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COVER Young longleaf reclaiming the shore of Hurricane Lake, in the Blackwater River State Forest of Florida. Longleaf forests yield cleaner, more abundant water than other forest types. Photo by Ad Platt.

The Longleaf Leader (USPS#) is an official publication of The Longleaf Alliance, 12130 Dixon Center Road, Andalusia, Alabama 36420 and is published 4 times a year. The Longleaf Alliance reserves the exclusive right to accept or reject advertising or editorial material submitted for publication. Advertising rates quoted upon request. Postmaster: Send address changes to The Longleaf Alliance, Address 12130 Dixon Center Road, Andalusia, Alabama 36420. Periodicals Postage Paid at Montgomery, Alabama.

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The Longleaf Alliance PRESIDENT'S MESSAGE



CAROL DENHOF

Learning from Longleaf – Staying Strong, Persistent, and Hopeful During Adversity



The first six months of 2020 have been anything but ordinary. Lives all around the globe are impacted by COVID-19, many more severely than others. Our hearts go out to the families who have lost loved ones and others that are suffering as a result of the pandemic.

Like you, we have adapted our schedules and routines to keep our offices

open and to safely and prudently make progress where we can in restoring longleaf across the region. Throughout the spring, our staff worked remotely, went out into the woods to advance our field projects, and remained available, providing valuable technical assistance to all that are working to restore longleaf. Like many of our partner organizations, The Longleaf Alliance canceled or postponed spring in-person events. We hope to reschedule some of these workshops and meetings when appropriate.

As we looked towards the fall and our 13th Biennial Longleaf Conference in October, we decided to go virtual! The virtual format will better accommodate the diverse situations of longleaf enthusiasts across the range. Even though we will be disappointed not to see you all in person, we are excited to explore this new platform and create a unique program that will provide everyone with an engaging and interactive experience. Stay tuned to the conference website for updates (longleafconference.com).

Health concerns and social isolation are not the only stressors

of 2020. Financial insecurities loom. Severe weather and natural disasters increasingly impact our properties. Emotional conversations addressing racial injustice and systemic racism challenge each of us to look within ourselves and our organizations to determine how we can contribute to meaningful solutions. Since our founding in 1995, we have worked with all landowners and partners to provide scientifically sound guidance, and it is my hope that all who are passionate about restoring longleaf, regardless of skin color or socioeconomic status, feel welcome to become a part of The Alliance.

I often look to the longleaf pine tree itself for lessons in strength and resilience. We have a great deal to learn from these trees that have adapted over the millennia to withstand all manner of disturbance, be it fire, weather, or pest related. Seeing a young grass stage longleaf bounce back following a prescribed burn gives us hope that we are all stronger than we look and can handle the issues that life throws our way. We also know that there would be no longleaf pine ecosystem if not for all the individual organisms that make up that community. Every piece is essential, just as all who live in our communities are important. Times like now, this is especially evident. We must all work together to make our communities healthy and strong to move forward.

Advice from a Longleaf Pine™

Stand tall
Keep cool under fire
Take the heat and come back stronger
Be a leader in your community
Stay in it for the long run!

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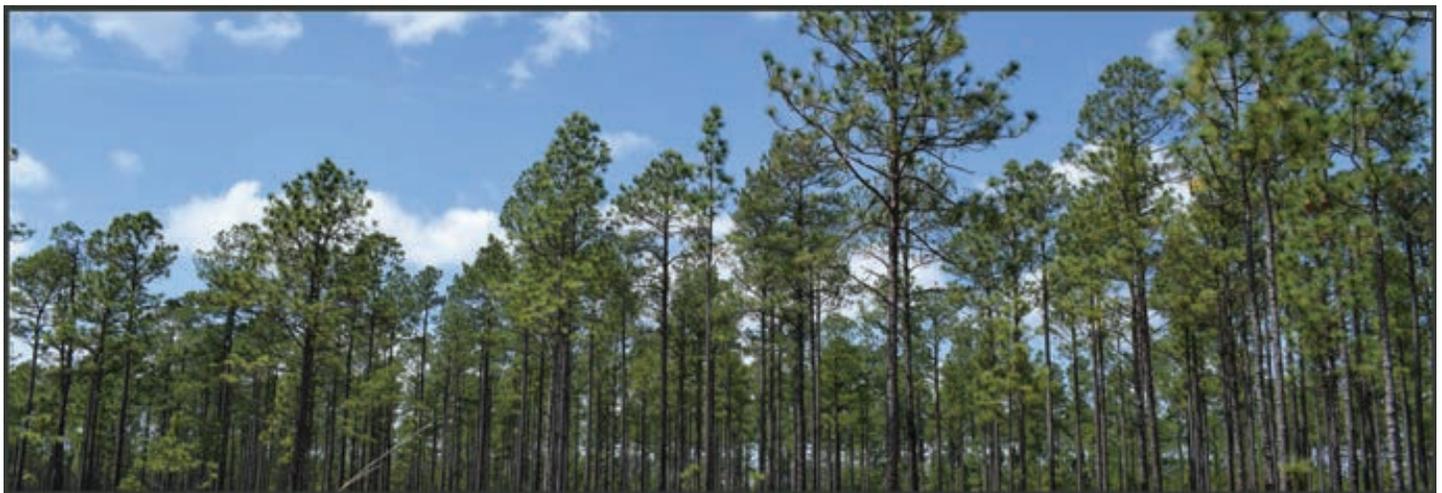
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13th BIENNIAL LONGLEAF CONFERENCE

OCTOBER 20-23,
2020



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VISIT WWW.LONGLEAFCONFERENCE.COM FOR UPDATES.

2020 | Calendar

UPCOMING EVENTS

August 12

North Carolina Prescribed Fire Council
Annual Meeting (virtual)
ncprescribedfirecouncil.org

September 8 – 9

South Carolina Prescribed Fire Council
Annual Meeting
scpfc.weebly.com

September 24 – 26

Southeastern Environmental Education
Alliance Conference
Columbia, South Carolina
eeasc.org/conference

September 30

Georgia Prescribed Fire Council
State-wide Meeting
garxfire.com

October 20 – 23

13th Biennial Longleaf Conference
Virtually Anywhere
longleafconference.com

November 12

Longleaf Pine Seminar
Autaugaville, Alabama
alaforestry.org

November 17 – 19

Longleaf Academy: Fire & Longleaf 201
Georgia, TBD
longleafalliance.org

In cooperation with our partners, our spring and summer longleaf academies were canceled or postponed due to COVID-19. We hope to reschedule these trainings when normal activities resume.

Events are subject to change. Please visit the websites listed for the most up-to-date information.

SUMMER 2020 MANAGEMENT CHECKLIST

- **Evaluate young stands:** Inspect new longleaf plantings and plan future treatments if problems are noted. Mow or spray problematic species such as crabgrass, coffee weed, partridge pea, hairy indigo, and other emergent weeds.
- **Prepare for planting longleaf:** Secure soil samples for selected longleaf restoration sites. Subsoil or rip sites with hardpans early to allow time for the furrow to settle.
- **Order longleaf seedlings** for upcoming plantings; nurseries may sell out their entire inventories early. A list of preferred nurseries can be found at — www.longleafalliance.org.
- **Herbicide treatments:** Secure contractors for any chemical site-prep treatments. For maximum efficacy, foliar active herbicides such as glyphosate (Roundup®/Accord®) should be applied to actively growing pasture grasses at their most receptive stage. If targeting waxy species, triclopyr (Garlon®) may be applied now or delayed until after the first frost to minimize impact to herbaceous groundcover.
- **Spray invasive species** such as kudzu, cogongrass, bermudagrass, Japanese climbing fern, bahiagrass, and fescue. Repeated applications will likely be necessary to combat these problematic species.
- **Prescribed fire:** Burn wiregrass and native groundcover to maximize fall seed production and viability.
- **Conduct a seedbed preparation burn** on mature longleaf stands with good cone crops before seed fall (October/November). The goal is to increase the likelihood that longleaf seed falls on bare mineral soil, but not have the seedbed so clean that predators can easily find and destroy most of the new seed.
- **Order native seed for understory restoration:** Seed from local ecotypes and endemic species is limited and expensive. Although some landowners have the time and expertise to collect their own, the most restoration will occur with purchases from the few seed companies that sell southeastern sourced seed.
- Too hot to go out? Now is a great time to develop or **update your management plan!** There are numerous partner organizations willing to help, and often incentives to assist.

Q&A

Q. Dear Longleaf Alliance,

I have a five-year-old stand of longleaf pine planted in an old pasture near Springfield, Louisiana. The trees had excellent survival, and most were growing in height by the third growing season after planting. They've been burned twice and now range between 3-8 feet in height. Recently, I've noticed very scattered top dieback with occasional branches dying. Upon a closer look, I find tent-like webbing around some of the tips that died and something that looks like a combination of reddish-looking grit and sawdust around the base of the dead tip. What's going on here? Should I be worried that this will spread?

Concerned in Springfield

A. Dear Concerned,

We are pleased to hear your trees are off to a great start! You were wise to get prescribed fire into your young longleaf stand early. That kept brown spot needle blight at bay and reduced competition, which can be fierce on a fertile site like an old pasture. However, at The Longleaf Alliance, we receive numerous calls about insect and disease issues on these former agriculture crop fields and pastures. It seems that the residual fertility attracts insect and disease problems.

From your description and pictures of the tips of the tree and affected branches, we think coneworm larvae (*Dioryctria* spp.) are the likely culprit. Coneworms are the larval form of one of the six species of pitch moths – which occasionally get into longleaf pine of various ages and sizes, though all southern yellow pines can serve as hosts. The most common symptom is large masses of pitch oozing from caterpillars' feeding sites and their brownish frass, that reddish-looking grit you mentioned. Very few people ever see the caterpillars, but they do their damage by feeding within the cones or inner bark of shoots, branches, and

stems. For young longleaf like your stand, the damage is observed on the terminal buds and elongating shoots; for mature pines, damage can also occur on the flowers and immature cones.

Pine coneworms are a major pest in seed orchards managed at high levels of fertility and can cause economic losses. Outside of seed orchards, damage is rarely severe enough to cause mortality. What usually happens is dieback of branches and treetops. These injury points can

be an entry point for pitch canker fungus, *Fusarium subglutinans*, which can be another problem on high fertility, old field sites.

We suggest that you monitor the site for spread. Trees significantly weakened by pine coneworm damage will usually fall behind in growth and most likely die in subsequent prescribed fires or in competition with your more vigorous trees. Those that survive until the first thinning can then be harvested, taking out the weaker and defective pines and leaving the better-quality trees to grow.

The problem can look serious, but we've never seen a significant pine coneworm infestation that affected more than 2-3% of a seedling and sapling longleaf stand. Spraying an insecticide is not usually warranted, except for high-value landscape pines and in seed orchards. Besides the additional expense of spraying to control, the application will probably reduce the normal predator population and likely make the problem worse. Moreover, these restricted chemicals require a pesticide applicator license to purchase and are not available to non-licensed individuals.

If you'd like to learn more about pine coneworms, please contact The Longleaf Alliance or your local County Extension Agent or Forestry Commission representative. An online resource that is always interesting is southernforesthealth.net.

Sincerely,
The Longleaf Alliance



Brownish frass from coneworms around the terminal bud of a longleaf branch. Photo by Drew Woodham, Southeastern Forestry Consultants.



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By Carol Denbof, *The Longleaf Alliance*

PLANT SPOTLIGHT

Rhynchosia reniformis DC.

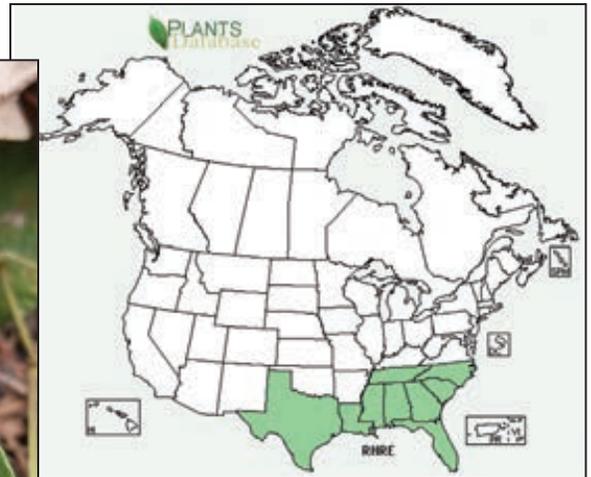
Dollarleaf

Legume Family – Fabaceae

Bright yellow flower of dollarleaf.
Photo by *The Longleaf Alliance*.



Fruit of dollarleaf. Photo by Carol Denbof.



Map showing distribution of dollarleaf.
USDA PLANTS Database.

Description

Dollarleaf is a member of the legume family and is a bit different from many of our legumes in that it has a simple leaf as opposed to a tri-foliolate leaf. This perennial herbaceous plant has relatively short stems (3-7 inches tall) that are densely hairy. As the scientific name indicates, the simple leaf is kidney shaped with a wrinkled surface and can measure up to 2 inches wide. Its bright yellow, pea flowers can be seen from June to September. The flowers and subsequent pea pods are borne on short stalks and are tightly clustered around the leaf axils.

Distribution & Habitat

This species of *Rhynchosia* occurs in a wide variety of longleaf habitats, from dry to mesic soils. It can be found in most of the longleaf range from North Carolina south to Florida and west to Texas.

Wildlife/Medicinal Uses

The seeds produced by *Rhynchosia* species are generally good food for the northern bobwhite quail, other songbirds, and mammals. They are also utilized as an important forage plant for white-tailed deer.

Plant Availability

Dollarleaf is not generally available commercially.

References

- Miller, J.H. and K.V. Miller. 2005. *Forest Plants of the Southeast and their Wildlife Uses*. The University of Georgia Press. Athens, GA. 454pp.
- Sorrie, B.A. 2011. *A Field Guide to Wildflowers of the Sandhills Region: North Carolina, South Carolina, and Georgia*. The University of North Carolina Press. Chapel Hill, NC. 378 pp.
- USDA, NRCS. 2020. The PLANTS Database (plants.usda.gov, 11 May 2020). National Plant Data Team, Greensboro, NC 27401-4901 USA.

WILDLIFE SPOTLIGHT



Recovering the Florida Bog Frog

By Nicole Barys, The Longleaf Alliance

Mechanical restoration activities in bog frog habitat facilitate reintroduction of prescribed fire and promote herbaceous species growth, which assist with regulating the seepage hydrology of bogs in the small floodplain of the seepage stream. Pictured to the right of Ed O'Daniels, The Longleaf Alliance, is a blooming white top pitcher plant (Sarracenia leucophylla). Photo by Nicole Barys.

Meet the frog

With its small size, secretive habitats, and limited distribution, the Florida bog frog (*Lithobates okaloosae*) may not be what most people think of when asked about amphibians associated with longleaf pine ecosystems. Adding to that, the species was first recognized and described in 1985. These frogs utilize a type of embedded wetland within the longleaf pine landscape, called seepage streams. In these streams, particularly in lower-order streams, water flows laterally into the main channel, from the banks of the wetland. This shallow, slow seep creates an acidic bog, full of carnivorous plants, mosses, and herbaceous species.

The Florida bog frog utilizes shallow pools found in these seeping bogs to lay their eggs away from the stream's main channel. They breed during the warmer months of the year, with activity starting as early as late March and ending as late as the middle of October. This species appears visually similar to the bronze frog (*Lithobates clamitans*). The bog frog can be distinguished by highly reduced (almost absent) webbing on

the back feet. By avoiding deeper water, the bog frog does not need the large webbing seen on other frogs of the same genus, such as bronze frogs or leopard frogs (*Lithobates sphenoccephalus*). Hybrids of the Florida bog frog and bronze frog are known to occur; however, these hybrids are believed to be incapable of reproduction.

Bog frog on the decline

These small frogs are on the decline for a multitude of reasons, mostly associated with habitat loss or degradation. The total distribution of the Florida bog frog occurs between two rivers in the Florida Panhandle, spanning three counties: Santa Rosa, Okaloosa, and Walton. Fortunately, most of its current distribution is on protected land. However, habitat degradation through fire suppression has caused plants such as sweetbay magnolia (*Magnolia virginiana*), red titi (*Cyrilla racemiflora*), and black titi (*Clyttonia monophylla*) to grow unchecked, altering the soil hydrology of the seeping acidic bogs. Feral hogs (*Sus scrofa*) pose an additional threat to the bogs, by uprooting large



An adult male Florida bog frog (Lithobates okaloosae), sitting in a breeding pool trying to attract a female. Photo by Nicole Barys.



A Florida bog frog egg mass: the eggs are deposited in shallow pools of soft mud and algae in seepage bogs occurring along the margins of seepage streams. Photo by Nicole Barys.

expanses of critical wetland habitat in a short period. Hydrology of the seepage streams and bogs may also be impacted by alterations to the water table, either by damming of the rivers on which they occur or through excessive groundwater withdrawal from communities near the Florida bog frog's occupied locations.

