

Meristems

The Polly Hill Arboretum
West Tisbury, Massachusetts

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Disanthus cercidifolius

Arboretum Collecting Trips Planned to Japan

In 2018 and 2019, PHA plans to participate in two collecting trips to Japan as part of a plant-collecting partnership with the Arnold Arboretum of Boston, Massachusetts, and the Morris Arboretum of Philadelphia, Pennsylvania. Why Japan? We desire to expand our Asian collections of several plant groups, most notably rhododendrons, hydrangeas, maples, magnolias, and our nationally recognized stewartia collection. Plants from Japan have shown tremendous ornamental potential; many grow, survive, and prosper in maritime climates very similar to that of Martha's Vineyard. In addition, the trip follows in the tradition of Polly Hill's love affair with Japan, which began in 1928, when after graduating from Vassar College she spent a year teaching English and physical education at a girls' school

in Tokyo. She returned to Japan in 1954 and met the influential plant breeder and horticulturist Dr. Tsuneshige Rokujo. Their sharing of seeds and resulting friendship led to the development of the noteworthy North Tisbury azaleas as well as the presence of many other remarkable Asian plants in our collections.

These will not be the first collecting trips PHA staff have made to Japan. In 2005, Executive Director Tim Boland (then Curator) travelled to the mountains of central and northern Honshu, where he collected large amounts of seed; however, due to a long delay in return shipping, many of the seeds lost viability. Nonetheless, some spectacular specimens have prospered at PHA. Tim recalls, "It remains a fond memory: the people, the culture, and the

plants were intriguing, and I made many enduring friendships." In 2007, then Curator Tom Clark returned to Honshu, Japan, and made over 300 seed collections. Many of the resulting trees, shrubs, and perennials—some rare and distinctive—grace our grounds today.

Tim adds, "The prospect of returning to Japan and exploring new areas is beyond exciting. Not unlike North America, the Japanese islands continue to be impacted by development, habitat destruction, and the effects of climate change. We can't afford to wait." Our mission is to continue the horticultural experimentation of our founder by collecting, growing, and displaying these plants, and engaging our visitors in their stories. The potential for promising new plants is exciting!

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The Polly Hill Arboretum

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The mission of the Polly Hill Arboretum is to perpetuate the experimental tradition in horticulture established by Polly Hill by sharing knowledge of plants and scientific procedure through educational programs, research, plant conservation, and exploration. The Arboretum seeks to preserve its meadows and woodlands, to promote an understanding of its collections, and to encourage their utilization for scholarship, observation, and the enjoyment of all.

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The Dogwood Allée viewed from the EBL in early evening light

Message from the Director

Seeing is believing! That's the best impression I can offer after our first year with the Education Center and Botany Lab (EBL) in full operational mode. What this new facility has enabled PHA to accomplish has been a revelation to the staff and board. Starting in late winter, our year-round residents were treated to popular presentations, including plant travelogs from distant lands and the plant sale preview, highlighting our opening day offerings. As the year continued, there were days when both the EBL and the Far Barn were active with courses and workshops, while visitors explored the grounds on our daily tours.

When I consider PHA as an inspirational and educational landscape, I see the EBL, with its classroom and herbarium, as part of our commitment to advance that mission. As we enter our 20th year as a public garden, we look forward to making a stronger connection with our visitors and members by engaging them in a collaborative dialogue. In doing so, we hope to transform how people understand the world of plants and view our beautiful

and historic landscape. In this issue of *Meristems*, you will read about a new audience research initiative to help us understand how people come to know PHA and connect with us on different levels. Also, keeping within the spirit of our agrarian past, we are pleased to share with you a series of articles on sustainable practices, including our experiment with using Biochar to improve soil health.

Another milestone in sustainability is the realignment of our endowment investments with a conscious and strategic move to completely divest from fossil fuel industries. The world in which we live is quite different from 1998 when we began our journey as a public garden. Through environmental, social, and governance-based (ESG) investment practices, we intend to support the long-term health of the planet. We hope that in recognition of PHA's mission of education, plant conservation, and research, we will inspire your continued support, now, and into a greener future!

Timothy M. Boland

Third Graders Explore Vernal Pools

Third graders from the Tisbury School visited the Allen Farm in Chilmark this October as part of a farm habitat program. The field trip, co-led by PHA Executive Director Tim Boland and community food educator Mary Sage Napolitan from Island Grown Schools, focused on specialized wetland habitats called vernal pools. These rare, seasonally

wet habitats support a unique set of plants and animals. The goal was to observe how these important habitats can coexist with farm production, in addition to sharing the stewardship principles that could protect vernal pools into the future. Tim brought herbarium specimens from our previous studies of the area (part of the Flora of



Kids experience the diverse natural and farm habitats of the Allen Farm in Chilmark.

Martha's Vineyard) to show students the importance of recording changes through observing and documenting plants over time.

