

# PublicGarden

THE JOURNAL OF THE AMERICAN PUBLIC GARDENS ASSOCIATION

VOL 30, NO 1 • 2015

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The Atlanta Botanical Garden, Gainesville opens this month. In our next issue, you'll learn about the fifteen-year effort to make this garden a reality.

PHOTO CREDIT: JASON GETZ PHOTOGRAPHY

## CORRECTIONS FOR THE LAST ISSUE:

Cover Photo Credit: Merrill Jensen

Table of contents and page 24 – correct spelling is Jensen-Olson Arboretum, not Jensen-Olson Arboretum

Pages 24-28 – All Photo Credits: Merrill Jensen

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# President's Note



Dear Readers,

Every APGA board member, past and present, has contributed to the growth of our organization over its long and distinguished history. I am so proud to have served the Association as president for the last two years, and to have worked with such an outstanding group of individuals—both staff and board members—during my tenure. Together, we have collaborated to create APGA's new five-year strategic plan.

The groundwork for the current strategic plan was laid in 2012 when APGA was in the final year of a business plan as well as in the process of selecting its next executive director. Serving as vice president and as leader of the Executive Search Committee, I knew the Association needed someone with the passion and vision to take the organization from *good to great*, as many have aspired to do. Fortunately, we secured Dr. Casey Sclar, an established leader from our own membership to help lead the organization on its next steps in the journey.

My term as president began right after Arizona's 2013 Garden Evolution Conference in Phoenix. During my term, I wanted to focus on developing a sound strategic direction for APGA's future. A plan was needed, but an evolutionary one, not a revolutionary one. Our trajectory as an Association reflected this. We were making good progress, evolving our board and transitioning leadership. We needed to increase the organization's impact and ensure that it provided the greatest value to its members.

Led by Casey and facilitator Anne Gallagher, the board developed the plan in 2014. Guided by an environmental scan and member surveys, we held several focused discussions and set goals. The APGA staff were also instrumental, especially in articulating our aspirations into its many objectives and tactics.

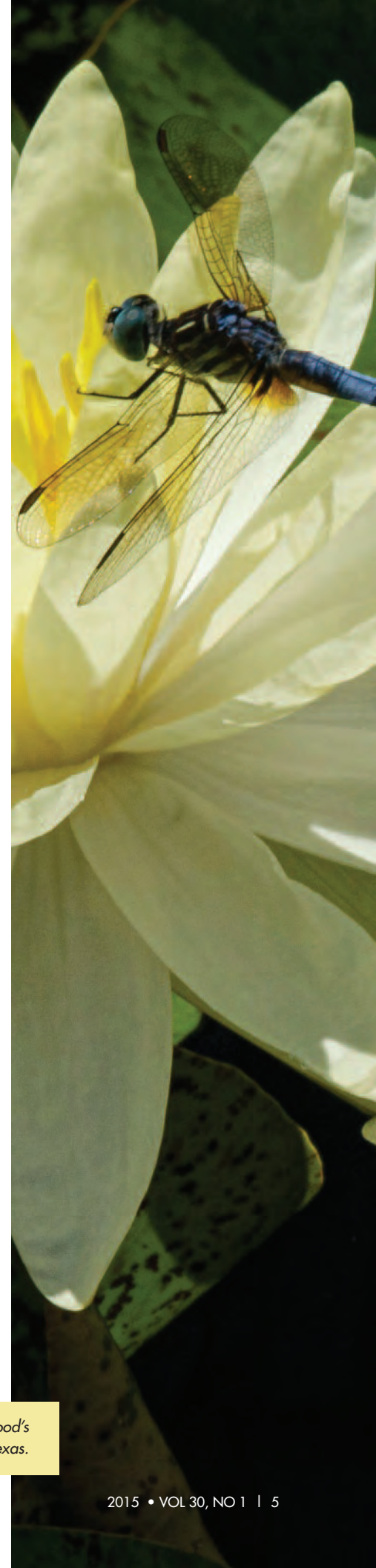
I'm very pleased with the direction that the 2015-2020 Strategic Plan sets to advance our Association. The beauty of the plan is in its simplicity and focus to ensure member value. This value is expressed in several key areas such as diversified professional development opportunities, better data for gardens to use, and promoting greater awareness of public horticulture. It also ensures that the Association maintains its own commitment to organizational excellence. The plan is strategic, keeping an eye toward the future, and is readily adaptable for the changes in our profession that we know will come.

Ultimately, APGA's direction was set by those individuals serving before the current board, and will be realized by those serving after the current board. When Sabina Carr assumes the role of board president this summer, she is poised to guide our association in achieving the plan's goals through the leadership of APGA's executive director and the diligence of its talented staff. As vice president, Sabina has been a passionate advocate for APGA and all of our members, and I am confident that she will excel in her role as our next president.

Yours,

Ken Schutz,  
APGA Board President

*'Texas Dawn' represents Nymphaea subgenus Nymphaea. It was added to Longwood's Nymphaea collection in 1988 and was recently named the state waterlily of Texas.*





## {Focal Points}

### Casa del Herrero

Gardens here feature colorful tiles and splashing fountains in 1940 and today.

*Submitted by Susannah Gordon, visitor and volunteer coordinator, Casa del Herrero*



PHOTO CREDIT: CASA DEL HERRERO ARCHIVES



PHOTO CREDIT: MATT WALLA

# Your Photos, THEN & NOW

These images were selected from those submitted by APGA member gardens to our recent Call for Photos. Not only are they beautiful, they offer a unique perspective on the longstanding presence of public gardens in our nation's history.



Find more images submitted by members in the APGA celebration video, a special presentation honoring the Association's seventy-fifth anniversary and announcement of its new five-year strategic plan. View it at [www.publicgardens.org/content/apga-celebrates-75-years](http://www.publicgardens.org/content/apga-celebrates-75-years)

### Magnolia Plantation and Gardens

Julia Grimké Drayton, the wife of Rev. John Grimké Drayton, who opened Magnolia to tourists in 1870, strolls through the garden in this photo taken around 1880.

Magnolia Plantation and Gardens was the first in the US to plant azaleas outdoors in the 1840s. They continue to thrive 175 years later.

*Submitted by Herb Frazier, public relations and marketing manager, Magnolia Plantation and Gardens*



PHOTO CREDITS: MAGNOLIA PLANTATION ARCHIVES



PHOTO CREDIT: MONTGOMERY BOTANICAL CENTER ARCHIVES

### Montgomery Botanical Center

Colonel Robert Montgomery and Nell Montgomery at Montgomery Botanical Center (MBC) in 1947. This overlook is sited on the Silver Bluff Escarpment, a geologic feature which runs through MBC.

Royal palms grow by Royal Lake at Montgomery Botanical Center.

*Submitted by Tracy Magellan, outreach manager, Montgomery Botanical Center*



PHOTO CREDIT: CHAD HUSBY

PHOTO CREDIT: CHUCK CARMACK



### Airlie Gardens

The 467-year-old Airlie Oak, in 1904 and more recently

*Submitted by Flo Berry, guest services coordinator, Airlie Gardens*



PHOTO CREDIT: CHARLES E. VALE

PHOTO CREDITS: UNITED STATES BOTANIC GARDEN ARCHIVES

### United States Botanic Garden

Beyond the United States Botanic Garden (USBG), the Capitol rises in 1864 and the view today.

*Submitted by Ray Mims, conservation and sustainability horticulturist, USBG*





# A TRIBUTE: *Rick Colbert*



Rick points out features on the newly paved Scenic Loop in 2013.

PHOTO CREDIT: TYLER ARBORETUM

Rick's commitment to and love of horticulture was evident in all that he did at Tyler Arboretum and as a member of the board of the American Association of Botanical Gardens and Arboreta (now APGA).

