

Native Plant News

NEWSLETTER OF THE NC NATIVE PLANT SOCIETY

Native Plant News
Julie Higbie, editor

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MISSION STATEMENT:

Our mission is to promote the enjoyment and conservation of North Carolina's native plants and their habitats through education, cultivation and advocacy.

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Seeing Red Winter is a 'Berry' Good Time of Year!

By Lisa Lofland Gould

Summer blooms are long gone, the glory of autumn is fading fast, and it seems we are stuck in bleakness until spring bursts into flower and leaf again. But spend a few minutes outside and look more closely, and you'll find lots of color on the winter landscape, not just the greens of evergreen trees and shrubs, but also lots of red, blue, purple, and orange.



Winterberry

The red has been sneaking up on us for months. Just past the summer solstice you may begin to notice a few red leaves on the Black Gums (*Nyssa sylvatica*), which will eventually become a blaze of deep crimson. Poison Ivy (*Toxicodendron radicans*) begins to turn yellow or red in late summer, and its cousin Poison Sumac (*Toxicodendron vernix*) takes on a glorious coral-red in the swamps. The scarlet leaves of Virginia Creeper (*Parthenocissus quinquefolia*) also begin to put on a show by late summer or early fall, as do the pumpkin-colored leaves of Sassafras (*Sassafras albidum*) and the red leaves of Black Haw (*Viburnum prunifolium*).

These plants share a common trait: their fruits are eaten by birds but are not colorful. Instead, their ripe fruit is advertised with colorful foliage that turns early, while most other woody plants' leaves are still firmly green (Black Haw and Sassafras further advertise their ripeness with red fruit stems). Botanists call this trait a "foliar fruit flag". It can also be found among the herbaceous plants: in Indian Cucumber-root (*Medeola virginiana*), for example, the leaf area closest to the central stem turns red, making the dark fruits stand out

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Society News

The North Carolina Botanical Garden is sponsoring a **Community Photo Exhibit** to help showcase the beauty and diversity of our native flowers, as part of its “2020: Year of the Wildflower” garden-wide focus. The exhibit contains nearly 400 photos by 105 photographers of all ages and skill levels, from across the state and country. A number of photos were taken by Society members!

The photos are being displayed in the DeBerry Gallery at The University of NC at Chapel Hill throughout November and December 2020.

The NCBG is also sharing these photos in a digital gallery. You can see it at:

<https://ncbg.smugmug.com/Artwork/Art-Exhibits/Wildflowers-of-North-Carolina-All/n-cXPDPK/WFoNC--by-Photographer/>

The DeBerry Gallery is located at 100 Old Mason Farm Road, Chapel Hill, NC 27517.

Don't forget! Our Society now has all of our newsletters online back to 1951! They are available in the Members Only section under “Publications” on our website. Just log into your account and click on Publications at the top. Our newsletters became digital in 2002, so we had those newsletters in a form easy to make available. From 1972-2002, they were in the form of booklets. Many of the earlier newsletters were done on a mimeograph machine. Remember those? This effort to share our history was undertaken with the help of **Carolyn White, Kathy Schlosser, Paula LaPoint, Anna Gometz and Jean Woods**. Great job everybody!

Here's a poem that was in the 1954 NCNPS newsletter:

Merry Christmas to You
I wish you every happy thing
That comes with Christmas and with Spring;
I wish you luck and lots of cheer
Not just today but all the year;
I wish you good things by the score
May each day bring you more and more!
Mrs. Paul R. Spencer

Seeing Red! (cont.)

against the scarlet whorl of leaves.

The sweet fruits of summer—strawberries, blueberries, blackberries, raspberries, mulberries, and others—are now past, their flesh and seeds gone down the gullets of many birds and mammals and thus dispersed. But as summer ends and fall approaches, the fatty fruits ripen, heavy with lipids to speed migrating birds on the jour-

ney south. Spicebush (*Lindera spp.*), dogwoods (*Benthamidia/Swida spp.*), Sassafras, Arrow-wood (*Viburnum dentatum*), Mapleleaf Viburnum (*Viburnum acerifolium*), and Black Gum are among these energy-rich fruits eagerly sought by migrants, and they disappear rapidly from the autumn scene, either eaten or rotting quickly. Spicebush displays shiny, bright red berries, as does Flowering Dogwood (*Benthamidia florida*, formerly *Cornus florida*), while other dogwoods (*Swida spp.*) have white to blue fruits. Our native arrow-wood fruits tend to be blue to blue black, although some, such as Possumhaw (*Viburnum nudum*), start off green or pink and transition to bluish black, and Hobblebush (*Viburnum lantanoides*), a denizen of high-elevation forests and boulderfields in North Carolina, has red fruit that eventually turns blue black.

