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COVER Longleaf pines release their seed in the fall and will germinate a few weeks after falling to the ground.
 New germinants are often spotted with their seed wings still attached. [Sarah Crate]

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The Longleaf Alliance

PRESIDENT'S MESSAGE



CAROL DENHOF

As I write this piece for the fall issue of *The Longleaf Leader*, we are still in the “Dog Days” of summer here on the Georgia coast. It has been a tough summer for many in the Southeast and beyond who have suffered from extreme heat, drought, wildfires, and Hurricane Idalia. Our hearts go out to those personally impacted by these events across the U.S. and Canada. Our resilience, and that of the longleaf pine, have certainly been tested this season.

In recent days, though, I've sensed a slight change. The days are shortening, and the oppressive heat is beginning to let up just a bit. Other signs of fall are also happening around us – aisles of school supplies at the local store, excitement about the beginning of football season, and students returning to school and college campuses. Being the daughter of two retired high school teachers, I tend to have an innate excitement for the promise of a new school year with its opportunities for learning and growth.

This excitement carries over to the education and outreach efforts of The Longleaf Alliance (TLA) and our role in engaging with the next generation (from grade school and beyond) of longleaf scientists, natural resource professionals, and enthusiasts. Two of our strategic priorities focus on growing awareness of the longleaf ecosystem among the general public and cultivating an understanding of the processes necessary to restore and manage these forests. We achieve our priority goals through a variety of outreach mechanisms ranging from festivals and school programs to research fellowships and Longleaf Academy courses.

This issue's feature article illustrates one way TLA is reaching out to bring attention to longleaf-related topics among undergraduate and graduate forestry and natural resource

students. Ad Platt provided a guest lecture in the Longleaf Pine Dynamics course at Louisiana Tech University, which included questions to foster discussion. By contributing to the lecture series of the course, he sparked an interest and desire in these students to learn more about the overall longleaf effort and the work of TLA. These connections are crucial in maintaining an engaged and diverse longleaf restoration community moving forward.

Looking to the fall, TLA is excited to participate in and offer a range of events that will benefit those seeking to learn more about this unique ecosystem. In November, TLA will participate in a new school program called CoLab, being led by the Thomasville Center for the Arts. This program provides STEM-focused lessons to groups of 3rd graders from the Thomas County and Thomasville, Georgia school systems and will run throughout the 2023-24 school year. We are also accepting applications for the second round of The Owen Fellowship of The Longleaf Alliance (see page 46). The Fellowship award advances needed longleaf research by directly supporting a graduate student who is focusing their research on a longleaf-related topic. This program, generously supported by William Owen, is a tremendous opportunity for an eligible student. The deadline for applications is January 12, 2024.

The TLA calendar is also full of opportunities to develop your knowledge of the many aspects of longleaf restoration and management. Our staff are passionate and eager to pass on their experience and technical expertise to support your efforts to meet your land management goals. Providing this education is truly one of the most fulfilling parts of our jobs.

Please stay connected with our website as we add events. We would love to see you out there with us!

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MANAGEMENT CHECKLIST | FALL 2023

PREPARE FOR PLANTING LONGLEAF

Apply fall site-preparation herbicides.

- For effective treatment, foliar active herbicides such as glyphosate (Roundup®/Accord®) should be applied to pasture grasses before the first frost.
- Triclopyr (Garlon®) may be delayed until after the first frost to target waxy leaf competitors while minimizing impact to herbaceous groundcover.
- Allow time for soil active herbicides to break down before planting longleaf, especially when using imazapyr (Arsenal®/Chopper®) or Metsulfuron-methyl (Escort®/Patriot®). The waiting period will vary based on the rate applied, date applied, rainfall since application, and soil type.

Implement mechanical treatments for site-prep

- Scalp agricultural sites. Remember to stay strictly on the contour and pick the scalper up regularly; leaving these plugs (or mini-water bars) in the furrow will significantly reduce erosion.
- Subsoil or rip sites with hardpans, allowing sufficient time for the ripped furrow to resettle prior to planting (up to 2 months with several rain events). Do not plant seedlings directly into the sub-soiled/ripped furrow. Plant just beside the rip, and the taproot will find it.

PLANT LONGLEAF EARLY

It is never too early to plant longleaf if the following conditions are met: the site is prepared, there is adequate soil moisture, seedlings are available, and a planting crew is available

PRIORITIZE PRESCRIBED FIRE

- **Clean up or establish fire lanes for site prep or fuel reduction burns.**
- Need better burning weather? Conduct post-burn evaluations to determine if previous burns, including woody control, achieved objectives.

GROUNDCOVER RESTORATION

Harvest native herbaceous seeds.

- Certain species, such as the Indiangrasses, ripen and fall in a very short time window (as little as one to two weeks).
- Wiregrass can lose all its ripe seed if a cold front blows through. Be prepared to collect when it's ready.

Order native seed for understory restoration.

- Seed from local ecotypes and endemic species is limited and expensive.
- Although some landowners and land managers have the time and expertise to collect their own, most restoration will occur with seed purchases from the few seed companies that sell southeastern sourced seed.

TREAT INVASIVE SPECIES BEFORE THE FIRST FROST

- For invasives like cogongrass or climbing fern, the recommended prescription is 4% glyphosate with surfactant, with thorough coverage, for glyphosate formulations that contain 41% active ingredient (4.0 lb./gal.). Map these infestations for follow-up treatments in spring and fall until control is achieved.
- In existing stands, avoid any herbicide contact with green needles of longleaf (or other desirable plants).

THIN LONGLEAF STANDS

Drier conditions typical of the fall season favor pine thinning operations.

CONSIDER WILDLIFE

- Avoid disturbance around intermittent wetlands, as some amphibians, especially salamanders, move to seasonal breeding ponds when heavy rains occur.
- Use caution with any mechanical operations around gopher tortoise burrows, as any newly hatched tortoises will be nearby, and their burrows are shallow.

Reach out to The Longleaf Alliance with your longleaf questions at longleafalliance.org/contact.



Former logging road planted with longleaf pine at Homochitto National Forest near Meadville, Mississippi (Cody Pope)



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Q&A



Q. Dear Longleaf Alliance,

I have a small stand of longleaf pines that are about five years old. I tried to burn the stand, but there wasn't enough fuel to carry the fire. The trees are well out of the grass-stage and seem to be doing fine, except they look bushy. They have many lower branches growing downward and/or straight out – sometimes touching the ground. Can I cut these branches off without hurting the trees?

Puzzled about Pruning

A. Dear Puzzled,

Longleaf trees planted with wide spacing, particularly those on old agricultural fields, can have odd forms with big lower limbs compared to natural longleaf stands whose lower branches are self-pruned or thermal-pruned with fire.

We periodically hear from homeowners or hands-on landowners considering tackling this issue by manually pruning the trees. Cutting these lower branches can quickly improve the appearance of a stand, but there are a few things you should know before you make any cuts.

TREES SEAL, NOT HEAL

One common misconception is that trees “heal” following a cut or wound. What we observe is the swollen callus tissue (sometimes called wound tissue) developing around the area to close over or isolate the injury. Trees must seal off the injured tissue from the healthy portion; they do not replace the injured cells.

TECHNIQUE MATTERS

To preserve tree health and reduce scarring, never make a “flush cut.” Cutting a branch flush to the trunk increases the tree's susceptibility to further injury. Instead, cut the branch so a small “nub” remains on the trunk. The goal is to preserve the branch collar.

LONGLEAF CONSIDERATIONS

In “Planting Longleaf Pine in the Southern Urban Landscape” from the Alabama Cooperative Extension System, Dr. Becky Barlow recommends **careful** pruning of longleaf once the tree reaches 15-20 feet tall, preferably in the winter or fall.

Only remove the lower branches as described above, and never more than 50% of the crown or canopy on an individual. Avoid frequent pruning, as it slows growth. Keep equipment clean, especially if cutting through cankers or wounds.

It is impressive how many limbs are generated once you begin, so some thought needs to go into collecting, hauling, and a burn pile location. Pruning can be a big undertaking for even a small stand. Depending on your property objectives, frequent and proper prescribed burning of the stand may be much easier than pruning. Just because it didn't burn on the first try, let's not give up. Fuel is probably accumulating as we go, and with the proper conditions, burning can help “naturally” prune and shape up lower limbs.

Sincerely,
The Longleaf Alliance



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By Sarah Crate, The Longleaf Alliance

PLANT SPOTLIGHT

Gentiana autumnalis

Pine barren gentian

Gentian Family – Gentianaceae



A. In addition to the eye-catching blooms, can you spot the closed flower (top left), slender stems and leaves (bottom), and visiting pollinator (top right)? {Linda Lee, South Carolina} B. Flowering pine barren gentian in longleaf pine and turkey oak sandhill at Weymouth Woods Nature Preserve, North Carolina {Julianne Jones} C. Deep blue blooms with the light green throat at the Sandhills Gameland, North Carolina {Crystal Cockman}

Description

Pine barren gentian may be easily overlooked when not in flower due to its slender, low-growing stems. Its narrow leaves are glossy, dark green, opposite, and twisted. Solitary flowers (sometimes 2 or 3) appear at the top of the stem from September to January. Its deep blue blooms have a light green spotted and striped interior but stay closed until there is sufficient sunlight, usually opening in mid-morning.

Distribution & Habitat

Pine barren gentian is found from New Jersey to South Carolina with most populations occurring in North Carolina, where it is nearly always associated with longleaf and/or wiregrass. It prefers open, pine woodlands maintained by regular fire, but it may also be found along roadsides and powerlines maintained with mowing.

Similar Species

Numerous gentian species occur in the Southeast. Vegetatively, wiregrass gentian (*Gentiana pennelliana*) is most similar to pine barren gentian but is easily distinguished by bloom color and distribution. Wiregrass gentian blooms are white with purple-green exterior stripes and are endemic to nine counties in the Florida Panhandle.

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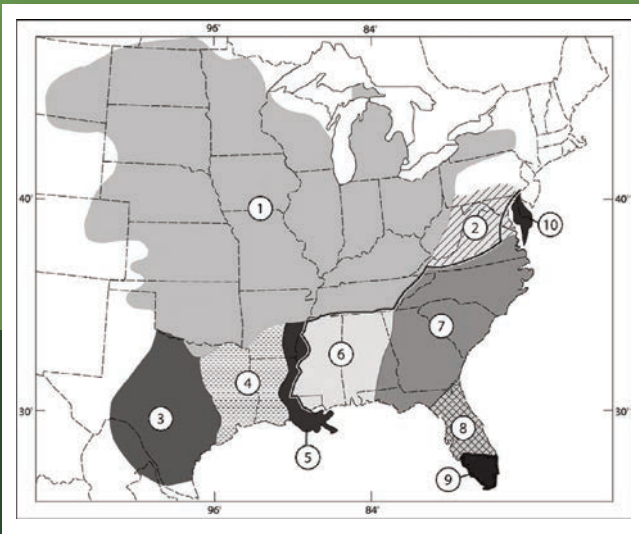
By Sarah Crate, The Longleaf Alliance

WINDOW *into* WILDLIFE

Eastern Fox Squirrel *Sciurus niger*



Fox squirrels commonly have a black face with a white nose and ears (Brady Beck)



Distribution of Eastern fox squirrel subspecies: 1) S. n. rufiventer, 2) S. n. vulpinus, 3) S. n. limitis, 4) S. n. ludovicianus, 5) S. n. subauratus, 6) S. n. bachmani, 7) S. n. niger, 8) S. n. shermani, 9) S. n. avicennia, and 10) S. n. cinereus. Map by N. Moncrief et al. (2010)

DESCRIPTION

Fox squirrels are the largest tree squirrel in North America and are twice the size of the common gray squirrel. They occur in various color phases, including black, gray, brown, and reddish, and often have white patches.