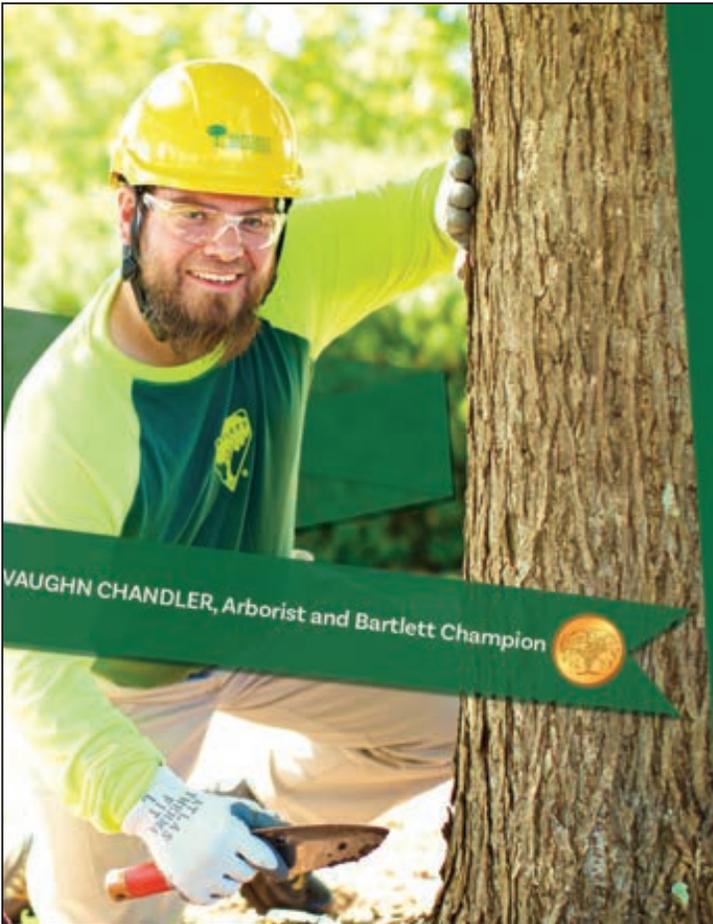
Despite all of these threats, efforts are underway to protect the species. The Longleaf Alliance's Wetland Ecosystem Support Team (WEST) has conducted work with partner agencies to restore habitat for the bog frogs, through improving and connecting occupied sites. This involves going in with a small chainsaw crew to cut out overgrown woody species of plants that consume too much water. Only footwork is used, to avoid excessive disturbance to the hydrology of the seepage bogs. Additional care is taken to avoid damaging rare and sensitive plant species, such as the white top pitcher plant (*Sarracenia leucophylla*) and pink pitcher plant (*Sarracenia rosea*). Cutting the trees also allows sunlight to reach the bog's fine fuels, allowing the sun to cure the fuels. The removed vegetation is strategically placed in nearby uplands or locations with no ground cover, in a way to enhance desirable fire effects. At a later date, prescribed fire is applied to these locations. The frogs are able to shelter from the fire by burrowing into sphagnum moss that is too saturated to burn, or by jumping into the water. During surveys for the species, the WEST team and partners found the frogs utilizing sites with recent restoration activities.

Why restore bog frog habitat?

Some people may wonder why they should care about such a small frog, and why money should be spent to save it. Restoration activities for the frog meet multiple different objectives. The Florida bog frog may be considered an umbrella species,

or a species that by managing for it, many other species benefit. The sensitivity of the Florida bog frog to precise environmental conditions means that if the frog is thriving, the habitat is in a relatively healthy condition. By managing large sections of watersheds for ideal Florida bog frog habitat, ideal environmental conditions can also be met for waterfowl, turkey and bobwhite quail, deer, black bears, and fish. A healthy seepage bog will also act as a filter for the water that feeds our rivers. The seepage bogs also help to stabilize the banks of creeks by reducing erosion and trapping sediment. The erosion control and water filtration properties of seepage bogs help improve river health, which impact local bays and beaches, large economic assets to the region. Opening the canopy of seepage streams that have been fire suppressed, and restoring bogs, can also have beneficial aspects for pest control such as cutting down on disease-carrying mosquitoes. The improved habitat allows for an improved predator-prey dynamic between mosquitoes and their predators.

While restoration work is advancing to protect the species, there is still a lot left to do. The Longleaf Alliance's WEST will continue to help local land managers in the restoration and protection efforts for the Florida bog frog. Hopefully, this state-threatened species can be kept from becoming an endangered species through continued efforts and the proper application of prescribed fire. The Gulf Coastal Plain Ecosystem Partnership thanks the Florida Fish and Wildlife Conservation Commission State Wildlife Grant program and the U.S. Fish and Wildlife Service for providing the funding that makes this important work possible.



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MISSION TO REVITALIZE OUR COMMUNITIES, MOUNTAINS & RIVERS.

By Steven Brantley, PhD, and Stephen W. Golladay, PhD,
The Jones Center at Ichauway

Longleaf Pine Restoration for Water Resources

Longleaf pine woodlands are characterized by relatively low density of the trees and continuous groundcover. This structure is ideal for supporting high water yield. Photo by Stephen Golladay.

Water is an essential element for all life on Earth. While two-thirds of the Earth is covered with water, freshwater resources are surprisingly scarce. Globally, humans are already using more than half of the available freshwater every year. The Jones Center at Ichauway has long recognized this issue and developed an integrated water research and education program to address these issues. We use our study area, the lower Flint River Basin of southwestern Georgia, as a case study to understand the consequences of, and provide solutions to, problems of water scarcity. Our water program asks three fundamental questions:

- How does water availability change throughout the year, and what do these changes mean for rivers, streams, and wetlands?
- How do climate change and human water use affect water availability and quality in the region?
- What management and conservation actions are needed to provide for human and environmental needs?

This last question ties back to longleaf pine in some surprising ways.

Increasing water scarcity & higher water demand by modern forests

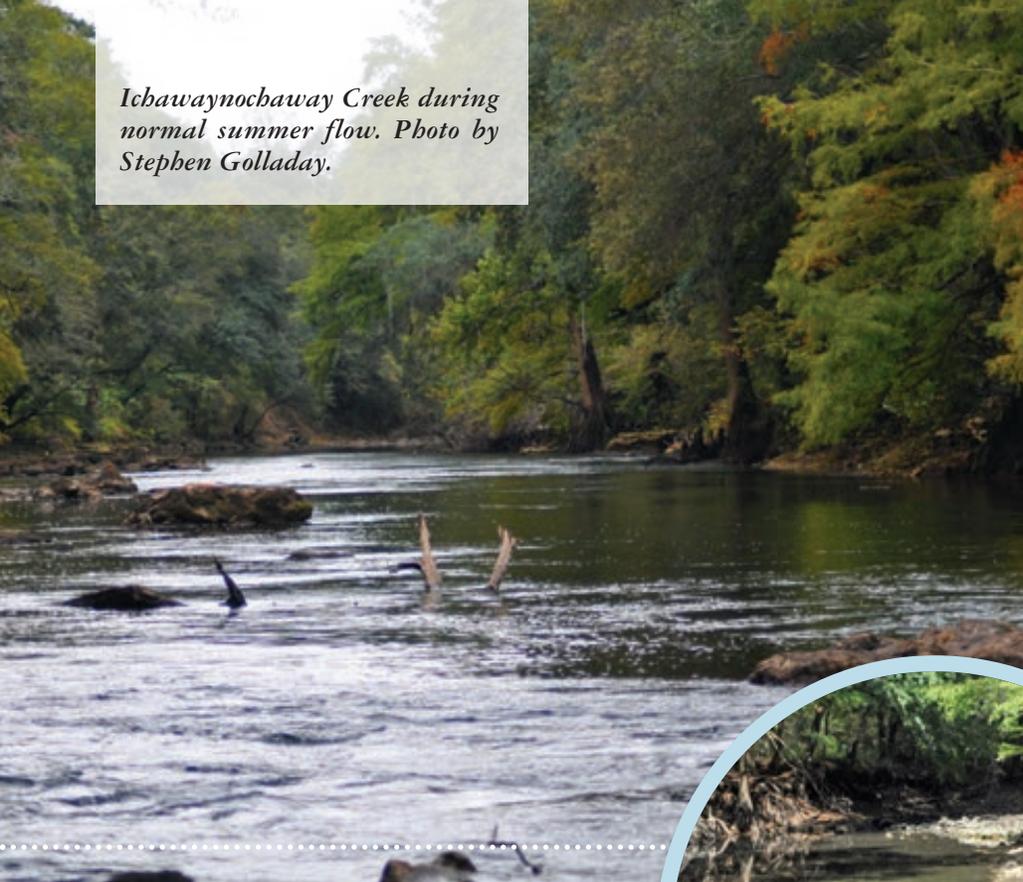
The southeastern U.S. receives abundant rainfall, but increasing human demand, climate change, and multiyear severe droughts have combined to create extended periods of water

scarcity. Recent droughts are more frequent and severe, and combined with rising temperatures are increasing the regional demand for water. We are seeing undesirable consequences, including degraded streams, rivers and wetlands, loss of native plants and animals, and threats to human health. While many of the water conservation efforts to date have focused on reducing agricultural water use, we must also recognize that forests are large water consumers. Changes in forest management over the last century, including loss of native longleaf forest, denser replanting for economic gain or carbon sequestration, and fire suppression, have all contributed to higher water demand by modern forests. Restoring longleaf pine may help mitigate stress on water resources and add resilience to threatened aquatic ecosystems.

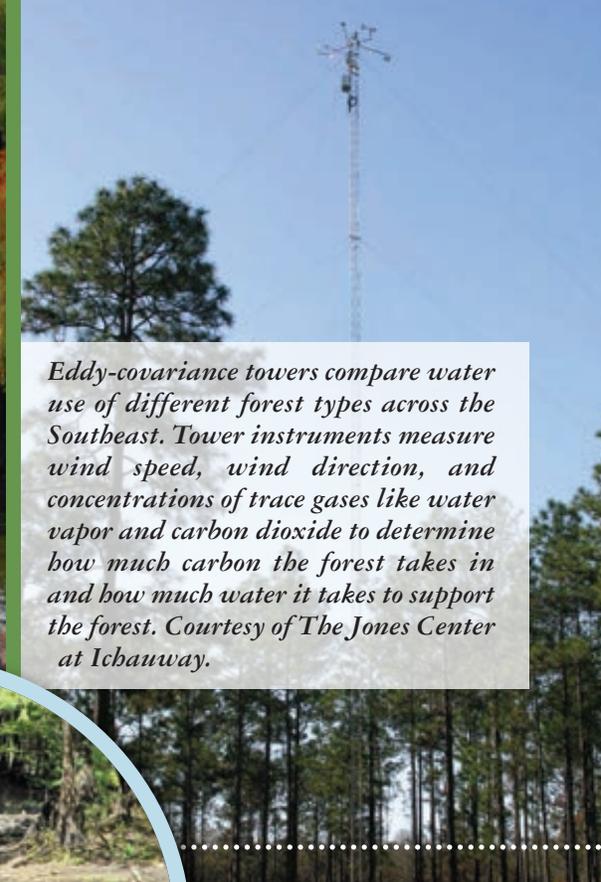
A water cycle refresher

While most types of forests benefit water quality, compared to alternate land uses like cities or farms, there are large differences in the amount of water consumed by different forest types. To understand why we must understand the basics of the hydrologic cycle. The ultimate source of water is rainfall in most of the Southeast. As rainfall passes through forests, much of the water is captured in the foliage of trees, shrubs, and grasses, and absorbed by leaf litter. Called “interception,” this water generally evaporates and never makes it into the soil. Water that does make it to the soil may then be taken up by plant roots and transpired through leaves to support metabolic

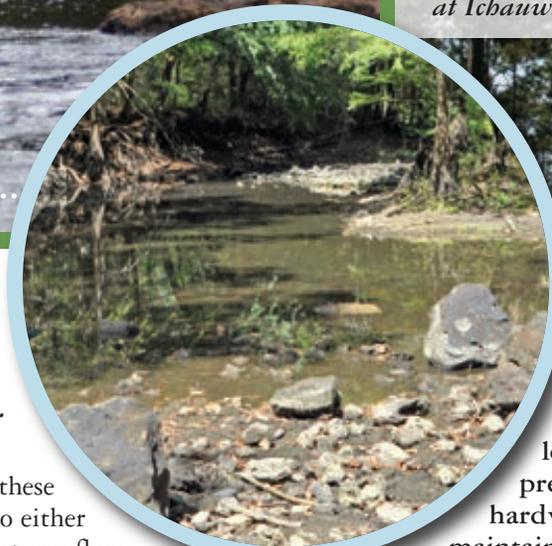
Ichawaynochaway Creek during normal summer flow. Photo by Stephen Golladay.



Eddy-covariance towers compare water use of different forest types across the Southeast. Tower instruments measure wind speed, wind direction, and concentrations of trace gases like water vapor and carbon dioxide to determine how much carbon the forest takes in and how much water it takes to support the forest. Courtesy of The Jones Center at Ichauway.



Chickasawhatchee Creek, a tributary of the Ichawaynochaway Creek, during the severe drought in summer 2011. Note the exposed rocks that would normally provide habitat for aquatic organisms. Photo by Stephen Golladay.



activity like growth. Water that makes it through these two barriers is free to percolate through the soil to either recharge groundwater, re-fill wetlands, or support streamflow. The difference between precipitation and combined transpiration and interception is often called “water yield.”

Why longleaf pine?

The benefits of longleaf pine forest restoration are obvious to many people: high biodiversity, protection of endemic species, excellent wildlife habitat, and the unique aesthetics of open pine woodlands. But longleaf pine may also provide benefits for water supplies. Thinking about the forest as a barrier to water movement, it naturally follows that forest structure affects how much precipitation is available to support aquatic systems. **In many ways, the structure of longleaf pine woodlands is ideal for supporting high water yield while also improving water quality.** The relatively low density of trees means that less water is used in transpiration, and the relatively open canopy means less water is lost to interception. Native groundcover and warm-season grasses like wiregrass may also have lower water use than a dense shrub understory common to many fire-suppressed forests. Wiregrass is both highly efficient in water use and relatively slow-growing compared to many other understory plants. Lastly, longleaf pine may be more responsive to drought in that it naturally slows down its metabolic activity when conditions become stressful. While this may slow longleaf growth, it also reduces forest

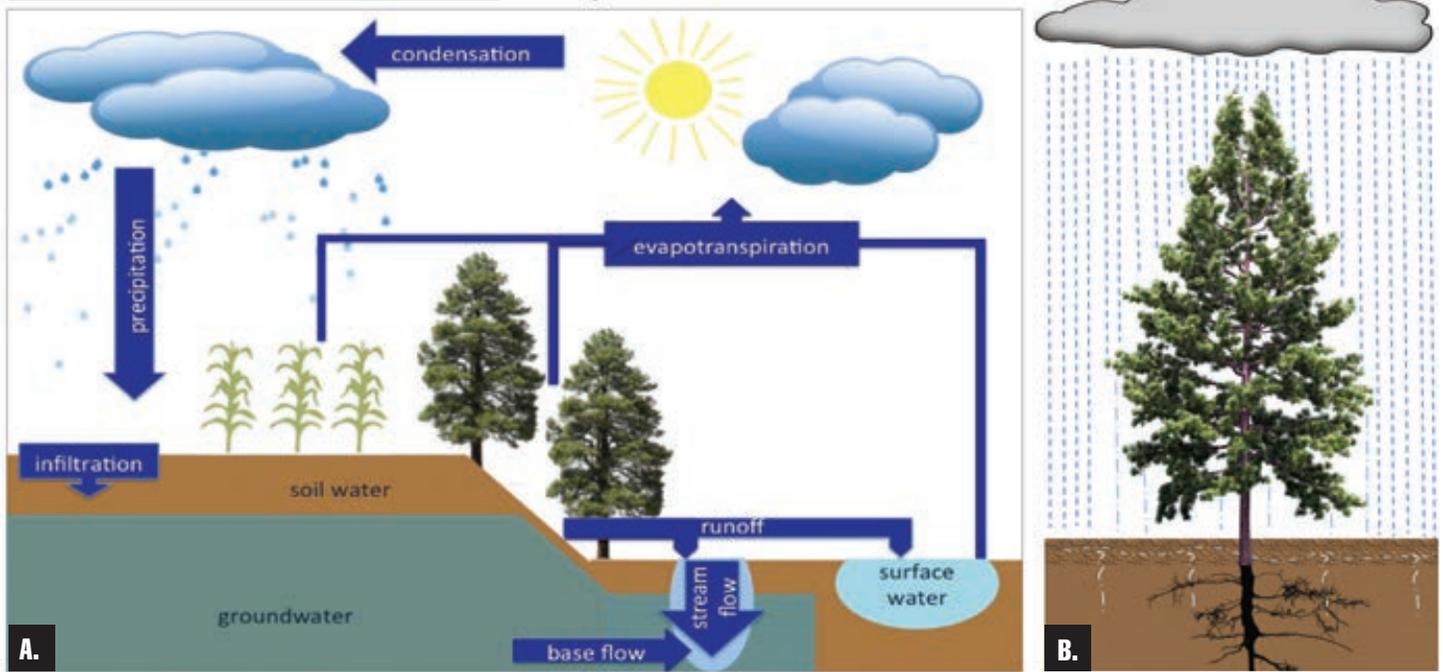
water consumption when water is most scarce.

On average, a stand of longleaf pine managed with prescribed fire to control hardwood encroachment and maintain native groundcover typically uses about 15% less water than a typical mixed pine-hardwood forest with no fire. And the same longleaf stand would use about 30% less water than a typical loblolly or slash pine plantation planted for commercial timber production (Brantley et al. 2017). In areas like southwestern Georgia, where transpiration and interception typically consume two-thirds of precipitation, these reductions can have a strong impact on water yield. And since streamflow is essentially just the leftover rainfall that is not used by vegetation or extracted by humans, reducing forest water use should naturally improve streamflow during times of similar rainfall.

What effect does longleaf restoration have on streams and wetlands?

