

The beautiful Arboretum fields are part of a study featured in this newsletter.

PHA Collects Seed to Preserve Island Floras

Islands are isolated by definition. As a result, there are significant biological trends unique to them. The proportion of endemism (species not found elsewhere) is higher in island systems and, while isolation from the mainland often leads to increased speciation (the evolution of new species), genetic diversity tends to be lower. As a result, island species can become more prone to extinction. Thus it is with great interest that PHA not only helps to steward the flora of Dukes County, Massachusetts, but also participates in plant conservation on islands with similar climates on the other side of the world.

In 2018 and 2019, PHA collaborated with the Arnold Arboretum and the Morris Arboretum on two seed-collecting expeditions

to the Japanese archipelago, continuing Polly Hill's legacy of collecting and cultivating the flora of Japan. These recent expeditions were focused in Honshu, the central island of Japan, where the climate and cold-hardiness zones are optimal analogues for Martha's Vineyard. The trips collectively yielded nearly 100 new collections into North American horticulture, increasing the genetic diversity held among conservation collections like PHA's.

These recent trips mark the third and fourth PHA expeditions to Japan since 2005. We are especially interested in collecting plant genera whose ancient lineages diversified into both New and Old World species. These groups include *stewartia*, *rhododendron*, *hydrangea*, *maple*, and *viburnum*. The Arbore-

tum's side-by-side cultivation of North American and Japanese plants provides a fascinating look at evolution and comparative biology. Some of Japan's flora never made it to the New World, or have since been extirpated, including one of our favorite flowering shrubs, *enkianthus*, and some remarkable monotypic conifers like Japanese umbrella pine (*Sciadopitys*) and Japanese cedar (*Cryptomeria*).

Botanical gardens and arboreta function as islands in their own right. Gardens are concentrated hotspots of biodiversity with small populations of species isolated from the outside world. As most gardeners know, these plants live precariously: one storm, insect, or

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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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A bountiful season of spectacular blooms at the PHA this past year. *From top, left to right: Narcissus 'Ceylon,' beautybush (Kolkwitzia amabilis), Rhododendron 'Sunlight,' and silky Stewartia (Stewartia malacodendron).*

Message from the Director

Flowers lift our spirits and inspire us with their beauty. Who doesn't love them? This past spring we witnessed the most prolific display of flowers on the trees and shrubs at PHA. The entire Island experienced a similar effect! Many lifelong residents attested that it was the most bountiful blooming they had ever witnessed on Martha's Vineyard. Looking into it further, I discovered that the entire Eastern Seaboard experienced incredible floral displays on both native and cultivated woody plants. Why? The phenomenon was likely due to a (comparatively) mild winter, ample rain the previous season when trees and shrubs set their flowering wood, and just the right amount of sunshine.

The memorable bloom at PHA was accompanied by over 20,000 spring-flowering bulbs that were planted in the fall of 2018. The display was so spectacular we drew an additional 1,000 visitors in April—never doubt the power of flowers! The early-blooming winter-hazels and Asiatic azaleas were breathtaking; the flowers of the oakleaf hydrangeas and our native Stewartias were incredible; and the extravagant floral outburst continued throughout the summer. Polly Hill bred some of her favorite plant groups specifically for their summer appeal

since most of her family and friends visited at that time. She particularly admired summer-blooming azaleas. This year the North American azalea species (native to the southeastern U.S.), including Polly's named introductions, bloomed profusely in rich yellows, deep oranges, and fiery reds.

While the quiescence of winter awaits, PHA's landscape remains beautiful with trees and shrubs that inspire with attractive bark, berries, and architectural form. But if you look close enough, you'll still find flowers! Join me this winter for a workshop and tour of our ever-expanding witch-hazel collection. Witch-hazels bloom deep into the winter months when their glowing fragrant flowers feel like a miracle. Plan for a spring visit as well; as they get established, the bulbs we planted last fall will become even more impressive.

As we move from one season to the next, we thank you, our members, for enabling the care and stewardship of PHA's plants and landscape. We are grateful for your participation in making our 21st year so abundant!

Margaret Curtin Joins PHA as Research Associate

Research associates provide expertise to advance PHA's mission of scientific inquiry and discovery. We are pleased to welcome longtime volunteer Margaret Curtin as our newest research associate. As a volunteer, Margaret has spent much of her free time working on the flora of Dukes County—a big project and an important part of our scientific mission. One aim of the flora project is to have an herbarium specimen for every plant species found in Dukes County. She and her collecting partner, research associate Greg Palermo, have been collecting and identifying specimens for PHA's herbarium for many years.