DIET & BEHAVIOR

Fox squirrels are diurnal and are generally active from the fall to spring (less so in the summer). They mainly forage on the ground and feed on pine seeds, acorns, hickory nuts, flowers and buds, fruits, insects, bird eggs, and fungi. With their large forage areas, the squirrels may be an important dispersal agent of fungal spores.

Fox squirrels are primarily solitary animals, except during breeding season or near concentrated food supplies. Breeding season is usually January to April, with a second breeding season possible in late summer. Litters are generally 2-4 young.

HABITAT

Fox squirrels prefer mostly open, mature forests. In the southeastern U.S., this includes oak-pine woodlands and adjacent bottomland hardwoods. Large mature trees supply adequate supplies of food and nesting sites.

Tree cavity dens in large hardwood trees, mature longleaf pines, or dead standing trees (snags) are used to rear young and for protection from severe weather. Leaf nests are often constructed in warmer conditions or when mature tree cavities are scarce.

RANGE & CONSERVATION STATUS

Eastern fox squirrels are found in much of the United States east of the Rocky Mountains. They may be locally common in certain regions, but habitat loss has resulted in fragmented and sometimes declining populations.

They have been introduced to the western U.S. and Canada.



Fox squirrel coloration can be a mixture of black, gray, white, and red. {Carrie Threadgill}

LONGLEAF MANAGEMENT CONSIDERATIONS

Use frequent prescribed fire to maintain open pine savannas, but aim for a heterogenous burn to retain pockets of mast-producing trees for both food and nest sites. Stream buffers also provide habitat and travel corridors.

Without fire, conditions will favor the more abundant gray squirrel, which prefers densely stocked stands and tends to move through the canopy.

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Kelsey D. Shoemaker, Graduate Research Assistant, School of Agricultural Sciences and Forestry, with Dr. D. Paul Jackson, Professor, Plant Science, at Louisiana Tech University

LONGLEAF TREE IMPROVEMENT INCLUDED IN GRADUATE STUDIES

The Longleaf Alliance staff often assist with collegiate courses and research related to longleaf pine. This Q&A is the result of a recent guest lecture presented at Louisiana Tech University by Ad Platt, Vice President for Operations.

Dr. Jackson, can you explain what led to the development of the “Longleaf Pine Dynamics” course you instructed at Louisiana Tech University?

Longleaf pine has been the main focus of my career for over 20 years while a research technician with the USDA Forest Service, in my M.S. and Ph.D. graduate work, and in my current role as a professor at Louisiana Tech University. Since 2015, I have mainly focused on studying the morphological description and nursery culling practices involving the natural longleaf and loblolly pine hybrid, Sonderegger pine. Several undergraduate students have gained research experience by working with me over the last eight years, but one in particular was able to build on her experience by remaining at Tech as a master’s student.

After shining as an undergraduate student and graduating in 2021, Kelsey Shoemaker published her undergraduate research on avian herbivory of pine seeds in the nursery in *Tree Planters’ Notes* and began graduate school. The objectives of her research involve describing the morphology of 5-year-old out planted Sonderegger pine to one day relate that to

known wood quality standards and to evaluate and compare the morphology of culled Sonderegger pine seedlings in the nursery to longleaf and loblolly pine seedlings.

It was important for me to offer a graduate course specific to longleaf pine, so as part of Kelsey’s graduate coursework, I built the Longleaf Pine Dynamics course. I reached out to individuals from around the South that are experts in different areas of longleaf pine and built a weekly guest lecture schedule using Zoom. Some of the lecture topics included longleaf pine cone production, seed processing and quality, genetics, natural regeneration, seedling establishment, fire ecology, economics, pathology, and physiology. Speakers submitted discussion questions each week as an assignment.

The following questions were submitted by Mr. Ad Platt, who delivered a lecture on The Longleaf Alliance’s (TLA) role and the current state of longleaf pine restoration. Kelsey submitted the answers to the questions during that particular week of the course.

Kelsey, you have heard from many prominent partners in longleaf restoration in your studies and in this course. What have you learned so far about The Longleaf Alliance?

Throughout this course, TLA was referenced in various discussions as the primary leader in longleaf pine restoration and conservation efforts across the South. Some of my previous knowledge of TLA was driven by my own personal interest in longleaf pine and restoration of the ecosystem. For instance, I was aware of America's Longleaf Restoration Initiative and its goal to increase longleaf pine acreage from 3.4 to 8.0 million acres.¹ After hearing Mr. Platt's lecture, however, I realized that establishing *fully functioning* ecosystems is more important than simply establishing new longleaf pine acreage. While meeting certain acreage goals is critical in restoring longleaf pine forests and maintaining species richness in their ecosystems, that goal—in and of itself—is not sustainable. I learned that improving the functionality of new and existing longleaf pine stands and maintaining them properly is more important than the number of longleaf pine seedlings being planted each year.

I also heard from previous guest speakers that TLA is coordinating efforts among state agencies, universities, and industry members across the South to initiate longleaf pine improvement programs. Currently, genetic gains in longleaf pine are moderate at best, and limited resources have been allocated to longleaf pine tree improvement in the past.² There are 50% fewer tree breeders and forest geneticists today compared to twenty years ago,³ and there is a particular shortage of both expertise and research interest in longleaf pine tree improvement. Personally, I was excited to learn that TLA is taking the initiative to guide research efforts in this underserved area.

This course has provided a great variety of perspectives on longleaf dynamics. Putting all you've learned together, what do you consider to be the greatest challenge to our (TLA's) mission of ensuring a sustainable future for the longleaf ecosystem?

Regenerating longleaf pine is unique among the southern pines for many reasons, including (1) the sporadic nature of cone productivity, (2) physical and physiological seed properties affecting seed quality and processing, (3) the indispensable role of fire in controlling competition during the grass stage and maintaining fuel continuity for subsequent burns, and (4) canopy distribution at the

regeneration site. Each of these factors must be considered when understanding longleaf pine dynamics and formulating management objectives.

One of the greatest limitations in longleaf pine regeneration is the availability of high-quality longleaf pine seed.⁴ Longleaf pine seed production is highly variable across temporal and spatial scales.^{4,5} Wahlenberg⁶ stated that good cone crops may only occur every 4 to 7 years, while Boyer⁷ found that the frequency of acceptable cone crops could range from zero in a 19-year period to three in a 4-year period. Longleaf pine seeds also have unique properties that present challenges in regeneration efforts. Longleaf pine has the largest seed of all the southern pines, contributing to poor seed dispersal and high palatability for various predators. For these reasons, seed availability is a perpetual challenge in longleaf pine regeneration.

The availability of fine fuels to carry frequent, low-intensity fire is required for long-term maintenance of all longleaf pine sites, regardless of restoration objectives.⁸ Fine fuels and fire are linked by a cyclical feedback mechanism: frequent fire discourages hardwood dominance while encouraging growth of pyrogenic grasses that aid in subsequent prescribed burns.⁸ Fuel continuity is therefore critical in preparing the seedbed for natural regeneration opportunities and controlling competition from hardwood species. Although frequent fire is unquestionably the most critical factor in longleaf pine management, canopy distribution is another important factor

affecting seedling establishment. Canopy distribution (coupled with fire) regulates (1) interspecific competition between longleaf pine seedlings and more aggressive hardwoods and pines, (2) intraspecific, asymmetric competition between mature longleaf trees and regenerating cohorts; and (3) pine fuel, which is described as the nexus that links silviculture and fire management in longleaf pine systems.⁹ The longleaf pine overstory not only influences how pine fuels are distributed across temporal and spatial scales, but can indirectly influence fire behavior through stand dynamics.⁹

After longleaf pine was extensively harvested in the late 1800s and early 1900s, few seed trees were left for natural regeneration, and this was largely confounded by fire suppression across the South. Now that the requirements of longleaf pine silviculture and seedling establishment are better understood, the future of the species and the health of its species-rich ecosystem relies on sustainable management.



Kelsey observing a bolting longleaf pine on the Kisatchie National Forest (D. Paul Jackson)

Thus, the greatest challenge in creating a future for longleaf pine ecosystems may be employing the sustainable silvicultural practices that the species requires. It is important to note that all longleaf pine forests are unique and must be managed according to specific site conditions as well as historic and prevailing disturbance regimes.¹⁰

Is the movement of longleaf provenances over the last 80 years a major concern, or not? How would you propose to characterize the entire population?

The increasing popularity of restoring longleaf pine ecosystems has led to a significant rise in the demand for longleaf pine seedlings.^{2,4} Adhering to proper seed zones is a critical factor when collecting longleaf pine seed, establishing orchards to supplement annual seed needs, and planting seedlings at regeneration sites.¹¹ However, when longleaf pine seed is in short supply, the seed that is available could be planted anywhere without regard to seed source.¹² Landowners may plant longleaf pine seed sources that are not adapted to the local environment, which may result in poor seedling survival, growth, or vigor.¹² Because moving longleaf pine provenances from south to north within its natural range may pose a risk to seedling performance, longleaf pine seed sources should not be moved more than one seed zone in either direction.¹² In contrast, variation in longleaf pine is minor between eastern and western sources, and transferring seed from east to west within districts is usually successful.¹³

Although geographic variation in longleaf pine is less complicated than other southern pines,¹³ longleaf pine forests across the South have likely developed distinctive attributes through natural disturbances and silvicultural management at local scales. Various factors, such as recurrent natural fire, prescribed burns, pathogens, thinning, and timber harvesting, have impacted longleaf pine forests in different ways across the vast range of the species. Therefore, using a “one-size fits all” approach to characterize the entire longleaf pine population as a uniform forest type would be a detriment to managing longleaf pine sustainably and a disservice to the uniqueness of the species.¹⁰

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RESTORING RELATIONSHIPS:

Ye Iswq and Longleaf

By Aaron W. Baumgardner and Teresa M. Dunlap, Catawba Nation

A young Longleaf pine seedling on the Catawba Indian Nation's reservation in 1922. Though outside the traditionally accepted Longleaf range, the reservation is in the Carolina Slate Belt which is known to contain pockets of Longleaf.

Reciprocity is being mended between *Ye Iswq* and Longleaf pine.*
The *Ye Iswq* will provide and care for the Longleaf ecosystem as
the ecosystem provides and cares for the *Ye Iswq*.

* Capitalization of Longleaf and other species rejects the idea of human exceptionalism and denotes their equal treatment as inhabitants of the land.

The ancestors of the *Ye Iswq* (“People of the River” federally recognized as the Catawba Indian Nation) have inhabited their homelands for over 6,000 years. This homeland stretched across the Piedmont and Sandhills physiographic regions of the Carolinas and Virginia. To survive and prosper for thousands of years, the *Ye Iswq* developed an understanding and reciprocal relationship with the ecosystem. The Coastal Plain ecosystem was dominated by Longleaf pine savannas and expansive canebrakes and was grazed by megafauna such as Bison and Elk. The Piedmont possessed savannas dominated by Shortleaf pine and Oaks. The immense biodiversity of the region existed because of the land stewardship—mainly the use of fire—by indigenous peoples, and, in return, indigenous peoples were gifted with

food, medicines, and material goods needed for their survival and prosperity. From the Longleaf, the *Ye Iswq* used sap for medicines and needles for basketry.