Several non-native Viburnums are spreading in North Carolina, and the ones I've observed have red fruits that persist well into fall, suggesting that they are not so high in nutritional value as the native Viburnums that are eaten much earlier in autumn; recent studies appear



Black Gum fall foliage and ripe fruit.

to confirm this. The fruit of other non-native shrubs also persist into late fall, such as Amur Honey-suckle (*Lonicera maackii*), Autumn-olive (*Elaeagnus umbellata*), and Multiflora Rose (*Rosa multiflora*). Scientists have observed that due to climate change, birds are tending to migrate later in the year, while at the

same time the native plants appear to maintain their traditional fruiting schedules. If this trend continues, the birds are less likely to find the high-fat fruits they normally eat during migration and may be forced to rely more heavily on lower-fat invasive shrubs. And of course, the more the birds utilize these plants, the more they will spread over the landscape.

The fleshy berries of Persimmon (*Diosyros virginiana*) and of North America's largest native fruit, Common Pawpaw (*Asimina triloba*), ripen late summer into fall; the orange to reddish-brown Persimmon berries, famous for making your mouth pucker if you taste an unripe one, may linger into winter, providing some winter food for wildlife. Perhaps it's difficult to think of the large fruits of Pawpaw or Persimmon as "berries", but they are! A *berry* is a fleshy fruit with one or more seeds in the soft ripe ovary (think blueberries, for example). The fruits of dogwood, holly (*Ilex*), and viburnum are not actually berries, but are drupes. A *drupe* is a single-seeded fruit that is indehiscent (= not splitting open at maturity); the seed is

(Cont. on P4)

Seeing Red! (cont.)

surrounded by a hard wall and the outer portion may be dry or fleshy (think peaches, plums, and Fringe Tree [*Chionanthus*]).

Once the high-fat fruits have been gobbled up, there is plenty remaining behind to help mammals and year-round bird residents make it through the winter. The dusty-blue drupes of the bayberries (*Morella* spp.) are relished by Tree Swallows during migration and help Yellow-rumped Warblers survive winter; these birds have digestive enzymes that can break down the waxy coating on bayberry fruits. And who hasn't seen (or heard) a noisy flock of Cedar Waxwings gobbling down the blue female cones of Red Cedar (*Juniperus virginiana*)? The bluish to black fruits of many greenbriars (*Smilax* spp.) are important winter food, although one coastal-plain species, Coral Greenbriar (*Smilax walteri*) has bright red fruits.

Also ripening about this time, and persisting into late fall, is American Beautyberry, whose startling purple fruits form tight clusters along the stems. Beautyberry fruits have a fairly high protein content and are relished by many songbirds and mammals. The gaudy pink-and-red fruits of Strawberry-bush (*Euonymus americanus*), the scarlet berries of Red Chokeberry (*Aronia arbutifolia*), and the deep red torches of sumac (*Rhus* spp.) can last well into winter. The red or yellow (and occasionally black) hawthorn (*Crataegus*) fruits

may be low in fat and sugar but are eaten by many birds and mammals as winter progresses (hawthorn fruits are *pomes*, a fleshy fruit

with a compound ovary and seeds enclosed in a thin wall—think apples). In high elevations look for the lingering red-orange clusters of Mountain-ash berries (*Sorbus americana*), a beautiful contrast with the blue of our mountains.

But when most people think of red fruit in the winter, they are likely to think first of our hollies. Some are evergreen, such as American Holly (*Ilex opaca*) and Yaupon (*Ilex vomitoria*), while others are deciduous, such as the winterberries (*Ilex laevigata* and *Ilex verticillata*). The birds don't seem to like them until they've been tempered by hard frosts, so the fruits may last far into the winter, especially here in the Southeast where the winters are increasingly mild. Once they are ready, however,

watch out: I've seen a winterberry shrub stripped completely of fruit in one day, with as many as five bird species at once devouring the fruits. Is it any wonder that the colors of Christmas, at least here in the Northern Hemisphere, mirror the reality of the reds and greens that stand out so beautifully in the gray winter landscape?

Lisa Gould is a longtime Society member known for her devotion to wild plants and plant ecology through her popular field trips, lectures, writings and photographs.

All photos by the author.



Common Spicebush in fruit.



Mountain Ash in winter.

What About the Trees??