Margaret's botanical expertise and her time commitment warrants the official designation of research associate. While Greg Palermo became a research associate in 2014 for his early work on the flora of Dukes County, it's fitting, perhaps overdue, that Margaret join us in the same capacity. Executive Director Tim Boland comments, "Margaret is an extremely talented field botanist, a real expert. Her work with Greg has had tremendous impact on elucidating the distribution of the native and spontaneous plants of Martha's Vineyard." He adds, "In addition, she is smart, observant, a joy to learn from. She has taught me a lot. We are fortunate for her past contributions and we look forward to more years ahead!"

An architect by trade, working on the flora project allows Margaret to combine two passions: botanizing and being outdoors. She says, "I have the Arboretum to thank for my love of botany." Her interest in identifying native plants grew as a result of various classes on complex plant groups—sedges, grasses, goldenrods, and more—that she attended at PHA with instructors such as botanists Melissa Cullina and Arthur Haines. Much of the work of identifying plants requires careful observation; after collecting in the field, Margaret and Greg spend quite a bit of time looking at plants under one of their many microscopes in a makeshift botany laboratory set up in Greg's kitchen. They share a mutual admiration for plants; according to Margaret, while examining specimens one of them often exclaims enthusiastically, "Wow, that's a great looking plant!"

Margaret first came to the Vineyard in the 1970s. Like many Islanders, she came to work summers when she was an undergraduate student; for her it was Smith College, where



Margaret Curtin poses with a tree on a trip to France.

she majored in art history with a concentration in architecture. After graduating, she returned to the Island to work for a local architect and eventually opened her own firm. As a building designer, she has made an indelible mark at PHA. She designed several new buildings on our campus in addition to renovating historic structures like the Cowbarn. She works in tandem with our builder Tucker Hubbell. Margaret's signature style can be seen in the Education Center and Botany Lab, Littlefield Maintenance Building, Cowbarn, and even the headhouse at the nursery. PHA is lucky to have the talents of such an incredible building designer!

Margaret has always loved the outdoors and been interested in conservation. In addition to her role as a PHA research associate, she has been involved with many Island conservation groups. She is currently on the board of BiodiversityWorks and is involved with Lagoon Pond Associates. While outdoors (when not botanizing) she enjoys biking, hiking, and cross-country skiing. She also enjoys visiting her son in Seattle, where she is

attempting to learn the flora of the Pacific Northwest. Margaret loves being anywhere outdoors on the Island, but has a special affinity for the State Forest. She enjoys being deep in the middle of the forest where you can't hear any road noise and it's uncommonly quiet.

In regards to the flora of Dukes County, Margaret says, "It's fun to work on a project that has an impact on the future." She also finds it interesting to see how things have already changed since the first flora was published in 1999; much of the change she attributes to loss of natural habitat, the constant influx of non-native plants, and deer browse. When asked our standard question, what is your favorite spot at PHA? Margaret mentions the open landscape of the West Field looking towards the Conifer Rows, but she adds that what she really likes best about the Arboretum is the people. We are grateful to have her as a part of our team!

PHA Collects Seed to Preserve Island Floras

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unfavorable winter can decimate an entire collection. PHA mitigates this risk through collaborative efforts such as our seed collection trips and the regular sharing of seeds and plants with other organizations.

Case in point, the seed collections made in Japan in 2018 were divided and sown by PHA, the Arnold Arboretum, and the Morris Arboretum. Each institution had successes and failures with different plant species, but altogether nearly all the collections were germinated by at least one organization. In the summer we were able to swap seedlings and send even more to our fellow collaborators in the Plant Collecting Collaborative (PCC), which is the organization that funded our collecting trip. Some of the 2018 plant collections are now two feet tall and ready to be planted on the grounds! Seeds from this fall's trip have recently arrived via the U.S. Customs Service. We are eager to sow them in the greenhouse and follow their development in our living collections in the years to come.

Youth Education Program Receives Gift

This summer PHA received a surprise phone call. It was good news: Sydell Rabin, former PHA volunteer tour guide, was calling to offer a donation. She and her husband, Arnold, wanted to honor their fond memories of Polly Hill and special relationship with PHA with a gift. After an exploratory discussion with Executive Director Tim Boland, they proposed a donation earmarked for PHA's youth education program.

We miss Sydell here at PHA, and we thank the Rabins for their generous gift, a fitting tribute to Polly's staunch belief in the power of observation to incite learning and Sydell's passion for the importance of education. PHA's youth education program brings hundreds of Island students to PHA each year, connecting school children with nature and making scientific exploration fun and interesting. Each child who participates in our youth education program leaves with awareness of the importance of plants.