This reciprocal relationship between the *Ye Iswq* and Longleaf began to erode with colonization. The *Ye Iswq* were forced onto smaller and smaller reservations with less and less ability to adequately steward their homelands. Today, the Catawba Indian Nation's 1,200-acre reservation sits along the Catawba River in York County, South Carolina (one county west of Longleaf's geographic range). Even though the *Ye Iswq* and Longleaf no longer coexist, there are a few within the Catawba Indian Nation that still practice the art of pine basketry. The Nation is currently experiencing a resurgence and renaissance of this art form because of



Longleaf pine needle basket in progress during a Catawba Cultural Center class (Made and photographed by Kassidy Plyler)



Longleaf pine needle "nest" basket with exposed fascicles. (Made and photographed by Teresa Dunlap)



Cultural Center staff learn more about Longleaf pine basketry and splitting rivercane.

classes offered by elder Beckee Garris and apprentices Teresa Dunlap and Kassidy Plyler at the Nation's Cultural Center. The *Ye Iswaq* must travel off the reservation to collect needles for basketry and have to request permission to harvest from public and private landowners. This situation to obtain needles is not ideal, and as more Catawba citizens take up pine needle basketry, a local source of needles is needed.

Catawba Indian Nation's Director of Natural Resources, Aaron Baumgardner (a Catawba citizen), is working on that solution. His approach to land stewardship is rooted in eco-cultural restoration. Eco-cultural restoration works to restore relationships with the land. As the *Ye Iswaq* care for the land, the land can once again take care of the *Ye Iswaq*. It is this reciprocity that will allow for a long-lasting, successful

restoration of Longleaf. In early 2022, Aaron invited Jesse Wimberley, North Carolina Sandhills Prescribed Burn Association Coordinator, and Charles Babb, Chesterfield Soil and Water Conservation District's Sandhills Longleaf Pine Conservation Partnership Coordinator (South Carolina), to visit potential Longleaf restoration sites on Catawba Indian Nation's reservation and tribal lands. Aaron has begun working with Milliken Advisors on locating sites ecologically suited for establishing Longleaf and their associated species utilizing tribal government aid through the American Rescue Plan Act. His project, *Manube Kuri* ("Good Earth") - Restoring Our Lands, is the first step in re-establishing the coexistence between *Ye Iswaq* and Longleaf as well as working to restore fire sovereignty to the Nation.

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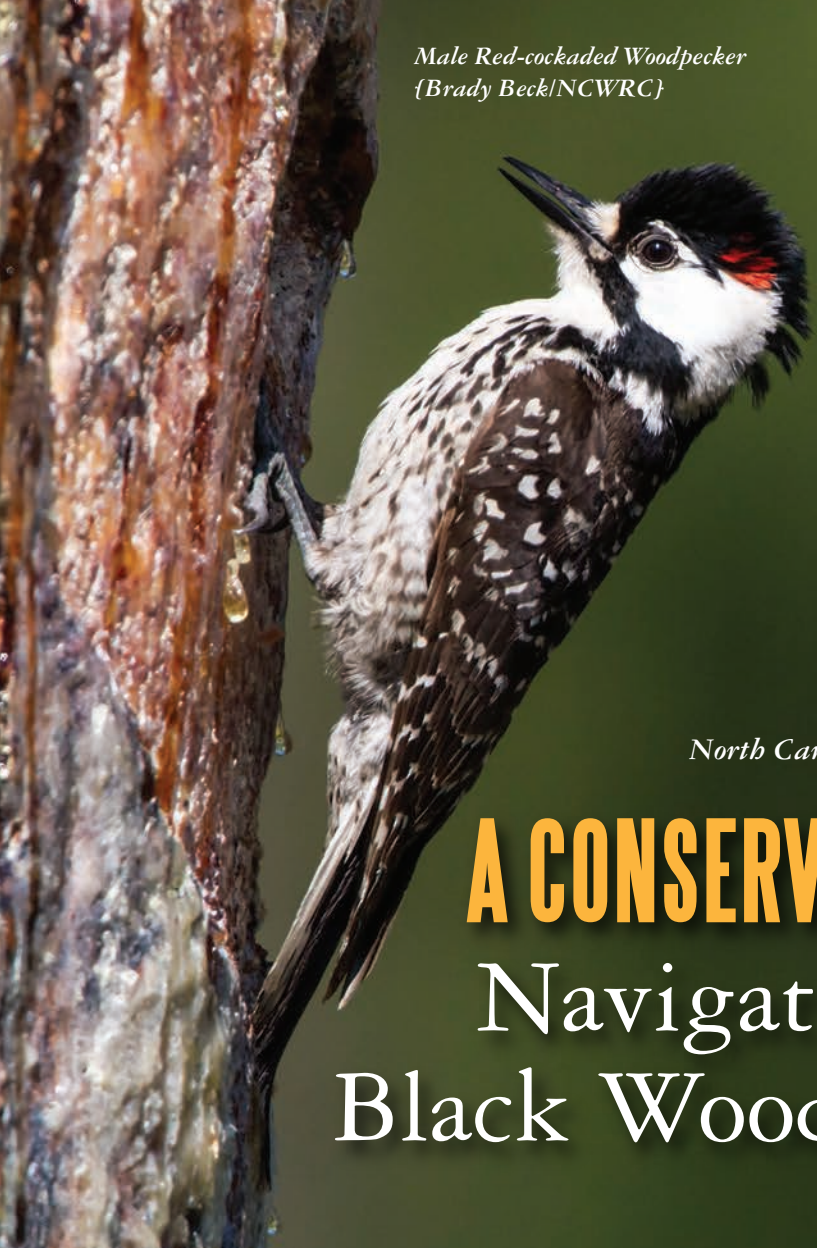
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BY LAUREN D. PHARR, Ph.D. Student,
North Carolina State University and co-founder of Field Inclusive



A CONSERVATION CONVERSATION: Navigating the Field as a Black Woodpecker Biologist

There's a new face in the field of Red-cockaded Woodpecker conservation investigating the impacts of a changing climate on their populations while paving the way for others who look just like her.

As an avian ecologist, I am currently investigating the potential impacts of climate change on the reproductive success of the federally endangered Red-cockaded Woodpecker (hereafter RCW), a species with an extraordinary conservation success story. Along with my research, I also help monitor RCWs in the North Carolina Sandhills.

I am also Black — and a woman — pursuing a doctorate degree in Fisheries, Wildlife, and Conservation Biology. Why is this important? White Americans vastly outnumber people of color in outdoor activities like fishing, hunting, and wildlife watching.¹ Not many people look like me in the conservation field.

Every other day I am reminded of this, finding myself representing the minority amongst my colleagues in various

spaces: academia, environmental organizations, and committees dedicated to conservation. But with every other day, this serves as a reminder I am paving the way for others in this not-so-diverse field.

My rigorous work with the RCW allows me to see from a different point of view. Investigating the science is one part, while the other continues to amplify the importance of diversity.

Investigating RCW Populations

Red-cockaded Woodpeckers are a federally endangered, cooperative breeding species that live in family groups called “clusters.” These clusters consist of a specific territory with multiple cavity trees that the family uses to roost, nest, and forage. The RCW is also known to be the only species of



Lauren poses with her field truck and identifying NC State car magnet sign as a solution to being safe in the field (Mike Fernandez/National Audubon Society), holding newly banded RCW nestlings (Lauren Pharr), and climbing a longleaf pine (Andy Van Lanen/SEI)

woodpecker to nest in living trees and is currently restricted to the fire-dependent longleaf pine ecosystem.

An almost complete loss of habitat has been responsible for the species' population decline. The longleaf pine provides essential resources for RCW cavities and foraging; once covering an estimated 90 million acres, 97% of longleaf forests were converted to other land uses. Today, longleaf forests cover 5.2 million acres thanks to conservation and restoration efforts. Though still listed as endangered, the development of artificial cavities in the late 1980s marked a key moment in RCW recovery. Populations have continued to increase thanks to successful management of the longleaf pine ecosystem through frequent prescribed burning as well as the continued construction of both artificial drilled cavities and insertions of nest boxes in living pine trees by biologists and land managers.

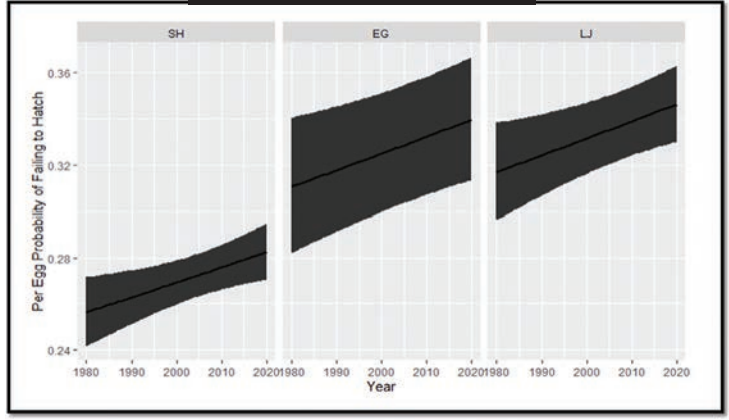
Although I'm ecstatic about the woodpecker's progress, I firmly believe that this bird will continue to need our help — especially due to factors relating to an unpredictable changing climate.

The research-based *North Carolina Climate Report*² projects a continued increase in temperatures, precipitation, storms, floods, droughts, wildfires, and sea level rise, much of which places the longleaf pine ecosystem at greater risk, particularly trees along the coast. As a result, 63 out of 124 known RCW populations are vulnerable to hurricanes, according to the U.S. Fish and Wildlife Service, with 56 RCW populations having low or very low ability to withstand environmental or demographic changes.

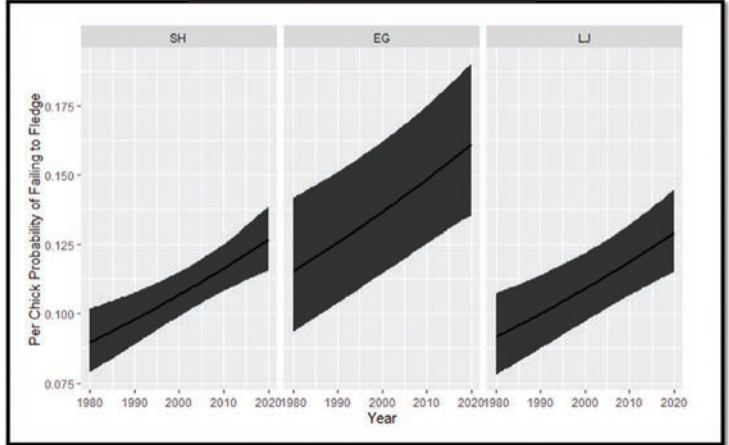
"There's probably been more significant damage to the woodpecker populations in the last [five] years than in the previous 50," explains Jeffrey Walters, leading RCW expert and conservation biologist at Virginia Tech in a WRAL news report.³ "Hurricane Hugo in 1989 did a lot of damage, but there's been multiple, major impacts in the last few years."

In 2018, Hurricane Michael hit multiple RCW populations in the panhandle of Florida and Hurricane Florence caused substantial damage to RCW cavity trees in eastern North Carolina. Hurricane Laura impacted two major RCW populations in Louisiana in 2020.

EARLY PARTIAL BROOD LOSS



LATE PARTIAL BROOD LOSS



RCW brood loss trends are increasing over time at the NC Sandhills (SH), Eglin Air Force Base (EG), and Camp Lejeune (LJ). Early partial brood loss trends showing Per Egg Probability of Failing to Hatch is lowest in the Sandhills. Late partial brood loss trends showing Per Chick Probability of Failing to Fledge over time is lower at both the Sandhills and Lejeune compared to Eglin.