The ideal way to answer this question would be a large-scale experiment that restores longleaf pine on hundreds of acres, and then measures stream responses against a reference watershed without restoration. Such an experiment is currently underway at Santee Experimental Forest in South Carolina, but those results will not be available for several years. To begin understanding the benefit of longleaf restoration in the meantime, we used a well-respected USDA streamflow model to understand how changing forest cover can improve streamflow. Such models are based on real-world processes

THE WATER CYCLE



A. The water cycle can be thought of as a simple budget. Incoming precipitation is balanced against the evaporation of water from land, including forests. What is left over contributes to groundwater, wetlands, streams, and rivers. Reducing evaporation through land management can increase water output. **B. What happens to rain when it comes into the forest? Much depends on the structure and density of trees.** A large portion of incoming rain never makes it to the ground as it is intercepted by leaves and branches and simply evaporates back to the atmosphere. Rainfall that does make it to the forest floor may be absorbed by the duff layer and evaporate or be taken up by tree roots and used by the tree. These processes can benefit water quality by slowing rainfall and protecting soil. But too much water use by forests can reduce water supplies. Courtesy of Stribling Stuber & Haley Ritger, *The Jones Center at Ichauway*.

like climate, soil variability, and vegetation cover, and allow us to test the effects of forest management on streamflow under a wide range of climate conditions. We tested whether longleaf pine restoration affected streamflow in our home watershed, the Ichawaynochaway Creek. This ~1,000 square-mile watershed lies squarely in the native range of longleaf pine forest, which has been reduced to less than 5% of its historic area. Our model showed that increasing longleaf cover to ~30% of the watershed reduced forest water consumption and increased streamflow by 9%. Maybe, more importantly, October streamflow increased by about 50%. This is critical since October is often the driest month of the year and the time when aquatic ecosystems are under the most stress. And this was accomplished by only converting other forest types to longleaf pine, thus leaving agricultural lands alone (Qi et al., in preparation).

Longleaf restoration can also have a major impact on how wetlands work. Although relatively small in area compared to the surrounding forest, geographically isolated wetlands are an important part of the longleaf pine landscape. These wetlands are known for extremely high biodiversity for both plants and amphibians. They can also take in and store large amounts of carbon and can help improve water quality. Many wetlands are slowly losing their ability to support amphibians and provide other ecosystem services due to lack of water during drought and increased water demand from climate change. However, longleaf restoration provides a potential remedy. Our research

shows that removing hardwoods like water oak and live oak, and reintroducing fire in the wetland “contributing area”—essentially the wetland watershed—reduces demand for water and improves wetland hydrology (Golladay et al., in revision). Improving land management around wetlands may mean earlier wet-up and longer inundation periods, both of which can help maintain wetland function.

Regional policy to support local solutions

If there is any perceived downside to restoring longleaf for water yield, it may come from the perception of longleaf as a poor carbon sink. In many ways, water yield and carbon sequestration are competing interests since water loss and carbon intake are fundamentally linked in plants. Sequestering atmospheric carbon is an important strategy for climate change mitigation, but doing so at the expense of water supplies and native forest cover may be unwise. Current policies that incentivize carbon sequestration tend to promote dense, fast-growing forests that show high short-term carbon gains. These policies also converge with economic interests in having fast-growing forests. Emerging research is showing that the long-term carbon benefits of such forestry might be exaggerated due to the massive release of carbon from soils during harvest (James and Harrison 2016). Another tactic is to promote the conservation of older forests and larger trees that tend to store more carbon in soils and roots. Sustainable harvests provide some economic benefits while protecting soil carbon.



Isolated wetlands are integral components to the longleaf pine ecosystem, supporting high levels of biodiversity. Photo by Lisa Lord.

And this type of management—the periodic thinning of the forest—actually promotes higher water yield and sustained water quality.

As we gain a better understanding of how longleaf pine restoration benefits water resources, we need to identify opportunities to incorporate these benefits into on-the-ground restoration. Restoring longleaf for water yield alone may or may not be a viable solution. However, adding the water-saving benefits of longleaf restoration to existing programs that promote restoration for wildlife or other benefits may help tilt landown-

ers towards longleaf restoration as a financially viable option. Removing barriers based on the perception that longleaf is a poor carbon sink may also become important. Having a sustainable supply of freshwater has certainly always been a valuable ecosystem service. That importance is only increasing as human demands and climate change alter the equation in the southeastern U.S. Adding water-based incentives into existing conservation and restoration programs that focus on threatened and endangered species may help accelerate the restoration of this endangered ecosystem.

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Doug Causey on his land in Craven County, North Carolina. Photo by Robert Abernethy.

By Robert Abernethy

LANDOWNER SPOTLIGHT

Doing it Right - Loving the Land for the Next Generation

The land has been in Mr. Doug Causey's family since the 1700s. It is rich land and has supported generations of Causeys. Located in Craven County, North Carolina, Doug and his wife added to the original tract that he inherited from his Dad and increased the property to 150 acres of forest land, and with 50 acres of cropland.

Their longleaf journey began in 2001 when Doug contacted the USDA Natural Resources Conservation Service (NRCS) about enrolling a portion of the property in the Conservation Reserve Enhancement Program (CREP). Part of the Farm Services Administration's Conservation Reserve Program (CRP), CREP targets specific state or nationally significant conservation concerns, and Federal funds are available to assist the landowner with management. Participation is voluntary, and the contract period is 10-15 years. In Doug's case, the NRCS representative met with him and discussed his objectives and how CREP might be of use in achieving them. The North Carolina Forest Service (NCFS) assisted with preparing

the Forest Stewardship Plan. Doug settled on a longleaf pine planting that removed agricultural land from production and helped him establish a forest of young longleaf (2002) to achieve his objective of improved wildlife habitat. The initial planting of bareroot seedlings failed, and the follow-up planting in February 2003 was with containerized seedlings.

Seventeen years later, the stand has survived several hurricanes and is flourishing. I visited Doug, his son Bill, and their consulting forester, Seth Ward, on a windy February day. The deer tracks were abundant, and a tiny winter wren was flitting and feeding in and around brush piles that Doug and Bill had created as they pruned up several rows of oaks. The oak planting consisted of four species, cherrybark, willow, red and white oak, which was established in February 2002 to provide a more diverse area with mast for the wildlife. As we walked through the oaks along a mowed and well-maintained trail, I noted flagging on some of the oaks. Bill said that he and his Dad had marked the smaller oaks, and they would be removed dur-



The Causeys (Bill, left and Doug, right) got their start with longleaf with the Conservation Reserve Enhancement Program (CREP), part of the Farm Services Administration's Conservation Reserve Program (CRP). Photo by Robert Abernethy.

ing an upcoming logging operation of an adjacent stand of loblolly pine.

The logging operation will thin the stand of older loblolly to remove some of the poorly formed trees to reduce the basal area and promote native warm-season grasses and allow a more diverse groundcover to develop. On the day I visited, we discussed if longleaf could be planted in the stand following the thin. I noted the dense stands of river cane, which indicated moist soil. If conversion to longleaf was desired, I suggested developing small 1- or 2-acre gaps during the thinning operation and focusing on longleaf plantings in these gaps. That way, herbicide treatments could be directed specifically where they would do the most good, and future logging operations could work around the gaps without damaging the young trees. Burning on a 2- or 3-year interval should allow the young longleaf to become established and jump ahead of the competition.

We also discussed the Conservation Stewardship Program (CSP), another NRCS program that helps landowners manage their non-agricultural forests to benefit wildlife and improve forest management and water quality. Doug had already contacted the Craven County NRCS office and discussed the program with Andy Metts, the County Conservationist; Andy is guiding Doug through the various programs and application procedures over the next several months. Both Bill and Doug will be working with their forester this spring to develop a forest stewardship plan that will be implemented over the next five years.



Bill and Doug Causey with forester Seth Ward, Premier Forestry and Environmental Consulting. Photo by Robert Abernethy.

Doug lives on the property and is managing the land in concert with Bill, the next generation. Both father and son have attended the NCFS Certified Burner course, and Doug recently completed a Longleaf Alliance Longleaf Academy in Ridge-land, South Carolina. He is expanding his knowledge by employing a certified forester and land management professionals with the NRCS and the North Carolina Forest Service. Together, their management provides early successional habitat for such species as white-tailed deer, bobwhite quail, and song-birds.

As I walked through Doug's mowed trails in the young longleaf, discussing the oak plantings, prescribed fire, and his management, I thought about this land that has been in this one family for over 200 years. Doug is doing it right, loving the land. He is generating income to sustain the farm and working with his son to ensure a smooth transition that will conserve this little slice of heaven into the next generation.



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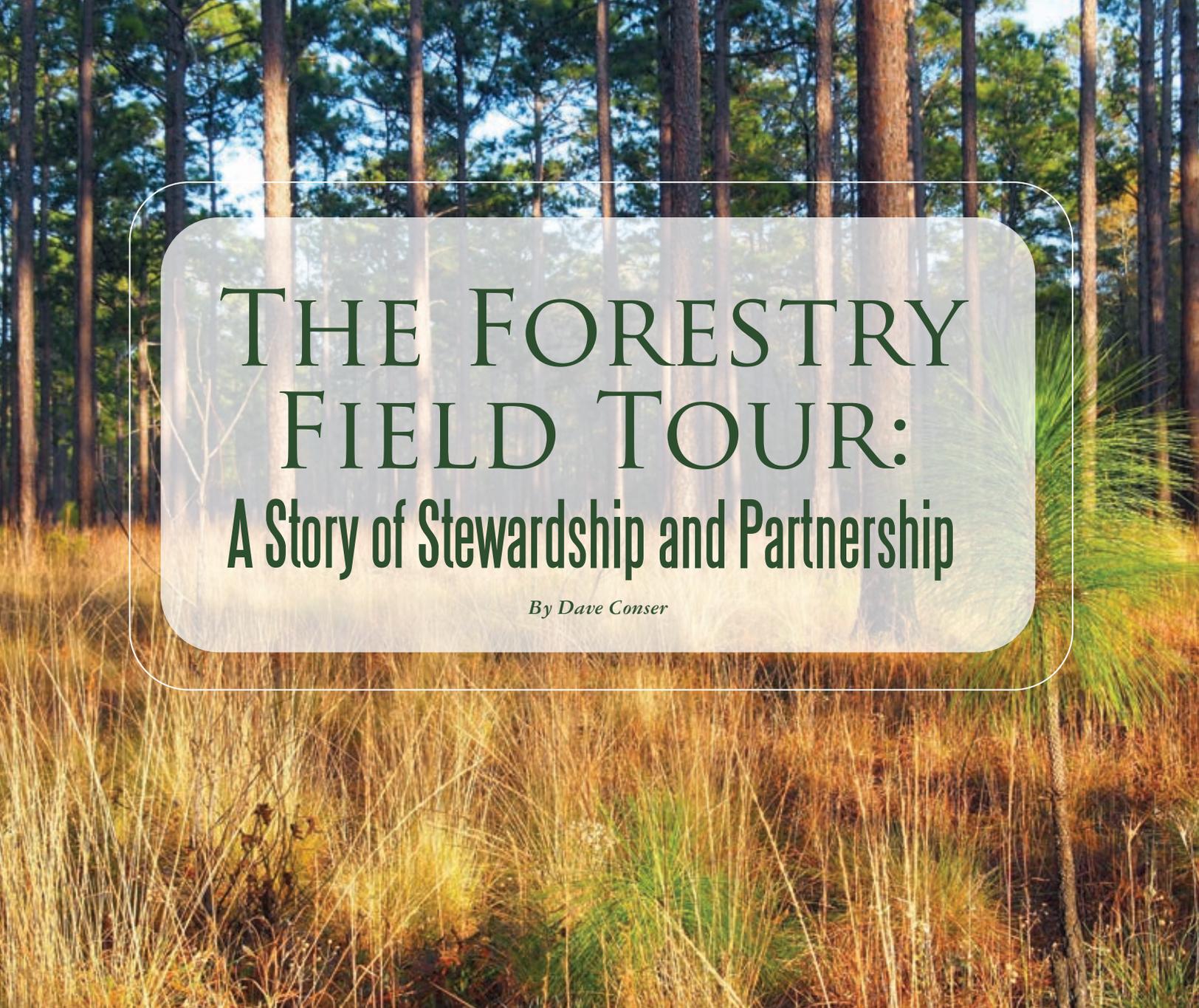
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THE FORESTRY FIELD TOUR: A Story of Stewardship and Partnership

By Dave Conser

Longleaf regeneration in wiregrass understory. Photo by Randy Tate.

Sam stepped out onto his back porch, coffee cup in hand, as he did every morning. The view still warmed his heart: big, old, natural longleaf pine, more trees in some places, more scattered in others. They stood as silent sentinels of grandeur in the early morning light, but later this afternoon, they would sing in the breeze. What Sam had grown to love and appreciate was underneath the longleaf pines – the beautiful savanna of grasses and wildflowers – the native groundcover. He thought, “What once covered almost all of this local country, all across the southeastern United States, is now so rare.” Sam knew he was blessed to find this place for sale 17 years ago; the previous owner preserved these 40 acres of natural longleaf because it reminded him of his childhood and growing up on the land. For Sam, buying the property had been a no-brainer.

Sam wanted more longleaf, though, so he and his friends were hard at work establishing this native species on the other 80 acres as well. His friends, those helping him with the management of his land, would be here in a couple of hours to make the final preparations for tomorrow’s tour of his property. Sam’s wildlife biologist told him that as many as 60 or 70 folks might attend – foresters, wildlife biologists, other natural resource professionals, but mainly fellow landowners. He was happy to show the place off. They had made good progress, even though there was still much to accomplish.

The door to the porch creaked open as his 7-year-old grandson, Billy, stepped out. Billy was visiting with his family, who had come for the tour, but as much as anything, to enjoy the land. “Grandpa, are they going to burn the trees tomorrow?” Sam replied, “If the weather holds out, they plan on burning a



Field tours, like this one in Bamberg County, South Carolina in 2017, bring a diversity of partners together, including landowners, natural resource managers, and the public. Photo by Bobby Franklin.

small area of the big pines, right over there, to show the people how it's done." "What if it rains?" Billy asked. "Well, it's not supposed to, but you know what, Billy? That grass under the pines is so special that even with some rain, it can be dry enough to burn in a couple of hours once the sun comes out." Billy's eyes opened wide, half in amazement, half in disbelief. Sam thought about his county forester and rangers from the state forest service, demonstrating a small, easy prescribed burn on the five acres. They had helped him with so many burns, to the point that he had learned enough to pull his own permits. Sam and Billy both caught the smell of bacon, wafting through the open windows. They looked at each other, a silent understanding between them. It was time to go back inside.

Later that morning, vehicles started pulling in. First to arrive was John, the wildlife biologist from the state wildlife commission. John was organizing the property tour, together with a half dozen other natural resource professionals including Kathy, the county forester, Scott, Sam's consulting forester, Connie from the Natural Resource Conservation Service, Ad from The Longleaf Alliance, Steve the extension specialist from the University's School of Forestry, and Mary from the Rolling Hills Conservation Trust.

Sam made his way out to the assembled group and greeted everyone. He thought about the wonderful community of partners they represented. This land they were stewarding was all the better because of each one of them.

John spoke up, "Sam, we really appreciate you sharing your property with us, and especially with the group tomorrow. The plan is to meet up here with all the folks, have you introduce yourself and your family, express the passion we know you have for this property, and talk about your management objectives. We'll then load up in vans and make four stops to show off your work. We hope to be back at your barn for lunch." They decided that at lunch Steve would go over the booklet he developed for the attendees, covering their tour. Mary and Sam would also explain the conservation easement sold by Sam to the Rolling Hills Conservation Trust, ensuring his land would remain in longleaf pine.

"Sounds good," said Sam. "In so many ways, I don't feel like I own this land, only take care of it with all of y'all." "I hear ya'," replied John, "Let's go visit each stop and make a dry run of who is going to say what." They loaded up in their vehicles and headed off.

The first stop was a 16-year-old longleaf pine plantation. They decided that Kathy, the county forester, would discuss



Demonstrating different management techniques, like understory seed collection for groundcover restoration, engages field tour participants. Photo by Carol Denbof.

how this stand was established on a former pasture, scalped and planted to longleaf pine. The wildlife biologist, John, would discuss the rotational disking (harrowing) Sam had carried out, and how that had benefitted wildlife habitat, discouraging the pasture grass and promoting native herbaceous plants. Both Kathy and the consulting forester, Scott, could talk about the prescribed burning they took turns conducting in this stand on a two- to three-year rotation. But the greatest impact at this stop would be last year's selective harvesting Scott would discuss. As his consulting forester, Scott had listened to Sam's objective for longer rotations, fewer trees per acre, and a more savanna-type appearance. The stand was marked for pole production, favoring trees straight enough, and of the quality, to be future transmission poles, the highest value pine product in the Southeast. Sam could talk about how this would create both future revenues and meet his objectives.

At their second stop, they arrived at Sam's most ambitious project, a former loblolly plantation recently harvested and scheduled to be replanted in a particular way. Ad, from The Longleaf Alliance, would describe the plan to plant with native groundcover species first, followed by longleaf pine. This would involve choosing selective herbicides to treat competing vegetation, burning to remove slash and debris, possible follow-up treatments, and then planting native groundcover seed. There was even a possibility of gathering some of the seed from under Sam's big longleaf as a donor site, then planting it here, thus expanding the beautiful savanna-like groundcover that Sam appreciated so much. From the Natural Resource Conservation Service, Connie would talk about the financial incentives Sam would receive to partially offset the project's expense.

residual hardwood trees that had escaped control by the site preparation herbicide treatment and prescribed burning. Sam would also talk about his work in this stand controlling cogongrass, one of the worst invasive plants in the world. He had based his treatment on information provided by Steve, the extension forester from the local state university.

