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FROM THE EXECUTIVE DIRECTOR

DEAR FRIENDS OF THE NATIONAL ARBORETUM:

In the words of F. Scott Fitzgerald, “Life starts all over again when it gets crisp in the fall.” We have certainly taken this quote to heart in 2021. As the leaves change at the U.S. National Arboretum, it is also a time of transition for us at FONA. We’re doing our best to finish this year’s important work on a high note, and we look forward to a strong start to the new year.

We have new officers for FONA’s Board of Directors. We are thankful for the leadership that our past Board Chair, Jennifer Hatcher, provided over the last 2 years. We needed every bit of it as the world continued to test us all. Jennifer leaves an impressive legacy and has positioned FONA well for the future. We’re pleased to welcome Michael Stevens as our new Board Chair. Michael is the President of the Capitol Riverfront Business Improvement District in Washington, and he has been on the FONA Board of Directors for more than 6 years.

We also welcomed back many of our long-standing supporters for several in-person outdoor events this fall, including a 5K run and a bulb sale. It was an exciting series of reunions. Seeing old friends again and introducing new ones to this great place has given us all a little extra extra pep in our step. Thanks to everyone who came out and for all the great feedback on our work.

Looking forward, we now prepare for 2022 with the hope that we can return to our well-loved events and activities, like the traditional spring FONA Garden Fair. Plus, we have some exciting things planned for the new year to improve the visitor experience and our community programming. There will be more news about our planned Treetop Canopy Trail and the redesign of the Washington Youth Garden. Both projects are part of our Washington Youth Garden 50th anniversary celebration (read all about it in this issue). Join us and get ready for the garden’s next 50 years!

As always, we thank you for your membership commitment, and we hope that you, too, are in the midst of a crisp, productive transition. Hope to see you at the National Arboretum soon!

Craven Rand, Executive Director
Friends of the National Arboretum
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ON THE COVER Even in fall and winter seasons, the Gotelli Conifer Collection has beautiful plants, such as Virginia Pine (Pinus virginiana ‘Wate’s Golden’).
Cultivating gardens, creating memories

At a celebration of the 50th year of the Washington Youth Garden (WYG), attendees were asked to close their eyes and think back to their earliest garden memories. For me, it was sitting on a wooden cable spool on top of a wire fence section being dragged behind my father's tractor, breaking up clods of soil in the freshly tilled vegetable garden. Whether a four-year-old should be towed behind a tractor is one thing, but the indelible memory of surveying that first garden from my dusty perch while taking in the smell and feel of garden soil comes flooding back each time I dig in the dirt.

The first crop I remember is the massive rhubarb plantings anchoring the corners of our family garden. In Wisconsin, rhubarb grows the way nature intended: large leafy masses with fleshy stalks thriving in the bright sun and cool temperatures of northern gardens. Naturally found in moist montane habitats in east Asia, or more lowly ones in northerly latitudes, rhubarb has been cultivated since ancient times. First grown as a medicinal crop, it didn’t become a staple until the late 19th and early 20th centuries. The USDA Office of Foreign Seed and Plant Introduction played a significant role in introducing to American gardens the improved hybrids from European breeders and also the wild collected crop relatives from China. In 1907, USDA plant explorer Frank Meyer sent forms of rhubarb from Siberia, while his peer and USDA collaborator E.H. Wilson sent plants from the mountains of central China. David Fairchild, head of the Office, orchestrated an importation of the latest British and French varieties for a collaborator in California. Today, cool gardens can enjoy ornamental species and varieties with purple foliage and spectacular flowers!

Our gardens showcase diversity: tomatoes from South America, corn from Mexico, blueberries from North America, okra from Africa, and rhubarb from east Asia. It comes as no surprise, then, that the WYG plays a critical role in connecting people with plants by celebrating the bounty and beauty of diversity. For five decades, the WYG has encouraged kids to dig in the dirt, harvest the fruits of their labor, and learn where food really comes from. Many generations of families have participated in the garden, a tradition we are proud to support through FONA. To its credit, the WYG is our most effective component of outreach and inclusion at the Arboretum.