MARY PAT MATHESON

**R**ick Colbert, the late executive director of Tyler Arboretum, was a dear friend, trusted colleague, and consummate professional. Rick's commitment to and love of horticulture was evident in all that he did at Tyler Arboretum and as a member of the board of the American Association of Botanical Gardens and Arboreta (now APGA).

I served on the Association's board with Rick for many years, some very challenging such as when we struggled with the 2001-2003 recession and an underfunded but essential Association. As treasurer, Rick's business acumen enabled us to steer through those difficult years and rebuild the Association's financial base.

Rick was always a calming influence with a steady head and heart and an earnest belief in the Association's importance. I relish those wonderful years on the board; they offered a rare

opportunity to build long-lasting and deep friendships with colleagues. At the end of a long day, it was always a pleasure to find one another at the bar, order drinks, and catch up on life. Eric Tschanz and I used to tease Rick because he was only good for one beer, but he was a good sport and a dear friend.

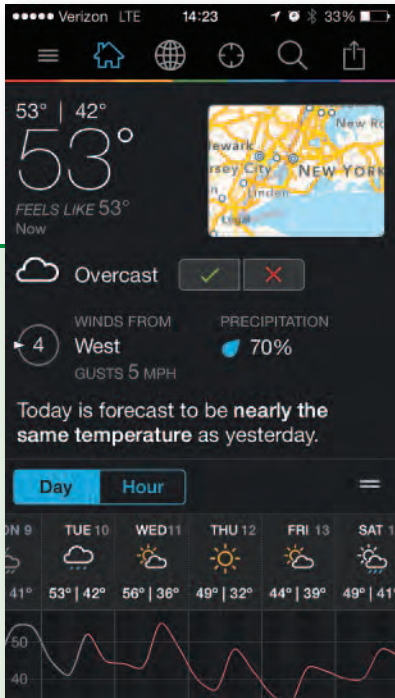
I am fortunate to have spoken to Rick periodically over the last few years of his life. We didn't dwell on his illness; instead we talked about his growing family, beach house, and time spent woodworking.

As a professional, Rick left a lasting legacy at his beautiful Tyler Arboretum. He also left an indelible mark on APGA through his low-key and thoughtful efforts to stabilize the Association and position it for future success. As APGA celebrates its seventy-fifth anniversary, I hope that we will all celebrate the life of a quiet hero and dear friend, Rick Colbert.

*Mary Pat Matheson is the Anna & Hays Mershon President and CEO of Atlanta Botanical Garden.*







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A thoughtful and equipment-focused donor gave us these shears a couple of years ago, and they are now essential to our winter pruning operations. They really help to reduce repetitive strain on hands from tedious small- to medium-caliper pruning jobs, such as those involving roses and other shrubs, and fruit trees. <http://www.oescoinc.com/felco-f820-electric-pruning-shear.html>



PHOTO CREDIT: KRISTY ALBUR

*Both the above submitted by Melanie Sifton, vice president of horticulture and facilities, Brooklyn Botanic Garden*

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*Submitted by Dave Schurr, garden horticulturist, Winterthur Museum, Garden, & Library*



# OUR **STINKIN'** SUCCESS STORY: *Morty, the AMAZING *Amorphophallus titanum**

ERIN GRAJEK



Graphic used to promote Morty in the community, on the Web, and in social media.

While attending the APGA Conference in Denver, Colorado, in late June 2014, I received a call advising me that three *Amorphophallus titanum* tubers were en route to Buffalo and Erie County Botanical Gardens, our Buffalo, New York, garden. The conference session *The Corpse Flower Phenomenon: Big Stinkin' Success Stories* was to take place the following day, which was incredibly timely. The session was presented by Joe Reed from Phipps Conservatory and Botanical Gardens, Ray Mims from the United States Botanic Garden, and Holly Berthold from Missouri Botanical Garden. I attended the session and was amazed how one peculiar plant could change everything for these three gardens. Their experiences were individual but quite similar overall. After living through our own story, I concur—corpse flowers bring big stinkin' success!

(Left) Morty shows off his gigantic and stinky bloom! August 8, 2014

(Bottom) Morty, placed on display for the public on July 28, 2014, with Jeff Thompson, director of horticulture.





Morty was surprised by his local fame... President/CEO Dave Swarts reads aloud Morty's feature article in *The Buffalo News* to prove it.

An extremely diverse group of visitors came from far and wide to see and smell this unique flower. Truly a dynamic experience, Morty helped to raise funds and friends for our garden.

— DAVE SWARTS, PRESIDENT/CEO

When I returned to Buffalo on July 7, I encountered the very strange “adoptees” that were beginning to rock our world. Knowing little about these amazing plants, our team reached out to Joe, Ray, and Holly for advice. The plants were growing several inches each day, and we were still unsure whether we had a bloom or a leaf structure. If we had a bloom, we knew the window of opportunity would be short. Keeping in constant contact with Joe and his Phipps colleague Ben Dunigan, we determined it was a bloom and that it would be fully open in a few short weeks. We developed a care, marketing, education, and visitor experience plan, on zero budget, for our new best friend, and on July 28, the plant—dubbed “Morty”—was placed on public display. Morty was now growing six to eight inches per day and promptly bloomed eleven days later for twenty-four to forty-eight hours of stinky bloom time. We reveled in Morty's true magnetism within the community.

Attracting ten thousand guests in two weeks—massive crowds, by our Garden's standards—and a frenzy of media

coverage, Morty accounted for almost 10 percent of our overall visitors in 2014. In those two weeks, Morty increased our number of website users by 96 percent and attracted over one thousand likes to our Facebook page. On Twitter @MortyStinks collected 754 very active and entertaining followers, and #corpseflower was the hashtag of the week on our local CBS station. Morty was featured four times in our local newspaper, *The Buffalo News*, with photos and editorials; starred in several live shots on our local NBC, CBS, and ABC stations; was listed on Wikipedia.com under *Amorphophallus titanum*; created record sales in our gift shop; and that's just the tip of the iceberg! Did I mention that we had no budget for marketing Morty?!

Morty rocked our world and attracted an amazing number of visitors. Some waited in line for over an hour to see the bloom, and we believe Morty helped us connect people with plants, the focus of our mission. I can attest to that. Morty's name was constantly bandied about in the community,

and he is still the talk of Western New York. (To see for yourself what the fuss was about, go to [www.youtube.com/watch?v=g4FUOH2Y-qY](http://www.youtube.com/watch?v=g4FUOH2Y-qY).) Morty is the gift that keeps on giving.

Thanks to the generosity of Ray, Holly, and especially Joe and Ben from Phipps, Morty is our incredible success story—and proof that the APGA network of amazing professionals is an invaluable resource.

*Erin Grajek is the associate vice president of marketing and visitor experience at the Buffalo and Erie County Botanical Gardens.*



Going “live” on *Wingin' It Buffalo Style* on the local CBS affiliate station. Anchor Matt Snyder (right) speaks with President/CEO Dave Swarts as Morty “looks on.”



The most amazing botanical experience I have ever been a part of. Morty's massive size and rapid growth rate was astonishing!

— JEFF THOMPSON, DIRECTOR OF HORTICULTURE





# Managing Your GARDEN SHOP

ANDREW ANDONIADIS

Successful garden shop management is a combination of art (product selection, merchandising, display) and science (the numbers). If sized and located properly and managed well, your garden shop can be a significant source of revenue, a public relations asset, and a steady source of delight for visitors, members, and all other customers.

At Andoniadis Retail Services, we have been engaged in cultural commerce consulting for twenty-three years, during which time we have worked with more than 350 clients including representatives of fifty botanical garden

and arboreta projects. This article focuses on the most impactful financial and product selection strategies that can be employed to make an existing garden shop a success.

Not all strategies are equally important for all gardens—some may be difficult for certain gardens to execute due to a variety of constraints. However, for the most part, every strategy, with some modification, can be applied to nearly every existing operation to increase profitability. Our firm offers the following checklist of strategic opportunities every garden should consider.

