While North American magnolias like sweetbay (Magnolia virginiana) and Southern magnolia (M. grandiflora) typically flower in midsummer, deciduous species from Asia like star magnolia (M. stellata), Loebner magnolia (M. × loebneri), and saucer magnolia (M. × soulangeana) offer spectacular floral displays in April before their leaves emerge. This wonderful accession of the 'Candolleana' cultivar of saucer magnolia on the Hunnewell Building lawn dates to 1895 and originated at George Washington Vanderbilt’s famed Biltmore House and Gardens in Asheville, North Carolina. Photograph by Jon Hetman.
From the Director

From effecting a profound and historical impact on horticulture in the United States to pioneering (and continuing) work in global plant exploration, the Arnold Arboretum of Harvard University has contributed a great deal to making Boston a hotspot for the study and appreciation of trees. An essential part of our story and our identity—and what makes us truly unique among academic units at Harvard and botanical museums around the world—is the transformational thousand-year agreement (renewable) we share with the city we inhabit.

Since 1882, when Harvard donated the property we occupy to the City of Boston, the Arnold Arboretum has belonged to the people of Boston as a community resource while continuing to grow and thrive as a privately-funded museum and research center. Part of our strength and meaning as an institution lies in the absence of barriers—physical, cultural, economic—between our collections and the many communities enriched by them. As we approach our sesquicentennial celebration in 2022, we are working on many fronts to make the Arboretum and its treasures more readily accessible and available to support the increasingly diverse and vital needs of science and society.

In this issue of *Silva*, get to know your Arboretum a little better from the ground up. Head of Horticulture Andrew Gapinski and Gardener Brendan Keegan reveal some of the philosophy, planning, and partnerships underpinning our growing focus on making more holistic and sustainable choices in the care of our collections and our environment. Explore two collections in particular—*Ginkgo* and *Forsythia*—which recently were recognized as the preeminent holdings of these plant groups in North America by the Plant Collections Network administered by the American Public Gardens Association. And find out how our wild-sourced holdings of American chestnut (*Castanea dentata*) and ashes (*Fraxinus* spp.) have helped one scientist learn more about how plants adapt to contagion and pests—vital knowledge as global change continues to bring new challenges to our plant communities.

By the time you read this, our willows will have begun leafing out along Meadow Road, buds in the *Forsythia* bank featured on the back cover of this issue will be poised to burst into brilliant gold, and the larches in our conifer collection will delight the eye with colorful spring cones. This growing season, enjoy a hands-on workshop, learn about science in the landscape, or explore plants you love on a guided or self-guided tour. Come and discover how spring unfolds among more than one hundred plant families right here in Boston. 🌿

—William (Ned) Friedman, Director of the Arnold Arboretum & Arnold Professor of Organismic and Evolutionary Biology, Harvard University

---

**The Arnold Arboretum of Harvard University**
125 Arborway
Boston, MA 02130-3500
617.384.5209
fax 617.524.1418

Adult Education: 617.384.5277
adulted@arnarb.harvard.edu

Library: 617.522.1086
hortlib@arnarb.harvard.edu

Membership: 617.384.5766
membership@arnarb.harvard.edu

Visitor Services: 617.384.5209
arbweb@arnarb.harvard.edu

**Editor**
Jon Hetman

*Silva* is a benefit of membership in *The Friends of the Arnold Arboretum* and is published biannually. It is printed on recycled paper using soy-based inks. © 2019 President and Fellows of Harvard University

Visit us online at arboretum.harvard.edu

---

visit us online arboretum.harvard.edu
At the Arnold Arboretum, we continuously strive to increase the health of our plant collections, improve the aesthetics of our landscape, and support and enhance ecosystem health across our 281 acres of urban greenspace. We do this by thinking critically about landscape stewardship and the impact of our activities on the larger environment. From reducing our carbon footprint to recycling green waste into a compost “brew”—yes, even coffee and beer contribute to feeding our plants—instituting an adaptive management approach reflects our ever-increasing concerns for a changing world.

A Lighter Footprint

If you have visited the Arboretum over the past year, you may have noticed the addition of new mulched paths, areas of tall grass, a reduction in leaf collection, and the cordon-off of key specimens. These changes reflect our coordinated strategy to improve the health of the collection by containing or minimizing the physical footprint on our soil—the primary cause of soil compaction. Soil compaction reduces moisture infiltration, soil biodiversity, and the fine root growth that trees depend on for absorbing nutrients and water. As a result, compaction...
stresses and weakens the valuable plants in our landscape and increases the cost of care and maintenance required to sustain them.

Some recent steps taken to reduce compaction across the Arboretum include reducing or eliminating mowing with heavy equipment in the linden, maple, zelkova, oak, hornbeam, and pine collections and establishing seasonal “no-mow” areas on Peters Hill, Bussey Hill, and in the conifer collection. In addition, new protocols reduce the off-road use of vehicles, while mulched paths enable ease of access for both visitors and staff into the collections while channeling compaction along managed routes. As a bonus, less machinery in the collections increases the amount of undisturbed habitat for a variety of organisms while also reducing carbon emissions.

Lightening our footprint requires equipment evaluations as well. For example, last year we retired the eighteen-ton bucket truck used by our arborists to access the canopy and replaced it with a smaller, more versatile lift that exerts about a third of the weight, uses battery and diesel power, and extends up to ninety feet in the air. This complements a second, smaller lift acquired in the previous year. Together, these new lifts allow our arborists to get closer to our trees without damaging their vital root systems.

The physical weight of our operations is not the only footprint we care about. Since climate change induced by greenhouse gases presents a major threat to plants in our landscape as well as their wild counterparts, identifying methods to reduce our emissions is increasingly important to our institution. As a result, we are investing in renewable energy to fuel our operations where we can, like utilizing a rooftop solar array to help power our equipment garage and providing our grounds crew with a growing number of electric tools. Along with reducing fuel use and emissions, electric tools are quieter and improve the auditory aesthetic of the landscape. While visitors will likely enjoy a more serene experience here, research suggests that some species of birds and mammals that have difficulty communicating in noisy urban environments may appreciate the change as well.
Progress through Partnership

Our efforts to think critically about our operations and enhance our landscape also rely heavily on collaboration with local businesses, academic institutions, and federal agencies. Take our new compost system, for example. Organic waste from staff breakrooms is combined with spent grains and hops from Turtle Swamp Brewing (Jamaica Plain), coffee grounds from Recreo Coffee (West Roxbury) and mixed with weeds, grass, leaves, and fine woody debris. After weeks of monitoring temperatures, turning piles, adding new ingredients, and letting it rest, the result is 100 percent organic (and very local) compost. We apply this nutrient-rich, biologically active, and pathogen-free product as a soil amendment to feed our plants and improve the physical properties of our soil.

To gain insight into what our soils and plants need in the first place, we rely on a committee of soil specialists drawn from government agencies, public gardens, and universities. Results from our recent soil sampling and compaction-evaluation efforts help the committee provide recommendations for our compaction-prevention protocols, soil treatments, and irrigation initiatives. Managing historically disturbed soils to grow trees from around the world requires constant evaluation, and our work with partners from around New England and beyond plays a key role in this endeavor.

