



NORTH CAROLINA
BOTANICAL
GARDEN

CONSERVATION GARDENER

FALL & WINTER 2016/17



THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

ON THE COVER

Photo by Tom Earnhardt

Ruby-throated hummingbird

Archilochus colubris



Cardinal flower

Lobelia cardinalis

Illustration by Dot Wilbur-Brooks



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

Volunteers tend the Carolina Campus
Community Garden, which provides healthy
food for the University's lowest wage earners.



A piece of ground used for growing flowers, fruit or vegetables

BY DAMON WAITT, NCBG DIRECTOR

Dear Members and Friends,

The other day I was thinking about our tagline, *A Conservation Garden*, so I googled “conservation garden” and was happy to see the North Carolina Botanical Garden was in the top five results just after a Scott’s fertilizer ad (go figure) and three references to a park in Utah called Conservation Garden Park.

Digging a little deeper, I typed in “garden,” hit enter and was rewarded with a piece of ground used for growing flowers, fruit or vegetables. I wonder if 1,100 acres of conservation land qualifies as a piece of ground? If so, then yes we are a garden. And so much more...

We are a bastion of botany in an era that has seen dramatic reductions in botanical capacity across government, academic and private sectors.

We are the pharmacy where you can get your prescription filled for Nature Deficit Disorder.

We stop plants from going extinct.

We make college students future ready for careers in conservation, ecology and field botany.

We cure plant blindness.

We invent ways for immuno-compromised children to interact with nature from their hospital beds.

We grow healthy, sustainably produced food for the University’s lowest wage earners.

From our LEED Platinum facilities to our native plant demonstration gardens, we are a model of ecological sustainability.

We are the largest repository of botanical specimens in the southeastern United States.

We are a destination for Pokémon Go, and we are okay with that.

We are home to more than 2,000 species of North Carolina native plants.

We are gardeners, like you, our members and friends. You have helped us sow the seed, nurture the sapling, water and fertilize to create the right growing conditions for this garden to flourish.

And for that, we are eternally grateful.

Sincerely,

Damon Waitt



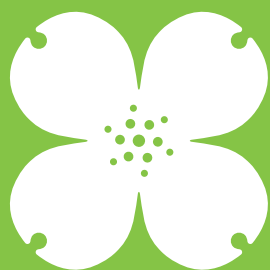
**IN THE
GARDEN
SHOP
BOOKS**

Books by local authors

Camp Wannatippattrashcan by K.R. Finnegan.
A middle-readers series about Roger McPaw and raccoon summer camp! Find this series and more in our Garden Shop

\$12.95





NORTH CAROLINA
BOTANICAL
GARDEN

North Carolina Botanical Garden

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NANCY EASTERLING *Education*

CHARLOTTE JONES-ROE *Development*

JOHNNY RANDALL *Conservation*

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Conservation Gardener

JENNIFER PETERSON *Managing Editor*



One brush pile at a time...

BY JENNIFER PETERSON, MANAGING EDITOR

Our mission as a conservation garden means our work goes beyond simply providing a pretty space. Our work goes toward making the world a better place by improving the environment, helping wildlife and inspiring others to care about our local flora.

This mission is what drives the staff, volunteers and members of the North Carolina Botanical Garden to devote time and resources to this unique and inspirational place. And this dedication to our mission is why I am especially excited about this edition of the *Conservation Gardener*. This issue is filled with ways you can make the world a better place, too. From creating winter wildlife habitat in your yard to selecting plants to feed our native birds, there is so much you can do at home.

I am excited to put my yard to better use. My house is well-shaded, making it difficult to grow many plants. While I am attracted to bountiful vegetable gardens and stunning wildflowers, I know I need to be very selective or the plants will not survive at my home.

After reading the articles in this issue, I am starting to see my yard in a different light, with more opportunity than I had seen before. Sure, prize-winning tomatoes will not be grown at my house...but I can certainly make my corner of the world a haven for wildlife! I already have the towering oak trees that provide food for caterpillars. And after reading Catherine Bollinger's article (p. 10), I won't feel hurried to rake the truckloads of leaves and sticks that fall from those oaks.