## Inventory Management

Perhaps the most important operational requirement for a financially successful store is inventory management (typically the largest expense category), primarily through the consistent use of a merchandise-buying plan, commonly known as an Open-To-Buy (OTB). The OTB is the process of projecting sales and inventory levels for a future period of, perhaps, twelve to fifteen months or more, and then calculating when and in what quantity merchandise should be purchased and delivered to meet these sales goals.

ALL PHOTO CREDITS: ANDREW ANDONIADIS



(Above) The Rose Garden Store at the International Rose Test Garden in Portland, Oregon, specializes in roses and related materials.



(Right) Nestled under the trees, the Gift Store at the Portland Japanese Garden features Japanese items.





The Garden Shop at Lan Su Chinese Garden offers many Chinese items, including a selection that is unique to the garden.

When assessing an existing shop with lagging profits, we frequently identify inconsistent use of an OTB as the culprit. And where an OTB is not being used, the result is very often a bloated inventory—equivalent to wasting precious cash reserves. In our opinion, regardless of a garden retail operation's size, an OTB should be established and used consistently.

Use of an OTB helps to determine how much product is needed to meet expected sales. If sales are more than expected or inventory lower than it should be, the OTB will help to project how much additional product to buy to meet the increased demand and keep the shop looking well-stocked, attractive, and inviting. Most important, however, if revenue is less than expected or inventory is too high, the OTB assists in determining how much to decelerate buying in order to reduce the possibility of having too much product on hand. The consistent use of an OTB also ensures less interruption to a critical segment of shop operations should the manager/buyer suddenly be unavailable.

No discussion of inventory management can exclude addressing how to handle inventory that, by plan or

circumstance, is available in multi-year quantities. Although all the inventory must be reported for tax and other purposes, we recommend establishing a “virtual” warehouse to house the inventory for products such as books, postcards, and other proprietary and purchased products, that will be sold over an extended time period. The goals of this virtual warehouse are to:

- relieve the immediate store inventory of excess products for the purpose of calculating the OTB;
- allow the store to “buy” products from the virtual warehouse as needed;
- highlight the status of, and assign responsibility for, multi-year inventory.

### Invest in a Computerized Point-of-Sale System

In general, a strong return on investment (ROI) case can be built for investing in a computerized point-of-sale (POS) system when net sales reach \$125,000. At this sales level, savings from better inventory management, including quick identification of and reaction to bestsellers and slow-selling products, will recapture the investment in an acceptable time period.

Choosing the right system can be difficult. We suggest that you consult with similarly sized retail businesses in your area (not just other gardens or museums) for recommendations. Many factors should be considered, but don't forget to evaluate ease of use at the point of sale, especially if you have volunteers on staff, and local service representation. Also, in order to avoid finger pointing when your system goes down—and it will—buy your software and hardware from, and have it installed by, the same company.

Systems that integrate admissions, membership, group sales, development, volunteer tracking, accounting, class registrations, retail, and other functions are gaining popularity. When evaluating these systems from the shop perspective, make certain the retail module is strong. Retail requiring the management of hundreds to thousands of different products and the tracking of multiple aspects of each product is typically the most complex segment of integrated systems. Currently, the retail component is the weakest link of most integrated systems.



The Arboretum Store at the Morton Arboretum offers visitors an abundance of nature-inspired items.



Here is just a smattering of the jewelry items available at the Morton Arboretum's Arboretum Store.

## Retail Pricing

The consistent retail pricing of products that are not pre-priced is essential in any profit-enhancing effort. If insufficient profit margins are generated at the top of a profit and loss statement, little chance exists of having sufficient revenue to cover the costs reflected in all the other line items.

The critical steps to maintaining margins and lowering the Cost of Goods Percentage, typically the biggest expense item, includes determining the retail price *before buying* a product or making sure that the pre-established price is sufficient to maintain desired margins. Multiplying cost times 2.3 to 2.5 is a way of calculating an initial retail price. (Books, especially, are a frequent exception to this guidance.)

After making this calculation, keep the retail price mostly in that range. However, if perceived value and competition allow, increase the price to what the market will bear. If perceived value and competition require, and the product is important to the mission-related product selection, lower the retail price to an acceptable level. Pricing below doubling of cost should be a rare and strongly justified occurrence. The initial markup includes covering standard freight-in. The retail price should be increased for extraordinary freight costs. If a potential product doesn't meet markup parameters, look for another product that does before pricing at a lower price.

## Focus the Product Selection

The product selection should mirror the strengths of the garden and must reflect the profile of visitors, members, volunteers, and other customers. Perhaps the most important requirement to meet is Unrelated Business Income Tax (UBIT) guidelines. Tax accountancy is not our area of expertise, but in general UBIT guidelines allow profits generated from the sales of merchandise to be free of federal income tax if the merchandise is closely related to the mission of the garden or a current exhibit. UBIT requirements are actually easily met and can help encourage shop management to keep merchandise well focused.





Yew Dell Gardens in Crestwood, Kentucky, opened its gift shop in 2010.

Merchandise focused on the mission not only limits UBIT exposure, but also creates a retailing environment that makes each site unique and more appealing to the customer. Even if it were not a tax code requirement, keeping the product selection focused on the mission of the garden is a key ingredient in creating a compelling retail atmosphere.

Ensure that your selection of products is distinctive. Develop up to three product

categories for which the shop has a reputation due to category depth, breadth, or unusualness.

In summary, if you focus on what the customer wants to buy, price it properly, and carry a financially appropriate level of inventory, you will have taken the critical giant steps necessary to have a profitable shop that also enhances the visitor experience. To be clear, this does not mean that proactive selling, product

knowledge, compelling merchandising, and display are not important—they are just not addressed in this article.

*Andrew Andoniadis is the principal of Andoniadis Retail Services in Portland, Oregon. If you would like to learn more about improving your garden's gift shop, he may be reached at [andrew@museumstoreconsult.com](mailto:andrew@museumstoreconsult.com).*



## THE MOST POPULAR PRODUCT CATEGORIES ACROSS MOST BOTANICALLY ORIENTED VENUES ARE:

- Apparel
- Arts and Crafts
- Books, Magazines, and Other Publications
- Children's Merchandise including Activity Kits
- Convenience, Novelty, Souvenir, Impulse, Tchotchkes
- Food
- Garden Accessories
- Gifts, Home Décor, Tabletop, Desktop
- Jewelry\*
- Plants (indoor and outdoor)
- Prints, Posters, Note Cards, Postcards
- Stationery
- Specialty Tools

*\*Jewelry is often the best-selling and highest margin product selection in the shop.*



The Garden Shop at Santa Barbara Botanic Garden showcases items made by local artisans, jewelers, and the Garden Guild Crafters, as well as other gifts, books and products inspired by the natural world.









This image is another submitted in response to our recent Call for Photos. Bamboo (*Phyllostachys viridis* 'Robert Young') and a Japanese-style arched bridge grace Sarah P. Duke Gardens' Culberson Asiatic Arboretum.

PHOTO CREDIT: RICK FISHER





# PLANT HEALTH and PUBLIC PERCEPTION

PESTICIDES IN PUBLIC SPACES:  
*Protecting Plants, People, and the Environment*

JODY FETZER AND CINDY BAKER

Beauty, serenity, and safety are essential components of the visitor experience in public gardens. Pesticide safety has been in the news and under discussion both in the United States and Canada due to potential adverse effects on children, bees, and the environment. To protect their citizens, several states, cities, counties, and municipalities have passed legislation to prohibit pesticides.

