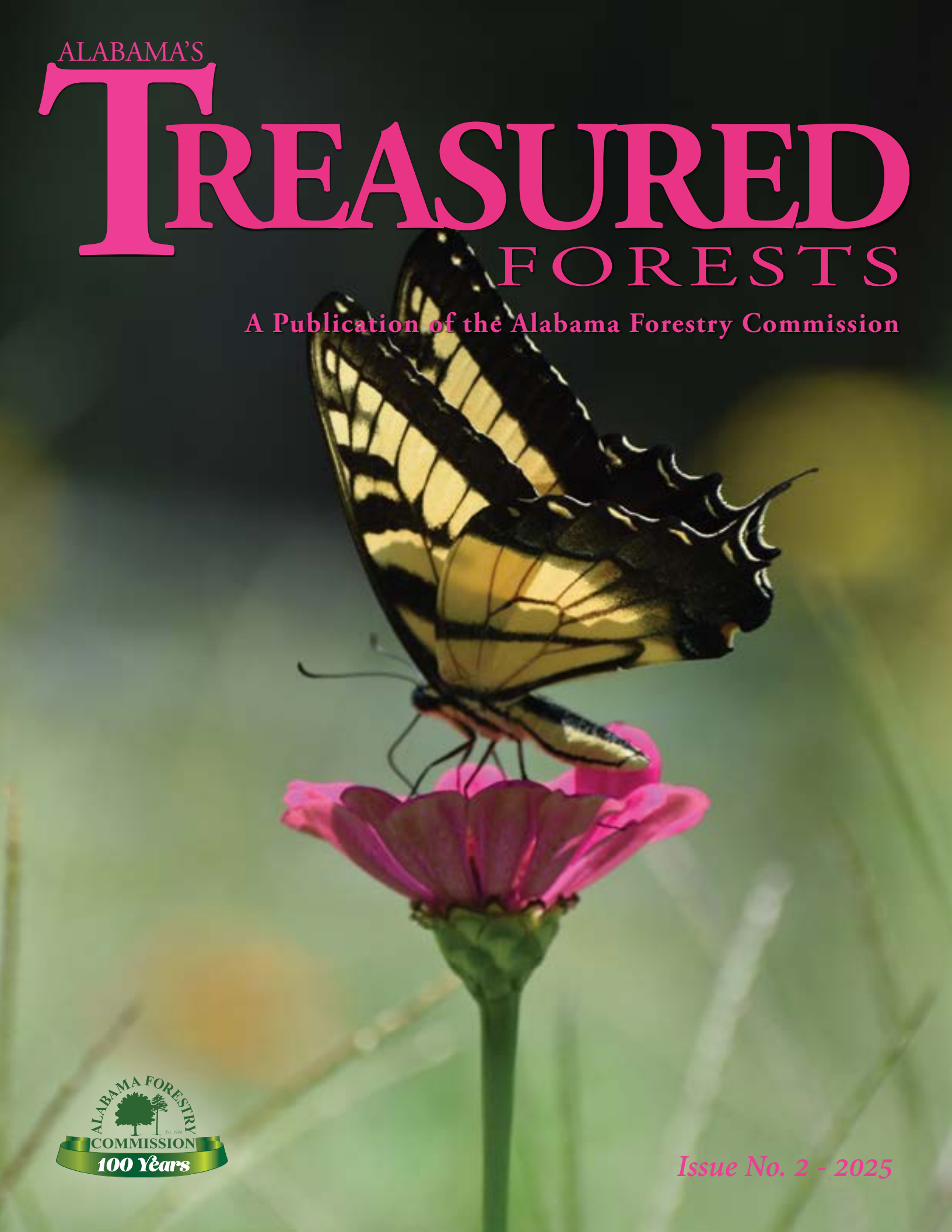
ALABAMA'S

TREASURED FORESTS

A Publication of the Alabama Forestry Commission



ALABAMA FORESTRY COMMISSION
Est. 1924
100 Years

Issue No. 2 - 2025

WE'D RATHER BE IN THE WOODS. WOULDN'T YOU?

Buying an "I'd rather be in the woods!" tag helps share the love of Alabama's incredible natural resources with students – and adults – of all ages.

Learn more at your local Probate Office.

PROMOTE • EDUCATE • IMPROVE

ATFA

TREASUREForest.org

SUPPORT NATURAL RESOURCES EDUCATION

ALABAMA'S
TREASURED FORESTS
A Publication of the Alabama Forestry Commission

table of CONTENTS

Vol. XLIII Issue No.2 - 2025

On The Cover:

Photo by Mollie Kate Erwin

Monarch butterfly posing for a photo on the property of landowners Salem & Diane Saloom in Conecuh County, a former Helene Mosley Memorial TREASURE Forest Award recipient.

This publication is provided at no charge to the forest landowners of Alabama, with a circulation of approximately 13,000. Published four times each year, the magazine is filled with forestry information and technical assistance designed to assist landowners in making informed decisions about the management practices they apply to their land. Articles and photographs are contributed by AFC employees and other forestry or natural resources professionals.