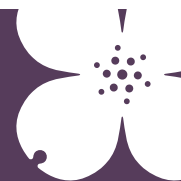
There are so many things we can all do to make each of our corners of the world better. Small things can make a big difference, including planting a patch of milkweed (p. 6), installing a bird bath (p. 9), recording observations for citizen science (p. 16) and so much more.

I hope you also find inspiration from this edition of the *Conservation Gardener*, as we make the world a better place, one milkweed plant and one brush pile at a time.

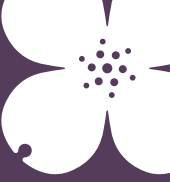
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DEBERRY GALLERY EXHIBITS



Conserving habitats for our native birds

Birds are critical to a healthy ecosystem. They eat insects, distribute plant seeds in their droppings and pollinate flowers. However, bird populations in the United States are declining. While bird watching is second only to gardening as a favorite hobby in the United States, the average yard does not provide much for birds to eat, shelter from predators or places to rest. How can we create spaces for our feathered friends? What plants and other features do they need?

The North Carolina Botanical Garden's *Saving Our Birds* exhibition, on display through December 16, inspires awareness and understanding of North Carolina's native birds. Through an informational exhibit and numerous programs for both novice and veteran birders, children and adults, the exhibit encourages citizens to help conserve the habitats they need to thrive.

Find out more at ncbg.unc.edu/birds.

On display through October - *Birds in Art*, featuring illustrations, sculptures and birdhouses by several local artists

COMING IN NOVEMBER...
PHOTOS FROM OUR BIRD PHOTO CONTEST



Right: A wood thrush.
Below: Eastern Bluebird with a dogwood berry.
Photos by Mike Dunn





In the Weeds

BY ALYSSA LAFARO
REPRINTED FROM *ENDEAVORS* MAGAZINE

A monarch butterfly rests on a milkweed plant at Merritt Pasture, land that is protected by the Botanical Garden Foundation.

Each spring, the black and orange monarch butterfly lays hundreds of sesame seed-sized eggs on the leaves of milkweed plants. About four days later, a baby caterpillar small enough to fit on the head of a pin escapes from

emerges as a beautiful butterfly. The process begins again.

Within the last decade, deforestation of overwintering sites (where monarchs migrate in the winter) in Mexico and

and 2014 when they saw a 90 percent decline in the monarch population in Mexico,” Damon Waitt, director of the Garden, says. “We’re talking about going from 1 billion monarchs to just a few million.”



Conservation botanist Amanda Faucette grows milkweed at the Mason Farm Biological Reserve.

In response, President Barack Obama issued a presidential memorandum on pollinator health in regard to both the declining monarch and honey bee populations — honey bee pollination alone adds more than a \$15 million value to the nation’s agriculture industry. The Garden has taken action by growing thousands of common milkweed, which monarchs rely on for growth at the larval stage.

The public cares a lot about these butterflies, but perhaps not so much for the milkweed they depend on. Milkweed has gotten a bad rap for being a pesky plant that overgrows its welcome, so, oftentimes, it’s sprayed with pesticides.

“Farmers want to get rid of it,” Johnny Randall, director of conservation programs at the Garden, says. “But, mostly, I think land conversion — for range, for farming, for housing development — plays a big role in milkweed loss.”

Two years ago, the U.S. Fish and Wildlife Service awarded a grant to the Botanical Garden to grow 7,200 milkweed plants. Conservation botanist Amanda Faucette,

its shell. It eats its own egg shell and then rigorously chomps away at the milkweed leaves and grows quickly, shedding its skin each time it enters a new instar, or life stage. After attaching to a nearby twig, the caterpillar undergoes metamorphosis and two weeks later

California, severe temperature drops, excessive rain, and the decline in milkweed have caused population numbers for this iconic butterfly to plummet.

“Biologists got a wakeup call in 2013



A patch of Common Milkweed (*Asclepias syriaca*) at Merritt Pasture



A monarch on Butterfly milkweed (*Asclepias tuberosa*).

who's leading the project, has grown mostly common milkweed because of its resiliency. This species of milkweed is rhizomatous, meaning it grows an underground stem that creates larger patches of the plant.

"And it's very tolerant of general human activities," Randall laughs. "It tolerates disturbances like mowing and burning. If you plowed it up, it would probably spread more."