They saved the best stop for last. The big longleaf with native groundcover was a magnificent sight. The pines were 80 to 120 years old, and the previous owner had burned the stand religiously every winter at night. However, Sam's land management friends advised him to switch over to burning in the growing season, in blocks, on a two- to four-year rotation. They could all take turns discussing the incredible diversity of the savanna-like groundcover, its value for wildlife, the importance of bunchgrasses for quail and other wildlife, the benefit of the healthy gopher tortoise population - providing a refuge for almost 400 animal species, the prescribed burning strategy for burning in May through August, the natural regeneration of new seedlings, and the management of a stand with uneven age classes / multiple size trees. Likely there would be a demonstration burn tomorrow.

Sam recalled the statement he heard on a previous landowner tour, when the host remarked, "We are in year 20 of a 300-year restoration project." At the time, he had been surprised and somewhat disheartened. He smiled, remembering how, after a period of reflection, he had taken a step back to look at the bigger picture. He was managing the longleaf on his property with the help of his friends. Not so much for himself, but for others — his children, grandchildren, friends, and generations to come as a treasured legacy.

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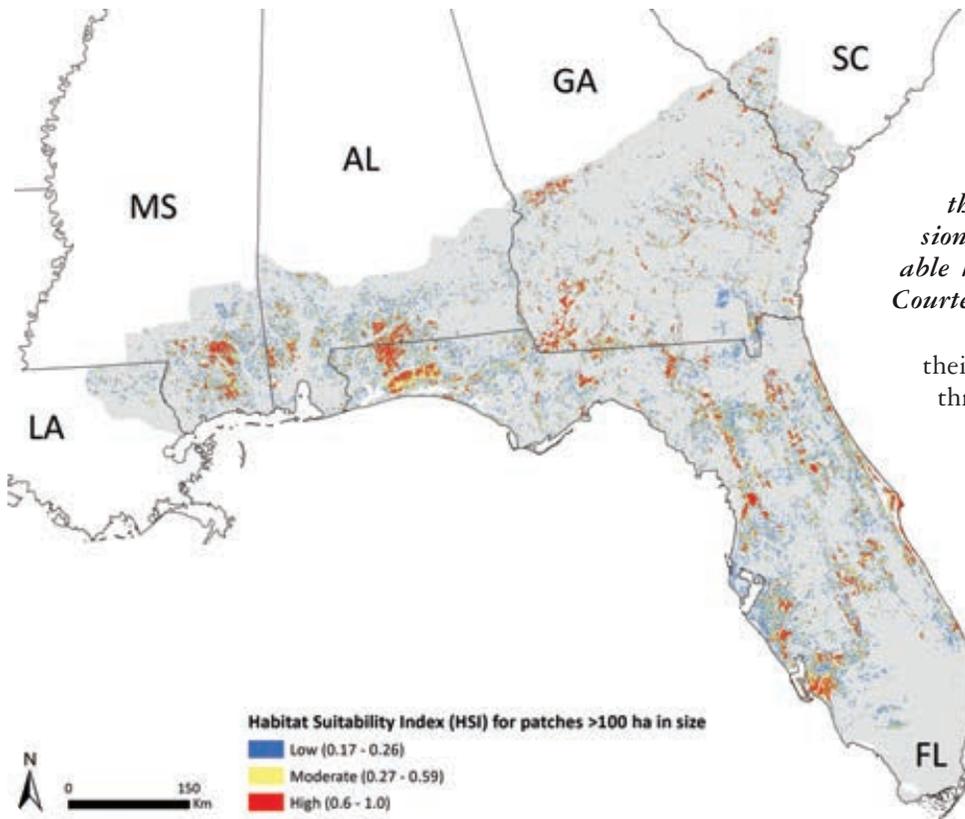


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By Brian Crawford, PhD, Georgia Cooperative Fish & Wildlife Research Unit, University of Georgia

Providing Science for the Conservation of At-risk Reptiles & Amphibians in the Southeastern Longleaf Pine Ecosystem



*Distribution of suitable habitat (as of 2018), predicted by habitat suitability models, for the gopher tortoise, *Gopherus polyphemus*, across its range (grey shaded area) in the southeastern United States. This version of the map only shows patches of suitable habitat greater than 100 ha in size. Courtesy of Crawford, et al. 2020.*

their habitats under current and future threats and management options.

The project is taking advantage of knowledge and data on these herpetofauna from a large network of conservation partners across the Southeast, including many state and federal agencies, non-governmental organizations, academic institutions, and other partners who will use the models to make conservation decisions. These groups have actively contributed data to the project and participated in workshops to review and inform model development and outputs. Together, the project has gathered a

The longleaf pine (*Pinus palustris*) ecosystem in the southeastern U.S. supports several “at-risk” species that are currently undergoing status reviews by the U.S. Fish and Wildlife Service (USFWS) to determine if they are threatened or endangered due to habitat loss and other threats. These include five reptile and amphibian (herpetofauna) species: the gopher tortoise (*Gopherus polyphemus*), gopher frog (*Rana capito*), striped newt (*Notophthalmus perstriatus*), southern hognose snake (*Heterodon simus*), and Florida pine snake (*Pituophis melanoleucus mugitus*). Conservation partners are grappling with tough decisions about how best to improve the statuses of these species before declines are irreversible, and there is currently limited scientific information on which to base those decisions. To address this need, a research team, headed by the USGS Georgia Cooperative Fish and Wildlife Research Unit at the University of Georgia, is developing models that predict the conditions of these species and

comprehensive dataset of over 70,000 species location records, which were used along with input from over 30 experts to develop predicted habitat suitability maps across each species’ range. Habitat suitability data and maps are now publicly available on ScienceBase.

Habitat suitability maps will add to the toolset of conservation planning in the Southeast at both local and range-wide scales. The maps have already informed the USFWS Species Status Assessments (SSAs), which are used when making listing decisions for the gopher tortoise and southern hognose snake. They will likely inform additional SSAs in the future. Regardless of final listing decisions, partners could use habitat maps in conservation planning to:

1. Assess suitability at a local site known to be occupied by a species and tailor site-level management (e.g., increased use of prescribed fire),



An active gopher tortoise burrow in suitable habitat - an open canopy, mixed longleaf forest that receives frequent fire. Photo by Brian Crawford, Georgia Cooperative Fish & Wildlife Research Unit.

A southern bog-nose snake found in a longleaf pine forest in North Carolina. Photo by Jeff Beane, North Carolina Museum of Natural Sciences.

2. Prioritize survey efforts in areas of high suitability without known or documented species records (e.g., on private lands), or

3. Use the distribution of areas suitable for one or more species on protected or unprotected lands to identify priority areas for management, land acquisitions, or other strategies.

In the next phase of research, habitat suitability maps will be used, along with expert opinion and additional species data, to predict species outcomes under different scenarios of future threats and management decisions. These results will inform

where and how to invest conservation resources in the longleaf system to protect and restore them on public and private lands.

Research publication: Brian A. Crawford, John C. Maerz, and Clinton T. Moore (2020). Expert-informed habitat suitability analysis for at-risk species assessment and conservation planning. *Journal of Fish and Wildlife Management*. In-Press.

Online data available at:

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*Longleaf pine branch.
Photo by Randy Tate.*

Celebrating Ten Years of Success

*By the Longleaf Partnership
Council Leadership Team*

Ten years ago, the U.S. Departments of Defense, Agriculture, and the Interior made a bold move that would forever change the landscape of the Southeast. Fueled by a mutual interest to secure the full spectrum of ecological, economic, national defense, and social values offered by the restoration of the longleaf pine ecosystem, these agencies came together to support the establishment of America’s Longleaf Restoration Initiative (ALRI) and the Range-Wide Conservation Plan for Longleaf Pine, released in 2009. This was an instrumental step in solidifying the public-private partnerships that would ultimately lead to management activities on over 15 million public and private acres cumulatively over the decade.

This year we are celebrating the monumental partnership of ALRI, deemed by many as one of the most successful landscape-level, conservation-based coalitions in North America. The Initiative is made up of public land partners, including federal and state agencies, private landowners, non-governmental organizations, forest industry, educators, and longleaf enthusiasts—all collaborating and endeavoring to reach our 15-year goal of 8 million acres of longleaf pine habitat on the landscape by 2025.

In the 1990s, an estimated 3.2 million acres of longleaf remained from what was once the dominant forested ecosystem in the Southeast. As a result of the efforts of ALRI, today we stand at approximately 4.7 million acres. Over the past ten years alone, more than 1.3 million acres of new longleaf stands have been established, and equally impressive is the more than

12 million acres of longleaf habitat with prescribed burn activities to advance forest management outcomes.

Range-wide estimates of annual longleaf establishment

Year	Longleaf Establishment (acres)
2010	75,000*
2011	101,088
2012	163,595
2013**	156,800
2014	153,039
2015	150,808
2016	139,427
2017	131,254
2018	130,314
2019	133,414
10-year total	1,335,739 acres

* 2010 conservative estimate

**1st year of ALRI Accomplishment Report



*A new longleaf pine germinant.
Photo by Gretchen Coll.*



*Prescribed fire is an integral tool
for longleaf pine restoration. Photo
by Gretchen Coll.*

KEY ACCOMPLISHMENTS 2010-2019

 <p>1,333,739 ACRES OF LONGLEAF ESTABLISHED</p>	 <p>235,887 ACRES OF LAND PROTECTED</p>	 <p>12,221,076 ACRES OF PRESCRIBED BURNS ON LONGLEAF LANDS</p>
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Ten years of range-wide longleaf accomplishments reported by ALRI.

These accomplishments are a collective effort on both public and private lands, and the many dedicated professionals and landowners committed to longleaf restoration. Longleaf restoration happens on the ground through the work of these individuals as well as local partnerships (Local Implementation Teams) organized under ALRI to support the goals of the Initiative to conserve and restore longleaf. Setting the bar high for other agencies, the U.S. Forest Service (USFS) is already on its way to putting one million longleaf acres on the path to restoration by 2025. The Public Lands Task Force of ALRI is working with other federal and state partners to evaluate their lands to submit similar 2025 restoration goals to ALRI.

No words can adequately recognize the steadfast efforts of our private landowners who continue to contribute most longleaf accomplishments each year. Many of these landowners are led and supported by technical assistance and incentive and grant programs provided by ALRI partners such as the USDA Natural Resources Conservation Service (NRCS) and the National Fish and Wildlife Foundation (NFWF).

The ten-year anniversary celebration in Washington D.C. this past March was postponed due to the COVID-19 pandemic. While we wait until the time is right to celebrate in person, we will continue to share the story and significance of the cumulative achievements of our partners and the Initiative. It is important to reflect on the substantial gains this partnership has collectively garnered in halting and reversing the decades-long trend in longleaf decline. ALRI exemplifies the “power of

partnerships” and shared stewardship principles of working together in an integrated way to make decisions and take actions on the land to restore this vital ecosystem. As we celebrate ten years of success, the Initiative is poised to build on our successes towards 2025 and beyond.

Update from the Longleaf Partnership Council

First and foremost, I would like to send my best wishes to the entire longleaf community. While the spring looked much different than anticipated for America’s Longleaf Restoration Initiative (ALRI), it has been encouraging and wonderful to get updates from our partners that on-the-ground longleaf restoration continues here in the Southeast. The LPC leadership team was quite busy this spring with the release of the 2019 Annual Longleaf Accomplishment Report, as well as looking back over the past decade and documenting the cumulative successes from partners and friends of ALRI. I hope you enjoy seeing how your efforts, combined with others in this community, made all the difference in bringing back this iconic species. I truly believe the best is yet to come. *Tiffany Woods, 2020 LPC Chair*

The LEO Project: Making Strides in Range-wide Mapping Effort

By Karen Zilliox Brown, The Longleaf Alliance

The Southeast Longleaf Ecosystem Occurrences Geodatabase project, “LEO” for short, was developed to create a shareable GIS database of longleaf pine ecosystem occurrences throughout its range. The LEO web map and geodatabase will be an interactive tool that enhances your work and that of others throughout the longleaf range—but first, we need your help. Representatives from the LEO team are making the rounds to Local Implementation Teams (LITs) and coalition meetings. If we haven’t visited you yet, we will soon!

How does LEO work?

Gather existing information – Existing local information and field data are the foundation for this effort. We don't want to duplicate our partners' efforts, so this helps tremendously in the next step in the process.

Determining areas for field surveys – The mapping team at Florida Natural Areas Inventory (FNAI) and The Longleaf Alliance (LLA) use a variety of tools to identify areas on the landscape that are “likely longleaf.” They work down to a fine-scale to determine where the field surveys should take place, delineating areas of similar age or density characteristic. Each shape warrants a field survey to ground-truth the occurrence of longleaf and provide observations of ecological conditions. That leads us to the next step.

Forming field teams – We craft an individualized approach for each landscape with guidance from the partners. The local knowledge of partners plays a key role in this step by informing us on priority areas and interests. Field work occurs with partner help and contractors. After a training session, field teams



A mobile app was developed for the LEO project. Field teams can use a variety of device types to take surveys. Photo by Karen Zilliox Brown.

will go out to make assessments. Surveys are designed to be rapid and completed largely by roadside observations. This field data comes back to us and, after a quality control check, will be incorporated into the final product, the longleaf geodatabase and web map, produced by FNAI.

How can your LIT help LEO?

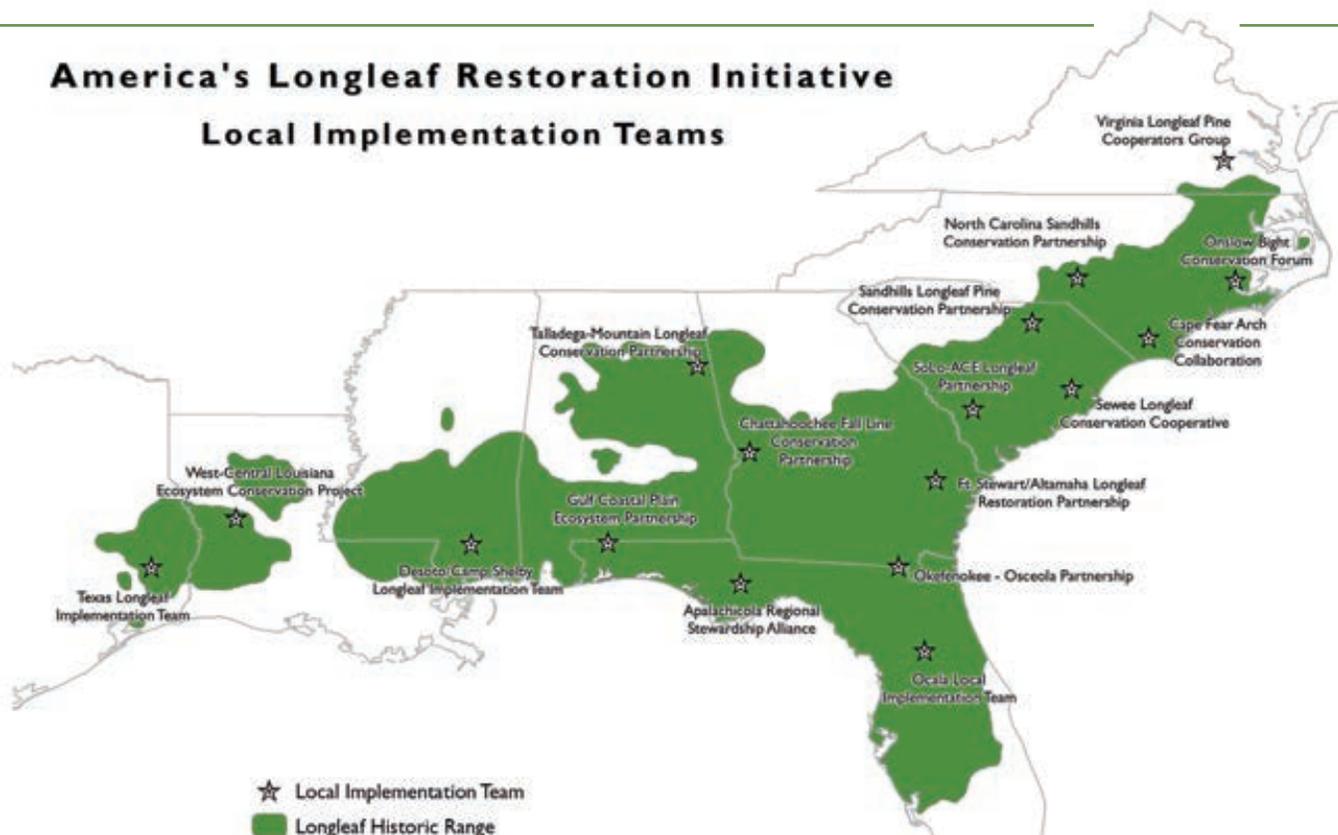
1. Contribute to the knowledge-base. We work with dozens of partners to fit the data they share with us into the LEO database. Shared data may be in the form of forest stand characteristics, fire histories, habitat or vegetation map data, and relevant species habitat distributions, to name a few. We do this with the utmost respect for privacy and the integrity of your work. If you have something to contribute or questions on this step, reach out to Carolyn Kindell at ckindell@fsu.edu. You can also find details at the LEO project website: www.fnai.org/se_longleaf.cfm

2. Participate in a priority mapping session. These are short web calls or meetings to identify where information gaps exist in your landscape. This may look different than previous mapping exercises LITs have gone through—or it may result in similar hot spots on your map where conservation values and knowledge gaps coincide. If you would like to help guide us in this step, please reach out to your LIT Coordinator or Ryan Bollinger at ryan_b@longleafalliance.org.