We also rely on regional expertise to help reduce herbicide and pesticide applications and to stay on the leading edge of bio-control research. In the past, Arboretum horticulturists worked with local organizations to rear and release populations of the purple loosestrife beetle (Galerucella pusilla) to contain the invasive purple loosestrife (Lythrum salicaria) in our wet meadows. Since 2015, we have partnered with University of Massachusetts–Amherst Professor Joe Elkinton and contributed to the release and study of Cyzenis albicans, a parasitic fly that specializes on the larvae of winter moth (Operophtera brumata)—one of New England’s most prolific and challenging plant pests. Regular surveys on our grounds, and a remarkable decline of the moths since this work began, is a hopeful indication of success.

Recent collaborations with Richard Casagrande (Professor Emeritus, University of Rhode Island) led us to plant and study Canadian hemlock (Tsuga canadensis) that are showing promise for resistance to hemlock wooly adelgid (Adelges tsugae), and in 2019 we hope to release a newly approved bio-control for black swallowwort (Cynanchum louisea). Along with being a highly invasive vine, swallowwort is also correlated with declining populations of monarch butterflies, which confuse it with their native host plants. As a whole, these partnerships lead to a better understanding of our environment and inform a holistic approach to its management.

Supporting Wildlife

As these initiatives illustrate, a holistic approach to the health of our plants also improves wildlife habitat on the grounds. While one purpose of reduced mowing pressures is soil-compaction mitigation, another is increasing the amount and diversity of flowering plants. This is a boon for pollinators and other insects that depend on herbaceous annuals and perennials for summer forage and winter dormancy. Mass milkweed plantings on Peters Hill, pollinator-friendly plantings in the open wet-meadow of the conifer collection, and the steady installation of herbaceous plants throughout the landscape continue to enhance the ecological value of these areas as habitat.

Another example is our decision to “leave the leaves” on most of our 281 acres this past fall. Naturally-deteriorating leaves increase nutrient cycling, insulate roots, protect against

A "condominium" (inset left) installed on the edge of the Leventritt Shrub and Vine Garden uses bored logs, twigs, and sections of Japanese knotweed to create habitat for invertebrates like solitary bees. This structure was created by Gardener Brendan Keegan and Horticultural Technologist Jed Romanowiz.
soil erosion, and reduce the impact of mowers and leaf clean-up equipment on the landscape. Leaves provide essential habitat as well, supporting many species of butterflies and moths whose pupae depend on leaf litter to survive the winter. In addition, many amphibians, such as adult salamanders and toads, rely on leaf litter for camouflage, habitat, and hunting, while birds such as the American robin and American woodcock flip through them in search of invertebrate prey.

However, since often problematic mammals like rabbits, mice, and voles also enjoy inhabiting these environments, making the landscape appealing to natural predators is important, too. Our arborists recently installed several nest platforms designed to attract great horned owls and red-tailed hawks, carnivorous species whose diets consist mostly of rodents. Nest boxes suitable for screech owls and the much less common barred owl also hang throughout the landscape. Although these birds are common in New England, increasing available nest sites may provide us with a chance to gain insight on their populations at the Arboretum, as well as free and effective pest control.

In addition, our nest boxes for cavity nesting birds successfully attracted black-capped chickadees, tree swallows, great crested flycatchers, and house wrens during their first year. As a bonus, we even have a colony of chimney swifts living in the inactive Hunnewell Building chimney. Given appropriate nesting habitat, all of these species play a role in regulating insect populations, from tree swallows elegantly catching mosquitos along Blackwell Path to black-capped chickadees feeding their young with leaf-eating caterpillars.

Moving Forward

Overall, our approach to landscape management at the Arboretum focuses on the principles of plant care, soil health, work efficiency, and intelligent aesthetics to make the most sustainable decisions for this urban ecosystem. The decisions we make rely on input from a variety of experts and stakeholders, both in our neighborhood and throughout the region, and the actions we take help inform the effectiveness of horticultural practices beyond our grounds. Taken together, these and other activities increase the value of the Arnold Arboretum as a role model for sustainable practices while highlighting the importance of our landscape to organisms of all types in the City of Boston and beyond.

DIG DEEPER INTO PLANT CARE, URBAN LANDSCAPES, AND SUSTAINABILITY

with Arnold Arboretum experts

**Landscape Plant Selection, Planting, and Establishment**
Saturday, May 4, 1:00–3:30pm [HB]
Andrew Gapinski, Head of Horticulture
Learn standards and techniques for growing healthier plants, including site selection and preparation, planting, and establishment—and common issues and solutions for balled-and-burlapped and containerized specimens.

**Landscape Compost Compendium**
Thursday, June 6, 6:00–8:00pm [HB]
Conor Guidarelli, Horticulturist
See what components make the most effective compost, from mixing the right balance of brown to green materials to giving the materials proper moisture and aeration to encourage decomposition.

**The Substance of Soil**
Wednesday, July 10, 6:00–8:00pm [HB]
Conor Guidarelli, Horticulturist
Gain an overview of soil, from its formation and components to its properties. Learn how to analyze soil quality to determine amendments needed for desired outcomes.

**Gardening for Butterflies and Moths**
Tuesday, July 16, 5:30–8:00 PM [HB]
Colin McCallum-Cook, Horticultural Technologist
Learn how to attract moths and butterflies to your garden and create habitat with plants that cater to their unique lifecycle requirements.

See details on pages 14–17. Register at arboretum.harvard.edu
The Top of Their Class

Ginkgo and Forsythia holdings acknowledged for research and conservation value

Deborah Blackwell, Marketing and Communications Specialist

It's a rare experience to stroll through a landscape that contains as many different plants as the Arnold Arboretum. But what makes it even more special is that some of the collections here, arranged side-by-side with relatives from around the globe, are among the most complete of their kind.

In the fall of 2018, the Plant Collections Network of the American Public Gardens Association bestowed national accreditation status on two plant genera in the Arboretum's collections: Forsythia and Ginkgo. Along with six genera recognized previously—Acer (maple), Carya (hickory), Fagus (beech), Stewartia, Syringa (lilac), and Tsuga (hemlock)—the Arboretum's national collections represent some of the world's most diverse, well-documented, and widely-studied collections.

A long-standing collaboration between the American Public Gardens Association and the USDA-Agricultural Research Service, the Plant Collections Network recognizes exemplary collections that serve critical conservation and research needs. Collections are awarded status following the preparation and submission of a comprehensive application and peer review process. Genera considered for national accreditation must be maintained at the highest horticultural, arboricultural, and curatorial standards, and qualifying institutions must also demonstrate a long-term commitment to their care and management.

“As the Arnold Arboretum has emerged as one of the most active botanical gardens in the world collecting in the wild, we have been able to boost some of our key genera,” said Arboretum Director William (Ned) Friedman. “In this case, our ginkgo and forsythia collections are now recognized as the preeminent holdings of these plant groups in North America.”