MV Wildtype Plants Used for Restoration Project

Plants from PHA's Island-native plant production program, MV Wildtype, are "returning to the wild" as part of an ecological restoration project conducted by the Sheriff's Meadow Foundation. The project is within the confines of their namesake property, the Sheriff's Meadow Sanctuary in Edgartown, a heavily used parklike property that has been colonized by many exotic invasive species, including bittersweet, honeysuckle, and multiflora rose. In one particular area, shrub encroachment into a wet meadow habitat had decreased species diversity from approximately 100 to only 25 species.

Sheriff's Meadow director of stewardship Kristen Fauteux oversaw the restoration activities, beginning with the removal of woody plants within the meadow. The decline in species diversity has necessitated the introduction of herbaceous native plants in order to recolonize the meadow. Native wildflowers and grasses, many from MV Wildtype, were planted back into the site this past fall, giving the plants ample time



Two species grown by PHA as part of the MV Wildtype program: Cardinal flower (*Lobelia cardinalis*) (left) and swamp milkweed (*Asclepias incarnata*) (right).



to establish themselves prior to winter.

Projects such as this restoration planting see PHA's MV Wildtype program come full circle. The cycle begins in the fall when seeds from native plant populations on Martha's Vineyard are collected and sown in the PHA greenhouse. By keeping seed sources local, the MV Wildtype program

ensures that population genetics remain stable, leading to better adapted plants and more resilient ecosystems. While many of the native plants we grow make wonderful additions to home gardens, we are especially pleased to see them used in restoration projects. Look for MV Wildtype plants in the Arboretum's plant sale area in 2018.

Battling Invasive Plants at Nat's Farm

PHA Horticulturist/Arborist Ian Jochems and Horticulturist Ben Madeiras traveled to the Sheriff's Meadow Foundation's property Nat's Farm in West Tisbury this past spring to join conservation colleagues in the removal of the aggressively invasive plant, autumn olive (*Elaeagnus umbellata*). Using the power of our Bobcat skid-steer loader to dislodge the shrubs, roots and all, over 100 plants were removed and later composted.

Autumn olive has been officially designated as an invasive plant in Massachusetts;



Ben Madeiras and Bobcat operator Ian Jochems mechanically remove autumn olive, avoiding the use of herbicides at Nat's Farm.

it colonizes open fields and disturbed areas pushing out native flora and disrupting the natural nutrient cycles of soils. We participated in this eradication effort in an attempt to stop the spread of the plant at Nat's Farm conservation area and to minimize the threat it carries to colonize the adjacent Manuel F. Correllus State Forest, home to rare habitat. PHA was joined in this effort by state forest superintendent Chris Bruno and Sheriff's Meadow property managers Bill Bridwell and Marc Macfarlane.

Summer Review and Looking Ahead

Attendance was lively at our annual summer lecture series held in the Far Barn. Our summer evening lecture series allows us to bring leading figures in horticulture, science, and garden design from around the world to share new ideas with PHA members and the Vineyard community. The major theme of this past summer's programs was natural garden design, reflecting an attitude shift gaining momentum in the field.

Ecological landscape designer Claudia West began the series with the inspiring talk, "Wild and Neat: Bridging the Gap Between Great Garden Design and Ecology." She championed the idea of creating gardens that mimic the beauty and ecology of a truly wild natural landscape. For those interested in delving deeper into this hybrid between natural and cultivated gardens, we recommend Claudia's recent book, *Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes*.

Later in the summer, Dr. Art Cameron, director of the Michigan State University Horticulture Gardens, touched on a similar theme with his talk, "Landscaping in Tune with Nature." In addition, he provided a useful plant list containing many Northeast natives and drought-resistant perennials. Similarly, landscape designer Rebecca Lindenmeyr, the featured speaker at our fall plant sale, demonstrated the beauty, diversity, and ecological functionality of meadow gardens. She emphasized the importance of designing meadows for their value to pollinators, and supplied a plant list recommending the best plants to do so. For a copy of either plant list, contact Ann Quigley at ann@pollyhillarboretum.org.

Another highlight of the summer series was Dr. Eric Chivian, founder of the Center for Health and the Global Environment at Harvard Medical School, who spoke on how medical models can help us understand global environmental threats. One example he presented was forest fragmentation and the attendant loss of biodiversity, which has led to increased rates of tick-borne illness in humans. This event, co-sponsored by the Vineyard Conservation Society, drew a crowd of over 100 and was the subject of two articles in the *Vineyard Gazette*.

In August, PHA hosted a program by wildlife biologists Dr. Luanne Johnson and

Liz Baldwin of BiodiversityWorks. Their popular talk focusing on snakes of Martha's Vineyard fascinated audience members of all ages. They introduced the seven snake species (none of which are poisonous) that live on Martha's Vineyard. In addition they explained their ongoing study of black racer snakes, which is providing valuable insights into the behavior of this Island species. The audience—who all had a chance to touch a live snake if they wished!—left convinced of the importance of snakes to the Island's ecosystems. We look forward to further collaborations with BiodiversityWorks in the upcoming months. Stay tuned for a class on animal tracks and signs this February!