My sincere thank you to all the staff at FONA, the volunteers, members, supporters, donors, and most importantly the participants that have made the WYG such a force for good in our Nation’s Capital. The future is growing at the National Arboretum.

All the best,
Richard T. Olsen, Director
United States National Arboretum

Commemorative Benches

Honor loved ones or special occasions by donating a teak bench at the National Arboretum. Each commemorative bench will have a plaque engraved with your message and will stand in its selected location for 15 years. Email info@fona.org to request more information on benches.

Benches have been placed all over the Arboretum. There are available locations in the Asian Collections and in the Azalea, Conifer, and Holly & Magnolia Collections. Many are nestled in quiet nooks with breathtaking views and under the shade of marvelous trees.

Half the revenue from your bench donations goes straight to the Director’s Fund, which pays for some of the consultants, supplies, and building maintenance costs that aren’t covered by the Arboretum’s federal budget. Your donation of a commemorative bench is tax deductible. For more information, please email info@fona.org.
Celebrating Washington Youth Garden’s 50th Anniversary

“If you work here, you learn how to be comfortable with being uncomfortable. Meaning that when you grow up, you just live in your box. But I have learned to see the world differently. See the grocery store differently…the environment…myself.”

—Damion Covington, 2019 Green Ambassador Farm Crew Leader
“If you work here, you learn how to be comfortable with being uncomfortable. Meaning that when you grow up, you just live in your box. But I have learned to see the world differently. See the grocery store differently…the environment…myself.”
—Damion Covington, 2019 Green Ambassador Farm Crew Leader

“I love weeding in the garden with other volunteers and swapping stories with the staff, coming across an occasional toad, and watching our butterflies go from flower bed to flower bed. It’s my lovely sanctuary.”
—Dawn Gaither, Garden Volunteer

For 50 years, Washington Youth Garden (WYG), the youth education branch of Friends of the National Arboretum, has provided hands-on education to connect youth to food, the land, and each other. We encourage young people across Washington, DC, and beyond to build positive relationships with food and nature, increase their consumption of healthy foods, and learn about science, agriculture, and nutrition.

Established in 1971 on the grounds of the U.S. National Arboretum to teach local elementary students horticultural and life skills, WYG has grown into an award-winning education program engaging thousands of under-resourced students and educators across the region.

“The Washington Youth Garden means so many things to me, a native Washingtonian. I love knowing that there is a safe place where Washington’s youth can come to learn about food from the earth. Here, the benefit is not limited to the harvest: working the soil strengthens their bodies, and sharing the fruits of their labor with others gives them a sense of value and belonging. They are also planting the seeds for their future; one day, they will become adults who take pride in their work and, like our ancestors, will forever feel a sense of connection to the land.”
—Diane Riccobene, Garden Volunteer
1971-2021: 50 years of the Washington Youth Garden

Washington Youth Garden (WYG) at the U.S. National Arboretum began as a Department of Recreation initiative to teach DC youth horticulture and life skills. At that time, there were many other “youth gardens” in DC that were part of the Washington Youth Garden Council.

1971

WYG partnered with neighboring elementary schools to create the Garden Club program and bring 3rd to 5th graders to the garden, which operated as an established community garden for children from local schools and DC Department of Parks and Recreation camps until 1996.

1973

Due to DC city budget cuts, Friends of the National Arboretum adopted WYG as its youth education and outreach program.

1996

WYG hired a second full-time staff member, allowing for significant program expansion.

1999

The Garden Science program was created, an 8-week plant science unit offered in Title I schools.

2000

Science Programming Reaching OUT (SPROUT) began, and it still brings students into the WYG on field trips.

2002

1971-2021: 50 years of the Washington Youth Garden
WYG created a summer internship program for college students.