Forsythia is a genus of deciduous shrubs in the olive family grown for their tough constitution and bold display of yellow flowers that appear at the start of the growing season. Grown throughout the United States, this iconic shrub is synonymous with the passing of winter and arrival of spring. Although the first forsythias were introduced in the United States 180 years ago, they were not widely grown. The Arnold Arboretum has played a major role cultivating forsythias in the United States, not only introducing species from the wild, but researching and creating hybrids and cultivars as well. The ginkgo collection at the Arboretum contains the most diverse collection of ginkgos from known wild origin in North America. A relict of an ancient plant family, Ginkgo today comprises just a single species, Ginkgo biloba. Related to conifers, it is known for its fan-shaped leaves and odoriferous seeds and is valued for its resilience and tolerance of unfavorable conditions such as pollution and shade. Despite being commonplace in cultivation, this living fossil is represented in the wild today by just a handful of populations in China.
Keeper of the Living Collections Michael Dosmann recognizes the strength of the ginkgo collection is due to Senior Research Scientist Emeritus Peter Del Tredici, who acquired numerous representatives from wild refugia (locations which support an isolated or relict population of once widespread species). “Because of Peter's work, the Arboretum's ginkgos represent an important collection for plant conservation,” Dosmann said. “And, the story of forsythia in the Americas is very much an Arboretum story. It’s just fantastic to see these two collections recognized by the Plant Collections Network. It acknowledges our commitment to global plant exploration, conservation, and collections management.”

Like all of the collections at the Arboretum, its holdings of forsythia and ginkgo are used to promote research, plant conservation and germplasm preservation, as well as to promote their responsible use in landscapes.

“The Arnold Arboretum is truly one of the great museums of the world,” Friedman said. “And while there are no paintings, sculptures, or archaeological objects, the sixteen thousand accessioned living objects—namely our trees, shrubs, and lianas—constitute a world-class set of curated holdings.” Friedman said. “Like every museum, the Arnold Arboretum never stops collecting and aspiring to acquire new objects to make its core holdings even stronger—from both horticultural and botanical perspectives.”

The forsythia bank on the eastern side of Bussey Hill brightens the approach to Beech Path and the lilac collection near Rehder Pond. Staff mounted a comprehensive collections review and restoration project beginning in 2005 in which the massed plantings were thinned and replanted in order to invigorate and delineate individual accessions.

Like all of the collections at the Arboretum, its holdings of forsythia and ginkgo are used to promote research, plant conservation and germplasm preservation, as well as to promote their responsible use in landscapes.

“The Arnold Arboretum is truly one of the great museums of the world,” Friedman said. “And while there are no paintings, sculptures, or archaeological objects, the sixteen thousand accessioned living objects—namely our trees, shrubs, and lianas—constitute a world-class set of curated holdings.” Friedman said. “Like every museum, the Arnold Arboretum never stops collecting and aspiring to acquire new objects to make its core holdings even stronger—from both horticultural and botanical perspectives.”

The forsythia bank on the eastern side of Bussey Hill brightens the approach to Beech Path and the lilac collection near Rehder Pond. Staff mounted a comprehensive collections review and restoration project beginning in 2005 in which the massed plantings were thinned and replanted in order to invigorate and delineate individual accessions.
Jane Austen’s enduring reputation owes much to her clear sense of—and unique slant on—social respectability in early 1800s Great Britain. Fast forward to the twenty-first century and the Arnold Arboretum, Frederick Law Olmsted’s vision preserved from the late nineteenth century, where more than a “respectable pleasure” is obtainable by all. Rigorous care and documentation of the collections for over 147-years affords every person who strolls here the good fortune to encounter trees, shrubs, and vines collected from around the globe in a harmonious, naturalistic setting.

On June 23, the Arboretum brings a new production of Austen’s Regency Period romance *Pride and Prejudice* to the Leventritt Shrub and Vine Garden. This adaptation by Kate Hamill will be staged by Actors’ Shakespeare Project (ASP), the award-winning theater company that brought the site-specific *Fog × Macbeth* to the Arboretum last October. Bringing theater performances like these to the Arboretum represents an exciting, fresh way for the institution to make new connections in our richly multi-cultural community through the arts.

The seed for these events was planted in 2016, when an incredible group of 92 percussionists offered the Arboretum’s first foray into large-scale performance with a production of *Inuksuit* in our oak collection. Composed by Pulitzer Prize winner John Luther Adams, *Inuksuit* illustrated the unqualified appeal of free art in the landscape, attracting visitors from around the region. Last June, conversations began with ASP on a collaboration, and their production of *Macbeth* offered a perfect complement to programs associated with Fujiko Nakaya’s temporary fog installation on the Hunnewell Building lawn. The overwhelming success of the effort—more than 1,500 attended a one-night-only performance—cemented a strong relationship rooted in a shared value to educate and to reach more diverse audiences.

Through the development of a new Artist in Residence program here, more visitors will discover the pleasure derived from experiencing art—its universal, as well as immediate and intimate, life lessons.

On June 23, the Arboretum brings a new production of Austen’s Regency Period romance *Pride and Prejudice* to the Leventritt Shrub and Vine Garden. This adaptation by Kate Hamill will be staged by Actors’ Shakespeare Project (ASP), the award-winning theater company that brought the site-specific *Fog × Macbeth* to the Arboretum last October. Bringing theater performances like these to the Arboretum represents an exciting, fresh way for the institution to make new connections in our richly multi-cultural community through the arts.

The seed for these events was planted in 2016, when an incredible group of 92 percussionists offered the Arboretum’s first foray into large-scale performance with a production of *Inuksuit* in our oak collection. Composed by Pulitzer Prize winner John Luther Adams, *Inuksuit* illustrated the unqualified appeal of free art in the landscape, attracting visitors from around the region. Last June, conversations began with ASP on a collaboration, and their production of *Macbeth* offered a perfect complement to programs associated with Fujiko Nakaya’s temporary fog installation on the Hunnewell Building lawn. The overwhelming success of the effort—more than 1,500 attended a one-night-only performance—cemented a strong relationship rooted in a shared value to educate and to reach more diverse audiences. Through the development of a new Artist in Residence program here, more visitors will discover the pleasure derived from experiencing art—its universal, as well as immediate and intimate, life lessons.

The “magical” experience fostered by ASP’s *Fog × Macbeth* finds Artistic Director Chris Edwards enthusiastic about bringing *Pride and Prejudice* to a “truly living” landscape like the Arboretum. “An actor responds to the energy that exists in a natural setting, knowing they have to match...
that energy,” says Edwards. The living world of wind, rain, trees, and natural sound energizes the actors and the audience, who suspend belief to fully enter the world of the play.

In *Pride and Prejudice*, the inspiration of Pemberley’s gardens (the estate of the story’s suitor, Mr. Darcy) looms large. Elizabeth, the object of Darcy’s conflicted heart, is impressed by the openness of Pemberley’s landscape, a “place where natural beauty had been so little counteracted by an awkward taste,” and the gardens help transform her feelings about its owner. Gardens in Austen’s world and time were changing. Earlier Renaissance formality was evolving into a more natural look. Straight paths made way for curved ones, allowing mystery around the bend to tempt and delight (à la Mr. Olmsted). Our *Pride and Prejudice* will take place in the more formal Leventritt Shrub and Vine Garden, yet its proximity to the “naturalized” collections surrounding it provide both foreground and background to Hamill’s contemporary take on this classic.

Hamill’s adaptation of Austen’s novel brings its own unique energy to our garden. Her *Pride and Prejudice* debuted in 2017—in the outdoors. Edwards offers that the playwright “is funny, a free spirit, and down to earth,” bringing a comic *Pride and Prejudice* to the stage. Edwards directed the play at the Dorset Theatre Festival in 2018, where it was voted BroadwayWorld Vermont Award winner for best professional play. A review of the New York production by Dan Dwyer for the *Berkshire Edge* concludes that Hamill’s adaptation is “...about three-quarters her own, a bubbling, contemporized mix of period dialogue and modern idiom.”

