Asian Longhorned Beetle Found Near Arboretum

What to look for when monitoring for ALB: At left, an adult Asian Longhorned Beetle (depicted above at actual size, its body is approximately ¾ to 1¼ inches or 20 to 30 millimeters in length). Above right, an infested tree displaying two egg-laying sites and a perfectly round, dime-sized exit hole.

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When the Asian Longhorned Beetle (ALB) was discovered in Worcester in 2008, only 40 miles from the Arnold Arboretum, it felt too close for comfort. Arboretum staff moved quickly to address the threat ALB would pose to the living collection, instituting new protocols and a response strategy directed at routinely monitoring our trees for signs of the beetle. Staff arborists and horticultural technologists were trained to recognize signs of infestation, inventoried the trees at risk, and began regularly checking for ALB in the winter of 2009.

With the discovery of ALB this July at Faulkner Hospital in Jamaica Plain, just across the street from the Arboretum, “close” took on a new meaning. At press time, no beetles have been found in the Arboretum, and no more beetles have been found in Boston. However, the Arboretum is located inside the regulated area (or quarantine zone), and we remain on high alert. Inspections continue in cooperation with the United States Department of Agriculture and the Massachusetts Department of Agricultural Research, and Arboretum educators are developing programs to turn all Bostonians into Beetle Busters!

You Can Help

Early detection is key. In most cases in the United States, ALB was first spotted by an observant citizen. Learn how to identify the beetle, discover which trees the beetle targets (called “host species”), be aware of the quarantine zone and the associated regulations, participate in a beetle citizen science project, and find out about upcoming training and information sessions on our website: arboretum.harvard.edu/alb.html

Visit as online at arboretum.harvard.edu
When we learned over the Fourth of July weekend that the Asian Longhorned Beetle (ALB) had been discovered in six trees at Faulkner Hospital—directly across the street from the western edge of the Arboretum—we were ready. Over the previous eighteen months, since the pest had been discovered in nearby Worcester, the Arboretum had been routinely monitoring the approximately 1,600 trees in our living collection that this notorious tree-killer enjoys most. Though we had just completed an inspection for ALB in June, the Faulkner discovery prompted another comprehensive search, this time with help from state and national officials. I’m glad to report that so far we have not found evidence of ALB in the Arboretum, but regular monitoring will continue for the foreseeable future.

To our skilled and intrepid horticulture staff, ALB joins a long list of plant scourges—from winter moth to hemlock woolly adelgid and beech bark disease to fire blight—that they are trained to recognize in their work. Since 2007, we’ve assigned our horticultural technologists to specific collections and areas of the Arboretum grounds as part of a revamped Landscape Management Plan. We’ve seen some wonderful improvements that this focused approach has garnered, and we spotlight a handful of these successes in this issue of Silva. Reported by members of the crew themselves, it’s clear that enabling staff to become personally invested in their individual zones has reaped rewards on both sides of the equation.

Caring for the plants in our collection begins long before they appear in the landscape. Since the early days of the institution, Arboretum propagators have had the sometimes difficult task of germinating seeds collected in the wild from around the world. Read our interview with Oren McBee, the current Greenhouse and Nursery Manager, to learn more about how the Arboretum obtains and nurtures new plants for the collection. In addition to nurturing the seedlings that will one day populate our landscape, Oren and his staff also supply the plants we offer to our members through the Spring Plant Dividend and the Fall Plant Giveaway. The latter will be held on Saturday, September 25, and in addition to an exceptional selection of plants, it’s a good opportunity to meet and talk shop with Oren and many of our other plant experts. See the inside back cover for more details.

As summer wanes and autumn approaches, there are so many ways to make the most of all the Arboretum has to offer. Come for a walk in the landscape to enjoy the vibrant tones of autumn foliage. Take a class or join a free tour to learn more about trees, nature, or the environment. For nearly 140 years, this place has offered beauty and inspired discovery. Your interest and engagement helps that tradition endure.

—Richard Pagett, Interim Managing Director of the Arnold Arboretum
Throughout its history, the Arnold Arboretum has primarily developed its extensive living collection of woody plants through seed propagation. Many of the Arboretum’s most treasured accessions were collected as seed by intrepid plant collectors like Charles Sprague Sargent, Ernest Henry Wilson, and Joseph Rock, and it was left to Arboretum propagators to discover the best ways to germinate the seeds and grow the plants to maturity. This tradition continues today at the Arboretum’s Dana Greenhouses, where the staff grows new trees, shrubs, and vines for the collection from seed, seedlings, softwood and hardwood cuttings, and grafts. With a collections policy that values genetic continuity, the greenhouse staff also repopulates plants whose survival is threatened by age, storm injury, or damage by insects or disease. As a result, historical and ongoing research in applied horticulture and propagation contributes to a significant body of knowledge guiding plant production at the Arboretum. Since his arrival in the fall of 2008, Oren McBee has coordinated these efforts at the Dana Greenhouses as Greenhouse and Nursery Manager. In this interview, Oren discusses his background, the plant production process, and why it’s impossible for him to pick favorites in the plant world.

Q. What’s your background in horticulture? When did you become enamored with plants?

A. I love to grow plants! To say that I come from a family of gardeners is a major understatement; I have grown plants all my life. I obtained a degree in biology from Colorado Christian University and spent seven years working in various plant-related jobs from landscaping to irrigation to composting. However, my work at a wonderful native plant nursery called Green and Growing in Pflugerville, Texas, made a particularly strong impression. That experience contributed to my decision to go back to school to study horticulture, and I obtained a master’s degree from the University of Georgia. I then turned my hobby into a full time job. I worked at the Atlanta Botanical Garden/Smithgall Woodland Garden as nursery and greenhouse manager for five years before arriving at the Arboretum in the fall of 2008.

Q. How would you characterize the Arboretum’s approach to plant production?

A. Plant production is definitely a collaborative effort. Luckily, I have a team of all-stars at the Dana Greenhouses. Bob Famiglietti coordinates production and grows our plants until they are large enough for the landscape. He is the tree and shrub farmer, and few people have grown as many different and rare plants as he has. Jack Alexander is our propagator and possesses a well-earned reputation as one of the best in the world. His work has enabled us to determine the best conditions for propagating rare plants from around the globe. Irina Kadis helps with seeds, inventories our holdings, and maintains our crucial propagation data. We utilize more than a century of information and experience in growing plants at the Dana Greenhouses. It’s an inspiring place to work.

Q. How does the Arnold acquire the plants to strengthen its collection?

A. The Arboretum’s horticulture team works together to acquire plants. We prefer plants that were obtained from a known global position. In other words, we focus on plants with great collection data. In addition to knowing the point of origin, we also want to obtain a herbarium specimen, information about sympatric species (what grows alongside this plant), growing habitat, and a general description. Our Curatorial Department decides on new plant additions, while the greenhouse staff focuses on collecting, propagating, and growing the plants to a good size for planting.

In terms of acquisitions, once we have determined there is a need, we seek out the best ways to acquire the plants. This usually means securing wild-collected seed, preferably with the desired associated data I just mentioned. We acquire seeds from Arboretum staff trips, exchanges with other botanical institutions, and through collaborations with other professionals in the plant world. Right now we are working a lot with native plants. In the future, through both new and established relationships and collecting trips, we hope to target additional plants needed to strengthen our global collection.
Q. Controlling pests must be an ongoing challenge in your work. What are the primary components of the Greenhouse’s approach to pest management?

A. Every year we are bombarded with pests and diseases that prey on our plants. Aphids, spider mites, scale, thrips, fungus, mildew, and many others attack at various times during the year. We use the Integrated Pest Management (IPM) method of control to keep these problems in check. One IPM tool we use is beneficial predatory insects, and it’s an ongoing process to determine which predators are most effective in combating a particular pest. For example, while aphids might cower at the sight of a sweet little ladybug, spider mites wouldn’t be bothered at all. And since pest problems vary from year to year and season to season, so do the ways we deal with them. Bob Famiglietti carries out our IPM program and stays abreast of the latest developments and practices. Overall, we find IPM to be very effective for our purposes. This is not to say that we never use pesticides, but IPM allows us to use them less often.

Q. What sort of research do you and your staff conduct in terms of applied horticulture and propagation?

A. Over the years, we have investigated things like how to germinate seeds and root cuttings, cold hardiness testing, and growing habitats. We hope to create some basic seed and cutting propagation recommendations from these data once it is all compiled—a task that Irina Kadis continues to work on faithfully. I am personally interested in a complex but interesting occurrence in plants called polyploidy—the doubling of chromosomes due to abnormal cell division.

Q. Are there specific genera or species that you particularly enjoy working with at the Arboretum?

A. It may seem impossible, but I like all plants and I don’t have a favorite. Large and small, short and fat, weeping and columnar, red and green, species and cultivars... all are fascinating and I hope to grow them all. If I had to state a preference, I might pick woody ornamentals. It’s quite astonishing to be out hiking in the mountains of north Georgia and come upon a stewartia in flower, for example. Then, of course, my plant-nerd brain immediately jumps to figuring out how to best propagate it. So you see, it’s not just the plants themselves but the whole adventure of getting them to grow that captures my imagination.

Q. What special projects are you and your staff working on presently in terms of collections development?

A. Our ongoing, never-ending project is growing better plants of more kinds for the Arboretum. Currently, we are growing a lot of *Rhododendron vaseyi* and *Rhododendron purdinii*, two endangered azaleas that we collect and maintain in collaboration with the Center for Plant Conservation (CPC). In the near future, we are also looking to increase other collections, particularly our nationally recognized holdings of maple (*Acer*), hickory (*Carya*), beech (*Fagus*), stewartia, lilac (*Syringa*), and hemlock (*Tsuga*). We are also working with the Department of Agriculture in their efforts to preserve our native ash trees in the face of the destruction by the emerald ash borer.

Q. Do you have any advice for home gardeners who are interested in propagating woody plants from seed?

A. Growing plants from seed is one of the most enjoyable and affordable hobbies. Take a class with Jack Alexander and learn about growing plants from seed. As you’re learning, it’s really important not to be bothered by failures along the way. Even with the natural and inevitable losses, you’re likely to have far more successes. All you need are some seeds, soil, and a little patience and determination, and you are off to the races. Who knows what unique and wonderful plant you might discover and introduce to the world of horticulture. Enjoy the journey.

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**Learn to grow at the Arboretum’s Dana Greenhouses.**

**Propagating Trees and Shrubs**

SEE PAGE 14

**Grafting Techniques for Ornamental Trees**

SEE PAGE 19

**Growing Plants from Seeds**

SEE PAGE 22 & 23
Plants are essential to human existence. They provide the oxygen we breathe and the food we eat. Plants accomplish this through photosynthesis—the process of assimilating carbon dioxide, producing sugar molecules, and releasing oxygen back into the atmosphere. This process requires that a plant’s photosynthetic cells have access to carbon dioxide, light, and water, which work together in a tangled knot of interdependencies that researchers have long tried to understand from physical and biological perspectives.

To put it simply, plants need sunlight to photosynthesize. But, as everyone knows, without water, plants can easily wilt and die in the presence of prolonged sun exposure. The flow of water through plants is critical to their survival. Water hydrates cells so they can sustain physiological activity, it maintains heat capacity to buffer against sudden temperature changes, and it cools leaves through evaporation. Indeed, leaves evaporate a lot of water. An average tree transpires 60 to 80 gallons of water every day. By comparison, a person would need to drink one gallon of water every two minutes to match the average water consumption of a tree.

For a tree, drawing water up from the soil during long, hot summer days and moving it to the top of the crown proves a challenging task. Water is not being pushed up from the roots—it is being sucked up by the tree’s canopy. Water evaporation through the leaves creates a negative water vapor pressure that pulls water up the tree toward the leaves. When the soil is very dry and/or the tree is very tall, trees must pull water against an unfavorable pressure. When this occurs, water molecules can pull apart from each other. This can create air bubbles that can endanger water flow and cause blockages in conducting tissues — a problem similar to that experienced by deep-water divers who are afflicted with “the bends” when they surface too quickly.