Sydell and Arnold Rabin's connection to PHA began in 1991 when they purchased a home in West Tisbury, Massachusetts. They discovered Polly Hill's property in a book on the homes and gardens of Martha's Vineyard. Soon after they were chatting with Polly on the Cowbarn porch. When PHA became a public garden, Sydell began volunteering as a docent tour guide, enthusiastically sharing her appreciation for the beauty of plants and recounting the history of the property. She was a featured volunteer in the Spring 2015 issue of *Meristems*.

Do you have a special devotion to the Arboretum? If so, we hope you'll find inspiration in the Rabins' generosity and will consider a gift to PHA, either to support a specific program or to help fund our year-to-year operations. Please call or write us at info@pollyhillarboretum.org to explore our current areas of need!

Dr. Murphy Westwood Joins the PHA Board



Murphy Westwood

The PHA board of directors is pleased to announce that Dr. Murphy Westwood, director of the Global Tree Conservation Program at the Morton Arboretum in Lisle, Illinois, joined our board this past October. Over the past 15 years Dr. Westwood has worked to save trees from extinction in both the U.S. and Europe. She has extensive training in plant biology, evolution, and plant systematics. Her academic background has enabled her to lead efforts on a national and global scale to devise strategies to preserve plants in their native habitats and in well-documented collections. In addition, as part of her work at the Morton Arboretum, she is the Global Tree Conservation Officer for Botanic Gardens Conservation International (BGCI).

Throughout the world, many trees are facing increased threats to their existence. Murphy asserts that this is a critical time for botanic gardens and arboreta to be taking a leadership role to advance efforts to better understand and conserve the world's plant diversity. She adds, "I am honored to be joining the Polly Hill Arboretum board to help guide their science and conservation initiatives. I look forward to working with PHA's dedicated team of scientists, educators, and horticulturists."

"We are thrilled to have Dr. Westwood's talents as we look to increase our scientific capacity at PHA, advance our efforts to save imperiled trees, and continue our work with our local flora," says PHA Executive Director Tim Boland. "Murphy brings a wide range of skill sets to PHA. She will support and work with our collections staff to define priorities, advocate for plant conservation, and connect us to collaborations among our peers." Please join us in welcoming our newest board member to the PHA team.

Farewell to our 2019 Summer Interns!



PHA summer interns Soleil Kurowski-Labelle (left) and Caitlin de Vries (right) with curatorial intern Elizabeth Thomas, who will be at PHA through December 2020.

Ian Jochems: Grounds Manager *by Ann Quigley*

I caught up with Ian one rainy day in October, shortly after his return from a seed-collecting trip to Japan. The rain was fortuitous, as in almost any weather but pouring rain—and sometimes even then—you'd be hard pressed to find him indoors. He can usually be found outdoors, tending to the collections, performing maintenance on the grounds, overseeing facilities, and interacting with visitors. Having joined the PHA team in February of 2012, Ian is now nearly the senior-most staff member, second in tenure only to Executive Director

Tim Boland. This year, Ian was promoted from Horticulturist to Grounds Manager. He is also a certified arborist—an important part of his role at PHA. While he still retains duties that keep him out on the grounds, he has gained new responsibilities, including hiring and overseeing the summer interns.

When Ian applied for the job at Polly Hill Arboretum, he had never been to Martha's Vineyard. He remembers knowing, just from reading about the garden online, that PHA was a special place. At the time he was working as a horticulturist in Fort Collins, Colorado, at the Gardens on Spring Creek, near Colorado State University, where he earned a degree in environmental horticulture. He remembers walking the PHA grounds with several of the staff during his in-person interview. He was struck by the compelling story of Polly Hill; how through experimentation and record-keeping, she created a garden that attracted benefactors like co-founder Dr. David Smith to the cause of preserving her arboretum for the future. Ian felt drawn to be a part of it. He was offered the position the afternoon of his interview, and, with the blessing of his now-wife Erin, accepted the position that day. They were in for an adventure!

When asked what he enjoys most about working at PHA, he is quick to say that he loves how every day is different. One day he may be climbing a tree to prune and the next, working with grounds volunteers to weed and mulch. He loves being outdoors and is proud to say he spends over 300 days per year outside. Over time he has taken on more responsibilities. Another rewarding part of his job is the hiring and management of the summer interns. Each year PHA accepts applications for two 12-week summer intern positions. We hire students, usually at the undergraduate level, who are looking to gain hands-on experience in a public garden setting. Ian is enthusiastic about the mutual benefit of the summer intern program for the students and for PHA. The help they provide for grounds maintenance during the busy summer months is invaluable, but he adds, "It's more about what we give to them." He mentions several past interns who went on to use skills they learned at PHA, like tree climbing and plant identification, immediately upon returning to school. But he also stresses the importance of the internship to build professional habits like punctuality as well as interacting with visitors and working with volunteers. He's also a proponent of

instilling the attitude that nobody is above any less-than-glamorous job. For example, each member of the grounds staff takes a turn on "trash duty." If an intern can pick up debris from the roadside at 8:30am with a smile on their face, that's a win in Ian's book.