Pesticide safety is not a new concern. In 1959, Stern, Smith, van den Bosch, and Hagen, entomology professors from University of California's Riverside and Berkeley campuses published an article in *Hilgardia* mentioning potential "hazards to insecticide handlers and to persons, livestock, and wildlife subjected to contamination by drift." They further stated, "Unquestionably, some of these problems have arisen from our limited knowledge of biological science; others are the result of a narrow approach to insect control."<sup>1</sup>

Today, after years of scientific research, we have gained knowledge regarding the molecular mechanisms of pesticides; we have the ability to analyze biochemical pathways; and researchers have amassed biological data to better understand complex plant health issues. Decades of data have led to more effective strategies and safer products for managing pests. Due to rigorous scientific testing and registration





requirements implemented in the 1970s with federal oversight, the required labeling provides instructions that protect handlers and minimize environmental risks. Just as predicted, detailed knowledge of biological science has broadened our approach to insect control!

The authors further noted that pest populations were on the increase because of the environmental changes caused by humans accommodating their own needs for food and space; the transporting of plants and pests across geographical barriers, leaving their specific predators, parasites, and diseases

behind; and changes in the economic threshold levels—people expecting higher quality produce. All of this holds true today; pests continue to be on the move, and climate change may accelerate this process. Public gardens are facing some very serious plant health-management challenges!

### Emerald Ash Borer at Chicago Botanic Garden

When the Emerald Ash Borer (EAB) was first discovered in Detroit, we viewed it as something insignificant and far

away—a host-specific, slow-moving pest. But a few years later, everyone realized that this was a devastating pest that through human intervention was spreading fast and broadly.

At Chicago Botanic Garden (CBG), we felt it was necessary to prepare for the worst-case scenario—EAB would likely invade Chicago. Our inventory listed 451 *Fraxinus* in the ornamental collection. This meant a significant number of trees would either need to be treated with pesticides to keep them healthy, or removed to prevent hazardous liability issues.



(Above) A volunteer checks funnel traps in order to monitor *Ips* sp. beetle population fluctuations at The New York Botanical Garden.

PHOTO CREDIT: JODY FETZER

(Left) Workers remove ash trees before they become dangerous.

PHOTO CREDIT: CHICAGO BOTANIC GARDEN

### Our plan and our recommendations for any botanic garden facing these issues are as follows:

- 1. Develop close networking** with Federal, State, and professional green industry groups including the United States Department of Agriculture, your state's Department of Agriculture, International Society of Arboriculture, Sentinel Plant Network (SPN), APGA, local extension services, and neighboring botanic gardens to stay on the forefront of any and all information regarding detection and treatment options.
- 2. Inventory and assess.** An accurate and thorough inventory of what exists is critical to developing a plan. Record tree health, aesthetic aspects, collection value, and donor trees.
- 3. Develop a plan** to save the best and most important trees. At CBG we selected a core group of approximately fifty ash trees to protect as part of the collection.
- 4. Research product options** and carefully select the most effective and appropriate pesticide strategy. Our smallest trees, <10", would receive soil drench treatments with imidacloprid. Larger trees would be injected with TREE-äge®.
- 5. Identify and budget** for removals that are not critical to the collection. We identified four hundred trees near high visitor areas that needed a plan for removal. Many were old and very large; estimates to have them removed by a professional tree company ranged from \$750 to \$1,500 each. That was an expense we would not be able to meet even if spread out over ten years. Therefore, grant requests were written to help cover costs of removals and replacement trees. Corporate sponsor SavATree was brought on board to help us with costs of both removal and protective treatment. Operating expenses were requested from our board for additional removal costs—both labor and the hauling of ash wood.
- 6. Develop plan phases.** We developed a multi-task plan which included removing a predetermined number of ash trees annually whether dead or alive, and proactively treating all others that would then be removed at a future date. This allowed us to control costs and labor and prevent hazardous tree conditions that we could not keep up with.



A large number of ashes were removed prophylactically from CBG and the site replanted.



Dangerous tree work and pesticide applications are done on Mondays when the New York Botanical Garden is closed. Here, the spray *Bacillus thuringiensis* ssp. *israelensis* is used to manage mosquito larvae in stagnant water.

PHOTO CREDIT: JODY FETZER



BEFORE



AFTER

As it turned out we had developed our plan just in the nick of time. EAB did arrive at CBG, and when the insects invaded, they came in the millions! We expected EAB to “creep” across our property and take several years before all the trees were affected. Instead they came as a smothering blanket, affecting all 385 acres within almost the same year. What was predicted as a five- to ten-year decline took less than four.

As environmental stewards and responsible pesticide users, we believed that saving all 451 trees in the collection would have been the wrong choice even though most were beautiful and healthy pre-EAB. As collections managers, we felt that it was very important to save select trees. By planning ahead, we were able to make good choices grounded in facts.

We shared our story with homeowners and municipalities in our region to help others make better informed choices. Our EAB battle built new bridges connecting us with governmental and educational institutions. We feel better prepared for the next invasive pest—and you know there will be one!

Pesticides helped us to preserve important trees and to lower costs—by delaying tree death, we gained time to create a fiscal plan for expensive removals. Pesticides have associated risks, but they also provide many benefits and are critical tools when used as part of a well-thought-out management plan. This process of analyzing options and combining strategies to manage pests is known as Integrated Pest Management (IPM).

### Integrated Pest Management

The 1959 Integrated Control Concept forms the backbone of our current IPM approach to plant pest management throughout public gardens and parks. Developed by Stern, Smith, van den Bosch, and Hagen, it was proposed as a new and more sustainable way of making decisions regarding pest management for agricultural crops. It is based on these principles:

- Recognition that agriculture is part of the larger ecosystem, comprised of all the living organisms of an area and their environment;
- Supervision of insect levels so that chemical applications take place

only when and where they are absolutely necessary;

- Promotion of beneficial insects through conservation and augmentation;
- Use of products and application timing to target specific pests, minimizing the effect of treatment on pests' natural enemies.

Intervention with pesticides or plant removal may be the only options for some fast-moving pests such as EAB, but IPM includes much more than pesticides. Steve Stauffer, Kristine Ciombor, and Mike Rose stressed the importance of using biological control agents as part of an IPM program in public gardens.<sup>2</sup> Biological control is especially effective for managing pests in conservatories with very diverse plant species. While it may seem simple to create a system based on multiple methods of control, introducing biological controls leads to complicated details; both the pest and beneficial organisms are living organisms whose environmental responses must be considered so that beneficial organisms prevail over the specific pest. Beneficial organisms are more widely available now, and we have options to help manage





Ontario pesticide prohibitions caused a giant step backwards for plant health management at Royal Botanical Gardens (RBG) in Hamilton, Ontario. Old-fashioned sulfur and copper products are among the limited options being applied for fungal problems; soap and oil are products allowed for insect pests on the Gardens' roses. Unfortunately the roses at RBG, the Montreal Botanical Garden (photo), and other Ontario public gardens are defoliating and declining because these older products tend to be phytotoxic and have little effect on rose pests.

PHOTO CREDIT: JON PETER, RBG, ONTARIO

many challenging pest problems. The Association of Natural Biocontrol Producers ([anbp.org](http://anbp.org)) is a resource with lists of producers and distributors of beneficial organisms used for biological control. It is important to examine beneficial organisms upon arrival and to monitor pest and beneficial populations to determine if additional measures are needed to protect plant health.

IPM specialists, supporting staff, volunteers, and students are essential for collecting site-specific data and designing programs that integrate strategies for a park or public garden's specific problems. Nancy J. Bechtol detailed options for gardens lacking the financial resources to hire specialized IPM staff.<sup>3</sup> Bechtol provided guidelines for building a successful IPM program if specialized staff were brought in. Her work inspired staff at many public gardens and parks including the Minnesota Landscape Arboretum and NYBG. Since its inception in the early 1990s, the Maryland National Capital Park and Planning Commission located in Montgomery County, Maryland, has become a recognized leader in the mid-Atlantic region for innovative and comprehensive IPM programs that

encompass public gardens, parks, recreational fields, forests, natural habitats, and storm water facilities.