It was believed that the formation of vapor bubbles in plant tissues—known as cavitation—could cause permanent damage to a tree’s system for water transport. However, many tree species can survive prolonged droughts and recover from losses of transport function. Only recently have we started to reconstruct and understand the puzzle behind the “magical” recovery of water transport in tree trunks during or after droughts. This recovery involves specific biochemical signaling pathways that trigger responses in the stems aimed at releasing enough water and energy to refill cavitated water channels. It also relies on the highly specific material properties of the plant’s cellular walls.

The entire process is still far from being fully understood, but it has proved to be interesting and challenging work that requires studying plants ranging in size from submicron to tens of meters, determining the structure and material properties of wood, and a firm understanding of applied physics as well as plant biology. Learning more about how plants optimize their biological functions despite physical and environmental pressures may prove critical as we contemplate growing diverse populations of plants in a changing world.
A FONT OF KNOWLEDGE
Elise Sigal, Plant Information Volunteer and Endowed Fund Donor

Jon Hetman, Development Manager

In botany, we learn that plants pass on their identifying traits to the next generation. For Elise Sigal, heredity is the only explanation she can think to explain the genesis of one of her own defining traits: her passion for plants. “It must have come from my father,” she offers. “He had a great love for plants. I grew up outside of Allentown, Pennsylvania, and Dad loved to work in the garden. In fact, one of his prized specimens was a Chinese silk tree (Albizia julibrissin), which was the first one I’d ever seen. I didn’t even know what it was or that it was anything special until I started coming to the Arboretum!”

Elise’s affinity with plants and talent for growing them is appreciated by countless individuals who have sought her advice as one of the Arboretum’s plant information hotline volunteers. In her 55 years as a resident of the Boston area, Elise has volunteered at the Arboretum in various capacities for over half of that time.

“I started taking classes at the Arnold Arboretum, and got fascinated more and more by plants and gardens,” she continued. “Then in 1978, a good friend who was also extremely interested in plants invited me to a dinner with Peter Ashton and his wife Mary.” Peter Ashton had just become the Arboretum’s director, and soon after their introduction, Elise became involved with the Arboretum.

“I went from being a helper to lending a hand with obtaining and organizing the material donated for the plant auctions.” Her enthusiasm and growing importance as part of the coordination team and knowledge base for the sale continued for nearly 25 years. Looking to increase her involvement in the 1980s, Elise began compiling a calendar of regional horticultural events for inclusion in the Arboretum’s plant journal, Arnoldia. This calendar eventually evolved into the ‘Arnold Arboretum News’ section of the magazine, which today is published separately as Silva. As word got around the Arboretum about her extensive knowledge of plants, she was asked to interact with the public on the plant information hotline. Elise jumped in again to help, and has researched and responded to queries ever since, while coordinating the activities of the other hotline volunteers.

“Volunteering makes my life worth living!” Elise says with a laugh. “It’s really such fun, and so challenging. I had no idea how much I would gain being a volunteer. It’s a constant, unending process of learning. And people are so gratified to get help, to be able to talk to someone who can speak on their level about plants.”

In appreciation of her own journey of learning at the Arboretum, Elise and her husband Marlowe established the Cunin-Sigal Research Award Endowment in 2006. A tribute to her parents, the fund supports work by undergraduate and graduate students engaged in the Arboretum’s research programs. “I’ve always seen the Arboretum as a hugely important, international source for botanical information,” she explains. “Because the plants are so well curated and recorded, it makes this beautiful place all the more valuable.”

The Arnold Arboretum relies on the support of private individuals to ensure the success of our research and education programs, and to maintain our treasured landscape for scientific use and public enjoyment. Donations at all levels are appreciated and we invite your participation as a member of the Friends of the Arnold Arboretum.

The Arboretum provides the opportunity to leave a lasting legacy through support of an endowment fund. A gift to an endowment is invested and the return on investment supports Arboretum programs and initiatives. The investment of the fund enables it to continue in perpetuity and ensures its value for future generations.
The Arnold Arboretum’s team of horticultural technologists—the plant and landscape specialists who, along with three arborists, care for the Arboretum’s vast living collection of woody plants—have a very big job on their hands. With 15,000 accessioned plants and a 265-acre landscape to look after in all seasons, they must coordinate their efforts to effectively provide an appropriate and consistent level of care across all areas. A fundamental tool directing this charge is the Arboretum’s Landscape Management Plan (LMP), instituted in 2007. The plan organizes the Arboretum into management zones, each assigned to one of the Arboretum’s horticultural technologists to oversee. In addition to ensuring that all areas of the Arboretum receive regular attention, this site-specific approach enables staff to accumulate knowledge and become experts on the particular plants, soils, pests and diseases, hardscape features, and visitor amenities of their zones.

Implementation and refinement of the LMP has yielded a number of successes in the past three years, not the least of which are increased opportunities to address deferred maintenance and support larger renovation projects throughout the Arboretum. Major efforts such as the remediation of the steep slopes abutting the State Laboratory and the redesign of the Bradley Rosaceous Collection may be the most obvious signs of change to visitors, but many other smaller projects have contributed to a healthier plant collection and an improved landscape. In this issue of *Silva*, several horticultural technologists describe their contributions over the past year to the LMP’s explicit goal of attaining an exemplary level of horticultural care in the Arboretum.

**Bussey Hill Summit**  
*Scott Grimshaw, Horticultural Technologist*

At an elevation of nearly 200 feet, the summit of Bussey Hill is the second highest point in the Arboretum, offering terrific views of the Arboretum and the Blue Hills. Accessioned plants located here dating back to the 1920s and 1930s include birch (*Betula*), elm (*Ulmus*), and hawthorn (*Crataegus*). These initial plantings were followed by Chinese silk tree (*Albizia julibrissin*), Japanese barberry (*Berberis thunbergii*), and Chinese sumac (*Rhus chinensis*)—popular exotic ornamentals of the day which have since been found to exhibit invasive qualities. Beginning in the mid-1950s, planting on the hill focused on groundcovers, and pathways and stone steps were added for improved visitor access in anticipation of the Arboretum’s centennial celebrations in 1972. To bring the summit in line with the standards of the LMP, the time had come to rejuvenate this scenic area once again.

From the outset, we wanted to open up vistas of the Arboretum landscape and Blue Hills that had become obscured by abundant plant growth. Work began with a curatorial review of all holdings on the hill to determine their value. This process identified accessions that could be removed, including more than a dozen *Berberis* plants which had grown into one another and become a burgeoning thicket. New cedar planks were installed in benches and fences, and Roxbury puddingstone from the Arboretum quarry was used to shore up eroded areas and to finish an incomplete retaining wall. Final steps...
included removing noxious weeds and adding mulch to protect plant roots and inhibit spontaneous plant growth. Looking ahead, we hope to add plants where the renovation has opened up space, and reconfigure pathways to respond to how contemporary visitors utilize and enjoy this popular destination.

**Oak Path**  
*Wesley Kalloch, Horticultural Technologist*

Over the past year, a major focus for my work has been the resurrection of Oak Path. Initiated by Sargent as a mowed path to increase access to the collections, the path lost much of its character and definition over the years. While open areas were occasionally mowed and the oaks regularly pruned by arborists, smaller trees and shrub beds required focused attention. Following the initiation of the LMP, I began restoring this historical landscape feature to a state worthy of the fine trees and shrubs that grow there.

The shrub beds that lie along Oak Path consist mainly of flame azalea (*Rhododendron calendulaceum*), accompanied by plantings of dogwood (*Cornus florida*), redbud (*Cercis canadensis*), walnut (*Juglans spp.*), and *Viburnum*. When I began the project, the azalea islands along the path were competing for space and nutrients with both woody and herbaceous weeds. The major woody culprits were brambles (*Rubus spp.*), Oriental bittersweet (*Celastrus orbiculatus*), Castor-aralia (*Kalopanax septemlobus*), poison ivy (*Toxicodendron radicans*), and devil’s walking stick (*Aralia spinosa*)—plants all adept at propagating themselves into highly tenacious populations. From May through September 2009, I eradicated the offending plants and mulched the planting beds with raw wood chips, shredded leaves, or a combination of both. Open areas were seeded with turf grass and are now regularly mowed. Although I removed a great deal of spontaneous plant material, I am attempting to encourage controlled massing of several of the more desirable herbaceous perennials that occur there, such as trillium (*Trillium grandiflorum*), black snakeroot (*Actaea racemosa*), false Solomon’s seal (*Maianthemum racemosum*), and bracken fern (*Pteridium aquilinum*). This season, as a result of these measures, the maintenance of Oak Path is easier and more efficient and the number of weeds in the area is rapidly declining.

**South Street Slope**  
*Kevin Block, Horticultural Technologist*

Before the implementation of the Landscape Management Plan (LMP), the South Street slope bordering Beech Path was one area in need of more focused attention. This zone consists of many beautiful trees and plants, including red pine (*Pinus resinosa*), white pine (*Pinus strobus*), beech (*Fagus spp.*), hemlock (*Tsuga spp.*), Paulownia, dogwood (*Cornus spp.*), azaleas (*Rhododendron spp.*), and mountain laurel (*Kalmia latifolia*). It had the potential to offer visitors a beautiful forest setting. The problem was that among these beautiful specimen trees and shrubs grew an ever-expanding number of spontaneous plants. Weed trees and shrubs like brambles, buckthorn (*Frangula alnus*), apple (*Malus spp.*), and Amur cork tree (*Phellodendron amurense*) had gained a foothold, and invasive vines like Oriental bittersweet, swallowwort (*Cynanchum spp.*), Virginia creeper (*Parthenocissus quinquefolia*), and wild grape (*Vitis spp.*) were devouring the understory vegetation.

*continued*
Over the last two years I have started to bring this region and its plants back in line with the standards of the LMP. With a chainsaw and a chipper I removed all of the weed trees, and used large mowers and brush cutters to cut back all the vines and clusters of *Rubus*. With these pests out of the way I was able to prune away dead wood from our plant accessions to help them prosper over the growing season. Most responded well, and this spring an unobscured view of red and orange azaleas in flower made for a spectacular sight under the canopy. Keeping these weeds, vines, and spontaneous trees in check will remain a challenge along our South Street border, but utilizing numerous methods of control has made an enormous difference to this beautiful and dramatic landscape.

**Water Mitigation Projects**
Matthew Connelly, Horticultural Technologist

You might think that water would never be unwelcome at the Arnold Arboretum, where an extensive plant collection requires so much of it to thrive. Yet in recent years, the high volume of water from rain and runoff has created problems for our infrastructure, particularly our gravel pathways. Heavy use of these walkways tends to loosen their hard-packed gravel and stone dust, which can wash away during heavy rain storms. Washouts were patched as needed in the past, but reliable preventive measures were needed. In the fall of 2008 we began a major reconstruction to regrade and bolster all our secondary paths as part of the LMP.

Fixing the problem required three strategies. The first was to properly pitch the paths to shed water to the side, using a "cut and fill" method to even out high and low areas. A second method was employed where excessive amounts of water originated from a centralized area. Channel drains, cut across the path where water ran the heaviest during storms, were installed to collect and send the water below the ground to designated leaching areas. The third and most noticeable means of water mitigation is called a water bar—two thick boards installed at an angle across a path with a two-to-three-inch gap between them. The water bar catches surface water traveling along the path and redirects it off to the side of the road. Although simple in design, the water bar has proved to be our most useful means of preventing washouts along our secondary paths. Since completing the renovation of all our major gravel paths in spring 2010, we have developed a schedule to keep their monitoring and maintenance a management plan priority.