It's also packed with protective toxins that make monarchs unappetizing to predators, which also explains why

monarchs laying eggs on other plants in the same plant family and the caterpillars ended up dying after a very short period of time," Faucette says. "Even though there are other plants in that family with similar toxins, it's not the same."

Not only do the monarchs require milkweed as a host plant, but the milkweed needs the monarchs for pollination. Monarchs pollinate hundreds of other plants as well, particularly flowers that are colorful, grow in clusters, remain open during the day, and feature flat surfaces for the butterflies to land on.

Generations of effort

The Garden protects milkweed at various sites around Chapel Hill including Merritt Pasture within the Morgan Creek Preserve and at the Mason Farm Biological Reserve. The partnership on this project with the U.S. Fish and Wildlife Service came to a close this April, but the potential for a partnership with North Carolina State Parks looks promising.

Common milkweed doesn't occur naturally in state parks within the eastern United States — and North

Carolina State Parks wants the Garden to grow more appropriate milkweed species for them.

"Milkweed naturally grows at the Mason Farm Biological Reserve, but we're also planting it there, which means it will have enough milkweeds to be considered a seed increase site," Randall explains. "That means we will be able to get seeds from our own property now to supply others who want to grow their own plants, rather than have us grow them all."

More milkweed not only means more monarchs but more migration. Like birds, monarchs migrate thousands of miles each year. But it takes several generations for them to successfully disperse throughout North America.

"That's why we need relatively continuous milkweed populations," Randall says. "It takes several generations to go north and then one generation comes back. But, really, they are important pollinators in both directions."

"We're talking about going from one billion monarchs to just a few million."

they're so colorful. "It's called Mullerian mimicry," Randall says. "That's when an animal has very contrasting colors. It's meant to be an obvious warning sign not to consume them."

Monarchs have adapted so heavily to sequestering this toxin that milkweed is the only plant they can consume.

"There have even been studies where researchers monitored female

A monarch caterpillar on milkweed





Creating a buffet for birds in your yard

BY BARBARA DRISCOLL, NEW HOPE AUDUBON

Making your yard welcoming for birds can be very easy. Just like people, birds need food, shelter and water.

Insects, including caterpillars, are a critical food source for baby chicks, and they need a lot of them to grow and mature. Native plants evolved together with native birds, and they provide insects, in addition to berries, seeds and nuts for hungry birds, while foreign plant species do not support the insects critical for bird health.

By creating a multi-layered natural area filled with native plants, you invite many different types of birds into your yard. From the canopy to the ground cover, these plants provide a buffet for birds.

- **Canopy:** Oak, pine, hickory and Tulip poplar provide a bounty of insects, as well as places for shelter. Oaks can support over 500 different species of insects!
- **Understory:** Trees such as dogwood, cherry and sourwood are also important for providing food to birds and other pollinators.

- **Shrubs:** Winterberry, American beautyberry and spicebush provide berries that are high in fat for adult birds, in addition to places for nests.
- **Herbaceous layer:** Coral honeysuckle, cardinal flower, cross vine and trumpet vine provide nectar for hummingbirds and insects. Coneflowers, milkweed, tickseed and asters provide seeds and insects.
- **Ground cover:** Birds prefer leaves and natural materials which promote insect larvae, caterpillars and worms. Leaving a natural ground layer is beneficial to many of our birds such as the American towhee, robins and other thrushes and also many sparrows which search for food on the ground. Providing a leafy ground layer also helps many of our pollinators as their larvae feed and remain in the leaf litter until it is time to mature.

In addition to plants, provide water in a bird bath or shallow container to invite birds to your yard. Birds need something to drink as well as clean their feathers.

Many birds are attracted to the sound of running or dripping water.

Don't forget to add a bird house or two, especially for cavity dwellers such as bluebird, nuthatches and chickadees. Once you have created this amazing place for birds and other wildlife, you can sit back and enjoy all the activity and antics of the birds, butterflies and other pollinators you have invited into your yard.



Eastern Goldfinch Photo by Mike Dunn



FALL
PLANT
SALE

FALL IS FOR
PLANTING!

Create a bird buffet with native plants!