This winter we will be offering lectures and workshops during the colder months in our new Education Center and Botany Lab. In addition, our guided "winter walk" tours resumed November 11 and will continue on the second Saturday of each month through March. If you live on-Island year-round, you'll find a winter/spring program guide in your mailbox soon. For dates, details, and our complete winter schedule, visit our programs calendar at pollyhillarboretum.org. To receive email updates, subscribe on the homepage of our website.



Dr. Eric Chivian explains the importance of protecting polar bear habitat, not just for the preservation of the species, but for their importance to human health research in the areas of osteoporosis and kidney disease.

Student Scientists Explore Arboretum

PHA Youth Education Coordinators Betsy Driggs and Jill Bouck recently completed a busy fall season providing programs for school children from all five Island elementary schools and the MV Public Charter School. This year Betsy and Jill were joined by new part-time staff member Kendra Buresch. (Learn more about Kendra on p. 6.) As always, our team is assisted by a wonderful group of dedicated volunteer school guides, who lead students in exploratory lessons on-site at the Arboretum.

The PHA youth education program introduces Island children to the special place that is the Arboretum and is free of charge to all schools. During classroom visits, each child receives a hands-on lesson led by Betsy, Jill, or Kendra, who arrive with seeds, leaves, flowers, and other natural materials for exploration. At the Arboretum, each class is divided into small groups of student scientists who embark on their field studies with a volunteer school guide. With the scientific background provided by the classroom visit, students revel in the opportunity to learn from nature in PHA's "outdoor classroom." Our volunteer guides encourage everyone to observe, ask questions, and make discoveries. Students discover landscape and buildings, plants and animals, and sounds and smells that combine to create a memorable experience. Before leaving PHA, they make a drawing and discuss what they've seen, learned, and enjoyed.

PHA works hard to align our kindergarten to fourth grade curriculum with the next-generation science standards that the schools are adopting in their classrooms. By staying current with the curriculum standards, our youth programs provide a valuable resource to teachers. These educational field trips reach students of all learning styles: some kids charge forward with exuberance, while others become absorbed in examining a seed or flower. We continue to be motivated by Polly Hill's passion for plants, nature, and learning through observation. Polly said, "Educate yourself. Learn. The learning is the fun." Making learning fun is a natural outcome of a field trip to the Polly Hill Arboretum!

Amending Soils with Biochar

PHA is experimenting with the use of biochar as an environmental approach to amending soil. The term biochar describes a type of charcoal produced through burning wood slowly with a reduced oxygen supply. Though new to us, the use of biochar in agriculture is ancient. Evidence shows that as far back as 2,500 years ago, inhabitants of the Amazon basin used a slash-and-char process, burying burning vegetation so it smoldered, creating “terra preta,” which means black earth in Portuguese. The charred material left behind, what we call biochar, is a stable, carbon-rich material that helps soils retain water and nutrients and is beneficial to plants and microorganisms.

Biochar is a promising soil amendment for areas like Martha’s Vineyard with low-nutrient sandy soils. At PHA we have applied it to the Dogwood Allée and a few Stewartia trees; it’s too early to tell definitively, but it appears to be improving tree health. Last winter we made our own biochar for the first time, and we plan to continue. We use a pyrolysis chamber, dried-out wood chips, and old wood. (Pyrolysis is the thermal decomposition of organic material through the application of heat without the addition of extra air or oxygen.) We get rid of materials we don’t need while creating a usable product. It’s a win-win outcome for us.



“Dinosaur Plants,” a popular third-grade lesson, returned to PHA this fall. This program introduces children to the evolution of plants whose ancestors existed when dinosaurs roamed the earth. Although the dinosaurs met their demise in a dramatic mass extinction, plants persisted. Many evolved in complex ways, but others remain much the same; these prehistoric plants, such as dawn redwood, monkey puzzle tree, ginkgo, and magnolia, fascinate us with their beauty, resilience, and ancient heritage.

PHA Book Series

PHA’s successful family book series returned for its third season this year attracting over 180 participants! Along with school-aged children, babysitters, parents, and grandparents enjoyed an outing; and even newborn babies experienced their first Arboretum activity. Classic storybooks with ecological themes like Dr. Seuss’s *The Lorax* and newer titles such as *Uno’s Garden* by Graeme Base were read by PHA volunteer Kathy Kinsman. After story time, Kathy and fellow volunteer Barb Caseau helped Visitor Services/Resource Specialist Erin Hepfner lead a range of fun and engaging activities, including arts and crafts, scavenger hunts, and nature walks. Check back in 2018 for next season’s family book series schedule!



Kids and adults recreate characters from *Uno’s Garden*, a timely tale about the importance of habitat restoration.

Aligning Mission & Values with ESG Investing at PHA by Pamela Kohlberg

Environmental conservation and education are at the core of the Arboretum’s mission. The Board of Directors wishes to reflect these values in the investments held directly by the endowment.

With this statement of purpose in 2013, the PHA Board of Directors began research on an ESG (Environmental/Social/Governance) investment strategy for the endowment fund. ESG investing denotes an investment philosophy that targets, in addition to financial returns on the investment, a double or triple bottom line return, also tracking impacts in environmental, social benefits, and corporate governance in the companies and funds in the portfolio. Environmental, social, and corporate governance criteria are incorporated into the investment screen, in addition to goals of generating long-term competitive financial returns and minimizing risk.