**Weld Hill**
Brendan McCarthy, Horticultural Technologist

Under the LMP, I am responsible for the Weld Hill parcel and portions of the conifer collection. Weld Hill is an area that previously received minimal maintenance other than the seasonal mowing of its grassy areas. With the construction of a new research facility on the parcel and the implementation of the LMP, various improvement projects are currently in the works. The first order of business, though, was to eliminate the many invasive plants that were populating large areas of the hill. Working around the entire perimeter of the property, my first objective was to remove the many weed trees, shrubs, and vines growing there. These unwelcome pioneers included buckthorn, apple, cherry (*Prunus* spp.), multiflora rose (*Rosa multiflora*), Oriental bittersweet, and poison ivy among others. Once these were eradicated, I was able to tackle the larger problem—a rampant invasion of Japanese knotweed (*Fallopia japonica*). Through the careful timing and application of low concentrations of herbicide in the fall when the plants flower, we’ve been able to attain an extremely high rate of control of this weed at the Arboretum. By reestablishing grasses in these areas, we will also extend the character of our historical landscape to this parcel. For me, it’s satisfying to see this area of the Arboretum restored. It’s a great example of how the LMP allows us to embark on significant reclamation projects while still providing the rest of the Arboretum with exceptional care.
Adult education at the Arnold Arboretum is a community resource for the study of horticulture, botany, and garden arts.
# Arnold Arboretum Course Overview

## Horticulture

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## Botany

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## Ecology and the Environment

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## Walks, Talks, and Visits

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Focused Studies

Adult Education at the Arnold Arboretum is centered on our collections of temperate woody plants. We offer core classes in plant identification, horticultural methods, and propagation. We recommend that all students complete an introductory botany class as a preliminary step. Note that not all classes are offered every semester, or even every year. However, we are always developing new ones.

Temperate Woody Plant Identification (Fall/Winter 2010–2011)
The ability to identify a wide variety of hardy woody plants is essential for understanding the floral and horticultural environment of New England. The classes below provide a foundation for this skill.

**BOT 172**  Introduction to Winter Tree Identification
**BOT 256**  Conifer ID with Richard Bitter
**HOR 103**  Identifying the 25 Most Common Trees in Boston
**HOR 125**  Woody Vines for the Garden
**HOR 137**  The Multifaceted Edible Landscape
**HOR 278**  Designing Gardens with Flora of the American East
**HOR 368**  Conifers for Gardens
**WAL 190**  The Edible Landscape
**WAL 200**  Plant Conservation
**WAL 212**  After the Bloom: Colorful Crabapples
**WAL 242**  Conifer ID via Snowshoes

Horticultural Methods for Woody Plants
Proper care of woody plants is important to their overall health. These classes teach techniques for woody plant care.

**HOR 111**  Landscape Maintenance in Spanish
**HOR 147**  Organic Lawn Therapy
**HOR 191**  Landscape Maintenance: An Organic Approach
**HOR 193**  Chainsaws: Use, Safety, and Maintenance
**HOR 220**  Introduction to Forest Measurement Tools
**HOR 314**  Pruning In Winter
**WAL 142**  From Seed to Tree

Woody Plant Propagation (Year-long Cycle)
The elements of propagation—from taking cuttings and germinating seeds to hardening off, potting, and planting out—are covered in the classes listed below.

**HOR 303**  Propagation 1: Hardwood Cuttings and Seeds (Fall)
**HOR 305**  Propagation 2: Grafting of Ornamental Trees (Winter)
**HOR 307**  Propagation 3: Layering and Softwood Cuttings (Summer—offered occasionally)
**HOR 316**  Budding Workshop (Summer—offered occasionally)
**HOR 320**  Advanced Propagation: Choice & Challenging Plants (Summer—offered occasionally)
**HOR 336**  Growing Plants from Seeds (Spring)

Class Key

**Class Abbreviations**

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<td>ECO</td>
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<td>HOR</td>
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<td>WAL</td>
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**Meeting Places**

| [BAC] | Boston Architectural College 320 Newbury Street, Boston |
| [BSG] | Bussey Street Gate Bussey Street Arnold Arboretum |
| [DG] | Dana Greenhouse Arnold Arboretum 1050 Centre Street, Boston |
| [HB] | Hunnewell Building Arnold Arboretum 125 Arborway, Boston |
| [HUH] | Harvard University Herbaria 22 Divinity Avenue, Cambridge |
| [NEWFS] | New England Wild Flower Society, Garden in the Woods 180 Hemenway Road Framingham |
| [PHG] | Peters Hill Gate Bussey Street Arnold Arboretum |
| [TC] | Trinity Church 206 Clarendon Street, Boston |
| [WCBG] | Wellesley College Botanic Garden’s Visitor Center |
| [WCSC] | Wellesley College Science Center Both Wellesley College locations at: Wellesley College 106 Central Street, Wellesley |

**Professional Credit**

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<tr>
<td>APLD</td>
<td>Association of Professional Landscape Designers</td>
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<td>MCA</td>
<td>Massachusetts Certified Arborists</td>
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<td>MCLP</td>
<td>Massachusetts Certified Landscape Professionals</td>
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September

From Seed to Tree  WAL 142

Dana Greenhouses Staff
1 Session
Tue Sep 14 1:00–2:00pm [DG]
Get a behind-the-scenes look at the Arnold Arboretum greenhouses and nurseries with staff. Learn about the plant production and growing process, from seed to sprout to seedling to tree. Meet at the Larz Anderson Bonsai Collection. This offering is limited to 15 participants; first-come, first-served.
Free. No registration required.

Plant Conservation  WAL 200

Abby Hird, Researcher, Botanic Gardens Conservation International
1 Session
Sat Sep 18 1:00–2:30pm [HB]
Like animals, many plants in once-wild places are extinct, endangered, or severely threatened. Take a stroll with Abby Hird, a researcher for BGCI’s Global Strategy for Plant Conservation, to see some of the nearly 3,500 plants collected from wild places that are now growing at the Arboretum, and find out how these plants are being used for conservation and restoration efforts today.
Free. No registration required.

Creature Feature: Asian Longhorned Beetle Movie and Game Night  ECO 911

Maureen McConnell, Team Leader for Programs, EcoTarium
1 Session
Mon Sep 20 6:30–8:30pm [HB]
See Lurking in the Trees and a presentation by Maureen McConnell from the Ecotarium in Worcester to learn about the consequences of an Asian Longhorned Beetle infestation. Maureen will also facilitate a community game to inspire discussion about the issues surrounding the beetle and tree cutting, based on experiences from the Worcester, MA infestation.
Free. No registration required.

Introduction to Botany  BOT 100

K. N. Gandhi, Botanist, Harvard University Herbaria
8 Sessions
Tue Sep 21–Nov 9 6:30–8:30pm [HUH]
Learn botany from dedicated instructor and plant nomenclature specialist Kanchi Gandhi. Among the topics to be explored: plant cells and tissues, anatomy and morphology, reproduction, nutrition, growth and development, plant diversity, evolution, classification, and nomenclature. This course offers both lecture and laboratory activities. Required text: Botany for Gardeners by Brian Capon. Contact the Arboretum’s bookstore (617.384.5209) for book availability.
Fee $225 member, $270 nonmember
Credit MCLP: 1ceu; MCA: 1ceu
Offered in collaboration with the New England Wildflower Society

In the News

Kanchi Gandhi recently received the “Distinguished Service Award” from the American Society of Plant Taxonomists in recognition of his national and international service to the botanical community.

Gardens and Spirit

A series on faith, gardens, and human nature, offered in collaboration with Trinity Church in Boston.

Feb 1: Dan Snow
TBA: Jamaica Kincaid
April 7: Bill McKibben

See details in our chronological listing of classes and lectures and online.

Chainsaws: Use, Safety, and Maintenance  HOR 193

John DelRosso, Head Arborist, Arnold Arboretum
1 Session
Sat Sep 25 9:30am–2:30pm [HB]
Learn the basics of chainsaw use from ISA-certified arborist John DelRosso. John will talk about essential safety equipment and maintenance requirements. He will demonstrate sharpening and bar tensioning and discuss felling techniques, including tension cuts. Bring your saw, along with ear protection, for the maintenance discussion. Bring a lunch, too, and dress for the outdoors.
Fee $60 member, $75 nonmember
October

Pen & Ink I: Foundations for Botanical Rendering  ART 121
Jeanne Kunze, Artist
5 Sessions
Fri Oct 1–29 9:30am–12:30pm [WCBG]
Flowing contours, rich tonal values, and expressive imagery are the hallmarks of pen and ink drawings. Jeanne Kunze will introduce you to the traditional illustrator’s Crowquille pen. You will learn methods of inking a drawing from start to finish, and practice techniques for building an ink vocabulary, including stippling and cross-hatching. Some drawing skill advised.
Fee $250 member, $300 nonmember
Offered in collaboration with The Eliot School

Landscape Photography  ART 412
Robin Radin, Photographer
8 Sessions
Wed Oct 6–Dec 1 7:00–9:00pm [HB]
Broaden your photographic vision beyond traditional landscape shots and explore your surroundings with new eyes. We will supplement weekly assignments by looking at the work of some extraordinary landscape photographers to see what makes them great. Bring your own camera (any kind) and prepare to bring in 4” x 6” prints each week. (No class meeting on Nov 24.)
Fee $235 member, $260 nonmember
Offered in collaboration with Wellesley College Friends of Horticulture

Elements of Botanical Drawing: Getting It Right  ART 114
Jeanne Kunze, Artist
5 Sessions
Sat Oct 16, 23, Nov 6, 13, 20 9:30am–12:30pm [WCBG]
Jump start your drawing in this class filled with individual teaching moments and
designed to produce accurate observation and definition of shape. Learn to represent plants through specialized observation; composition set up; sketching exercises and techniques; foreshortening petals, flowers, and leaves; aerial perspective; and compositional balance.

Fee $225 member, $275 nonmember
Offered in collaboration with Wellesley College Friends of Horticulture

**Identifying the 25 Most Common Trees in Boston**  
Kyle Port, Manager of Plant Records, Arnold Arboretum
1 Session
Sun Oct 17 9:00am–1:00pm [HB]
In just a few hours you can learn to identify 90 percent of the trees growing in Boston, both native and nonnative. Beginning in the classroom, you will briefly review the characteristics of the 25 most common trees and learn the botanical terminology necessary to describe them. You will then walk the grounds of the Arboretum to look at mature specimens of these trees.

Fee $45 member, $55 nonmember
Credit MCLP: 1ceu, MCA: .5ceu

**The Edible Landscape**  
Maggie Redfern, Visitor Education Assistant
1 Session
Tue Oct 19 10:00–11:30am [HB]
Birds love the Arboretum’s many fall fruiting trees and shrubs, but how about us folks? Come and identify trees and shrubs with edible fruits, suitable for growing and harvesting at home.

Free. No registration required.

**Propagating Trees and Shrubs from Cuttings and Seeds**  
Jack Alexander, Plant Propagator, Arnold Arboretum
2 Sessions
Sat Oct 23, Nov 6 9:00am–4:00pm [DG]
Need to nurture? Then join longtime Arboretum propagator Jack Alexander to learn basic information and techniques for propagating most woody plants. Session One includes a lecture and workshop on seed propagation and construction of a propagation case. Session Two will be a lecture and workshop on hardwood cuttings. You will leave class with numerous cuttings and seeds to care for. To participate, you must sign an Assumption of Risk and Release in order to practice the techniques taught in class. Bring a lunch and beverage. If you own hand pruners, bring them to class. A sharp knife and an apron may also be helpful. You will be collecting propagules from the Arboretum grounds on both afternoons regardless of weather, so dress accordingly and wear comfortable shoes.

Fee $180 member, $215 nonmember
Credit MCLP: 1ceu

**Wow—Botany Is Exciting!**  
Carol Govan, Naturalist and Artist
1 Session
Sun Oct 24 9:30am–2:30pm [WCBG]
Enjoy the Wellesley College Botanic Gardens Greenhouses as Carol Govan introduces botany using basic terminology, direct observations, and journaling to explore basic plant morphology (roots, shoots, flowers and fruit).

Fee $50 member, $65 nonmember
Offered in collaboration with the Wellesley College Friends of Horticulture

**Seeds on the Move**  
Rhoda Kubrick, Arboretum Docent
1 Session
Tue Oct 26 1:00–2:30pm [HB]
Whether “naked” or “clothed,” seeds can swim, fly, hitchhike, and even dance! With volunteer Rhoda Kubrick, discover the many adaptations to help seeds move. Learn the variety and ingenuity that enable plants, rooted in one spot, to create offspring in new locations.

