

NORTH CAROLINA
BOTANICAL
GARDEN

CONSERVATION GARDENER

SPRING/SUMMER 2021
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THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

IN THIS ISSUE

ON THE COVER

Aquilegia canadensis

Eastern columbine

Phlox divaricata

Woodland phlox

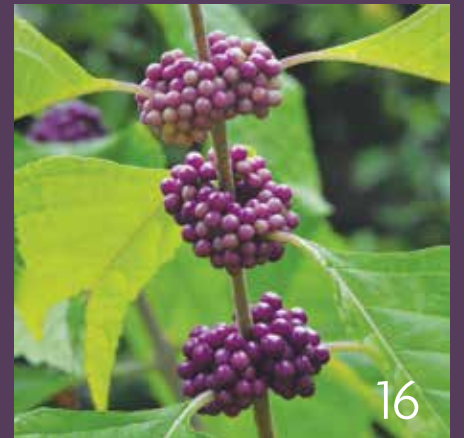
Tiarella cordifolia

Foamflower

Illustration by Dot Wilbur-Brooks



Public Gardens and Conservation 6
Local Biodiversity Projects 8 Biodiversity at Home 12
Staff Pick 15 Wildflower of the Year 16
Flora 17 New Membership Categories 18



To inspire understanding, appreciation and conservation of plants and advance a sustainable relationship between people and nature.

When times are unprecedented, it's time to set new precedents

BY DAMON WAITT, NCBG DIRECTOR

Dear Members and Friends,

Last fall we asked you to complete a membership survey that would inform critical decisions related to member recruitment, benefits, and retention. The last membership survey was administered by mail 37 years ago at a time when there were only 188 members of the Foundation. Unfortunately, while a record exists of the 1984 survey questions, the results from the survey have been lost to the sands of time. Since then, membership has grown steadily and now encompasses over 3,600 members. Clearly, an assessment of the membership program was long overdue. Here is what we learned from you, the 527 members who responded to the survey.

You are a homogenous group – If you are reading this letter, there is an 88% probability you are over the age of 50, a 77% probability you are female, and a 96% probability you are white.

You love to visit – Most of you (95%) live in North Carolina and in the last year, 81% of you visited the Display Garden or Nature Trails, 43% of you visited Coker Arboretum, 33% of you visited Mason Farm Biological Reserve, and 29% of you visited Battle Park/Forest Theatre.

You love what we do – Only 4% of you were motivated to join or remain a member based solely on the member benefits. Instead, 86% of you joined because you support the Garden’s mission. When asked what you value most, 93% of you ranked “the Garden is a native plant conservation garden” and 90% of you ranked “the Garden is engaged in plant conservation and botanical research” as the most important values. You also value your subscription to this magazine as the most important benefit of membership, further substantiating the hypothesis that you value the conservation mission

of the Garden over and above all other benefits.

We are incredibly pleased that your relationship with the Garden is transformational (a meaningful sharing of yourself) not transactional (in exchange for a good or service). We also love that the Garden is a part of your life, a destination you seek to visit.

While we are very proud of some of the results of this survey, we also see we have work to do. As a garden focused on conserving the biodiversity of southeastern native plants, we recognize that just as biodiversity is critical to a healthy ecosystem, diversity in people and perspectives makes our organization and community stronger. To that end, we formed a membership task force with broad representation from across the Garden and Foundation to evaluate the membership program and make recommendations for future growth that are aligned with the goals of our diversity and inclusion strategic plan found at ncbg.unc.edu/deiplan.

The task force identified three goals for the membership program: 1) To foster Community by enabling individuals to interact with the Garden and one-another around plant-conservation, 2) To inspire Advocacy by driving actions that increase support for plant conservation, and 3) To Fundraise in support the Garden and its mission of plant conservation.

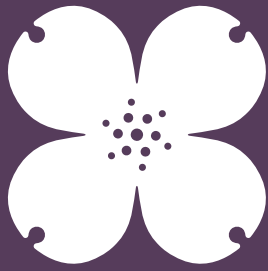
As a result of this work, this spring we will be rolling out a new membership program with new member levels and benefits, a new system to track and manage the membership, a streamlined web interface for joining and renewing your membership, and a membership marketing effort with exciting new goals to increase diversity in member age, ethnicity, and geography.

As we all are well aware, we are living in unprecedented times. Let's get to work setting some new precedents.

Sincerely Yours,



A graphical representation of the comments we received from the member survey that gives greater prominence to the words that appeared most frequently.



NORTH CAROLINA BOTANICAL GARDEN

North Carolina Botanical Garden

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JOHNNY RANDALL *Conservation*

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Conservation Gardener

JENNIFER PETERSON *Managing Editor*

An eastern tiger swallowtail butterfly and a bee on Stoke's aster (*Stokesia laevis*). Photo by Judy Stierand



The power of your yard

BY JENNIFER PETERSON, MANAGING EDITOR

If you Google biodiversity, the news isn't good. North America has three billion fewer birds than in 1970; 40% of insect species may be extinct in four decades; and 60% of the world's turtles are threatened or already extinct.

However, if you dig a little deeper, there is hope. Many scientists have said we can turn things around, and by "we," they often really do mean "we," right in our own yards and landscapes.

At the Garden, we have been leading the way in slowing biodiversity loss (see how in the article on pg. 6). And last fall, our UNC Herbarium director Alan Weakley released his latest *Flora of the Southeastern United States*, a literal documentation of the biodiversity of our region, extending from Pennsylvania to eastern Texas (pg. 17).

In addition, our local community understands the importance of biodiversity. We offer several examples of local organizations getting it right, using their landscapes to increase habitat for our neighbors, the pollinators, birds, and

other animals searching for food and shelter (pg. 8).

We always want this magazine to be relevant to our readers at home. Longtime contributor Catherine Bollinger offers tips for increasing biodiversity in your own yard (pg. 12). And we offer a couple favorite plants to consider incorporating into your landscape in our Staff Pick (pg. 15) and the Wildflower of the Year (pg. 16).

In addition to this magazine, the Garden offers many opportunities to learn more. Consider signing up for a class, hike, or lecture at ncbg.unc.edu/calendar. Volunteer to help us in a variety of ways for a hands-on experience. Or simply visit the Garden and our natural areas to see all sorts of wildlife enjoying our landscapes.