The team grew to three full-time staff members. WYG began installing school gardens in conjunction with the Garden Science program and led the development of the DC Healthy Schools Act, a law that dedicated state resources to horticulture education for the first time.

The Green Ambassador Program was established to offer DC teenagers paid summer internships during which they could learn about green career opportunities.

Began offering professional development to teachers using school gardens through the Summer Institute for Garden-based Teaching in partnership with the Office of the State Superintendent for Education.

FONA’s education program team now has seven full-time staff members. The School Garden Support program was launched to help schools build strong, sustainable school garden programs and to have a deeper impact on students. The Green Ambassador Program was expanded to offer year-round employment for 25 of DC’s young adults.

Adapted programs to work during the COVID-19 pandemic by offering Grow@Home kits and virtual field trips so students could learn garden science at home. A hybrid in-person and virtual Green Ambassador Program allowed young adults to directly connect with the land and with green leaders across the country.

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BECAUSE MY EXPERIENCE AT THE WASHINGTON YOUTH GARDEN (WYG) includes roles as participant, volunteer, and Program Director, I have more than a few memories to share. I can still vividly remember my science teacher at Charles Young Elementary School speaking to our 5th grade class about a program that was coming to the Arboretum that would be teaching young people how to grow fruits and vegetables. I loved learning new things and being outdoors, particularly at the Arboretum—an expansive, verdant playground for those of us who grew up with constraints on playing outdoors at our public housing development just south of the Arboretum.

The spring and summer of 1972 and 1973 was when the magic happened! Being one of a hundred kids each with their own plot—I was eagerly learning about how to grow a garden, dragging home bags full of vegetables, and delighting my mother with fresh produce and reminders of her memories of growing up in North Carolina—was so empowering at ages 11 and 12. My love for growing things was firmly rooted, and my appreciation for the transformational tool of gardening was seeded, which shaped much of my personal and professional life.

Fast forward 27 years to the early spring of 2005. WYG’s Program Director Kim Rush came to the Master Gardener class at the University of the District of Columbia and told us about volunteer opportunities available for us to fulfill the hours of service required for certification as a Master Gardener. I could not believe I would ever have the opportunity to give back to the place that had been so life altering when I was a child.

It was a privilege to experience WYG anew while working alongside garden volunteer rockstars like E.J. Truax, Sophie Fredrickson, and Butterfly Bob, and assisting WYG’s inspiring staff in Garden Science classrooms (including those at my old Charles Young Elementary School). As if my world had not already been enriched enough by WYG, in less than two years’ time, I was offered the position of Program Director! I accepted the position, paying homage to William Hash who not only shepherded staff toward success at WYG and left an indelible imprint on my life, but who was also at the helm of the citywide WYG program from 1964 to 2000. I owe so much to him. All of us at WYG have the greatest admiration for him as he celebrates, at 86 years young, this 50th anniversary with us.

My Life Is Rooted in the Washington Youth Garden

By Kaifa Anderson-Hall
Anniversary Projects

FONA looks forward to the next half century of youth education at the Arboretum, and we are committed to adapting and expanding our education programs to meet the community’s needs. We are investing in three key components to engage children, families, and teachers in garden education:

**SCHOOL GARDEN SUPPORT:**
Adapting our programs to help more schools build strong, sustainable school garden programs. This program has two main professional development components: (1) to strengthen a school’s garden infrastructure and (2) to increase the quantity and quality of school garden–based education.

**GREEN AMBASSADOR PROGRAM:**
Expanding our youth development program to provide year-round employment and development opportunities for young adults. Three tiers of participation encourage youth to build skills, implement community action projects, and become mentors.

**GARDEN REDESIGN:**
Reimagining our one-acre garden at the Arboretum to make it more engaging, productive, and easier to maintain. We will enhance interpretive garden signage, self-guided activities, nature play features, and food production infrastructure.