People, beneficial organisms, pesticides, and timing! Optimum time of application leads to less pesticide and fewer numbers of applications. University extension e-newsletters, pest alerts, and diagnostic networks keep us informed of the emergence of local pests and arrivals from outside our state. The National Plant Diagnostic Network ([www.npdn.org](http://www.npdn.org)) provides links to regional plant health threats. The SPN is a resource for public gardens ([www.publicgardens.org/content/sentinel-plant-network](http://www.publicgardens.org/content/sentinel-plant-network)).

Pesticides—newer, safer, better—will continue to be a component of our diversified toolbox of options used for managing weeds, insect pests, and pathogens. Public gardens and parks with their broad diversity of plants have much more varied pests than do agricultural crops—we also have more visitors! Responsible pesticide use by public gardens is important: why chemical options are needed, what products and alternative organisms are selected, how they are administered and timing

strategies for applications are decisions critical to our missions of providing the best care for our collections, the environment, and visitors.

*(Editor's note: A pdf with FAQs and answers is available as supplemental material at [www.publicgardens.org/content/current-public-garden](http://www.publicgardens.org/content/current-public-garden))*

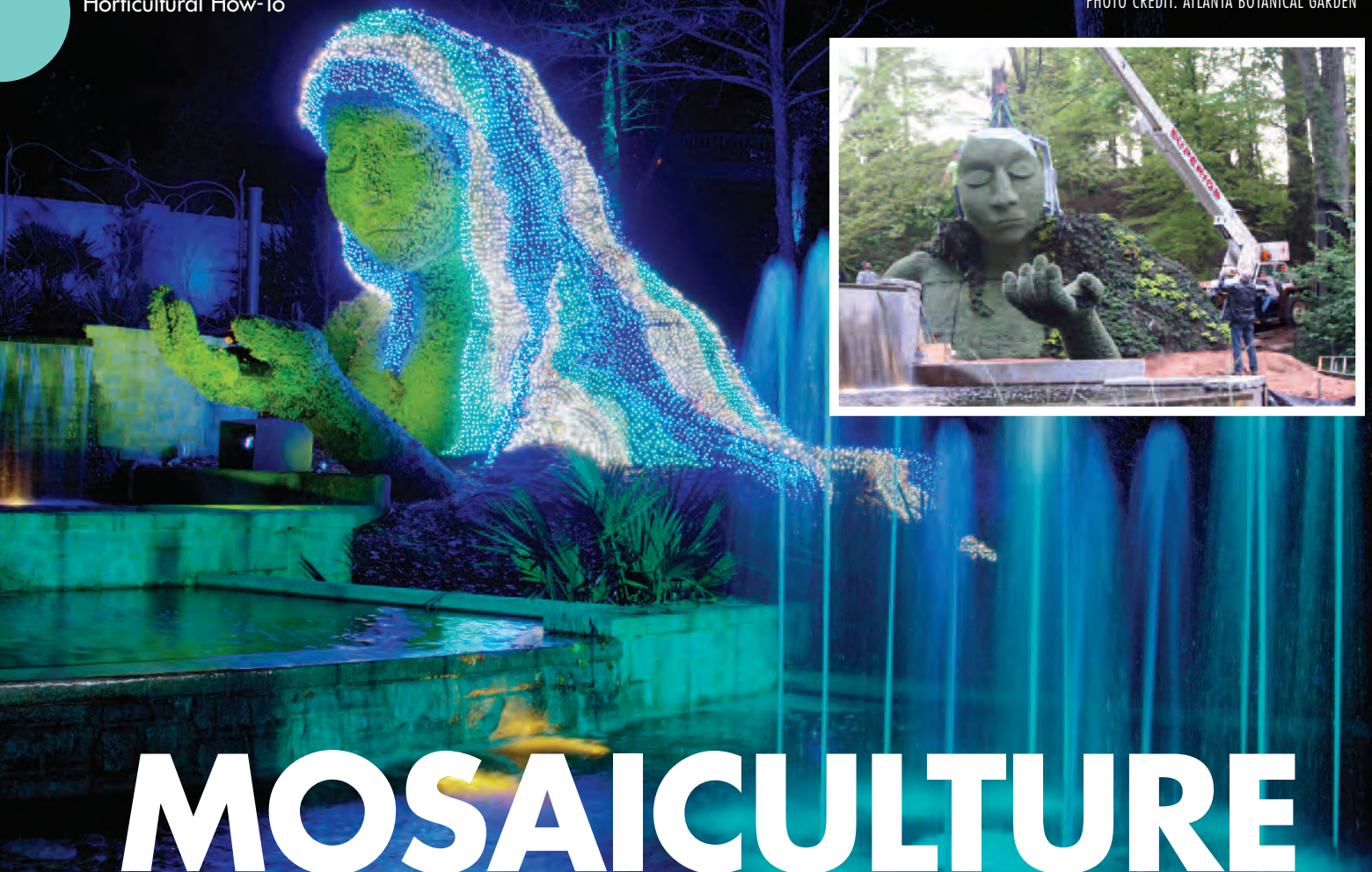
*Jody Fetzter is the green management coordinator at the Maryland National Capital Park and Planning Commission. She may be reached at [jodyfetzter@montgomeryparks.org](mailto:jodyfetzter@montgomeryparks.org).*

*Cindy Baker is the manager of horticulture services at Chicago Botanic Garden. She may be reached at [cbaker@chicagobotanic.org](mailto:cbaker@chicagobotanic.org).*



1. Vernon M. Stern, Ray F. Smith, Robert van den Bosch, and Kenneth S. Hagen, "The Integration of Chemical and Biological Control of the Spotted Alfalfa Aphid: The Integrated Control Concept." *Hilgardia* 29 (2): 81-101, <http://hilgardia.ucanr.edu/Abstract/?a=hilg.v29n02p081>.
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# MOSAICULTURE

MILDRED PINNELL FOCKELE

2013 - Ice Goddess

PHOTO CREDIT: JOEY IVANESCO

In the summer of 2013, the Atlanta Botanical Garden (ABG) staged a blockbuster exhibit—*Imaginary Worlds: Plants Larger than Life*, the creation of International Mosaiculture of Montreal®, a nonprofit organization that since 2000 has staged wildly successful, worldwide exhibitions and competitions involving the centuries-old horticultural art of mosaiculture. Each work is a living sculpture, an evolution of the “stuffed topiary” technique, yet is not topiary at all; instead, its steel armatures are covered with a special fabric that contains planting pockets for plugging in thousands of tiny plants that are meticulously groomed to maintain the sculpture’s form. The 2013 exhibit featured nineteen pieces including two sixteen-foot cobras, an eight-foot grazing unicorn, and the twenty-five-

foot centerpiece of the exhibit, *Earth Goddess*.

The exhibit returned in the summer of 2014 with an additional eleven pieces, and was entitled *Imaginary Worlds: A New Kingdom of Giant Plants*. Many of the works returning to the exhibit were given new locations in the Garden, as well as a new plant palette. The additional pieces came from a 2013 display created by International Mosaiculture of Montreal® at the Montreal Botanical Garden.

Mosaiculture truly combines art and horticulture to form exquisite, artistic masterpieces. But creating, installing, and maintaining these works is no easy task. The basic framework of steel is created by artisan welders working from pictures to create unique figures. Large pieces are divided into smaller ones so that all can fit inside the greenhouse. There, the pieces are stuffed with growing medium

inside of mesh fabric, and an internal irrigation system is installed within the framework of steel and growing medium.

Hundreds or thousands of annual or perennial plugs are used to “plant” each form. The outline of each plant’s color pattern is drawn directly on the fabric with paint; a dibble is used to create holes in the mesh; and the plants are plugged directly into the holes. One of the keys to a successful Mosaiculture piece is proper plant selection. The majority of the color in a piece comes from foliage and not flowers. The lighting of the final locations of each piece is critical—some annuals lose their foliage color intensity with low light levels.