As the days get warmer, I hope you are inspired to slow biodiversity loss by incorporating some native plants into your life, or by enjoying the visitors to the native plants you already have. And I hope to see you at the Garden, too!

DIVERSITY, EQUITY, & INCLUSION

The Garden is making Diversity, Equity, and Inclusion (DEI) a priority. Our DEI committee recently developed a strategic plan to focus our efforts, and we are already making progress! For example, we are expanding our hours by staying open later on Thursday nights this summer, offering the 9-to-5 crowd an opportunity to relax at the Garden after work. We look forward to sharing our journey and our progress with all of you over the coming years.

SEE OUR STRATEGIC PLAN
NCBG.UNC.EDU/DEIPLAN



Why do we need a biodiverse planet?

BY CATHERINE BOLLINGER

As a member of the North Carolina Botanical Garden, you are likely aware of issues concerning biodiversity loss in the southeastern United States and around the globe. That's because many ecologists and biologists throughout the world believe slowing biodiversity loss is critical to the survival of all of us.

Biodiversity Defined

Biodiversity is the variability among all forms of living organisms within species, between species, and among environments. Scientists speak about biodiversity with increasing frequency these days because species extinction rates on Earth alarm the experts.

Esteemed Harvard biologist Edward O. Wilson calls the current loss of Earth's biodiversity "among the deadliest threats that humanity has imposed on itself."

Wilson coined the acronym HIPPO to describe plant and animal biodiversity threats by their level of severity:

- Habitat destruction
- Invasive species
- Pollution
- Population growth (human)
- Overharvesting

Plant species loss is a substantial component of biodiversity loss, and involves two mechanisms:

- Outright extinction of individual species
- Loss of genetic diversity within and among species populations

The disappearance of a plant species via either of these mechanisms often drives the extinction of animal species that rely on those plants for food and/or shelter. Put simply, without the plants they need, the animals cannot survive.

Why Rising Extinction Rates Matter

Why are scientists worried about the rapid rise in extinction rates? After all, species have been evolving and going extinct ever since the first organisms appeared on Earth. The rising rate of extinctions alarms scientists because it takes far less time to kill off a species than it does for a species to evolve.

The Center for Biological Diversity estimates that, until recently, the average rate of extinctions on Earth was about five species per year. However, now we

are losing 1,000 to 10,000 times more species; literally dozens are disappearing daily. All over the world, organisms that evolved together into intricately balanced ecosystems are disappearing.

No expert can predict how long or how well ecosystems can function as they continue to lose the species that comprise them. Most experts agree that steps must be taken immediately to slow rapid extinction rates and preserve remaining ecosystems.

Preserving Our Future

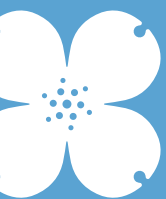
The good news is that around the world and here at home measures are being taken to stem species loss and even restore native biodiversity to local landscapes. This magazine issue features examples of work being done by experts and regular citizens to preserve and increase biodiversity. In the hope these stories inspire you to improve native biodiversity in your landscape, this issue also contains an article to help you begin that transformation.

FOR FURTHER READING: BIODIVERSITY PROGRAMS WORLDWIDE

Visit links to these organizations to learn about their worldwide efforts to protect biodiversity.

- International Institute for Environment and Development iied.org
- Millennium Ecosystem Assessment millenniumassessment.org
- E.O. Wilson Biodiversity Foundation eowilsonfoundation.org
- Plant Conservation Alliance plantconservationalliance.org
- Conservation International conservation.org
- Society for Conservation Biology conbio.org
- International Union for Conservation of Nature iucn.org
- United Nations Environment Program unep.org
- International Plant Protection Convention ippc.int
- Center for Biodiversity and Conservation amnh.org/research/center-for-biodiversity-conservation





The Role of Public Gardens in Conservation

BY CATHERINE BOLLINGER AND JOHNNY RANDALL

Some regard botanical gardens as pretty places to visit and a nice backdrop for family photos. But for many gardens, a deeper purpose exists. As a member of the North Carolina Botanical Garden, you have likely heard the term “A Conservation Garden,” a tagline the Garden takes seriously. This term is built on a worldwide cause addressed with local action.

Many botanical gardens around the world have been involved in scientific efforts to decrease global biodiversity loss for a number of decades. Some of these gardens have adopted objectives derived from a treaty signed by many countries: the Convention of Biological Diversity (CBD) that went into effect on December 29, 1993.

The convention delineated five objectives comprised of 16 targets that scientists hoped to accomplish between 2011 and 2020. You can read more about this agreement, the targets, and ongoing activities online at cbd.int.

The five objectives were:

1. Plant diversity is well understood, documented, and recognized.

2. Plant diversity is urgently and effectively conserved.
3. Plant diversity is used in a sustainable and equitable manner.
4. Education and awareness about plant diversity, its role in sustainable livelihoods, and importance to all life on Earth is promoted.
5. The capacities and public engagement necessary to implement the Strategy have been developed.

The North Carolina Botanical Garden: A Conservation Garden

The North Carolina Botanical Garden is an excellent example of how a public garden can contribute significantly to international efforts to slow biodiversity loss. In the early 1990s, the Garden adopted the term “A Conservation Garden” with the specific intent of incorporating some of the objectives of the international effort to conserve native species.

As described at ncbg.unc.edu under the About tab, the Garden identified themes aligned with conservation objectives delineated by the Convention of Biological Diversity. Programs include:

Left: Foxglove beardtongue (*Penstemon digitalis*) blooming at Mason Farm Biological Reserve, a protected natural area.
Right: Students remove invasive English ivy (*Hedera helix*) in Battle Park in 2010.