Alabama's TREASURED Forests magazine is also available on-line! **www.forestry.alabama.gov**

facebook YouTube

GoodFIRES www.goodfires.org/

VISIT MY FOREST www.visitmyforest.org/

◂ 5

Family Legacy
by Sam Boswell

◂ 10

Best Management Practices (BMPs) & Roads
by Carey Potter

◂ 13

Pecans: A Rich History of the 'State Nut' of Alabama
by Dan Chappell

◂ 19

Alabama's Underwater Forest
by Al Jones

◂ 24

Endemic Species of Alabama
by Ray Metzler

Alabama's TREASURED Forests (ISSN 0894-9654) is published by the Alabama Forestry Commission,
513 Madison Avenue, Montgomery, Alabama.
For address changes/new subscriptions,
email: **tfmag@forestry.alabama.gov** or call: (334) 240-9300

Bulk rate postage paid at Montgomery, Alabama.
POSTMASTER: Send address changes to: *Alabama's TREASURED Forests*, P.O. Box 302550, Montgomery, AL 36130-2550.

The publication of a story or article in this magazine does not constitute the Alabama Forestry Commission's endorsement of that particular practice, product, or company, but is an effort to provide forest landowners of Alabama with information and technical assistance to make informed decisions about the management practices they apply to their land. The Alabama Forestry Commission is an equal opportunity employer and provider.

Message from the *STATE FORESTER*

Rick Oates, State Forester

The Alabama Forestry Commission is moving out of the Stone Age! No longer will we use stone tablets, ancient parchment, or smoke signals to get our message out. We have a newly developed app available at both the Apple App Store (for iPhones) and the Google Play Store (for Androids). You can download it by searching for "Alabama Forestry Commission." The AFC app has many great tools at your fingertips.

All sorts of fire information will be available. If you are getting ready to do a prescribed burn and need the latest weather updates, you can get forecasts, KBDI Index Maps, Red Flag Warnings, precipitation maps, and much more. Presently, Certified Prescribed Burn Managers can get an online burn permit through our app, but we hope to soon make this opportunity available for all burn permits. The current Alabama wildfire map is also there. As burning conditions change across the state, the app will send you notifications (if you choose to receive them) alerting you about burn restrictions, large wildfires, and other important information that will keep you safe and help you stay abreast of forestry-related topics across the state.

If you are interested in AFC landowner services such as prescribed burning or installing fire lanes, you can access our new services sign-up portal through the app. This will be a quick and convenient way to get your name submitted so that we can evaluate your request. The latest southern pine beetle maps and other forest health information about pests and disease will be available here as well.

There will be a link to all addresses, contact information, and driving directions to our field offices. This will help you stay in touch with your local AFC employees and locate our sometimes 'out of the way' offices.

Along the lines of staying in touch, you will be able to link to our social media platforms through the app and keep up with the latest forestry news and views. Educational opportunities and other AFC supported events will be posted there as well.

As you can see, this new app will give you access to much of what the agency does and help you stay current on the latest within our forestry community. Please take the time to get connected to your Forestry Commission. And the best part? All this information and convenience is free!

I would like to thank our employees who have been working on this project for several months. There is not room to name them all, but it has been a labor of love, with only a few disagreements along the way! I think you will agree, their efforts have resulted in an awesome product.

Rick Oates

The Alabama Forestry Commission supports the Alabama Natural Resources Council's TREASURE Forest program. *Alabama's TREASURED Forests* magazine, published by the Alabama Forestry Commission, is intended to further encourage participation in and acceptance of this program by landowners in the state, offering valuable insight on forest management according to TREASURE Forest principles. TREASURE is an acronym that stands for **T**imber, **R**ecreation, **E**nvironment, and **A**esthetics for a **S**ustained **U**sable **RE**source.

Family Legacy

By Samuel Boswell, Registered Forester/Forestry Management Specialist, Tuscaloosa County Alabama Forestry Commission

Keith Dollar

Located in the rural Sterling community of northern Tuscaloosa County sits a property that won the 1992 Helene Mosley Memorial TREASURE Forest Award. The Dollar family has been farming and managing this land for over 100 years, so it might be safe to say that the Dollar family's roots run as deep as the tree roots here.

The current generation of Dollars to own this family property consists of Keith Dollar, along with his sister, Lisa Buley. They inherited the land after their father, J.B. Dollar, passed away in the early 2000s. The family property all started with Keith's grandfather, who bought 80 acres in 1906. Over the years, J.B. added small parcels of land to the family farm, sometimes 10, 15, or 20-acre plots at a time, until they reached approximately 900 acres.

After his retirement in 1982, J.B. Dollar "really went to work," becoming a 'hands-on' landowner. He constructed his own home using salvaged lumber from the pine on the property. Doing most of the work himself, he felled and hauled the trees to nearby mills, until hiring a local man with a portable sawmill to cut the lumber on site. J.B. also began an experiment of pruning young pines and even hosted a field day about pruning pines with the Tuscaloosa County Natural Resources Planning Committee.