Competitive Returns: There was a time when many assumed that it was not possible to achieve ESG goals and generate returns competitive with single bottom line investment strategies focusing only on financial metrics. Over the past decade, the ESG investment trend, with related strategies called purpose-driven, mission-driven, or socially responsible investing, has been adopted by numerous foundation endow-

ments. According to a 2014 article by Lisa Woll in the *HuffPost*, data suggests that several hundred foundations are practicing sustainable and responsible investment (SRI) as a way to ensure greater alignment with their goals and mission, including the Rockefeller Foundation, the Nathan Cummings Foundation, and the Wallace Global Fund, to name a few.

Leveraging the Other 95% of the Endowment: Foundation leaders had begun to reflect that while their mission focused overall on “serving the public good,” just 5% of the endowment returns funded operations or grants dedicated to these goals, but the companies and sectors with whom they were invested might be at cross purposes with this mission. The investment strategy with the remaining 95% of the endowment, in companies promoting better use of natural resources (in the case of PHA) enhances progress toward the environmental conservation mission.

With this pivot, the major corpus of the endowment is also working to achieve environmental and social sustainability and good governance practices. After a 4-year journey of research, analysis, and realignment, the PHA’s investment portfolio strategy has integrated ESG principles, with continued competitive financial performance.

Kendra Buresch Joins PHA Staff

This fall we welcomed Kendra Buresch to the PHA staff as our newest part-time Youth Education Coordinator. Kendra is assisting Youth Education Coordinators Betsy Dripps and Jill Bouck with the PHA youth education program, and will be visiting first through fourth grade classrooms and helping guide school groups on-site. In addition, Kendra brings us the conservation education program Habitat Kids.

Kendra is a biologist with a master's degree in natural resources from the University of New Hampshire and over 20 years experience working in the field. She spent 14 years at the Marine Biological Laboratory in Woods Hole, and prior to that, four years as a field ecologist for the Martha's Vineyard office of the Nature Conservancy. Most recently, she has been teaching local children about ecology through her pilot program, Habitat Kids.

In 2015 Kendra received a Martha's Vineyard Vision Fellowship to begin



Kendra Buresch engages students in a "habitat match" board game. Photo: Ken Wentworth

Habitat Kids, an education program designed to directly engage Island elementary school students in habitat stewardship and conservation efforts. As a part of this program, and in collaboration with PHA, students at the Edgartown, Tisbury, Oak Bluffs and Chilmark schools created "habitat patches" that will be used for stewardship

projects in upcoming years. Here at PHA, in addition to her assistance with our youth education program, Kendra will continue her work with Habitat Kids, programming for students in kindergarten, second, third, and sixth grades. Kendra's breadth of experience, innovation, and positive attitude are a welcome addition to the PHA team.

Staff News

In March, Horticulturist/Arborist Ian Jochems received certification through the International Society of Arboriculture for Tree Risk Assessment Qualification (TRAQ). Ian's certification will help us monitor and evaluate the risks associated with our trees and make more informed decisions about tree health and maintenance.

In July, Executive Director Tim Boland traveled to the Scott Arboretum of Swarthmore College to present "Into the Wild: Capturing the Genetic Potential of North American Native Plants" at the 20th annual Woody Plant Conference. More than 450 participants attended this popular conference. In August, he was in Bar Harbor, Maine, to give the Beatrix Farrand Society's annual summer lecture. His talk featured PHA's origins, history, and current activities.

Visitor Services/Resource Specialist Erin Hepfner attended the American Public Gardens Association's *The Nature of Exhibitions* symposium hosted by the Denver Botanic Gardens in September. Topics

included interpretive planning, reaching visitors in compelling ways, and how to connect guests to the mission by implementing art and exhibits. Erin also visited the Denver Art Museum and the Denver Museum of Nature & Science to observe how other institutions share information.



Tim's talk reached a large audience at the annual Woody Plant Conference.



PHA Horticulturist/Arborist Ian Jochems examines a tree for trunk decay.

Brian McGowan Retires

Plant Propagator/Horticulturist Brian McGowan retired this summer after a long and successful career in horticulture. He came to PHA in 2015 after working as a horticulturist, restoration designer, author, and nurseryman—for 20 years he and his wife, Alice, operated Blue Meadow Farm in Montague, Massachusetts.

In his slightly over two years at PHA, Brian made a big impact. He juggled three full greenhouses where he lovingly propagated thousands of plants, including seed

from collecting trips and cuttings from the Arboretum's collections. Brian worked closely with a group of dedicated greenhouse volunteers, who assisted in sowing seed, propagating cuttings, and watering every Wednesday. In addition, Brian oversaw the plant sale area with the assistance of the summer interns, taught popular plant propagation workshops, and led tours. We will miss Brian's sunny smile and infectious laugh at PHA. We wish him and Alice a happy retirement.