- **Conservation through propagation of native plants**
By growing native plants and offering them for sale to the public, the Garden protects wild populations from damage by collectors. The Garden collects seeds for its propagation efforts from local wild populations to ensure that they offer plants adapted to the local conditions of our region. The new Native Plant Materials Development program collects and offers bulk seeds and plants for large-scale restoration.
- **Seed banking and reintroduction**
As a last resort against extinction in the wild, scientists all over the world collect and store seeds of native plants in seed banks. The Garden also preserves seeds, particularly those of endangered and threatened species, in their affiliation with the Center for Plant Conservation (saveplants.org), currently seed banking 46 rare plant species.
- **Protection and restoration of natural areas**
The Garden manages approximately 1,100 acres in seven local nature preserves. Conservation staff continually work to manage these areas and restore wild populations for overall ecosystem health. This habitat conservation work is critical to the survival of biological diversity.
- **Elimination of invasive species**
In a world in which native plant populations are increasingly confined to small areas, the destructive power of non-native invasive species is a perpetual threat to biodiversity. The Garden works to eliminate invasive species from the properties it manages, and to replace the invaders with native plants.
- **Gardening in nature's context**
Native plants are essential components of healthy ecosystems. All have a role to play within their naturally occurring context. When such components are grown together, native biodiversity, including pollinators and seed-dispersers, are much more likely to thrive.
- **Sustainable gardening**
By promoting environmentally-friendly gardening practices, the Garden encourages the protection of native environments through sustainable water use, stream quality protection, using plants adapted to site conditions, working with existing natives already present on a site, integrated pest management, renewable energy sources, non-toxic and sustainably produced materials, recycling, and reuse.
- **Education**
Staff at the Garden continue to research and develop critical information on the conservation of the flora of the southeastern United States. They also work to continually expand the Garden's educational outreach programs, from classes to online materials to the publication of this biannual magazine.

- **People-nature relationships**

This Garden theme recognizes the critical importance of human interaction with the natural world. Preservation of plant diversity in natural areas significantly contributes to the physical and psychological well-being of the people who visit such areas.

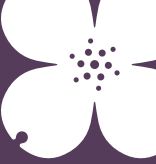
The Garden is recognized for its leadership role as a conservation garden, receiving accreditation as an Advanced Conservation Practitioner from Botanic Gardens Conservation International (bgci.org). The Garden has been recognized for Excellence in Biodiversity and Conservation by the American Public Gardens Association (publicgardens.org), and the Garden also won the American Horticultural Society's 2021 Garden Stewardship Award.

Members of the North Carolina Botanical Garden can be proud of supporting a public garden that walks its conservation talk every day. Recognized by its peers around the world, it continually demonstrates leadership today in the ongoing battle to preserve a biodiverse world for tomorrow.



By growing native plants and offering them for sale to the public, the Garden protects wild populations from damage by collectors. The Garden also provides information about the importance of each plant to pollinators and other wildlife.

Local Biodiversity Projects



In addition to the biodiversity projects at the North Carolina Botanical Garden, we are proud of our friends and neighbors who have transformed spaces to increase biodiversity. Here is a sample of a few projects close to home. What biodiversity projects are happening close to your home?

Chapel Hill Public Library



The Chapel Hill Public Library has installed a vibrant pollinator garden with design assistance from the Garden. The library also holds volunteer workdays to remove invasive species from the surrounding Pritchard Park and offers nature-based educational programs.

School Gardens



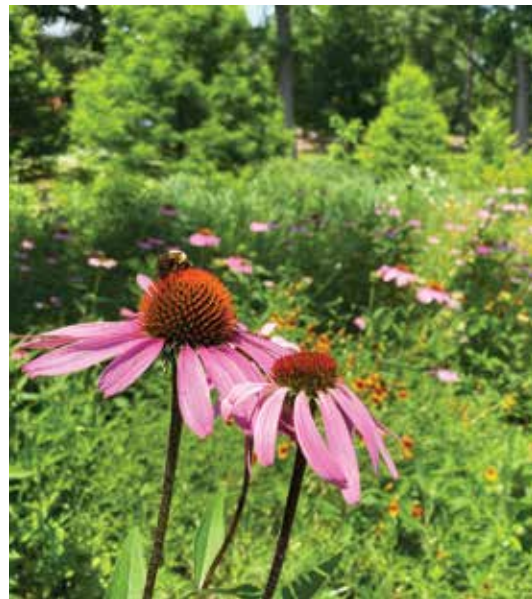
Photo by Johnny Randall

Several schools in our local school system have created pollinator gardens as a way to increase biodiversity, and for the hands-on learning and mental well-being these spaces offer. On the left is the Living Learning Landscape garden at Glenwood Elementary School. This garden was created to offer horticultural therapy to children with learning differences and behavioral challenges. On the right is the entrance landscape at Carrboro High School. Johnny Randall, NCBG director of conservation, worked on the initial landscaping plan when the school opened in 2007, and students, teachers, staff, and volunteers continue to enhance the school grounds with biodiversity in mind.

Community Efforts

Local neighborhoods and churches have transformed their landscapes, too. Fearington Village offers native landscapes in its newest development (Conservation Gardener Spring/Summer 2019). Woodcroft neighborhood's Ivy League is removing invasive species and they have a five-year plan to that envision's a landscape that reflects the North Carolina Piedmont's ecological heritage. (Conservation Gardener Fall/Winter 2019/20). And the Piedmont Patch Collaborative (piedmontpatch.org), is working with the Episcopal Church of the Advocate to teach private and public landowners how to collaboratively restore native landscapes one patch of Piedmont at a time.

University of North Carolina at Chapel Hill's Battle Grove



The University of North Carolina at Chapel Hill turned this frequently flooded field near McIver Residence Hall into a small above-ground stream. Before the project was completed, water from the creek was contained by an underground pipe and concrete ditch. The field's stream naturally filters pollutants and contaminants from runoff water. The site has been enhanced with scores of native plants, offering a gorgeous pollinator garden on campus.

Extra Terrestrial Projects' Carolina Futurescape



Carolina Futurescape is a piedmont prairie landscape at the corner of Blackwell Street and Morehead Avenue in Durham, just at the entrance to the American Tobacco Trail. The greenspace is composed of historical flora of Durham County. These plants that once sheltered and fed local jaguar, elk, and bison are also well suited for Durham's future cityscape, because they require little water and support pollinators. The project was funded by a Durham Open Space and Trails commission matching grant for the benefit of all Durham residents.

Booker Creek Bird-Friendly Restoration Project

BY BARBARA DRISCOLL, NEW HOPE AUDUBON SOCIETY

For many years, I have walked the Booker Creek Trail in Chapel Hill, and as I walked, I noticed the encroachment of privet and other invasive plants into the flood plain to the point where nothing could be seen but privet. I dreamed that if I won the lottery, I would pay to have the invasive plants removed.