Despite her humorous take on the story, one thing Hamill remains serious about is who plays the parts in her adaptation, insisting that at least half of the cast be women or non-gender identifying; her non-traditional cast sees men acting women’s parts and women as men. The laughs are nonstop, though the awkwardness of finding love in Austen’s novel in the nineteenth century holds true in the twenty-first: both the struggles in finding it and the social tensions we endure when the norms of who, and when, we love are broken.

Oh, and let’s not forget Mr. Collins, the pompous, self-important foil for Austen’s seminal look at love and whose garden she describes with such relish. What, we wonder, will Mr. Collins make of the Leventritt when he visits our large, well laid out garden this summer? We hope you’ll join us for *Pride and Prejudice* to find out.

---

**Actors’ Shakespeare Project and the Arnold Arboretum present**

**Pride and Prejudice**

**in the Leventritt Shrub & Vine Garden**

Sunday, June 23, 5:00–6:00pm, free

Visit [arboretum.harvard.edu](http://arboretum.harvard.edu) for more information
Past and Future Pests

Digging into genetics and population dynamics to fight tomorrow's plant foes

Elizabeth Spriggs, 2017–19 Katharine H. Putnam Research Fellow

The history of North American forests is dynamic. Alternating glacial and interglacial periods have reshaped forest communities over the past million years, causing species to migrate south during cooling periods and north during warming periods. Evidence of these migrations can be found in fossil pollen deposits, which provide a snapshot of the plant communities present in an area at a particular time. In Massachusetts, for instance, glaciers covered much of the land area twenty thousand years ago. As the climate warmed and the glaciers receded, boreal species arrived from the south and were eventually replaced by today’s deciduous forest.

Many of the North American tree species that comprise these forests span large geographic areas. Red maple (Acer rubrum) is common in Massachusetts, Minnesota, Florida, and even Texas. Other species with widespread distributions include white oak (Quercus alba), tulip tree (Liriodendron tulipifera), pignut hickory (Carya glabra), basswood (Tilia americana), black cherry (Prunus serotina), and flowering dogwood (Cornus florida). Within these species, there is often significant variation in traits like flowering time, leaf shape, or disease resistance. And often, this variation within species is underpinned by genetic variation.

As a Katharine H. Putnam Research Fellow at the Arboretum, I am studying genetic variation in blue ash (Fraxinus quadrangulata) and the North American Castanea, chestnuts and chinquapins. These are widespread, ecologically important tree species under attack from pests or pathogens brought to North America by human activities. Once a common tree in eastern North America, the American chestnut (Castanea dentata) was famously decimated by the chestnut blight (Cryphonectria parasitica)—first identified in 1904, the blight spread rapidly and by 1950 had killed nearly every adult tree across its range. The collapse of the beloved American chestnut is infamous as an ecological disaster that permanently transformed North American forests.

Meanwhile, the story of North American ash trees is still unfolding. In 2002, a metallic green beetle from eastern Asia called the emerald ash borer (Agrilus planipennis) was found in Michigan, and has since been observed throughout the eastern United States, including eastern Massachusetts (it was first detected at the Arboretum in 2014). Its larvae feed on the phloem and outer cambium of ashes, eventually girdling and killing them. Given the advance of these lethal invaders, it is increasingly urgent to learn everything we can about Fraxinus and Castanea.

My research at the Arboretum focuses on two types of genetic variation: genetic structure and genetic diversity. Genetic structure describes how populations are similar or different from one another and is often correlated with...
Looking for Trouble: Preparing for Tomorrow's Pests

According to a 2016 study, nearly sixty non-native forest pests are imported into the Commonwealth each year. While most of these pests won't necessarily become a major problem for forests and woody plants here, we never know what might become the next emerald ash borer or chestnut blight—or worse.

Fortunately, the Arnold Arboretum has a long history of finding innovative ways of dealing with a wide range of exotic and local pests and diseases. Rather than wait for a new pest to show up and scramble to find a solution, the staff at the Arboretum devote significant time and effort investigating which emerging pests and diseases may be headed for the Arboretum in the future.

As part of my work as the Living Collection Fellow, I am tasked with getting the Arboretum ready for these threats before they are able to cause considerable harm to landscapes like ours. This past year, I’ve kept an eye on a few potential pests. The first of these is the spotted lanternfly (Lycorma delicatula), a Chinese leaf hopper first observed in Pennsylvania in 2014, which appears to be spreading east. We’re also watching for thousand cankers disease, which results from the combined activity of the walnut twig beetle (Pityophthorus juglandis) and a canker producing fungus, Geosmithia morbida, and jumped from the Southwest to the East Coast in 2010. Finally, southern pine beetle (Dendroctonus frontalis), found in Cape Cod in 2015, is a beetle from the Southeast that attacks almost every species of pine (Pinus).

To prepare for the worst, we have been developing partnerships with other public gardens and organizations like the Massachusetts Department of Conservation and Recreation (DCR), the American Public Garden Association’s Plant Sentinel Network, and the US Forest Service’s Cryptic Borer Program, as well as researchers and universities around the country. A great example is a collaboration with our colleagues at DCR to deploy specialized traps that will show us exactly when southern pine beetle arrives in our landscape. We’ve also worked with entomologists at Colorado State University to see which species of walnut (Juglans) are most susceptible to thousand cankers disease, and our colleagues at Longwood Gardens and the Morris Arboretum have helped us prepare the most efficient integrated pest management strategies for confronting spotted lanternfly.

The research, resources, and recommendations shared through these alliances are key to helping us protect our immensely valuable living collections at the Arnold Arboretum. In turn, sharing what we learn can help build public awareness and help others in our region prepare for these and other environmental challenges. Attempting to outsmart plant pests before they arrive can certainly be difficult, but it’s an endeavor worth pursuing for the health and sustainability of trees in our region.

—Jared Rubinstein, Living Collections Fellow

geography. For instance, populations in the western portion of a species’ range may be more similar to one another than they are to the populations in the eastern part of the range. This kind of pattern can arise through local adaptation or through historical processes like migration. Glacial cycles can generate population structure by forcing a species into isolated refugia, where the separated populations spend several generations evolving independently. Genetic diversity, on the other hand, is a more general metric of variation within species. It is based on counting how many different versions of a gene—think blood types in humans—occur within an individual or a population. In a population with very low genetic diversity individuals would be like clones, almost genetically identical. Most natural populations...
The origin story of the Arnold Arboretum’s dual relationship with Harvard University and the City of Boston has many fascinating twists and turns, yet at its heart was a belief that the institution could generate a greater impact in pursuing its mission as a public resource. Founding Director Charles Sprague Sargent found a valuable ally for this transformational idea in Frederick Law Olmsted, the pioneering American landscape architect who co-designed the Arboretum with Sargent, who had also begun working with the City on expanding its park system. Both men were visionaries and true believers in the intrinsic value of preserving nature and natural systems in urban areas.

Despite initial resistance from both the City Council and Harvard’s President Charles Eliot, negotiations to make the Arboretum part of the park system began in 1877 and took several years to complete. When an agreement was finally signed in 1882, the Arboretum landscape officially became part of the Boston Park system, a would eventually be the penultimate park in Olmsted’s Emerald Necklace. In exchange for its donation of land to the City, Harvard received additional services for the Arboretum from Boston, including the construction and maintenance of sidewalks, roadways, walls, and gates. The City also agreed to shoulder policing and security, and to connect the Arboretum to municipal water supplies. Harvard’s lease on the total acreage—including parcels contributed by the City—extended to 1,000 years with the right to renew for another millennium, at the rate of one dollar per year.