Smiles all around at Brian's retirement party. (Shown here with greenhouse volunteers Berta Geller, Nancy Rogers, Susan Silva, and Judy Bryant)

Audience Research Workshop

In honoring the tradition of sharing this property with visitors that extends beyond the Arboretum's official 20 years, and giving back to visitors and friends who have supported PHA, the Arboretum hosted renowned audience research specialist Jeff Hayward to conduct an evaluative workshop with staff, volunteers, and board members. Jeff, director of People, Places and Design

Research, facilitated discussions to discover how we can best communicate our mission and inspire people to connect with nature. The goal of this workshop was to aid staff in aligning programs and outreach to support our mission in a way that is most relevant to our specific visitors. To do that, we need to better understand our audience. Jeff provided valuable guidance.



Jeff Hayward conducted group interviews to learn more about PHA visitors from constituents who have different perspectives. Clockwise from top right: Jeff Hayward, Karin Stanley, Cynthia Bloomquist, and Linda Hearn.

2017 Summer Interns

The Feldman internship is offered each summer to two college students pursuing careers in horticulture. This season we welcomed Julia Craddock and Torie Jones to PHA. They arrived eager to learn about working in a public garden and maintaining a plant collection. Both Julia and Torie cited working alongside and getting to know the grounds volunteers among their favorite memories, in addition to just being part of the PHA team. Torie spoke of feeling welcomed and important, even when weeding! Julia especially enjoyed learning plants from the collection while creating the 6-plant tour display in the Visitor Center. Julia and Torie both recognized how much they learned in addition to the horticultural practices they expected; both gained a better understanding of public garden management from collections curation, to visitor education, to working with volunteers.

As always, the annual intern field trip was a huge success! Torie and Julia, along

with curatorial intern Thomas Murphy, went on a botanical excursion to Boothbay, Maine, led by PHA Curator Todd Rounsaville. The Coastal Maine Botanical Garden hosted the PHA group for a behind-the-scenes tour of this popular 270-acre public garden. Another highlight was a trip to Monhegan Island, a one-square-mile volcanic remnant located 12 miles off the coast.

We said goodbye to Torie and Julia in August. After spending the summer together, we are appreciative of their positive attitude, sense of humor, and exceptional work ethic. Torie returned to North Dakota State University for her senior year, where she is earning bachelor's degrees in both horticulture and public history. Before beginning her job search, Julia (with her horticulture degree from the University of Maryland) embarked on a hiking trip to Spain. We wish them well on their professional journeys; both will be pursuing jobs in public horticulture.



Julia Craddock (left) and Torie Jones (right) were a dynamic duo! Pictured with curatorial intern Thomas Murphy (center).

Beguiled by Beauty: Disanthus

by Tim Boland

It has happened only a few times in my life: upon meeting a plant for the first time, its startling beauty creates an indelible image and leads to a lifelong obsession. The year was 1986. I was an international student at the Royal Horticultural Society's Garden at Wisley, in Surrey, England. That year would transform my palette of garden plants and lead to many wonderful horticultural encounters. But I remember this one the most clearly . . .

In autumn of that year, I was pining for the vibrant fall colors of my native Michigan. Each day I had the pleasure of walking home through my favorite part of Wisley called Seven Acres. Within this open area is a fantastic array of rare trees, shrubs, and perennials planted in a layered fashion. One afternoon while admiring the peeling bark of birches, I spotted in the distance a shrub with vivid autumn coloration. Getting closer, I marveled at the intensely red, heart-shaped leaves and surmised that it might be an Asiatic form of the North American native tree, eastern redbud (*Cercis canadensis*). Digging around the base of the plant I found the label. I was wrong! It said *Disanthus cercidifolius*, a name I had never heard before. The species name was decipherable, the



Watercolor of *Disanthus cercidifolius*, Curtis's Botanical Magazine, 1917 Courtesy of the Jardin botanique Meise Library, Brussels Belgium.

translation of *cercidifolius* meaning leaves resembling redbud (*Cercis*). There wasn't a common name. The label said that the plant was in the witch-hazel family (Hamamelidaceae). I was not surprised as this plant family with its winter-hazels, witch-hazels, and foothergillas holds a special allure for many. To this day the claret-red foliage remains the most vivid fall color I have ever encountered.

Back in the States, I attempted to cultivate the plant in two different home gardens—both failed! I discovered its cultural needs through trial and error: a sheltered spot; morning sun; afternoon shade; free-draining, acidic soils; and water in times of drought. With all its needs met, disanthus grows into a large shrub or small tree (6 to 10 feet tall). In exposed locations it forms an upright habit; in a more protected spot, it will grow with a wide-spreading shrublike habit and zig-zag branches, much like the large shrubby winter-hazels (*Corylopsis*). Its tiny, maroon-red, spidery flowers are borne in pairs. They're not showy but they are curious, appearing in late autumn the same as the flowers of our native fall-blooming witch-hazel. The small, plump, green fruits are bi-lobed capsules that when mature contain jet black seeds.