One day my dream came true! I didn't win the lottery, but someone had removed large swaths of the privet. In 2019, Jeanette and Neal Bench and Michael Everhart, working with the Chapel Hill Parks and Recreation Department adopted the Lower Booker Creek Trail. With a strong and willing group of community and middle/high school volunteers, privet and other invasive plants have been removed from several acres of the trail.

The removal of many of the invasive plants created an opportunity for incorporating native trees and shrubs along the creek. The New Hope Audubon Society (NHAS), through a National Audubon Burke grant, was able to purchase native plants and pay for much needed signage to explain our project to people who walk the trail. Plants from the North Carolina Botanical Garden were used in two perennial showcase beds. Volunteers helped to plant over 200 trees and shrubs including paw paw, elderberry, silky dogwood, and painted buckeye.

Actively removing invasive species and replanting with natives has a myriad of benefits over time: creating diverse and nutritious habitat for birds, pollinators and other wildlife; augmenting stormwater retention and groundwater recharge; facilitating nutrient and



Ann Gayek and volunteers from the Church of Latter Day Saints plant a perennial garden. Photo by Barbara Driscoll

pollutant sequestration resulting in improved water quality downstream; and improving trail visibility, safety, access, and connections. Increasing and preserving the biodiversity in this floodplain is one of the primary goals of NHAS.

One year after our major planting, the majority of the trees and shrubs survive. The perennial beds have become a focal point for many residents. Many people have told me seeing the plants blooming is the highlight of their walk. We won't be able to know the full impact of the plantings for several years. Now we can see native trees starting to pop up in the cleared areas.

One big issue is the growth of Japanese stiltgrass (*Microstegium vimineum*) which grows up to four

feet high, covering much of the new growth. Johnny Randall, NCBG director of conservation, was helpful in spraying several tracts. Management of the stiltgrass and privet seedlings will continually be required.

There are several factors that have helped this project to continue and to be successful: Community champions who promote and continue to organize invasive plant removal; great partners such as the NCBG who helped with plant selection and maintenance advice; Chapel Hill Parks and Recreation Department; and the continued enthusiasm of our many participants including the Youth Leadership Team, Chinese American Community, the Church of Latter Day Saints, and other middle school and high school students who continue to volunteer.

STUDENT COMMENTS

... Thank you for the opportunity to help out this weekend at Booker Creek. The opportunity to beautify the creek with fun and interesting people while helping the environment by clearing out invasive species was truly the most enjoyable school-related experience this year. I look forward to working with you in the future.

... Thank you for the opportunity to work on the trail. I greatly enjoyed working to cleanse the trail of the privet. I did not know it was such a problem, let alone that it was considered an invasive species.

... Thank you so much for letting me work this weekend on the creek. It was a very rewarding experience for my friends and me, and I am very grateful

to have come away with a sense of accomplishment. I learned a lot about invasive species and helped pull out a huge shrub (which I believe was called *Elaeagnus*, but can't be sure), which gave me a new appreciation for what you are doing. If you could please pass along my thanks to the other man who was there helping it would be very much appreciated. He helped my friends and me a great deal with plant removal.

A Biodiverse Cattle Farm in NC

BY CATHERINE BOLLINGER

During the four years that Nick Harper managed Braeburn Farm in Snow Camp, NC, he implemented a number of management practices that enhanced the health of the 230 or so head of cattle raised there while simultaneously improving the biodiversity of the land on which the cattle grazed. Instead of fencing cattle into one feed lot for prolonged periods, which destroys all vegetation growing there and turns the ground to mud, Nick rotated the cattle onto different parts of the 530-acre pasture every few days. He used movable electric fencing, which the cattle quickly learned to respect. As soon as the cattle ate plants growing in one area, he moved them to another part of the pasture. Not only did this method prevent the demise of pasture plants, it also minimized the amount of cow dung deposited in any one area. Because the cattle were not crowded into a muddy, contaminated feedlot and ate a wide array of nutritious plants, the cattle were not treated with insecticides that, for example, deter flies.

Increasing biodiversity by reducing chemical applications

Nick did not apply chemical fertilizers

or herbicides to the fields, and he actively encouraged wildflowers to grow with a mix of grasses. With increased plant diversity and an absence of chemicals, insect diversity increased substantially, followed by an impressive uptick in native bird diversity – enough to attract the attention of local birdwatchers. During summer nesting season for ground-nesting birds, Nick prevented access to some sections of pasture, so that plants grew tall enough to provide the cover such birds prefer.

Nature's cow patty clean-up crew

Nick's science-based, ecology-focused approach to cattle farming yielded measurable results in many areas. In the absence of insecticides and other chemicals, a diverse array of insects eliminated cow dung almost as quickly as the cattle deposited it. During the summer months, Nick identified ten different species of dung beetles on the cow patties in his fields, all but one of which was native to the area. Different species specialized in using cow dung in different ways, ensuring that all of it disappeared remarkably quickly. Additionally, he noted the presence

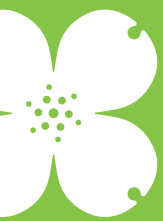
of native golden dung flies. These insects lay eggs in fresh cow dung, where the larvae hatch and join the dung beetles in eliminating cow dung before it can accumulate to unhealthy levels. When Nick examined cow dung on an adjacent cattle farm that uses conventional management techniques, including a heavy use of insecticides and herbicides, he found no insects of any kind working to break down the excrement.

Collaborative strategies

Nick's collaboration with plant and animal species native to the farm he managed resulted in measurable increases in biodiversity and in the health of the cattle raised there. He continues to work with other innovative farmers and ecology-focused groups to encourage the adoption of his management techniques on other farms. For more information on these techniques and collaborations, read this recent post on the blog of the New Hope Audubon Society at go.unc.edu/braeburnfarm.

This beautiful Piedmont stream was a treeless, channelized ditch two decades ago. The farm's owners leveraged stream mitigation funds and expertise from the state to restore the ditch to a healthy stream with now-diverse native occupants. *Photo by Catherine Bollinger*





Enhancing Native Biodiversity in Your Home Landscape

BY CATHERINE BOLLINGER

In his most recent book, *Nature's Best Hope*, Douglas Tallamy suggests that in the United States, one of the most effective ways we can stabilize species extinction rates and restore health to surrounding ecosystems is to convert private and public landscapes from biologically sterile, non-native designs to ones full of native species that are grown with minimal use of herbicides and pesticides.