Ian's recent promotion to Grounds Manager came as a result of well-deserved recognition for his longevity and increased responsibilities. In addition to the summer interns, he has taken on more grounds management duties, such as scheduling season-specific

ARBORETUM NEWS

Dick Reische Steps Off PHA Board

We bid farewell and extend thanks to PHA board member Richard (Dick) Reische who stepped down at last summer's meeting. Former board chairman Joan Smith originally recruited Dick, knowing of his board involvement and finance committee membership at Brookgreen Gardens in coastal South Carolina. He retires from the PHA board after many years of membership, including service on the finance and investment committee.

"Dick was a valued member of the PHA board and of the finance/investment committee. His important contributions will be sorely missed by all," says fellow board and committee member Pam Kohlberg. "He could always be counted on for thoughtful comments, reminding us to focus on fundamental metrics in investing. He brought balance to our discussions, making sure all issues were aired in important debates. Dick's participation exemplifies the experience and diplomacy that every group needs. We wish him well, as we reluctantly accept his resignation."

Executive Director Tim Boland adds, "Dick and his wife, Diana [an active PHA volunteer], have a special affinity to the people and programs of PHA. The staff and the whole Arboretum community hopes they will continue to visit and participate in the years ahead." We are all grateful to Dick and Diana Reische for their many contributions to PHA.



Ian Jochems

tasks and making planting recommendations. Planting and deaccessioning decisions are made as a team under the leadership of Curator Todd Rounsaville. Ian enjoys the collaborative approach when it comes to plantings and removals: "It's helpful to have several staff in on the decision. One person might think of something and another person might build on their idea or come up with something others didn't think of." Even with multiple minds considering a horticultural decision, it often takes experimentation to achieve the desirable outcome of "right plant, right place." Learning the needs and habits of plants in the ecological and climatic conditions of Martha's

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Ian Jochems: Grounds Manager *continued from p. 5*

Vineyard takes time; Ian's nearly nine years at PHA have afforded him the ability.

Ian also mentions the value of seeing plants in their native habitat. This past October, Ian spent two weeks seed collecting in Japan as part of a group of public garden professionals from PHA, the Arnold Arboretum in Boston, Massachusetts, and the Morris Arboretum in Philadelphia, Pennsylvania. They were assisted by experts from Utsunomiya University in Tochigi Prefecture. Ian explains that visiting areas where the sought-after plants grow naturally allows him to get a sense for the conditions back at PHA where they might be happiest. He also enjoys learning the stories behind the plants. *Rhododendron sanctum*, one of the plants whose seed was collected on his recent trip, was first discovered in the sanctuary of the Ise Shrine, the most sacred shrine in Japan. The perfect foil for this rhododendron, *Acer diabolicum*, another of the species collected, is a maple named for the horn-like structures that form at the base of the seed coat. And then there's cryptomeria, a large evergreen cedar of the same type that forms a backdrop for our own Far Barn, whose branches are used in Japan to perfectly time the aging of saké in barrels. These types of stories certainly make for a more interesting garden tour, but they also help us to gain a fuller understanding of the cultural context of these plants, many of whom have traveled (as seeds) across the ocean to live as "washashores" on Martha's Vineyard. Additionally, we often host travelog talks with staff or visiting lecturers who share stories and photographs from collecting trips. If you're interested in learning more about Ian's recent expedition, keep your eye out this winter/spring for an announcement of his travelog talk.