3. Collect! Karen Zilliox Brown, with LLA, is the project coordinator for field work; contact her for more details on collecting longleaf data in your LIT at karen@longleafalliance.org.

Funding for LEO is provided by the Natural Resources Conservation Service via the U.S. Endowment for Sustainable Forestry and Communities.

America's Longleaf Restoration Initiative Local Implementation Teams



The LEO project has hit the ground and is coming to a LIT near you!

{ ONGOING PARTNER SURVEYS }

DeSoto-Camp Shelby Longleaf Implementation Team • Gulf Coastal Plain Ecosystem Partnership
Chattahoochee Fall Line Conservation Partnership

{ SPRING 2020 }

SoLoACE Longleaf Partnership • Ft. Stewart/Altamaha Longleaf Pine Restoration Partnership
Apalachicola Regional Stewardship Alliance

{ SUMMER 2020 }

Texas Longleaf Implementation Team • West Central Louisiana Ecosystem Partnership
Cape Fear Arch Conservation Collaboration

{ FALL 2020 }

Onslow Bight Conservation Forum • North Carolina Sandhills Conservation Partnership
Okfenokee-Osceola Partnership

{ SPRING/SUMMER 2021 }

Sewee Longleaf Conservation Cooperative • Talladega Mountain Longleaf Conservation Partnership
Virginia Longleaf Pine Cooperators Group • Sandhills Longleaf Pine Conservation Partnership

The Ocala-to-Osceola (O2O) Wildlife Corridor (O2O) strives for habitat connectivity for wide-ranging species such as Florida black bears. Photo by Kelly O'Connor.

By Matt Greene, The North Florida Land Trust

The O2O Partnership

A Land Trust Approach to Longleaf Landscape Conservation in North Florida

Those of us who choose to reside in North Florida often do so for one of several reasons; no state income tax, plenty of sunshine (and golf courses), beautiful beaches, and our bays and rivers that provide world-class fishing. A select few do so because of something deeper – a connection to the land. We cannot seem to shake the desire to wander under dappled sunlight in longleaf forests, and marvel at the plant and animal diversity found here. Some of us are even lucky enough to make a living helping to protect and restore the once-dominant forest of the Southeast. While our portion of North Florida may not be as renowned for its longleaf pine as other spots in the South, this landscape is giving rise to a new belt of continuous longleaf pine ecosystems.

About North Florida Land Trust

Within the last decade, several land trusts have waded into the longleaf arena to boost existing state and federal restoration efforts. Land Trusts are charities across the country that work with landowners to conserve and steward land for conservation, which may include protecting habitat, water quality, scenic views, soils, and more. Founded in 1999, the mission of North Florida Land Trust (NFLT) to protect natural resources, historic places, and working lands in North Florida has resulted in the preservation of nearly 25,000 acres. In addition to the acquisition of conservation lands, NFLT and land trusts nationwide have an obligation to protect and steward those lands in perpetuity, including annual monitoring and often ecosystem restoration. In recent years, NFLT has established partnerships focused on augmenting existing efforts of two longleaf Local Implementation Teams to preserve and restore longleaf ecosystems in North Central Florida.

The Ocala-to-Osceola (O2O) Partnership

The idea of connecting Ocala and Osceola National Forests was created decades ago, but it was not until recently that the effort gained momentum. Known as the Ocala-to-Osceola Wildlife Corridor (O2O), this area includes 1.6 million acres of forested and rural lands that make up a 100-mile long section of the larger statewide Florida Wildlife Corridor. In a nutshell, the goal is to create a functional corridor of habitat large enough to allow wide-ranging species such as Florida black bears to meet their biological needs.

Launched in 2017, the O2O Partnership, led by NFLT, has 18 member organizations, including federal and state conservation agencies and six non-profit organizations. The Partnership centers on common goals – landscape conservation and protection of working lands and military training missions. The O2O Partnership seeks to promote collaboration among programs, funding sources, and resources to improve conservation delivery within the O2O. The Partnership envisions a landscape that includes habitat for wildlife and imperiled species, healthy watersheds, working forests, and rural-based economies to ensure ecological resiliency for future generations as our populations grow and our climate and environments change.

Accomplishments

Camp Blanding Joint Training Center (CBJTC), located in the heart of the O2O and home of the Florida National Guard, is a prominent partner in regional preservation efforts. NFLT is working with CBJTC via the Army Compatible Use Buffer Program to accelerate land conservation near the installation to prevent incompatible development from impacting military



North Florida Land Trust staff celebrated the Trust's 20th Anniversary this year. Photo by NFLT.



Skyblue lupine in a longleaf sandhill at Little Rain Lake Preserve. Photo by Matt Greene.

training and to increase habitat for imperiled species. Since 2016, this partnership between NFLT and CBJTC, which benefits conservation and military mission flexibility, has protected >7,000 acres surrounding CBJTC in the O2O. Further contributions from the state have added an additional 3,562 acres, and a long-term commitment from the Natural Resource Conservation Service will apply more than \$12 million in conservation easement and land restoration funding.

In less than three years, NFLT has acquired 6,000 acres of historical longleaf pine habitat, often neglected and fire-suppressed but still intact. Of our 4000 acres of upland longleaf, 47% is suitable gopher tortoise habitat, and restorable with prescribed fire. In fact, it is unusual, and disappointing, to not encounter a tortoise while doing fieldwork. Sandhills, pine flatwoods and scrub are home to other beloved species like the Florida black bear, pocket gophers, Bachman's sparrow, and brown-headed nuthatches. Seasonal ponds, sandhill lakes, and deep sugar sand soils aid in recharging the Floridan aquifer, the primary source of drinking water for millions of Floridians.

Looking to the Future

Buying land is only half the story, however. In the last year, NFLT increased its stewardship staff to better tackle our management opportunities. Each NFLT property has a management plan and is enrolled in best management practice and forest product certification programs. Prescribed fire, coupled with chemical and mechanical treatments, will improve forest

health and enhance wildlife habitat. We are working on careful reintroduction of fire into a 600-acre sandhill ecosystem that hasn't burned in more than 50 years, restoring ephemeral wetlands to benefit declining amphibians (gopher frogs, striped newts, and ornate chorus frogs), and planting 130 acres of longleaf. It's a blessing to work on several large tracts (600+ acres) featuring intact groundcover underneath a canopy of multi-aged longleaf pine, with trees often exceeding 100 years old. The sight of a fox squirrel, array of wildflowers and winged friends, with the wind amongst the pines, are the simple pleasures of summer.

Although early land preservation efforts are promising, much work remains. Recently acquired lands require restoration, and fundraising needs never stop. Twenty-one million people already call Florida home, and with projections to add thirteen million more residents by 2070, our wildlands and working lands will be lost to degradation, development, and fragmentation if we do not act in a timely manner. The O2O represents an opportunity to preserve an ecologically functioning and fire-adapted landscape within reach of the first and fourth-

largest cities in Florida, Jacksonville and Orlando. It will not be easy, but NFLT and partners look forward to partnering with private landowners to preserve the sunshine state, its agricultural economies, and perhaps most importantly, a vast array of biodiversity that John and William Bartram documented in the 1760s and 1770s for future generations to enjoy.



The O2O Partnership collaborates with two longleaf LITs while also working towards a wildlife corridor between these longleaf focal areas. Map by Matt Greene.

Having met the initial goal of protecting 10,000 acres by 2020, the new O2O goal is to protect an additional 140,000 acres by 2040 through strategic acquisitions of land and conservation easements.

News from the Chattahoochee Fall Line Conservation Partnership

By LuAnn Craighton, *The Nature Conservancy*



The Chattahoochee/Marion County Unit was named the Georgia Forestry Commission's 2019 North Zone Unit of the Year honoring their outstanding stewardship achievements across the region. Photo by Georgia Forestry Commission.

The Georgia Forestry Commission recently honored the Chattahoochee/Marion County Unit as the 2019 North Zone Unit of the Year. This group of talented men and women work in the heart of the Fort Benning Significant Geographic Area along the Fall Line and provide a broad set of services to landowners in the region. The award was based on the Unit's wildfire response actions, plowing and harrowing completed for private landowners, prescribed burning assistance provided to private landowners, participation in community outreach events as well as their execution of special assignments and projects.

Prescribed fire is a critical component of land management across the region. The Chattahoochee/Marion Unit assisted with 5,929 acres of prescribed burning during the 2019 fiscal year. That positioned them as the Unit with the second-highest number of prescribed burn acres statewide. The Unit also provided instructors for three "Learn & Burn Workshops" organized by the Chattahoochee Fall Line Prescribed Fire Cooperative. These events focused on working with private landowners, in small group settings, to expand their prescribed fire skills and experience. In addition, the Unit conducted Smokey the Bear programs at the local elementary schools.

Congratulations to the Chattahoochee/Marion Unit on this award! Their expertise and commitment to excellence contribute significantly to the positive conservation outcomes achieved along the Fall Line.

Georgia Sentinel Landscapes Awarded \$2.1 Million Grant from USDA

By Randy Tate, *The Longleaf Alliance*



The Georgia Sentinel Landscape was formed in 2017 with the goal of coordinating state conservation priorities across a broad area of South Georgia.

The Georgia Conservancy received an award made by the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service in support of the Georgia Sentinel Landscape, a collaboration of Georgia-based organizations and agencies whose mission is to conserve working and natural lands adjacent to Georgia's military installations.

"I'm excited to announce the first RCPP awards under the 2018 Farm Bill," said USDA Natural Resources Conservation Service Chief Matthew Lohr. "Through collaboration and aligning our resources toward a common goal, we're making an impact for natural resource conservation that could never have been realized on our own."

The \$2.1 million grant from the USDA Regional Conservation Partnership Program (RCPP) will be leveraged to address key land conservation and stewardship priorities in Georgia. The RCPP is a partner-driven approach to conservation that funds solutions to natural resource challenges on private agricultural and forestry lands.

A portion will be allocated for permanent land conservation by land trusts in conjunction with the U.S. Department of Defense's Readiness and Environmental Protection Integration (REPI) Program. The remainder of the grant will be used to enhance habitat management in ecologically-significant areas, including the native longleaf pine ecosystem.

Florida Funds Invasive Plant Management; Back to Burning

By Brian Pelc, *The Nature Conservancy*



Fire Staff waiting, 6 feet apart, before the daily prescribed fire briefing at Apalachicola Bluffs and Ravines Preserve. Photo by J. Vineyard.

Partners from both Apalachicola Regional Stewardship Alliance (ARSA) and Gulf Coastal Plain Ecosystem Partnership (GCPEP) convened the Panhandle Working Group for Florida Fish and Wildlife Conservation Commission's FY2021 Upland Invasive Plant Management Program. This unique program provides invasive plant control on any public conservation land in Florida, with projects submitted and ranked by local land managers. The Panhandle Working Group considered presentations on 12 projects, including several important longleaf pine sites struggling to manage large infestations of weed species. Contracts will be executed over the summer, and work on the highest-ranking projects can commence as soon as August. Prescribed fire is starting to return to the landscape as ARSA agencies gradually return to field work following spring stay-at-home measures due to COVID-19. While social distancing has huge implications for the fireline, creative land managers have worked to balance staff safety with the growing backlog of acres ready for growing season fire. Many of the critical longleaf pine forest groundcover species depend on growing season fire for seed production, so safely returning to burning this summer means we can collect seed in the fall for restoration.

North Carolina Sandhills Conservation Partnership Celebrates 20 Year Anniversary

Jeff Marcus, *The Nature Conservancy*, Susan Miller, *U.S. Fish and Wildlife Service*, and Ana Castillo, *Oak Ridge Institute for Science and Education*



Planting of the one-millionth longleaf by The Nature Conservancy was celebrated by Fort Bragg Garrison Commander Kyle Reed, TNC NC Director Katherine Skinner, landowner Margaret Johnson, U.S. Senator Richard Burr, landowner and special forces Officer Jay Johnson, and NC Department of Agriculture Assistant Commissioner Scott Bissett. Photo by Brady Beck.

The North Carolina Sandhills Conservation Partnership (NCSCP) is celebrating its 20th anniversary. The Partnership was born out of conflict, following the “woodpecker wars” of the 1990s. The U.S. Fish and Wildlife Service issued a Jeopardy opinion to Fort Bragg, restricting military training. Meanwhile, on private lands, many were clearcutting their mature longleaf forests before they became “infested” with red-cockaded woodpeckers (RCWs) for fear of government regulation.

Fortunately, some forward-thinking individuals understood that there was more to gain by working together and thus began the “woodpecker dialogue.” Key collaborators from the U.S. Army, U.S. Fish and Wildlife Service, The Nature Conservancy, Environmental Defense, and North Carolina State University worked together to craft solutions. Two notable programs were created through this effort—the Army Compatible Use Buffer program to conserve land to protect endangered species and military training, and the Safe Harbor program, which provides private landowners with regulatory assurances if they manage their land compatible with RCWs.

This collaborative spirit was formalized with the formation of the NCSCP in 2000, providing a forum for the Army and federal, state, and NGO conservation organizations to share information, ideas, and resources. Since its inception, NCSCP

partners have protected over 30,000 acres, restored and managed longleaf and related habitats on over 240,000 acres of conservation lands, and planted over two million longleaf pine trees.

The Partnership collects and synthesizes data on conservation priorities to guide protection work and land use planning by local governments. Partners launched the first Prescribed Burn Association in the southeastern U.S., provide cost-share and technical advice to thousands of landowners, and established a festival to celebrate fire and the oldest known living longleaf (472 years and counting). The Partnership leverages grants and facilitates the sharing of burn crews. In 2006 the NCSCP celebrated the recovery of the NC Sandhills RCW population, allowing Fort Bragg to ease many training restrictions.

The NCSCP helped inspire the creation of other conservation partnerships, and it continues to reinvent itself to respond to evolving challenges and partner needs. Happy 20th Anniversary, NCSCP!

Spring Planting Success in the O2LIT

By Rebecca Shelton, O2LIT Coordinator, The Nature Conservancy



Betsey Nayfield Crisp planting longleaf on her family's private conservation easement. Photo by Dr. KC Nayfield.



Florida Fish and Wildlife Conservation Commission and Florida Forest Service staff loading seedlings designated for private landowners restoring fire-damaged longleaf on 500 acres. Photo by Ginger Morgan.

The Okefenokee-Osceola Partnership (O2LIT) enjoyed a productive spring planting season. From the feedback received from prior outreach workshops and by working with private landowners, we were able to identify several areas of land prepped and ready for longleaf restoration. Through a cooperative effort with our partners, over 57,000, second-year, containerized longleaf pine seedlings were recently distributed and planted. These seedlings were provided by the Okefenokee National Wildlife Refuge in conjunction with partners in the O2LIT to meet longleaf restoration and outreach goals in our area.

More than 32,000 quality seedlings were given to several private landowners at no charge. This helped to create active and open lines of communication and guidance, as well as influencing restoration on several hundred acres of privately managed lands. Also, approximately 15,000 seedlings were planted on the Florida Fish and Wildlife Conservation Com-

mission's Lafayette Forest Wildlife Environmental Area (WEA), along with 10,000 seedlings on the Suwannee Ridge WEA to conserve and restore a critical habitat that is paramount to imperiled species management.

Upcoming plans for the O2LIT include additional site preparation for habitat restoration, removal of offsite pine species, and identification of areas and landowners interested in understory restoration. O2LIT members actively engage in social media, handwritten notes, and offer several virtual opportunities to learn and interact, keeping our landowners engaged and safe during this challenging time.

Data Analysis of 3,500-Acre Longleaf Tract on Sandy Island

By Patrick Ma, The Nature Conservancy of South Carolina



Upland timber age classes on Sandy Island. Green = mature longleaf (80-150 years), yellow = intermediate longleaf, and blue = young longleaf (<15 years). Other upland habitats are in red. Map by Sabine & Waters, Inc.

The Sewee Longleaf Conservation Cooperative (SLCC) contracted Sabine and Waters Natural Resource Management (S&W) to conduct a timber cruise of the 3,500 acres of longleaf pine uplands on The Nature Conservancy of South Carolina's (TNC-SC) 9,165-acre crown-jewel preserve, Sandy Island. S&W cored three longleaf pines at each plot (one core from the dominant, co-dominant, and suppressed canopy classes in 353 plots, roughly 1000 cores total). Data suggest the Preserve's unique dune topography dramatically influences longleaf growth characteristics and canopy recruitment. S&W observed that longleaf pine on the sandy ridges exhibited stunted growth in both diameter and height. Conversely, trees near the top of the slope and in drains exhibited larger diameters and height for trees of the same age class. In other words, trees at the top and bottom of slopes could be the same age but exhibit vastly different diameters and heights. Clearly, soil type and water availability play a key role in these differences in growth.

Next, the SLCC will enlist the help of Dr. Don Hagan's Forest Ecology and Fire Science Lab at Clemson University for exploratory data analysis. Hagan's lab will conduct a thorough investigation of the data collected by S&W and process the collected tree cores. Prescribed fire is the only management tool allowed on the island due to the restricted covenants created during its protection in 1997. Ten years ago, The Nature Conservancy defined desired future conditions for the upland longleaf on Sandy Island Preserve based on LANDFIRE Biophysical Settings. When combined with ten years of significant prescribed fire history, this timber cruise will serve as a benchmark to guide future prescribed fire applications.