Most of the pieces from our 2013 exhibit were removed from the Garden, and all plants and media were removed by volunteers. The three remaining works, the two cobras and *Earth Goddess*, were



Comparing the years 2013 and 2014 with 2012, Mosaiculture boosted attendance by seventy thousand to one hundred thousand additional visitors. Admissions revenue increased by 20 percent over the two years; membership revenues swelled by 25 percent; and gift shop revenues rose by 15 percent.



Cobra being moved into place

PHOTO CREDIT: ATLANTA BOTANICAL GARDEN



ABG Mosaiculture cobra in Greenhouse

PHOTO CREDIT: FRANÇOIS GRAVEL

outlined with LED lights to create a stunning special effect for our *Garden Lights, Holiday Nights* winter exhibit. The pieces for our 2014 exhibit were then brought into the greenhouse in January, stuffed, planted, and grown for an installation date of early April. To begin the process, our regular horticulture staff assisted with the stuffing and planting for three weeks in late January and early February, for a total of six hundred hours. Once most of the forms were stuffed (by mid-February), the Mosaiculture team (one permanent ABG staff, three temporary staff, and two Mosaiculture team members) finished the smaller ones. (The cobras and *Earth Goddess* were replanted on site in April during the installation of the remaining pieces.)

The final installation presented its own set of challenges. Concrete footings (requiring engineering drawings) had to

be built to support the large sections. These were moved into place with a small crane—quite a feat at ABG, given how narrow some of our walkways are. Often, parts of the Garden were closed during installation, and a Visitor Services associate was assigned to the area to re-route guests during our busy spring season. Larger sculptures required on-site assembly, with riggers and welders putting them together. We discovered that welding and irrigation tubing are not a good mix! Tubing melted under the welder's torches and had to be repaired after installation was complete.

At this point, the Mosaiculture team moved into maintenance mode. The detail on the forms—noses, eyes, feet, etc.—demanded regular shearing of the plants. In addition, certain sections required additional hand watering. As always, the plants had to be fertilized and

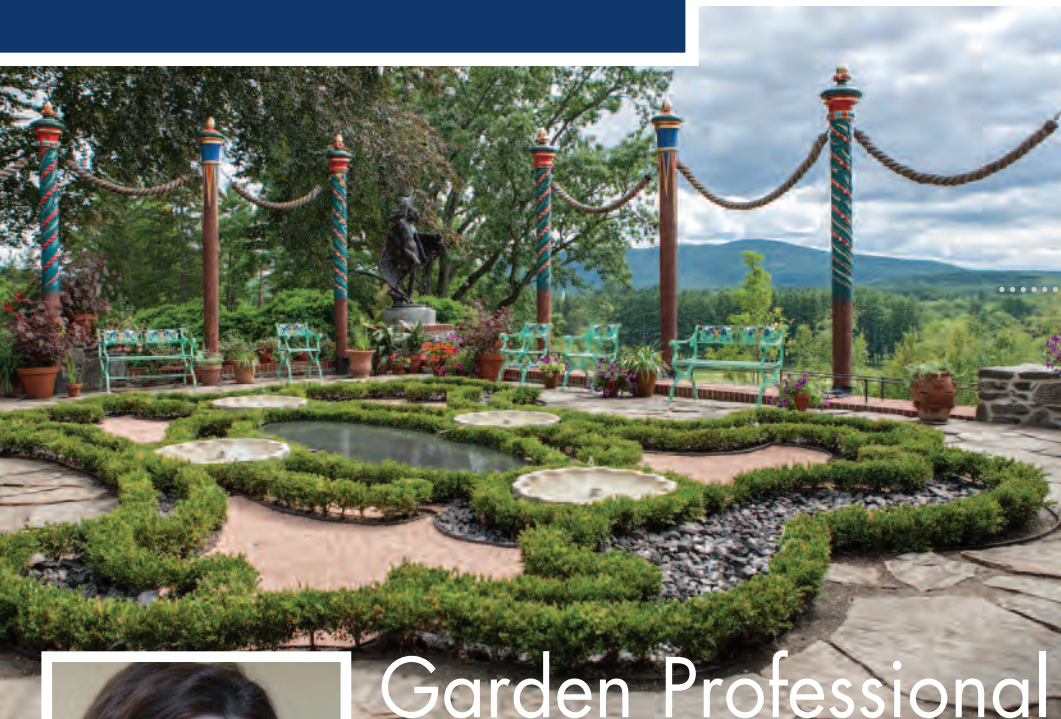
monitored for pests and diseases. All this work was done by a temporary, full-time staff of three under the supervision of one of our permanent horticulture staff. A very tight and organized schedule was set for shearing, watering, fertilizing, and monitoring to keep all in top shape.

While such exhibitions require an up-front investment and an ongoing effort to keep them in peak condition, those investments will pay off in spades when it comes to creating the wow factor. Mosaiculture—truly a work of horticultural art—creates a unique, unforgettable horticultural experience for garden members and guests.

*Mildred Pinnell Fockele is the vice president of horticulture at Atlanta Botanical Garden. She may be reached at [mfockele@atlantabotanicalgarden.org](mailto:mfockele@atlantabotanicalgarden.org).*







The Afternoon Garden, at Naumkeag, which is a property of The Trustees of Reservations and is a National Historic Landmark, in Stockbridge, Massachusetts.

PHOTO CREDIT: MICHAEL FLOWER

# Garden Professional SPOTLIGHT Cindy Brockway

*Program Director for Cultural Resources  
The Trustees of Reservations  
Beverly, Massachusetts*



PHOTO CREDIT: ELIZABETH BROCKWAY

### **How did you come into the garden industry?**

Born and bred into a family of foodies and gardeners, I have gardening in my genes, but on a simple, family scale. Barely having time to pull the weeds among the vegetables, I view my own garden as a bit like the cobbler's children who have no shoes. Instead, I spend my time making other (mostly public) gardens look their best.

My career has focused on historic landscapes of all types—I have done everything from reading the cultural landscape for clues about a place's history to polishing the work of great landscape architects. Reviving the beauty of places almost lost to the passage of time is my passion, whether restoring old gardens or stabilizing their ruins. I received a good academic foundation at the University of Rhode Island and Boston University and then hands-on learning in internships at

Longwood Gardens and Chicago Botanic Garden. This mentor/student hands-on learning is some of the most influential of my career. I've also been lucky enough to work on some tremendous properties and with some terrific professionals.

### **Would you tell us about a recent project?**

I serve as program director for cultural resources at The Trustees of Reservations. The Trustees owns and operates over one hundred properties across more than twenty-five thousand acres of Massachusetts' most important scenic, historic, and natural landscapes. Recently we have focused our attention on two National Landmark gardens: Castle Hill (Ipswich) and Naumkeag (Stockbridge). At Castle Hill we have recently completed the restoration of a fifteen-hundred-foot-long grand allée and casino complex, and we are about to embark on the restoration of its Italian

(formal) garden. At Naumkeag, we are nearing the end of a five-phase restoration of Fletcher Steele and Mabel Choate's garden collaboration, including the restoration of its most iconic garden—the Blue Steps. Its Chinese Temple Garden restoration, the final phase, will be completed in 2016. These restorations are transformational, and have generated some wonderful press, but it is the long-term, annual commitment to appropriate stewardship that is most exciting to me. As the state's only preservation and conservation organization, we are seeing our role as caretakers of some of the Commonwealth's most important public gardens highlighted by the work we are doing. As we build our identity around these very special places, we hope to inspire others to care for, appreciate, and make a commitment to public gardens across the region.

### **What do you find most rewarding about working in this industry?**

The people. Gardeners are a passionate, caring, sharing group. We support each other and the pursuit of excellence in horticulture, design, and all of its related fields. Working in gardens is humbling—we are constantly coping with the variability of weather, funding, audiences, and the unique personalities of each place. I think that challenge inspires us to collaborate, to facilitate, and to celebrate all of our successes. I am as happy to hear about the work of new plant introductions as I am to hear about the great work around heritage plant genome preservation. I celebrate the opening of new public gardens as much as I love wandering the paths of the oldest ones. We have our challenges, but we have much to celebrate in all of the work of our industry. Our people are its greatest resource.