By Bruce A. Chapman

Freshly transplanted in the NC Native Plant Society's ecosystem, I'm excited to find trees and forests sharing space with those flashier forbs and grasses, shrubs and sedges that often command a native plant aficionado's attention. Appreciation for native trees and forests echoes in Larry Mellichamp and Paula Gross's recent, practical field guide, *The Southeast Native Plant Primer: 225 Plants for an Earth-Friendly Garden*, where the authors recognize the contributions trees and forests provide in native ecosystems and landscapes.

Trees' beauty derives in part from their longevity, which is not limited to a single species. Across ancient North America, old-growth forests (among other ancient remnant ecosystems, e.g., grassland prairie or Florida scrub) coalesce into a noble, if rare, primeval landscape. Fortunate to escape the felling axe while weathering stormy blasts or fiery lightning flashes, these old growth sentinels testify to Earth's aged forest ecology.

North Carolina boasts old-growth trees and forests of its own. An often overlooked, if not under-appreciated, native species, Longleaf Pine (*Pinus palustris*), some that are hundreds of years old in our state, recall that species' former Southeastern Coastal Plain preeminence. Uwharrie National Forest hosts old-growth Longleaf Pine, for instance. And down east, Weymouth Woods preserves old-growth Longleaf Pine acreage. In western NC's Joyce Kilmer Memorial Forest, as elsewhere in higher Smoky Mountain tracts, towering, old-growth Tulip Poplar (*Liriodendron tulipifera*) and Hemlock (*Tsuga canadensis*), some with 4-foot breast-height

diameters, humble humanity. Into these ancient columns of cellulose, lofty branches merge to create cavernous microclimates below and vaulted, leafy-green ceilings above. Nothing like something so naturally large to make one feel so exceedingly small. Or something so awfully old to make one feel unusually young!

Our "Tar Heel" moniker reflects NC's historical association with its ancient piney woods. Especially during our colonial era, but even

extending into the 20th century, Longleaf Pine resin was collected, cooked and distilled into valuable naval stores such as pitch, tar and turpentine. During the age of sail when thousands of wooden ships—many of the best of them constructed with Live Oak (*Quercus virginiana*), which, like Longleaf Pine, is endemic to the Southeastern Coastal Plain—plied the Seven Seas; naval

stores were essential shipbuilding and marine-maintenance commodities. Resin distillates traded internationally then, like petroleum in today's markets.

To see more of our land's amazing Longleaf ecosystem and habitat, see the fine YouTube series, "Longleaf Serenity" by Brady Beck.

In an effort to acknowledge old-growth trees and forests as quintessential natives, I ask anyone interested to join me in an effort to identify and register native, old-growth trees and forests throughout our state. Visit <http://www.OldGrowthForest.net>. Working through this philanthropy, I envision a cohort of us engaged in the worthwhile cause to identify, locate and protect old-growth trees and forests among us. Contact me at this e-mail address: brucemary.chapman@gmail.com

Bruce is a member of the SP Chapter.



Joyce Kilmer Memorial Forest

CHLOROFIENDS!*

By William Dunson

Are we just
“rearranging the deck
chairs on the Titanic”,
aka Planet Earth?

A basic premise of native plant societies is that “native” plants are better than “exotics” for a variety of reasons, including benefits to wildlife. This may be irrelevant, since as a consequence of globalization, species have been widely spread beyond their original distributions. It is unrealistic to return more than a tiny fraction of the ecosystems to their original/native species configuration. So, what do we do? I suggest we come up with a practical plan to maximize the potential of the remaining homogenized ecosystems to support wildlife of specific concern.

A DEFINITION: First, you must realize that there is no single way to define native vs exotic species. There is in fact a continuum between native and exotic species that depends on how far apart two species occur naturally.

THE PROBLEMS: The general area of Boone where I live in the summer is currently undergoing massive invasion by many exotic species such as Oriental Bittersweet, Mile-a-Minute Vine and Tree-of-heaven. There is really nothing that can stop them at a broad scale, even using massive herbicide treatments. An equally dangerous problem throughout the eastern US is that forest habitat undergrowth is being devastated



by browsing of an overpopulation of native White-tailed Deer. Already the understory consists almost entirely of toxic plants that deer will not eat (such as Yellow Buckeye, Mountain Holly, Striped Maple, Spicebush, and Barberry). Few desired native tree saplings are present to regenerate the natural forests.



Ruby-throated female feeding on an exotic Coppertips.

A PLAN: I would prefer not to constantly praise the sole benefits of “natives” and demonize “exotics” when they can be difficult to define, and sometimes impossible to physically separate without environmentally damaging methods. Certainly, the goal should be to use natives first. I would prefer to debate the specific goals of gardening in each location and in

nature at large and define the best approach using whatever beneficial native and non-invasive exotic species propagate well in that site. We should focus on the “vegetative potential” of a site rather than what it might have been hundreds of years ago.