South Carolina Sandhills Partnership Landowner Outreach Sees Results

By Charles Babb, SLPCP Coordinator



Landowner Barbara Jenkins's longleaf restoration project included removing loblolly and hardwoods during thinning to shift the stand to longleaf dominant. Photo by Charles Babb.

The South Carolina Sandhills Longleaf Pine Conservation Partnership (SLPCP) is once again using its field inventory of forest stands to conduct an outreach campaign, this time to landowners with mature longleaf sites who could benefit from management practices to enhance longleaf understory and wildlife habitat. The initial inventory indicates that only about 4,500 acres of privately owned, mature longleaf remain in the focal area. Protection and management of these stands is key to aiding the Partnership's efforts to return threatened and endangered species such as the red-cockaded woodpecker to private lands.

Charles Babb, Coordinator, is reaching out to landowners to discuss alternatives to clear-cutting and replanting mature stands. To date, seven landowners have worked with the SLPCP to remove undesired species of hardwood and loblolly pines, thinned to reduce basal area, and returned fire to their forest stands. Three landowners have installed RCW nest cavities. Approximately 375 acres of mature longleaf are being managed to encourage natural regeneration and long-term selective harvesting.

The SLPCP mailed letters to 200 landowners, identified as owning forests with mature trees, to introduce the Partnership and raise awareness of their stands' unique values and potential. "We want to start a conversation with these landowners in hopes of finding a few champions interested in creating something special. When people understand just what they have, we often find that their priorities aren't necessarily to maximize income," said Babb. "Habitat improvement and aesthetics are valuable to many landowners who enjoy their forests."

Planting Trees, Chasing Frogs, and Workshops in the South Lowcountry – ACE Basin (SoLoACE)

By Bobby Franklin and Lisa Lord, The Longleaf Alliance



Jim Porter discusses stand management at the Women Owning Woodlands tour in Jasper County, South Carolina. Photo by Lisa Lord.

Even with the pandemic and weather-related challenges, the SoLoACE partners succeeded in restoring longleaf and providing outreach to landowners throughout the landscape. The wet weather slightly delayed the planting season, but all the seedlings made it into the ground, with a total of 813 acres planted.

Some species in the longleaf ecosystems benefited from the rainy period. The Longleaf Alliance partnered with the Savannah River Ecology Lab (SREL) to survey private lands for the Carolina gopher frog to better understand the species range in South Carolina. These efforts also provide landowner outreach opportunities to discuss the role of fire in maintaining their isolated wetlands. The rain kept ephemeral ponds full, providing a wonderful environment for egg mass surveys and water sampling. Dr. Stacey Lance, a researcher with SREL, moved her lab to her living room during COVID-19 stay-at-home orders to continue making progress on the project!

Despite rain delays and a short, virus-related burn ban, partners are on track to burn at least 1,600 acres. The area was impacted by the April 13th tornado outbreak with at least eight tornados confirmed in the LIT; some partners suffered extensive damage. Many in the Partnership were involved in damage assessment and tornado recovery.

Several SoLoACE partners, including Clemson Extension, The Longleaf Alliance, SC Forestry Commission, Lowcountry Land Trust, NRCS, and others, organized and participated in a Women Owning Woodlands Workshop and Field Day on March 7th in Ridgeland at the Blue Heron Nature Center and Bailey Mill Plantation. Over 35 women participated in this event designed to connect landowners with natural resource professionals and the resources they need to manage their land. The Women Owning Woodlands Program addresses the needs of female forest owners and supports women in forest leadership roles.

Texas Team Launches Songbird Monitoring Project

By Bill Bartush and Jenny Sanders



A song meter in a young longleaf stand where northern bobwhite quail were detected. Photo by Dr. Dan Saenz.

In 2018 the Texas Longleaf Implementation Team (TLIT) partnered with the U.S. Forest Service Southern Research Station to launch a project that would evaluate the effects of longleaf restoration on priority bird species. Conservationists have long assumed that common longleaf management practices ultimately result in an increased occurrence of priority birds such as eastern wild turkey, brown-headed nuthatch, northern bobwhite, Bachman's sparrow, and red-cockaded woodpecker. However, responsible restoration requires the testing of assumptions.

Through this collaborative effort, an intensive investigation of bird response to longleaf restoration was initiated. Researchers placed remote sound meters in treated (burned) and untreated (unburned) sites in southern Angelina and Jasper Counties. Monitors collected singing bird presence data each day at dawn and dusk during the breeding season. After the first season of monitoring, the results are promising! Preliminary analysis indicates a greater occurrence of priority birds in the treated stands than untreated.

Additional song meters were deployed and are collecting data for a second season. Perhaps the best news in all this is that the TLIT is poised to have a more solid understanding of our impacts on a key indicator of system health and integrity. The birds are letting us know, and we're listening!

Read the full preliminary report at www.txlongleaf.org/blog. Thank you for funding and resources provided by the National Fish & Wildlife Foundation, American Bird Conservancy, Texas Parks & Wildlife Department, Texas A&M Forest Service, Lower Mississippi Valley Joint Venture, and U.S. Fish & Wildlife Service.

Season of Fire Guidelines for Longleaf Pine Seedlings and Saplings

By Mary Anne S. Sayer, Plant Physiologist, USDA Forest Service, Southern Research Station



After May prescribed fire, starch that is naturally available between late winter and early summer feeds the post-scorch foliage growth of seedlings and young saplings until new foliage is mature enough to export photosynthate. Photo by Mary Anne S. Sayer.

By using prescribed fire as early as two years post-planting, foresters can “jump-start” the growth of longleaf pine seedlings. Abundant sunlight after burning leads to early emergence from the grass stage, thereby promoting the juvenile growth of longleaf pine desired by private landowners. But what are the risks of burning young longleaf pine? A recent study on the Kisatchie National Forest by the USDA Forest Service Southern Research Station found both starch and photosynthate are important to post-scorch needle regrowth, which is key to sustained production in prescribed burned forests. Relative contributions of these mechanisms depend on post-fire foliage retention and season of fire. Longleaf pine starch reserves accumulate annually from November through March and are nearly depleted by August. Photosynthate produced by un-burned foliage feeds foliage regrowth, but for young, completely scorched longleaf pine, foliage regrowth depends on seasonally available starch until new fascicles mature. Prescribed fire in spring should be avoided where seedlings recently initiated height growth and have fire-vulnerable elongating buds. Otherwise, prescribed fire in spring is tolerated by young longleaf pines despite complete crown scorch because of seasonally available starch that supplements photosynthate to regrow scorched foliage. The USDA Forest Service Southern Research Station is a founding member of the West Central Louisiana Ecosystem Partnership, a coalition of stakeholders including the U.S. Forest Service and U.S. Department of Defense, Natural Resource Conservation Service, state and federal wildlife agencies, conservation NGOs and others advancing longleaf restoration within the Fort Polk/Kisatchie National Forest SGA.

Research publication: Sayer, M.A.S.; Tyree, M.C.; Kuehler, E.A.; Jackson, J.K.; Dillaway, D.N. 2020. Physiological Mechanisms of Foliage Recovery after Spring or Fall Crown Scorch in Young Longleaf Pine (*Pinus palustris* Mill.). *Forests* 11(208). <https://doi.org/10.3390/f11020208>

Talladega Mountains Longleaf Conservation Partnership Burning Update

By Alex Varner, TMLCP LIT Coordinator/Mountain Longleaf Conservation Coordinator, The Nature Conservancy



This high ridge along Weogufka Creek in Coosa County, Alabama contains significant stands of ancient longleaf. Fire crews burned this area for the first time in February. Photo by Alex Varner.

Despite this abridged fire season, the seasonal fire crews across the Talladega Mountains Longleaf Conservation Partnership (TMLCP) landscape still got in some great burning. Total fire acres for the two Alabama and one Georgia crew were 40,481—an impressive number for a very short amount of time wedged between the abnormal rain amounts this winter and the early shutdown due to COVID-19. Prescribed fire occurred across the entire TMLCP landscape, from the southern edge in Autauga County, Alabama, to the rocky escarpments in east Alabama and northwest Georgia. Fire was conducted on all three districts of the Talladega National Forest, the Conasauga District of the Chattahoochee/Oconee National Forest in Georgia, TNC lands in Georgia and Alabama, Paulding and Sheffield State Forests in Georgia, high priority old-growth tracts in Alabama, state-owned lands in Alabama, and Army Compatible Use Buffer (ACUB) lands in Georgia. Some of the most important lands within the landscape were burned this year. All the seasonal firefighters learned a great deal about firing operations and ecosystem dynamics in this unique part of the longleaf pine's range. Berry College was lined up for a 120-acre unit fire, but will have to wait until next year, like many other burns planned this season. Fingers crossed that we can get next year's fire season underway without any major hiccups from the pandemic.

Exceptional Prescribed Fire Year for Conecuh National Forest

By Vernon Compton, The Longleaf Alliance



Prescribed burn through the ground-cover on the Conecuh National Forest. Photo by Geoffrey Sorrell, The Nature Conservancy, Alabama Chapter.



Understory response, 2.5 months post-fire on the Conecuh National Forest. Photo by Vernon Compton, The Longleaf Alliance.

Within the Gulf Coastal Plain Ecosystem Partnership (GCPEP) landscape, partners have identified prescribed fire as the highest priority for longleaf pine ecosystem restoration and management. The Conecuh National Forest benefited from a banner prescribed fire year with 34,208 acres burned, the most burned annually since 2001. This was all accomplished before March 18, when the Forest Service paused prescribed burning in response to the COVID-19 pandemic. Several factors led to such a productive year, including a new streamlined burn plan format and funding for a full-time dozer crew to prepare firelines.

With more line prep accomplished earlier in 2019, all was ready to go when the first good burn day arrived in November, leading to more prescribed fire opportunities. New equipment also played a role as two new UTV torch units helped with ignitions, and helicopter ignitions assisted with several big burn days where two to four units were burned at the same time. "This good year helped us get fire into areas that were very much in need of fire effects," said Kevin Mock, new Fire Management Officer on the Conecuh. "It wouldn't have happened without the great financial support from our Regional and Forest Supervisor's Office, and exceptional ground and air support from our local staff, the whole National Forests in Alabama team, and the many partners who provide us essential capacity to do more." Partners contributing to this accomplishment include Alabama Forestry Commission, Florida Forest Service, Prescribed Fire Training Center, The Nature Conservancy, and LLA and GCPEP. Of course, Mother Nature must cooperate for a season like this to occur, and good fire weather conditions prevailed with rain falling when needed to allow prescribed burning to continue. Congratulations, Conecuh National Forest, on pulling together everything necessary for the outstanding prescribed fire accomplishments in a shortened burn season. Job well done!



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— Becky Humphries,
NWTF Chief Executive Officer

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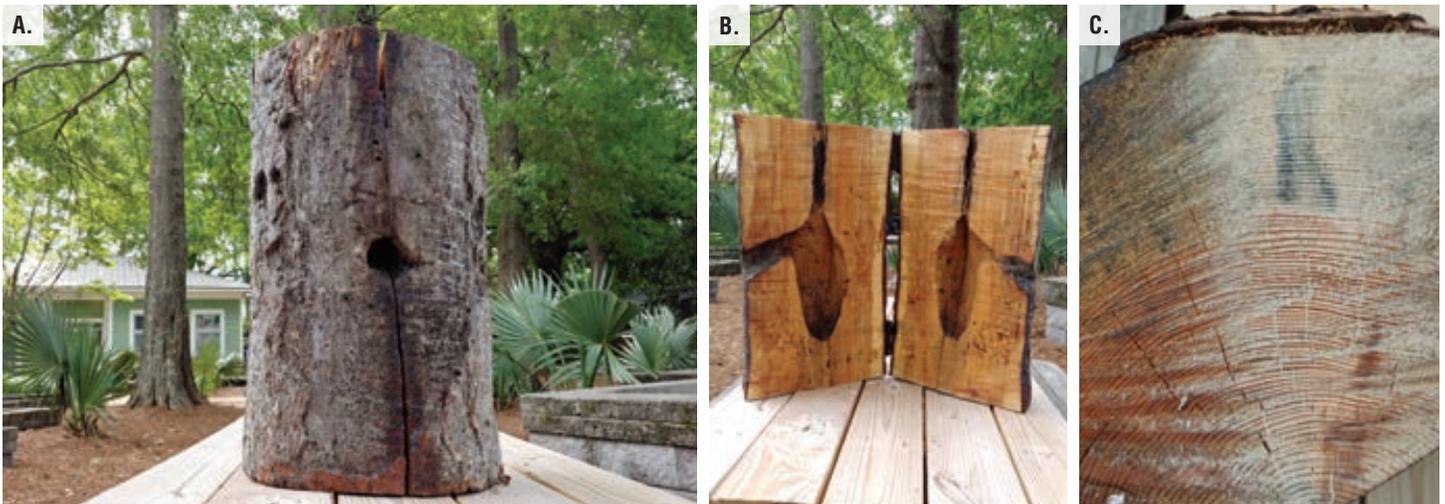
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WHILE YOU'RE IN THE GRASS STAGE

By Patrick Ma, The Nature Conservancy South Carolina

Many longleaf advocates understand the importance of increasing public understanding of conservation and management. Still, we often lack the tools to engage one of our most captive audiences — KIDS! Find inspiration for your inner educator with unique resources from across the longleaf range.

Turning a Loss into Learning



A. The RCW cavity was salvaged from a windthrown longleaf pine and repurposed into an interpretive display. The display provides an inside look into why these birds are clever engineers and their relationship with longleaf. It touches on three desirable qualifications for a cavity tree: tree size, age, and fungal decay. **B.** The cross-section pivots open along the vertical plane on hinges. Note the characteristic upward angle of the entrance into the cavity. Evidence of red heart disease is clearly visible in the heartwood above the cavity. RCWs select trees based on size and age, but research suggests that they also may use the presence of exterior cankers on the tree trunk to identify red heart disease which makes the inner wood, or the heartwood, soft and easier to excavate. **C.** The tree itself is roughly 122 years-old. By back-dating from 2019, this tree germinated around 1897. Photos by Patrick Ma.

My colleague, Matt, and I discovered the fallen longleaf while prepping for visitors to The Nature Conservancy's Sandy Island Preserve in South Carolina. Only a few staff had been on the island since the start of the 2019 hurricane season, so our best guess is that Hurricane Dorian likely toppled this tree. The tree used to provide a convenient and up-close look at an active red-cockaded woodpecker (RCW) cavity, standing merely 20 feet from the edge of the road. At first, Matt and I stuck our eyes right in the cavity's entrance hole and half-heartedly joked about how visitors would now be able to get a 'real close' look at a cavity. After pausing for a moment, our creative juices started flowing. We thought more seriously, "What if we could cut the cavity in half?" We both remembered a similar display

at the Tom Yawkey Wildlife Heritage Center. We marinated on that idea for the rest of the day and later posed it to our conservation team. With leadership approval and permission from U.S. Fish & Wildlife Service, our seasonal fire crew salvaged the cavity and, using chainsaws and polyurethane, cut and finished the display.

The display is an invaluable and portable visual aid about the relationship between the 'birds and the trees.' We plan to use this as a teaching tool at donor events and local festivals like the annual Sewee Fire Festival and South Carolina's Wood Magic Forest Fair. Thanks to the team effort, a small part of this old-growth longleaf pine will impact and educate many people.

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LONGLEAF LITERATURE

Author: J. Drew Lanham

Publisher: Milkweed Editions, 2017

The Home Place: Memoirs of a Colored Man's Love Affair with Nature

Reviewed by Lisa Lord, *The Longleaf Alliance*

J. Drew Lanham's book is an ode to so many things pineywoods lovers, ecologists, birders, naturalists, and "wandering-wondering watchers and ecologically enlightened spirits" hold dear. *The Home Place: Memoirs of a Colored Man's Love Affair with Nature* unfolds in exquisite layers exploring the connections between the past, nature, and man's relationship to the land. Lanham weaves together art and science in his memoir, delving into race, family, sense of place, and what it really means to embrace wildness, and through it, his self-acceptance as a "rare bird." Lanham's ability to analyze himself in this memoir is astounding, thought-provoking, and at times hilarious, and he does it with incredible clarity.

The author is a native of Edgefield County, a mostly forested county situated in western South Carolina and the backdrop for the memoir. It's a place where elements from the coastal plain, piedmont, and mountains intertwine and is traversed by tributaries that eventually make their way to the Savannah River. This mosaic creates a wealth of biodiversity and a landscape that is ripe for those with a natural outdoor curiosity.

In the book, we are introduced to the Home Place and his multi-faceted family members, including his grandmother, Mamatha, his teacher parents, siblings, and others that

helped to ignite his passion for birds along the way. He describes his education and experiences at Clemson University, where he completed his PhD, and now holds an endowed chair as an Alumni Distinguished Professor and Master Teacher. Lanham also discusses what it means to bird while black. As he stated during a 2015 interview with Audubon, "I also think it's a matter of redefining and expanding what a birder is. Color doesn't limit birds; it simply enhances their lives and our enjoyment in seeing them. I think it should be the same with us." As our country engages in conversations and protests centered around racial injustice, the author's message of racial inclusion in outdoor spaces is relevant and needs to be embraced now more than ever.