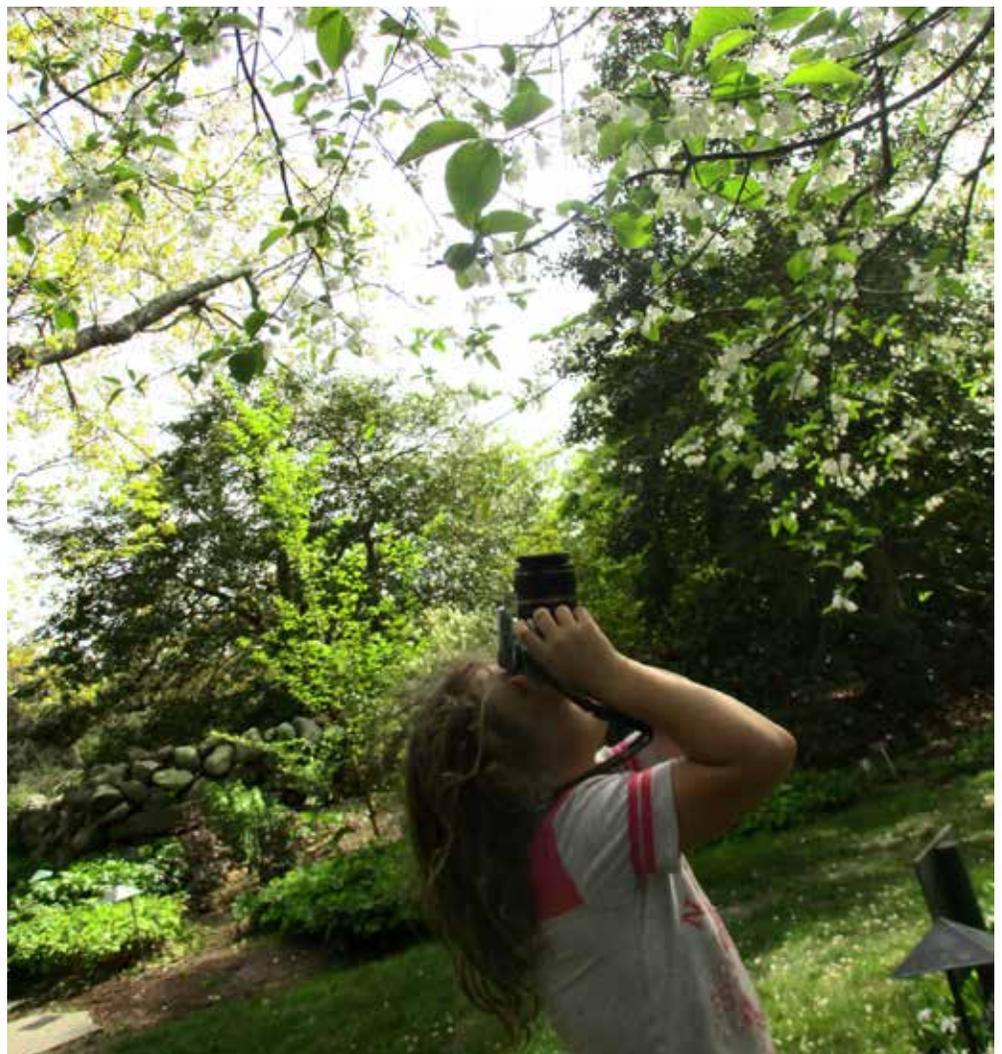
As spring approaches, you will also want to be on the lookout for the dates of Ian's annual pruning classes. An International Society of Arboriculture (ISA) certified arborist, Ian offers a wealth of knowledge about the management and pruning of shrubs and trees. He's been landscaping since the age of 15. Trees and shrubs were always his favorite part of the landscape. He was gratified to find that the proper care of woody plants by a certified arborist was valued at PHA, and soon after being hired, he was able to attain his ISA certification and additionally to become a tree risk assessment qualified arborist. He loves big trees and has always enjoyed climbing, an easy transition from his earlier hobby of rock-climbing. When queried as to his advice

for homeowners venturing into the world of pruning, he says, first and foremost, don't be afraid. Although many people are concerned they will hurt their plant, he encourages experimentation, preceded by a reasonable amount of research or instruction. If you're in need of some hands-on training, sign up for one of Ian's pruning courses.

Another way to learn about pruning, among other horticultural techniques, is to join our volunteer grounds crew! Twice a week, a group of volunteers of all ages gathers with staff to tackle a specific project on the PHA grounds. It's a congenial setting where, in addition to helping with Arboretum upkeep, volunteers have the opportunity to learn new skills they can use in their home gardens and ask questions of gardening experts. For more information on the PHA grounds volunteer program, please contact Ian Jochems at ian@pollyhillarboretum.org.

Youth Photography Students Observe Nature

PHA hosted an after-school nature photography series this past spring with instructor Melissa Knowles, an artist, photographer, and exhibits curator whose work encompasses reconnecting individuals with nature. Each Tuesday eight students from Grades 3 through 7 met in the Far Barn for orientation before setting out to photograph plants and vistas around the Arboretum grounds. A student/parent reception capped off the course and an exhibit of student images was displayed in the Far Barn through July. Seeing PHA through young eyes presents a fresh perspective. We are looking forward to offering more after-school enrichment programming to Island students in the future.



Chilmark School third-grader Josee Winston Feder gets a close-up shot of the Carolina silverbell. Photo: Melissa Knowles

A Season of Art at the Arboretum

2019 has been filled with creativity inspired by the Arboretum's plants and vistas. We often hold art classes at PHA, but this year was brimming with artistic interpretations of the plant world and new perspectives on the Arboretum's collections through art. Looking back over the season, we noticed a theme—art was everywhere!



