- maintained at a depth of at least 4" to prevent weed growth.

What to do instead: Action items for gardeners and landscape professionals

- Choose appropriate native or introduced tree species based on their suitability to site conditions and ecological function (Chalker-Scott 2018).
- Prune only broken, dead, or diseased branches in newly transplanted trees.
- Remove branches so that branch collars are left intact – not flush with the trunk.
- Allow cut surfaces to seal naturally: do not use sealing paints or other products.
- Leave lower branches intact to help develop taper and to protect the young bark tissues.
- Avoid mycorrhizal products, but instead use arborist wood chips as a natural inoculant and microbial food source (Chalker-Scott 2017).
- Remove stakes as soon as possible to avoid injury to the trunk.
- Retain a thick woody mulch layer to reduce weeds and nourish both trees and soils (Chalker-Scott 2015c).

Horticultural lore is full of apparent “common sense” practices that are not supported with scientific evidence. Gardeners and educators alike must question these



Figure 12. Fresh arborist chips are the best wood-based mulch.

practices, asking for supporting evidence from current, relevant, and science-based resources. Developing scientific literacy skills should be part of any professional or volunteer-based training, and can be facilitated through peer-reviewed materials readily available on the web (Chalker-Scott and Daniels 2016).

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Species Spotlight, Urban Tree of the Year

Eastern hophornbeam, *Ostrya virginiana*

Compiled by **Michelle Sutton**



Ostrya fall color. Photo by Shawn Tubre



The leaves of hophornbeam have an acuminate tip, and their edges are doubly serrated. Photo by Ethan Dropkin

street, it makes a generally oval to rounded tree, about 30 feet (9.1 m) tall at maturity, with somewhat downward drooping branches. The distinctive hop-like flowers that give *Ostrya* its common name are most numerous when it has

Each fall, Society of Municipal Arborists members vote for the Urban Tree of the Year. In 2019, members are elevating American hophornbeam (*Ostrya virginiana*), a very tough tree with subtle, often underappreciated, beauty. It is a medium-sized tree in the birch family that has an extensive native range east of the Rockies, from Manitoba to Florida.

“*Ostrya virginiana* has common names that include American hophornbeam, Eastern hophornbeam, hornbeam, ironwood, leverwood ... a poster child for why common names can be a problem,” says Cornell Urban Horticulture Institute Director Nina Bassuk. She describes *Ostrya* as an understory tree that is distinctive for its bark, which looks like thin, evenly spaced, stringy strips lightly exfoliating from the trunk.

Bassuk says, “When we urban foresters bring it out of the forest and onto the

some sunlight, but the tree grows well in light shade, too.”

Although it manages dry periods in the shade of the forest, it is not particularly drought-tolerant on the street. However, Bassuk says that at the Urban

Horticulture Institute (UHI), they have found that *Ostrya* tolerates a wide soil pH range and is pest-free, making it well worth consideration.

Transplanting *Ostrya* can be a bit touchy, but planting small caliper and bare root in the fall is the most economical way to go. “Our UHI research on transplantability of *Ostrya virginiana* agrees with others that it is difficult to transplant successfully,” Bassuk says. “In [our study](#), small-caliper (1.5 inch/38 mm) trees showed significant transplant shock in the first year after planting, but then recovered in their second year. B&B trees transplanted better in the spring than bare root trees, while B&B and bare root trees transplanted equally well in the fall. Regardless of production method or season, small-caliper trees would be recommended when transplanting.”

Virginia Tech Associate Professor of Urban Forestry Eric Wiseman is a big fan of *Ostrya*, which is hardy

The Society of Municipal Arborists 2019 Urban Tree of the Year designation recognizes the underutilized, attractive, and useful American hophornbeam (*Ostrya virginiana*) for its service to urban forests and encourages its use when matched appropriately to site and as part of a diverse urban tree inventory. You can see the [full list](#) of past Tree of the Year winners on the SMA website.