Free. No registration required.
**Conifers for Gardens**

*Dr. Richard L. Bitner, Conifer Enthusiast*

1 Session

Thu Oct 28 7:00–9:00pm [HB]

Conifers are usually thought of as plain-green blobs used to hide the foundations of homes or occasionally grown as solitary pyramidal accents in an expanse of grass. This lavishly illustrated talk will introduce the great diversity of shapes, textures and colors in this plant group and promote integrating conifers in the landscape with other woody and herbaceous plants, rather than isolating them. Slow-growing selections for small gardens along with the best choices for larger landscapes will be presented as well as suggestions for difficult sites. The goal is to help novice gardeners as well as horticultural professionals make better plant choices.

Fee $25 member, $30 nonmember

Offered in collaboration with the Wellesley College Friends of Horticulture

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**Conifer ID with Richard Bitner**

*Dr. Richard L. Bitner, Conifer Enthusiast*

1 Session

Sat Oct 30 9:00am–2:00pm [HB and Arboretum Grounds]

Do you know the differences between pines, firs, and spruces? How about arborvitae, junipers, cedars, and false-cedars? Some of these are easily distinguishable, while others require close observation of needle patterns and a deeper understanding of reproductive structures. By the end of this session with Dr. Richard L. Bitner, you will have a clearer understanding of needled and deciduous conifers. Dress in layers so that you are comfortable both in the classroom as well as outdoors in the Arboretum’s outstanding conifer collection. The class fee includes a copy of the *Timber Press Pocket Guide to Conifers*.

Fee $70 member, $80 nonmember

Offered in collaboration with the Wellesley College Friends of Horticulture

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**Dr. Richard L. Bitner** is a practicing board-certified anesthesiologist and currently teaches at the Penn State School of Medicine/Hershey Medical Center. He studied horticulture at Longwood Gardens, where he now teaches the Conifers and the Deciduous Flowering Shrubs II certificate courses, and has been a popular Plant Study Walk Instructor for many years. His book, *Conifers for Gardens: An Illustrated Encyclopedia*, was published by Timber Press in 2007 and his *Timber Press Pocket Guide to Conifers* was issued in June, 2010. A book on designing with conifers will be published in April, 2011.
Ink Brush Painting  
*ART 117*

*Nan Rumpf, Artist*

4 Sessions  
Sat Oct 30, Nov 13, 20, Dec 4  
1:00–4:00pm [WCBG]

Come and learn to capture the essence of different plants and flowers using expressive gesture strokes based on Asian ink brush painting traditions. You will work with black ink and color and also explore rice paper washes using gouache tea and color. No previous experience is required.

Fee $125 member, $160 nonmember

Offered in collaboration with Wellesley College Friends of Horticulture

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November

**Bird Buffet**  
*WAL 120*

*Marc Devokaitis, Visitor Education Assistant*

1 Session  
Thu Nov 4 10:00–11:30am [HB]

The Arboretum in fall is like an all-you-can-eat buffet of international cuisines—if you are a bird, that is. Explore the fruits and nuts from around the world that make the landscape a ripening feast for migrating birds.

No registration required.

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**So You Want to Be a Garden Designer**  
*HOR 409*

*Love Albrecht Howard, Landscape Designer*

1 Session  
Sun Nov 14 2:00–3:30pm [HB]

Have you ever dreamed of becoming a garden designer or opening a landscape business? If so, you might consider Love Albrecht Howard’s experience and wisdom before seeking out clients. With humor and astuteness, Love will present some key points to direct you towards a successful start, including acquiring horticultural know-how, planning a business strategy, determining your fee structure, and communicating with clients. Current design practitioners may also glean helpful information. Love is the author of the recently released Timber Press book, *So You Want to Be a Garden Designer: How to Get Started, Grow, and Thrive in the Landscape Design Business*. Copies of the book will be available for purchase (cash and checks only, payable to the author) at the event.

Free. No registration required.

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**After the Bloom: Colorful Crabapples**  
*WAL 212*

*Nancy Rose, Arnoldia Editor*

1 Session  
Sat Nov 6 1:00–2:30pm [PHG]

Sure, crabapples have beautiful flowers (briefly) in the spring, but their colorful fruit can provide even longer lasting landscape interest. We’ll hike through the crabapple collection on Peters Hill and look at those trees with fruit that persists through fall and into the winter, including some historically significant crabapples.

Free. No registration required.

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**A Garden in Your Mind’s Eye: Developing Your Vision**  
*HOR 244*

*Tony Bernstein, Principal, SLDA Landscape Design Associates*

5 Sessions  
Tue Nov 9, 16, 30, Dec 7, 14  
6:30–8:30 [HB]

Garden design incorporates philosophy, aesthetics, economics, and theories as well as practicalities. It’s no wonder that considering where to begin can overwhelm. In this class, designer Tony Bernstein will teach core design principles and coach you to clarify what you desire of a garden. Through exercises and discussions, he’ll encourage you to develop design concepts that are reflective of your personality and lifestyle. Melding inner visions with external factors and surroundings, you will begin to develop a cohesive garden design. You will finish the class with rough sketches and ideas to develop during the winter.

Fee $140 member, 168 nonmember

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**Understanding Botanical and Horticultural Names**  
*BOT 209*

*Judith Sumner, Botanist*

1 Session  
Sat Nov 13 1:00–4:00pm [NEWFS]

In this workshop on plant nomenclature, students will have the opportunity to sort out the confusion associated with plant names. We will discuss common names,
binomial scientific names, and the history of nomenclature since Linnaeus. The current rules of nomenclature will be reviewed, and we'll see why and how plant names sometimes change.

Fee $40 member, $48 nonmember
Offered in collaboration with the New England Wild Flower Society

December

Introduction to Winter Tree Identification

Kyle Stephens, Arborist, Arnold Arboretum
2 Sessions
Sat Dec 4, 11 9:00am–12:30pm [DG]
Learn the basic information necessary to identify deciduous trees during their dormant season. Looking at specific character combinations, you will determine the genus and species of several types of trees in the Boston area. Class begins indoors with a discussion of basic classification techniques and continues outside to the Arboretum grounds to examine a variety of trees. This class is recommended for the beginner-to-intermediate tree observer. Dress in layers for both classroom and outdoor learning. A hand lens may be helpful, but is not necessary. Note: This class is also offered on March 5.
Fee $65 member, $75 nonmember

Introduction to Forest Measurement Tools

Joel Carlson, Forester
1 Session
Sat Dec 11 10:00am–2:00pm [NEWFS]
Participants will be introduced to various tools such as diameter tapes, calipers, Biltmore sticks, laser measuring devices, clinometers, angle gauges, and other tools used to measure trees and other features in the forest environment. Following classroom discussion, participants will practice using various measurement tools. Bring a lunch and water, and dress in layers for both classroom and outdoor learning. Bring any of the following to class if you have them: a hand lens, winter tree identification field guide, compass, and/or any forest measurement tools.
Fee $44 member, $52 nonmember
Offered in collaboration with the New England Wild Flower Society

The Winter Solstice in Legend and Song

Diane Edgecomb, Storyteller, and Margot Chamberlain and Tom Megan, Musicians
1 Session
Sat Dec 18 7:30–9:30 pm [HB]
Celebrate the season with acclaimed storyteller Diane Edgecomb and musicians Margot Chamberlain and Tom Megan. This performance features solstice legends from Greece, Scandinavia, and England as well as traditional music on Celtic harp, synthesizer, accordion, and voice. Classic evergreen lore, haunting legends of light, humorous tales of the season, and a traditional wassail round out this solstice celebration. Register early for this popular event. Appropriate for adults and for children twelve years and older.
Fee $20

One of New England’s favorite storytellers, Diane Edgecomb has been featured on National Public Radio as well as at theaters, museums, and nature centers throughout the Northeast. A versatile performer whose performances are filled with rich characterizations, Edgecomb has been hailed by Publisher’s Weekly as “a virtuoso of the spoken word...an entire cast rolled into one.” Edgecomb has been recognized nationally as a leader in bringing together storytelling and nature themes. She is the author of A Fire in My Heart: Kurdish Tales. Margot Chamberlain draws on a background of singing, classical piano, medieval and folk repertoire, Celtic music, and therapeutic harp to create accompaniments that speak to the heart of story and song. She has performed with Quadrivium, LiveOak, Mistral, Revels, and the Gentle MUSES at museums, festivals, care facilities, and other venues throughout New England. Composer, playwright, and musician Tom Megan is a multi-instrumentalist who plays piano, synthesizer, accordion, guitar, and penny whistle. He has written several full-length musicals and has received numerous writing awards for the musical stage, including the Yip Harburg Award. He performs regularly with the Billy Walsh Band and Naked Caravan.
The Secret Lives of Honey Bees  
Heather Mattila, Assistant Professor, Biological Sciences, Wellesley College  
1 Session  
Mon Jan 10  2:00pm tea, 2:30pm lecture [WCBG]  
Heather Mattila studies the social organization and the communication systems of honey bees at Wellesley College, where her hives lend a lively presence to the arboretum. Heather will unravel the secret life of honey bees, including the different kinds of bees that are found in hives, their roles, and the means by which honey bees communicate. She will also touch on some of the challenges that are facing pollinator populations today.  
Fee $10 member, $15 nonmember  
Offered in collaboration with Wellesley College Friends of Horticulture

The Buzz on Beekeeping  
Nancy Bentley Mangion, Owner, Beekeepers’ Warehouse  
1 Session  
Wed Jan 19  6:30–9:00pm [HB] (Snow date: Wed Jan 26)  
Learn the art, science, and craft of beekeeping from Beekeepers’ Warehouse owner Nancy Bentley Mangion. She will discuss equipment, site requirements, environmental benefits, and a bit of the

Walls and Steps—Design and Construction  
Scott Scarfone, Landscape Architect, Oasis Design Group  
1 Session  
Fri Jan 21  9:30am–12:30pm [BAC]  
In this class you will consider the various design opportunities that walls and steps provide and the proper construction techniques that ensure that the resulting structures are safe, secure, and built to withstand the effects of time. Structural issues and consideration for safety as it relates to wall foundations, earth retention, risers, treads, and landings will be discussed.  
Fee $45  
Offered in collaboration with the Landscape Institute of the Boston Architectural College

Garden Structures and Decks—Design and Construction  
Scott Scarfone, Landscape Architect, Oasis Design Group  
1 Session  
Fri Jan 21  1:30am–4:30pm [BAC]  
Building principles for trellises, pergolas, arbors, small buildings, and decks are fundamentally similar. You will learn about basic and detailed construction techniques for footings, post and beam construction, trilliage and roofs, as well as railings as applied to decks and garden pavilions. Scott will show a variety of examples and lead discussion of design and construction techniques.  
Fee $45  
Offered in collaboration with the Landscape Institute of the Boston Architectural College

Scott C. Scarfone, ASLA, is a registered landscape architect in six states and is certified by the Maryland Landscape and Nursery Association as a professional horticulturist and specialist in herbaceous perennials. He is the principal and founder of Oasis Design Group, a landscape architectural design firm in Baltimore, Maryland. He is author of Professional Planting Design—An Architectural and Horticultural Approach for Creating Mixed Bed Plantings, published in 2007 by John Wiley & Sons.
history of beekeeping. She will also touch upon beeswax crafts, the medicinal uses of honey and beeswax, and have honey for tasting and purchase. There’s much to learn and gain through a closer connection to these vital pollinators. (Note: for an in depth series in your area, consult the Massachusetts Beekeepers Association for a list of Bee School programs.) Fee $20 member, $25 nonmember

**Wow—Botany Is Exciting!** 
**BOT 103B**

*Carol Govan, Naturalist and Artist*

1 Session

Sat Jan 22 9:30am–2:30pm [WCBG]

Enjoy the Wellesley College Botanic Gardens Greenhouses as Carol Govan introduces botany using basic terminology, direct observations, and journaling to explore the various facets of basic plant morphology (roots, shoots, flowers, and fruit).