Since that time, Harvard has focused on managing the Arboretum landscape and acquiring, growing, and stewarding a comprehensive collection of woody plants from around the world for study, education, and appreciation. The institution’s relationship with its municipal landowner has ebbed and flowed over the decades, often reflecting changes in Harvard and Arboretum administration and the City’s political climate. When Ned Friedman became the eighth director of the Arboretum in 2011, he made a concerted effort from the start to build mutually beneficial relationships with City officials and Boston parks affiliates, in order to jumpstart long-desired improvements to parts of the Arboretum landscape under City control.

An opportunity for renewed cooperation came almost immediately in fall 2011 when a large section of stone wall along the Arborway collapsed onto Willow Path. When the City met its responsibility in repairing the wall damage—along with a separate project to repair an unrelated collapse in the roadway over Goldsmith Brook at the Arborway Gate—the Arboretum began to assess the condition of other parts of its City-managed...
infrastructure with an eye toward prioritizing future needs for repairs and upgrades. Two projects came immediately to the foreground: new traffic infrastructure to improve safety and pedestrian access at intersections on Bussey Street (South Street and Walter Street), and major repairs to historic stone walls along the western edge of Bussey Brook Meadow.

In the first project—driven largely by studies illustrating the severity of the circulation problems at these intersections—the City installed new traffic lights, improved sidewalks and crosswalks, and made safe pedestrian access into the Arboretum a priority. The changes also allowed staff to reconsider the quality of the landscape around the Walter Street Gate, and the appearance of our perimeter along our border with Roslindale. The crumbling puddingstone walls along South Street bordering the urban meadow had long been an aspirational focus for renovation, and on this point the Arboretum already had a number of friends in its corner. One was Paul Sutton, program manager of the Urban Wilds Initiative of the Boston Parks and Recreation Department, who for years had utilized part of his modest annual repair budget to help fund restoration of sections of the South Street wall. Though his contributions were timely and meaningful, more help was needed to complete a full renovation of all Arboretum walls.

To move the project ahead, the City of Boston, as landowner with responsibility for the integrity of the Arboretum perimeter, would need to be fully engaged and persuaded. In addition to Paul Sutton, the Arboretum turned for help to Boston Parks Commissioner Christopher Cook (now Chief of Environment, Energy, and Open Space) and City Councilor Matthew O’Malley. The Arboretum had worked closely with both on a number of issues, and had received their encouragement regarding the aims of an infrastructure-needs assessment the Arboretum submitted to the City. Councilor O’Malley led efforts to recognize some of these needs in the City's operational budget, and Commissioner Cook assisted the Arboretum in calling attention to some of the Arboretum's critical needs with his colleagues at City Hall. Last year, Boston received a windfall settlement as part of a development deal in the Back Bay, and—with the extraordinary advocacy of Manager Sutton, Commissioner Cook, and Councilor O’Malley—a sum of $100,000 was allocated to fund a major survey and design plan for restoring all of the Arboretum’s puddingstone walls. Substantial funding from Boston—up to $1 million—has been reserved to complete the renovation.

Although the Arboretum is both a unit of Harvard University and a part of the Boston park system, nearly everything the Arboretum does to expand and preserve its collections, to advance scientific study, and to educate and engage the public is funded by past and present philanthropy. There will always be a need for the Arboretum to rely on the generosity of its friends to achieve its vision, and for 137 years the City of Boston has played a defining role in shaping how the public connects with this landscape. With at least 863 years left to go on the first 1,000 years of our lease, there is much to look forward to as this most unique of relationships continues to blossom.

Continued from page 11] have significant genetic diversity, but the amount of diversity varies among populations and species. Higher genetic diversity generally means greater potential for adapting to changing environments.

These research projects began in the Arboretum’s living collections. I visited the Arboretum’s chestnut and ash trees last spring, checking the winter buds and waiting for leaves to emerge. Most of the chestnuts and ashes at the Arboretum have been collected from wild populations. Some were collected close by, like an American chestnut from Petersham, Massachusetts (24-80*A); others originated on the distant edges of the species’ ranges, like a chinquapin (Castanea pumila) collected in Arkansas (21486*A). I sampled young leaves (often the best for DNA extraction) from all of these trees in early spring. To draw a broader picture for each species, I made several field excursions to collect leaves from populations throughout each species’ range, visiting sites in Arkansas, Mississippi, Florida, South Carolina, Georgia, North Carolina, and Virginia. After extracting DNA from all of the leaves I amassed, I should obtain the first genetic sequences within the next few months.

Essentially, I’m looking for insights into both the past and future of these species. Genetic variation in a species carries clues of past events that can be disentangled to reconstruct aspects of its history. In this way, genes can show us how natural forces have caused adaptation, changes in population size, migration, or even hybridization. This project will also provide important information for future conservation efforts by identifying populations that are particularly distinctive or genetically diverse. Often, conservation strategies that protect the broadest range of genetic variation within a species will give that species the best chance to adapt to current threats and future climatic changes. This kind of genetic information can also be useful for horticultural breeding programs that aim to produce individuals adapted to a specific environment or with particular characteristics, like disease resistance.
Learn at the Arnold Arboretum

Featured Programs

Hands-on Classes & Workshops

Grafting Woody Plants
Saturday, March 16, 9:00am–12:30pm [DGH]

Pruning Project: Hydrangeas
Saturday, March 23, 10:00am–Noon [HB]

Photographing the Landscape
8 Thursdays, March 28, April 4, 11, 18, May 2, 9, 16,
6:30-8:30pm [HB]

Basic Identification of Evergreens
Saturday, April 13, 9:30–11:30am [Weld Hill]

Get to Know Your Chainsaw
Saturday, April 27, 9:00–1:00pm [DG]

Smartphone Photography: Spring Close-Ups
3 Wednesdays, May 15, 29, June 12, 1:30–3:30pm [HB]

Growing Plants from Softwood Cuttings
Wednesday, June 12, 5:30–7:30pm [DG]

Deciduous Tree Identification
Thursday, June 20, 6:00–8:00pm [HB]

The Substance of Soil
Wednesday, July 10, 6:00–8:00pm [HB]

Full details at my.arboretum.harvard.edu

Abbreviations Key

[DG] Dana Greenhouses
[HUH] Harvard University Herbaria, Cambridge
[HB] Hunnewell Building
[WH] Weld Hill Research Building

Contact
Pamela Thompson, Manager of Adult Education
617.384.5277 | adulted@arnarb.harvard.edu

March

Cultivating Legacies: New England Women in Horticulture and Landscape Design
Saturday, March 9, 9:30am–1:00pm [HB]

Women are often overlooked when we discuss individuals who had great impact on botany and landscape design of the twentieth century. This seminar highlights a number of women and their roles in creating and protecting New England landscapes, how the Arnold Arboretum contributed to these endeavors, and how we can continue to raise the visibility of these special places. Program includes an associated exhibition in the Arnold Arboretum’s historic Library Reading Room and light refreshments.