Photo by nature photography student Tara Ledden

Our popular “Art in the Arboretum” exhibit returned this year with a new set of paintings, drawings, and photographs depicting PHA through the eyes of visitors. The most difficult part of the show was selecting the 12 pieces from so many worthy submissions! For the exhibit, each piece was positioned near its subject allowing viewers to imagine the scene in a different season or from a different perspective. Rain caused us to move our opening reception indoors, but nonetheless the assembled group of artists and art appreciators enjoyed a cozy evening inside the Far Barn. Images of the art were projected on a screen, each accompanied by a few words of explanation from the artist and context for the subjects by Executive Director Tim Boland. We thank the following artists and photographers: Mary Alden, Leonard Hall, Lynn Hoeft, Laurie Howick, Peter Jochems, Dale Julier, Nancy Kingsley, Kathy Kinsman, Melisande Knowles, Kasha Ritter, Carmen Torres Rodriguez, Beth Smith, and Katy Upson for participating.

In addition to “Art in the Arboretum,” Island potter Bill O’Callaghan displayed a selection of ceramic sculptures this season in an exhibit titled “Castles in the Conifers.” Bill’s sculptures, inspired by nature and his lively imagination, were nestled in the Conifer Rows among the pines, firs, and hemlocks. The evergreen trees in this area were planted by PHA founder Polly Hill and intended as a windbreak.

Artistic themes could be found in our summer lecture series this year too. The series

began with a talk by botanical illustrator and printmaker Bobbi Angell. Bobbi, whose work has been featured in official floras and in the *New York Times* gardening column, spoke on the connection between horticulture, scientific research, and art appreciation in a beautifully illustrated lecture. The next day, she led a botanical illustration workshop; class participants toured PHA’s herbarium with Executive Director Tim Boland.

Over the summer we offered two series with local artists: “Drawing from Nature” with Lizzy Schule and “Landscape Watercolor” with Lynn Hoeft. Lizzy focused on a variety of themes and artistic subjects from shades of green to shadow and light. Her drawing series was featured in an *MV Times* article, “Sketching Between the Trees: Lizzy Schule teaches Light, Texture, and Composition of Natural Scenes.” Lynn Hoeft and her watercolor students captured the vistas and blooms in a medium that exquisitely conveys the Arboretum’s colors and light. We appreciate having talented on-Island teachers who can offer on-going classes where students can experience different aspects of the Arboretum each week.

We wrapped up the warm season with three evenings of nature photography classes with Boston-based professional photographer Lara Woolfson. Lara taught a two-day photography class using a DSLR camera—not a cellphone!—in manual mode. Students practiced just-learned techniques and camera settings on the Arboretum grounds in the



Photo by nature photography student Virginia Morris

glowing evening light. On the third evening, Lara’s class focused on nature photography for smartphones, covering settings, methods, and apps to make on-the-go photos look more professional.

All season long, it was a joy to see so many interpretations of PHA, whether scientific, horticultural, creative, or therapeutic, through the eyes of artists. We welcome visual artists to the Arboretum during daylight hours year-round, and we encourage everyone, from art appreciators to seasoned professionals, to look for more artistic offerings in our next program guide.



Students in the nature photography for smartphone users class. Photo: Courtesy of Lara Woolfson

Taking Measure of a Meadow: Evaluating Management Strategies

by Elizabeth Thomas



A large thicket of sumac on either side of the entrance to the West Field

At PHA the North Field and West Field, informally called “the meadows,” have had different characters and purposes throughout the property’s history. When Polly Hill inherited the property in 1956, these fields, which had been maintained as pastureland and hayfields in the 19th century, had already succeeded to scrubby shrublands. When Polly began her regimen of annual mowing, she had conservation in mind: conservation of the Island’s rural character that she called “quintessential Vineyard vistas.”

Presently, conservation of our historic agricultural character remains a priority in how we manage these fields, but the focus has shifted to encouraging plant diversity. Many of the region’s rarest plants are found in grasslands and other open habitats, which are rapidly disappearing on the Vineyard due to development or natural succession. If we left the meadows alone, woody plants would gradually encroach and transform these spaces into shrublands and forests, as happened with the cessation of grazing and cutting

under the ownership of Polly’s parents.

One of my projects at PHA has been to look closely at the meadows and piece together a more comprehensive and informed plan for their curation and management, based on the Arboretum’s interrelated goals for these spaces: to reduce the volume of woody plant material (biomass) and to create conditions favorable for native grasses and wildflowers. Reducing woody biomass is the first step to the second goal. Walking through the meadows today, it’s clear that we have a sumac problem. Although an Island native and beautiful in autumn, winged sumac (*Rbus copallinum*) is an aggressive species with rapidly spreading clonal growth. Left unchecked, a single sumac clone may spread 130 feet! Over the years, PHA has tried several strategies to curtail its growth (along with other woody invaders, such as bayberry), but nothing has done the trick.