(Continued on page 6)

Family Legacy

(Continued from page 5)

About 3 acres of pines around a food plot were pruned, increasing the visibility for hunting while also opening the ground for wildlife browsing. Today, approximately 30 years later, those once young pines now tower over the food plot as mature trees.

Keith Dollar continues to follow the TREASURE Forest principles set by his father. The entire property is managed for its potential in timber, wildlife, aesthetics, recreation, and environmental quality. The primary objective is timber production. Approximately 450 acres are pine plantations, both planted and natural. The rest of the property consists of mixed and hardwood stands. Multiple hardwood bottoms and Streamside Management Zones (SMZs) run throughout the property. The pine plantations are on a regular program of thinning and full harvests to maximize age diversity between the stands. Prescribed burns are also a regular practice on the Dollar property. On a three-year burn rotation, the prescribed burns help release the pine stands for improved growth and wildlife habitat.

The secondary objective is wildlife habitat. Dollar uses prescribed burning as his main tool to improve wildlife habitat, along with maintaining several wildlife openings and food plots throughout the entire property. Whitetail deer, eastern turkeys, quail, and other game species enjoy quality habitat and ample food supply from the diversity of the forest. Seeing the benefits of burning, Dollar wants to help educate other landowners about those benefits. In cooperation with the Tuscaloosa Natural Resource Planning Committee, he has hosted 'Learn & Burn' workshops on the family farm. These Learn & Burns allow landowners to get real hands-on experience with prescribed burning and help them gain more confidence to burn their own property.

As Keith Dollar nears his own retirement, he contemplates whether he'll be just like his father: maybe that's when he'll "really get to work," continuing the 'hands-on' land ownership until the Dollar farm is passed to a new generation of family conservationists.

TREE FARM

The Sign of Sustainability

Contact Cole Browning at
cbrowning@alaforestry.org
to learn how to get your sign.

A Short History of Alabama's Three Forest Recognition Programs

By Greg Brewer, Registered Forester/Stewardship Coordinator
Alabama Forestry Commission

Alabama has the unique distinction of being the sole state in the US to offer not one, not two, but three different recognition programs for forest landowners. These programs are Tree Farm, Stewardship Forest, and TREASURE Forest. As the Stewardship forester for the Alabama Forestry Commission, I am often asked questions about the ways this series provides an avenue for the acknowledgement of the work done by private forest owners on their property. A frequent query that our office receives involves the origin and development of the programs. These questions give us an opportunity to explain the history of the three and how they are related.

The **Tree Farm** program was the first recognition program initiated in Alabama. It originated in the state of Washington in the 1940s, established by a group of landowners who were performing sustainable forest practices. At that time, almost a century ago, American agriculture was focused primarily on row crops, while American forestry was focused on providing wood to mills. The forest industry was not as focused on replanting or on combating nonnative species as we are today. Trees were harvested and sent to the mill, and the land was left to regenerate on its own. Industry noticed this and started working purposely to improve their forest practices, but private landowners were slower to understand and respond to the issue. They were not seeing the forest for the trees — pun intended. And for good reason: if a person owned land, they wanted it to make money, and cutting trees could generate income. Site prepping the land and replanting were expensive and time-consuming. Also, when left alone, the land would generate trees naturally, so replanting seemed like an unnecessary step at the time.

That group of Washington landowners began to forge a different path towards more sustainable practices, and they wanted to be recognized for their efforts to establish forest health on their property. They were pioneers of their time, practicing sustainable efforts such as replanting after a harvest and correcting any erosion problems as they arose. These properties came to be signified by 'tree farm' signs. Neighboring landowners began to notice and wanted to be recognized as well. The program grew, and in the next several decades, the Tree Farm program spread across the nation.

In spite of its success and spread, the 1960s were a difficult time for the Tree Farm program. It suffered from the absence of a national standard, and additionally, many of the funding sources pulled away. The program almost went under during this time. In the '60s and '70s, environmental groups started to pop up around the country opposing natural resource professionals, and some landowners were afraid to display forestry signage on their property for fear of being attacked. With these groups at odds with each other, natural resource professionals lacking a unified voice, and landowners not knowing what to do, it became clear that Alabama needed a recognition program to bring everyone together.

The Tree Farm system managed to survive, eventually establishing a standard and acquiring status as a third-party audited program. These two elements ensured that the standards were clarified and upheld, providing necessary regulations, transparency, and accountability. This was (and is) unique. The Tree Farm system has come a long way since its inception in the 1940s, and today it is a strong nationwide program. Of the three programs, Tree Farm is the only third-party audited program and the only program that proves that a landowner is managing their property sustainably. This is a significant benchmark for the forest industry. Mills today need to bring in sustainably managed timber so that their finished products can be certified as sustainable.