D. cercidifolius is native to Japan and China. As part of PHA's 2005 seed-collecting expedition to Japan, I had a memorable encounter with hundreds of disanthus plants along a river bed in Nagano Prefecture. They were in vibrant fall color and loaded with seed, which I eagerly collected. Unfortunately, due to a shipping delay, the seed arrived non-viable. PHA has one disanthus received from a cultivated source in 1994. It is upright in habit and struggles with our drought-prone soils. We recently planted a cultivar with white-variegated foliage, 'Ena-nishiki', in Holly Park.

Disanthus was long thought to be a monotypic genus (a genus with only one species). This changed in 2006, when avid plant explorers Dan Hinkley and Scott McMahan were collecting in northern Vietnam and discovered a plant they thought at first was a Chinese fringe-flower (*Lorapetalum*)—another witch-hazel family member. However, this past year the plant was described and published as *Disanthus ovatifolius* (after initially being introduced in Europe as *Uocodendron whartonii*). It bears evergreen foliage with ovate leaves. The flowers and fruits are similar to *D. cercidifolius*, but different enough to establish a new species for the genus. Dan Hinkley was kind enough to send us a plant. Given its place of origin, it may be too tender to cultivate successfully, but in the spirit of experimentation, we will try!

In 2018, the PHA will return to Japan and once again we hope to encounter and collect seed of *Disanthus cercidifolius* to bring back and grow for future visitors, who may begin their own obsession with this remarkable and captivating plant!



Fruit of disanthus contains jet-black seeds.

Photo: Philippe deSpoelberch



Type specimen of *Disanthus ovatifolius* in the wild of North Vietnam. Photo: Scott McMahan

Kathy Kinsman

Volunteer Kathy Kinsman promptly recalls her favorite day at PHA with pride. She spent the better part of a day volunteering at the Arboretum (as she often does in the spring and fall). In the morning, she worked with middle school students who were so enthralled by their experience, they inquired about doing community service on the grounds! Shortly thereafter, while guiding third graders on a field trip, Kathy witnessed a young girl calling birds with such expertise that the birds sang back! And if that wasn't enough, her treasured day became complete when she successfully rescued a misguided hummingbird trapped in the Visitor Center.

A retired educator and hobbyist photographer, Kathy has two passions: education and nature. After 17 years teaching children with special needs, she taught fifth grade for several years, and then rounded out her career as a technology integration specialist. When she retired, she took on nature

photography with the same drive. We are fortunate she brought her skills, passions, and experience to PHA.

Knowing that there is always something new to discover through interactions with people, plants, and animals is what she enjoys sharing most with school children and visitors. "Being outside in a beautiful place, working with children, is the best way to teach," she said of being a school guide for the youth education program. "It's amazing to be living the mission of PHA." Kathy also assists with our family book series in the summer months, reading picture books aloud that connect visiting families with the natural world.

Her volunteerism doesn't stop there. Kathy is very outgoing. She spends half a day welcoming guests in the Visitor Center, at least once a week, all season long! While staffing the Visitor Center, she was inspired to combine her passions; this time to create



PHA volunteer Kathy Kinsman

a mesmerizing video of plant and landscape images (complete with scientific and common names and accompanied by soothing music) to share the year-round beauty of PHA with visitors who might only be able to visit infrequently.

We are thrilled Kathy sought out PHA as a volunteer opportunity when she wanted to become active in the community. Her advice to everyone? "Volunteer! You don't know what you're missing!" For more information about volunteering at PHA, contact Visitor Services/Resource Specialist Erin Hepfner by email at erin@pollyhillarboretum.org or by calling (508) 693-9426.

FROM THE LIVING COLLECTION

Arboretum's Plant Records Migrate to IrisBG

This fall we embark on the next step of plant records evolution at Polly Hill Arboretum: the migration of our digital plant records to IrisBG, a comprehensive software program for botanical garden data management. Polly Hill once wrote, "Maintenance of the records with accession numbers, labels,

and reference to record cards is of the greatest importance." Our update to IrisBG will honor Polly's commitment to plant records while also making them accessible to visitors like never before.

Looking back, it's remarkable to consider how the technology used to manage plant records data has progressed over time. Polly's work began before the invention of computers! Back then paper accession cards were used to record basic information such as name, source, and date planted. Through Polly's involvement with the American Horticultural Society and their Plant Records Center, she helped set standards for recordkeeping nationwide, and soon after became the first private gardener to computerize her plant records. Though we still maintain Polly's impressive card file, our plant records have expanded substantially as a result of our plant conservation and wild-collection efforts. Our current software program, BG-BASE, collects hundreds of data fields per plant,

including precise provenance information and propagation records.

Our migration to IrisBG will enable the Arboretum to seamlessly manage and build a comprehensive collection of plant accessions and their corresponding map data (PHA location). In addition, we will be able to manage the recordkeeping of our preserved collections (herbarium vouchers) now housed in the EBL. These collections are especially important for documenting and monitoring the Flora of Martha's Vineyard. Mapping of new plantings, managing the plant sale inventory, and cataloging reference material will also be possible via IrisBG.

We are especially excited to introduce IrisBG's Arboretum Explorer module, which will allow open access to explore our plant collections. Using a desktop computer, tablet, or smartphone, visitors will be able to search PHA's living and preserved plant collections, view plant images and local maps, and follow guided tours through the collection. This feature will be developed over the next year.