Fee $50
Cosponsored by the Trustees of Reservations, the Mary M. B. Wakefield Charitable Trust, and the Arnold Arboretum

Giving Voice to Nature: Director’s Lecture Series Simulcast
Monday, March 25, 7:00–8:15pm; live lecture is FULL; register for a SIMULCAST that will be viewed at the Hunnewell Building, 125 Arborway, Boston

For this talk in our annual Director’s Lecture Series, Richard Powers, Robin Wall Kimmerer, and Arboretum Director William “Ned” Friedman will join voices in this guided conversation about trees. Melding readings with discussion; drawing on mystery, lore, and science; they will convey the challenges and rewards of trying to represent non-humans—speaking both for and as the trees. Don’t miss this animated and enriching convergence of arboreal thinkers.

Free, member-only event. Registration is required
The American Chestnut: When Will It Flourish Again?

Saturday, March 30, 9:00am–12:30pm [WH]
David Foster, Director of Harvard Forest; Sara Fitzsimmons, Director of Restoration at The American Chestnut Foundation; William Powell, Professor and Director of the Council on Biotechnology and Forestry at State University of New York College of Environmental Science and Forestry; and Jared Westbrook, Director of Science at the American Chestnut Foundation

Will the American chestnut (*Castanea dentata*) be the first tree ever restored to its native forest after a century of devastation by an airborne blight? Join us for a thought-provoking gathering as experts share perspectives on the history of American chestnut, its significance as a forest species, and subsequent decimation by an invasive blight pathogen, *Cryphonectria parasitica*. Ongoing research in blight tolerance and the addition of blight-tolerant genes are the prognosis for this tree’s future.

Fee $20 (free for students)

APRIL

The Way of Coyote: Shared Journeys in the Urban Wilds

Wednesday, April 3, 7:00–8:30pm [HB]
Gavin Van Horn, PhD, Director, Cultures of Conservation, Center for Humans and Nature

Wanderer and writer Gavin Van Horn lives in Chicago, where he has long observed the attractiveness of cities to animals. He came to realize that our paths are crisscrossed by the tracks and flyways of black-crowned night herons, Cooper’s hawks, brown bats, coyotes, opossums, white-tailed deer, and many others who thread their lives ably through our own. In his book, *The Way of Coyote*, he describes this urban amalgam and reflects on the role wildlife can play in waking us to a shared sense of place and fate.

Fee $5 member, $10 nonmember

Cultivating Wilderness Where You Are

Thursday, April 4, 9:30–11:00am [Bussey Street Gate]
Gavin Van Horn, PhD, Director, Cultures of Conservation, Center for Humans and Nature

Redirect your commute to the Arnold Arboretum for an exploratory journey into what wilderness is, what it could be, and how it might be recovered in our daily lives. No matter if you live in the city or farther afield, exposure to natural elements and observation of other-than-human creatures can refresh your mind and fuel your soul. Gavin Van Horn will lead this landscape amble, interjecting readings and thoughts for finding wilderness within and beyond self.

Fee $180 member, $230 nonmember

An Introduction to Medicinal Plants

4 Wednesdays April 17, 24, May 1, 8, 6:30–8:30pm [HB]
John de la Parra, PhD, and Ernest Anemone, JD

Have you ever wanted to be able to separate medicinal plant facts from fiction? This introductory survey course, taught by two experts in the field of ethnobotany, will reveal essential connections between both the anthropological foundations and scientific principles underlying plant-derived drugs around the world. Knowledge will be built for the non-expert, atop four essential pillars of anthropology, botany, chemistry, and pharmacology. The class will be structured to include interactive classroom exercises, the making of simple herbal remedies, and lectures. Our learning experience will culminate in an intimate tour of the Arboretum’s medicinal plants on Saturday, May 11.

Fee $180 member, $230 nonmember
Around the World in 80 Trees
Thursday, April 25, 7:00–8:15pm [WH]
Jonathan Drori, Author, and Trustee, The Eden Project

Trees are one of humanity’s most constant and varied companions. In Around the World in 80 Trees, Jonathan Drori uses plant science to illuminate how trees play a role in every part of human life, from the romantic to the regrettable, to the downright ridiculous. Stops on the trip include the lime trees of Berlin’s Unter den Linden boulevard, which intoxicate amorous Germans and hungry bees alike; the swankiest streets in nineteenth-century London, which were paved with Australian jarrah wood; and the Japanese lacquer tree, whose sap has been used for some of the world’s most beautiful man-made objects. Jonathan Drori will share some of these strange and true tales taking us on a stunning journey through the world of trees.

Fee free member, $5 nonmember

How Birds Work: Eggs
Tuesday, May 14, 7:00–8:15pm [HB]
Lorna Gibson, Professor of Materials Science and Engineering, Massachusetts Institute of Technology

How does an egg become an egg? Why do chickens continue to lay eggs day after day? What controls the shape of eggs? Why do eggs of different species of birds have different colors? And how strong are eggshells? In this talk which follows previous talks about bird flight, migration, and feathers, Lorna Gibson answers common questions about bird eggs.

Fee free, but registration requested

Ethnobotany at Harvard
Wednesday, May 22, 12:00–2:00pm [HUH]
John de la Para, PhD, Associate, Harvard University Herbaria

Historically, plants have provided humans with most of our drugs, fibers, food, dyes, perfumes, building materials, and even musical instruments. But how has this diverse and fascinating field been studied and what has been learned? In fact, for over 100 years, Harvard has played a pivotal role in the study of human-plant interactions, leading to the creation of the Harvard University Herbaria.
of the field of ethnobotany. In this interactive lecture, we will explore the science and history of some of the most important Harvard botanists and explorers through specimens housed in the Harvard University Herbarium.

Fee $20 member, $30 nonmember

Plants Go to War: A Botanical History of World War II

Thursday, May 30, 6:30–8:00pm [HB]
Judith Sumner, PhD, Author and Botanist

As the first botanical history of World War II, Plants Go to War examines military history from the perspective of plant science. From victory gardens to drugs, timber, rubber, and fibers, plants supplied materials with key roles in the Allies’ victory. Author and botanist Judith Sumner will speak of the many plants that were incorporated into wartime safety materials, diet and rations, and even bombers.

Fee free, but registration requested

JUNE

Landscape Compost Compendium

Thursday, June 6, 6:00–8:00pm [HB]
Conor Guidarelli, Horticulturist, Arnold Arboretum

Conor Guidarelli manages organic materials recycling at the Arboretum and has worked to improve the production and quality of the compost used throughout our landscape. He will discuss the components of compost and the nutrients that can be returned to a site when compost is applied. He will explain the mix of brown to green materials, moisture, and aeration. Participants will start in the classroom and then travel to the Arboretum’s materials yard to see compost in various stages of development.

Fee $20 member, $30 nonmember

The Art of Botanical Prose

Tuesday, June 25, 7:00–8:15pm [HB]
Jonathan Damery, Associate Editor of Arnoldia

All writers must contend with translation. A poet translates the movement of a dancing figure into a brief couplet, and an essayist translates the noise and commotion of the city where she lives into a single paragraph. The three-dimensional world filters into text, and when done especially well—the realm of literature and art—readers often forget that translation has even occurred. Take a readersly tour through horticultural and botanical reference books and see the artistic endeavor within even the most exhaustive of botanical descriptions.