I suggest defining, evaluating and ranking the value to wildlife of plants over the growing season that most efficiently support specific types of animals—butterflies and

birds especially—and consider their uses regardless of their place of origin. The ranking of beneficial species relies on the seasonally distributed uses of cover, nesting sites, consumption of leaves by larvae, consumption of nectar, consumption of fruit, and consumption of pollen. Achieving a proper temporal distribution of flowering/fruiting is crucial, especially

CHLOROFIENDS!* (cont.)

during migration and reproduction. Some fruits are sugar bombs to be eaten immediately and others are more lipid rich and remain on the plant for months before being eaten.

Just to give one example, mulberries are highly prized by birds in spring migration. The native species, Red Mulberry (*Morus rubra*), is dioecious (mostly) and does not produce enough fruit at the time of spring migration to be as beneficial as the monoecious (mostly) exotic White Mulberry (*Morus alba*) in many sites.

We have gardened primarily for benefits to wildlife for 34 years in central Pennsylvania, for 26 years on two lots on a coastal island in Southwest Florida, for 15 years on a 107-acre wildlife farm near Galax, VA, and have now completed our third summer gardening on 2 acres near Boone at 3,400 feet. An approximately 50-50 split between natives and non-invasive exotics seems to work well for these locations. The early to late season phenology for the major nectar-producing flowers (and for fruits later) in our Boone yard is roughly serviceberry, dogwood, ragwort, Coral Honeysuckle, daisies, azaleas, rhododendrons, hawkweed, fleabane, coreopsis, Japanese Holly, bee balm, elderberry, coneflowers, Brazilian Vervain, Dianthus, Catmint, Red Hot Poker, zinnias, milkweed, butterfly-bush, Cupplant, goldenrod, Joe-Pye-weed, Althaea, Great Lobelia, and asters.. Since very few plants bloom for more than a few weeks, it is crucial to have a seasonally distributed sequence of blooms.

We must ask ourselves: Is it really worse to plant Coppertips (*Crocosmia montbretia*), an African nectar-producing flower, to attract pollinators like butterflies and hummingbirds than to put sugar water in a feeder?

A SUMMARY: Everyone should be the lord and master of their personal garden plan, but the minimum requirement should be that the

plan benefits wildlife, and does no harm to the soil, and to ground and surface water runoff. Try some non-invasive “exotics” that have a special benefit for butterflies and birds and use them to produce extra leaves, flowers and fruits which are not otherwise provided by “natives.”

Dr. Bill Dunson is Emeritus Prof of Biology, Penn State University. He has homes in Boone, NC, and Englewood, FL.



Red Admiral on Joe-pye Weed, a native.



Red-spotted Purple on an invasive Butterfly Bush.

After the Leaves Leave: A photo journal

By Bettina Darveaux

Your time outdoors should not be curtailed just because the growing season has ended. With the deciduous leaves now fallen, the forest canopy is more open and brighter allowing you to notice so much botanical detail. Tree identification can even be easier in the absence of leaves, since leaves can vary tremendously depending on growing conditions. Without leaves, the focus changes towards the twigs and buds, which are very distinctive and consistent, as well as towards the interesting colors and patterns of bark.

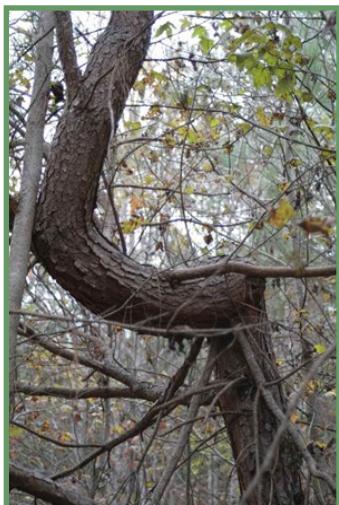
We have a 0.5-mile meandering trail that we made through our woodlands and although I walk the same few loops each day, I never run out of new interesting things to see or think about. Approaching the trail from the opposite direction, or at different times of day with varying angles of light, or after some precipitation has fallen, reveals unique botanical features. One day I decided to carry along my camera and capture whatever caught my eye or what profound lesson nature was trying to teach me that day.



DISTINCTIVE BUDS: Terminal bud of American Beech (*Fagus grandifolia*) and Hershey's kisses-shaped flower bud of Flowering Dogwood (*Benthamidia florida*).



A LESSON for today taught by a Loblolly Pine: When we hit adversities in life, we must find a new direction.