'Blue Cloud' represents *N.* subgenus *Anecphyta*. It was added to the Longwood Collection in 2006. Its stunning color is popular with guests.

PHOTO CREDIT: LONGWOOD GARDENS/D. WARD



# *Nymphaea* AT LONGWOOD GARDENS

TIMOTHY JENNINGS

The plant collection at Longwood Gardens can be traced back to 1798 and today features nearly ten thousand different kinds of plants that are critical to our mission of creating extraordinary horticulture displays.

Despite its long history, Longwood did not develop its first formalized Plant Collection Policy until 2011. Having the policy has enabled staff to make responsible and appropriate decisions about the management and care of our

existing collection and provides us with guidelines on acquiring and distributing germplasm. In addition to developing the policy, we are working on identifying the plant collections that are particularly important to our institution. These will be designated “Core Collections” and receive special focus with regard to their development, management, and display potential.

The first Core Collection to be developed at Longwood was the

*Nymphaea* (waterlily) collection. This collection began with the design and construction of the waterlily display, one of the first major undertakings of the board of directors upon Longwood creator Pierre S. du Pont's death in 1954. The pools were completed in 1957 and showcased the original collection of plants, which was the result of a close working relationship between Longwood's first acting director Dr. Russell Siebert and his father-in-law George H. Pring, a





'Antares' represents *N.* subgenus *Lotos*. It is a longwood hybrid created in 1966 by Patrick Nutt.

PHOTO CREDIT: LONGWOOD GARDENS/D. WARD



'Director George T. Moore' represents *N.* subgenus *Brachyceras*. It is a George H. Pring hybrid created in 1957.

PHOTO CREDIT: LONGWOOD GARDENS/D. WARD

world-famous waterlily breeder from the Missouri Botanical Garden. The fact that we still hold many of the original plant acquisitions is a testament to our commitment to this important collection. The current waterlily display is the result of a 1989 design project by well-known landscape architect Sir Peter Shephard (1913-2002).

Today's *Nymphaea* collection consists of 109 accessions including six species and botanical varieties and 103 cultivars developed by breeders in the nineteenth, twentieth, and twenty-first centuries. Both temperate and tropical *Nymphaea* are represented in the collection.

*Nymphaea* is comprised of roughly sixty species distributed worldwide, and in cultivation more than 1,700 garden varieties have been introduced. The family Nymphaeaceae includes not just *Nymphaea* but also *Victoria* and *Euryale*, along with several lesser known genera.

The genus is further broken down into five subgenera, with four of the five represented in our collection: *Nymphaea* subgenus *Brachyceras* represents day-blooming tropical waterlilies; *N.* subgenus *Lotos* represents the night-blooming tropical varieties; *N.* subgenus *Anecphya* represents tropical Australian varieties; and *N.* subgenus *Nymphaea* represents what we typically call hardy waterlilies.

This collection represents NAPCC's first aquatic collection and has several unique characteristics that needed to be addressed in the management plan. The collection represents both temperate and tropical accessions, each with its own unique curatorial needs. The hardy accessions remain in the display year round and are treated much like herbaceous perennials, allowing them to go dormant during the winter months. The tropical accessions are primarily held in our growing facility, and tubers of

these accessions are stored in a controlled environment for future use. The tropical accessions must also be propagated on a regular basis to build up stock that can be used for display each year.

Labeling is simple in concept, but has proven to be one of the most time-consuming components of maintaining our collection. With plants growing in water, traditional metal labels are challenging to maintain. To create our labels, we pull our plant accession information from our BG-Base database and transfer it to a spreadsheet. This information is then printed on plastic labels using a thermal printer. These labels work well, but we have found that they need to be placed in the pots so that the printed portion of the label is hidden in the soil. This eliminates degradation by UV rays, and also helps keep the labels free of algae. For tropical waterlilies in our production facility, we follow a





The original design of the Waterlily pools at Longwood, 1967

PHOTO CREDIT: LONGWOOD GARDENS/GOTTLIEB HAMPFLER



The current Waterlily Display at Longwood, 2006

PHOTO CREDIT LONGWOOD GARDENS/LARRY ALBEE

similar labeling process, but also write the name of the accession on the bottom of the pot for added reference.

Since our accessions are all containerized and rearranged annually, the mapping process of our collection had to be adjusted as well. Typically, the gardens are mapped using BG-Map. However, for this collection an AutoCAD map of the waterlily display is made each year showing the layout of plants in the display, the plant name, and accession number. The map also serves as the basis for planning next year's display and is archived for future reference.

Ideally, the entire collection is inventoried twice a year using a printed copy of our accessions and includes the plants on display, the plants growing in our production facility, and tubers in storage.

Containerized collections also require verification to ensure the accuracy of the collection. We do this by comparing flowering plants to digital images or published references. Many of the plants have been indexed to the Royal Horticultural Society (RHS) Colour Charts for added reference. Finally, herbarium specimens are created and also digitized for reference.

The curation of our collection takes place largely behind the scenes, and the work is spread among several departments. Maintaining this collection enables us to know what plants the public sees on display, to provide access to the collection for academic and horticultural research, and to continue to preserve this collection for future generations to study and enjoy.

*Timothy Jennings is a senior gardener and core collection curator for the Nymphaea collection at Longwood Gardens. Working at Longwood Gardens since 1989, Tim is a graduate of the Longwood Professional Gardener Program. Tim teaches several popular water gardening courses and serves as a lab instructor for various plant identification courses. He is nationally recognized in the field of water gardening and a member of the International Waterlily & Water Gardening Society.*





# POP-UP Exhibits

MADELAINE ZADIK



Gallery exhibitions at the Smith College Botanic Garden are scheduled years in advance. Strictly sticking to that plan, however, might keep us from other wonderful possibilities. When serendipity comes knocking, it is best to keep the door open! One fortuitous circumstance came our way and resulted in a “pop-up” exhibit that won over the hearts of everyone who came in contact with it.

We were delighted several years ago when, as part of our curricular enhancement program (aimed at encouraging faculty to use the Botanic

Garden in their teaching), our conservatory became a living laboratory for a semester-long leaf investigation. A professor of early childhood education paired her students with kindergartners from the campus school. The goal was for the education students to gain first-hand experience of inquiry-based teaching and learning contexts for young children while engaged in guiding botanical explorations.

Here’s where the serendipity comes in. The class took place during the spring, when our annual *Bulb Show* happens. The kindergartners were thrilled by the *Bulb*

*Show*, even though it was not part of their leaf study. The Campus School has a strong art curriculum, focusing on developing students’ individual expression. The kindergartners had already been exposed to a variety of art materials and techniques, and were learning to use the visual arts as a tool for recording information in their scientific studies. It was thus that they became immersed in a painting exercise. They were given very specific instructions for looking at the bulb flowers and recording their observations, first with pen, then adding watercolors. The results were amazing.





Although not planned, our staff saw the potential and quickly created an exhibition—scanning the artwork, printing reproductions, mounting them on foam core, and then figuring out how to hang them in the only available space: a hallway leading to the bathrooms. Enthralled by the kindergartners’ creations and astonished that the artwork was created by such young children, visitors asked many questions about the project. The exhibit was so popular that we have remounted it several times since, and it is also online ([www.smith.edu/garden/exhibits/edc231](http://www.smith.edu/garden/exhibits/edc231)). Visitors always

want to buy cards or prints of the paintings. It has been especially rewarding to see how children’s botanical paintings strike such a chord with our visiting public.

From this experience we learned that successful exhibits don’t have to be expensive, or planned, or even in our gallery!

