

NORTH CAROLINA
BOTANICAL
GARDEN

CONSERVATION GARDENER

FALL & WINTER 2017/18
\$4.95



THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

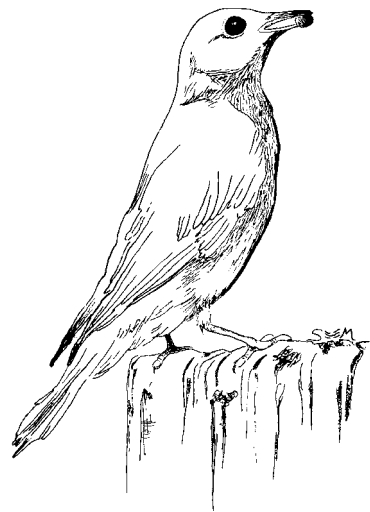
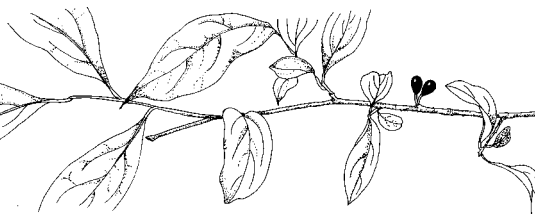


IN THIS ISSUE

ON THE COVER

Lindera benzoin

Spicebush



Wildlife, especially birds,
feast on the seeds of
Lindera benzoin (spicebush).

Bluebird illustration by
Sandra Brooks-Mathers

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

Each Seed Needs to Find a Home

BY DAMON WAITT, NCBG DIRECTOR

Dear Members and Friends,

I was never sure if Lady Bird Johnson was talking about people or plants when she would say, “Each seed needs to find a home.” Home to Lady Bird was a small town in East Texas called Karnack. Growing up in solitude with few friends her own age, she spent much of her time exploring the sandy lanes of the Pineywoods searching for violets, dogwoods, and dewberries or paddling the dark bayous of Caddo Lake under ancient cypress trees decorated with Spanish moss. The sense of place that came from being close to the land never left her, and she would devote much of her life to preserving it. It was the beginning of a life-long love affair with nature so intimate that when Mrs. Johnson talked about plants you might think she was talking about family or old friends.

Each seed needs to find a home – It usually came up in conversation about sowing wildflowers and how important it was to prepare the ground before sowing to ensure good seed-soil contact. She knew that the chance an individual seed would successfully germinate, grow to adulthood, and reproduce to make the next generation of seeds would be greatly improved if

that tiny well-equipped package we call a seed found a good home.

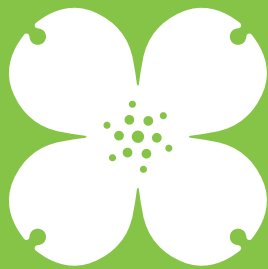
Each seed needs to find a home – *Location, location, location.* The old real estate adage applies to seeds as much as people. What I have always found remarkable about seeds is the myriad of mechanisms for dispersal and the distance they may or may not travel when they are house hunting. Too close to mom (and dad if the plant is self-fertile) and there will be competition among siblings and the parent plants for light, space, water, and nutrients. Too far from where mom and pop have already demonstrated that the environment is favorable for growth and reproduction could land you in a location that is not ideal. Nevertheless, off they go with their wonderful adaptations for dispersal by wind, water, animals, explosive force, and ants to name just a few. Yes, I said ants. Ant dispersal is called myrmecochory, an unnatural word for an even more unusual phenomenon.

Each seed needs to find a home – Seeds are at home at the North Carolina Botanical Garden. Our conservation programs interact internationally with

Kew Garden’s Millennium Seed Bank Project, an effort to conserve 25 percent of the world’s plant species by 2020. Nationally, we are a founding member of the Center for Plant Conservation with responsibility for the collection and banking of seed for 45 species of rare and endangered plants. Regionally, we are an active partner in Seeds of Success East, a federally-funded seed collection program to help restore coastal areas ravaged by Hurricane Sandy. Locally, seeds are used to grow plants for our gardens, our research projects, and for distribution to our members.

Each seed needs to find a home – I never knew if Lady Bird Johnson was talking about people or plants when she said it. Having recently made North Carolina, the University, and the Garden my home, nourished and supported in so many ways by so many people, I think it is safe to say, she was talking about both.

D Waitt



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Seeds: Making Dreams Come True

BY JENNIFER PETERSON, MANAGING EDITOR

As you may have noticed, this edition of the *Conservation Gardener* is all about seeds. It seems like such a simple topic, but as you dive deeper into this magazine, I think you will be pleased with the variety of articles you find.

So, what is a seed anyway? Most plants reproduce through seeds. A seed includes a plant embryo and food reserves which supply the young plant with nutrients before it develops true leaves. Given adequate moisture and the right temperature, the smallest of seeds can germinate and grow into the biggest of trees.

I like to think of seeds as tangible optimism. A seed is filled with possibility. When planning a garden and looking at packets of seeds, a future landscape is perfect in one's mind. It's those seeds that both inspire and make those dreams come true.