TREE HITCHHIKERS: Trumpet-creeper (*Campsis radicans*) on Loblolly Pine (*Pinus taeda*) with eye-catching pattern of aerial roots; Poison Ivy (*Toxicodendron radicans*) with "furry" aerial roots; and lichen on Honey Locust (*Gleditsia triacanthos*).

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Photo journal (cont.)



Unique Bark: Thorns, which are actually modified branches, on Honey Locust (*Gleditsia triacanthos*), beautiful to look at but very sharp; corky ridged bark on an American Sweetgum (*Liquidambar styraciflua*) sapling, reminiscent of a rugged mountain range; lovely bark pattern on a young Tulip Poplar (*Liriodendron tulipifera*); prominent branch scars on an older Tulip-tree.

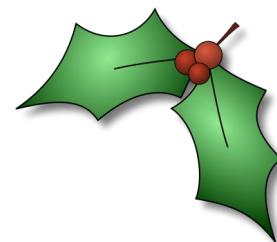
There is so much to experience during the fall and winter months after the **leaves leave** so don't **leave** your hiking boots tucked away in the closet but rather **leave** them by the front door ready to explore. Believe me, you won't be disappointed!

—All photos by the author

Membership Report

As of November 1st, there are 963 active membership records listed on our administrative website. New members added since the August 1st report are: 83 active and 3 pending receipt of dues. We have one new Lifetime membership: **George Carr** of Faison, NC.

Margie Bauer of Cashiers, NC, (who joined in 2019), upgraded to an Individual Lifetime membership. Added membership by chapter are: Blue Ridge—11, SE Coastal—12, S. Piedmont—17, Triad—7, Triad—7, Triangle—21, WN Carolina—6, At Large—24. All new active members who did not select a group when joining have been added to their closest chapter or are listed as an at-large member.



DeeDee Clarke, Membership Chair

Recreational Development Must Be Sustainable

By Dr. Matt Estep

Over the last six months, COVID has taught us many things about our country. One critical lesson is that we need more outdoor spaces to explore and commune with nature. As a native plant enthusiast, I enjoy traveling to see new species blooming in various locations, often on public lands. The recently passed Great American Outdoors Act will go a long way in refurbishing failing infrastructure within our park system and hopefully invigorate future recreational development planning.

Images of packed parking lots near trailheads and remote campsites overrun with tents (and refuse) have been a disappointing theme during COVID. So many people want to go hiking on the Roan at Carvers Gap that it has been difficult to socially distance, even when outdoors! The same trends were observed in the Linville Gorge Wilderness area and along the Blue Ridge Parkway. I argue the overcrowding and exploitative use of recreational areas is a symptom of poor planning and not necessarily COVID. As we plan for the future and consider what new recreational development is appropriate for our state, I think we must implement sustainable recreational development practices and learn from our COVID experiences.

In the last few years, a plan has been developed to construct a new state trail called the Northern Peaks Trail. While I strongly agree that we need new recreational opportunities, I would like to take a moment and explain why the Northern Peaks Trail should concern you and anyone who loves native plants.

First, much of the land associated with the development of the Northern Peaks Trail were gifts to the state from The Nature Conservancy, with the caveat that they are designated as nature preserves. The Nature Conservancy purchased these properties to protect one of our state's most rare habitats, high elevation rock outcrops, and the federally listed native



Spreading Aven

plants that inhabit them. Two of these species are Spreading Aven (*Geum radiatum*) and Heller's Blazing Star (*Liatris helleri*).

Second, high elevation rock outcrops are difficult to conserve because they have extremely thin and fragile soils that are easily disturbed by foot traffic. When accessible, high elevation rock outcrops typically experience high foot traffic because they tend to offer spectacular viewsheds of the surrounding area. This combination presents a real Catch-22 situation where nature-loving recreationists unknowingly destroy the habitat when they visit it. The Nature Conservancy understood this conflict and included specific language in their dedication documents to protect these rare sites.

Third, the original planners of the Northern Peaks Trail were NOT conservation-minded and designed a trail that literally connected all of the rare high elevation rock outcrops in the region. These planners were much more concerned in selling tourists a destination and chose to exploit the viewsheds as a mechanism to draw tourists. It is essential to recognize that their plan is antithetical to the conservation efforts of The Nature Conservancy.

Many of our state's conservation biologists

(Cont. on P11)

More Society News!