As with any landscaping project, going native requires an initial investment of time and money. The return on this investment is a healthier, biodiverse environment that takes less time and money to maintain than current lawn-dominated suburban and urban landscapes. However, the most important reason for creating biodiverse native landscapes is that we need them to survive. If we want to successfully grow food, for example, we need the help of native insects and other animals to pollinate our crops. Without native plants to provide food and shelter, the pollinators cannot survive. Even non-native honeybees require biodiverse plantings to maintain themselves. If you are ready to diversify your landscape, here are some key points to consider.

Identify the plants currently growing in your landscape

Walk around your yard with your favorite note-taking device and record the plants on your property. It is helpful to do this by their relative size. Start with tall canopy trees, then understory trees and large shrubs. Next, identify your small shrubs, and finally jot down the flowers – wild or otherwise – and grasses growing in your landscape. Each size group should be further divided into three groups: native, non-native ornamental, and non-native invasive. You may discover there is some overlap between the last two categories, because many of our most destructive invasive plant species in the southeastern US were introduced through the horticulture trade and marketed as desirable landscape plants. Remove as many non-native invasive plants as possible before you finalize your new biodiverse design.

If you need help identifying the plants growing on your property, you are in luck! Phone apps such as iNaturalist do the hard work for you. A myriad of helpful books, websites, and even local conservation organizations can help you identify

the plants growing in your yard. See the sidebar on page 8 for a sampling of resources that will help you with this task.

Identify the characteristics of your landscape site

Are you located on a hilltop? Beside a river? Is your lot level? Does it drain poorly or quickly? Is your soil Carolina clay or something else? What parts of your yard receive six hours or more of sun per day? Where is the north-facing part of your yard? How about the other directions? All of these factors should affect your choice of the native species you add, because you want to add those that are well-adapted to the growing conditions of your landscape.

Identify any non-native ornamental plants you wish to keep. Ideally, these non-natives should provide some ecosystem services. For example, do the flowers of your non-native favorites attract pollinators? Are their leaves nibbled by native caterpillars or sliced up for nesting material by leaf-cutter bees? Do the dense branches of your non-native shrubs provide protected favorite nesting sites for birds?

Be aware of any human-imposed constraints on your options

Before you finalize design plans, be sure they comply with these issues:

- Know the location of all utility lines buried on your property. You don't want to add any plants that would damage them.
- Similarly, if overhead utility lines cross your property, be very aware of what you plant beneath them. Power utilities, especially, do not negotiate over the distance they want between your plants and their lines.

“Without native plants to provide food and shelter, the pollinators cannot survive.”

- Does your property include a septic field? If so, you must limit your plant choices for that area to non-woody plants.
- Finally, if you live in a neighborhood ruled by a Home Owners Association (HOA), you must find a way to work within the rules of that group. Note that, through the advocacy of growing numbers of residents, more and more HOAs recognize the importance and value of native plants. If lawns are required, the size of such areas may be reduced, and it may be possible to grow a lawn that is not a monocrop of non-native, resource-hogging fescue grasses.

Factor time into your plans

Creating a biodiverse, native-focused landscape does not happen overnight. When dealing with living organisms, you must be far-sighted, flexible, and recognize that it will take a number of years for your new landscape to fully mature. Remember the old gardener's adage regarding the timetable



Don't neglect native vines when you're diversifying your landscape. This crossvine (*Bignonia capreolata*) is a favorite of Ruby-throated hummingbirds. Photo by Tom Earnhardt

Left: A young green anole (*Anolis carolinensis*) hunts for insects on a native ironweed. Photo by Catherine Bollinger

for newly planted perennials: First year sleep; second year, creep; third year, leap. Your patience will be amply rewarded as flowers bloom, fruits appear, and native wildlife materializes to enjoy the benefits of your efforts.

- After invasive species are removed, prioritize your design. Do you plan to add trees and shrubs that will grow large? The best time to plant them in our region is late fall through winter, whenever the ground is not frozen.
- Most grasses do best when planted in spring after frost danger. Most perennial wildflowers may be planted during fall or spring. If you plant in the spring, monitor them for drought stress, because their root development will not be as extensive as fall-planted additions.

Remember to enjoy your biodiverse landscape

As new native plants adapt and mature in your landscape, many fascinating native animal residents will be drawn to the habitat you've created for them. You may want to keep a journal – written or photographic – of the new species you encounter. Especially if you have children, explore your diversifying landscape often and throughout the seasons. Identify new butterflies and bees. Watch for praying mantises and very hungry caterpillars. Listen to the songs of birds. Breathe in the perfume of flowers and green leaves. There is no better cure for nature-deficit disorder than being able to step out your door into a biodiverse native landscape. Such transformations can heal human hearts as well as our planet. And it is something we all can do.

Catherine Bollinger is a professional writer and editor and a lifelong lover of North Carolina's native plants and animals. Since 2011, she has blogged about her favorite subjects at piedmontgardener.com.



SPRING PLANT SALE

In light of the University's COVID-19 guidance about gatherings, we will not be holding an on-site spring plant sale this year. But, we have already resumed online sales with curbside pickup. We have lots of terrific native herbaceous perennials, shrubs, and trees to choose from!

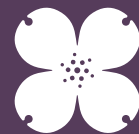
LEARN MORE AND ORDER
NCBG.UNC.EDU/PLANT-SALES



RESOURCES FOR IDENTIFYING NATIVE PLANTS

Here's a sample of the many resources available to help you identify the plants growing in your landscape and/or to find well-adapted native plants to add:

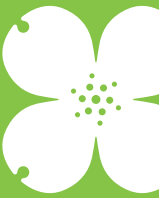
- **iNaturalist** This is an easy-to-use app for your phone. Submit a photo of mystery plants and animals, and the app identifies them for you.
- **The Southeast Native Plant Primer: 235 Plants for an Earth-Friendly Garden** by Larry Mellichamp and Paula Gross – This recent book is a treasure trove of information on native plants ideal for most southeastern landscapes.
- **Wildflowers of the Atlantic Southeast** by Laura Cotterman, Damon Waitt, and Alan Weakley – This recent book written by current and former staff members of the Garden offers exhaustive information on native wildflowers of the region.
- **ncwildflower.org** – The North Carolina Native Plant Society website includes a section called “Plant ID and Plant Gallery,” which provides detailed information on a vast number of species native to North Carolina.
- **newhopeaudubon.org** – For Chatham, Durham, Orange and parts of surrounding counties in North Carolina, the local Audubon chapter will assess the plants on your property for a small fee. Visit the “Bird Friendly Habitat” option under the “Conservation” tab on their website for more information.
- **ncbg.unc.edu** – Last but not least, the Garden's website offers online information and also classes you can sign up for to learn more about native plants. Be sure to check out the “Resources for Gardeners” option under the “Plants” tab.