We are doing a lot with seeds here at the Garden to make our dreams come true. As you know, we are a

conservation garden, and seeds are a very important part of realizing our mission. In the pages that follow, you'll read about some of these efforts. From collecting seeds to restore the coast following natural disasters, to researching the germination of rare species, to growing plants that provide food for wildlife, we are working hard to make our conservation dreams a reality.

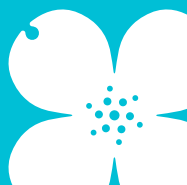
I also want to mention that we are excited to host our latest exhibition, *Saving Our Seeds*, August 27-December 22. The staff here at the Garden have poured countless hours into creating this exhibition, from planning programs to developing the content of the exhibit panels. We sure hope you stop by and enjoy the exhibit!

Whether literally or figuratively, I hope this issue of the *Conservation Gardener* plants a seed, inspiring a dream or two for you.

SIGN UP FOR OUR E-NEWSLETTER

Are you interested in knowing more about what's going on at the Garden? Subscribe to our monthly e-newsletter! Every month, we send out the latest information about exhibits, events, workshops, and more!

SUBSCRIBE: [NCBG.UNC.EDU/ENEWSLETTER](http://ncbg.unc.edu/enewsletter)



Conservation Gardener FALL/WINTER 2017/18

Cornus florida (dogwood) seeds

Saving Our Seeds August 27 - December 22

This fall, the Garden is hosting a new exhibition highlighting the importance of seeds. *Saving Our Seeds* includes an exhibit in the James and Delight Allen Education Center's Pegg Exhibit Hall and a series of lectures, workshops, and classes detailing the significance of seeds to human nutrition, ecosystem restoration, rare plant conservation, and more!

In addition, we are showcasing photography of seeds and pods by Mary Jo Hoffman and Mike Dunn and illustrations by North Carolina Botanical Garden instructors Linda Koffenberger and Kathy Schermer-Gramm.

For a list of *Saving Our Seeds* classes and events, visit our calendar at go.unc.edu/SavingOurSeeds



FITCH
LECTURE

SEEING SEEDS

A Journey into the World of Seedheads, Pods, and Fruit

Seeing Seeds

Teri Chace, author of *Seeing Seeds: A Journey into the World of Seedheads, Pods and Fruit*, takes us on a tour of seeds—what they look like, what they do, and how they do it, as they work towards their astounding goal of self-replication. Teri will also discuss the techniques used for the book's stunning photos by Robert Llewellyn. Free, preregister at ncbg.unc.edu

SUNDAY, NOVEMBER 5, 2:30 P.M.
FOLLOWED BY BOOK SIGNING AND RECEPTION

NORTH CAROLINA BOTANICAL GARDEN





The Need for Seeds

BY ALYSSA LAFARO
REPRINTED FROM *ENDEAVORS* MAGAZINE



A brimmed hat keeps the sun out of Amanda Faucette's eyes as she leans down to grab something in the grass on the side of Mashoes Road, off of U.S. Route 64 near Manns Harbor. Cars speed by as she wanders through the weeds. She hears the sound of rubber halting on pavement and turns to see an elderly man getting out of

Bureau of Land Management (BLM) within the U.S. Department of the Interior.

Since 2001, the SOS program has collected seeds to restore native plant species after major natural disasters like wildfires, hurricanes, and flooding. Until 2015, most of that seed collection

proposal to collect seeds. Seeds of Success East was born."

The dirty details

Before going into the field, Faucette reached out to leaders from Hurricane Sandy restoration projects to learn the plant species that needed collecting. "Most of the species on our list are matrix species — the workhorses of an ecosystem that are often the first plants to develop and colonize an area after there has been a disturbance," she says. "You get more bang for your buck as far as the plant is concerned. They do more work in regard to soil retention and reclaiming an area than other plants would."

Faucette and her four interns for the project often found themselves knee-deep in wetlands, salt marshes, and estuaries. "We'd be out there in waders with pole pruners collecting seeds from plants that most people consider weeds," she says.

Seed type and quantity determined the locations they visited. "We had to find areas where there were enough of these plants to collect a minimum of 20,000 seeds per accession, but not negatively impact the native seed population in that area," Faucette says.

It's a bit more involved than it sounds. "First thing you need to do is grab a seed head," Faucette instructs, "and then you need to find out if there's any seed in it. And if there is seed, is it viable? Is it alive? Some plants will produce what looks like a seed, but there's actually nothing inside of it."

After collection, seeds get stored in paper bags. Then, they need to dry out — moisture will encourage fungal growth and destroy the crop. "It's very low-tech," Faucette chuckles.



Seeds of Success intern Samantha Walker collecting *Sambucus canadensis* (elderberry) fruit at Tuckahoe State Park, Maryland.

his car. He wants to know what she's doing on the side of the road, and he's surprised to hear she's collecting seeds from inside the spikey green fruit of a sweetgum tree — a common, weedy plant.

"Usually, when we're on the side of the road bent over in the weeds, people look at us like we've lost our minds," Faucette says with a laugh. The conservation botanist at the North Carolina Botanical Garden, Faucette is integral to the Garden's role in Seeds of Success (SOS) — a national native seed collection program led by the

took place in the western United States, where BLM administers 264 billion acres of lands — they manage next to none in the East.