Illustris Palustris Award The North Carolina Longleaf Coalition presented its 2020 Illustris Palustris Award to NCNPS Life Member **Julie H. Moore**, former coordinator of the US Fish & Wildlife Service's national Safe Harbor Program and active member of the NC Longleaf Coalition. Julie "richly merits recognition for her lifelong dedication and 'missionary work' on behalf of longleaf pine preservation and restoration in North Carolina and throughout its entire range," the coalition stated. She also worked with the USDA Natural Resources Conservation Service to establish their Working Lands for Wildlife Program for at-risk species, among other accomplishments. In our Society, she helps **Debra Murray** review grant applications for the Shinn, Wells, and Alice Zawadzki funds. "It pleases me that these funds have grown through the years and that so many good projects are looking for funding. I knew the Shinns, Alice Z. and Dr. Wells," Julie told us. Congratulations!

IN OTHER NEWS, the SE Coastal Chapter has a new co-chair! Welcome to **Krystyna Ochota**, who is now helping **Charlie Winterbauer**. Also, this chapter participated in the 2020 Native Plant Festival held in Wilmington. Like everything else in 2020, this event was held virtually. One of the ways to view videos of the presentations is to go on YouTube and search for the Cape Fear 2020 Native Plant Festival playlist. Among the presenters was our own artist friend **Trena McNabb**, who discussed transforming her sewer-easement line into a vibrant native wildflower meadow!

Rec Development (cont.)

have worked to illuminate the conflicts between the Northern Peaks Trail and biodiversity conservation. These arguments are raising awareness and beginning to impact the trail's planning. However, we are at a critical time in this process, where YOUR voice could make a big difference in how the trail is routed. Please consider reaching out to State Parks Planning Program Manager Dave Head (dave.head@ncparks.gov) and to Blue Ridge Conservancy (<https://blueridgeconservancy.org/>) to let these organizations know how you feel about protecting our state's biodiversity and the importance of responsible and sustainable trail development. If you are like me and love the outdoors, love to hike and explore, care about biodiversity,

native plants, and our state's natural heritage, then please raise your voice. Let them know that you want a trail, but that it must be sustainable! Compromises that endanger rare habitats and biodiversity are unacceptable. Our state deserves a sustainable trail that accommodates and prioritizes the needs of biodiversity while providing recreational opportunities.

Dr. Estep is assistant professor of Evolutionary Genetics and Genomics at Appalachian State University, and a plant conservation geneticist. He can be heard on the following podcast:

<https://www.indefenseofplants.com/podcast/2020/9/6/amphibolitemountains>

Society's Grants & Awards

The write-ups below highlight the varied and interesting research of four more of this year's Shinn Grant recipients.

—Debra Murray, Scholarship & Grant Chair

Matt Hedges, East Carolina University

Invasive species are an increasing threat to biodiversity, but we don't often know the best way to control them. Sometimes spraying the area with herbicide is the only practical solution. But what are the consequences of that on native flora? In addition, some invasive species have been shown to change soil properties to benefit their germination and growth. I chose to focus on Chinese Lespedeza (*Lespedeza cuneata*) to see how plant-soil interactions could impact the management of this species and the native flora. Soils of three different histories were used in my experiments: soil with no history of lespedeza invasion, soil with an ongoing invasion of lespedeza, and soil where herbicide had been used to control lespedeza. I used these soils to grow both lespedeza and three native species, in addition to documenting the effects on the naturally occurring seedbank. I found that lespedeza formed more root nodules and grew to a larger size in soils previously occupied by lespedeza and sprayed with herbicide, indicating that the plant does alter the soil property in its favor. Data also showed that the naturally occurring seedbank was less diverse and bountiful in sprayed soils. Therefore, restoration efforts could be more successful by augmenting the area with native flora rather than simply relying on a seedbank. We identified possible contenders for restoration, including Late Goldenrod (*Solidago altissima*). Thank you to the NCNPS for your support of this research!



Georgia Harrison, Appalachian State University

Cliff systems can harbor unique, diverse plant communities, such as glacial relicts and endangered biota, and are dominated by stress-tolerant, often cryptic lichens, bryophytes, and vascular plants. Rock climbing is a major source of human disturbance to cliff ecosystems, but this effect is highly variable due to the unevenness of the rock surface. To assess the impact of climbing, cliffs at Table Rock and Hawksbill Mountain in the Linville Gorge Wilderness Area were surveyed along 39 vertical transects. I observed 42 lichen, 22 vascular plant, and 21 bryophyte species. The most common species were lichens *Lasallia papulosa*, *Lepraria neglecta*, *Physcia subtilis*, *Aspicilia cinerea*, *Xanthoparmelia conspersa*, and *Umbilicaria mammulata*; vascular plants *Selaginella tortipila* and *Hydatica petiolaris*; and bryophytes *Campylopus tallulensis* and *Weissia controversa*. Notably, *Canoparmelia alabamensis* was collected for the first time in North Carolina and 21 other species (17 lichens, four bryophytes) were Burke county records. Potential climbing areas should be thoroughly surveyed before management decisions are made, since lichen cliff communities vary by site, and some will need more protection than others.