Fee $5 member, $10 nonmember

JULY

Gardening for Butterflies and Moths

Tuesday, July 16, 5:30–8:00 PM [HB]
Colin McCallum-Cook, Horticultural Technologist, Arnold Arboretum

Learn how to attract moths and butterflies to your garden and cater to their unique lifecycle requirements. Lepidopteran conservation in New England is more important than ever, as many formerly common species are now threatened with extirpation. Colin McCallum-Cook will also show you how to use citizen science applications to monitor species in your garden and contribute valuable data to the cause of lepidopteran conservation.

Fee $25 member, $32 nonmember

In the Groves: A Summer Solstice Journey

Two Sessions (select one): Friday, June 21, or Saturday, June 22, 6:30–8:30pm [HB]
Diane Edgecomb, Storyteller, and Margot Chamberlain, Celtic Harpist

Join us for an enchanting evening of tree myths, songs, and summer solstice legends. Diane and Margot spin tales of the human connection with trees in a performance that travels through the Arboretum. Each story is told under a different tree or among a unique collection of Arboretum plants, culminating with the haunting Czech legend “The Wild Woman of the Birch Grove” told amid the birches at sunset. Appropriate for adults and for children twelve years and above.

Fee $20 per person through June 15; $25 after June 15
Visitor Information

The Hunnewell Building is open for restroom access and business guests on weekdays 9:00am to 5:00pm and on weekends 10:00am to 5:00pm. The Visitor Center in the Hunnewell Building is open 10:00am to 5:00pm; closed Wednesdays and holidays.

Services in the Visitor Center include:

• Personal assistance and recommendations to enrich your visit
• Membership information
• Maps, postcards, and water bottles for sale
• Changing exhibits including materials from our archives
• Curated art exhibitions
• Activities for children and families
• Lost and found: 617.384.5209. Unclaimed items are donated to charity after two weeks.

The Arnold Arboretum Horticultural Library is open Monday through Friday, 10:00am–3:45pm. For information, visit our website, email hortlib@arnarb.harvard.edu or call 617.522.1086.

Visitor Parking and Driving Permits
Street parking is available along the Arboretum’s perimeter. Individuals with special needs may request a driving permit at the Visitor Center, weekdays only (closed Wednesday), from 10:30am to 3:00pm. Please call 617.384.5209.

Be a part of the Explorer’s Club! Borrow a Discovery Pack from the Visitor Center with tools and activities for hands-on exploration with children. Perfect for families, homeschoolers, and after-school groups. Try our newest addition, Be an Engineer, and create simple structures out of bamboo sticks.

Well Being at the Arnold Arboretum

Forest Bathing
Tam Willey, Certified Forest Therapy Guide
Relax and immerse yourself in nature on a slow-paced, facilitated combination of wandering, sitting, and resting in our landscape.

Weekend Sessions
2nd & 4th Saturday Morning Sessions: April & May
April 13, April 27, May 11, May 25, 9:00–11:00am
Fee $25 member, $35 nonmember

Five Week Series
May 2, 9, 16, 23, 30, 5:30–7:30pm
Fee $125 member, $175 nonmember

Lilac Therapy Walks
May 14 and 16, 9:00–11:00am
Fee $25 member, $35 nonmember

Morning Yoga at the Arboretum
July 14, 21, 28, and August 4 at 10:00am
Improve your health and practice well-being with poses, breathing, and meditation in the tranquil setting of the Arnold Arboretum. Cosponsored with the Emerald Necklace Conservancy and the NPS Frederick Law Olmsted National Historic Site.

Free, registration is limited and required
Art Exhibitions

Drawn to Paint
*Paintings of Arnold Arboretum Trees by Paul Olson*

On view May 10–July 21, 2019
Opening Reception: Saturday, May 18, 1:00–3:00pm

Artist Paul Olson has been a landscape painter for decades. He explores the Arboretum landscape with sketchbook in hand, then brings his on-site observations into the painting studio to work in color, reflecting on his real-world experience. These works on paper and canvas also feature paintings of bonsai from the Bonsai and Penjing Collection. Olson last exhibited at the Arboretum in 2012, with an exhibition entitled *Drawn to Woods*.

Between the Leaves
*The Unique Prints of Sarah Cross*

On view July 26–October 13, 2019
Opening Reception: Saturday, July 27, 1:00-3:00pm
Cyanotype Workshop with the Artist: Sunday, July 28, 10:00am–Noon

*Between the Leaves* focuses on the ephemeral quality of light. The resulting prints are fragile, painterly, and unique. Artist Sarah Cross works with a range of photographic media, including 4” x 5” color negatives, digital manipulation, and gum bichromate printing to create photographs, which although large in physical presence, are meant to express small invitations to reverie.

Special Events

*A Tradition in New England since 1908*

**Lilac Sunday**
Sunday, May 12, 10:00–3:00pm

Of the thousands of flowering plants growing in the Arboretum, only the lilac (*Syringa spp.*) is singled out each year for a daylong celebration. With more than 380 lilac plants of 172 kinds, the Arboretum holds one of the premier lilac collections in North America. Join us to explore the beauty and diversity of these fragrant shrubs and the coming of spring on Mother’s Day at the Arnold Arboretum.

Guided and self-guided tours of the lilacs and other special collections, fun family activities, and picnicking (on this day only) make for a memorable day at the Arboretum. Be a part of this beloved Boston tradition.

**Collections Up Close:**
*The Ginkgo Collection*
Sunday, June 2, 1:00–3:00pm

Celebrate plant diversity, natural history, and the work of public gardens by spotlighting plants and their families. Join us for tours, family activities and festivities in the ginkgo collection on Peters Hill. Most people can identify a ginkgo leaf—but what do you really know about the tree itself? Come learn more about this “living fossil” and explore a collection that reflects the greatest known genetic diversity of wild-collected ginkgos in North America and possibly the world.

**A free performance in the landscape**
*Pride and Prejudice*
Sunday, June 23, 5:00–6:00pm

Join us in the Leventritt Shrub & Vine Garden for a play adapted from Jane Austen’s novel and performed by Actors’ Shakespeare Project. See story on page 8.
Landscape Explorations

Guided Tours

Free landscape tours are available on Saturdays at 10:30am and Sundays at 1:00pm from April 13 into November. Weekday tours will be available on Mondays and Thursdays at 10:30am during May, June, September, and October. For additional details on Arboretum tours and full schedule, visit my.arboretum.harvard.edu or call 617.384.5209.

Theme Tours

Look into a special focus or area of the Arboretum. Geared toward adults, free, and registration requested.