The female *Ostrya* catkins morph into showy clusters of drooping seed pods that look like hops. [Photo](#) by Eric Hunt - Own work, CC BY-SA 3.0



Ostrya virginiana catkins. This monoecious tree bears both male and female catkins on the same tree. Photo by Ethan Dropkin

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Species Spotlight, Urban Tree of the Year (continued)

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Ostrya shading diners on the student center patio at Virginia Tech. Photo by Eric Wiseman

candidate for planting in narrow tree lawns, sidewalk cutouts, and parking lot buffers throughout most of the conterminous United

in zones 3 through 9A. “For arborists, the attraction of hophornbeam goes beyond its outward appearance, for it fills a gap in the plant palette where few other native species have similar traits,” he says. “Here in Virginia, it is a fairly slow-growing species that reaches up to 40 feet (12.2 m) at maturity. Because it tolerates a wide range of soil conditions, it’s a good

States and southern Canada.” Wiseman shares that on the Virginia Tech campus, hophornbeam was the tree of choice for an outdoor dining area on the south side of the student center, where both above- and below-ground space were at a premium, yet shade and ambience were for critical to diners’ comfort.

“Hophornbeam wood is strong and the tree naturally takes on an excurrent growth habit with well-spaced, subordinate scaffold branches,” Wiseman says. “As such, it requires minimal structural pruning and holds up well in storms and busy urban environments. Given its slow growth rate, transplanting and aftercare require attention and patience. But once established, hophornbeam has few serious pest or disease problems.”



Bark of a mature *Ostrya*. Photo Courtesy Cornell Woody Plants Database

Growing on Trees

Scholarships

Do you know a student pursuing a degree in arboriculture, urban forestry, or a related field? Scholarships available:

TREE Fund – Due March 15

Multiple scholarships available, ranging from \$3,000-\$5,000, including one open to high school students.

[Find out More.](#)

New England Chapter ISA – Due April 1

Three \$2,500 scholarships available, including one open to high school students.

[Find out More.](#)

Cape Cod Landscape Association – Due April 25

Three \$1,500 scholarships. Deadline to apply: April 25

[Find out More.](#)

Massachusetts Arborist Association – Due May 31

Three \$2,500 scholarships available for high school students.

[Find out More.](#)

Calls for Proposals

Society of Municipal Arborists Annual Conference November 18-19, 2019 Cleveland, OH

SMA seeks presentations that address successful interdisciplinary partnerships resulting in sustainably managed community forests for this and future generations. Topics of interest are listed on the SMA website.

Proposals are due by 5:00 pm (Eastern), April 5, 2019. Details can be found at: <https://www.urban-forestry.com/>

Partners in Community Forestry Conference November 20-21, 2019, Cleveland, OH

The Arbor Day Foundation seeks proposals from a wide range of forestry-related topics in general sessions and concurrent/breakout sessions.

Proposals are due by May 29, 2019.

Details can be found at: <https://www.arborday.org/programs/pcf/>

Growing Greener—in Springfield



Society of Municipal Arborists (SMA) Recognizes i-Tree Innovators

The SMA has recognized the City of Springfield and Regreen Springfield with an award for novel uses of i-Tree tools in community and youth educational programming, job training, and enhancing the quality of life in underserved neighborhoods.

ReGreenSpringfield

Celebrate Arbor Day April 26, 2019

Looking for ideas on how to celebrate Arbor Day this year? Here are some of the ways communities celebrated Arbor Day in Massachusetts last year:

- Planting trees at schools, town commons, along streets, and other locations
- Dedicating a tree
- Giving away seedlings to students and residents
- [Organizing an Arbor Day of Service](#)
- Arranging an assembly at a local school
- Having a tree pruning day
- Inviting a speaker to give a public presentation about trees
- Partnering with a local organization or scout troop to plant trees
- Holding a tree poetry contest for children and adults and publishing winners in the local newspaper (and planting a tree!)
- Staging a tree climbing and planting demo
- Hosting a tree walk
- Holding an Arbor Day Festival
- Participating in the [DCR Arbor Day Poster Contest](#)

Celebrating Arbor Day is one of the requirements to become a Tree City USA. For Tree City USA applicants, any day may be Arbor Day, so long as the community proclaims it. For more info on Tree City USA, contact [Mollie Freilicher](#), 413-577-2966.