In 1970, Bill Moody was hired to be Alabama's State Forester. He recognized the turmoil going on and how landowners were in the middle of it. He created a concept to recognize landowners who were managing not just for timber but were managing their property for multiple uses. He came up with **TREASURE Forest**, an acronym that stood for **T**imber, **R**ecreation, **E**ducation, **A**esthetics, **S**ustained, **U**sable **RE**source. This recognition program would highlight landowners implementing good forest stewardship on their property and focusing on multiple-use forest management practices. TREASURE Forest brought all the natural

resource professionals together, and it satisfied the environmental groups because the management of the forest was not just focused on one area, but all aspects of the forest. This program was designed to recognize landowners who were the top-tier managers of their land and who adhered to the best management practices. They worked not only with foresters but with wildlife biologists as well to achieve outcomes that served as ultimate examples of sustainable forestry. Bill Moody's concept became a reality in 1974. The TREASURE Forest Program was born, and the first TREASURE Forest property was recognized in Marengo County, Alabama. In the '70s and '80s, the TREASURE Forest recognition program grew in reputation and popularity, so much so that the USDA Forest Service started noticing what a tremendous success it was.

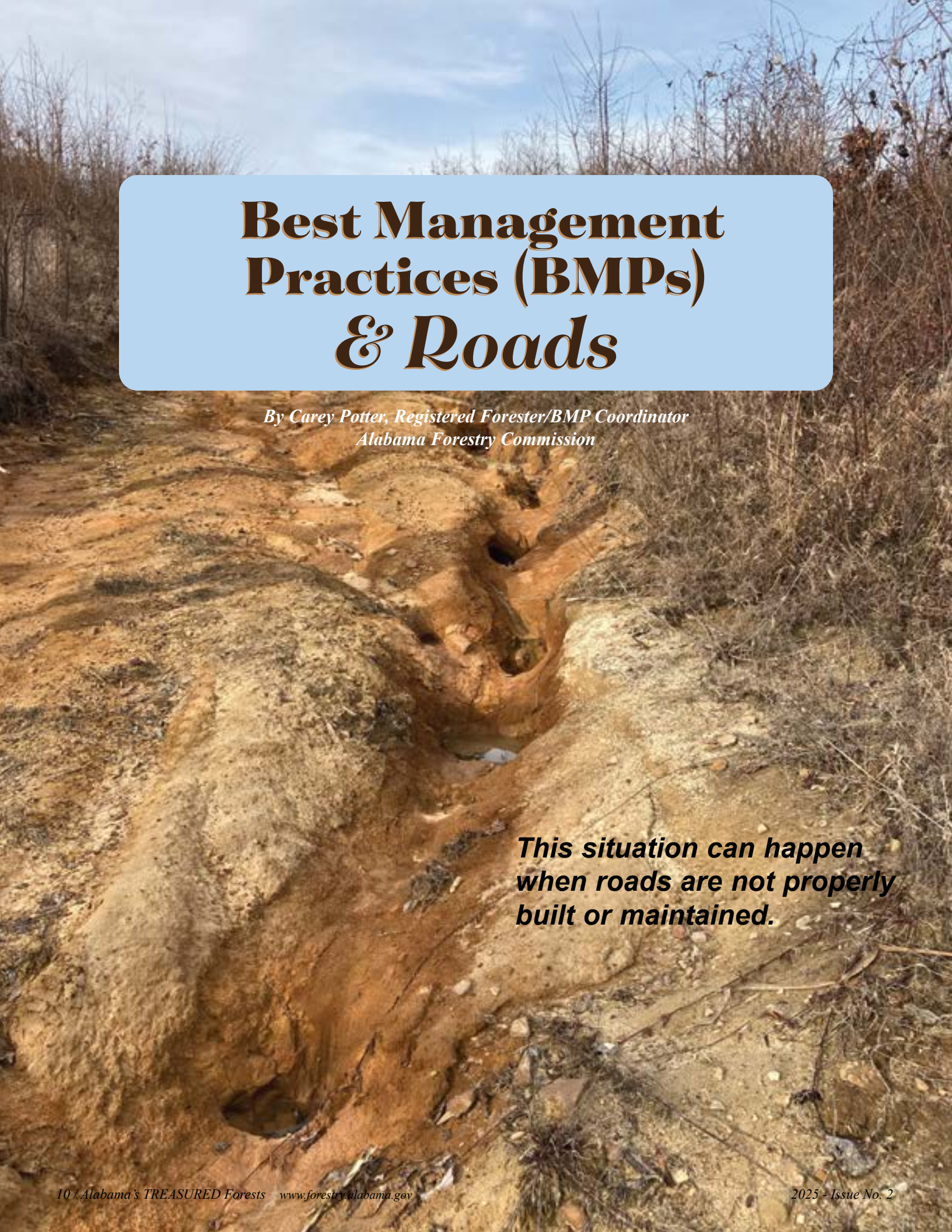
The Forest Service wanted a similar program across the nation to recognize private landowners for adhering to good forest stewardship practices. Thus, in the early 1990s, the **Stewardship Forest** program was born. Although the Stewardship Forest program recognizes landowners for their good forest management practices, it does not require a wildlife biologist to look at the property and is not as rigorous to enter as the TREASURE Forest program. In Alabama, we use the Stewardship Forest program as a stepping-stone to the TREASURE Forest program. Once a landowner is enrolled in Stewardship Forest, hopefully, they will continue to steward their land well and eventually qualify to be recognized as a TREASURE Forest.