Staff Pick: Sassafras

BY CHRIS LILOIA, HABITAT GARDENS CURATOR



A great landscape plant AND a biodiversity buffet

It starts in March, flowering before the trees leaf out. The yellow inflorescences of sassafras (*Sassafras albidum*) are small but stand out in the still gray woods. These blooms attract different insect pollinators including small bees, flies, and beetles. (A)

When the pollinators have done their work, female plants produce summer clusters of blue fruit made quite ornamental by their red stems. (B) The fruits are enjoyed by various songbirds.

The foliage is handsome as soon as it emerges, sporting a number of forms from unlobed to multilobed. Since these leaves are the preferred host for spicebush swallowtail

larvae, a careful inspection will sometimes yield one of our most charming caterpillars. (C) As the caterpillars mature into lovely butterflies (D), so the leaves senesce in dazzling shades of orange, yellow, and red come fall. (E)

With the arrival of winter the graceful trunks become visible and each curved and fragrant branch is festively tipped with a swollen bud holding the promise of spring.

Sassafras is a small tree that generally reaches 30-60 feet. It can be maintained as a single trunk or allowed to develop into a grove of stems. In addition to its wildlife and landscape value, it has a long tradition of culinary and medicinal use.





Illustration by Dot Wilbur Brooks

2021 Wildflower of the Year

BY HEATHER SUMMER, COLLECTIONS MANAGER AND SEED PROGRAM COORDINATOR

Once again, we are bending the definition of a wildflower to offer American beautyberry (*Callicarpa americana*) as our 2021 Wildflower of the Year. This deciduous understory shrub is native to woodlands, open forests, and disturbed areas throughout the central and southeastern United States. Beautyberry has pale green leaves along graceful arching stems and forms clusters of dainty pink flowers nestled in the leaf axils in late spring and early summer. However, the real show starts in fall, when the developing berries ripen to such a vibrant shade of magenta that they have been described as “neon violet.” In fact, the genus name *Callicarpa* comes from the Greek words *kalos*, meaning beautiful, and *karpos*, meaning fruit. Even after the leaves have turned yellow and dropped in late fall, the bright berries persist along the stem and feed many species of birds during fall migration. They also provide a striking contrast of vibrant color amongst the warm tones of fall foliage and make beautyberry a real gem in the garden!

The medicinal and ethnobotanical uses of beautyberry are widely documented throughout history. Indigenous tribes in the Southeast cultivated beautyberry, making a tea from the roots to treat a variety of stomach ailments, and using the leaves and roots in sweat lodge ceremonies for the treatment of malaria, rheumatism, and fevers. Another traditional use is to crush and rub the leaves on the skin as a natural mosquito repellent, which has recently been confirmed by scientists at the USDA who isolated a chemical compound from the leaves called callicarpene that does indeed repel mosquitos and other biting insects. Additionally, the berries are edible, and though somewhat bland and mealy when consumed raw, they can be cooked and prepared into jelly or wine.

Beautyberry is very easy to grow and requires minimal care once established. It prefers sites in full sun to part shade with average to moist, well-drained soils that don't stay too wet for extended periods. Beautyberry typically grows 4-6 feet tall and wide, but in favorable conditions it can grow up to 9 feet tall. In order to keep a more compact form, it can be pruned back to 6-10 inches tall in March, before the growing season begins. Because of its loose, open form that could be perceived as untidy, beautyberry is best planted in a group to give a fuller appearance, at the back of a shrub border, or in a naturalistic woodland garden where it can stretch out.

For a Wildflower of the Year brochure and seeds, send a stamped, self-addressed, business envelope to North Carolina Botanical Garden, UNC-CH, Campus Box 3375, Chapel Hill, NC 27599-3375 with attention to NCWFOY 2021.

FLORA OF THE SOUTHEASTERN UNITED STATES



Photo by Alyssa LaFaro

The southeastern United States is home to incredible biodiversity, and new plants are discovered in this area every year. Plant lists for this region, or Flora, evolve and change, making the most recent edition vital for professionals working in conservation and natural resources management. The newly released Flora of the Southeastern United States, developed by Alan Weakley, director of the UNC Herbarium, provides a key to identifying plants all the way from Pennsylvania to the eastern part of Texas and Oklahoma. Weakley has created several Flora over the years, and they are often cited as the documents of record on plant identification in the Southeast. His Flora began by covering just the Carolinas, and regions were added steadily to cover more of the southeastern United States, resulting in the present version that covers the entire region plus some areas along the border. This new Flora is available as a 2,000-page PDF. This document took years of research, yet it is offered for free to make it more accessible to those who need it. Flora of specific states and regions are also available.

DOWNLOAD THE FLORA
NCBG.UNC.EDU/FLORA

ARTICLE IN ENDEAVORS MAGAZINE
GO.UNC.EDU/FLORA

MEET THE FAMILY

Pea Fabaceae

Species worldwide: 20,000
Species in NC: 199

Leaves with three or more leaflets; fruit is a legume (think *snap peas*); flowers... not so easy-peasy...



sensitive briar
(*Mimosa microphylla*)



blue wild indigo
(*Baptisia australis*)

There are three main types of pea flowers. The classic pea flower has a large, creased top petal, two wing petals, and two bottom petals fused into a boat-like shape:



spiked wild indigo
(*Baptisia albescens*)



pink fuzzybean
(*Strophostyles umbellata*)

The second type is more variable but also tends to have five petals.

The third is the mimosa subfamily. You don't see the petals: it's the stamens that are showy!



partridge pea
(*Chamaecrista fasciculata*)



sensitive briar
(*Mimosa microphylla*)



MEMBERS SEED PACK

As a member, you are entitled to eight free seed packets! Learn about our Members' Seed Pack and order your seeds at:

NCBG.UNC.EDU/SEEDPACK



New Membership Categories

BY ANNE HARRIS, PRESIDENT, NORTH CAROLINA BOTANICAL GARDEN FOUNDATION

We've updated the North Carolina Botanical Garden Foundation's (NCBGF) membership categories after carefully analyzing the results of the member survey conducted in late 2020, evaluating the existing categories and benefits, and reviewing practices at similar non-profit organizations throughout the country. We hope these changes ensure the benefits associated with each category more equitably reflect the cost of the membership, and the increased number of categories offers more options for prospective members.