*Madelaine Zadik is the manager of education and outreach at The Botanic Garden of Smith College. She may be reached at [mzadik@smith.edu](mailto:mzadik@smith.edu).*



It has been especially rewarding to see how children’s botanical paintings strike such a chord with our visiting public.



# The **AGONY** and the **ECSTASY** of the **AGAVE**

JOSEPH MOONEY

An eighty-year-old agave at the University of Michigan's (U-M) Matthaei Botanical Gardens began to bloom for the first and only time last year. What happened next was the story of The Century Plant That Could and an unexpected publicity boon that continues to this day.

Collected in Mexico by U-M grad student Alfred Whiting in 1934, the agave grew in the botanical gardens' collection for eighty years, unpetaled. When its inner flower wanted out last spring, the agave's flower stalk soared, at times growing six-plus inches a day.

A press release was issued. University and local media came calling. After the Associated Press (AP) picked it up the agave went viral, appearing in print, online, TV, and radio stories nationwide. Our Facebook page went haywire. Google garnered eight-plus pages of search results.

Crowds poured in. By July, parking revenue had doubled from the year before. Gift shop sales and donations spiked by a third over 2013. Staff created

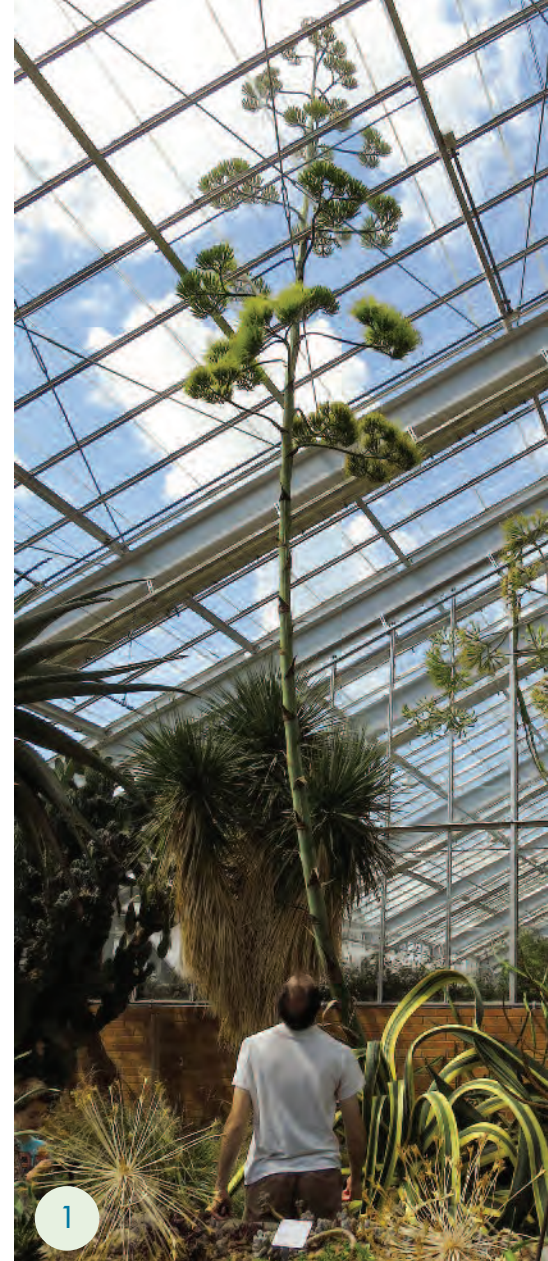
interpretive signage, made daily updates to a dedicated web page, installed a time-lapse camera, and shot videos.

The agave kept growing through the roof, requiring the removal of a pane of glass from the conservatory ceiling. When that story hit, facilities staff constructed a special outdoor viewing area. Finally, in July, the agave began to bloom, for nearly two months.

By September it was over. But the people still came. Cold weather settled in and the stalk above the glass had to be cut down and the pane replaced. By early 2015, the agave was dying, its withered leaves drooping.

The agave drama continued in winter 2015. Ripened seeds planted in December sprouted. Seedlings are now on display near the dying agave. The AP picked up the story again. The agave lives.

*Joe Mooney is the marketing and communications coordinator at Matthaei Botanical Gardens & Nichols Arboretum in Ann Arbor, Michigan. He may be reached at [jfmooney@umich.edu](mailto:jfmooney@umich.edu).*

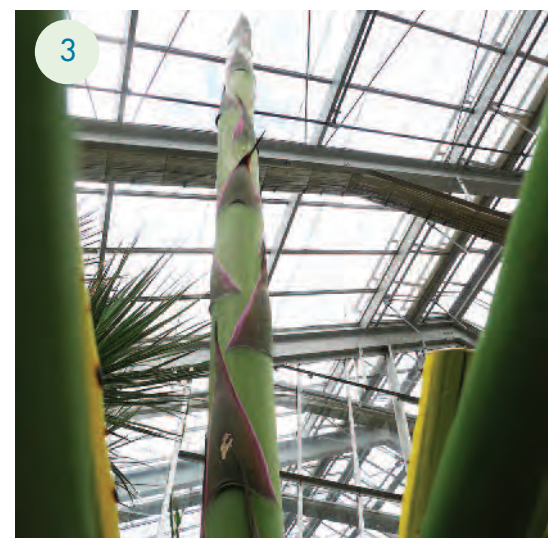


## TAKEAWAYS WHEN LIFE HANDS YOU A BEAUTIFUL AGAVE:

- Keep records.
- Photograph from all angles.
- Feed the media.
- Dedicate a web page.
- Post on social media.
- Write about it on your blog.
- Update your docents.
- Add a message to the phone system.
- Develop a cheat sheet of answers.
- Keep smiling.

1. A pane of glass from the conservatory ceiling at Matthaei Botanical Gardens had to be removed to allow the flower stalk to continue its upward climb.
2. Early-morning drops of dew pepper the unopened agave flower buds.
3. Just a few short weeks after volunteers discovered it in late April 2014, the agave's flower stalk was growing six or more inches a day.

ALL PHOTO CREDITS: MATTHAEI BOTANICAL GARDENS AND NICHOLS ARBORETUM





# Origami in the Garden



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## THE AMAZING STORY OF COBB'S MAGIC FROGS

As directors of gardens that have hosted our exhibit of twenty whimsical copper frogs will happily tell you, adults as well as children absolutely love it.

So much so, our exhibit has increased visitors to gardens by as much as 64%.

Families tell friends. Friends tell other friends. The response is really amazing.

Our exhibit is easy to install, too. No need for cranes. Or fork lifts. Or bull dozers.

We install it ourselves. All you need do is invite us to plant our frogs in your garden and watch your visitors grow like magic.

Plus there's no charge for lawn service.

*Rabbit The Exhibit*

Andy Cobb  
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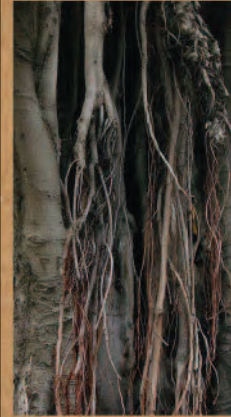


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Cultural Institution Partnerships

Development

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# Upcoming APGA Professional Development Symposia

## **VOLUNTEER ENGAGEMENT**

*September 23-25, 2015 | Santa Barbara, CA*

*In partnership with Santa Barbara Botanic Garden,  
Ganna Walska Lotusland & Casa del Herrero*

## **HORTICULTURE, GREENHOUSES AND FACILITIES & GREEN BUILDINGS AND LANDSCAPES**

*October 5-7, 2015 | Madison, WI*

*In partnership with Olbrich Botanical Gardens &  
University of Wisconsin-Madison Arboretum*

## **EDUCATION**

*February, 2016 | Seattle/Bellevue, WA*

*In partnership with Bellevue Botanical Gardens,  
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Washington Park Arboretum, & Bloedel Reserve*

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