"We were not getting much funding or attention," Johnny Randall, director of conservation programs at the Garden and adjunct faculty in the UNC-Chapel Hill Curriculum for the Environment and Ecology, says. "But because of damage caused by Hurricane Sandy and the need for seed on federal projects, especially at national wildlife refuges, we got together with two other botanical institutions to write a grant

Top: Collecting saltmeadow cordgrass seeds in the high marsh of The Nature Conservancy's Brownsville Preserve in Nassawadox, Virginia. Bottom: Staff collected bald cypress and swamp tupelo from North Carolina's Merchants Millpond State Park.

“Most of the species on our list are matrix species — the workhorses of an ecosystem.”

She recalls the interns traveling long distances for seed collection, which meant hotel rooms became their labs. “They’d have luggage carts overflowing with plants and bags of seed. And they’d have seeds spread out all over their hotel rooms to try to get them to dry before they went out the next day.”

Space and resources weren’t the only hurdles the interns came across. On a few occasions, they stumbled upon black bears. And one intern got her rental car stuck in a ditch at Alligator River National Wildlife Refuge. A handful of locations required the interns to hop into a boat. “They’d be in canoes beating off the cones from bald cypress and fruits from water tupelo trees,” Faucette says.

A germinating program

Faucette and her team collected approximately 15 million seeds in the past two years — and they still have four months to go. So far, the project has gone very well and completely according to plan. It actually exceeded expectations. SOS East is actively seeking funding for continuation of the project — and perhaps an expansion.

“Right now, SOS East is concentrated on the Mid-Atlantic Region because of hurricanes and flooding,” Randall says, “but I’d like to see it expand to the South-Atlantic coast as it’s more vulnerable to hurricane damage than the Mid-Atlantic. Plus, hundreds of thousands of acres there have been burned from wildfire.” Forty percent of the nation’s forests reside in the South, which leads the nation in annual wildfires, according to research from the USDA Forest Service Southern Research Station. In 2007 alone, several wildfires along the Georgia-Florida border near the Okefenokee National Wildlife Refuge burned approximately 600,000 acres.

Local seeds are ideal for restoration thanks to ecotypes — genetically distinct plant variations that

have adapted to specific environmental conditions. “The ecotypic seed phenomenon is real,” Randall says, “so if you want to have a successful project, you want seeds from plants that are locally adapted for those sites.” And the North Carolina Botanical Garden could be a hub, able to help local agencies with restoration and rehabilitation after natural disasters strike.

The project needs to go beyond seed collection, Randall stresses, to truly be successful. Fifteen million seeds sounds like a lot, but that only goes so far in restoration. Growers will need to plant those seeds to produce thousands more in seed increase plots — an economic driver, Randall says, for people to open seed conservation businesses. Ernst Conservation Seeds, located in Pennsylvania, is one of the only companies in the eastern United States that grows, processes, and sells native seeds.

“There will be a need for seeds,” Randall says. “We don’t know where, and we don’t know when — but these storms happen every year. And you don’t want to look for the seed after the storm occurs.”

“There will be a need for seeds... you don’t want to look for the seed after the storm occurs.”

Left: Scouting for seeds at Eastern Shore National Wildlife Refuge. Below: Emily Driskill and Jake Dakar, Seeds of Success interns, calculate if there is enough seed for collection. Seeds of Success needs to gather 20,000 seeds during each collection.



In mid-summer, thrushes and other birds eat sassafras seeds. Photo by Mike Dunn



Seeds for Wildlife

BY HEATHER SUMMER, NCBG SEED PROGRAM COORDINATOR

Native plants evolved together and have close relationships with native wildlife. Not only do our native plants provide the ideal shelter and nesting sites for birds, small mammals, and other critters but they also provide the food that our wildlife needs to live and reproduce. This food comes in many different forms, such as nectar, flowers, leaves, buds, cones, and sap, as well as in the abundance of caterpillars, spiders, and other insects that birds rely on to feed to their young. But of particular interest this time of year (which also happens to correspond with our *Saving Our Seeds* exhibit) are the numerous plant species that have fruit, berries, seeds, and nuts that are eaten by animals.

Many species in the Asteraceae (Sunflower Family) such as *Coreopsis* spp. (tickseed) and *Helianthus* spp. (sunflower) have seeds that are

favorites of goldfinches, cardinals, sparrows, and other seed-eating birds. It is common to see flashes of yellow swarming a patch of *Echinacea purpurea* (purple coneflower) as the goldfinches frantically tear apart the seed heads in search of nourishment.

Our fall-fruiting native trees and shrubs produce berries that are higher in fat content than their non-native relatives that are commonly used in ornamental plantings. This is particularly important not only for overwintering birds gearing up for the upcoming cold winter, but also for migrating birds fueling up for their journey south. Perhaps one of the best fall-fruiting native trees for birds is *Nyssa sylvatica* (blackgum). Multiple species of birds flock to the deep blueish-black fruits of this species in the late summer and early fall. Another great fruiting species is *Sassafras*

albidum (sassafras), whose dark fruits are relished by thrushes and many other bird species in mid-summer.