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 23, 5-7:30 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 24, 9 A.M.-NOON



Saving Places for Wildlife

Winterizing Your Yard and Garden Sustainably

BY CATHERINE BOLLINGER

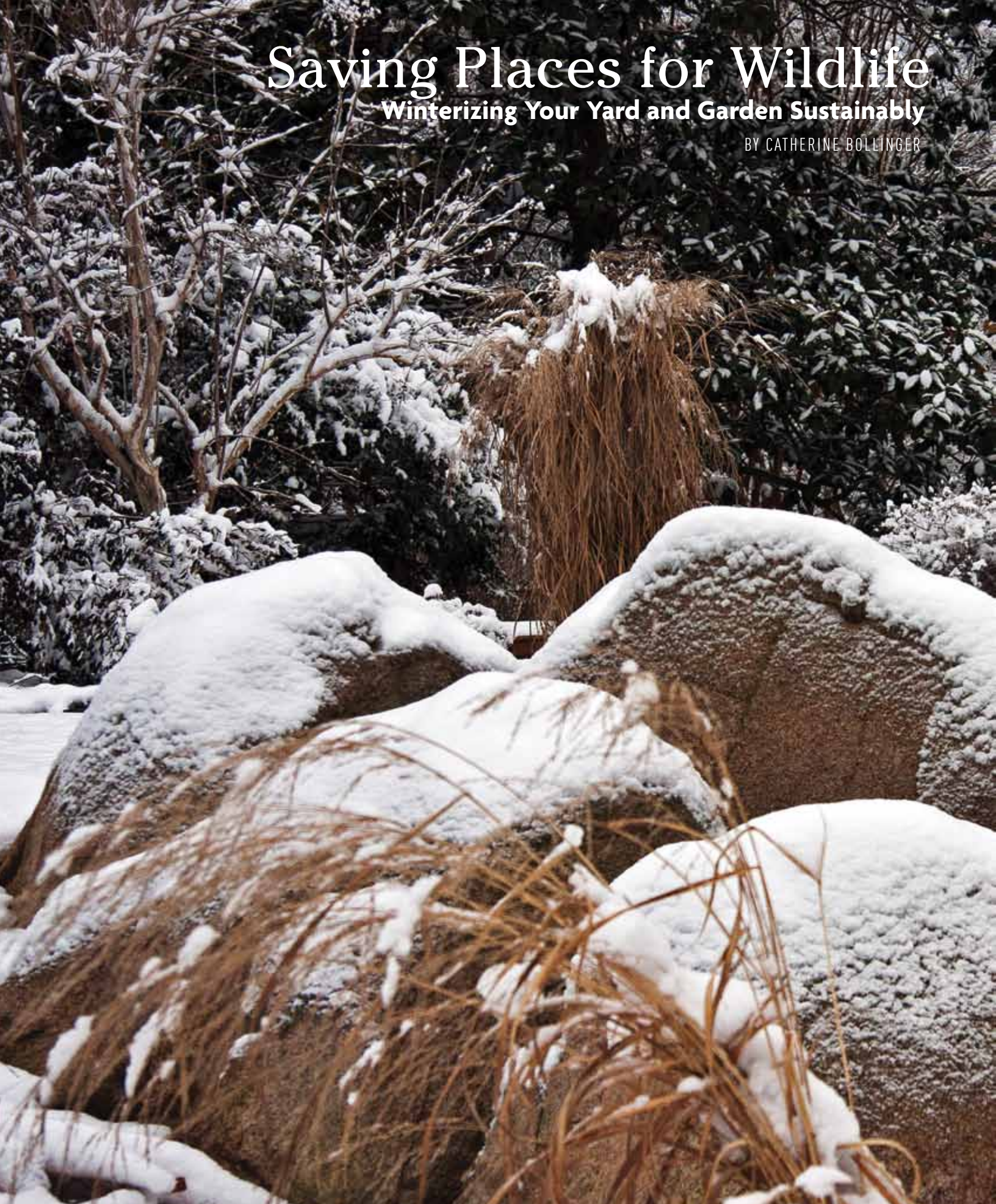


Photo by Catherine Bollinger

If you grew up in a suburb or farm a few decades ago, you may well remember the chores we all performed as we tidied up our yards and gardens every autumn. We raked the leaves into enormous piles, many of which were burned. We removed the frost-killed portions of perennials; vegetable gardens and farmers' fields were plowed under. In doing so, we almost certainly destroyed the winter homes of many beneficial insects and other animals, but this was not catastrophic because farmers' fields were edged by overgrown hedgerows, where wildlife could winter in peace. Undeveloped stretches of forest and old fields provided plenty of additional havens where wildlife could ride out the winter season.