Thank you for joining in our celebration of Washington Youth Garden’s 50th anniversary. Your membership gifts support FONA’s work, including programs at WYG. Thank you for helping us connect DC youth to food, the land, and each other! 🌿

“I was a participant back in the late 1970s when William Hash and Jerry Smith worked there. In addition to gardening, Mr. Hash took us on field trips and had award ceremonies at the Botanic Garden near the Capitol. We received plaques and trophies for growing vegetables, but the best part was taking home our harvest and having those vegetables for dinner, knowing that we planted them. I’m so happy DC kids are still benefiting from such a great program.”

—Greg Taylor, student in the 1970s

“I’ve learned how to kickstart a project if I want to make a change. From conducting interviews to networking, I feel competent as a concerned community member.”

—Aliyah B, 2021 Green Ambassador Guild Member

“Recently, my three children and I visited the National Arboretum. As we walked through the youth garden, I shared my story about the experience I had in the youth garden program as a child. The bonus was that my children saw the lovely garden and quickly realized how other children are being empowered to connect with food and land. Today, I have a vegetable garden in my backyard and many plants around and throughout my home. The Washington Youth Garden sparked a lifelong love for nature and a connection to land, food, and health in my life.”

—Shandell Taylor, student in the 1980s
Research geneticists at the Arboretum’s McMinnville, Tennessee, facility have several projects focused on hydrangeas. (Photo credit: Dr. Lisa Alexander, USNA)
While strolling through the Arboretum, a visitor may not be aware that this lovely public garden is an important research facility. As part of the USDA’s Agricultural Research Service, the National Arboretum is dedicated to finding solutions to agricultural problems and to developing improved floral and landscape plants. The work of Arboretum scientists is collaborative and cooperative, and it takes place across several entities: the Gardens Unit at the Arboretum in Washington, DC; the Floral and Nursery Plants Research Unit (FNPRU) at the Beltsville Agricultural Research Center in Beltsville, Maryland; and the Otis L. Floyd Nursery Research Center at Tennessee State University in McMinnville, Tennessee.

At the McMinnville facility, a team headed by research geneticist Dr. Lisa Alexander is working on the genetic improvement of hydrangeas. There are two ways to make these improvements. “The simplest way,” explains Dr. Alexander, “is through recurrent breeding. That is where two plants are cross-pollinated, the seed is planted, and the seedlings are evaluated for growth rate, flowering characteristics, etc. The very best seedlings are grown to maturity, cross-pollinated, and the cycle continues. After several generations, this will lead to an improvement in the trait of interest.” This traditional method has at least one drawback: it is sometimes necessary to evaluate thousands of seedlings to find one that has the right combination of traits.

The second way is to use modern genetics and genomics methods, which speed up the process of recurrent breeding. Dr. Alexander says that “Genomics allows us to find which genes or areas of DNA control a trait. From there, many technologies can be employed, such as marker-assisted selection (MAS). In MAS, all seedlings are tested to see whether they have a piece of DNA that is related to a target trait. Only those seedlings with the special piece of DNA are retained; the rest are discarded. This means that a plant breeder needs to evaluate far fewer plants to get a good one."

One objective of this research is to establish long-term experimental hydrangea populations along with systems for managing the data that have already been collected. The research team is phenotyping a population of bigleaf hydrangeas (Hydrangea macrophylla) for the identification of disease resistance and ornamental traits. They are also phenotyping and genotyping an
Kadijah Blair (a NEA sponsored intern) uses the tweezers to remove the showy sepals of the hydrangea and carefully open the flowers to remove the stamens (pollen-bearing parts). After this, the opened flowers will be bagged and pollinated after 1 or 2 days with the pollen chosen by the researchers.

(Photo credit: Dr. Lisa Alexander, USNA)

Dr. Alexander’s research so far has found that a single molecular marker identifies bigleaf hydrangea (H. macrophylla) inflorescence type with 100% accuracy. Inflorescence refers to the way a plant flowers—the arrangement of flowers on a plant or the complete flower head of a plant, including stems, stalks, bracts, and flowers—and is a valuable trait in bigleaf hydrangea. Earlier work by Dr. Alexander and others on hydrangeas has resulted in plants with a more compact shrub size, bigger flowers, more color variations, and the ability to re-bloom—characteristics that are especially appealing to gardeners. For instance, the Arboretum’s shrub breeding program released the hybridized ‘Queen of Hearts’ cultivar in 2013. It was selected for its large, upright inflorescences and heavy flowering. The flowers open white but turn pink.