Larger seeds and nuts from species such as *Quercus alba* (white oak) and *Carya glabra* (pignut hickory) are an important food source for deer, foxes, small mammals, and other wildlife. And even the diminutive seeds of our native grasses are eaten by birds, rodents, and other small animals.

As you select plants for your home garden, keep wildlife in mind. A few well-chosen plants can offer beauty in themselves and the animals they attract.

Left: Don't deadhead your coneflowers — Goldfinches eat their seeds! Photo by River of Life Farm
Right: Chipmunks and other small mammals rely on acorns and other seeds for food. Photo by Mike Dunn

50 NATIVE SPECIES FOR WILDLIFE

Herbaceous

Bidens aristosa (bearded beggarticks)
Chamaecrista fasciculata (partridge pea)
Coreopsis auriculata (lobed coreopsis)
Echinacea purpurea (eastern purple coneflower)
Helianthus angustifolius (narrowleaf sunflower)
Mitchella repens (partridge-berry)
Phytolacca americana (American pokeweed)
Rudbeckia fulgida var. *fulgida* (orange coneflower)
Rudbeckia fulgida var. *sullivantii* (black-eyed Susan)
Salvia lyrata (lyreleaf sage)

Grasses

Andropogon ternarius (splitbeard bluestem)
Panicum virgatum (switchgrass)
Schizachyrium scoparium (little bluestem)
Sorghastrum nutans (Indiangrass)
Tripsacum dactyloides (eastern gamagrass)

Vines

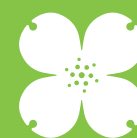
Campsis radicans (trumpet creeper)
Lonicera sempervirens (coral honeysuckle)
Parthenocissus quinquefolia (Virginia creeper)
Passiflora incarnata (purple passion-flower)
Smilax spp. (greenbrier)
Vitis rotundifolia (muscadine)

Shrubs

Aronia arbutifolia (red chokeberry)
Callicarpa americana (American beautyberry)
Ceanothus americanus (New Jersey-tea)
Corylus americana (American hazelnut)
Euonymus americanus (heart's-a-bustin')
Ilex glabra (inkberry)
Ilex vomitoria (yaupon)
Gaylussacia spp. (huckleberry)
Lindera benzoin (smooth northern spicebush)
Morella cerifera (wax myrtle)
Rhus copallinum (winged sumac)
Rubus spp. (blackberry)
Sambucus nigra ssp. *canadensis* (American black elderberry)
Vaccinium spp. (blueberry)
Viburnum acerifolium (maple-leaf arrow-wood)
Viburnum dentatum (arrowwood viburnum)
Viburnum nudum (possumhaw)

Trees

Asimina triloba (common pawpaw)
Carya glabra (pignut hickory)
Diospyros virginiana (American persimmon)
Fagus grandifolia (American beech)
Juniperus virginiana (eastern redcedar)
Morus rubra (red mulberry)
Nyssa sylvatica (blackgum)
Prunus americana (wild plum)
Prunus caroliniana (Carolina laurel cherry)
Prunus serotina (black cherry)
Quercus spp. (oak)
Sassafras albidum (sassafras)



FALL
PLANT
SALE

FALL IS FOR
PLANTING!

Find plants for wildlife at our Fall Plant Sale!

Choose from a wide variety of southeastern native wildflowers, shrubs, trees, vines, and ferns at our annual sale, in addition to used books and native wildflower seeds.

Members' Night:

FRIDAY, SEPTEMBER 29, 4-8 P.M.

Members enjoy a special plant sale preview party with live music and refreshments. Non-members are welcome to become members at the door. Members receive a 10 percent discount on plant and garden shop purchases.

Public Sale:

SATURDAY, SEPTEMBER 30, 9 A.M.-3 P.M.



Right: Georgia indigo-bush, a rare plant, growing at Fort Bragg in Fayetteville, North Carolina.
Below: Fruit of a Georgia indigo-bush growing in the nursery at NCBG.



Uncovering the Secrets of Seeds

BY MIKE KUNZ, NCBG CONSERVATION ECOLOGIST

If you have ever perused our annual NCBG Seed List, you might remember seeing the various methods provided to get the seeds to germinate. Sometimes the process is as simple as exposing the seed to water and light, and sometimes the process is quite complex, where the seeds require stratification, exposure to extreme temperature, or nicking the seed coat with a razor.

Determining the germination ecology, or specific conditions needed for seeds to germinate, can be difficult. To do this, we often look

at the natural conditions a seed experiences. Species that flower in spring may only germinate after exposure to warm and then cold stratification, like *Jeffersonia diphylla* (twinleaf) (Baskin and Baskin 1989). *Pyxidanthera brevifolia* (Sandhills pyxiemoss) flowers in winter and early spring and its seeds only germinate in cool temperatures (Wall et al. 2010).

However, this process can work in reverse, with the discovery of how best to germinate a seed guiding our understanding of

natural habitats and processes. It can lend valuable information that can guide plant conservation and land management activities to facilitate germination and maintain healthy populations of a species. This is particularly helpful for rare species where understanding the germination requirements can be the line between helping a population to grow or driving it to extinction. This is just one area in which the North Carolina Botanical Garden is contributing to rare plant conservation.