DCR Arbor Day Poster Contest Deadline March 15



New England ISA Arbor Day Grant

The Arbor Day Grant supports small communities in building their Arbor Day programs. This grant awards up to \$1,000.00 to a municipality, non-profit organization, or institution that demonstrates need to support their Arbor Day celebration.

Deadline: March 31, 2019.

Find out more: www.newenglandisa.org

Download the [Arbor Day Grant Application](#) or [Apply Online](#).

Arbor Day Poster Contest



Fifth-grade classes from public and private schools across the Commonwealth are encouraged to participate in the annual Arbor Day Poster Contest by having fifth-grade students create posters highlighting this year's theme, **Trees Have Mass Appeal**, and then hosting a school poster contest. The winning poster from each school can be submitted to DCR. Home-schooled or non-participating school students may submit their posters and enter the contest individually. The Arbor Day Poster Contest is sponsored by the Department of Conservation and Recreation, the U.S. Forest Service, and the Massachusetts Tree Wardens' and Foresters' Association.

For complete rules and guidelines, go to the [Arbor Day Poster Contest page](#) on the DCR website.

Mass. Department of Conservation and Recreation

Growing on Trees

Celebrate Arbor Day with Tree Seedlings!

From the Massachusetts Tree Wardens' and Foresters' Association

Arbor Day Seedling Program

The [2019 order form](#) is now available!

The MTWFA sells seedlings to fund its scholarship program and to promote Arbor Day and tree planting. Seedling purchasers include municipalities, garden clubs, private firms, arborists, and other interested individuals and organizations. Seedling proceeds support [annual scholarships](#) for college arboriculture students.

Order deadline: **April 15, 2019.**

Find out more at <http://masstreewardens.org/arbor-day-seedling-program/>

Natural Resources Conservation Service Conservation District Seedling Sales

Seedlings are also available from local conservation districts. Contact your [local NRCS office](#) to find out if there is a seedling in your district.

Districts with known seedlings sales:

[Middlesex Conservation District](#)

[Worcester County Conservation District](#)

DCR Forestry is Hiring!

Long-Term Seasonal positions for tree planting with the Greening the Gateway Cities Program and also with the Forest Health Program. Search for opportunities on www.mass.gov/topics/work-for-the-commonwealth.

Tree City, Tree Campus, and Tree Line USA Programs



Tree City USA, Tree Campus USA, and Tree Line USA are national recognition programs sponsored by the Arbor Day Foundation and are implemented in Massachusetts by the Department of Conservation and Recreation.

Celebrating Arbor Day is a pillar of these three programs. Though Arbor Day just around the corner, it's not too late to plan an event and be on the way to Tree City, Tree Campus, or Tree Line USA status.

Detailed instructions for Tree City USA are available on our website, along with links to additional Tree Campus and Tree Line USA information.

Questions? Contact Mollie Freilicher, 413-577-2966 or mollie.freilicher@mass.gov.

DCR Park Serve Day—April 27, 2019

The Department of Conservation and Recreation (DCR) invites you to attend DCR's Annual Park Serve Day, Saturday, April 27, 2019 at parks across the Commonwealth of Massachusetts.

With the help of volunteers, DCR will spruce up park facilities, clean coastlines, clean and maintain trails, plant flowers, and more!

These valuable resources belong to all of us, and we can all take pride in them. Since Park Serve Day began in 2006, tens of thousands of Massachusetts residents have helped to prepare Massachusetts state parks and beaches for the summer recreation season. Find out more on the [DCR website](#).

MASSACHUSETTS



PARK SERVE DAY

THE CITIZEN FORESTER

Growing on Trees—Webcasts and Events

Urban Forestry Today Webcast

March 14, 2019 | 12:00 – 1:00 p.m. (Eastern)
Designing & Promoting Urban Forestry Contracts
for Municipalities – Marc Welch, City Forester/Tree
Warden, Newton

To attend live and receive free CEUs, go
to: www.joinwebinar.com and enter the ID code:
525-196-411.