All three programs differ but have the same goals: to promote good, sustainable forest management and to recognize the landowners who are practicing just that, to different levels and degrees. Whether a forest manager is focused solely on timber production or all aspects of forest health, participating in any of these programs requires intentional efforts to manage well. All three programs have their place in Alabama; they work not as competitors but symbiotically, recognizing the hard work of landowners and encouraging individuals who are managing their property well.

Photo by Kelvin Daniels

Best Management Practices (BMPs) & Roads

By Carey Potter, Registered Forester/BMP Coordinator
Alabama Forestry Commission



This situation can happen when roads are not properly built or maintained.

Roads are necessary to get us where we need to go. It could be to work, the grocery store, vacation, or just to get out of the house and ride around. Some of my best childhood memories involve traveling to the beach, hunting trips with my dad, and riding backwoods dirt roads when I became a teenager. There are some roads that your parents had to walk – uphill – both to and from school – when they were kids.

Have you ever stopped to think how these roads got there or why they were put in certain locations? There are state highways, city streets, county roads, and dirt roads. Many people don't realize the effort it takes to establish a good road system. In this article, I will focus on roads as they relate to best management practices (BMPs) and forestry use. There are three main areas that I would like to discuss, and these are types of roads, drainage control, and maintenance of roads.

Forest Road Types

For forestry use, there are two types of roads: permanent and temporary. Permanent roads remain open to travel on a property for the purpose of timber harvests, prescribed burning, forest management activities, and hunting purposes. These types of roads are continually used for these activities and, under heavy use, can deteriorate rapidly. How do we keep these roads in good shape? Well, we will discuss that later in this article. The second type of road is a temporary road, which is established for the purpose of harvesting timber on a property. This type of road can eventually turn into a permanent road if necessary.

Whether it's a permanent or temporary road, two very important considerations must be made, and these are proper planning and location. You wouldn't go on a vacation without first planning for it, would you? The same concept should be applied to the location of the road you are establishing. Both planning and road locations are more easily accomplished using topographic maps to determine elevation changes on a property. Using these maps, you can plot the location of the road and then physically flag such areas on the ground. Everyone would like to put a road in on a nice flat surface, right? Well, guess what, that is rarely the case. This is Alabama, not Kansas. There are going to be situations in which roads must be established where there are hills or higher degrees of slope involved. Ridges are great locations to put in roads, but eventually, you must come down the hill. In this case, you must use the slopes of the hill for road locations.

There are several considerations when establishing permanent or temporary roads. First, always consider drainage when building a new road or maintaining an existing road as an important tool to keep sediment out of water. Second, never build a road within a streamside management area unless there is a proper stream crossing. Finally, minimize road grades where erodible soils are present or where topography is steep.

Drainage Control

Here we go! You've used proper planning and location to establish your new road, plus a lot of money and effort. How do you make sure this new road or network of roads will stand the test of time? The number one factor to consider with all roads is to properly drain water and sediment off the road. If this doesn't happen, you will have roads that erode over time, or have what we call in the South, mud holes. How do we do this? There are several techniques, or water diversion devices, that can be used


'Out-sloped' road

to divert water and sediment from the road surface to the adjacent vegetative areas off the road.

Let's start with the basic road designs. Crowned and ditched roads are excellent at keeping water and sediment off the road. Crowned roads are just what the name implies; the roads are shaped, so the middle of the road is higher than the sides. This diverts water off the road into the sides where water can flow and eventually move into the adjacent vegetative stand using 'ditches' or 'turn out ditches.' Two other designs would be 'out-sloped' and 'in-sloped' roads. Out-sloped roads are typically used in steep terrain, and the concept is to angle the road so that water is drained to the outer edge of the road into vegetated areas. In-sloped roads are the opposite: roads are angled to the inside of the road. Small culverts are often used with in-sloped roads to drain the water under the road into vegetative areas.

Now that we've discussed road designs to drain water and sediment from the road surface, let's talk about other water diversion devices that can be used in addition to the design of the road. 'Water bars and turnouts' are one of the most popular forms of water diversion devices for permanent and temporary roads. Water bars are mounds of soil extending from one side of the road to the other. They should be angled around 40 degrees with a turnout ditch in conjunction with the angled water bar. These water bars should be packed down with a dozer, so they do not

(Continued on page 12)


'Water bar with turnouts'

Best Management Practices (BMPs) and Roads

(Continued from page 11)

Example of proper road maintenance

lose their integrity. Run the tracks of the dozer up and over the water bar several times to pack the soil.