In recent years, populations in the NC Sandhills, Marine Corps Base Camp Lejeune in coastal North Carolina, and Eglin Air Force Base in the western panhandle of Florida have been experiencing drastic changes in their reproductive success. Early and late partial brood loss (i.e., when all eggs don't hatch or all fledglings don't fledge) has continued to be observed, with some years being better than others. One hypothesis for this is believed to be climate change.

Using a 40-year high-quality data set managed by Walters, I configured population trends of the three populations to get an idea of what's happening and how the numbers look. It seems that although partial hatching is the lowest in the NC Sandhills compared to populations at Lejeune and Eglin, it is undoubtedly increasing across all three sites. Reproductive success for the RCW across these populations is indeed changing.

With my continued research, I plan to tackle more of this question. By studying both the direct and indirect effects of climate change, we can make new discoveries, which in turn can help assist managers and others to inform conservation efforts.

Bringing Awareness as a New Face in the Field

Although I conducted research as an undergrad, the summer of 2021 was my first time performing actual fieldwork. Taking the opportunity to monitor this species gives me a closer connection with the bird and the data that I'm working with in these long-term datasets. Navigating fieldwork, let alone the RCW work at first was no easy feat.

In my first year of learning, I continuously compared my ability to biologists who have been carrying out this work for decades.

"Summer fieldwork in the Southeast is tough," explains Brady Beck, Southern Piedmont Management Biologist for the North Carolina Wildlife Resources Commission. "Chiggers, ticks, and heat and humidity don't make things any easier. The work is physically demanding and not something you can pick up in a day or two of training - or something that comes easily to everyone."

Based in Richmond County, NC on the Sandhills Gameland, I went through extensive training and worked alongside wildlife biologists like Brady, and biologists from the Sandhills Ecological Institute. From them, I was educated on all the activities with RCW monitoring; inspecting cavities to find a nest, climbing trees and banding RCW nestlings, and carrying out fledge checks to re-sight those nestlings as fledglings.

But with physical field work barriers aside, there comes an aspect to field work that some may rarely think about – *social field safety*.

Working on a public 65,000-acre rural property like the Gamelands led me to think about uncomfortable situations and human interactions that could happen to anyone in remote areas and urban settings – particularly individuals from marginalized and historically excluded backgrounds. I use examples like re-sighting RCW's color bands near a road where passing cars may wonder what I am doing, or by carrying out my duties near residential private properties.

Some may not question seeing an unfamiliar person doing these things in the woods, but as a woman and person of color, I know not all fieldworkers experience the same concerns or outcomes from public encounters. I am thankful for colleagues who take the time to check in on me and my whereabouts and are open and receptive to this new idea that many may not have thought about. Institutions and organizations need to become more aware of these social field safety concerns. Once we begin to address this, change will gradually promote a more inclusive and safe space for marginalized researchers and workers.

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Field Inclusive, Inc.

Co-founded in 2019 by grad students Lauren D. Pharr and Murry Burgess, Field Inclusive, Inc. is a nonprofit dedicated to making field research safer for all — especially researchers from marginalized communities. The organization provides resources

such as social safety workshops, as well as documents to educate organizations on topics such as the language they should use to attract diverse applicants and the importance of paying their technicians a living wage. Beyond making the field a safer place for researchers from marginalized communities, Field Inclusive seeks to eliminate barriers that often keep members of these communities from entering field research by providing grants, fellowships, and scholarships for historically underrepresented field researchers.

Current Partners and Sponsors of Field Inclusive include: NC State University, The Nature Conservancy, North Carolina Sea Grant, Wilson Ornithological Society, Wake Audubon Society, Tracy Aviary, Southeast Climate Adaptation Science Center, Cape Fear Bird Observatory, and Walnut Creek Wetland Center in Raleigh. Learn more at fieldinclusive.org.

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By Carol Denbof, *The Longleaf Alliance, Longleaf Partnership Council Chair*

America's Longleaf:

AN OVERVIEW

The America's Longleaf Restoration Initiative (ALRI) is a collaborative effort of multiple public and private sector partners that actively supports range-wide efforts to restore and conserve longleaf pine ecosystems. For any new TLA members and those needing a refresher, I wanted to provide an overview of how America's Longleaf Restoration Initiative (ALRI) came to be and how it is structured to meet our strategic goals.

HISTORY

In 2007, a Regional Working Group of diverse organizations was formed to develop America's Longleaf Restoration Initiative (ALRI) and produce the Range-wide Conservation Plan for Longleaf Pine (Conservation Plan) that serves as a roadmap for the Initiative to this day. They determined that the vision of ALRI is to have functional, viable, longleaf pine ecosystems with the full spectrum of ecological, economic, and social values inspired through a voluntary partnership of concerned, motivated organizations and individuals.

America's Longleaf began as a wide-ranging group of individuals and agencies with a shared concern for the decline of the longleaf pine ecosystem. With the formation of the Federal Coordinating Committee (FCC) in 2010, the Longleaf Partnership Council in 2011, and the subsequent development of Local Implementation Teams, ALRI developed a system for merging these separate entities into a collaborative framework that has allowed for more efficient use of resources, skills, and relationships to further longleaf restoration goals.

WORKING AT MULTIPLE SCALES

The governance structure of America's Longleaf has taken on three different tiers, mentioned above and outlined below, which carry out the work of ALRI. While we remain flexible and open to change as appropriate, this model is working and has remained consistent since the inception of the original Conservation Plan.

Federal Coordinating Committee

In June 2010, the Departments of Agriculture, Defense, and Interior formalized their commitment to America's Longleaf and the goal of restoring 8 million acres in a Memorandum of Understanding (MOU). This landmark agreement also established the Federal Coordinating Committee (FCC) to

coordinate efforts among federal agencies to restore the longleaf pine ecosystem. These federal agencies work alongside a variety of stakeholders who are actively engaged in the restoration effort and meet at least once a year. The commitment and collaboration by these agencies in this formal way provides a clear message of dedication that enables federal resources and policy to be mobilized to help achieve the stated objectives of ALRI.

Longleaf Partnership Council

The Longleaf Partnership Council (LPC), established in 2011, is comprised of 33 members representing non-governmental organizations, state and federal agencies, implementation teams and other collaborative efforts, private industry, universities/research/extension, and private landowners. Its purpose is to promote effective communication and collaboration among the large number of partners working to conserve longleaf pine ecosystems across the South. It provides a forum where diverse partners can bring their different objectives, missions, responsibilities, and contributions required to make the conservation implementation efforts successful and demonstrate collective progress.

The LPC is governed by a chair, chair-elect, and past chair, each serving a one-year term. This three-part leadership model, along with consistent partners on the leadership team, help ensure continuity. The LPC typically meets biannually to provide a platform for shared learning, planning, collaboration, and recognizing achievements. All are welcome to attend LPC meetings, but the council members have voting and decision authority. These open meetings allow transparency and engagement. As of 2022, over 100 representatives and more than 55 organizations have served on the LPC, bringing diverse perspectives and expertise to the table, making ALRI a true collaborative effort.

Local Implementation Teams

Local Implementation Teams (LITs) comprised of public and private landowners and managers interested in restoring and maintaining longleaf forests were assembled around Significant Geographic Areas (SGAs) to accomplish the work on the ground. SGAs were created in the original Conservation Plan as a framework for a landscape-level approach to the strategic,

science-based conservation of longleaf pine ecosystems and their component species. Each LIT has a coordinator, an essential ingredient to champion and maintain coordinated momentum. There are currently 18 LITs recognized by ALRI, which have individual conservation plans to prioritize actions on the ground and make the best use of available resources. LIT partners use an adaptive management approach to periodically re-evaluate priority areas and update plans based on new opportunities.

STRATEGIC PRIORITIES AND ACTIONS

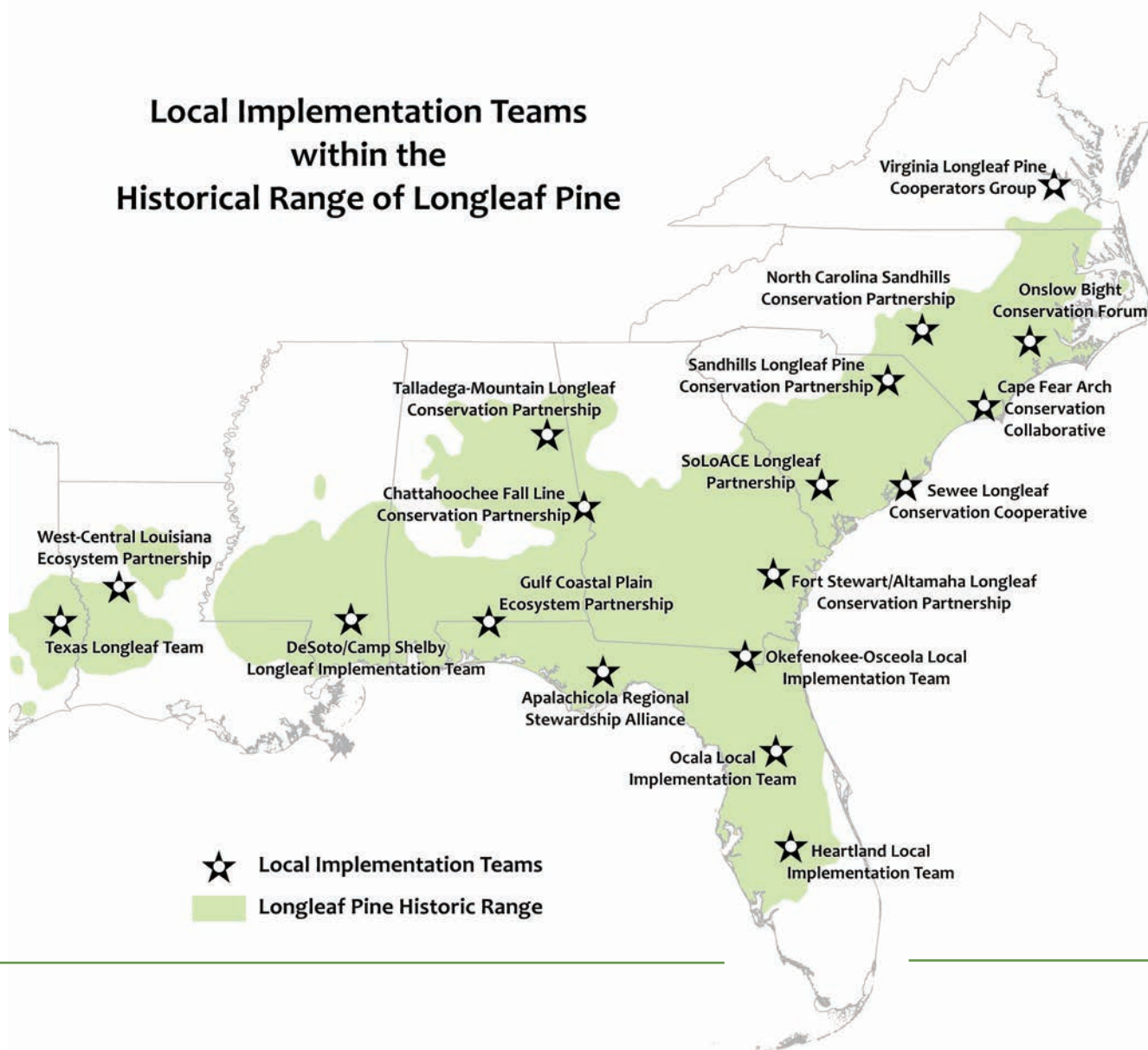
In 2013, America’s Longleaf recognized the need to step down the overarching goals of the Conservation Plan into specific implementation actions resulting in the development of a Strategic Priorities and Actions document to be created

every three years. By assessing progress, new research and data, challenges, and opportunities, this review provides critical evaluation of existing work and allows for adjustment and communication of updated strategies and actions as needed.