Herbarium Organization Project

The new Education Center and Botany Lab with its temperature-controlled herbarium has allowed us to properly organize all of the herbarium collections made over the last 12 years. Starting in May, curatorial intern Thomas Murphy began the tremendous task of sorting and arranging over 3,000 herbarium sheets. (Herbarium sheets are flat pressed and dried plants used for scientific study.)

Executive Director and botanist Tim Boland oversaw the organizational work—a massive filing process of a delicate nature. The herbarium specimens are arranged in folders following a flowering plant classification system established in 1981 by influential botanist Arthur Cronquist. The Cronquist system places plant families into broader categories called orders, indicating a close relationship and a shared evolutionary history. The Cronquist system begins with the most primitive flowering plants, the magnolias (Magnoliaceae) and continues to the most advanced, the asters or daisies (Asteraceae). In our herbarium cabinets, non-flowering plants such as ferns and conifers

are placed before the flowering plants.

Our herbarium specimens are organized into three distinct categories: native and spontaneous plants of Martha's Vineyard, cultivated plants from the PHA collections, and herbarium specimens collected on seed expeditions. Thomas produced new labels and attached them to file folders with a different color for each category. Each category is contained within its own cabinet. This logical division makes the collection more accessible to users.

The PHA herbarium was first established in 2001 by Director Emeritus, Dr. Stephen A. Spongberg, spurred by a generous gift of marine algae specimens from naturalist and artist Rose Treat. We are thankful for the dedication of our staff and research associates who collect plant specimens locally and from distant locations (including overseas!). In addition, we recognize the meticulous preparation and mounting of specimens performed by our herbarium volunteers, coordinated by Visitor Services/Resource Specialist Erin Hepfner.



A well-organized herbarium cabinet

Today, we are proud to say we have the optimum conditions for the safe long-term storage of our herbarium specimens, which are available for public display, scientific use, and education courses. We will continue to add to our collection. If you are interested in learning more about PHA's herbarium, check our website programs calendar for herbarium-related programs and tours.

Fall Seed Expeditions

When autumn arrives, our thoughts turn to seed collecting! In early October, PHA participated in two exciting, fruitful seed-collection expeditions. Curator Todd Rounsaville was joined by representatives from the Bartlett Arboretum, Chicago Botanic Garden, Morton Arboretum, and U.S. National Arboretum as part of a trip to the western reaches of Kentucky and Tennessee. The team made 60 collections in a range of unique forest types, including old growth oak woodlands, oxbow swamps, and flatwood acid seeps. Later in October, PHA research associate Tom Clark set out for the coastal areas of North and South Carolina. Tom's team included former PHA intern Cat Meholic, now a graduate student at the University of Delaware, and representatives from the Arnold Arboretum and the Morris Arboretum. The seed, all collected from wild sources, will be processed and sown in our greenhouse, and the resulting plants will be added to our living collections, becoming an integral part of our research mission.



Seeds from our fall collecting expeditions have been processed and moved to cold storage in the EBL basement. Seed collections are arranged by the length of time required to break dormancy, and will be removed throughout the winter and sown in the PHA greenhouse.

New Report Guides Oak Conservation

PHA Executive Director Tim Boland and research associate Matt Lobdell of the Morton Arboretum were recognized for their contributions to the recent publication of *The Red List of US Oaks*. This important report details for the first time the distributions, population trends, and threats facing all 91 oak species (genus *Quercus*) found in the U.S. Oaks are keystone species on Martha's Vineyard as well as in many areas across the country. A keystone species is one which defines an ecosystem, and on which other species in the ecosystem depend. When a keystone species declines, it indicates an ecosystem is under stress. One-quarter of U.S. oak species are considered of conservation concern and nine oaks are now classified as critically endangered. The report, a collaboration of the Morton Arboretum in Lisle, Illinois, and Botanic Garden Conservation International, will serve as a guide for conservation action.

Experimenting with Stewartia Propagation *by Thomas Murphy*

Polly Hill was devoted to horticultural experimentation and raising plants from seed. She also named many of her favorite plants, including several cultivars (cultivated varieties) of stewartia. To get an exact duplicate (a genetic clone) of a plant, it must be propagated asexually, which eliminates the genetic variability found in seed propagation. Typically this is done through rooting cuttings. While many of Polly's stewartia introductions have made it beyond our borders, some have not, primarily due to difficulties with propagation. As part of my curatorial internship I was tasked with looking deeper into these propagation issues.

A longtime problem with growing stewartia trees from cuttings is that after rooting, the cuttings fail to break dormancy the following season. This issue with overwintering has puzzled plant propagators and limited the distribution of some of Polly's most beautiful cultivars. Studies have shown a correlation between several environmental factors involved in overwintering cuttings. One critical factor is the effect of a chilling period (exposure to cold temperatures) in regards to the dormancy requirements of stewartia. What is dormancy and how does it work? Dormancy is defined as the process by which active growth subsides to minimize exposure to harsh weather conditions. Sometimes described as a "deep sleep," dormancy is a complex physiological process that remains somewhat mysterious.