In the southeastern United States today, increasing urbanization of our landscape has significantly reduced the availability of relatively undisturbed woodlands and fields where birds, mammals, reptiles, amphibians, spiders and beneficial insects can successfully overwinter. But we can help sustain healthy populations of these creatures by changing our thinking about how we prepare our yards and gardens for the winter season.

By changing the way we maintain our home landscapes, we can help preserve

“By changing the way we maintain our home landscapes, we can help preserve their natural biodiversity.”

their natural biodiversity. These minor adjustments will allow most of the animals native to our local ecosystems to have a better chance of sustaining healthy populations in the habitats for which they are adapted. All that is required is that we slightly modify our aesthetic perspective as we learn to view our landscape through the eyes of native wildlife seeking winter shelter. To create a winter haven for native wildlife in your home landscape, consider these practices.

Plant food for winter foragers

Birds and many mammals are active throughout the winter. In your landscape, include native shrubs, trees and perennials such as viburnums, nut trees, hollies and fruit trees like persimmon and serviceberry that will feed wildlife. If you dead-head perennials to prolong blooms, stop doing so by August to give them time to produce seeds favored by native birds and small mammals. After you dispose of frost-killed plants in vegetable gardens, plant a cover crop, such as crimson clover, on the beds. The cover crop will enrich garden soil, prevent soil compaction and erosion, support soil organisms and provide food and shelter for invertebrates.

Do not remove frost-killed perennial stems and leaves from the garden; instead, transform them into art

Many flower seed heads are quite ornamental and will provide visual



A Green Treefrog forages among freshly fallen leaves on a warm October morning.
Photo by Catherine Bollinger

NORTH CAROLINA BOTANICAL GARDEN



Perennial garden in September. Note the seed pods and fruits maturing on the plants.

Photo by Catherine Bollinger



Fruits of Possumhaw (*Viburnum nudum*) are ornamental and provide winter food for native birds and mammals.

Photo by Catherine Bollinger

interest in your landscape. They look especially lovely when painted by frost or draped in snow. Birds and small mammals will find them and devour the seeds. When animals or heavy ice eventually begin to break apart the stems, arrange them artfully in your garden, so that overwintering beneficial insects that may be resting inside

hollow stems or curled leaves remain undisturbed.

Chris Liloia, curator of habitat gardens at the Garden, suggests that artful arrangements of stems and leaves can be left in garden beds to provide winter interest. She suggests sinuous, fence-like arrangements at the backs of beds, so

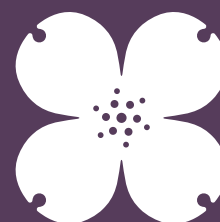
A FEW DEFINITIONS

Biodiversity: The variety of life (plants, animals, fungi, etc.) that lives in a particular ecosystem.

Ecosystem: A group of organisms (plants, animals, fungi, etc.) that interact with each other to form an interdependent community.

Habitat: An environment that is natural for the life and growth of an organism.

Sustainability: The support of long-term ecological balance by doing no harm to the native environment.



Seed head of Purple Coneflower (*Echinacea purpurea*).

Photo by Catherine Bollinger

“Artful arrangements of stems and leaves can be left in garden beds to provide winter interest.”

that they create frames for picturesque views of the garden.

Sally Heiney, a horticultural technician at the Garden, suggests that “intentionality is everything” when you arrange frost-killed materials. Criss-crossed stems arranged in patterns become design rather than debris.

Try leaving fallen leaves in place. Heiney notes that some plants with evergreen basal rosettes, such as cardinal flowers, must remain uncovered during winter. But where possible, she adds, leaving fallen leaves and spirals of frost-killed ferns in place creates “blankets for wildlife.” Beneficial insects that need such winter blankets to complete their life cycles include praying mantis, assassin bug, ladybug, ground beetle, soldier beetle, syrphid and tachinid flies and many native wasp and bee species.