CONSERVATION IN ACTION

America’s Longleaf collaborative framework has led to the planting of over 1.6 million acres of longleaf pine forest, the prescribed burning of approximately 1.3 million acres per year, and the long-term protection of over 325,000 acres of longleaf pine ecosystem since 2010. These accomplishments have positive impacts on local economies, national defense, threatened, endangered, and at-risk species, recreational opportunities, forest resiliency, wildfire risk, clean air and water, carbon sequestration, and climate change mitigation.

Local Implementation Teams within the Historical Range of Longleaf Pine



West-Central Louisiana Ecosystem Partnership’s ‘Learn to Burn’ Field Day

By Chris Rice, *The Nature Conservancy*



2023 Learn To Burn Field Session (Chris Rice)

The Louisiana LIT, known as the West-Central Louisiana Ecosystem Partnership (WLEP), held a Learn to Burn field day at the Boy Scouts of America Camp Edgewood property in DeQuincy, Louisiana. This was the third of these prescribed fire outreach events held in the WLEP project area since 2017. Twenty-three participants, including seven landowners, spent the day enjoying presentations and expert training on how to plan and implement a prescribed fire.

The Louisiana Department of Agriculture and Forestry discussed planning and preparation techniques, smoke management, and a review of Louisiana burn laws. Other participating agencies, including the Natural Resources Conservation Service, Louisiana Department of Wildlife and Fisheries, National Wild Turkey Federation, and U.S. Fish and Wildlife Service, provided insight on various cost-share programs that assist landowners with restoration and land management goals. Additionally, a landowner who participated in the 2017 event shared experiences gained from burning his property. Members of the Louisiana

Prescribed Burn Association, a recently formed PBA in the area, were in attendance to gain additional experience.

The WLEP is a coalition of stakeholders, including the U.S. Forest Service, U.S. Department of Defense, Natural Resources Conservation Service, state and federal wildlife agencies, conservation non-governmental organizations, and others overseeing longleaf and other ecosystem restoration efforts within the Fort Polk/Kisatchie National Forest Significant Geographic Area. The partnership is committed to providing opportunities to practice supervised prescribed burning for landowners and professionals.

The Coca-Cola Foundation, Silk, Google, Meta, and Microsoft Fund Longleaf Pine Restoration in East Texas

By Jenny Sanders, *Texas Longleaf Team Coordinator*



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The Coca-Cola Foundation, Silk, Google, Meta, and Microsoft are coming together to invest \$972,000 to restore 2,000 acres of longleaf pine forest on private lands in Trinity County, Texas. Coordinated by the Texas Longleaf Team, with support from Texan by Nature, the restoration will entail managing and removing invasive plants, conducting prescribed fire, and planting approximately 100,000 longleaf pine seedlings over the course of five to ten years.

“As we work to make progress against our commitment to replenish more than we consume by 2030, we are looking to collaborate with local stakeholders on impactful projects that align with local needs,” said Eliza Roberts, Water Lead, Microsoft. “The Texas Longleaf team is leading critical work to restore this longleaf forest in Trinity County, which will provide clean air, water, and economic benefits to communities in Texas.”

This investment is a result of project matching through the Texas Water Action Collaborative (TxWAC) and collaboration with Bonneville Environmental Foundation through their Business for Water Stewardship program. Led by Texan by Nature, TxWAC is a coalition of industry, nonprofit, and governmental

organizations established in 2021 to increase investment in efforts that yield positive returns for Texas’ water resources. Through the restoration of the 2,000 acres, increased water filtration is projected to provide over 200 million gallons per year for eight to twelve years.

The Texas Longleaf Team is honored to serve as a conduit for these companies as they seek to achieve their sustainability goals in Southeast Texas.

New State Park Hosts Sewee Longleaf Conservation Cooperative Summer Meeting

By Jennie Haskell, *The Longleaf Alliance*, and Patrick Ma, *The Nature Conservancy*



Sewee partners explore Ramsey Grove pine stand. (Patrick Ma)

Sewee Longleaf Conservation Cooperative (SLCC) gathered for a summer partnership meeting in late July. Partners met at the new Ramsey Grove State Park to tour the property and share information. The meeting agenda included updates about funding from the National Fish and Wildlife Foundation, upcoming workshops, and updates on carbon projects with Clemson's Baruch Institute.

Ramsey Grove is one of three new properties transferred to the State of South Carolina from Dominion Energy as part of the tax settlement following its acquisition of South Carolina Electric & Gas in the wake of its failed plant construction at the V.C. Summer Nuclear Station. This 2,600-acre property along the Black River in Georgetown County was formerly a hunting retreat for South Carolina Electric & Gas executives and their families. The uplands appear well-managed and provide habitat for many wildlife species, including the federally endangered Red-cockaded Woodpecker. South Carolina Parks, Recreation, and Tourism (SCPRT) plans to continue managing the property with prescribed fire and harvest operations.

Ramsey Grove represents one of six properties (totaling 5,466 acres) that SCPRT and South Carolina Natural Resources have onboarded or will onboard within the SLCC geography in the next five to ten years. Longleaf restoration through planting and prescribed fire will be priority management objectives.

South Carolina Longleaf Partners Gather for a State-wide Collaborative Meeting

By Jennie Haskell, *The Longleaf Alliance*



Longleaf enthusiasts share conservation efforts. (Guy Sabine)

Longleaf conservation partners across South Carolina met in Columbia for a state-wide meeting at Harbison State Forest on August 2, 2023. State, federal, and private organizations discussed topics regarding many aspects of the longleaf ecosystem restoration on all types of land ownership.

The Longleaf Alliance shared the America's Longleaf Restoration Initiative's 2022 Range-Wide Accomplishment Report and mapping projects like the Longleaf Ecosystem Occurrences Geodatabase and the Longleaf Pine Sustainability Analysis. The SoLoACE Longleaf Partnership, the Sandhills Longleaf Pine Conservation Partnership, and the Sewee Longleaf Conservation Cooperative presented local implementation team updates. Various partners shared information about incentives for landowners, including revenue from pine straw, seedling reimbursement programs, conservation easements, carbon markets, Clemson's Climate-Smart Forestry program, and the vast amounts of funding available from the Natural Resources Conservation Service (NRCS) programs.

Several researchers presented their studies on black carbon retention after fire, gopher frog and isolated wetland restoration, and understory diversity. Center for Heirs Property Preservation presented on their work with properties challenged by multiple, and sometimes unspecified, owners. The South Carolina Prescribed Fire Council and the Piedmont Prescribed Fire Cooperative discussed burning and the benefits of working with friends to accomplish prescribed fire. Discussions will continue to increase collaboration for longleaf conservation throughout South Carolina.

GCPEP Partners Celebrate Milestone for the Okaloosa Darter

Compiled by Vernon Compton, The Longleaf Alliance, with contributions from the U.S. Fish and Wildlife Service, and Ilka Cole, United States Air Force, 96th Test Wing Public Affairs,



Left: Bill Tate holding two captured Okaloosa darters (Jerron Barnett) Middle: Okaloosa darter (Bill Tate) Right: Clear seepage stream habitat of the Okaloosa darter (Derek Wheaton)

The U.S. Fish and Wildlife Service removed the Okaloosa darter (*Etheostoma okaloosae*) from the federal list of Endangered and Threatened Wildlife on July 28, 2023. An early conservation target of the Gulf Coastal Plain Ecosystem Partnership (GCPEP), long-term cooperation among federal, state, local and private entities contributed to the recovery of the species, which was near the brink of extinction.

Found only in six stream systems located in two counties in the Florida Panhandle, Okaloosa darters live in clear seepage streams surrounded by sandhill habitat. Over 90% of all Okaloosa darters inhabit land managed by Eglin Air Force Base. Since the fish was listed as endangered in 1973, habitat restoration at 363 sites across 627 acres reduced erosion into streams, removed barriers to fish passage, and reconnected streams. A population that once numbered fewer than 1,500 fish has grown to more than 600,000 individuals, a 400-fold increase from its population low.

A delisting ceremony, attended by 120 people, was held on August 2 at Anderson Pond, Eglin Air Force Base, one of the habitat restoration sites that played an important role in the recovery effort. Speakers included Shannon Estenoz, Department of Interior Assistant Secretary for Fish and Wildlife and Parks, and Dr. Ravi Chaudhary, Assistant Secretary of the Air Force for Energy, Installation, and Environment.

“This remarkable recovery story was made possible by our partners and the U.S. Air Force’s commitment to improving Okaloosa darter habitat on Eglin Air Force Base,” said acting Regional Director Michael Oetker. “As we celebrate the Endangered Species Act’s (ESA) 50th anniversary this year, this is a great example of how the military and the Service collaborate to achieve our respective missions.”

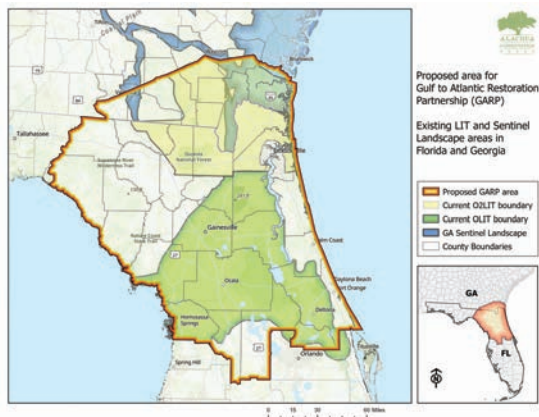
In her remarks, Shannon Estenoz stated, “The staff at Eglin have proven to be incredible conservation engineers. They designed and implemented the recovery of the Okaloosa darter and are steadily and strategically rebuilding the entire ecology of this landscape with no loss to the flexibility of the military mission.”

“More than 30 years of best management practices and partnerships with the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, and the efforts of many others led to the recovery of the Okaloosa darter,” said Brig. Gen. Jeffrey Geraghty, 96th Test Wing Commander. “We are grateful to everyone who brought this fish back from the brink of extinction to a thriving population on Eglin.”

Throughout 2023, the Department of Interior is celebrating the ESA turning 50 years old and its vital role in preventing imperiled species extinction, promoting wildlife recovery, and conserving the habitats they depend on. The recovery of the Okaloosa darter represents another success story of the ESA and what can be accomplished through collaboration and science-driven action. Congratulations to all who worked together to make it happen.

Excitement for the Gulf to Atlantic Restoration Partnership (GARP)

By Kimberly Tillman, Alachua Conservation Trust



GARP includes 32 counties in northern Florida and southeastern Georgia, encompassing the OLIT, O2LIT, and portions of the Georgia Sentinel Landscape.

groundcover planting. One of the greatest strengths in developing GARP is the collaboration and support between private landowners, public agencies, and non-profit organizations to leverage their collective efforts to improve habitat health, function, and sustainability on the ground.

As of July, Alachua Conservation Trust (ACT) now coordinates two longleaf local implementation teams (LITs) after taking on the lead partner coordinator role for the Okefenokee to Osceola Local Implementation Team (O2LIT) and continuing as coordinator for the Ocala Local Implementation Team (OLIT). To prepare for this effort and new role, ACT submitted and received a grant from the National Fish and Wildlife Foundation's (NFWF) Longleaf Landscape Stewardship Fund to develop a combined landscape scale partnership in northern Florida and southeastern Georgia encompassing both the O2LIT and OLIT. Both teams have previously accomplished great restoration projects with the help of the NFWF Longleaf Landscape Stewardship Fund. ACT looks forward to continuing these efforts, expanding collaboration, and increasing longleaf restoration in the 32 counties within the newly named Gulf to Atlantic Restoration Partnership (GARP) landscape.