In addition to producing more attractive and healthy plants, the research done at McMinnville supports the ornamental nursery industry and protects natural resources. The development of plant

oakleaf hydrangea (H. quercifolia) collection that includes as many as 20 populations of plants from each of the six states that compose the oakleaf’s native range (Tennessee, Georgia, Mississippi, Louisiana, Alabama, and Florida); they are looking for natural genetic variation that contributes to disease resistance and various ornamental traits. The aim is to harness the genetic diversity found in the wild and potentially produce new genetic variability.

A second research objective is to develop, evaluate, and release improved germplasm of hydrangea and other nursery crop species. All of the wild collections at the McMinnville research facility are coordinated in the Germplasm Resource Information Network (GRIN), a databank for ornamental plants maintained by the Arboretum. The germplasm, plus phenotype or genotype information pertaining to these collections, is then available for other types of detailed studies by Arboretum scientists and outside researchers.
cultivars that are resistant to pests and disease mitigates the use of chemical insecticides and fungicides, which reduces production costs and loss of crops to pests and diseases while protecting natural resources and worker health and safety.

Breeding and testing new plant varieties is a multi-year effort and involves the cooperation of plant nurseries, universities, and public gardens that “try out” plants that are selected for potential cultivar release. The Gardens Unit at the Arboretum cooperates in these efforts to evaluate potential hydrangea releases from McMinnville and displays the releases once they are officially available.

If you think of the hydrangea as a tall, broad bush with abundant blue flowers bending under their own weight, check out these McMinnville releases for a new look: *H. quercifolia* ‘Munchkin’, *H. quercifolia* ‘Ruby Slippers’, and *H. quercifolia* ‘Queen of Hearts’. (The latter was released by Dr. Alexander, and the others were released by her predecessor, Dr. Sandra Reed.) These plants are found in different places on the Arboretum grounds, but they are concentrated in the Introduction Garden around the Administration Building and Visitor’s Center. You can also look up various hydrangeas on the Arboretum’s web plant finder, ABE, at https://www.usna.usda.gov/abe, which shows the location of each plant and more information about it. Either way, you’ll see much more variation in the size of hydrangeas as well as the size and color of their flowers. And whether you browse in person or virtually, you’ll find yourself at the intersection of science and beauty.

KAREN ZILL is a DC-based freelance writer. Her work includes discussion guides for film and public television programs, memoirs, essays, and nature writing.

Oakleaf hydrangea ‘Queen of Hearts’, was released in 2013 by the U.S. National Arboretum’s shrub breeding program in McMinnville, Tennessee. Its flowers open white and slowly change to a deep pink color. (Photo credit: USNA)

Dr. Lisa Alexander, Research Geneticist

From trees to grass to woody ornamental plants—that’s the path Lisa Alexander’s research career has taken. As a biology major at the University of Tennessee (UT) in Chattanooga, she did an independent study with Dr. James Hill Craddock, a prominent UT professor noted for his work on the American chestnut. Despite spending many hours roaming the woods near Chattanooga where she grew up, the chestnut was new to her. She took an immediate liking to working with trees, drawn to both the science and the breeding of them—collecting their pollen, measuring their rhythm of growth, and seeing the genetics processes in generations of trees and the cultural associations trees have in our environment.

In graduate school at Purdue University, Lisa continued to focus on trees and worked on red oak conservation. After receiving a PhD in Molecular Genetics, she returned to Tennessee to a research position at UT-Knoxville that involved breeding switchgrass for biofuel.