Through his teaching, speaking, and mentorship, Lanham has ignited an ecological flame in many of his students at the university. Through his prolific writing, he is spreading this flame beyond the classroom. Many that work to restore the longleaf ecosystem are, as Lanham describes,

"possessed by it," although perhaps we have not defined this as clearly or expressed it so eloquently. Overall, this award-winning book is akin to a bird song. It is unique, lyrical, captivating, and for those that truly know the natural world, it holds beautiful familiarity.



"I think a lot about land. In fact, I am possessed by it. I think about the lay of the land, how it came to be, what natural forces have changed it, what human forces have mangled it, how concrete and asphalt shall doom it. I think about the promise it holds for the future and what history it preserves from the past."

LONGLEAF *Art* SPOTLIGHT

SANCTUARY

By Wendy Jo Ledbetter, *The Nature Conservancy*



Pinus palustris 3, oil and acrylic on canvas. Photo by John Fulbright.

could not have come at a better time. In her recent mixed-media exhibition, Sara's definition of "sanctuary" was crystal clear, proving nature's role as a source of comfort and inspiration.

While on a sabbatical from her work as a machinery engineer at the ExxonMobil Chemical Plant in Beaumont, Sara explored her interest and passion for art and science. The *Sanctuary* exhibition is the culmination of her pursuits as a citizen scientist and exemplifies her love for the longleaf pine forests found at The Nature Conservancy's Roy E. Larsen Sandyland Sanctuary



Sara Tuell at the virtual reception for Sanctuary with her piece, Longleaf pinecone 2. Photo by Joel Kaser.

Sanctuary: (noun) a place of refuge or safety, 2) a nature reserve, 3) a holy place, temple, or church.

In these times of global uncertainty, aren't we all seeking the benefits of a sanctuary in some form or fashion? These were my thoughts as I experienced the *Sanctuary* art installation by Sara Lydia Tuell, a Southeast Texas artist whose profound celebration of nature

air. When the opportunity for the show came up, Sandylands seemed like an obvious focus for my work.

Did the diversity you observed in the natural world influence your use of a variety of mediums — clay, wire, paint, etc.?

Yes, absolutely. The variety of textures, weight, and movement in the subjects I was inspired by required experimentation with different mediums. I hadn't worked much with sculpture before *Sanctuary*, so translating those forms in a way I was satisfied with was a real challenge!

As an artist, citizen scientist, and community member, what messages about our natural world and conservation do you hope to convey to those who view your work?

I hope that my work inspires curiosity. Learning allows us to create personal relationships, whether it is with our environment, art, local culture, etc. Without those personal connections, it is difficult to advance conservation.

The *Sanctuary* exhibition and the 17 works of art it encompassed was held at The Art Studio, Inc. in Beaumont, Texas, and on screens everywhere via Facebook LIVE. Visit www.art-studio.org/sanctuary to view photos of the exhibit as well as find the recording of the opening reception.

Browse Sara's artwork on her website saratuell.com.



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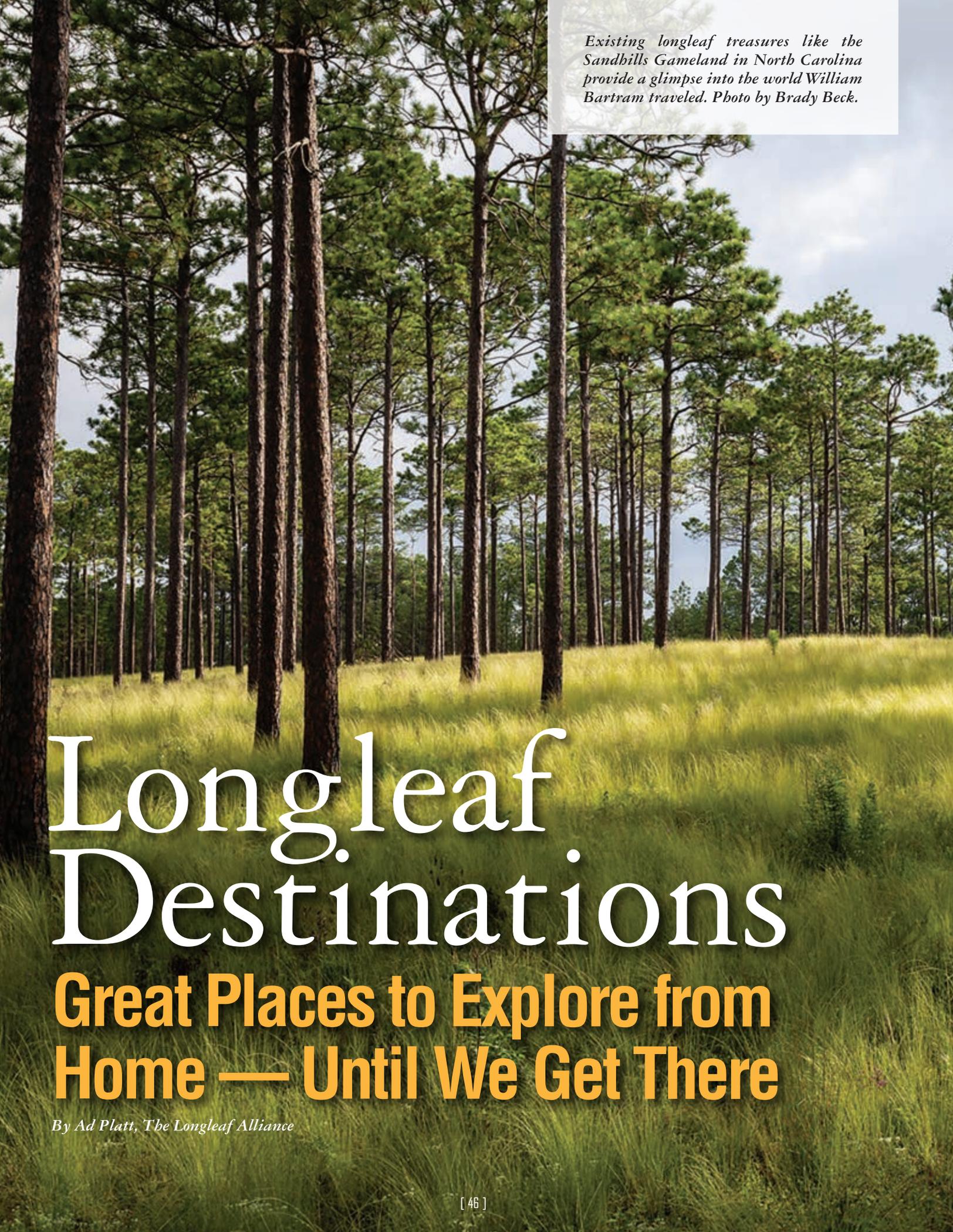
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Existing longleaf treasures like the Sandhills Gameland in North Carolina provide a glimpse into the world William Bartram traveled. Photo by Brady Beck.

Longleaf Destinations

Great Places to Explore from Home — Until We Get There

By Ad Platt, The Longleaf Alliance



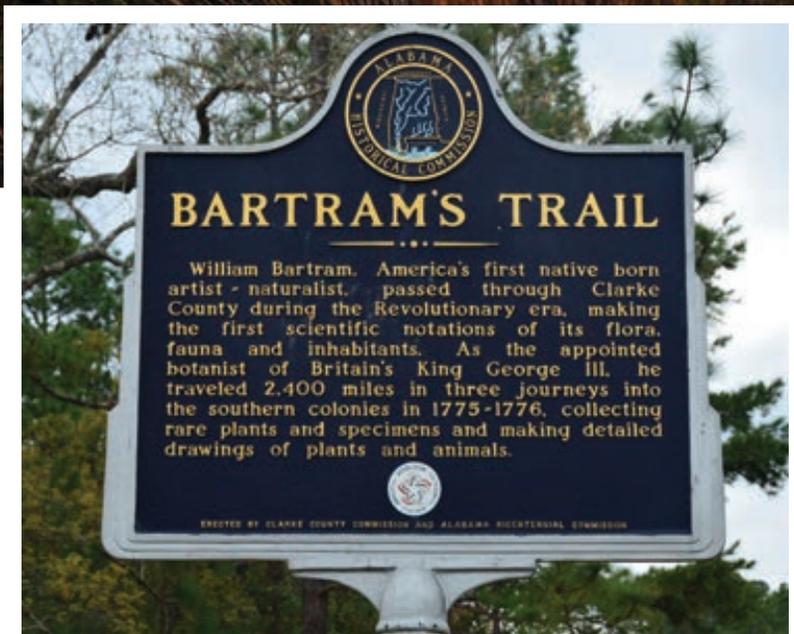
Portrait of William Bartram, by Charles Willson Peale, c. 1808. Used with permission of Independence National Historical Park.

By now, you likely have gotten as good as you want to get at being “safer at home” and practicing your social distancing. Fortunately, there is nothing to stop us from planning destinations for our bucket list. One thing that consistently contributes to making trips memorable is the time we spend in advance on planning and our anticipation. On the other hand, it is already a cliché that too often overly busy people go straight from work to a big busy vacation so rapidly that they never really relax, and come back “more tired than when they left.” Now more than ever, armchair travelers can take great trips, as anyone who loves reading books or maps already knows.

Anticipation plus the time to research and plan for that long-awaited chance to explore any destination makes the realization of travel that much more enjoyable.

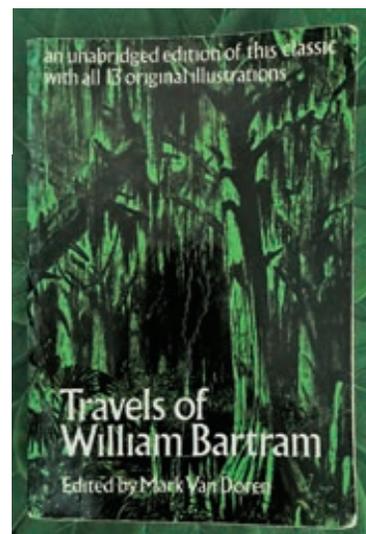


Longleaf Serenity. Photo by Brady Beck.



Using the interactive maps on Bartramtrail.org, locate Bartram Trail historical markers. Explore the markers virtually or plan a short road trip to visit those in your local area. Photo courtesy of RuralSWAlabama.org.

With that thought in mind, here are two recommendations that longleaf enthusiasts will enjoy exploring until you can visit in person. They also provide an excellent introduction to the longleaf ecosystem to people of all ages.



One of the many editions of Travels of William Bartram.

Travel alongside William Bartram

Have you ever wished you could go back in time and see the New World? How would you like to walk in the footsteps of

William Bartram and see some of the places that he visited on his travels, nearly 250 years ago? Thanks to the hard work and dedication of many people, you can.

Many prominent naturalists today can trace their inspiration to their discovery of the 1955 unabridged edition of this American naturalist's 18th-century manuscript, *Travels of William Bartram*. A trained naturalist in a "brand-new" world,



“We find ourselves on the entrance of a vast plain which extends west sixty or seventy miles.... This plain is mostly a forest of the great long-leaved pine, the earth covered with grass, interspersed with an infinite variety of herbaceous plants, and embellished with extensive savannas, always green, sparkling with ponds of water...” William Bartram

William Bartram Trail

Interactive maps available on Bartramtrail.org provide locations and descriptions of historical sites from Bartram's travels. Courtesy of Brad Sanders.



Bartram noted the characteristics of almost everything he encountered, the landscapes, animals, plants and peoples, both native people and earliest settlers. In 1976 a group of historians and preservationists gathered and established the Bartram Trail Conference to locate and mark Bartram's route from 1773 to 1778 through what would eventually become eight of the nine longleaf states: North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, and Louisiana.

Bartram's *Travels* still make for exciting reading today, a classic of natural science and detailed observation. His 250-year-old words speak to pertinent environmental choices we

face, but the profound changes and development have indeed transformed the path of his travels. From Bartramtrail.org, a virtual traveler can find interactive trail maps with historical markers and references, book recommendations, and a robust collection of other resources, many tailored to your state.

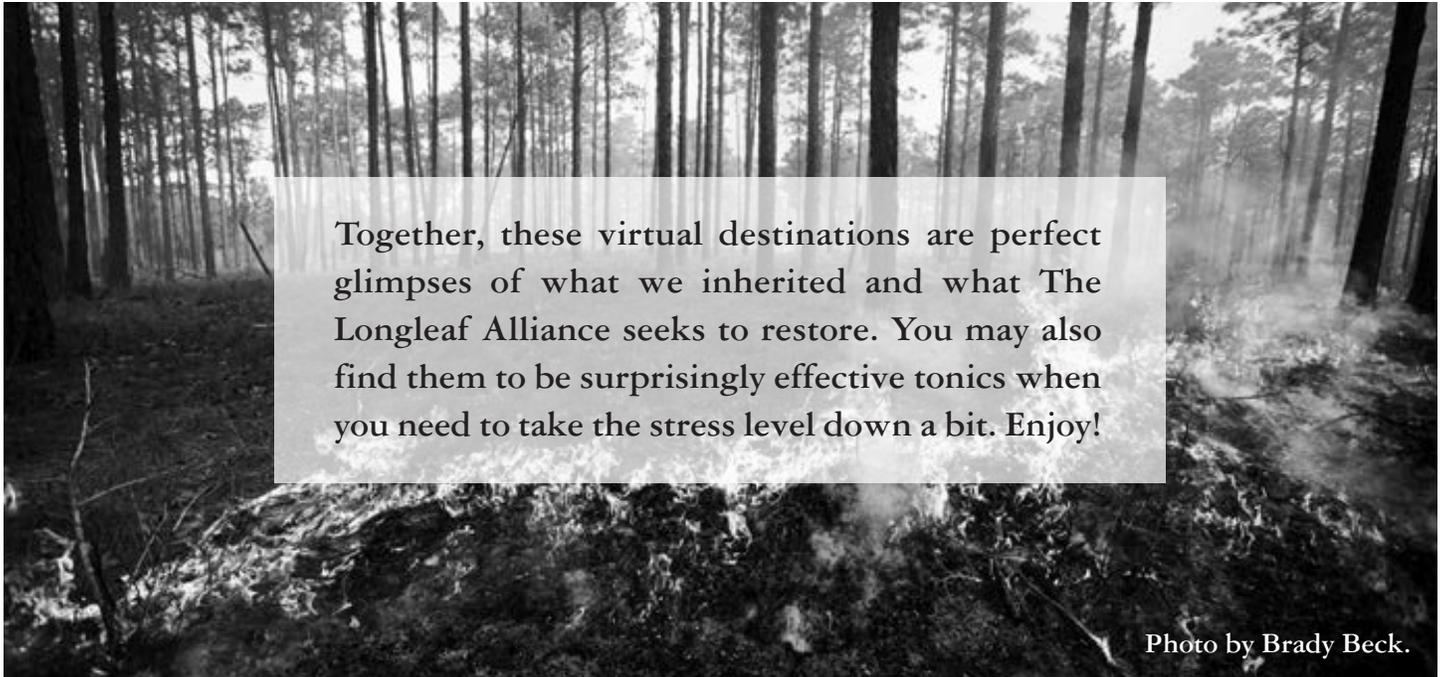
Find serenity in a virtual forest visit

Despite Bartram's vivid descriptions, are you still yearning for more of what he saw? Even now, there are notable examples of longleaf ecosystems where you can experience what our ancestors inherited initially, thanks to the continued stewardship

and hard work of landowners and partners. Luckily, we benefit from a time when we can virtually experience the sights and sounds of some of these places!

One site we highly recommend you explore is the *Longleaf Serenity* project on YouTube created by Brady Beck. You will find a weekly series containing one-minute video vignettes, complete with the natural soundtrack experienced in these

places. Pulling from Brady's vast archive of video footage from his time working and playing in the woods, the longleaf landscapes span multiple seasons and perspectives, including drone footage, to provide unique explorations of the treasures found in longleaf forests. Brady said, "I have been thinking about this project for over a year. Now seems like a good time to share it with the world. We can certainly all use a little Serenity."



Together, these virtual destinations are perfect glimpses of what we inherited and what The Longleaf Alliance seeks to restore. You may also find them to be surprisingly effective tonics when you need to take the stress level down a bit. Enjoy!

Photo by Brady Beck.

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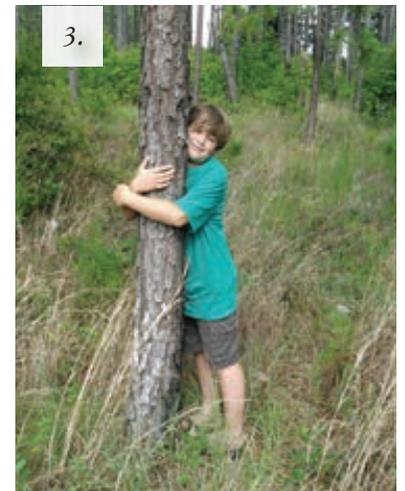
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Growing Up with Longleaf

When Roger Birkhead and Dr. Chelsea Ward welcomed their first child in 2008, they initiated a photo series of their son Michael next to “his” longleaf tree. In the Spring of 2010, when Roger first shared these images of Michael with his tree in *The Longleaf Leader*, he wrote, “I want my son . . . to have an appreciation for these trees and the role they have played in our

history.” Later Sawyer and Adelaide joined the family, each receiving their own tree as well. Seeing that this family tradition has carried on and grown in the last ten years, it is evident that Roger and Chelsea are passing their love and respect for this ecosystem along to the next generation of longleafers.



1: Roger and son Michael (6 months) next to Michael's longleaf in 2008. 2: Brothers Michael and Sawyer in 2012. 3: Michael, now 12, literally hugging his longleaf tree. 4: A family tradition for all 3 kids! From left to right, Adelaide, Sawyer, and Michael. All photos courtesy of Roger Birkhead.