By the end of 2023, ACT will complete longleaf restoration projects with ten partners utilizing previous NFWF funding. Thirteen partners are also working on additional longleaf restoration efforts within the partnership boundary. ACT's fire and restoration team has continued to assist private landowners with prescribed fire, invasive plant removal, and longleaf and

Honoring a Conservation Champion – the Nancy Schuster Natoli Memorial Preserve

By Wendy J. Ledbetter, The Longleaf Alliance, and Katie Dorris, Georgia-Alabama Land Trust



Nancy Schuster Natoli Memorial Preserve, Richmond Hill, GA (Hal Robison)

On May 27th, The Georgia Alabama Land Trust (GALT) established the Nancy Schuster Natoli Memorial Preserve in Richmond Hill, located just outside Savannah, Georgia. The 5-acre preserve is within the larger 1,100-acre Elbow Swamp property and features longleaf pine uplands, wet pine flatwoods, depressional wetlands, and river swamps.

This Preserve is dedicated in memory of Nancy Schuster Natoli (1965-2013), a remarkable conservationist who was instrumental in establishing the Department of Defense's Readiness and Environmental Protection Integration (REPI) program, which now protects over one million acres of conservation land across the country.

Tim Beaty, former Fish & Wildlife Branch Chief & Army Compatible Use Buffer (ACUB) Program Manager at Fort Stewart, reflected on Nancy's contribution, "Nancy's work touched landscapes from Hawaii to Alaska to Florida, so this memorial could have gone a lot of places. We are really honored that it is here, next to Fort Stewart. As I was thinking about Nancy, I wondered where the REPI program might be if we still had Nancy to lead us. I think it would be pretty much exactly where it is. Like all great leaders, Nancy affected others with her vision, her passion, and commitment, so the members of the team she built have continued to make progress, reaching new heights."

The Nancy Schuster Natoli Memorial Preserve is open to the public during daylight hours from February to June, with plans to expand access. To request access and view more information, visit www.galandtrust.org/Natoli.

The Georgia-Alabama Land Trust plays a vital role in the Ft. Stewart/Altamaha Longleaf Restoration Partnership, focusing on land protection, restoration, and management of natural systems, including longleaf resources. Key to connecting conservation lands is GALT's focus on protecting lands within the Army Compatible Use Buffer adjacent to and near Fort Stewart, the largest Army installation east of the Mississippi River.

Understanding Prescribed Fire vs. Wildfire Effects on Forest Carbon and Tree Mortality

By Tamara Milton, Kathleen Gabler, Geoff Sorrell, and Heather D. Alexander



Post-Doctoral Research Associate, Tamara Milton, and undergraduate researcher, Wyatt Murphy, measuring tree diameter in recently burned areas on Flagg Mountain in May 2023. PhD Student, Kathleen Gabler, posing near a mostly consumed stump nearby. {Kathleen Gabler}

The lab hopes this work will aid in understanding wildfire risk and promote regular use of low-intensity prescribed fire in fire-dependent forests to decrease fuels and restore critical habitat.

The Auburn Forest and Fire Ecology Lab, in collaboration with The Nature Conservancy, is conducting a research project on Flagg Mountain, Alabama, to better understand how wildfire and prescribed fire might differentially affect forest carbon and tree mortality in mixed montane longleaf pine and upland oak forests.

In March 2023, the team had just completed establishing plots in a unit scheduled for a first-entry prescribed burn when a lightning strike caused a wildfire in the same area, creating a new research opportunity to study fire's importance across these landscapes.

Forest plots were established in the wildfire area and in adjacent forest units where prescribed fires are planned for spring 2024. Lab members took samples to estimate tree, understory vegetation, woody debris, and organic soil carbon pools, which will be re-sampled periodically to estimate carbon recovery over time. In addition, 300 overstory trees of longleaf pine, upland oaks, and encroaching fire-intolerant species were tagged, identified, and characterized for damage after the wildfire, and 300 more will be included from adjacent forest slated for prescribed fire this coming spring. Survival and growth of these individuals will be measured annually to investigate the effects of fire type and severity on tree stress and mortality.

Apalachicola Regional Stewardship Alliance Renews Their Partnership

By Diane Alix, The Nature Conservancy



ARSA partners on field tour during spring membership meeting {Diane Alix}

The Apalachicola Regional Stewardship Alliance (ARSA) recently re-signed their Memorandum of Understanding, reauthorizing the Partnership for another five years.

Eleven partners, which include the Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Florida Forest Service, The Nature Conservancy, Northwest Florida Water Management District, U.S. Fish and Wildlife Service, USDA Forest Service, National Interagency Prescribed Fire Training Center, U.S. Department of Defense at Tyndall Air Force Base, U.S. Army Corps of Engineers, and Tall Timbers Research Station, renewed their commitment to work together to advance the restoration of one of the most ecologically diverse regions in North America.

First executed in 2010, the ARSA footprint covers nine counties in Florida, three in Georgia, and one in Alabama and has proven a successful mechanism for encouraging parties to share resources and expertise across agency lines.

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Happy 5th Anniversary Burner Bob!



2023 marks an exciting milestone for The Longleaf Alliance (TLA) and Burner Bob® as we celebrate the 5th anniversary of our partnership. The accomplishments during that time are numerous:

- Two coloring books
- Two life-sized costumes
- Two educational videos
- Hundreds of appearances across the country

During his visits to schools, festivals, and conservation meetings, Bob shares his prescribed fire message, often leaving behind token reminders for his new friends. Swag items for all ages, including t-shirts, puzzles, stickers, bandanas, and more, amplify Bob's reach.

Bob's Origin Story

Burner Bob® hatched from the mind of Reese Thompson, a tree farmer and conservation enthusiast. Reese will tell you that the idea came to him one day after he hit his head on a tree planter while planting longleaf pine. That may be, but it comes after years of involvement with conservation

organizations where the recurring theme is the need for more fire on the ground to create good habitat for sensitive species. Reese thought about Smokey Bear's wildfire message and knew that the Southeast needed a charismatic messenger to promote the benefits of fire. What better choice than a Bobwhite Quail, that iconic bird in the South that benefits from prescribed fire?

Working Together

Burner Bob® may be THE prescribed fire ambassador of the Southeast, but his supporters make his accomplishments possible. The Longleaf Alliance is grateful to Reese Thompson, Shan Cammack, and Carol Denhof for their joint leadership in "all things Burner Bob®."

Thank-you also to Bob's funders, including private supporters of The Longleaf Alliance, Wade Research Foundation, and TERN, The Environmental Resources Network, which is the friends' group of the Georgia Department of Natural Resources Wildlife Conservation Section.

Burner Bob® is a Bobwhite Quail who lives in the longleaf forest with other animal friends such as gopher tortoises, indigo snakes, and Red-cockaded Woodpeckers. He devotes his life to explaining that the longleaf forest, with its many plants and animals, has evolved over time with regular burning. The forests need fire to survive and thrive, so Burner Bob® shows people how to burn them safely.



The Longleaf Alliance Board of Directors celebrated Burner Bob's 5th Anniversary with creator Reese Thompson. {Carol Denbof}

Shan Cammack and Burner Bob visit with school children in Georgia. {Carol Denbof}



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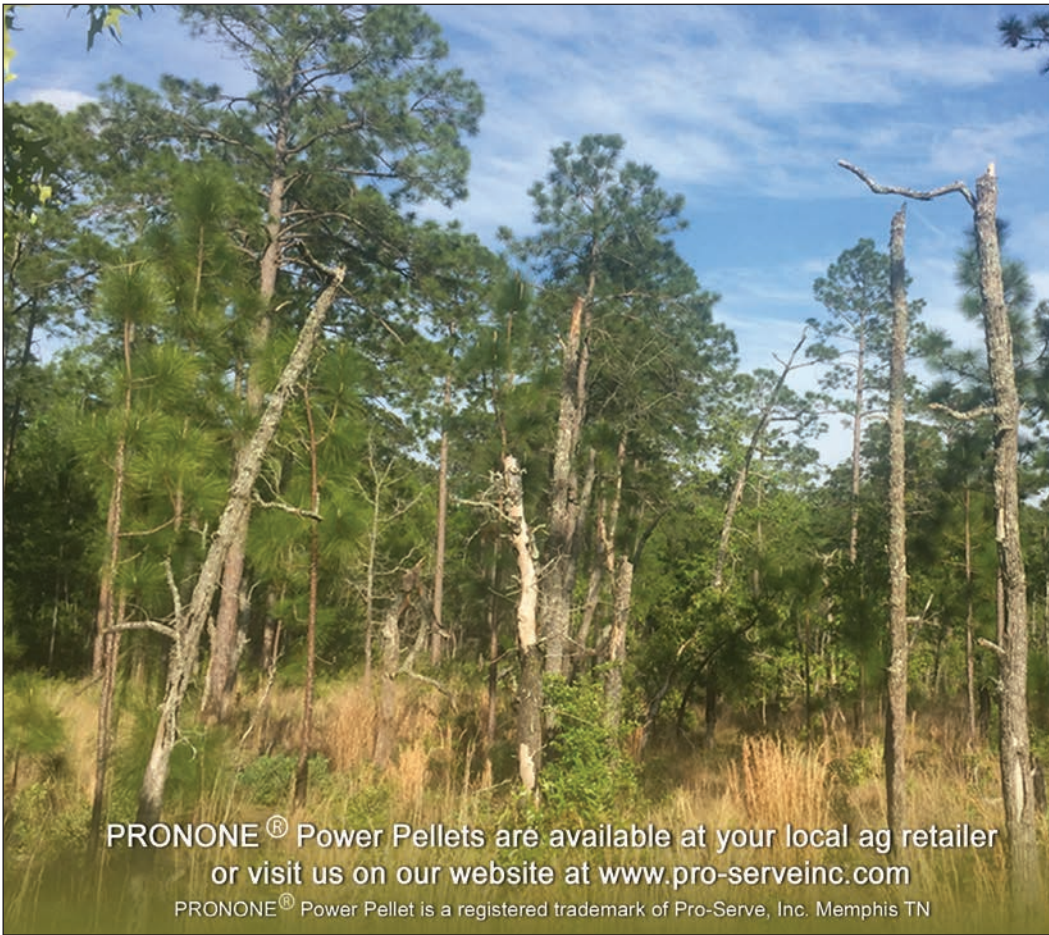


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PAPER BOTANICALS

Native Plant Replicas by Cynthia Woodsong



A.



B.

A. Whenever possible, Woodsong takes paper and pastel samples to the field to better understand the plant. Here she is matching the color of a Sandhill lily. (Bruce Sorrie) B. Sandhills lilies in a vase! Although one of the identifying characteristics of this lily is the leaf whorls which begin near the ground, Woodsong notes that the lower leaves would be removed if they were to be put in a vase of water. Just imagine if they were so plentiful that you could have a vaseful of fresh Sandhill lilies.

Returning home from work, Jeffrey Marcus carried a blooming stem of *Lilium pyrophilum*, Sandhills lily. Since he is The Nature Conservancy's North Carolina Director of Longleaf Restoration, Marcus's wife and daughters were alarmed that he would harvest such a rare plant. He told them to take a closer look. The blooming stem was made of paper.

Earlier that day, Jeff led a walk through longleaf sandhills habitat. The visit focused on Sandhills lilies and was organized by botanist Bruce Sorrie at the request of Cynthia Woodsong, a paper artist. Woodsong creates 3-D replicas of plants and flowers, made at scale and as accurately as possible

with paper. She observes plants in their natural habitat, taking photos and measurements and matching colors of the papers and pastels she uses. Access to botanical gardens and botanists offers further opportunities to observe plants over their life cycle and in natural settings, which provides details that are not easily observable.