The chart below provides a summary of all the updated member categories and benefits. One of the most significant changes is the addition of a digital membership and a Director's Circle. The digital membership includes a digital subscription to this magazine, reciprocal garden privileges at more than 330 public gardens, and a 10% discount on virtual adult classes and programs. Those who wish to be part of the Director's Circle at the \$1,500 level are entitled to all of the benefits, including an invitation to the annual Director's Reception.

Whether you join via the website or by mailing in a form, you will receive an acknowledgement of your membership,

including your membership's start and renewal date. Note that you can use this proof of membership to receive reciprocal admission privileges at more than 330 gardens throughout North America.

I am often asked, "What is the difference between a member and a donor?" While both members and donors are showing support for the Garden, a member is someone who gives that support in exchange for a set of benefits. A donor might support a particular Garden project, program, or cause without expecting anything in return. The first step is to choose a membership category that best suits the needs of your family, and ensure your membership is current to receive all of the great benefits listed below. Then become a donor by giving to your favorite Garden projects, programs, and causes at a level comfortable to you.

If you are not yet a member, please consider joining the Foundation to help the North Carolina Botanical Garden continue its efforts in conservation, botanical research, habitat management, and the preservation of rare and endangered plants.

	Digital	Individual	Dual	Family	Sustainer	Director's Circle
	\$30	\$50 (\$40)*	\$75 (\$60)*	\$100 (\$80)*	\$500	\$1,500+
Digital subscription to Conservation Gardener	✱	✱	✱	✱	✱	✱
10% discount on virtual adult classes and programs	✱	✱	✱	✱	✱	✱
Reciprocal admission privileges at more than 330 gardens throughout North America	✱	✱	✱	✱	✱	✱
Printed magazine subscription to Conservation Gardener		✱	✱	✱	✱	✱
10% discount on in-person adult classes and programs		✱	✱	✱	✱	✱
Access to special member events		✱	✱	✱	✱	✱
Member previews and discounts at our biannual plant sales		✱	✱	✱	✱	✱
10% discount on most in-store Garden Shop purchases		✱	✱	✱	✱	✱
8 free packets of wildflower seeds		✱	✱	✱	✱	✱
Early registration and reduced rate for Camp Flytrap				✱	✱	✱
10% discount for Youth & Family programs				✱	✱	✱
10% discount on a facility rental per year					✱	✱
One gift membership to share per year					✱	✱
Recognition in Conservation Gardener magazine					✱	✱
Invitation to annual Director's Reception						✱

*20% discount on Individual, Dual, and Family Membership

Applies to Seniors (65+), Students (21-), NCBG Volunteers, Teachers (K-12), NCBG Instructors, and others who give back to the Garden



Include the North Carolina Botanical Garden in your will or estate plans. Contact Stephen Keith at 919-962-9458 or Stephen.Keith@unc.edu for more details.

A Legacy of Biodiversity Preservation

BY STEPHEN KEITH, NCBG DIRECTOR OF DEVELOPMENT

Where will you find a more diverse garden in North Carolina or the Southeast? Surveying the biodiversity of North Carolina's flora and fauna is a delightful reminder of all the efforts the North Carolina Botanical Garden coordinates to protect, restore, and celebrate native plant diversity in the state and region.

It's been a tough 12 months for us all, and the Garden has suffered its share of revenue and opportunity losses. However, I am regularly reminded of the strong passion and commitment of the North Carolina Botanical Garden Foundation members and supporters, who ensure our plant conservation mission carries forth.

Your annual gifts allow our educators, horticulturists, and conservationists to continue their work safeguarding our natural resources, inspiring youth and adult minds, and showcasing native plant collections. When we reopened our outdoor collections after being shuttered by the pandemic, **Marcella and Paul Grendler** stepped up and provided a large gift to support the Garden. At the same time, the estate of **Sandy and Bet McClamroch** provided a distribution to the Garden to support general operations. Both these gifts provided a strong boost to the beginning of the fiscal year.

Many donors provide multiple gifts each year to the overall Garden and to specific programs or managed areas. Thank you for the many 2020 year-end gifts, which sustain the annual budget. It was a tough year for the Garden with decreased on-site events and classes, but annual gift donations continued to arrive and provided much needed funds for the operation budget.

There are numerous ways to support the Garden annually, including responding to the **Spring Appeal**, serving as an **Event Host**, sponsoring the Garden with your business through the **Corporate Partner** program, participating in **GiveUNC**, establishing a monthly gift with your credit card, or by simply using the gift envelope in this magazine. These gifts are critical to sustaining the overall health of the Garden.



Besides annual giving, there are additional philanthropic ways to celebrate biodiversity. Each year, the Garden receives gifts through wills or revocable living trusts. These gifts provide a percentage of an estate or a certain amount of cash, securities, or property. After planned gifts are officially documented and eventually realized, they provide the resources to continue the Garden's mission, extending the legacy of the donor. We have trained staff to answer questions and guide a donor's work with their qualified estate attorney. If you would like to start this conversation, I welcome

you to contact our development office.

A new planned gift will have a great impact on the future of the Garden. North Carolina Botanical Garden Foundation (NCBGF) board member **Jim Pick and his wife Judy** documented their estate plan in late 2020 to donate their land, house, and other properties. Sadly, Judy passed away in February. This gift allows the NCBGF's

land trust role to forever manage and preserve over 78 acres of Piedmont forest for conservation purposes.

We also give a huge thanks to the **NCBGF board** and the friends and family of Bob and Molly Broad for the many gifts of support to complete Phase II of the Garden's Entranceway Master Plan. In the last magazine edition, we reported the loss of NCBGF honorary board member Bob Broad. To honor Bob and Molly's many accomplishments to the Garden and the State of North Carolina, the **Bob and Molly Broad Entrance Walk** is under construction

to funnel visitors to the Allen Education Center. Low stone walls and a paved stone walkway will welcome visitors to our display gardens. An improved breezeway plaza is also underway to allow for future successful events and programs.