A case study

Amorpha georgiana Wilbur (Georgia indigo-bush) is a rare shrub in the Fabaceae (Legume Family), which grows in fire maintained wet pine flatwoods and savannas in the sandhills and coastal plain of Georgia, South Carolina, and North Carolina. While propagating Georgia indigo-bush for our restoration project on Fort Bragg, we found there was little information on its germination ecology, so we began experimenting.

We exposed the seeds to hot and cold, smoke and razors to find what would lead to the best germination. Initially, we found that mechanical scarification (nicking the seed coat) and exposure to 94 degrees Celcius (200 degrees Fahrenheit) water yields higher germination than all other treatments. The results of the hot water treatment were particularly intriguing as it functions as a surrogate to the heat created by fires. Ooi et al. (2014) found six Australian species that only germinate after exposure to temperatures of 80 degrees Celcius (176 degrees Fahrenheit) or above, the temperature commonly associated with the temperature seeds experience during fires. They concluded the seeds have obligate pyrogenic dormancy. That is, they will only germinate after being exposed to the high temperatures of fire. Does Georgia indigo-bush require a similar phenomenon?

We continued to investigate if the germination response for Georgia indigo-bush is linked to the fires that frequently burn in its natural habitat by exposing the seeds to varying temperatures (40, 60, 80, and 94 degrees Celcius) of water. Our results show that most germination does occur at temperatures at or above 80 degrees Celcius, but some seeds still germinated at lower temperatures, albeit less than 20 percent. While our results indicate Georgia indigo-bush doesn't strictly germinate only after

a fire, they do support the idea that fire is an important factor in breaking seed dormancy and stimulating germination, not to mention maintaining the habitat the species needs.

This all fits into the larger context as well. Many of the species that co-occur with Georgia indigo-bush rely on frequent fires natural in the sandhills and coastal plain, most notably *Aristida stricta* (wiregrass) and *Pinus palustris* (longleaf pine).

Now armed with this information from our study of germination ecology, we can further support that idea that managing Georgia indigo-bush populations with fire is beneficial and may help create healthy populations of this rare species.

References:
Baskin, Jerry M., and Carol C. Baskin. "Seed Germination Ecophysiology of *Jeffersonia diphylla*, a Perennial Herb of Mesic Deciduous Forests." *American Journal of Botany*, vol. 76, no. 7, 1989, pp. 1073–1080.

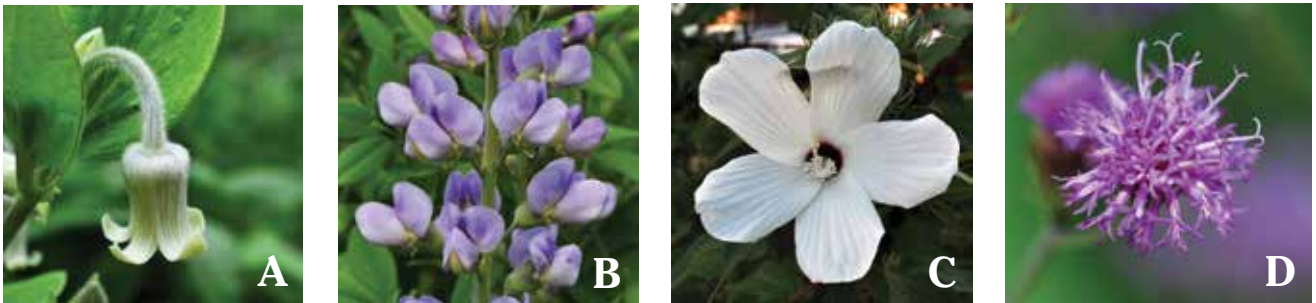
Ooi, Mark K J et al. "Temperature Thresholds of Physically Dormant Seeds and Plant Functional Response to Fire: Variation among Species and Relative Impact of Climate Change." *Ecology and Evolution* 4.5 (2014): 656–671.

Wall, Wade A., et al. "Effects of Light and Temperature on Germination of *Pyxidanthera brevifolia* Wells (Diapensiaceae)." *The Journal of the Torrey Botanical Society*, vol. 137, no. 4, 2010, pp. 348–354.

Georgia indigo-bush blooming at NCBG.



Match the Seeds to their Flowers!



1 ____ 2 ____ 3 ____ 4 ____ 5 ____ 6 ____ 7 ____ 8 ____ (Answers on page 19.)



UNC’s Edible Landscape

Edible Campus, a student-initiated project operated by the North Carolina Botanical Garden, is re-imagining the traditional campus landscape. The program has converted eleven garden beds across the University of North Carolina at Chapel Hill campus to incorporate edible, medicinal, and pollinator-friendly plants. They maintain these “satellite” beds with the help of students in the residence halls and allied organizations. All produce grown in these beds are free to pick by passersby!

In April, Edible Campus expanded its palette with the construction of a 13,000 square foot production garden behind Davis Library. The first workday in the new garden brought over 150 members of the UNC and larger community, and ever since, the space has been vibrant with students working in the garden, socializing, and engaging with sustainable food systems.