Archived webcasts are available at
www.urbanforestrytoday.org under 'Videos.'

1 ISA CEU and 0.5 MCA credit available.

The Urban Forestry Today 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.

Western Mass. Tree Wardens Dinner Meeting

March 12, 2019, 5:00 – 7:30 p.m. | Northampton
Energy Benefits of Trees, Dr. Benjamin Weil,
UMass-Amherst
Managing Roadside Tree Mortality, Mollie
Freilicher, Paul Sellers, and Lance Wade
Register at www.masstreewardens.org

Urban Forest Connections

This USDA Forest Service webinar series brings experts together to discuss the latest science, practice, and policy on urban forestry and the environment. Past webinar presentations and recordings are available [here](#).

April 10, 2018 | 1:00-2:15 p.m. (Eastern)
Green Readiness, Response, and Recovery:
Stewardship of natural resources in the context of
disturbance

Lindsay Campbell, USDA Forest Service
Traci Sooter & Nancy Chikaraishi, Drury University
Jonathan Halfon, FEMA

Find out more and connect to the webinar here:
<https://www.fs.fed.us/research/urban-webinars/>

UMass Community Tree Conference

March 5, 2019 | UMass-Amherst

Topics include: Choosing Trees for Storm
Resistance * Creating Habitat for Birds in Urban
Settings * Selecting Trees to Improve Public Health
in the City * Climate Change at the Local Level:
Trees in the Urban Landscape * Insects and
Disease: Strategic Approaches to Managing
Threats * and more

Find out more and register at ag.umass.edu.

25th Annual ELA Conference & Eco-Marketplace

March 6-7, 2019 | UMass-Amherst

Forests and natural systems are under enormous pressure from the effects of climate change, insect damage, invasive plants, and rapid urbanization. What can you do to protect these systems? Join us to learn more how to restore lost ecological connections, better manage urban land, and create beautiful, highly functioning landscapes!

Find out more at: www.ecolandscaping.org/.

Massachusetts Land Conservation Conference

March 23, 2019 | Worcester

The Massachusetts Land Trust Coalition coordinates the annual Massachusetts Land Conservation Conference. It is the largest statewide land conservation conference in the country. Hundreds of conservation practitioners attend, enriching and energizing themselves each year with new knowledge to assist them in their work. Numerous workshops are offered, with topics ranging from conservation techniques to communications to fundraising.

Find out more and register: <http://massland.org/conference>.

Growing on Trees

Emerald Ash Borer Update

As of February 20, detections of emerald ash borer in 2019 include Stockbridge, Wales, Brimfield, Monson, and most recently, Spencer.

DCR EAB Identification and Detection Workshop Series

Presented by the DCR Forest Health Program. Free, but registration required.

Tuesday, April 9, 2019

10:00 am–12:00 p.m.