**Spring into Health**
Rhoda Kubrick, Arboretum Docent
Sunday, April 14, 11:00am–12:30pm

**Arboretum Bird Walks**
Brendan Keegan, Arboretum Gardener 1
Saturday, June 1, 8:00–9:30am [Arborway Gate]; Sunday, June 23, 8:00–9:30am [Bussey Street Gate]

Bob Mayer, Arboretum Docent
Three Saturdays: April 27 [Arborway Gate], May 4 [Peters Hill Gate], May 18 [Arborway Gate]; one Sunday: May 5 [South Street Gate]; all 8:00–9:30am

**The First Twenty-Five Years of the Arboretum**
Emily Wheeler, Arboretum Docent
Sunday, May 5, 11:00am–12:30pm [Centre Street Gate]

**From Seed to Tree**
Dana Greenhouses Staff
First Tuesdays May–October, 1:00–1:45pm [Bonsai/Penjing Pavilion]

**When Lilacs in the Arboretum Bloomed!**
Chris McArile, Arboretum Docent
Wednesday, May 8, 11:00am–12:00pm; Monday, May 13, 1:00–2:00pm [map table at ponds]

**Family Rosaceae: Roses in Bloom**
Marty Amdur, Arboretum Docent
Sunday, June 9, 1:00–2:30pm [map table at ponds]

**Walking Postscript: Revisiting Plants from The Bulletin of Popular Information**
Jonathan Damery, Associate Editor of Arnoldia
Thursday, June 13, 4:00–5:30pm

**Medicinal Plants at the Arnold Arboretum**
John de la Parra, Associate, Harvard University Herbaria; Ernest Anemone, Lecturer, Tufts University
Saturday, June 15, 1:00–2:30pm

**Bonsai Behind the Curtain**
Tiffany Enzenbacher, Manager of Plant Production
Wednesday, June 19, 5:30–6:30pm [Bonsai/Penjing Pavilion]

**Peters Hill: Discover the Other End of the Arboretum**
Kevin Schofield, Arboretum Docent
Thursday, June 20, 5:00–6:30pm [Peters Hill Gate]

**Angiosperms and Gymnosperms**
Florie Wescott, Arboretum Docent
Sunday, July 20, 2:30–4:00pm

**Pollinators**
Sunday, July 21, 2:00–3:30pm

**The Forest is Calling**
Sunday, August 18, 2:00–3:30pm

Fun in the Landscape for Families with Children

**Spring/Summer Family Hikes**

Walks highlight plants, natural phenomena, and develop observational skills in children. Maximum of three children per accompanying adult; suitable for children ages four through twelve. Free and open to all; registration is requested.

- **Welcome Back Redwing Blackbirds**
  Sunday, April 14, 2:00–3:30pm
- **Flower Power**
  Sunday, May 19, 2:00–3:30pm
- **Insect Safari**
  Sunday, June 16, 2:00–3:30pm

**Science in Our Park Series**

- **Census Challenge! Biodiversity Sampling**
  Sunday, April 28, 2:00–4:00pm
- **Dissection Dramatics! Flower Form**
  Sunday, May 26, 2:00–4:00pm
- **Get Your Hands Dirty! Soil Science**
  Sunday, June 23, 2:00–4:00pm
- **Catch Some Rays! Solar Energy**
  Sunday, August 4, 2:00–4:00pm
Make the Most of Your Membership!

Your support is vital to the well-being and care of our magnificent landscape and living collections and sustains our programs in science, horticulture, and education. Enhance the experience of the Arboretum by taking advantage of our numerous membership and public program offerings. View the full calendar on our website arboretum.harvard.edu. For membership questions, please contact 617.384.5766 or membership@arnarb.harvard.edu.

The Sargent-Olmsted Society

The Sargent-Olmsted Society recognizes a community of plant, garden, and science enthusiasts who provide philanthropic support to the Arnold Arboretum at the highest level. Sargent-Olmsted Society members enjoy exclusive access to the Arnold Arboretum, its collections, and expert staff through select benefits including special programs and signature events.

On Saturday, May 4 from 4:00–6:00pm, we invite members of the Sargent-Olmsted Society to Peters Hill for a spring soiree in the flowering crabapple collection, featuring Director William (Ned) Friedman, Keeper of the Living Collections Michael Dosmann, and Miles Schwartz Sax—a post-doctoral researcher at Cornell University, former Arnold Arboretum horticultural apprentice, and grandson of former Arboretum director and crabapple hybridizer Karl Sax. Enjoy a delightful afternoon of great food, fragrant flowers, and expert commentary in the apples! Join the Sargent-Olmsted Society at arboretum.harvard.edu, or call Director of Institutional Advancement Janetta Stringfellow at 617.384.5043 for more information.

Arbor Day Seedling

Participate in the Arboretum’s nearly 50-year tradition of sharing notable woody plants with our community. Members at the Sustaining ($100) level and above may participate in the Arbor Day Seedling program. Our selection this year, Japanese Stewartia (Stewartia pseudocamellia), is a wonderful small to medium-sized tree boasting four seasons of interest. Hardy in Zones (4)5–7, Japanese Stewartia displays white flowers in early to mid summer, and its striking calico-patterned bark looks beautiful year round. In fall, its bright green foliage turns crimson and burgundy, providing perhaps the best autumn color in the genus. To take part, join the Friends of the Arnold Arboretum online at arboretum.harvard.edu or call Wendy Krauss, Membership Coordinator, at 617.384.5766.

Great Perks for Our Members!

» Free or discounted admission to Arboretum classes and lectures
» Special admission or discounts at 300 gardens and arboreta worldwide via the American Horticultural Society’s Reciprocal Admission Program
» Discounts at participating nurseries and garden centers; visit our website for a complete list
April is the perfect month to catch the bright flowering of *Forsythia*. Spring is manifest in these golden-flowered, deciduous shrubs, and the Arnold Arboretum Horticultural Library curates a number of brilliant Ektachrome color images of *Forsythia* like the one featured here, captured by an unknown photographer on Beech Path looking toward the ponds, available through Harvard’s online catalog, HOLLIS Images.

Named for William Forsyth (1737–1804), Scottish horticulturalist and founding member of the Royal Horticultural Society in London, the genus *Forsythia* consists of fewer than a dozen species native mainly to Asia. According to British garden writer Stuart Phillips, *Forsythia* correlates in plant lore with “anticipation, good nature, [and] innocence.” The link between *Forsythia* and the anticipation of spring makes perfect sense, as the Arboretum’s collection beckons visitors each April to admire its spectacular display along the bank where Forest Hills Road meets Bussey Hill Road and begins its rise into the lilacs.

Plant explorer Robert Fortune introduced *Forsythia* to the West in 1844. Nautical transport during this era proved a challenge, as the specimens required sunlight and protection from saltwater spray. Fortune used Wardian cases (solariums) to protect his *Forsythia* plants during their long journey to Europe from Asia by way of Cape Horn.

*Forsythia* has a storied legacy at Arnold Arboretum, starting with Ernest Henry Wilson’s 1918 introduction of Korean forsythia (*F. ovata*), and the hybridization endeavors of Karl Sax during the 1930s and 1940s. Cultivars within the hybrid group *F. × intermedia* include ‘Beatrix Farrand’, ‘Arnold Giant,’ ‘Karl Sax,’ and ‘Primulina,’ a pale-flowered variety and chance discovery of Arboretum research taxonomist Alfred Rehder (1863-1949) in 1912.

Today the *Forsythia* collection at the Arboretum comprises eighty-five plants belonging to sixty accessions; in all, the thirty-four taxa include eleven species, three varieties, and twenty-two cultivars. Taken together, the plants represent a national collection accredited by the American Public Gardens Association’s Plant Collections Network—one of eight such collections at the Arboretum (see related story, page 6).

Early bloomers in New England need to be quite tough, and *Forsythia* delivers with considerable hardiness in urban settings. Its spreading habit and dense root systems have provided erosion control in several hillside locations at the Arboretum. Their precocious floral display also helps distinguish them in the landscape at the start of the growing season. Seek out the collection during your next visit to the Arboretum, and remember to stop by the horticultural library, where we curate a wealth of information about *Forsythia* and other spring favorites.