Fee $50 member, $65 nonmember

Offered in collaboration with the Wellesley College Friends of Horticulture

**Pruning in Winter** 
**HOR 314A**

*Jen Kettell, Horticultural Technologist, Arnold Arboretum*

1 Session

Sat Jan 29 9:00am–noon [HB]

Jen Kettell, an ISA-certified arborist and accredited Organic Land Care Professional, will explain the reasons for pruning and what to consider when pruning dormant trees, shrubs, and vines. She will demonstrate techniques, give guidelines for determining which plants benefit from winter pruning, and explain how plants heal from pruning wounds.

Fee $30 member, $35 nonmember

**Elements of Botanical Drawing: Value and Form** 
**ART 106**

*Jeanne Kunze, Artist*

5 Sessions

Sat Jan 29–Mar 5 (Snow date: Mar 12) 9:30am–12:30pm [WCBG]

Ramp your drawing skills up a notch in this class designed to help you develop form and value in your drawings. Take the mystery out of representing three dimensional botanical subjects in a two dimensional drawing. Learn the techniques necessary to correctly observe and to accurately express the subtlety of light and shadow and turn shape into form. Develop confidence in your skills through class demonstrations, individual teaching moments and directed practice.

Fee $225 member, $275 nonmember

Offered in collaboration with Wellesley College Friends of Horticulture

**Grafting Techniques for Ornamental Trees** 
**HOR 305**

*Jack Alexander, Plant Propagator, Arnold Arboretum*

1 Session

Sat Jan 29 9:00am–4:00pm [DG]

Grafting is the technique of joining parts of plants in such a manner that they unite and continue their growth as one plant. It is a practical propagation method for the hobbyist, since it does not require special conditions or equipment. You will learn methods of grafting and practice making graft unions, using both deciduous and evergreen trees and shrubs. (Simple aftercare will be required until planting out in late spring.) If you own pruning shears or a grafting knife, bring them to class. You must sign an assumption-of-risk-and-release form in order to practice the techniques taught in class.

Fee $90 member, $110 nonmember

Credit MCLP: 1ceu

**February**

**Darwinian Botany** 
**BOT 350**

*Judith Sumner, Botanist*

1 Session

Sat Feb 5 10:00am–3:00pm [NEWFS]

Did you know that Charles Darwin, who as a young man traveled to the Galapagos archipelago and later in his life developed a theory of evolution by natural selection, was also an expert botanist? Join Dr. Judith Sumner for an exploration of the botanical work of Charles Darwin. The class will include hands-on demonstrations and observations of plants that fascinated Darwin, as well as a traditional English tea to celebrate the anniversary of his birth on February 12.

Fee $70 member, $84 nonmember

Offered in collaboration with the New England Wild Flower Society
Design Workshop for Home Gardeners  HOR 282

Christie Dustman, Designer, APLD

5 Sessions
Thu Feb 3, 10, 17, (skip 24), Mar 3, 10
6:30–8:30pm [HB]

Explore principles of garden design and develop a plan for a specific area of your yard. In this beginner-level class, you will learn the importance of line, scale, circulation, unity, and repetition as the organizational components of a coherent garden. You’ll also consider finer details such as color, focal point, and connecting indoors to outdoors. You will be required to draw a base plan for your site and identify your wish list of features. In analyzing your own and your classmates’ base plans and needs, you will practice the process of design and then begin to apply principles to your site plan. You will leave class with a plan in progress from which to continue your design exploration. This class is primarily about garden space, and, as such, will not include planting design, though some key plant elements may be discussed. Email adulted@arnarb.harvard.edu for a list of materials and instructions on creating your base plan for the first class.

Fee $140 member, $168 nonmember

Conifer ID via Snowshoes  WAL 242

Jen Kettell, Horticultural Technologist, Arnold Arboretum

1 Session
Sat Feb 12 10:30am–12:30pm [HB]

Join Jen Kettell for a tromp through the dwarf conifer and juniper collections on snowshoe. She will help you identify common conifers, share the stories behind the plants, impart the history of the two collections, and describe the microclimate in this part of the Arboretum. Bring your own snowshoes, a travel mug for hot cocoa after the hike, and a camera.

Working with Stone: Creating a Connection with the Spirit of Place  HOR 345

Dan Snow, Master Dry Stone Craftsman

1 Session
Tue Feb 1 7:00–8:30pm [TC]

The gardener’s perspective is the perfect loci for seeking inward and reaching outward, for ordering the experience of time and space, and observing higher orders. Garden makers channel the power of nature through their imagination where it is interpreted and transformed through action. Working hands inform thought and awaken understanding of the gardener’s place in the natural world.

Working solo to build garden walls and dry stone features, Master Craftsman Dan Snow finds that the most successful designs are born of an intimate relationship with the landscape and knowledge and understanding of the materials at hand. Undulant lines and patterned spaces are the result of many choices made by a craftsman who recognizes and utilizes the unique character of stone. Dan’s presentation will examine the many uses of stone in the garden; how stone can support a garden design, or simply be the garden itself. Illustrated with images of his work, the presentation will also explore the “give and take” experience of working in nature, and the connection to spirit expressed through stone.

Fee $20 member, $25 nonmember

Offered in collaboration with Trinity Church

Dan Snow is a designer of outdoor spaces in stone, and an art maker specializing in dry stone constructions. He apprenticed with Scottish “dry stane dyker” Dave Goulder in 1986 and was certified in 2000 by the Dry Stone Walling Association of Great Britain as a Master Craftsman. His dry stone constructions have included stock-proof fences, pillars, stiles, staircases and arch bridges. His repertoire has expanded to include garden follies, grottos and grandstands, as well as environmental art and abstract and figurative works of sculpture. He is the author of In the Company of Stone and Listening to Stone—Hardy Structures, Perilous Follies, and Other Tangels with Nature.
dress warmly! This tour is not suitable for cross-country skis. Plan for a walking tour in the event that there is no snow. Sunglasses are recommended. Space is limited.

Fee $20 member, $24 nonmember

**The Multifaceted Edible Landscape**  
**HOR 137**

_Nancy Rose, Editor, Arnoldia_

1 Session

Sun Feb 13  1:00–2:30pm [HB]

Think creatively about next year’s garden: perhaps an eggplant or two next to a maroon-leaved Weigela? Or some blueberries among your azaleas? Horticulturist Nancy Rose will tempt you with creative ideas for multipurpose plantings that satisfy your aesthetics as well as your palate. Topics include site selection, growing and maintenance considerations, pest control, and lots of information on plant selection.

Fee $15 member, $18 nonmember

**New York Garden Spaces**  
**WAL 161**

_Maureen Bovet, Garden Designer_

1 Session

Mon Feb 14  2:00pm tea, 2:30pm lecture [WCBG]

Explore the green side of the Big Apple with garden designer Maureen Bovet. She will be your armchair guide to the historic and contemporary places where New Yorkers and visitors enjoy the great outdoors. The history and horticulture of various parks will be illustrated by beautiful images from her collection.

Fee $10 member, $15 nonmember

Offered in collaboration with Wellesley College Friends of Horticulture

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**Pruning in Winter**  
**HOR 314B**

_Jen Kettell, Horticultural Technologist, Arnold Arboretum_

1 Session

Sat Feb 26  9:00am–noon [HB]

Jen Kettell, an ISA-certified arborist, will explain the reasons for pruning and what to consider when pruning dormant trees, shrubs, and vines. See full description on page 19.

Fee $30 member, $35 nonmember

**March**

**Bones of the Garden: Strengthening the Design**  
**HOR 378**

_Cheryl Salatino, Designer and Horticulturist_

3 Sessions

Tue Mar 1 and Thu March 3  6:30–9:30pm, and Sat Mar 5  9:30am–1:30pm [NEWFS]

Learn to select and integrate trees and shrubs as structural elements in the cultivated landscape. You will explore the concepts of creating space, the impact of plant growth over time, and review a selection of native plant varieties that are suitable for New England sites. Using your new knowledge, you will develop your own site-specific design. You’ll receive feedback on designs and plant combinations, and during the final session, inspect the “bones” of Garden in the Woods.

Fee $98 member, $117 nonmember

Offered in collaboration with the New England Wild Flower Society

**Plant Nomenclature: Determination of the Correct Name of a Known Plant**  
**BOT 276**

_K. N. Gandhi, Botanist, Harvard University_

5 Sessions

Tue Mar 1–29  6:30–8:30pm [HUH]

In plant names, such as _Acer rubrum_ (red maple), what do the two parts of the name represent? Why do taxonomists change long-accepted plant names and who settles disputes about these names? What is “rule of priority” and why is it rejected occasionally (as in the name of tomato)? What is a ‘type specimen’? Dr. Gandhi will answer these questions and more in this introduction to the study of botanical nomenclature and explain the rules of the current international nomenclature code.

Fee $120 member, $144 nonmember

**Landscape Maintenance: An Organic Approach**  
**HOR 191**

_James J. Agabedis, Jr., Minuteman Landscaping, Inc._

1 Session

Thu Mar 3  9:00am–3:30pm [HB]

Learn the basics of horticultural landscape maintenance. James Agabedis, owner of an all-organic land care company, brings a solid understanding of current landscape practices to the classroom. He emphasizes organic techniques for landscape and gardening professionals. Jim will present the following topics: landscape maintenance practices; soil fertility; plant growth and health; plant evaluation; equipment safety; and turf care. The class will take place indoors and on the grounds of the Arnold Arboretum.

Fee $85 member, $100 nonmember
classes

Introduction to Winter Tree Identification

Kyle Stephens, Arborist, Arnold Arboretum
2 Sessions
Sat Mar 5, 12 9:00am–12:30pm [DG]
Learn the basic information necessary to identify deciduous trees during their dormant season. See full description on page 17.
Fee $65 member, $75 nonmember

Mantenimiento del Cesped y Paisaje (Landscape Maintenance in Spanish)

Geovani Aguilar, Jefe de Operaciones, A Yard & A Half Landscaping
1 Session
Miércoles, 16 de marzo 9:00h da manhã as 3:00h da tarde
Mejore su conocimiento de horticultura y sus destrezas laborales. Esta clase enseñará lo básico de la horticultura y mantenimiento de césped y áreas verdes. Geovani Aguilar ha trabajado en la industria por 13 años. Los temas a discutir son los siguientes: Mantenimiento del césped y paisaje; fertilidad de la tierra; salud y crecimiento de las plantas; técnicas de siembra y poda; evaluación de plantas; manejo seguro de equipo de horticultura. Se otorgaran certificados de participación a quien asista. El costo incluye el material necesario para la clase y café. Los estudiantes deberán traer su propio almuerzo.
El costo de la clase es $60.

Growing Plants from Seeds

Jack Alexander, Plant Propagator, Arnold Arboretum
1 Session
Sat Mar 19 9:00am–1:00pm [DG]
There’s nothing more satisfying to a gardener than growing plants from seeds. From annuals and perennials to trees and shrubs, success can be achieved if you understand what triggers germination.
Expert propagator Jack Alexander will share techniques for starting various types of plants from seeds. This workshop is for beginners and those who have been frustrated in past attempts to transform seed to seedling. Students will leave class with a selection of seeds raring to grow. Aftercare will be necessary. Note: This class is also offered on April 16.
Fee $45 member, $55 nonmember

Water—When is Enough Not Enough?

Russ Cohen, Rivers Advocate, Massachusetts Department of Ecological Restoration
1 Session
Mon Mar 21 10:30am coffee; 11:00am program [WCSC]
Massachusetts is blessed with relatively abundant precipitation, leading many residents to the erroneous belief that there’s plenty of “surplus” water available for human consumption at any time and for any purpose. Russ Cohen of the Massachusetts Department of Ecological Restoration will clue you in to why our water supply is not sufficient to support our ecosystem, how human activities—both historically and today—adversely affect our river and stream systems, and offer potential solutions to mitigate negative effects.
Fee $10 member, $15 nonmember
Offered in collaboration with Garden Club of Back Bay, Junior League of Boston Garden Club, and Wellesley College Friends of Horticulture

Gardening for the Birds

Stephen Kress, Vice President for Bird Conservation, National Audubon Society
1 Session
Sat Mar 19 9:30am–12:30pm [HB]
Stephen Kress, author of The Audubon Society Guide to Attracting Birds and Vice President for Bird Conservation for the National Audubon Society, will present desirable gardening practices—from a bird’s viewpoint. He will explain bird-plant interactions and suggest landscaping options for creating enticing and safe habitats. He’ll provide solutions for reducing bird encounters with windows and cats, as well as some tactics for preventing the spread of avian diseases. He will also share tips for learning to recognize common backyard birds by sight and song. His book will be available for purchase and signing.
Fee $40 member, $48 nonmember
Offered in collaboration with the Boston Nature Center, Ecological Landscape Association, Grow Native Massachusetts/Cambridge, and Wellesley College Friends of Horticulture
Growing Plants from Seeds

Jack Alexander, Plant Propagator, Arnold Arboretum

1 Session
Sat Apr 16 9:00am–1:00pm [DG]

Expert propagator Jack Alexander will share techniques and tips for starting various types of plants from seeds. See full description on page 22.