There are two types of dormancy relevant to the asexual propagation of stewartia. Endodormancy, also called true dormancy, occurs after leaf loss and inhibits the buds from further growth due to



Curatorial Intern Thomas Murphy randomizing experimental units to induce dormancy before they are subjected to chilling treatments.

colder conditions. Inducing and exiting endodormancy is known to be controlled by the changing concentrations of plant hormones that are signaled by seasonal temperature changes. A plant cannot exit endodormancy until it undergoes a significant period of temperatures near or below freezing. Once this chilling requirement is fulfilled, plants enter into another type of dormancy: ecodormancy, also known as quiescence, which is denoted by bud swelling. Plants in this state are on standby, awaiting warmer temperatures that will induce bud break and allow them to exit dormancy.

PHA's current procedure is to overwinter first-year cuttings in a greenhouse covered by polyethylene; however, this could be detrimental to the survival rate of stewartia. These newly rooted plants are entering endodormancy, but the greenhouse

environment is more susceptible to temperature fluctuations—heating up on sunny days—than the outdoors. This could mean that the dormant plants inside the greenhouse do not receive the necessary chilling conditions that would take place outside in a natural environment. The possible result is a low survival rate the following spring.

To better understand how PHA can improve propagation and overwintering procedures for stewartia, I designed an experiment to assess the length of chilling period in combination with the choice of media used for rooting and overwintering. The primary goal of my experiment is to establish a reliable protocol for propagating and overwintering stewartia cultivars in the PHA collection, and also provide further insight for others who propagate these plants in the future.

This past June, four PHA stewartia introductions were rooted under mist in pots containing two different types of soil media. All cuttings were placed outside to induce endodormancy under natural conditions. These rooted cuttings will then either be moved to chilling units in the basement of the EBL to endure varying chilling periods or to storage in which they will accumulate no chilling period (control group). In the summer of 2018, each cutting will be assessed. Whether or not the plant exits dormancy and lives until late summer, along with root quality, will indicate the results of the various treatments. I'm hopeful that these testing procedures will help us gain insight into the successful propagation of one of PHA's most popular plant groups.

Plant Exploration on Cuttyhunk

PHA research associate Melissa Cullina and Executive Director Tim Boland traveled to Cuttyhunk Island in August, as part of our ongoing effort to document the aquatic plant life of Dukes County for the Flora of Martha's Vineyard. Cuttyhunk has had limited botanical exploration due to its small size and remote location. While there Melissa and Tim collected plants at West End Pond

in full view of the Gosnold Monument. This monument marks what is believed to be the site of the first attempted European settlement: Bartholomew Gosnold's 22-day stay on Cuttyhunk in 1602. Melissa and Tim also had a chance to visit the Cuttyhunk Historical Society and Museum of the Elizabeth Islands. Future plant exploration trips to the Elizabeth Islands are planned!



A scene from Cuttyhunk Island with the Gosnold Monument in the background

THE POLLY HILL ARBORETUM

MAILING ADDRESS

PO Box 561
West Tisbury, MA 02575

508-693-9426 Tel
508-693-5772 Fax
www.pollyhillarboretum.org

ADMINISTRATIVE OFFICES

The Homestead
809 State Road
West Tisbury, MA 02575

VISITOR CENTER

795 State Road
West Tisbury, MA 02575

ACCESSIBILITY

The Visitor Center is wheelchair accessible.

VISITOR CENTER HOURS

Memorial Day weekend to
Columbus Day: 9:30 am–4 pm

ARBORETUM GROUNDS HOURS

Sunrise–sunset, year-round

TOURS

Daily July and August at 10 am,
or by advanced reservation

ADMISSION

\$5
Free to members and children under 12

FREE PARKING

DRIVING DIRECTIONS

See www.pollyhillarboretum.org

mer.i.stem: *n. botany.* The growing point or area of rapidly dividing cells at the tip of a stem, root, or branch.



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West Tisbury, MA 02575
www.pollyhillarboretum.org

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THEN & NOW



The Homestead Border in July 2009 ablaze in midseason color



Volunteers, staff, and interns tend to the rejuvenation of the Homestead Border this past May.

Helping Hands Rejuvenate PHA's Homestead Border

The original planting of the Homestead Border in 2003 created a colorful entry garden for our administration building, welcoming both visitors and drive-by traffic along State Road. Designed by *Meristems* editor (and Tim Boland's wife) Laura Coit, the border was main-

tained by her as a volunteer project for the first few years; later the maintenance was taken over by staff. As in any garden, plants disappeared, plants spread, and after 14 years the border needed some special attention.

This past May, Arboretum volun-

teers, interns, and staff took on the border renovation project, planting new plants and removing aggressive spreaders and unwanted self-sowers. A layer of PHA-produced leaf mold was added to boost soil nutrients and conserve water. Laura helped edit the design to

bring back the original color scheme of purple, pink, and orange, inspired by a Menemsha sunset. Several promising plant introductions were added, including ornamental onions and hardier forms of orange coneflower. Keep an eye on the border next season!