Transitions within The Alliance



1.



2.



3.

1: Jacob Barrett, Technical Assistance and Training Specialist 2: Kay Nail, Accounting Specialist. 3: Restoration Team members: Sean Moyer, Julianna O'Bar, Ronald Henderson, and Abraham Huang.

Jacob Barrett – joins The Longleaf Alliance as a Technical Assistance and Training Specialist in July. Growing up and attending college in the heart of longleaf range, Jacob developed a love for the longleaf pine and the matrix of plant communities that lie within. Earning his Bachelor of Applied Science in Natural Resource Management – Wildlife from Abraham Baldwin Agricultural College, Jacob began his career with The Orianne Society's Longleaf Savannas Initiative in southern Georgia as a Land Management Technician. He quickly accelerated through the ranks to Field Operations Coordinator and later, Stewardship Coordinator. Besides managing the 2,500-acre Orianne Preserve, the focus of his work at Orianne was centered around prescribed fire and groundcover restoration on privately-owned lands within the Fort Stewart/ Altamaha River Corridor.

Kay Nail – As The Longleaf Alliance's Accounting Specialist, Kay is responsible for assisting the Vice President for Business in executing the business aspects of LLA and working with our staff to provide management and understanding of all financial and administrative areas of the organization. Kay joined the team in May, sharing, "I have had the pleasure to work with The Longleaf Alliance for many years as a contract staff accountant with a local CPA firm. Recently the opportunity presented itself to join The Longleaf Alliance as their Accounting Specialist. I am thrilled to join the team, and everyone has made me feel very welcome."

The Longleaf Alliance also welcomed four new seasonal members, working with LLA Wildlife Biologist Charlie Abeles and Biological Technician Jessica Sandoval. The team is working to support the restoration of reticulated flatwoods salamander (RFS) breeding wetlands on Escribano Point

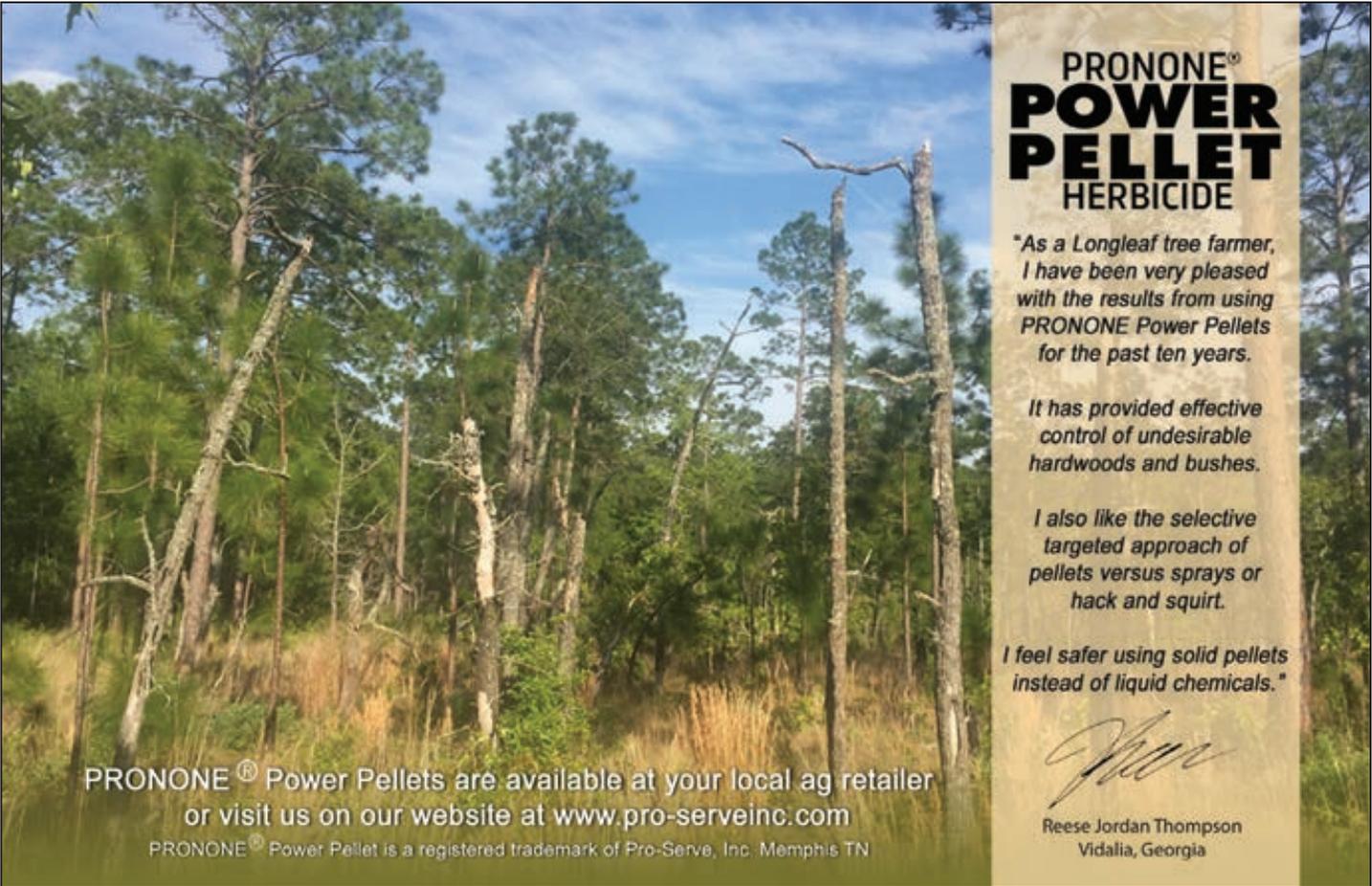
Wildlife Management Area (EPWMA) this summer. EPWMA borders the western edge of Eglin Air Force Base in the Florida Panhandle and conserves nearly 5,000 acres of unique habitat and contains more than 13 different natural communities.

Ronald Henderson – graduated from Franklin County High School in Eastpoint, Florida, in 2017. He has since worked as a Prescribed Burn Technician with the Student Conservation Association and a Crew Leader for the Conservation Corps of the Forgotten and Emerald Coasts.

Abraham Huang – graduated from Cal State University Long Beach with a B.A. in Geography. His previous experience includes the Student Conservation Association/TNC - EPA Fire Corps in Lowndesboro, Alabama as a FTT2 Prescribed Fire Ecosystem Restoration Intern. He also worked with the AmeriCorps as a Professional Development Member completing park trail maintenance and ecosystem restoration.

Sean Moyer – graduated with a B.S. in Biology from Florida State University in 2013. Since graduating, he has served as an Ecological Science Technician with The Nature Conservancy in New York and as an Invasive Species Technician, Stewardship Technician, and a Wildland Fire Technician with the Albany Pine Bush Preserve Commission in Albany, New York.

Julianna O'Bar – graduated in 2019 with a B.S. in Marine Biology from the University of West Florida (UWF). Her study areas included Marine Studies, Aquatic Botany, Ecology, and Animal Behavior. Upon graduation, Julianna began a semester-long internship with UWF that included working with volunteer ecological monitoring organizations.



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By Lynnsey Basala, *The Longleaf Alliance*

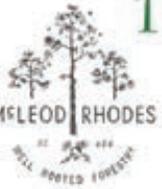
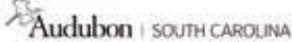
2020 CONSERVATION PARTNERS SHOW UNWAVERING SUPPORT AMIDST GLOBAL PANDEMIC

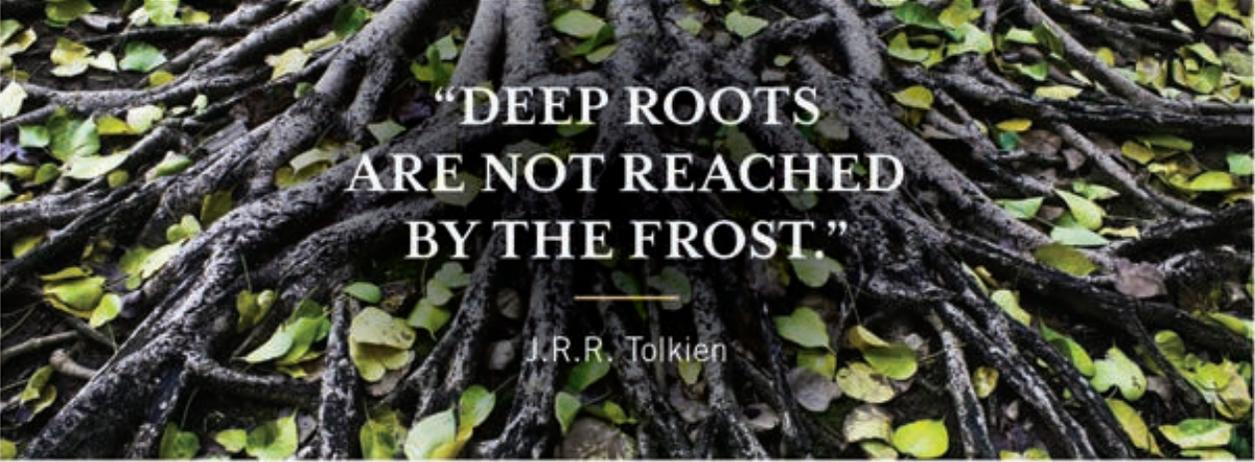
Yes, these are unprecedented times we're living. We are stretched and challenged in every capacity, moving with the ebbs and flows of life. But we are doing it. We are making it one moment, day, week, and month at a time. Despite the hardships and disturbances to routine, friendship and goodness prevail.

Mr. Fred Rogers, in all his wisdom, once said, "When I was a boy, and I would see scary things in the news, my mother would say to me, 'Look for the helpers. You will always find people who are helping.'" We want to thank the following conservation partners who have helped by recommitting

support. Instead of pulling back resources and monetary support, many have made contact to see if there is more they can do amidst the global pandemic. We are grateful for your unwavering commitment to the dedicated staff of The Longleaf Alliance.

The following conservation partners confirmed or renewed support before May 15. There will undoubtedly be more nonprofits, agencies, corporations, and nurseries that will contribute, and we look forward to providing an updated roster in the Fall issue. For partnership opportunities and incentives, please contact Lynnsey@longleafalliance.org.

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The Longleaf Alliance Presents The 13th Biennial Longleaf Pre-Conference Auction *Don't Miss the Opportunity July 1 - October 16!*

In an effort to include all of our members and conservation partners near and far in the upcoming 13th Biennial Longleaf Conference, we are hosting a pre-conference auction for Longleaf Leader subscribers! The following unique and enticing items are on the auction block. Buy it now options available.

Visit Colonial Williamsburg

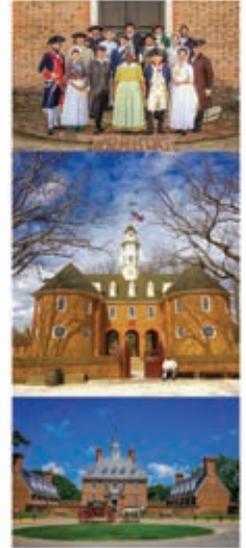
Colonial Williamsburg, Virginia is the largest living history museum in the world. It's also home to the largest longleaf pine restoration effort on private lands in the northern range. LLA Board of Director Dr. William "Bill" Owen wants to share the 'Historic Triangle' that is Williamsburg, Jamestown and Yorktown with you and up to *three guests. You're cordially invited to Colonial Williamsburg to spend two nights (optional third night) at his lovely home in the colonial district, which is within walking distance to some of the best restaurants, arts, history, activities and events in the country. We recommend an encounter with Colonial Nation Builders who portray real historic figures associated with 18th-century Williamsburg who made significant contributions to the American story. You will be provided daily breakfast and one dinner; surrounded by comfortable furniture and historic period-style rooms and decor. General admission to the Historic Triangle and an optional forestry experience, which includes a personal guided tour across the James River on the ferry to Bill's place in Sussex County is also included. This experience is truly unmatched, rich in culture, scenery and hospitality. *Small children and pets are not recommended for this space and experience. There will be a gentle Briard large breed dog onsite. Should the COVID-19 situation continue and cause serious delays, the buyer may postpone the trip to 2021 or request a full refund.

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Bids must be placed in \$250 increments



Beretta Model 471 Silver Hawk Side by Side Shotgun donated by Charley Tarver

Beretta Model 471 Silver Hawk Side by Side in 12 gauge with pistol grip stock. Stock is a beautiful semi-gloss European walnut with a hand checkered grip and fore-end. The receiver's sides, underside, bolsters and trigger guard feature beautiful scroll engraving along with a satin-nickel finish. The barrels are cold hammer forged with a blued finish and the 3 inch chrome lined chambers. The Silver Hawk has a single, selective trigger, which has an inertial block that sets the second barrel to fire. Barrel selection is made via a button mounted on the tang safety. Overall this shotgun is in excellent condition. It is approximately 20 years old with minimal use. FFL required.

Reserve Price: \$2,000

Buy It Now: \$3,500

Bids must be placed in \$250 increments



Longleaf Heart Pine Print by Timber Wood Prints

This framed screen print was made from salvaged Longleaf Heart Pine lumber by Artist Linne Hutto in Charleston, South Carolina. "Making Waves in Pantone 2166U" is screen printed on white 18"x24" high quality acid-free paper. To make an original relief print, Linne's process includes surfacing and burning the wood to prepare it for printing. Fire reduces the soft rings leaving a printable surface that reflects the life of the tree. Ink is rolled on the surface and paper is hand pressed onto the grain. The paper is removed to reveal a unique image of the growth rings. Screen prints are then pulled by hand using traditional methods. This piece is the perfect balance of old made new. Add Charleston charm to your wall today!

Reserve Price: \$250

Buy It Now: \$500

Bids must be placed in \$50 increments.



To place your bids from July 1- Oct 16 contact Lynnsey@longleafalliance.org or (314) 288-5654.

All bids are first come, first served.

Pre-Conference Auction expires at 11:00pm ET on October 16, 2020.

By Ben Larson, Enviva

HEARTPINE

Photo courtesy of Enviva.

In the summer of 2017, it was my second week on the job at Enviva, and what I was witnessing in the Florida Panhandle was a dream come true—Enviva was supporting, through its wood purchasing, the restoration of a longleaf pine forest. We were at Torreya State Park, where sand pine stands were being clearcut to re-establish longleaf. Enviva's purchasing of the chipped-up sand pine was an integral step in restoring longleaf.

More broadly, I could see the realized synergy between the world's largest pellet manufacturer and the longleaf community's need to remove significant volumes of hardwood and pine to restore existing longleaf stands and to establish millions of new acres of longleaf forests.

Enviva owns and operates eight pellet plants in the U.S. Southeast, coincidentally located in or close to

the historic range of longleaf. We produce wood pellets for heat and power applications, selling our pellets to customers located in the United Kingdom, Europe, and increasingly in Japan, to displace coal and fight climate change.



By buying the wood chips from the thinning operation, Enviva's sourcing supported the restoration of gopher tortoise habitat on 800 acres of longleaf at Geneva State Wildlife Management Area in southern Alabama. Photo by Ben Larson.

To make wood pellets, Enviva sources low-grade hardwood and pine, in the form of chips or roundwood, from loggers and wood suppliers as well as sawdust and other residues from sawmills. Because many existing longleaf forests need thinning, and because millions of acres of former longleaf forests were converted to different forest types, appropriate biomass removals are a critical step in the longleaf restoration process. Our sourcing can be particularly helpful in creating demand for some types of material, like small-diameter mid-canopy hardwood, which has limited (or no other)



*Ben Larson, Director of Sustainability.
Photo courtesy of Enviva.*

markets and needs to be removed to get light back on the ground to re-introduce prescribed fire.

Enviva's five-year partnership with The Longleaf Alliance announced in March, will focus on protecting and restoring longleaf tracts. The Longleaf Alliance will provide technical expertise to ensure that our restoration-oriented biomass sourcing in longleaf forests improves forest ecosystem conditions, with tract-level monitoring before and after biomass harvests. To protect existing longleaf stands, Enviva will expand our high conservation value forest (HCV) policy to include longleaf and will only source from identified, mapped longleaf stands if the stands will be maintained as longleaf. To support long-term longleaf management, The Longleaf Alliance helped develop management guidelines to be integrated into landowners' management plans. Enviva will cover the costs associated with writing the management plans as well as getting forestland certified through the Tree Farm or Forest Stewardship Council (FSC) systems.

Enviva is piloting these new procedures at our Cottdonale, Florida plant, and will implement them at our other plants later this year.

Going forward, Enviva and The Longleaf Alliance will work with partners to support additional longleaf restoration on public and private lands.

Furthermore, as part of our agreement with The Longleaf Alliance, we'll set annual longleaf restoration goals. For 2020, our goals are to:

1. Enroll 2,500 acres into sustainable forest management certification specifying long-term longleaf management.
2. Restore 5,000 acres (or have 5,000 acres on the path toward restoration) through restoration-oriented biomass sourcing.
3. Plant 135,000 longleaf seedlings on the DeSoto National Forest in Mississippi and other locations.
4. Install 56 red-cockaded woodpecker nesting cavities and repair 112 nesting cavities on the DeSoto National Forest.

As part of our Responsible Sourcing Policy, Enviva will report our progress towards these and other goals mid-year and at year-end. We look forward to working with The Longleaf Alliance and other partners to protect and restore longleaf for many years to come.