People often ask me, "How many water bars/turnouts do I need to install on my property?" This depends upon the amount of slope or steepness of your roads. You will find a handy-dandy table for this on page 12 in the *Alabama's Best Management Practices (BMPs) for Forestry* manual. I also tell people to use another technique, which involves standing at the bottom of the slope and putting your hand up, even with your eyes. Make sure your hand is flat, palm towards the ground, and use this to look up the slope. Where your flat hand transects the ground up the slope is where your first water bar should be located. Mark this spot with flagging tape, then perform the same exercise at that point. You must repeat this process all the way up the hill until your hand is hitting the sky and not the slope of the hill.

The one other water diversion device that is good to use is a broad-based dip, sometimes called a 'rolling water bar.' Broad-based dips are primarily used on permanent roads that have a lot of truck or logging traffic. These water diversion devices consist of an elongated, packed water bar followed by a dip in the road surface to drain water off the road into the adjacent stand or vegetative area. These should never be used as ramps or 'jumps' for ATVs or side-by-sides. (Many of you just laughed because you've done this before!) Remember, the whole idea behind these water drainage devices is not to destroy the integrity of the devices by traveling the roads when conditions are not suitable for it.

I'll end this section on drainage control with a great quote from someone who has extensive knowledge when it comes to building and maintaining roads. Freddy Tidwell, Professional Logger Manager, past Alabama Logger's Council Director, former Logger of the Year, owner of F & C Logging, with over 41 years of logging experience, had this to say about roads and preparation, "Pre-plan your roads and skid trails for BMPs and SFI (Sustainable Forestry Initiative) before you start to work. When it rains, give it time for the water to run off the roads before you go back to work." This is expert advice from someone who has been around logging practices and roads for a long time!