Holliston Town Forest

Adams St, Holliston, MA

Thursday April 11, 2019

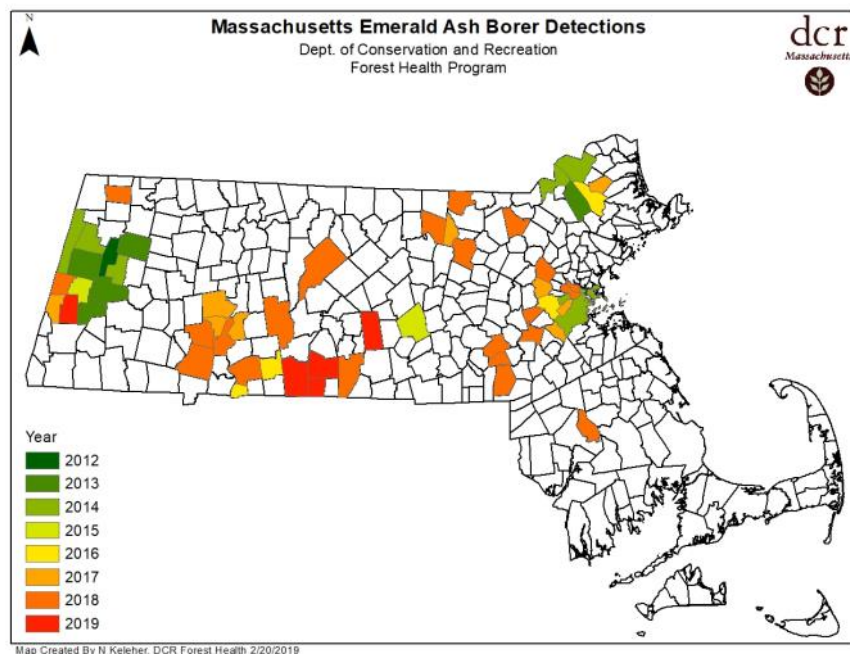
10:00 am–12:00 p.m.

Bachelor Brook Resource Area

Rt. 47, South Hadley, MA

For more information on these workshops and to register, go to:

<https://www.mass.gov/service-details/forest-health-program>



Map Created By N. Keleher, DCR Forest Health 2/20/2019

Emerald Ash Borer University

You've been accepted to Emerald Ash Borer University! Learn about emerald ash borer, and even some other pests, in these free webinars. The spring webinar series is in progress. View archived and upcoming webinars at <http://www.emeraldashborer.info/eabu>

March 5, 2019

Replanting after a Crisis: Worcester's Recovery from Asian Longhorned Beetle – Ruth Seward, Worcester Tree Initiative

April 2, 2019

Dead Ash Dangers and Considerations for Risk and Removal – Timothy Walsh, The Davey Tree Expert Company

April 16, 2019

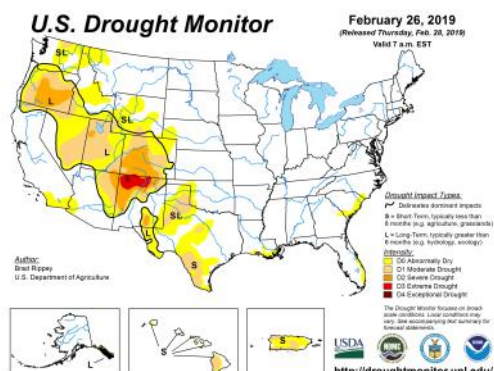
Emerald Ash Borer: Perspective from a Recently Infested State – Dr. Nate Siegert, USDA Forest Service

Drought Monitor

As of February 26, 2019, no parts of Massachusetts were classified in a drought status or as abnormally dry. Parts of the western United States, Hawaii, and Puerto Rico are experiencing drought and abnormally dry conditions.

For complete details, go to the U.S. Drought Monitor:

<https://droughtmonitor.unl.edu/>



Gleanings

Managing Forests as a Natural Climate Solution: Understanding the Contributions of Heterogeneous Landscapes

by Ian A. Smith and Lucy R. Hutya

Constraining the global average temperature rise to below the targeted 2°C (3.6°F) will require both a reduction in greenhouse gas emission rates and natural climate solutions through land stewardship practices that remove greenhouse gases from the atmosphere (1). Forest management is at the heart of many natural climate solutions as forests currently represent a large carbon (C) sink, offsetting nearly one-third of anthropogenic C emissions (2). Land management practices can be optimized to maximize the ability of forests and green space to act as a natural climate solution. However, in our current era of multifaceted global change, anthropogenic [land](#)-use and land-cover conversions are continuously modifying the ability of the world's vegetation to mitigate climate change via the uptake and storage of atmospheric CO₂. Read the full piece at ecolandscaping.org.



Climate Change Pressures in the 21st Century

This story map shows projected changes in three important metrics that influence plant growth and survival: growing degree days, plant hardiness zones, and heat zones. The resource also includes links to additional online maps for two scenarios of potential change (RCPs 4.5 and 8.5), and four different time periods. More information is available in the full report from the USDA.