The produce grown in the new Edible Campus Garden will be allocated to student initiatives addressing nutrition and food access. All are welcome to come explore the garden anytime, and then to swing by the nearby “satellite” beds to grab a snack!

Visit ediblecampus.web.unc.edu for a map of the gardens and to learn more.

GARDEN OUTREACH

Four programs that advance a sustainable relationship between people and nature:

CAROLINA CAMPUS COMMUNITY GARDEN
This campus garden grows vegetables and fruit so that all employees of UNC-Chapel Hill have access to fresh sustainably grown produce through the shared efforts of the university and local community.

EDIBLE CAMPUS UNC
Gardens throughout the campus of UNC-Chapel Hill provide opportunities for students to engage in gardening and social activities, creating a beautiful outdoor classroom that feeds us, too.

HORTICULTURAL THERAPY
This program promotes physical, social, and emotional growth through nature-based activities to underserved community members, including those with mental or physical disabilities.

WONDER CONNECTION
This program engages hospitalized children with the wonders of science through meaningful learning experiences and promotes healing and hope through positive connections with nature.



Right: *Remember* by Hackney, Best in Show 2007. Photo courtesy of Jeff Hackney
Opposite: Hackney works on a sculpture for this year's *Sculpture in the Garden* exhibition;
Aaralyn and *Sasha* by Hackney, People's Choice 2014



Welding Wonder into Sculpture

BY EMILY OGLESBY, NCBG COMMUNICATIONS ASSISTANT

It's that time of year when the heat of the summer begins to fade, children are settling in to a new school year, and football games become the weekend pastime. September also marks the arrival of new sculptures throughout the North Carolina Botanical Garden.

Every fall for the last 29 years, the Garden has hosted *Sculpture in the Garden*, a juried, invitational show of three-dimensional artwork created by local artists.

Chapel Hill sculptor Jeff Hackney, winner of the 2007 Best in Show award and the 2014 People's Choice award, is drawn to *Sculpture in the Garden* by the setting – and the audience. The North Carolina Botanical Garden "is a wonderful venue to display outdoor artwork," he says. The variety of settings within the Garden, from sheltered, woody coves to big, open spaces, gives the artists a number of options when it comes to deciding how the work will interact with the landscape. The setting also changes with the seasons – as fall

sweeps in, the foliage changes color and begins to clear, offering new perspectives. "Plus," Hackney adds, "the people who come to see the art appreciate the Botanical Garden," and vice versa.

The setting also helps guide the form of the sculpture. Hackney creates a piece specifically designed for the *Sculpture in the Garden* show every year. Although he acknowledges that a stark, modern, sculptural piece (of which he has created many) would look great among the plants, he strives to make the pieces for the Garden as harmonious with their surroundings as he can. Often that means organic shapes that are reminiscent of nature. If he has 20 minutes free, he will swing by and just walk through the display gardens. "I always see something new, and it allows me to look at the spaces" — he can get an idea for where he would like a sculpture to go.

Hackney also draws inspiration from the natural world. "Nature and physics are the things I will always wonder at and will never be able to solve," he says,

and that awe is reflected in the soaring, structural quality of his work. The inspiration for a piece could be as simple as thinking about the number three, leading to a sculpture formed entirely of triangles. Or it could come from a question like "Why is the north star a constant in our skies?"

The most important thing Hackney hopes people experience from his work is to be inspired on their own. There's no conclusion he's hoping they'll reach when they look at a piece — it's about being awake to the world around you. "Always wake up every day and question everything," he says.

It's not just the subject of the sculpture that he treats with an attitude of openness and investigation: his process is all about trying new things and testing the limits of what he can do with his materials.

Hackney spent his childhood in Mexico, followed by service in the Army Corps of Engineers above the Arctic Circle.

Then he worked as an art director, graphic designer, and mechanical artist in Georgia.

Hackney arrived in North Carolina in the 1990s, and he has been participating in *Sculpture in the Garden* since 2007, the year he went into the studio full-time to pursue a career as a professional artist. His work is featured in public and private collections across the country and runs the gamut from figurative sculptures like "Leaving," 14-foot concrete and steel human forms, to the "The Big Imagine," seven red, arching swing sets chosen as one of six sculptures in The Playable Art Park in Georgia.

Although he has worked at the crux of art and engineering for much of his life, he doesn't have formal training in metalworking. His wife, Lucie, gave him a welder as a gift in the early 1990s, and for over a decade, he continued to work in graphic design and historic restoration while he honed his craft. He sees his lack of formal education in metallurgy as an advantage — undeterred by prescriptive rules, his spirit is adventurous. The "let me try it!" attitude with which he welcomes new ideas and methods lends his work a fresh and creative aura. Mixing metals might not be standard practice, but being self-taught means that curiosity is a driving force in Hackney's work; he'll think, "If I can adjust the voltage here and the gas flow there, can I get bronze to attach to steel?" The result is innovative and striking.

Every piece starts with small thumbnail drawings, roughly nine per page. Sometimes he might go through 30 pages of drawings before ultimately abandoning the idea; other times two pages of sketches are all it takes to know it's worth pursuing.