Fee $45 member, $55 nonmember

Introduction to Landscape Lighting

Nancy Goldstein, Principal, Nancy Goldstein Design

3 Sessions
Wed Apr 6, 13 2:30-4:30pm and Apr 27 6:30–9:00pm [HB]

Learn the Do’s and Don’ts of illuminating the landscape from professional lighting designer Nancy Goldstein. In two classroom sessions, Nancy will give an overview of the subject and discuss the creative use of light, as well as the necessary fixtures, accessories, and controls. In the third session, participants will work with Nancy and Wade Geller, principal of Brilliant Lighting, in the landscape to practice certain effects and become familiar with a variety of lighting options. This class is geared for landscape professionals.

Fee $45 member, $55 nonmember

Champion Natives for Your Garden

Robin Wilkerson, Naturalist

1 Session
Mon Apr 25 2:00pm tea; 2:30pm lecture [WCBG]

Long-time gardener and naturalist Robin Wilkerson will present the reasons to grow native plants and introduce a selection of beautiful indigenous plants to inspire your gardening.

Fee $10 member, $15 nonmember

Offered in collaboration with Wellesley College Friends of Horticulture

Urban Vegetable Gardening for Beginners

Abby Hird, Researcher, Botanic Garden Conservation International

2 Sessions
Tue April 26, May 3 6:30–8:30pm [HB]

Learn the where, what, and why of urban vegetable gardening with horticulturist Abby Hird. Raised on a Nebraska farm and educated in horticulture, Abby Hird will talk about her gardening adaptations in the city environment. She will guide you through site evaluation, plant selection, and common problems and possible solutions in raising home-grown food. She’ll talk about community resources, maximizing yield from a small plot, and ways to grow food more sustainably. This class is for new vegetable gardeners and those who have been frustrated in their previous attempts.

Fee $45 member, $55 nonmember

Bill McKibben is perhaps one of the most recognized defenders of our planet and chronicler of how we could better inhabit it, having written The End of Nature and Deep Economy, among numerous other books and articles. His newest book, Eaarth: Making a Life on a Tough New Planet, is his latest plea for each of us to consider deeply how we tread upon this earth. Whether you are a person of faith, a gardener, or both, you’ll find a clear message of action, hope, and urgency in this presentation about moving forward on a drastically changed and changing Earth.

“What I have to say about this book is very simple. Read it. Straight through to the end. Whatever else you were planning to do next, nothing could be more important.” –Barbara Kingsolver, Reviewer of Eaarth.

Fee $20 member, $25 nonmember

Offered in collaboration with Trinity Church

Bill McKibben frequently writes about global warming and alternative energy and advocates for more localized economies. In 2010 the Boston Globe called him “probably the nation’s leading environmentalist” and Time magazine described him as “the world’s best green journalist”. In 2009 he led the organization of 350.org, which coordinated what Foreign Policy magazine called “the largest ever global coordinated rally of any kind,” with 5,200 simultaneous demonstrations in 181 countries.

The Earth Is Our Garden: Are We Doing Our Best?

Bill McKibben, Environmentalist and Writer

1 Session
Thu April 7 7:00–8:30pm [TC]

Bill McKibben is perhaps one of the most recognized defenders of our planet and chronicler of how we could better inhabit it, having written The End of Nature and Deep Economy, among numerous other books and articles. His newest book, Eaarth: Making a Life on a Tough New Planet, is his latest plea for each of us to consider deeply how we tread upon this earth. Whether you are a person of faith, a gardener, or both, you’ll find a clear message of action, hope, and urgency in this presentation about moving forward on a drastically changed and changing Earth.

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Fee $45 member, $55 nonmember
Instructors

James J. Agabedis, Jr. is the founder and president of Minuteman Landscaping, Inc., an organic lawn care company serving the landscape needs of clients in the metro Boston area since 1986. He is a Massachusetts Certified Horticulturist, a Northeast Organic Farming Association (NOFA) accredited organic land care professional and a Massachusetts certified landscape professional.

Geovani Aguilar, Construction Project Manager for A Yard & A Half Landscaping in Waltham, Mass., was born in El Salvador and came to the U.S. in 1994. He worked as a laborer, then first line Supervisor, Operations Manager, and now is Construction Project Manager. He is certified by ICPI as a concrete paver installer and by NCMA as a segmental retaining wall installer.

Jack Alexander is the plant propagator of the Arnold Arboretum, a position he has held since 1976. He was named a Fellow of the Eastern Region of the International Plant Propagators’ Society and in 2004 received their Award of Merit.

Tony Bernstein has been involved in the design industry for over 25 years, designing technology components, products, brands, engineering, packaging, and landscapes. He holds a Master’s Degree in Comparative Law from the University of San Diego as well as a liberal arts and law degree from South Africa. He is principal of SLDA Landscape Design Associates. See www.slda.biz.

Dr. Richard L. Bitner studied horticulture at Longwood Gardens, where he now teaches the Conifers and the Deciduous Flowering Shrubs II certificate courses. He is the author of two books, Conifers for Gardens: An Illustrated Encyclopedia and Timber Press Pocket Guide to Conifers, with a third to be published in April, 2011.

Maureen Bovet is a garden designer with a history degree from Wellesley College. She has studied with the Landscape Institute and the University of Massachusetts’ Green School and has worked for Historic New England in their historic plant propagation program.

Joel R. Carlson is owner and operator of Northeast Forest and Fire Management, LLC. The company develops plans and studies for forest management, wildfire hazards, fire management, prescribed burns, and monitoring protocols for state agencies, non-profit groups, and private property owners. He is a Massachusetts Licensed Forester, a Certified Forester with the Society of American Foresters, and a Certified Ecologist with the Ecological Society of America. See www.ne-ffm.com.

Russ Cohen is Rivers Advocate with the Division of Ecological Restoration of the Mass. Department of Fish and Game. Past employers have included the Nature Conservancy, the Land Trust Alliance, and the Mass. Audubon Society.

Kanchi Gandhi earned his doctorate from Texas A&M University. He is the editor of the International Plant Name Index for the Harvard University Herbaria; nomenclature editor of the Flora of North America; and an associate editor for several other journals.

Nancy Goldstein is the principal of Nancy Goldstein Design, LLC, located in Marblehead, MA. She received her M.F.A. in Lighting Design from Boston University School of Theatre Arts, and has been on the faculties of several colleges in the Boston area. Her work focuses on dramatic lighting for residential and public gardens and interiors. See www.ngdesign.net.

Carol Govan is a professional artist, teacher, and graduate of New England Wild Flower Society’s Certificate in Native Plants Studies program. She helps students to explore the connection between art and science.

Abby Hird is a researcher for Botanic Gardens Conservation International (BGCI), working on their Global Strategy for Plant Conservation. She is a former Putnam Fellow of the Arnold Arboretum.

Love Albrecht Howard has owned her landscape and garden design business since 1994. She is a passionate lifelong gardener and plant lover, and now an author. Her design work has been featured in national magazines and on cable networks.

Jen Kettell, horticultural technologist at the Arnold Arboretum, is an International Society of Arboriculture-certified arborist. She began work at the Arboretum as an intern in 2003.

John DelRosso, head Arborist at the Arnold Arboretum, is a graduate of the Consulting Academy of the American Society of Consulting Arborists. He is certified with the International Society of Arboriculture and the Massachusetts Arborists Association.

Christie Dustman, principal of her firm, Christie Dustman & Company Inc., is a certified landscape designer practicing in the Boston area. Her work can be viewed at www.christiedustman.com.
Stephen W. Kress is Vice President for Bird Conservation for the National Audubon Society. An expert in seabird conservation, Kress successfully led Audubon’s Project Puffin in Maine. He is also an associate at the Cornell Laboratory of Ornithology where he teaches a Field Ornithology course. He is the author of several books on attracting birds to the backyard.

Jeanne Kunze has a degree in painting and illustration and taught art history and studio fine arts for twenty years. She is now a freelance illustrator and teacher with an interest in botanical subjects.

Nancy Bentley Mangion, owner of the Beekeepers’ Warehouse, in Woburn, Mass., has been keeping bees for thirty years. She teaches and consults about keeping bees. See www.beekeeperswarehouse.com.

Heather Mattila studies the social organization of honey bees at Wellesley College. Her research focuses on the complex communication systems that honey bees use to coordinate their activities.

Maureen McConnell is Team Leader for Programs at the EcoTarium in Worcester, Massachusetts where she spreads the word about the Asian Longhorned Beetle.

Bill McGibben is an American environmentalist and writer who frequently writes about global warming and alternative energy and advocates for more localized economies. In 2010 the Boston Globe called him "probably the nation’s leading environmentalist" and Time magazine described him as "the world’s best green journalist."

Michael Murray is principal of his company, Organic Soil Solutions, providing organic care to over 600 lawns. Using organic techniques for ten years, his company also maintains town commons in Needham, Wayland and Stoneham. See www.organicsoilsolutions.com.

Scott C. Scarfone, ASLA, is a practicing landscape architect, registered in six states, and is certified by the Maryland Landscape and Nursery Association as a professional horticulturist and specialist in herbaceous perennials. He is the principal of Oasis Design Group, a landscape architectural design firm in Baltimore, Maryland. See www.oasisdesigngroup.com.

Dan Snow is a designer of outdoor spaces in stone and an artist specializing in dry stone constructions. He was certified in 2000 by the Dry Stone Walling Association of Great Britain as a Master Craftsman. He is the author of In the Company of Stone and Listening to Stone—Hardy Structures, Perilous Follies, and Other Tangles with Nature.

Kyle Stephens, a Massachusetts and International Society of Arboriculture certified arborist, has worked as an arborist for the Arnold Arboretum since 2005. Prior to this he work in New York at Brooklyn Botanic Garden, Wave Hill, and with the Central Park Conservancy.

Carolyn Summers is an adjunct professor for continuing education at Westchester Community College and provides technical assistance to the Native Plant Center, an affiliate of the Ladybird Johnson Wildflower Center.

Judith Sumner is a botanist with interests in flowering plant systematics and morphology, and medicinal plants. She is the author of American Household Botany and The Natural History of Medicinal Plants and numerous scientific publications.

Robin Wilkerson is a naturalist, landscape consultant, and an avid gardener, who relies on her chickens to help her care for her gardens.
Registration Information

The Arnold Arboretum's adult education program offers many types of classes for adult learners. These are listed chronologically with dates and times noted with each class description. Letters in brackets designate meeting places. If you have questions, contact Pamela Thompson, Manager of Adult Education, at 617.384.5277.

Registration—Online

To register online, please visit: www.arboretum.harvard.edu/adult_ed

Once you have selected the classes you wish to register for, the online registration system will guide you through the process, step by step. Payment is by credit card only (Visa, MasterCard, or American Express). If you are registering for more than one person, you must clear your browser and complete a separate registration for each person. You will receive an email confirming your class selection and payment. Consider your registration to be complete when you have received this email.

Registration—Mail or Telephone

To register by mail for adult education classes, please complete the attached form. You may register by phone with a credit card at 617.384.5277.

Registrations are processed upon receipt and confirmed in writing. You may pay by cash, check, or credit card (Visa, MasterCard, or American Express). If you are registering for more than one person, please attach a separate sheet with names, addresses, and telephone numbers. Consider your registration to be complete when you have received written confirmation.