In the past, controlled burns were given a try; although this method of disturbance has grown in popularity for grassland restoration and preservation, we did not see the desired

results. Our biggest offender—the aforementioned sumac—actually thrives after fire; its underground rhizomes are not killed by the heat and instead vigorously re-sprout as root suckers. Once the burns were discontinued in 2011, we established a regimen of mowing in both spring and summer, coupled with the manual pulling of undesirable plants and selectively applying herbicide. Over the last few years, we switched the mowing to early fall; at this time, many plants have yet to replenish their underground storage organs for the following year’s growth. It was hoped that this would be true for the sumac: that it would gradually exhaust its capability to re-sprout and spread.

Combing through various land management resources, this does not appear to be the case. I found the same advice repeated: the best option for reducing sumac is to mow immediately after flowering, when the rhizomes are exhausted of their sugar stores. From here, the recommendations diverge. Some sources say a second mow should follow 2 to 3

months later, after it has used its limited sugar cache to produce new growth, but before that growth has had much time to replenish its rhizomes; a third mow after flowering the next year will complete the necessary deep depletion. Another source suggests using herbicide after the first mow to attain the best results.

Reportedly, a single fall mowing is ineffective because the sumac has already been sending sugars back to its rhizome throughout the growing season. Previous strategies of double mowing in the spring and summer were ineffective because they happened too early; there was enough time left in the season for the second re-sprouts to contribute to the food stores. Armed with this new information, we're planning to set up treatment plots in the North Field to test these new methods in 2020. Because management is an ongoing process, it is helpful to have a way to measure progress in order to know whether a strategy is working. And to measure progress, you need ... data!

Throughout the season, I compiled two kinds of data: species richness and species abundance. Species richness is a simple count of total species, whereas abundance describes the population of a species within an area and gives a better idea of how the plant community is structured. Creating the species list is an ongoing process; so far, I've identified about 90 different species between the two meadows. This list includes natives, exotics, and even a new county record: the hairy mountain mint (*Pycnanthemum verticillatum*), which has never before been recorded in Dukes County. At least two of the species are of particular

conservation value: the orchid called spring ladies' tresses (*Spiranthes vernalis*), which was found naturally occurring throughout both meadows, is classified as a rare and threatened plant in Massachusetts; and New England blazing-star (*Liatris scariosa* var. *novae-angliae*) is a plant of special concern in the state. The

quality of the populations within an ecosystem. To collect this data, I sampled 63 small plots throughout the North Field, recording the presence and cover of the species found in each plot. Now that we have this data, we can periodically resample in the future to see what patterns are emerging and whether our



PHA Curatorial Intern Liz Thomas working in the Arboretum's North Field

ragged fringed orchid (*Platanthera lacera*) was a fun find in early summer; although not classified as rare, it is quite beautiful and its presence at PHA was previously unknown.

The species list tells us what is out there, but it does not provide any insight into abundance or distribution, which are more important measures for understanding the

management strategies should be adjusted. It also gives us a snapshot of what our plant community currently looks like. We are still analyzing the data, still taking measure, but we hope to find some interesting and actionable results. We're excited to watch our meadows continue to evolve towards greater diversity of native grasses and wildflowers.



Spring ladies' tresses blooming among the sumac in the North Field



Ragged fringed orchid blooming in the West Field in July



Native purple wavyleaf aster and wrinkle-leaved goldenrod

Perennial Plant Introductions from the Mississippi Embayment



American Dittany in flower

PHA explored the forests and swamps of western Tennessee and Kentucky in September 2017 to collect seed for the living collection. The expedition, branded “TNKY,” was a collaborative venture with Bartlett Arboretum, Chicago Botanic Garden, the Morton Arboretum, and the U.S. National Arboretum. This physiographic region is known as the Mississippi Embayment, a massive basin that drains into the Mississippi River. The comparatively young, rich soils deposited by changing river courses over thousands of years now support unique wetland communities and bottomland hardwood forests. The suitability of these soils for agriculture has subsequently turned much of the region into farmland and left a fragmented array of small forests. Although the majority of the TNKY expedition concentrated on tree species such as oak, hickory, water tupelo, and silverbell, we also gathered some noteworthy perennials entirely new to PHA. Here are a few that in only two years’ time are already thriving on the grounds.