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Society's Grants & Awards (cont.)

Ethan Hughes, Appalachian State University

Grandfather Mountain is a site of exceptional biological diversity in the Southern Appalachian Mountains. Long known for its unique assemblage of natural communities and rare and endemic species, the area has been a site of scientific research for many years. The Boone Fork headwaters on the northeastern slope of Callovay Peak within Grandfather Mountain State Park represent an area of high natural quality significance, yet there is little plant species or natural community data. The region is characterized by rugged terrain with few trails for access. Undaunted, I investigated the flora of this region and described all vascular plant species, a preliminary list of epipetric mosses on dry portions of boulders and rock outcrops, and the natural communities occurring within the roughly 1000-acre study site. I also researched the botanists who came before me. Asa Gray, Rev. Moses Ashley Curtis, John K. Small and Amos A. Heller all contributed to our knowledge of Grandfather Mountain and the species residing there today, and I am honored to further their work. The Tom and Bruce Shinn Grant was instrumental in providing me funds to travel to and from Grandfather Mountain during the field season of 2019 and enabled me to more readily complete the abundant field work with greater ease of mind. I am very grateful for this special award. I completed my M.S. degree in Biology from Appalachian State University in May 2020 and am now working in Tallahassee as a Field Botanist for the Florida Natural Areas Inventory.



Gregory Wilson, North Carolina State University

Smooth Purple Coneflower (*Echinacea laevigata*) is a highly charismatic member of the Northern Prairie Barren plant community, a rare plant community in North Carolina. The largest population in the world is found in Granville County, North Carolina at Picture Creek Diabase Barrens. There, populations of this flower are found in two different micro-habitats: a power line right-of-way and adjacent woodlands. The coneflower is self-incompatible, meaning to reproduce, it depends on pollinators to transfer pollen among individuals. Because pollinators of plants found in both habitats are crucial to any successful management strategy, I began my field investigations into whether or not there are shared pollinators between the two habitats and consequently, whether or not there is gene flow between the two populations. I collected pollinators visiting plants in both habitats, marking and releasing butterflies easily identified in the field. To see if the same pollinators were visiting plants in both the power line and in the woods, I placed on the flower heads a disc of safe artificial pollen marked with a fluorescent dye, so that a bee or butterfly visiting the flower and landing on the disc would collect some of the dyed material and then re-deposit that material on other plants it visited. Then in the evening, I used a UV light to record the activity. Unfortunately for this season, rainfall and dye colors too difficult to distinguish means I will need to repeat this experiment the following season. I also conducted controlled crosses of the Smooth Purple Coneflower, using pollen from the two different habitats. The seeds collected will be planted in our plots in the next season. This project is ongoing and will hopefully provide additional insight into the ecology of a species that is beloved by so many North Carolina plant enthusiasts. I would like to express my sincere gratitude to the NCNPS for supporting this project.



Society's Grants & Awards (cont.)

Lillian Mae Carroll Pollinator Garden

By George McDowell

With a grant from the B.W. Wells Stewardship Fund, we established a 3,150 square-foot pollinator garden along the White Oak Creek Greenway in Cary. This is part of our [Cary Tree Archive](#), the largest all-volunteer land-reclamation project in Wake County. The pollinator garden is named in honor of the mother of our volunteer designer, Richard Carroll. To prepare the site, grass and weeds were first killed with a plastic barrier and then removed with heavy equipment. Fifteen cubic



yards of a soil compost mixture was added and then covered with mulch. On planting day, 29 volunteers put in several hundred native pollinator plants composing nearly 40 species, including Bluestar (*Amsonia tabernaemontana*), Rattlesnake Master (*Eryngium yuccifolium*), Butterfly-weed (*Asclepias tuberosa*), Maryland Golden Aster (*Chrysopsis mariana*), and Boneset (*Eupatorium perfoliatum*). Because the pollinator garden is located along a popular greenway, we regularly engage with curious bikers and walkers, and our efforts have inspired several neighbors to not only volunteer with the project, but to create their own native habitats. The Cary Tree Archive is proud and grateful to have been the recipient of the B.W. Wells Stewardship Award.

Side projects are an essential part of graduate student life, and outreach efforts are an excellent example of those. Below, a recent Shinn recipient tells us about his work with undergraduates and their attitudes on invasive species.