Woodsong learned to make paper flowers from books and online videos, which tend to focus on common popular flowers such as roses, camelias, daffodils, etc. After learning the basic techniques, she turned her attention to figuring out how to make flowers and plants native to North Carolina, beginning with the Venus flytrap. A trip to the



A.



B.

A. Lucky for the fly which flew into the NC Botanical Garden gift shop, this Venus flytrap is made of paper. Woodsong often photographs her paper botanicals outdoors and is pleased when they attract bees and butterflies. Popular plant identification apps even recognize her replicas.

B. Woodsong's popular bog gardens are created in various sizes and color combinations and adhere to the flowering phenology observed in nature. The bog garden pictured includes pine lily blooms and the modified leaves of Venus flytraps and pitcher plants but no blooms for the carnivorous plants due to different flowering times.

Green Swamp's longleaf pine forest provided insights for improving her flytrap designs, as well as inspirations for additional plants to put on her to-do list. "The Green Swamp will always be one of my favorite places in the world," she says. "The plant diversity is hard to fathom, and each visit reveals new incentives to return."

These paper botanicals serve multiple purposes of education, fundraising, increased accessibility, and simply as a reminder of natural beauty. Woodsong is especially delighted to learn about her paper botanicals' presence in

the homes of people with limited access to the outdoors. By bringing seldom-seen species into other settings, her work increases awareness and appreciation for native plants.

Woodsong's native plant replicas are available at the North Carolina Botanical Garden in Chapel Hill, North Carolina, where sales proceeds are donated to the Garden. She has donated paper botanicals for fundraising for other non-profits and educational institutions, including The Longleaf Alliance. She also occasionally teaches workshops on paper-flower making at the Garden.



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By Andrew Balmford

Published by University of Chicago Press, 2012

Reviewed by Susan Miller, USDA Forest Service

Wild Hope – On the Front Lines of Conservation Success

Recently a longtime colleague and friend shared a link to a video titled *Woodpecker Wars* | *WILD HOPE*. As I watched the story, it was all too familiar. This PBS documentary featured the Red-cockaded Woodpecker (RCW) and the challenges that Fort Liberty (formerly Fort Bragg) military installation faced with its mission to train soldiers while also working to recover this endangered species. There were times when these two tasks seemed to be at odds, but the reality is that the military training provided some benefits to the endangered bird. As I watched the video, I couldn't get the subtitle "WILD HOPE" out of my head; it brought back a memory from 15 years earlier.

In the spring of 2008, Andrew Balmford, professor of conservation science at the University of Cambridge, contacted me. His research focuses on planning conservation, comparing the costs and benefits of conservation, and how conservation can be reconciled with other activities. Balmford was writing a book about conservation success stories from around the world and wanted to feature RCW's in the Sandhills of North Carolina. Having been involved in this work since 1993 (first working with RCW's as part of Fort Bragg's Endangered Species Branch, then later helping to implement our nation's first Safe Harbor Program with the U.S. Fish and Wildlife Service), I was able to introduce him to several people involved in this effort when he visited North Carolina to research his book.

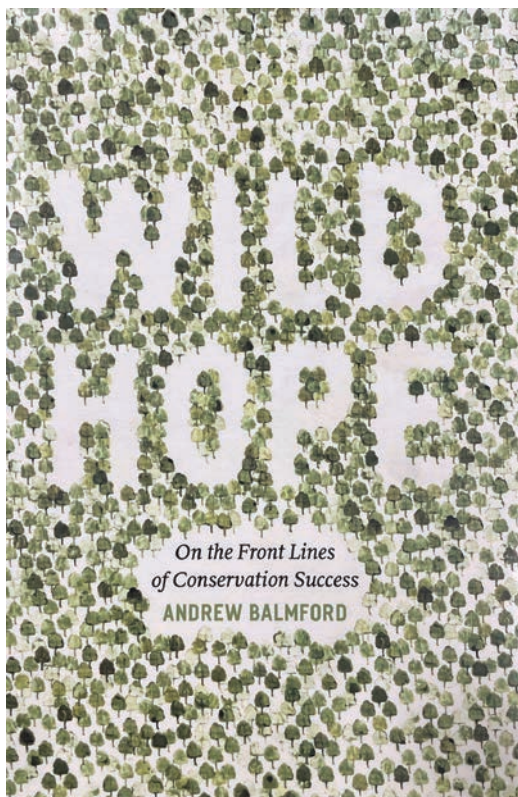
One evening, we spent time at Weymouth Woods Sandhills Nature Preserve, watching a family group of RCW's come to roost. I shared details about the RCW's unique cooperative breeding strategy, and we talked about

their habitat needs. The birds prefer open, park-like mature pine forests that used to be abundant throughout the southeastern United States. Historically, these forests burned every 2-5 years due to lightning occurrences and indigenous burning. Coincidentally, military training activities often spark fires when ammunition rounds are fired. These frequent fires continue to keep the preferred habitat in place on military installations across the Southeast.

Balmford went on to publish his book, *Wild Hope – On the Front Lines of Conservation Success*, in 2012 and sent me a signed copy. In the chapter titled "Ending the Woodpecker Wars," he told of the story of how what was once perceived as conflict between the military and the conservation community became a successful collaboration.

Now Andrew Balmford's book is the inspiration for the 2023 PBS Nature mini-series *WILD HOPE* – a collection of short films highlighting "the intrepid changemakers who are restoring our wild places and sparking new hope for the future of our planet."

I encourage you to watch the films and pick up a copy of this book, which through interviews and anecdotes, offers powerful stories of successful conservation across the world.



Woodpecker Wars is one of eight conservation stories included in the 2023 PBS Nature mini-series *WILD HOPE*, inspired by Andrew Balmford's book of the same title. Watch at www.pbs.org/wnet/nature/collections/wild-hope.

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The Ft. Stewart/Altamaha Longleaf Restoration Partnership prioritizes prescribed fire management. Visitors to these properties will see many signs of recent burning and may need to plan their visit around active firing operations. (Moody Forest, Steven Cabrera)



LONGLEAF DESTINATIONS IN SOUTHEAST GEORGIA

Compiled by Wendy J. Ledbetter, The Longleaf Alliance

The longleaf pine forest ecosystem provides habitat for a diversity of plants and animals, including endangered, threatened, and rare species. The Red-cockaded Woodpecker uses living pine trees to excavate its nesting cavity and live in breeding groups. The gopher tortoise lives in burrows, providing refuge for the gopher frog and the Eastern indigo snake. Frosted salamanders and striped newts live in the shallow seasonal wetlands and ponds embedded in the longleaf forest. With an open forest floor dominated by native warm-season grasses, forbs, and wildflowers, the longleaf forest is an essential habitat for the Northern Bobwhite Quail. Other wildlife and essential pollinators like birds, bees, moths, and bats benefit from longleaf forests.

Several sites under public and private ownership offer an opportunity to experience the longleaf forest habitat of southeastern Georgia. Active forest restoration and management practices can be observed, including the vital

role of prescribed fire application. Under controlled conditions, fire is used to mimic the effects of historic lightning fires to create optimum habitat for plants and wildlife of the longleaf savannas, woodlands, and flatwoods.

This is a general guide to areas of interest with public access in or around the Ft. Stewart/Altamaha Longleaf Restoration Partnership landscape. The Partnership provides project coordination, technical support, learning opportunities, and leveraged resources for private and public lands in Southeast Georgia to conserve, sustain, and improve the longleaf pine ecosystem. The team of agencies, non-profit organizations, private individuals, and business interests works within the 5-million-acre landscape in 28 counties.

Visitors are encouraged to contact agencies and organizations for the latest information and updates for access and a safe and enjoyable experience when visiting these longleaf sites.



A.



B.



E.



C.



D.

A. Charred stump surrounded by palmetto fronds at Broxton Rocks Preserve (Randy Tate) B. Hooded pitcher plant at General Coffee State Park (Braxton Barden) C. Groundcover seed harvesting at Fort Stewart (Jacob Barrett) D. Diverse groundcover at Moody Forest (Carol Denhof) E. Gopher tortoise at General Coffee State Park (Braxton Barden)

Fort Stewart

Fort Stewart-Hunter Army Airfield is a 280,000-acre military installation between the cities of Richmond Hill and Glennville and in the counties of Bryan, Evans, Liberty, Long, and Tattnall. It has the largest tract of longleaf pine under single ownership in the state. It harbors the second-largest population of the endangered Red-cockaded Woodpecker, and large gopher tortoise and Eastern indigo snake populations.

Fort Stewart is open to the public for recreational purposes (hunting, fishing, and nature watching). However, access is restricted to those who possess a Fort Stewart iSportsman recreational permit. To acquire a permit, visit fstewart.isportsman.net/

Broxton Rocks Preserve

Located in Coffee County, The Nature Conservancy's (TNC) Broxton Rocks Preserve is 125 miles from Jacksonville, Florida, and about 170 miles from Atlanta. This 1,650-acre preserve has sandstone outcrops and blackwater streams along Rocky Creek, rolling longleaf pine-wiregrass woodlands, and pitcher plant seepage bogs. The Preserve is home to the Eastern indigo snake, gopher tortoise, and Eastern diamondback rattlesnake.

A one-mile trail from the Preserve gate (31°43'37.5"N, 82°51'56.2"W) to the falls is open to the public. The forest area along the trail is being restored to longleaf pine and wiregrass. Note: The trail to the falls is not clearly marked following a recent thinning. TNC management advises you to follow the two-track road to the east until you reach the sign that says, "Trail to Falls."

www.nature.org/en-us/get-involved/how-to-help/places-we-protect/broxton-rocks

George L. Smith State Park

George L. Smith State Park is a 1,634-acre state park in Emanuel County best known for the refurbished Parrish Mill and Pond, a combination gristmill, sawmill, covered bridge and dam built in 1880. With seven miles of hiking trails, there is much more to see, including longleaf pine sandhill habitat where gopher tortoises reside.

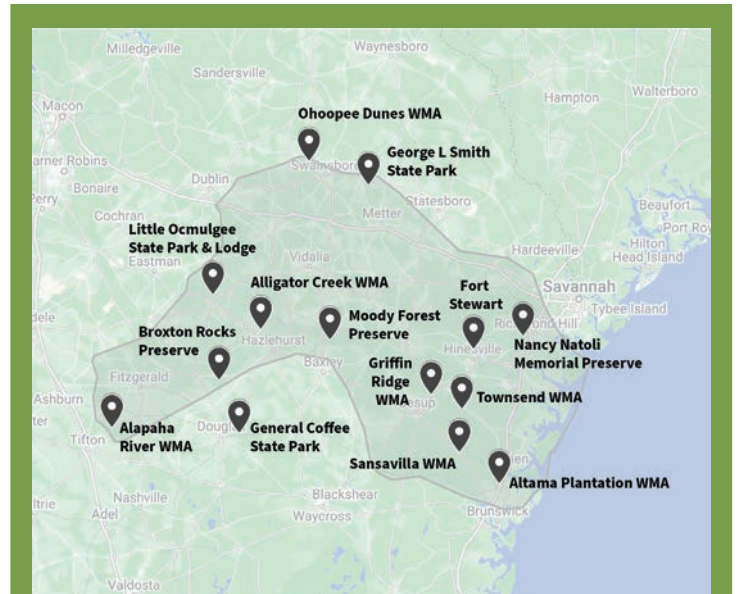
The Park offers lakeside camping and cozy cottage rentals, making it a perfect retreat for adventuring in South Georgia. Park hours are 8am-5pm, with a \$5 parking fee. gastateparks.org/GeorgeLSmith

Alapaha River Wildlife Management Area (WMA)

The Alapaha River Wildlife Management Area encompasses 6,870 acres of state-owned land managed by the Georgia Department of Natural Resources. Its namesake, the Alapaha River, serves as the border along Irwin and Tift Counties, between Tifton and Ocilla.