Then he starts on the structure. Whenever possible, Hackney works with post-consumer scrap metal. New metal, by contrast, is manufactured via a carbon-intensive process that generates harmful waste products at every step, from mining to refinement, not to mention that metal ores are a non-renewable resource. Taking advantage of recycled metal enables him to lighten his environmental impact.

Inspired by the way that even the most complex systems in nature are built from simple structures, he limits himself to a few basic tools — a plasma cutter and a welder — and rigs up any other tools as needed. A former tractor repair shed in northern Orange County with no heat or A/C serves as his studio. (In the summer months, he flips his schedule and works all night to avoid the heat.) Presley, an abandoned border collie, is his studio companion. Getting down to the basics allows—or forces—him to try new things.

From Hackney's design process to sculpture construction, from his work space to his materials, everything comes back to the inspiration that jumps out at him from the natural world. Even now, after 16 years of sculpting, he is still experimenting with new metalworking methods, still investigating new possibilities.

"This morning I took a break from wrapping my latest sculpture and watched a pair of mourning doves do a wonderful courting dance," he says. "Who knows what will come of that—but I wouldn't have missed it for the world."

See the work of Jeff Hackney and the many talented artists displayed throughout the Garden at our annual *Sculpture in the Garden* show, September 17 through December 10, 2017.

"This morning I took a break...and watched a pair of mourning doves do a wonderful courting dance. Who knows what will come of that—but I wouldn't have missed it for the world."

SCULPTURE IN THE GARDEN

PREVIEW PARTY SATURDAY, SEPTEMBER 16, 4:30–6:30 P.M.

Sculpture in the Garden, a juried, invitational show of three-dimensional artwork created by local artists, is free and open during regular hours September 17 - December 10. Meet the artists, vote for the People's Choice award, make early purchases, and enjoy hors d'oeuvres at this private party.

TICKETS: GO.UNC.EDU/2017SCULPTUREPARTY



Below: Garden Guides lead tours for both children and adults.
Right: Garden Guides attend special tours and programs to learn more about the Garden.

Inspiring Connections with the Natural World

BY EMILY OGLESBY, NCBG COMMUNICATIONS ASSISTANT

Squeals of laughter echo across the Garden as a bus filled with enthusiastic third graders empties near the gazebo. The children are studying habitats of North Carolina, and they have come to the Garden to see these habitats firsthand during an hour-long tour. For many, this is their first trip to a botanical garden and perhaps even a first lesson of the native flora and fauna of their home state.

Eager to greet these children, the Garden Guides are waiting, excited to share their knowledge and love of North Carolina’s natural world.

Every year, this scene plays out frequently as the Garden serves thousands of children and teachers through our curriculum-aligned school field trip program and hundreds of adults and children enjoy guided tours of our display gardens on Old Mason Farm Road.

Garden Guides are an essential part of our mission – inspiring understanding, appreciation, and conservation of plants—and they present our gardens in a way that does just that. Fran Whaley, a retired pharmacist who has been a Garden Guide for five years, sees firsthand the way a guided program can open up all kinds of possibilities to visitors. She often leads field trips for schoolchildren.

“I love the look of amazement on their faces when they learn something cool about a plant,” Whaley says, “and seeing their enthusiasm about being outside.”

Garden Guides make a huge impact; no one has a wider reach when it comes to connecting the Garden to the public. The perks extend beyond the rewarding experience of sharing an appreciation of nature with visitors. The Garden Guides keep building their knowledge through monthly advanced

trainings and field trips that cover everything from what’s in bloom to pollinators to birds.

“The training sessions are always beneficial,” according to retired public school teacher Margot Ringenburg, who has served as a Garden Guide for ten years. Although Margot grew up connected to the natural world, she didn’t live in the south before moving to North Carolina a decade ago. “Having grown up in New England, many of the southeastern native plants were new to me.” Now she is well versed in our local flora with a garden of her own.

“I can’t think of a better volunteer opportunity if you’re interested in continuing learning, because we learn new things all the time in our Garden Guide programs,” says Whaley, adding “The Garden Guides are just great people; we all help each other and discuss what went well and what we



might try differently next time, working together to make the program better.”

This comradery leads to many new friendships along the way. A discounted NCBG membership and special volunteer programs are just the icing on the cake.

“The Garden is a very special place – you can feel it in the air,” says Ringenburg. “It’s satisfying to be a part of such a wonderful institution.”

Volunteers have been providing guided tours of the Garden since the early 1970s. Volunteers don’t need to be experts or have a background in teaching — new volunteers go through

an in-depth training about the Garden’s history and mission, native plants, plant-animal interactions, interpretive techniques, and program curriculum.

While Guides learn a great deal, training is not about memorizing every scientific name. Instead, it is about providing the tools volunteers need to help connect people to plants and the natural world.

“What it comes down to is it’s fun sharing what you love about nature with other people,” says Mike Dunn, natural science educator.

After completing the initial training, new Guides shadow staff and veteran guides until they feel comfortable enough to

lead on their own. Guides choose to work with children, adults, or both.

Garden Guide training for NEW volunteers begins next spring! For more information or to apply, contact Mike Dunn at mike.dunn@unc.edu or 919-962-2887.