Mail registration form to:
Adult Education Registrar
Arnold Arboretum
125 Arborway
Boston, MA 02130

Fees and Membership

Fees for classes are listed with each class description. Members receive a discount of up to twenty percent for most classes. If you are a current member, or if you are enclosing a new or renewed membership with this registration, you are entitled to pay the member rate. If our records do not indicate that your membership is current, we must charge for classes at the nonmember rate. Please write separate checks for membership and class registration. For more information, call 617.384.5766 or visit our website at www.arboretum.harvard.edu.

Harvard University's Tuition Assistance Plan (TAP) for faculty and staff may be applied toward classes at the rate of $20 per class.

Children at Classes

We regret that it is not possible to include babies, children, or pets in classes designed for adults.

Parking for Arboretum Classes

Hunnewell Building [HB]
Due to an unsafe road condition, the Arborway Gate is closed to vehicular traffic until further notice. We apologize for the inconvenience. Please park along the Arborway and enter through the pedestrian gate.

Dana Greenhouse [DG]
For weekday, evening, and weekend classes, students may park in designated spaces and along the greenhouse drive in front of the Bonsai House unless otherwise directed. Do not block any entrances to the shrub and vine garden or access drives surrounding the greenhouse facility. Please do not park on the grass.

Note: At both locations be aware of Arboretum visitors (especially children), employees, and Arboretum equipment and vehicles when parking at and leaving our facilities.

Confirmation of Attendance

The adult education department does not maintain attendance records and cannot confirm your attendance at past class meetings. If you need proof of attendance at classes, you are responsible for obtaining your instructor's signature at each class meeting. To request a list of all the Arboretum classes for which you have registered, please call Pamela Thompson, manager of adult education, at 617.384.5277.

Professional Credits

Certified members of the Association of Professional Landscape Designers (APLD), Massachusetts Certified Arborists (MCA), and Massachusetts Certified Landscape Professionals (MCLP) may earn continuing education units for attending selected Arnold Arboretum classes. These classes and the number of credits offered are indicated by the following: (APLD: #ceu) (MCA: #ceu) (MCLP: #ceu). Other classes may also be accepted for accreditation. Contact the accrediting organization in advance for approval.

Instructor Biographies

Biographies of our current instructors are available on pages 24–25 and on our website on the adult education page.
REGISTER ONLINE: www.arboretum.harvard.edu/adult_ed

Registration

Classes fill quickly. Please register early (please print).

NAME

STREET

CITY STATE ZIP

HOME PHONE BUSINESS PHONE

EMAIL

Method of Payment (credit card preferred)

☐ VISA ☐ MasterCard ☐ American Express

AMOUNT (total from other side)

CARDHOLDER NAME

CREDIT CARD #

EXP. DATE SECURITY CODE

☐ Check or money order payable to the Arnold Arboretum

Are you a current member of the Arnold Arboretum?

☐ Yes ☐ No If yes, under what name is your membership listed?

Please suggest new course ideas or make comments below.

Registration

To register for Arnold Arboretum classes, please complete this form. If you are registering for more than one person, please attach a separate sheet with names, addresses, and telephone numbers. Credit card registration may be made online or by telephone at 617.384.5277.

Registrations are processed upon receipt. You may pay by cash, check, or credit card (VISA, MasterCard, or American Express). All registrations will be confirmed in writing. Your registration is complete after you have received written confirmation.

Mail registration form to:

Adult Education Registrar
Arnold Arboretum
125 Arborway
Boston, MA 02130

If you are a current member, or if you are enclosing a new or renewed membership with this registration, you are entitled to pay the member’s discounted rate. If our records do not indicate that your membership is current, we must charge for classes at the nonmember rate.

Please write separate checks for membership and class registration.

Join the Friends of the Arnold Arboretum

Select a level of membership:

☐ Student/Teacher $20
☐ Individual $35
☐ Household $50
☐ Sustaining $100
☐ Sponsor $200
☐ Patron $500
☐ Benefactor $1000

I would like to receive the quarterly journal Arnoldia (for tax purposes, a $20 value).

☐ Yes ☐ No

Name and Address (please print)

MR., MS., MRS.

STREET

CITY STATE ZIP

Payment can be made with a check, money order, or credit card ( Visa, MasterCard, American Express only). Please make checks payable to the Arnold Arboretum and send a separate check for class fees. Students and teachers, please send a copy of your I.D. with this form.

☐ My check is enclosed ☐ Please charge my credit card: ☐ Visa ☐ MasterCard ☐ American Express

CARDHOLDER NAME PHONE

CREDIT CARD # EXP. DATE

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### FALL COURSE SELECTION

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<td>ART 121 Pen &amp; Ink I: Foundations for Botanical Rendering</td>
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<td>ART 412 Landscape Photography</td>
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<td>HOR 278 Designing Gardens with Flora of the American East</td>
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<td>ART 114 Elements of Botanical Drawing: Getting It Right</td>
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<td>HOR 103 Identifying the 25 Most Common Trees in Boston</td>
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<td>HOR 303 Propagating Trees and Shrubs</td>
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<td>BOT 103A Wow - Botany Is Exciting!</td>
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<td>HOR 368 Conifers for Gardens</td>
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<td>BOT 256 Conifer ID with Richard Binzer</td>
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<td>ART 117 Ink Brush Painting</td>
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<td>HOR 244 A Garden in Your Mind's Eye: Developing Your Vision</td>
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<td>BOT 209 Understanding Botanical and Horticultural Names</td>
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<td>HOR 409 So You Want to be a Garden Designer</td>
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<td>BOT 172A Introduction to Winter Tree Identification</td>
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<td>HOR 220 Introduction to Forest Measurement Tools</td>
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<td>ART 265 The Winter Solstice in Legend and Song</td>
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<td>ECO 120 The Secret Lives of Honey Bees</td>
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<td>ECO 125 The Buzz on Beekeeping</td>
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<td>HOR 406 Walls &amp; Steps—Design and Construction</td>
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<td>HOR 286 Garden Structures &amp; Decks—Design and Construction</td>
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<td>BOT 103B Wow - Botany Is Exciting!</td>
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<td>HOR 345 Working with Stone: Creating a Connection</td>
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<td>HOR 282 Design Workshop for Home Gardeners</td>
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<td>BOT 350 Darwinian Botany</td>
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<td>WAL 242 Conifer ID via Snowshoes</td>
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<td>HOR 137 The Multifaceted Edible Landscape</td>
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<td>WAL 161 New York Garden Spaces</td>
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<td>HOR 314B Pruning in Winter</td>
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<td>BOT 276 Plant Nomenclature: Determination of the Correct Name of a Known Plant</td>
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<td>HOR 378 Bones of the Garden: Strengthening the Design</td>
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<td>HOR 191 Landscape Maintenance: An Organic Approach</td>
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<td>BOT 172B Introduction to Winter Tree Identification</td>
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<td>HOR 111 Mantenimiento del Cesped y Paisaje (Landscape Maintenance in Spanish)</td>
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<td>HOR 336A Growing Plants from Seeds</td>
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<td>ECO 220 Gardening for the Birds Stephen Kress</td>
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<td>ECO 250 Water—When is Enough Not Enough?</td>
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<td>HOR 439 Introduction to Landscape Lighting</td>
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<td>ECO 255 The Earth Is Our Garden: Are We Doing Our Best?</td>
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<td>16</td>
<td>HOR 336B Growing Plants from Seeds</td>
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<td>HOR 167 Champion Natives for Your Garden</td>
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<td>HOR 173 Urban Vegetables Gardening for Beginners</td>
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**Thank You for Becoming a Friend of the Arnold Arboretum!**

New members will be sent an introductory packet containing maps and information, the current issues of *Arnoldia* and *Silva*, a membership card(s), and a window decal. Please allow two to three weeks for processing. Call the membership office with any questions at 617.384.5766. Please write your name as you would like it to appear on your member card(s):

**MEMBER CARD**

2nd MEMBER CARD  
(household level and above only)

I would like to receive information about news/events via email.

**EMAIL ADDRESS(ES)**

---

**Help Us Make New Friends!** Do you know someone who would like information on our classes, free tours, and member benefits? Please provide their names and addresses and we will put them on our mailing list.

**MR., MS., MRS.**

STREET  
CITY  
STATE  
ZIP

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If you are already a member, thank you! Please give this membership application to a friend.

---

Arnold Arboretum
A bold rush of color stirs the senses this fall at the Arboretum. Then winter arrives with quiet, elemental beauty. Enjoy New England’s seasonal splendor in the heart of Boston.
Exhibitions

**Artists in the Arboretum**
A Juried Exhibit in Conjunction with Jamaica Plain Open Studios

September 22–October 17, 2010

Reception with the artists
Wednesday, September 22, 6:00–8:00pm

JP Open Studios Weekend
September 26 and 27, 11am–6:00pm

Twenty-six local artists will exhibit Arboretum-inspired work in this juried exhibition organized in conjunction with Jamaica Plain Open Studios.

Jamaica Plain Open Studios celebrates its 17th year as the premiere annual arts event in one of Boston’s most vibrant neighborhoods. For more information, and to preview artists’ work, visit www.jpopenstudios.com.

**Environmentally Friendly: Works on Wood by Tova Speter**

October 24–December 12, 2010

Reception with the artist
Sunday, November 7, 1:00–3:00pm

Somerville artist Tova Speter uses found wood as a conduit to artistic exploration. The grain serves as her guide on a journey into the lines, shapes, and flow of the composition of the particular piece. In transforming scrap wood into works of art, she conveys the idea that everything has an inherent beauty that will shine through when viewed from a new perspective.

*Note:* All exhibitions are in the Hunnewell Building Lecture Hall, which is often used for meetings and classes. Please call 617.384.5209 for exhibition availability. See page 33 for Visitor Center hours.
Newton artist Roberto Mighty presents a public, new-media, fine art project. His work focuses on dormant, dead, and decaying trees in surprising and beautiful ways. While photography is the main component of the Arboretum exhibition, the reception will also feature high-definition video and audio surround-sound installation. There will also be an on-line component using geotagged locations of the subjects portrayed in the show.

Trees of My City
Photography by Roberto Mighty
January 22–March 6, 2011
Multimedia Installation and Reception
Saturday, January 22, 1:00–3:00pm

To Merill Comeau, the cacophony and chaos of plant life parallels our shared human experience of coping with a complex and shifting environment. In her large-scale fabric interpretations of the natural world, she makes use of incongruous materials with past lives: artists’ brush cleaning rags, a mother-in-law’s blouse, cast-off sheets from the Salvation Army, plastic mesh bags from garlic bulbs, vintage linens, and colorful fabric samples. The complexity of the work is compelling from a distance, but also draws viewers closer to engage in the sensual surface.

Tree Pieces
Painted Fabric Collages
by Merill Comeau
March 12–April 24, 2011
Reception with the artist
Saturday, March 12, 1:00–3:00pm
Free Guided Walking Tours
Experience the Arboretum in a new way—take a guided tour with a knowledgeable volunteer docent.

Free Tour Schedule

**Saturdays at 10:30am**
- September 4, 11, 18, 25
- October 2, 9, 16, 23, 30
- November 6, 13

**Sundays at 1:00pm**
- September 12, 19, 26
- October 3, 10, 17, 24, 31
- November 7

**Wednesdays at 12:15pm**
- September 1, 15, 29
- October 6, 13, 20, 27
- November 10

**Fridays at 6:00pm**
**Last Friday tour of the season!**
- September 24

Every tour is different; hear about seasonal highlights, plant expeditions, the science of trees, and the history and future plans of the Arnold Arboretum. Tours begin in front of the Hunnewell Building unless otherwise noted, last around 90 minutes, and are geared toward adults. There is no need to register.

For more information or to learn about cancellations due to inclement weather, call 617.384.5209.

**Back by Popular Demand!**

**Winter Wellness Walks**
Enjoy the landscape pared down to its beautiful bones. The emphasis of these walks is fitness, with a healthy dose of information on seasonal highlights. **Three Sundays:** Jan 23, Feb 27, Mar 27, from 1:00-1:45pm [HB]

**Special Theme Tours**
Free. No need to register. All tours meet at the Hunnewell Building unless otherwise noted.

**From Seed to Tree**
Dana Greenhouse Staff
**Tue Sep 14 1:00–2:00pm [DGH]**
See page 12 for details.

**Plant Conservation**
Abby Hird, Botanic Gardens Conservation International
**Sat Sep 18 1:00–2:30pm [HB]**
See page 12 for details.