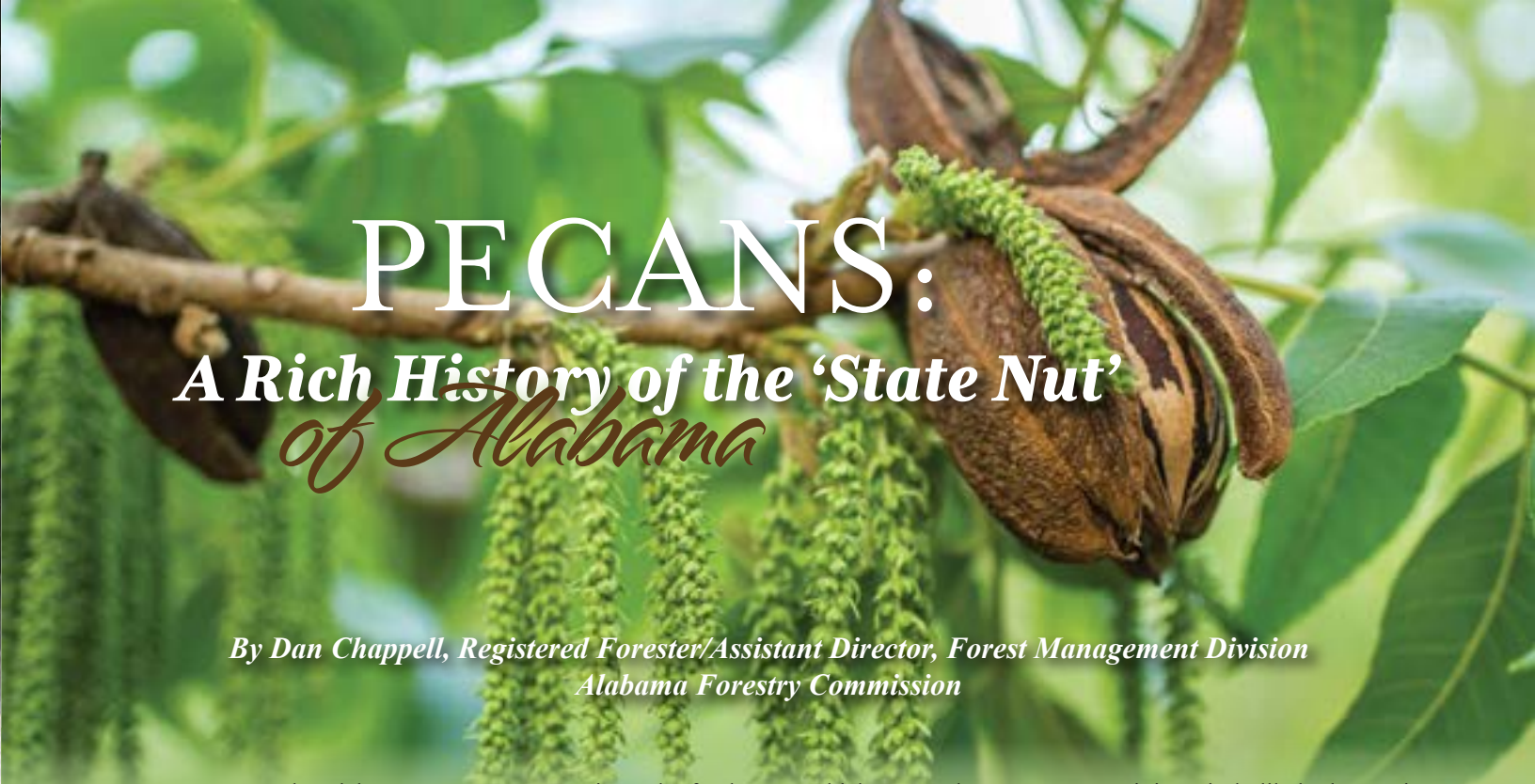
Road Maintenance

At this point, we know what type of road to establish and how to properly drain water and sediment from the road. Now it's imperative to understand how to use proper maintenance to make sure your road lasts for years to come. I know that if I spent a great amount of time, effort, and money establishing my roads, I would want to make sure that they last. How do we accomplish this? My first thought would be to make sure the road surfaces are properly stabilized. You can go many different routes with road stabilization; some are cheap, and others get into your bank account pretty good.

One of the cheapest methods would be to broadcast grass seed on the road surface to hold the soil. You can use rye grass, wheat, clover, fescue, or even brown top millet. Another, more expensive method, would be to spread rock or gravel on the road surface for stabilization, especially around any wet areas and approaches to stream crossings. Another consideration would be to allow ample sunlight to reach the road surface. Try not to plant pine seedlings all the way to the edge of the road. Allow 10 to 20 feet of right-of-way (ROW) on either side of the road. These ROWs can also serve as a natural food plot for deer, turkey, etc.

One of the most important factors to consider with any road system on your property is to keep all non-essential traffic off the road. One of the best ways to accomplish this is to put up a good gate at the entrance to the property and make sure that it is always locked. In this day and time, there are plenty of people who own ATVs, UTVs, and motorcycles who have nothing better to do than ride on someone else's property. It may even be a good idea to hide a cellular camera at the gate if you are having problems with trespassers. Always notify your local Wildlife & Freshwater Fisheries Division law enforcement officers or the local sheriff's office if you are having problems with trespassing.

In closing, there is one main point that I would like to make. Proper planning is essential with any great road system. It is imperative that you determine where your roads need to be, what type of road design that you want to use, and how to properly maintain your roads. If you properly prepare your roads, install water diversion devices, and maintain your roads, you will enjoy their use for years to come.



PECANS:

A Rich History of the 'State Nut' of Alabama

By Dan Chappell, Registered Forester/Assistant Director, Forest Management Division
Alabama Forestry Commission

We at the Alabama Forestry Commission are very fortunate to have a publication like *Alabama's TREASURED Forests* published in-house and distributed all across our state and beyond. Even though you may be reading this present edition on-line, it is also possible that you are handling an actual, non-virtual, paper copy of the magazine, and if so, you should consider yourself very fortunate, because there is not another forestry agency in the Southeast that maintains a magazine like this for interested landowners and the reading public. Also, I know that I am fortunate to have the opportunity to write for this magazine, which means the chance to do interesting research, which means to be frequently reminded of just how much I still have left to learn about the trees in our forest!

First, a question. Is pecan (*Carya illinoinensis*) a tree that is native to Alabama? This highly valuable nut-bearing tree is a major crop in the Southeast. The Southeastern state with the largest cash receipts for pecans in the 2023 rankings was Georgia, with an income of nearly $184 million. However, pecan is not a Georgia native. If you take a moment to search up the range map for pecan, you will see that it occurs mainly to our west and north, in the lower Mississippi Valley counties of Tennessee and Mississippi, and nearly the whole of Louisiana, and whose native habitat stretches from southern Indiana and Illinois, the middle portion of Missouri, much of Arkansas, Oklahoma, and east Texas, along with fingers reaching into Kansas. However, look closely at the map, and you will see an outlying island in west Alabama.

Digging a little deeper, I learned that the Alabama native range is somewhat of a question even among experts. The definitive work that places pecan as an Alabama native species is *Plant Life of Alabama, an Account of the Distribution, Modes of Association, and Adaptations of the Flora of Alabama, Together with a Systematic Catalogue of the Plants Growing in the State* by Charles Theodore Mohr, published in 1901. To quote from the species description on page 462: "Alabama: Central Prairie region. Rich woodlands. Hale County, Gallion. Dallas County, Uniontown. Marengo County, Demopolis. Undoubtedly indigenous." This volume can be found online at *https://archive.org/details/plantlifeofalaba00mohrrich/mode/2up*.

Although it looks odd on the map for there to be a small, disconnected piece of the range occurring in Alabama, there is likely a simple explanation. The word 'pecan' itself came to the English language by way of the French, whose explorers borrowed the Native American Algonquian word 'pakani,' which translates to 'a nut too hard to crack by hand.' This nut, both nutritious and delicious, was an important source of food for Native Americans, especially during the autumn months. As the tree grows well in the vicinity of waterways, it is entirely likely that Native Americans first cultivated the pecan in the land which became Alabama, long before the advent of European explorers (and botanists).

The potential for the pecan tree to be an important food crop producer in North America was realized early with the first known planting in 1772 in the (soon-to-be) United States, in, of all places, Long Island, New York. George Washington and Thomas Jefferson both planted pecan trees in Virginia. Even from London in 1805, there is a record of pecans being advertised as a potential food producer.