Matching Game Answers (page 14)

- 1H *Euonymus americanus* (heart’s-a-bustin’)
- 2D *Vernonia acaulis* (stemless ironweed)
- 3G *Asclepias syriaca* (common milkweed)
- 4E *Callicarpa americana* (American beauty-berry)
- 5A *Clematis ochroleuca* (curlyheads)
- 6B *Baptisia australis* (wild blue indigo)
- 7C *Hibiscus moscheutos* (crimson-eyed rose-mallow)
- 8F *Nelumbo lutea* (American lotus)

LEAVE A LEGACY

If you would like to speak with someone about making a special gift to the Garden, call Charlotte Jones-Roe at 919-962-9458 or UNC's gift planning experts at 800-994-8803.

Now and Later, Your Gifts Make a Difference

BY CHARLOTTE JONES-ROE, DIRECTOR OF DEVELOPMENT

Planned gifts by our members have made a great difference in the Garden's success this year and helped greatly in accomplishing the Garden's mission.

- Lifetime honorary Botanical Garden Foundation board member Nancy "Teeny" Stronach included the Garden in her will.
- The late William and Mary Coker Joslin, also honorary directors and leaders of the Botanical Garden Foundation, made an unrestricted gift as part of a charitable remainder trust. They also provided gifts to help build the UNC Herbarium building and to increase the permanent endowment for the Coker Arboretum, in addition to those the Garden received last year from a charitable annuity they had established decades ago.
- A gift from the Julia E. Irwin Charitable Lead Annuity Trust provided unrestricted support for the Garden. Mrs. Irwin's daughter, Julie Irwin, who received her masters from UNC in botany, had encouraged her mother to include NCBG as one of the recipients of her trust.
- The late Alice Zawadzki, a joyous lifelong advocate for wildflowers and conservation, included the Botanical Garden as one of the recipients of the proceeds from the sale of her home.
- Rebecca Leager, an early "Plant Rescue" volunteer, also left an unrestricted gift for the Garden. The ferns and wildflowers Becky

transplanted to the mountain collection are still thriving, and her gift was a reminder of the many ways our members and volunteers help the North Carolina Botanical Garden.

- Barbara Roth, who founded our local New Hope Audubon Society and defended Mason Farm from a proposed highway back in the 1980s, left a generous gift to build the endowment for the Mason Farm Biological Reserve. Funds generated by this growing endowment will help make sure we can pay staff and interns to care for this very special site for research and conservation of piedmont natural areas.

Not all planned gifts are estate gifts; some are contributions by members who make gifts over a number of years.

- Botanists Robert Wyatt and his wife Ann Stoneburner are building permanent endowments that make sure a NCBG student or staff member will have funding to attend the Cullowhee Native Plant Conference each year.
- Botanist Janice Coffey Swab honors her late husband with annual gifts to the Edward C. Swab Floristics Fund for the UNC Herbarium to sponsor important floristics fieldwork by young botanists.
- Judy and Jim Pick have responded to the Garden's need for a permanent conservation endowment by making gifts over several years for that purpose. They

have added to the permanent fund again this year to make sure the Garden will always have funding for our plant conservation projects and encourage others to join them in contributing to the conservation endowment.

Other major gifts, too many to describe here, have made a difference as well.

- Marcella and Paul Grendler have made generous commitments for landscape improvements, a new utility vehicle for the horticulture department, and funding for interns at Coker Arboretum and Battle Park.
- Cindy and Tom Cook sponsored a horticulture intern this summer.
- Generous contributions for general support arrived from Pam and Bill Camp, who arranged to have them matched by Bill's company, IBM.
- Donors have made generous grants that are supporting the new Edible Campus Initiative and Wonder Connection.
- Jim and Delight Allen reaffirmed their commitment to general support of the Garden with generous unrestricted gifts, supported student interns, and helped us with purchases of unglamorous but necessary items like freeze-proof faucets.

On behalf of all the Garden staff, please know that your dues, gifts and all contributions are essential to our success and deeply appreciated.

THANK YOU!

to all who have supported the Garden from July 1, 2016 to June 30, 2017,
including this Honor Roll of contributors

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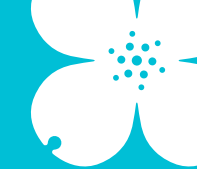
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Stop by the Garden Shop to pick up our latest NCBG shirts, available in short and long sleeve versions. Members receive a 10 percent discount.

\$20-24





We appreciate all memberships and additional gifts to the Garden!
Tribute Gifts below were received from February 9, 2017 to July 18, 2017.

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August 27-December 22
Saving Our Seeds
Exhibition

September 16
Sculpture in the Garden
Preview Party

September 17-December 10
Sculpture in the Garden
Exhibition

September 23
Magic in the Garden
Family Festival

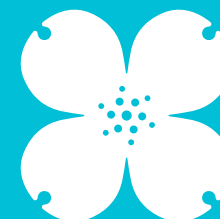
September 29 & 30
Fall Plant Sale

October 27
BOOtanical:
Pumpkins in the Garden

November 5
Jenny Elder Fitch Lecture
featuring Teri Chace

December 8 & 9
Holiday Festival

For more information:
ncbg.unc.edu/2017-events



North Carolina Botanical Garden

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