We are also grateful for **Cindy and Tom Cook**, who hosted a virtual student intern gathering in early December 2020. Cindy and Tom Cook challenged supporters to match their \$10,000 gift to our student intern endowment fund. Garden internships not only provide solid employment opportunities, but also provide students with a wealth of experience to further their educational and professional goals. Over 20 donors were inspired to help students which exceeded the challenge by 150%. Thank you!

Student intern funding is one of our campaign goals, with the vision of establishing several named student intern endowment funds to fully support a summer or academic year student intern each year. The Garden hosts between 10-12 student interns each summer, serving in all areas of the Garden, including Camp Flytrap, Coker Arboretum, Battle Park, our Habitat Gardens, and other conservation tracts. Interns join Garden staff during a crucial time, in the middle of the growing season and during summer camp.

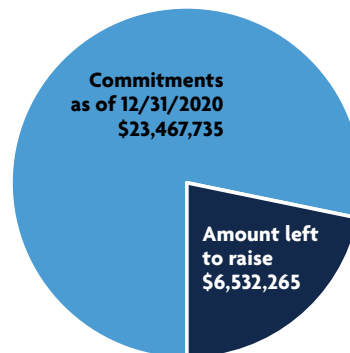
It takes many people and many ways to keep the Garden operating smoothly. With support from over 3,600 donors in the last fiscal year, the Garden continues to support many biodiversity preservation and education efforts. Come enjoy the Garden this spring and relish in all the available events and programs, both virtually and on-site, and know your gifts and contributions make our operations possible.



**PROGRESS TOWARD THE GARDEN'S
\$30 MILLION UNC CAMPAIGN GOAL**

FOR ALL KIND the CAMPAIGN for CAROLINA

The North Carolina Botanical Garden is a department of UNC-Chapel Hill. You can support the Garden and participate in Carolina's fundraising campaign. We have reached over 75 percent of our \$30 million campaign goal. The priorities of our campaign include several capital projects, such as the entryway landscape, Forest Theatre enhancement, and Children's Wonder Garden construction. We are also working to increase annual giving, fund several named student internships, build endowments, increase compelling interpretation throughout our spaces, and plan for the future Plant Biodiversity Research Center. For more information about the Garden's campaign, contact Stephen Keith at 919-962-9458.



**UPCOMING
EVENTS &
PROGRAMS**

Interested in taking a class this spring? See what we have to offer on our website. From drawing to entomology, from in-person, socially-distanced classes to Zoom workshops, we have a lot of variety this spring! Subscribe to our e-newsletter or check our website for the most up-to-date information.

SUBSCRIBE TO THE E-NEWSLETTER
NCBG.UNC.EDU/SUBSCRIBE

OUR EVENTS WEBPAGE
NCBG.UNC.EDU/CALENDAR

**Thank you for choosing to honor friends and family
through a gift to the North Carolina Botanical Garden!**
Tribute Gifts below were received from July 1 to December 31, 2020.

IN HONOR OF

Tommy and Brenda Alley

Shannon L. Alley, *for Seed Collecting Fund*

Mary and Carl Anderson

William and Marcia Daniell

August and Stella

Wilfred and LeAnne Barber,
for Mason Farm Endowment

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Richard and Jere Stevens
Maria G. Stotz
Damon and Sara Waitt
G. Smedes and Rosemary York

You can keep the Garden growing each month by establishing a recurring gift via your credit card. See the options on the Garden's giving page, or contact Stephen Keith at 919-962-9458.

Melinda Kellner Brock

Samuel H. Magill Jr. and Lucian V. Rinando, for Melinda Kellner Brock Terrace
Naomi P. Slifkin and Glenn A. Withrow
Kate Magill Walters, for Melinda Kellner Brock Terrace

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Mary C. Howes, for NCBG Director's Fund

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Caitlin Kennedy Kelly

Mildred G. Kelly

Meg Graham Kemper

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For Battle Park Fund
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Darcie Smith

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Jean C. Stewart, for Battle Park Fund

Barbara Lois Stiles

Lars G. Schoultz and Jane Volland, for Battle Park Fund
Anne R. Wade

M.J. Strickland

Anonymous

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Sandy and Reaves Thompson, for Battle Park Expendable

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Corporate Partners are businesses who support the North Carolina Botanical Garden year-round by sponsoring the full year of signature events. Thanks to our 2021 Corporate Partners for their commitment to the Garden's success. If you would like to become a Corporate Partner, please contact Jordan Wilkins at 919-843-2411.

NATURAL AREA STEWARD



HABITAT SUSTAINER



GARDEN SUPPORTER



COLORING THE CONSERVATION CONVERSATION

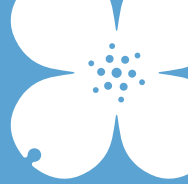
APRIL 11; 2:30 - 4 P.M.

Drew Lanham will discuss what it means to embrace the full breadth of his African-American heritage and his deep kinship to nature and adoration of birds in this virtual lecture. The convergence of ornithologist, college professor, poet, author, and conservation activist blend to bring our awareness of the natural world and our moral responsibility for it forward in new ways. Candid by nature, and because of it, Lanham will examine how conservation must be a rigorous science and evocative art, inviting diversity and race to play active roles in celebrating our natural world.

This free annual lecture focused on native plants and their conservation and ecology is made possible through a gift in honor of Evelyn McNeill Sims.

DETAILS AT
NCBG.UNC.EDU/SIMS

SIMS
LECTURE



MARK YOUR CALENDAR

*All major events will be held
online this spring.*

Spring 2021
online **Native Plant Sale**

April 11
**Evelyn McNeill Sims
Native Plant Lecture**
virtual with Drew Lanham

May 7-16
Go Public Gardens Days

May 22
**Virtual Carolina Moonlight
Garden Party**

*Major events this fall are
tentatively planned to be
held in-person.*

September 11
**Sculpture in the Garden
Preview Party**

September 24 & 25
Fall Plant Sale

October 29
BOOtanical Family Festival

November 7
**Jenny Elder Fitch
Memorial Lecture**

November 19
**NC Botanical Garden Foundation
Membership Meeting**

December 3
**Winter in the Garden
Member Party & Preview Night**

December 4
**Winter in the Garden
Holiday Festival**

For more information:
ncbg.unc.edu

North Carolina Botanical Garden

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