Create intentional winter shelters for wildlife

Birds, mammals, reptiles and amphibians also need shelter from winter weather. As you clean up fallen or pruned branches, consider incorporating a few artfully constructed brush piles into your winter landscape. The size of such piles will



Writing spiders (*Argiope aurantia*) camouflage the egg sacs they lay in late summer among plants near their webs. Leaving the plants in place ensures that newborn spiders will hatch out in the garden to catch pest insects.

Photos by Catherine Bollinger

depend on the dimensions of your yard and your aesthetic sensibilities, but you will be amazed at the diversity of wildlife that will inhabit your brush piles.

Johnny Randall, director of conservation at the Garden, notes that it is important to construct brush piles so that you leave plenty of air pockets. Don't orient the branches all the same way; instead, build squares or triangles of branches laid on top of each other. All the air pockets will serve as warm shelters for birds and mammals.

Boulders and rock piles provide winter shelter for reptiles and some amphibians. Constructing small rock shelters for native lizards can be a fun project to do with children. Logs and tree stumps left to rot in place will provide winter homes for grateful wildlife. During the growing season, logs and stumps can become design features enhanced with perennials or shrubs.

Winters present challenges for all of us. But for native wildlife in the southeastern United States, those challenges become greater every year

The evergreen branches on the top of this brush pile serve as a rain- and snow-resistant roof for wildlife sheltering within its air pockets.

Photo by Catherine Bollinger





White-throated Sparrows perch on a protruding branch of a brush pile. During harsh winter weather, they shelter inside the pile's warmer air pockets.

Photo by Catherine Bollinger

as the habitats they evolved to live in are swallowed by encroaching urbanization. Many of us have realized the importance of providing pollinator gardens for insects and food plants for native birds. But without also providing winter shelter, these species face increasing threats to their survival. By simply changing our perspective on winter landscape maintenance, we can employ creative, sustainable practices that will protect overwintering wildlife, and the continuing health of native ecosystems.



This small construction of flat stones provides sunny basking spots for lizards on warm winter days.

Photo by Catherine Bollinger

A writer and editor for over 30 years, Catherine Bollinger prefers to write about botanical subjects whenever she can. For the last six years, she has been blogging about her landscape at www.piedmontgardener.com.



**50TH
ANNIVERSARY
GALA**

Celebrate our 50th anniversary with a formal gala at the DuBose House and Rizzo Conference Center in Chapel Hill. This black tie affair will feature a seated dinner, honorary guests and a special presentation. Contact vsastor@email.unc.edu for more information.

OCTOBER 22, 6 P.M.



(Left to right) Ed and Nancy Preston with Evelyn Sims at an annual Sims Lecture.



Annual wildflower lecture becomes perennial

BY CHARLOTTE JONES-ROE, DIRECTOR OF DEVELOPMENT

Nancy Preston and her mother, Evelyn, shared a love of wildflowers. To honor this love and her mother, Nancy has established a permanent endowment to fund the Evelyn McNeill Sims Native Plant Lecture.

Born and raised in Lumberton, North Carolina, Evelyn graduated from North Carolina Women's College in Greensboro and earned her master's in social work from the College of William and Mary. She practiced in Baltimore where she met her future husband, Robert Jordan Sims, a native of Chattanooga, Tennessee. After World War II, the Sims family moved to east Tennessee, where Mrs. Sims continued to practice social work and serve as a community leader.

One of Evelyn's favorite activities was hiking with her friends in the spring when the wildflowers emerged. After her husband's death, Evelyn moved to Chapel Hill to be near Nancy and her husband Ed and their children and grandchildren, who delighted in calling her "Great Evelyn." Nancy introduced

her mother to the North Carolina Botanical Garden, where she became reacquainted with the wildflowers of her native state.

In 1999, for Evelyn's 90th birthday, Nancy proposed a gift in her mother's honor to support ten years of free public lectures on topics related to native plants. The following spring, the room was packed for the inaugural Sims Lecture by botanist Cecil Frost, who spoke about the future of North Carolina's wildflowers in a changing environment. When Evelyn celebrated her 100th birthday, Nancy and her husband Ed gave "Great Evelyn" another gift to the Garden to sponsor additional native plant lectures.