[Check out the story map here.](#)

What Residents of New England Can Expect with Climate Change

Climate change is expected to hit the Northeast pretty hard, affecting crops, ski resorts and fisheries on the coast. NEPR compiled their reports on inland floods in New Hampshire, to a Connecticut forest, to a salt marsh north of Boston where there's an invasive plant that just won't quit. [Read or listen to the story on NEPR.net.](#)

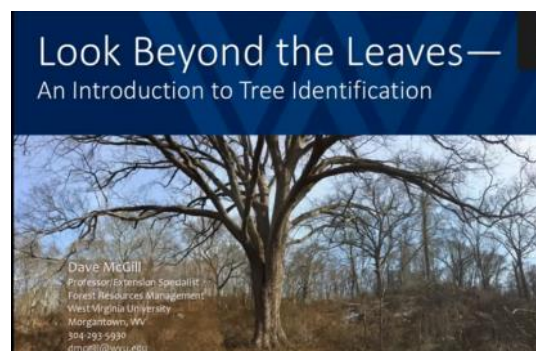
Video Highlights Science-Based Forestry in a Changing Climate

A new video featuring the partnership between American Forests and the Northern Institute of Applied Climate Science highlights work that both organizations are doing to prepare forests for future climates, and showcases the climate change adaptation work of partners on the ground, such as the Keweenaw Bay Indian Community. [View the video.](#)

Looking Beyond the Leaves: An Introduction to Tree Identification Webinar

This webinar is intended to help people look at and identify woody plants. The intent in this program is to highlight attributes that woody plants have that can be used with diagnostic keys and samples or in the field to distinguish one species from another. The webinar will cover what might be considered comparable to the first lecture a classroom full of forestry students might get in their course on dendrology (the study of trees). Presented February 20, 2019 by Dr. David McGill. West Virginia University.

Watch the webinar: <https://youtu.be/fXDGFv5Fnyl>



Spotted Lanternfly Update

State Agricultural Officials Urge Residents to Check Plants for Spotted Lanternfly - Discovery of Single Adult Insect Highlights Importance of Vigilant Reporting of this Pest ([Press release](#))

The Massachusetts Department of Agricultural Resources (MDAR) announced today that a single dead specimen of the invasive pest known as spotted lanternfly (*Lycorma delicatula*) was reported and confirmed at a private residence in Boston. As a result, MDAR is urging the public to check for signs of spotted lanternfly adults in any potted plants that they may have received over the holiday season and to report any potential sightings of this pest on MDAR's [online reporting form](#) by taking photographs and collecting a specimen if possible. Residents should look for large, gray insects, about one inch long, with black spots and red underwings.

"Early detection plays an important role in the protection of the economic and ecological resources of our state from invasive species," said MDAR Commissioner John Lebeaux. "We ask all residents who have received potted plants this past December to help us protect Massachusetts' environment and agricultural industries by checking for and reporting signs of spotted lanternfly."

The insect appears to have been unintentionally transported this past December in a shipment of poinsettia plants originating from Pennsylvania. Because only one dead adult insect was found, and spotted lanternfly dies off when a hard frost hits, there is currently no evidence that this pest has become established in Massachusetts. However, additional surveys are planned in the area to confirm that no other occurrences of lanternfly are present. Spotted lanternfly is an invasive sap-feeding insect from Asia that was first found in the United States in 2014 in Pennsylvania. While the main host plant of this pest is tree-of-heaven (*Ailanthus altissima*), spotted lanternfly attacks a variety of trees, shrubs, and vines, and has the potential to impact a broad range of agricultural commodities, including apples, peaches, grapes/wine, maple syrup, as well as the ornamental nursery industry.



DCR Urban Foresters with the Greening the Gateway Cities Program, Yoni Glogower (L) and Jay Girard (R), at last month's tree workshop in Pittsfield at the Hotel on North. Photo by Elizabeth Orenstein, Berkshire Environmental Action Team.