The “frost flower” phenomenon that can occur on the stem of American dittany during certain cold conditions

Photo by Mark Adams: flickr.com/photos/markinspex/6477498033/in/dateposted

American Dittany or Frost Flower (*Cunila origanoides*)

This subshrub from the mint family (Lamiaceae) reaches only 12 to 18 inches in height and width. It occurs naturally in open, hardwood forests, often in dry upland sites with shallow soils that limit competition from other plants. Our collection came from a steep, rocky, south-facing hillside in Tennessee that was dry and moderately sunny. *Cunila* has proved remarkably adaptable at PHA, and thus far, the plants have proved to be deer resistant. Its small size positions *Cunila* as a front-border plant, which is an ideal location to appreciate its small, fragrant, pink-to-purple flowers. Another wonderful attribute of this perennial is its extended flowering time; it begins in late summer and is still going strong and attracting bees in mid-October. Although it is adaptable to richer garden soils, care should be taken to ensure the soils are well drained. Avoid planting *Cunila* near larger, aggressive perennials that will crowd it out. A rare but



The distinctive flowers of snow squarosestem

not entirely unique feature of *Cunila* are its “frost flowers.” This phenomenon arises when conditions are just right: during the first hard frost, when air (but not soil) reaches freezing temperatures, frost flower’s stems rupture and the escaping sap slowly freezes into delicate, flowerlike ice ribbons.

Snow Squarestem (*Melanthera nivea*)

For those that have visited PHA in autumn, *Melanthera* is hard to miss. Growing in a mass between the plant sale area and the Visitor Center, this perennial begins flowering in late summer and continues until frost. The spherical white flowerheads support a plethora of pollinators. An additional ornamental aspect of this species are its quadrangular stems, which are heavily mottled with purple spots. Our collection was made near Paducah, Kentucky, on the edges of an oxbow lake formed by the Ohio River. This happens to be the northern extent of snow squarestem’s range, but this species occurs southward into the Caribbean, Mexico, Central America, and South America. A fascinating fact: a recent study found *Melanthera* growing in the ash of an active Nicaraguan volcano, where a native bee species derives 99 percent of its



The flower of white bergamot

Photo by Fritz Flohr Reynolds: flickr.com/photos/fritzflohrreynolds/7665697802/in/photolist-cFoGUtu-fxPAi



food from these plants alone. Thus far we have learned that snow squarestem grows extremely well in cultivation on Martha’s Vineyard. We have also found that the plants benefit from being cut back one or two times during the growing season to encourage more flowers. Even cut back twice this year, our plants still reached 6 feet tall in full sun. This perennial appears to reseed readily and may require extra attention to contain in a cultivated environment.

White Bergamot (*Monarda clinopodia*)

On a steep and densely shaded slope in an old-growth Kentucky forest, we found a *Monarda* species thriving in a natural community of ferns, rhododendrons, iris, and liverleaf. It’s unusual to find monarda in such deep shade. We made a collection and labeled it “*Monarda* sp.”—the flowers had long since passed in favor of seedheads and we were unable to identify it. In the summer of

2018 the vigorous seedlings were large enough for planting after only three months of growth. In June of this year, our modest planting of the unidentified monarda in Holly Park bloomed. Although purple, pink, and red are the typical colors of monarda’s flowers, this species, pure white, was readily identified as *Monarda clinopodia*. White bergamot is a fairly common species in eastern North America. It draws in a variety of pollinators to its two-lipped, purple-spotted flowers, but is particularly attractive to bees. We’ve especially appreciated this perennial due to its deer resistance, mid-summer bloom, tolerance of substantial shade, and mildew-resistant foliage.

Like often happens with plants from our expeditions, excess plants of white bergamot, snow squarestem, and frost flower have been offered to the PHA plant sale for the past two years. We hope those that purchased these plants have enjoyed them as much as we have!

Photo by Gail Hampshire: flickr.com/photos/gails_pictures/39911839960/in/photolist-f4wWJE-2h6H9MB-2dMq1L5-2chZQoq-2fiPEuq-f4wWxC-QftczL-f4wWR9-23NSzEu-23NSBVj-9BwofR-NgKZc-2wvzgL-NgKZTy-NgKZJC

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\$5
Free to members & children under 12

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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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ARBORETUM DESTINATIONS



Martha's Vineyard Charter School students gather to learn about flowers and pollination.

Outdoor Classroom is a Hit with School Groups

PHA's beautiful new outdoor classroom next to the picnic area was created by Grounds Manager Ian Jochems and Horticulturist Oliver Osness last spring. This renovation and repur-

posing transformed the beech grove just off Holly Park into an inviting and useful destination. The open air classroom has been the perfect addition to the Arboretum for field trips

and family gatherings alike; the rustic log benches are just the right size for hosting school groups as well as the summer family book series. The benches were made using sweet gum

and black oak trees that were taken down on the Arboretum grounds last winter—another great example of PHA sustainability!