Every spring for 17 years, Evelyn's family and friends have gathered to enjoy speakers on topics related to native plants, conservation and native plant horticulture. Mrs. Sims enjoyed having a room full of people who were interested in learning more about wildflowers, how to protect them and how to use them in their gardens. Mrs. Sims continued to live

joyously to the age of nearly 104, and she attended every one of the lectures until her very last year.

We remember with gratitude the range of native plant topics that Mrs. Sims's present has allowed us to share with the public, and how the lecture has been a great way to advance the Garden's mission.

With another gift from the Prestons in 2016, this annual lecture has become perennial. The gift is invested, and proceeds from this permanent endowment will fund the lecture honoring Nancy's mother in perpetuity.

We are grateful to Mrs. Sims for sharing her love of plants with her daughter and very pleased that Nancy and Ed have endowed the Evelyn McNeill Sims Native Plant Lecture to advance the Garden's mission and make sure future generations will have an opportunity to come together and learn about wildflowers.



SCULPTURE
IN THE GARDEN

The North Carolina Botanical Garden hosts its 28th annual outdoor exhibition of works by North Carolina artists. Free and open to the public during regular hours

SEPTEMBER 18 - DECEMBER 11

Preview Party

September just got Cooler

Meet the artists, vote for the People's Choice award, make early purchases, and enjoy hors d'oeuvres and live music at this private party. Tickets: ncbg.unc.edu

SATURDAY, SEPTEMBER 17, 4:30-6:30 P.M.





Citizen science for biodiversity conservation

BY JULIE TUTTLE, BIOGEOGRAPHER AND ECOLOGIST

For the last several decades, ecologists have increasingly engaged the public to help them study how biodiversity is changing and how best to conserve species and ecosystems.

This public contribution to scientific knowledge, now called citizen science, is not new. For instance, ornithologists have long partnered with birding enthusiasts to study the behavior, abundance and geographic distribution of birds. In the United States, Audubon's Christmas Bird Count is a long-running example: members of the public have been counting birds on Christmas Day since 1900. The USA National Phenology Network, a program that monitors seasonal changes in animals and plants (such as the timing of spring plant flowering) and relates these events to environmental change, originated from a program that began in the 1950s.

More recently, however, the scope of citizen science projects has expanded dramatically to encompass a wide range of species groups, including insects, mammals, plants and marine organisms and conservation issues, such as pollinator declines, non-native species invasions, changes in species' geographic distributions and wildlife behavior and health.

Similarly in recent decades, with increasing urbanization, many ecologists have turned their attention to urban ecology. The mosaic of "green space" that we use—for gardening, yards, recreation, stream protection and conservation—has emerged as an important, if complex, factor in biodiversity conservation. We know that gardening and landscaping with native plants adapted to local conditions

can help preserve and restore native plant species, conserve water, buffer vegetation against drought and disease, prevent the spread of invasive species and more. The use of native plants can also increase the diversity and abundance of birds, butterflies and other beneficial insects, such as pollinators. And green space, including preserved natural areas, provides food, habitat and movement corridors for wildlife. As we scale up from individual backyards to towns and cities, the type, size, structure and configuration of green spaces within the built environment affect how the urban ecosystem functions—and whether or not all species (including humans) thrive.

This scientific focus on urban biodiversity means increased opportunity—and need—for individuals and communities to observe the natural world where we live, work and play, and to share our observations and practices in ways that will help us understand and conserve biodiversity in human-inhabited ecosystems. The Cornell Lab of Ornithology, a pioneer in modern citizen science, runs several projects that monitor bird species by collecting participants' observations of birds and nests in their own backyards. Similar bird observation projects exist in the UK, Australia, Japan and elsewhere.

These backyard and garden citizen science projects have expanded to include observations of native and invasive plants; butterflies, bees and other insects; mammals such as deer and coyotes; box turtles; and more. More involved projects might ask gardeners to record, for example, their pesticide and herbicide use along with pollinator observations to help sort out the

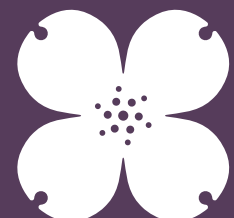
effects of pesticides and herbicides on pollinators. With the Habitat Network (Yardmap) project, individuals can help create maps of wildlife habitat across residential landscapes by mapping the habitat in their backyards, parks and other spaces.