Coming Soon! i-Tree Workshops in Gateway Cities

Stay tuned for a separate announcement soon!



Left: Spotted lanternfly adult.

Find out more:

www.massnrc.org/pests/pestFAQsheets/spottedlanternfly.html

News Headlines in Brief

[How and Why Do You Move a 600,000-pound Tree?](#)

[Lack of Fair Access to Urban Green Spaces](#)

[New Trees Take Root at Westport's Future Community Park](#)

[Planting 1.2 Trillion Trees Could Cancel Out a Decade of CO2 Emissions, Scientists Find](#)

[Horses Help Drag Felled Trees Out of Erie, PA, Park](#)

[A Tree Grows in — Well, You Don't Want to Know](#)

[Savannah Turning Vacant City-Owned Lots into Tree Nurseries](#)

[When Your Neighbor's Tree Blots Out the Sun, Can You Force Them to Take It Down?](#)

[Tree Rings Tell Climate Stories That Technology Can't](#)

THE CITIZEN FORESTER

On the Horizon

- Mar 5** UMass Community Tree Conference, www.umassgreeninfo.org
- Mar 5** Webinar: Replanting After a Crisis: Worcester's Recovery from Asian Longhorned Beetle (Free), 11:00 am (Eastern), www.emeraldashborer.info/eabu
- Mar 12** Western Mass. Tree Wardens Dinner Meeting, Northampton, www.masstreewardnes.org
- Mar 13** Tick Talk Webinar, UMass Extension, 12:00 pm (Eastern), <https://ag.umass.edu/>
- Mar 22** Tree and Shrub Pruning Workshop, Hopkinton, <https://newenglandisa.org/events/workshops>
- Mar 23** MassLand Conservation Conference, Worcester, <http://massland.org/conference>
- Mar 26** ISA Exam, Pittsfield (snow date: March 28). Enroll by March 8, www.newenglandisa.org
- Mar 27-29** New England Society of American Foresters Winter Meeting, South Burlington, VT, www.nesaf.org
- Mar 29** Wood Chipper Operation and Safety, BayState Roads, Douglas, www.umasstransportationcenter.org/umtc/Baystate_Roads
- Apr 2** Webinar: Dead Ash Dangers and Considerations for Risk and Removal (Free), 11:00 am (Eastern), www.emeraldashborer.info/eabu
- Apr 5** Mass. Certified Arborist Exam, Wellesley, www.massarbor.org
- Apr 9** EAB Identification and Detection Workshop, DCR Forest Health, Holliston, www.mass.gov/dcr/forest-health
- Apr 11** EAB Identification and Detection Workshop, DCR Forest Health, South Hadley, www.mass.gov/dcr/forest-health
- Apr 13** ISA Exam, Amherst, www.newenglandisa.org. (Enroll by March 28)
- Apr 24-26** ISA Tree Risk Assessment Qualification Course, New England ISA, Portsmouth, NH, www.newenglandisa.org/events/workshops
- Apr 26** Arbor Day in Massachusetts
- Apr 27** Park Serve Day, www.mass.gov/dcr
- Apr 29** Aerial Rescue Training, New England ISA, Northampton, www.newenglandisa.org/events/workshops
- May 29** Tree City USA Forum and Award Ceremony, Sturbridge—More info coming soon
- Jun 1** ISA Exam, Dighton, (Enroll by May 29), www.newenglandisa.org
- Oct 25-26** DCR Tree Steward Training, Harvard Forest, Petersham – stay tuned!

The Citizen Forester is made possible through a grant from the USDA Forest Service Urban and Community Forestry Program and the Massachusetts Department of Conservation and Recreation, Bureau of Forestry.

Bureau of Forestry

Department of Conservation and Recreation

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

Charles D. Baker, Governor

Karyn E. Polito, Lieutenant Governor

Matthew A. Beaton, Secretary, Executive Office of Energy and Environmental Affairs

Leo Roy, Commissioner, Department of Conservation and Recreation

Peter Church, Director of Forest Stewardship, Department of Conservation and Recreation

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

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