Weeding is Good for the Soul

Matthew Hedges, East Carolina University

There are many threats to the survival of our native flora and fauna, and in our efforts to engage the public on these pressing issues, outreach events are a common tactic to reach and inform citizens. We wanted to assess what impacts our outreach efforts had on the attitudes of the attendees. We recruited 27 undergraduates to manually remove lespedeza from local greenways, and gave them a survey to fill out after the event. Not too surprising for anyone that has helped with invasive removal, we found that participants enjoyed the event, felt more connected to nature, and felt more equipped to help the environment because of the event. Even more promising, participants stated they were likely to seek out similar events in the future and would recommend others to attend a similar event. However, while survey responses illustrated that participants understood the underlying concepts that cause invasive species to threaten local flora or fauna, responses suggested event participants were not aware of ongoing invasions that surround them. These findings illustrate the positive benefits of community engagement and the need to continue educating the public on the threat of invasive species.

My Summer of Snails

Not surprising, COVID-19 has impacted researchers in many ways - working shifts in labs, scrambling for study supplies, and of course virtual meetings. Field researchers found they could not access the natural areas they need to study or could not safely conduct studies that required multiple people working closely together. One recent Shinn Grant recipient describes his experience and what he did instead.

By David De La Mater

My spring and summer experiments, planned out in detail and in coordination with other research scientists, was to study how nutrient pollution affects coastal salt marshes. My research focuses on the dominant marsh grass, Smooth Cordgrass (*Spartina alterniflora*), and my field research team and I were to set up experimental plots and document the results. Salt marshes are crucial habitats for many reasons, including buffering against storm surge, protecting against



coastal erosion, fostering fish and crab populations, reducing CO₂, and filtering pollutants from the water. Given the importance of this habitat, I was excited to start my research. Unfortunately, the COVID-19 epidemic abruptly ended my work. The Duke University Marine Lab shut down for months, preventing me from initiating the experiments during the crucial timeframe. Also, safety precautions prevented any type of group work. Faced with this, I began to muse over what I could do, working alone with a few simple tools.

If you spend time tramping through North Carolina's coastal salt marshes, you most certainly will encounter snails, specifically the marsh per-

iwinkle snail (*Littoraria irrorata*). However, you may not realize the big effect these snails have on the marshes. They chew up the Smooth Cordgrass and can mow down huge swaths of the marsh. Fortunately, blue crabs, among other things, are voracious predators of marsh periwinkles and help maintain the delicate balance in the marsh. When there aren't enough blue crabs around due to overfishing or other reasons, the snails can get out of control. That's bad news for the marsh, and given all the benefits of a healthy, functioning coastal marsh, that's bad news for us, too.

I realized I had an opportunity to study another crucial component of the marsh, even though not very plant-like, and this was something I could do by myself in COVID times. So, I spent the many sunny summer days counting and measuring marsh periwinkles. I documented how their numbers increased and how they changed in size throughout the growing season. This information will help me understand an important piece of the puzzle that makes up our beautiful coastal salt marsh. While not the summer I expected, I was able to salvage the field season by studying another impact on the marshes, gaining a broader picture of this crucial habitat for future research. I started my third year at Duke this fall, and look forward to launching my full-fledged experiment in the Summer of 2021, with a newfound appreciation of the fast-paced life of marsh snails.





North Carolina Native Plant Society

C/O Julie Higgin
209 Hanks Bluff Drive
Mooresville, NC 28117

Membership Spotlight: ROXANNE NEWTON

What is your background?

After 30 years as a faculty member and administrator at UNCC and in the NC Community College System, I recently retired to help aging family members, work on making our western Iredell County “homestead” more sustainable, and expand my volunteer and learning activities.

Thus, I am happily engaged in UNCC’s wonderful Native Plant Studies Certificate classes, a yearlong ForestHer NC workshop series, and climate change and social justice activism.



How did you get interested in native plants?

I grew up in the best place imaginable: a small farm surrounded by woods, a creek, fields, and wildlife. I have always enjoyed gardening for wildlife wherever I have lived. With my children, now ages 39 and 40, I was a member of a local nature society and engaged in nature studies and bird counts. I have long admired the Society and have been a member on and off since the mid-80s.

How do you support native plants in your chapter?

As the Southern Piedmont Chapter’s Volunteer Coordinator, I am delighted to be more involved. The pandemic has paused our activities this year, but we are poised to serve the community and partner with local nature and environmental groups in the coming year.

Do you have a favorite native plant?

My favorite has always been what we called “Wild Ginger” (*Hexastylis arifolia* var. *arifolia*), ever since my mother showed them to me on weekly family walks in the woods.