Beyond residential landscapes, volunteers can help inventory and monitor biodiversity in public and private parks and preserves. Park and land trust biologists increasingly organize one- or two-day events called Bioblitzes, where members of the public and experts come together to rapidly observe and record as many species as possible at a given site. These events, which can be repeated, provide a baseline inventory of species of all

CITIZEN SCIENCE OPPORTUNITIES

Interested in getting involved in citizen science? There are many ways you can participate, at the North Carolina Botanical Garden and beyond! For a list of our favorite opportunities, go to

NCBG.UNC.EDU/CITIZENSCIENCE





Citizen scientists learn how to collect butterfly data for a project at Mason Farm Biological Reserve.

types, which enables land managers and stewards to make informed decisions that support effective conservation and human use in these important natural areas. The benefits of individual Bioblitzes can scale up, too; combining species checklists from parks and preserves can help us understand the ways that overall patterns of green space influence biodiversity.

Individuals can also choose less structured ways to contribute to citizen science: nature-oriented social media platforms like iNaturalist allow natural history enthusiasts to share geotagged plant and animal observations online, which can be verified by the “crowd,” including expert curators, and deposited in a global biodiversity database that scientists can later use.

And for those interested in historical biodiversity, many herbaria and natural history museums are making use of historical collections in new ways by scanning specimens and transcribing field notes and specimen labels, which often include valuable ecological information. Volunteers can contribute to these efforts by examining specimens or transcribing handwritten notes online.

Scientific data collection is not the only purpose or outcome of these volunteer efforts. For instance, in the Habitat Network project, participants can connect with others to form a conservation community, and project scientists provide participants with information on the surrounding landscape as well as decision-making tools. Other projects provide education and training, share project data and results publicly and

recognize major contributions by dedicated volunteers.

The best citizen science projects are a mutually beneficial exchange, in which useful educational information and results are communicated to participants; participants can provide feedback; scientists and participants learn from each other; and, depending on the type of project and level of commitment, citizen scientists may become collaborators or stakeholders in the communication and application of project outcomes.

However, perhaps the most important benefit of becoming a citizen scientist is learning to see the natural world in new ways: to come to know the biodiversity around us, observe connections, and begin to ask questions about how ecosystems function.



FITCH
LECTURE

Planting Design in a Post-Wild World

Thomas Rainer, a horticultural futurist fascinated by the intersection of wild plants and human culture, has worked on projects at the grounds of the U.S. Capitol, the Martin Luther King, Jr. Memorial and The New York Botanical Garden. His lecture, *Planting Design in a Post-Wild World*, will explore the future of ecological landscape design. Location: Reeves Auditorium

SUNDAY, NOVEMBER 6, 2 P.M.



THANK YOU!

We appreciate all memberships and additional gifts to the Garden!
Tribute Gifts received in the period from March 23 to August 10, 2016.

IN HONOR OF

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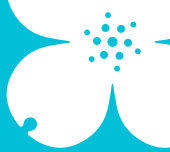


Calling all shutterbugs! Grab your camera and take some photos of North Carolina's native birds! Cash prizes will be awarded in adult and youth categories. Photos are due October 16.

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NCBG.UNC.EDU/PHOTOCONTEST



Photo by Mike Dunn



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Rus and Dixie Hapgood
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Roe, *for Mason Farm Biological
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Director's Fund*

MARK YOUR CALENDAR

through December 16
***Saving Our Birds* exhibition**

September 17
**Sculpture in the Garden
Preview Event**

September 18-December 11
Sculpture in the Garden exhibit

September 23 & 24
Fall Plant Sale

October 16
Discovering Magic in the Garden

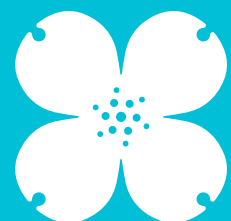
October 22
50th Anniversary Gala

November 6
Jenny Elder Fitch Lecture
featuring Thomas Rainer, RLA

November 18
**Botanical Garden Foundation
Membership Meeting**

December 11
**Botanical Garden Foundation
Holiday Party**

For more information:
ncbg.unc.edu/2016-events



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a special gift to the Garden, call Charlotte Jones-Roe at
919-962-9458 or UNC's gift planning experts at
800-994-8803.

North Carolina Botanical Garden

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