Sandhills dominate the landscape with approximately 4,726 acres of upland pine forest and 2,143 acres of bottomland hardwood forest, creek drains, and cypress/gum wetlands. Numerous rare species are found on the site, and the density of gopher tortoises is outstanding – one of the highest in the state. The area was once managed for longleaf pine turpentine production (until the 1960s) and is the site of foundational research on the Eastern indigo snake and the gopher tortoise.

Please remember that all wildlife species, including snakes, are protected unless their take is specifically authorized in the WMA regulations. georgiawildlife.com/alapaha-river-wma



For the complete guide to longleaf sites with public access in and around the Ft. Stewart/Altamaha Longleaf Conservation Partnership landscape, visit <http://longleaf.info/ftsa>

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By Lynnsey Basala, Vice President for Development, The Longleaf Alliance

Shop - Conserve - Restore

The Longleaf Alliance launched the Inaugural Online Auction in 2021 to showcase our members' and conservation partners' talents and goods and raise vital funds to continue our on-the-ground longleaf pine ecosystem restoration and conservation efforts. The Online Auction has become a biennial tradition to bring the longleaf community together for friendly bidding wars in the years we are not hosting the Biennial Longleaf Conference.

This year's Online Auction took place Monday, July 17 – Sunday, July 23, with nearly fifty items up for bid. Our hottest auction item was an ancient longleaf pine cross-section donated

by Tall Timbers Tree-ring Lab, Dr. Jean Huffman. The rings date to 1501-1713; after 63 bids, the roughly 15" diameter and 1" thick longleaf pine cross-section sold for \$6,050! One lucky bidder won this awe-inspiring piece of longleaf pine history.

Due to the generosity of our incredible supporters, we doubled our \$10,000 goal. Bidders stretched their donations further because Bartlett Tree Experts matched the collective highest bids up to \$7,500. Just wow! Thank you for sharing the event on social media, donating, purchasing items, and wishing The Alliance luck with this effort.

The following donors supported this special fundraiser.



Abigail Dowd,
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We are looking ahead and gathering auction items for the 15th Biennial Longleaf Conference in October 2024. Please contact Lynnsey@longleafalliance.org if you would like to contribute any of the following: artwork, longleaf-themed goods, outdoor experiences and equipment, apparel, literature, relics, tech gadgets, and more. We are open to suggestions.

THE LONGLEAF ALLIANCE BOARD OF DIRECTORS

Welcomes New Members

The Longleaf Alliance is pleased to welcome two new members to our Board of Directors. Lucretia Norman and Van Pittman began their terms on October 1st. Board members are selected based on their ability to contribute through experience, wisdom, talents, personal contacts, and willingness to support The Alliance and its goals.

We extend a heartfelt thank-you to Craig Blair, Angus Lafaye, and Marc Walley for their numerous contributions to the Board.



Lucretia Norman's connection to the natural world and longleaf pines began with exploring her grandparents' farm in North Florida at an early age. After receiving a degree in biology with an emphasis on ecology from Jacksonville University, she worked in management for an orthopedic group. Lucretia currently serves as a Charlton

County, Georgia District Supervisor for the Satilla River Soil and Water Conservation District. She shares her residence between Jacksonville, Florida, and her tree farm in Folkston, Georgia, which she manages alongside her husband, Lynn. The Norman family, including Lucretia's three children and seven grandchildren, love spending time at the farm and helping with the management, especially prescribed burning. Lucretia's hobbies (painting, fishing kayaking, upland hunting, gun sports, and tennis) allow her to spend a lot of time outdoors. She also enjoys making game sausages and preserving fruits and vegetables. Lucretia's love of nature and a desire to help the environment led her to become part of the national effort to conserve and restore longleaf pine forests throughout the Southeast.



Van Pittman, a seventh-generation Floridian from Tampa, grew up spending his weekends hunting on his family's ranch just outside of Brooksville, Florida. His early fascination with the outdoors ignited a passion for ecology and a determination to enhance the wildlife habitat on their property. This commitment has driven him for over a decade,

striving to restore the land to a more native and wildlife-friendly state, but with a mandate to do so in a financially rewarding way. Van recognizes the immense potential for landscape-level ecological improvement at the convergence of conservation and finance, commonly known as "Ecosystem Services." He pursues this objective through various avenues, including converting improved pastures into longleaf plantations, wetland mitigation banking, conservation banking, and carbon sequestration. As an advocate for the Florida Wildlife Corridor, Van champions the preservation of interconnected natural landscapes throughout the state. He firmly believes in the importance of conserving privately owned native landscapes, which are rapidly vanishing due to widespread development. Having previously worked in private equity and private credit funds, Van now serves as an Associate at Bourne Partners, managing investments for the founder's family office in Charlotte, NC.



TRANSITIONS WITHIN THE ALLIANCE

Julianne Jones, Biological Restoration Technician

Julianne Jones joined the *Ambystoma bishopi* (AMBBIS) Restoration Team, or A.R.T. for short, in July. Julianne is a naturalist from southeast Virginia and a 2023 graduate of Old Dominion University with special interests in herpetology and restoration. During her undergraduate career, she spent a season as a volunteer wildland firefighter and thesis researcher in Virginia's remaining longleaf ecosystems. In her free time, she enjoys field herping and wildlife photography. Welcome Julianne!

Susan French transitioned to Restoration Coordinator, a new TLA position focused on developing and implementing strategies and programs that promote, sustain, and increase longleaf restoration, longleaf seedling capacity, and

understory species supply. Susan previously served as the Georgia Sentinel Landscape Pilot Project Coordinator. Congrats, Susan!

On staff with The Alliance since 2016, **Lucas Furman** began as an Ecosystem Support Team (EST) member in the GCPEP landscape. In 2017, he moved to start and grow our GIS Program supporting TLA and regional longleaf projects. In his seven years with The Alliance, Lucas dedicated his energies to sustaining our mission by making us better, more productive, and more connected. Lucas recently took a position with EagleView, a geospatial technology company. We thank him for his time with TLA and wish him well in his new endeavors!

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J.R.R. Tolkien

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THE Owen Fellowship

OF THE LONGLEAF ALLIANCE



Photo by Forest Landowner Magazine

"I'm obviously passionate about longleaf but am also passionate about education. I decided to combine these two with a bequest to The Longleaf Alliance to endow a scholarship for advanced studies in the longleaf ecosystem." William Owen

Now in its second round, The Owen Fellowship of The Longleaf Alliance is an exciting program we are proud to offer in conjunction with the 15th Biennial Longleaf Conference to be held Fall 2024 and subsequent conferences. The Biennial Longleaf Conference is The Longleaf Alliance's regional event, the largest and longest-running longleaf event in the country.

The award will be given to a graduate student in the amount of \$20,000. The recipient will attend the 2024 conference, submit an article for publication in *The Longleaf Leader* quarterly magazine, and will submit a poster and presentation about the research at the 2026 conference.

Dr. William Owen is a professional musician, educator, and landowner in Virginia. Through his work on the Board of Directors of The Longleaf Alliance, he was inspired to endow a fellowship for advanced studies and research in the longleaf pine ecosystem. He hopes The Owen Fellowship will encourage the next generation of longleaf leaders.

Required Application Materials

- Applicants must be a member of The Longleaf Alliance (\$25 student rate).
- A proposal describing the research project and the specific funding needs (2-page, single-spaced maximum). Relevance of the research project to the protection, management, and range wide impact of the longleaf pine ecosystem must be clearly stated.
- Applicants must identify all other current funding for their research and justify the need for The Owen Fellowship Award. Salaries not supported. Biennial Longleaf Conference expenses are covered by TLA and William Owen. You may include participation in other conferences in your proposed budget.
- A curriculum vitae.
- A letter of support from the faculty advisor overseeing the research.
- An unofficial transcript.
- A high-resolution photo of the applicant.
- Brief project synopsis.

Complete applicant form and submit required materials at <https://longleaf.info/fellowship>. Please contact Lynnsey Basala, Vice President for Development, at Lynnsey@longleafalliance.org with questions.



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TIMELINE

of Pertinent Dates



● Applications received
September 1, 2023 - January 12, 2024.

● A committee will review applications **January 15 - March 29, 2024.**
There will be a required Zoom interview for Semi-Finalist Candidates.

● Fellowship Award Recipient announced on **April 1, 2024.** \$10,000 fellowship award will be disbursed by **June 1, 2024.** Awardee must attend the 15th Biennial Longleaf Conference in **Fall 2024.**

● \$10,000 fellowship award will be disbursed by **June 1, 2025.**

● Awardee must write an article for publication in *The Longleaf Leader* quarterly magazine in **Fall 2025.**

● Awardee must present research at the 16th Biennial Longleaf Conference in **Fall 2026.**

ALL IN FOR LONGLEAF

By Lucretia Norman



Granddaughters Grace and Sammy looking at the field of young longleaf pines {Lucretia Norman}



A.



B.



C.

A. Lucretia's son Greg hikes by the Satilla River with granddaughter Mary. Multiple generations of the Norman family, and their friends, enjoy spending time on the farm. {Lucretia Norman} B. Hunting and gun sports are shared passions in the family. {Lynn Norman} C. Lucretia and Lynn Norman are certified burners in Georgia. {Lucretia Norman}

My interest in nature and conservation began at an early age. Growing up in North Florida, my fondest memories were exploring the woods at my grandparents' farm. I was in awe of the longleaf pines and the wildlife there. It wasn't unusual to flush a covey of quail or spot a gopher tortoise. Some days I was able to spot the elusive indigo snake. Here was where my passion began.

After receiving a degree in biology with an emphasis on ecology at Jacksonville University in 1976, I worked in management for an orthopedic group until 2017. In 2012, I picked up the book *Longleaf, Far as the Eye Can See*, which rekindled my desire to help conserve the longleaf pine ecosystem. The following year I was fortunate to acquire 1,200 acres of a poorly managed loblolly tree farm in Folkston, Georgia. It was overgrown and seemed devoid of wildlife. Two hundred and forty acres had been clearcut approximately five years before our purchase and had not been replanted. My desire was to reforest this area in longleaf and eventually convert the loblolly stands into longleaf.

So, I started my journey into forest management by taking every course The Longleaf Alliance had to offer. I welcomed and appreciated assistance from the National Wild Turkey

Federation biologist, the Natural Resources Conservation Service (NRCS), Tall Timbers, Georgia Forestry Commission, and The Longleaf Alliance. In 2013, my husband, Lynn, and I enrolled in Georgia's Prescribed Fire Certification Course. We are now burn certified and have completed many prescribed burns on our property. Through proper forest management, which includes reforestation, prescribed fire, and sowing wildflower seed mixes, we now have a beautiful longleaf and loblolly pine plantation. A more diverse understory that includes wiregrass and other beneficial plants for game and nongame species has developed. It is not unusual to flush Bobwhite Quail while walking through the woods. Wild Turkeys are abundant, as well as other native birds, because of our woodland conservation practices.

We have three children and seven grandchildren (ages 1-10) with whom we have instilled a love of nature. They take an active role in helping us manage the farm, and our seven and ten-year-old grandchildren have helped with the prescribed burns. We take nature walks where we identify various flora and fauna that reside on the property. Seeing them experience and share the outdoors with their friends is encouraging. They are the future.