**The Edible Landscape**
Maggie Redfern, Visitor Education Assistant
**Tue Oct 19 10:00–11:30am [HB]**
See page 14 for details.

**Seeds on the Move**
Rhoda Kubrick, Arboretum Docent
**Tue Oct 26 1:00–2:30pm [HB]**
See page 14 for details.

**Bird Buffet**
Marc Devokaitis, Visitor Education Assistant
**Thu Nov 4 10:00–11:30am [HB]**
See page 16 for details.

**After the Bloom: Colorful Crabapples**
Nancy Rose, **Arnoldia** editor
**Sat Nov 6 1:00–2:30pm [PHG]**
See page 16 for details.

**Scheduled Group Tours**
A private guided tour of the Arboretum is a memorable experience. Adult groups interested in a private tour should contact the Visitor Center at least three weeks in advance of their visit. Group tours are 90 minutes long and cost $125 for a maximum of 20 people for a walking tour, or 35 people for a bus tour. (Groups supply their own bus.) For more information please call 617.384.5209 or email arbweb@arnarb.harvard.edu.

**Calling All Birders!**
This fall, two great birders offer four great walks at the Arboretum. Join Bob Mayer, Arboretum docent, and Marc Devokaitis, visitor education assistant, on one or more birding walks, good for all experience levels. Observe birds that overwinter here, as well as migrating species as they depart for warmer climates. Bring binoculars if you have them; some binoculars will be available to share.

**Four Saturdays:** Sep 18 [HB], Sep 25 [BSG], Oct 2 [HB], Oct 9 [PHG] from 8:00–9:00am
Family Fun

Foster a sense of wonder for nature in your child while exploring nature, science, and trees at the Arboretum. Here are three free ways to dig deeper. No registration required.

- Drop by the Visitor Center for special family activities on the last Saturday of each month through October, from 11:00am to 1:00pm. Activities may include scavenger hunts, science investigations, craft activities, stories, and more.
- Pick up a Tree-of-the-Month guide in the Visitor Center or online, with a new letterbox hunt each month.
- Connect with volunteer Arboretum Interpreters in the landscape for hands-on fun and learning, through October.

Check our website for details: www.arboretum.harvard.edu/programs/family_activities.html

Getting Here

Visitor Parking & Driving Permits

Visitor parking is available around the Arboretum’s perimeter. No parking is allowed inside the Arboretum gates. Individuals with special needs may request a driving permit; for information please call 617.384.5209 or visit our website: arboretum.harvard.edu. For parking for classes, see page 26.

Visitor Services

The Visitor Center, located in the Hunnewell Building, is open at the following times:

Monday–Friday 9:00am to 4:00pm
Saturday 10:00am to 4:00pm
Sunday Noon to 4:00pm
Holidays Closed

See website for holiday closings.

Telephone: 617.384.5209

Services available in the Visitor Center include:
- Personal assistance to enrich your visit
- Maps and self-guided tour brochures
- Special exhibitions, including “Science in the Pleasure Ground” and seasonal art shows
- Bookshop, featuring a large selection of books and educational items for children and adults
- Restrooms
- Horticultural library, open Monday through Saturday 10:00am to 4:00pm. For more information, call 617.522.1086 or email hortlib@arnarb.harvard.edu.

Plant Information Hotline

Run by knowledgeable volunteers, the hotline is available for questions about woody plants hardy in the Boston area. Available live every Monday from 1:00–3:00pm (February through mid December). Leave a message any time. Call 617.384.5235 or email plantinfo@arnarb.harvard.edu.
From the bright red winterberries, to the spiky globes of the sweet gum, to the rattling pods of the honeylocust, there are as many different fruits as there are plants. The diversity of fruit in the Arboretum naturally attracts a variety of bird and animal life. With fewer leaves on the trees, fall and winter are great times to scout for colorful and unusual fruits, and to marvel at the wildlife that turns our collections into a dinner table. After all, as much as animals rely on fruits for food, trees rely on animals to spread their seed.

**Common persimmon (Diospyros virginiana)**
- Berry (fleshy fruit with multiple seeds)
- 1-1½” diameter, pale orange when ripe, containing 3-8 flat brown seeds

In Greek, "diospyros" means "food of the gods." In fact, the Asian variety, D. kaki, is probably eaten by more people on a regular basis than any other fruit in the world (for example, it is eaten by over one billion people in Asia). Though nearly inedible while ripening, persimmon fruits become extremely sweet just before rotting. Many animals feed on the fruit once it drops to the ground, including turkeys, quail, opossums, raccoons, skunks, and deer.

**White spruce (Picea glauca)**
- Cone (woody scales arranged around a central axis)
- 1 to 2 ½” long, turning brown when ripe

Though conifers lack the flowers that precede fruits, cones are still considered to be a conifer’s "fruit." The seeds are protected as they develop because the unripe cone stays closed. Once fully ripe, the cone scales open and release the winged seeds. During some winters, birds like white-winged crossbills and pine siskins will migrate here from their northern ranges to feed on spruce and other conifer seeds. Crossbills have a wonderfully adapted beak that enables the bird to pry open unripe cones and extract the seeds.

**Apple and crabapple (Malus spp.)**
- Pome (a fleshy fruit with a core of hard seeds that develops from the flower tube instead of the ovary)
- ¾” to 2” diameter, shades of purple, green, red, brown, and yellow, containing 5 seeds

Apples and crabapples provide more food for birds, over a longer period of time, than any other genus in the Arboretum. Many hold their fruits into winter when food supplies from other trees become scarce. Then, flocks of cedar waxwings, cowbirds, robins, blue jays, and starlings are a common sight, pecking through the pulp to eat the seeds. When the pulp falls to the ground it is eaten by pigeons, pheasants, and rabbits.
Honeylocust (*Gleditsia triacanthos*)
- Legume (pod-like fruit splitting open along both edges)
- 8” to 12” long pod, turning a rich reddish brown when ripe, containing multiple seeds

Generally honeylocust pods hang on to the tree until strong winter winds carry them away. Crows have figured out a way to get at the nutritious seeds: perching in a tree they pull off the pods, then hold the pods between their feet and tear them apart to eat the seeds.

Magnolia (*Magnolia spp.*)
- Aggregate (multiple fruits from a single flower)
- 2” to 6” cone-like structure, turning pink, orange, or red to brown as red to orange seeds are released

Magnolia seeds, another favorite of birds, ripen about mid-September. Seeds are contained in chambers within colorful cones. At ripening, the chambers open and the seeds emerge and dangle on slender cords called suspensors. Eastern kingbirds, mockingbirds, robins, wood thrushes, red-eyed vireos, and starlings all feed from the ripe fruits while they are still on the tree. Mice, moles, and voles eat the seeds that fall to the ground.

Enjoy more fruit!
Join us for special theme tours this fall about fruits, seeds, and birds. See page 32 for details.
The Arnold Arboretum grows 4,500 kinds of hardy trees, shrubs, and vines. They are arranged in botanical sequence and labeled with name and country of origin. Frederick Law Olmsted designed the grounds, and the plantings were laid out by Charles Sprague Sargent. Special plant collections include the Larz Anderson Bonsai Collection, the Bradley Rosaceous Collection, and the Leventritt Garden of Shrubs and Vines.

The grounds are open daily without charge from sunrise to sunset. For Visitor Center hours and services see page 33.
Members' Fall Plant Giveaway
at the Arnold Arboretum
Saturday, September 25, 2010

The Fall Plant Giveaway celebrates the Arnold Arboretum's longstanding tradition of sharing and promoting woody plants for temperate climates. In addition to making plant material available to researchers and other botanical institutions, the Arboretum has traditionally distributed plants to members of the Friends of the Arnold Arboretum in recognition of their support. This year's Plant Giveaway gives members the opportunity to receive free Arboretum-grown plants as a part of their membership benefits, gain first-hand expert knowledge from our staff, and enjoy the beauty of our landscape in autumn.

The event will be held at 10:00am on Saturday, September 25 on the Arboretum grounds and is open to all membership levels. Detailed instructions including schedule, directions, and parking information will be mailed to members in early September along with free plant vouchers and a list of plant giveaway offerings. In addition to the many unique giveaway selections there will also be a Bonus Plant Drawing for some exceptional plants.

Staff and volunteers will be on hand to answer questions about woody plants and share their advice on planting and maintaining healthy trees, shrubs, and vines. For those interested in exploring the grounds, members may choose to visit mature specimens of the Plant Giveaway offerings in the Arboretum collection. A representative from the Massachusetts Department of Agricultural Resources will also be on hand to inform members about Asian Longhorned Beetle (ALB), including tips on identification and tree monitoring to control its further spread.

If you are not a member, you may join or renew your membership at the Plant Giveaway to attend and receive the free plant benefit that day. This is a rain or shine event. If you have any questions, or would like to join the Friends of the Arnold Arboretum in advance of the Plant Giveaway, please contact membership coordinator Wendy Krauss at 617.384.5766 or membership@arnarb.harvard.edu.

Members Make a Difference

Help keep us growing! Your annual membership in the Friends of the Arnold Arboretum supports the care of our landscape and living collections, research initiatives, and education programs for adults, children, and professionals. Your membership gift provides the foundation for all of this important work as well as these benefits to you:

- Subscriptions to Arnoldia, our quarterly journal of horticulture and botany, and Silva, our semiannual newsmagazine and program guide
- Free admission and/or discounts at nearly 200 gardens and arboreta
- Member rate for Arnold Arboretum sponsored classes and lectures
- Discounts at more than 35 participating nurseries
- Discounts on purchases at the Arboretum bookstore
- Admission and free plants at the Fall Plant Giveaway

Please join today at one of the following levels to help advance the Arboretum's mission and begin receiving your benefits. Additional benefits are offered at the Sustaining level and above.

- Student/Teacher ......... $20
- Individual ........... $35
- Household .......... $50
- Sustaining .......... $100
- Organization ....... $150
- Sponsor ............ $200
- Patron .............. $500
- Benefactor ......... $1000

To join or learn more, please contact the membership office at 617.384.5766, or request information by email at membership@arnarb.harvard.edu. Thank you!
In our Collection

Magnolia kobus
Kathryn Richardson, Curatorial Assistant

On January 22, 2010, the Arboretum removed a half-century-old accession of Kobus magnolia (Magnolia kobus, AA#1053-53*A) that was in severe decline due to fungal disease. Located in a prominent spot in the northeast corner of the Hunnewell Building lawn, the tree was one of the first that visitors encountered on entering through the Arborway Gate. Although this particular individual is forever gone from the landscape, a part of it lies preserved in the Arboretum’s Cultivated Herbarium and will continue to provide material evidence for centuries to come.

Why keep a preserved specimen even after its donor plant no longer exists in the collection? Herbarium voucher specimens provide a vital layer of documentation. Not only are they a permanent representation of a specific plant accessioned by the Arboretum, but they also provide growth, development, and performance information and are an essential tool for identity verification. Herbarium specimens can preserve viable DNA for research purposes, and provide plant scientists with important historical data on the plant, such as flowering or fruiting dates. Because new specimens are collected routinely when plants are used for scientific study, they also help document the research use of the living collection.

Herbarium voucher specimens—like the one pictured here from the Magnolia kobus—are cut from living plants, pressed, dried, mounted, frozen to eliminate any insects or pathogens, and accessioned into the Herbarium. Vouchers may include pressings of flowers, fruit, or vegetation. In all, the Cultivated Herbarium of the Arnold Arboretum holds approximately 131,000 specimens, and more than 48,000 of these document accessions grown at the Arnold Arboretum over the course of its history.

The herbarium houses several specimens of this M. kobus. Several of these also include verification labels, evidence that they have been examined by researchers and their identity authenticated. Along with the Arboretum’s outstanding curatorial records that track the lifespan of this tree, these physical remnants in the herbarium give this magnolia a measure of scientific immortality.