Lisa discusses her past and current projects with enthusiasm. She has a passion for science as well as the place where she has been pursuing it most recently. For the last seven years she has led a team at the Arboretum’s research facility in McMinnville, Tennessee, that focuses on improving the genetics of hydrangeas and other woody ornamental plants.

“The Arboretum is a great place to be,” she says, “a place where science and beauty come together.”

Aside from her work, Lisa enjoys outdoor pursuits—canoeing, hiking, fishing, and camping—with her husband and 6-year-old daughter.
Hats Off to Our David Fairchild Society Members!

Catherine P. Kerkam

David Fairchild Society members are the bedrock of FONA. We tip our hats in gratitude to our current members! Now in its seventh year, the David Fairchild Society is a group of supporters who are dedicated to FONA and its mission to help the Arboretum thrive.

FONA salutes our David Fairchild Society members! Together, we are having a positive impact on children, families, and our community. Please join us. For more information on the David Fairchild Society, or for other ways to support FONA, go to www.fona.org/dfs or email info@fona.org for more information.

CATHERINE P. KERKAM is FONA’s Director of Philanthropy and Communications.
CONSIDER DESIGN

- Walkways and terraces provide the perfect opportunity to emphasize and echo the style of your home or can be used to redefine a home with lackluster style.
- Geometric walkways exude a crisp, formal ambiance while meandering pathways evoke a more naturalistic feel.
- For cohesion, use no more than three types of hardscape materials. Examples of complementary combinations are (1) bricks, linear-cut bluestones, and cobblestones for formal settings or (2) irregular bluestones, boulders, and rounded steppingstones for informal settings. Remember to include materials already present in your home’s construction within this number.
- Walkways or terraces should be scaled in relation to their intended use and proportionally to their surroundings. Consider primary versus secondary paths.
- Hardscape elements are impervious and rain falling on your property should infiltrate mainly on your property. Follow county-specific best management practices for storm water, which define the limits of impervious surfaces.

BASIC CONSTRUCTION GUIDELINES

- A solid foundation is paramount to keep things working as intended in terms of aesthetics, function, and safety.
- There are two primary types of foundations: construction gravel with stone dust or concrete with cement. Both options are good and will depend on the situation.
- A concrete foundation will cost about three times more than a construction gravel foundation but will result in a longer-lasting final product.
- Concrete foundations require cement joints which will keep weeds at bay, while construction gravel foundation stone dust-filled joints will allow weeds to grow.
- Positive drainage away from structures is critical. A minimum pitch, or slope of 2% (equal to 1/4” per foot of run) is necessary.
- Walkways and terraces should be elevated 3” to 5” above existing grade for water shedding and to allow for soil and mulch to build up over time.

Done well, walkways and terraces are a home improvement and an investment that you won’t regret. 🌿
The Friends of the National Arboretum is an independent, nonprofit organization established to enhance, through public and private sector resources, support for the U.S. National Arboretum.

HAPPENINGS
For more information, visit usna.usda.gov or fona.org

Get Updates by Email and Online
Sign up for the FONA Field Notes email newsletters at FONA.org to get regular updates from the Washington Youth Garden, behind-the-scenes stories, pictures of the Arboretum, and announcements of upcoming events.

EVENTS
The calendar of events is updated regularly at FONA.org.

CHRISTMAS TREE SALE & PROCRASTINATOR’S HOLIDAY MARKET
Tree sale—Saturday, December 11 and Sunday, December 12.
Buy your Christmas tree, wreaths, and garlands, hassle-free this year. Pick up your pre-ordered tree or purchase one on-site during our Christmas Tree Sale located at the Arboretum’s New York Avenue parking lot. Details and pre-order at FONA.org
Holiday Market—Saturday December 11 only.
Come to the market for gifts and goodies from local vendors, plus family-friendly arts and crafts! We’re partnering with Bladensburg Road Main Street to bring you all the best vendors for last-minute shopping.

FOREST BATHING
Meditative forest bathing sessions are offered several times a month on a pay-what-you-can basis. Register online.