The large-scale industry of pecan orchard cultivation traces its history back to 1876. The successful use of grafting techniques made it possible to create superior stock based upon a superior wild individual. This first super pecan was named Centennial after being recognized at the Philadelphia Centennial Exposition of 1876. By the 1880s, commercial planting of improved stock was taking off in Louisiana and Texas, and soon to spread.

In Alabama, the leading pecan-growing counties were traditionally Mobile and Baldwin, and according to the USDA 2022 Census of Agriculture, Mobile County was still leading the way in acres produced. In fact, it was from that corner of the state that the Southwest Alabama Pecan Association arose, which held its first educational field day in 1960. After many years of success, this growers' association

(Continued on page 14)

PECANS: *A Rich History of the 'State Nut' of Alabama* *(Continued from page 13)*

broadened its scope through a name change to the Alabama Pecan Growers Association, to ensure that growers from any region of the state could feel at home. Concerted action by the state's producers was able to win for the pecan the position of 'State Nut of Alabama' in 1982.

Although you may not be a commercial-scale grower of pecans, you may have a few on your property or are considering planting them, and if so, there are some considerations. From the Alabama Cooperative Extension System's (Extension) "Factors That Affect Pecan Tree Production," we can take some useful information. First, even if you already have mast-producing trees, you have no doubt noticed that the production fluctuates greatly between years. This is a natural process and a smart strategy for the tree. As with many other nut and acorn producers, the pecan likes to store up its energy for several years, producing few if any nuts, then has a year of large output. This is called 'masting,' and the strategy seems to be to produce such a dizzyingly large crop that, try as they might, the birds and squirrels can't possibly consume them all, and some will be left to germinate and provide the next generation of trees. To smooth out the ups and downs, commercial growers may find it advantageous to have numerous cultivars all growing on their property at once, such that, hopefully, some of them will be masting each year to provide a marketable crop. Applying fertilizer in the recommended amounts also strengthens nut production even in off-years.

Unfortunately for both professionals and amateurs, the pecan is not immune to a number of pests. According to Extension, you can expect the disease known as pecan scab to give your trees trouble. This fungal disease attacks the tree on many fronts and costs the region millions of dollars each year in lost production and treatment expenses. Plant breeders have tried to stay one step ahead by developing resistant varieties, but pecan scab has consistently adapted itself in short order to the resistant varieties, making itself a challenging and expensive problem. However, if choosing to plant new trees, check with your local Extension office or nursery to select a variety with some level of resistance. On the insect side, pecan weevils are an insect that, as the name implies, attack the nuts on the tree by breaking in, feeding, and laying eggs in the nuts, which eventually hatch into larvae that, very conveniently for them, have a ready-made supply of food with the remaining nut. They proceed to eat their way out, fall to the ground, and patiently wait in the soil for the next big mast year to attack the tree again and repeat the cycle.

Even with those challenges that come with growing pecans, the reward for patience is a delicious nut that finds its way into many traditional Southern delicacies. Even if the pecan was not our only native tree nut, in my opinion, its role as the key ingredient in pecan pie would be enough to have earned its selection as State Nut of Alabama.

The Pecan Industry in Alabama

By Mollie Kate Erwin, Communications & Public Relations Specialist
Alabama Forestry Commission

Alabama has quite a few industries to be proud of, one of them being the pecan industry. While the pronunciation may vary, the love is consistent that Alabamians share for the delightful treats featuring the state nut. Our state is currently one of only 15 states that produces pecans commercially and ranks 8th in the nation, with an average yearly production sitting at a whopping 5.4 million pounds. Alabama's primary sources of production sit in Baldwin and Mobile counties, accompanied by 28 other counties across the state to make up the sprawling 9,000 acres of pecan tree orchards.

Commercial production of pecans in our state is traced back to the early 1900s, with a significant boom taking place by the '40s. Widely renowned as the father of the pecan industry in Alabama, J.E. 'Abe' Robinson became the first president of the Alabama Pecan Growers Association. The group was formed in the summer of 1960, originally under the name of Southwest Alabama Pecan Association, with members primarily residing in Baldwin and Mobile counties.

The current director, Terry Landry, represents the third generation of the Bayou Pecan Company located in Irving, Alabama. What started in the 1950s when his grandparents purchased land and established Landry Farms with the primary crops featuring watermelons, cantaloupes, hay, and cattle, has transformed into a bustling business for the family, with 65 acres hosting 15 pecan varieties. Bayou Pecan's story illuminates the provisions of hard work and the necessity of keeping family as a core value.

A staple for beachgoers, nestled off the side of I-65 in Fort Deposit, is Alabama's largest gourmet handmade candy company, Priester's Pecans. What began with a simple handshake among old friends has boomed into a multi-generational affair spanning across the past seven decades. Priester's has capitalized greatly on the wide variety of pecan uses that are enjoyed by Alabamians and other travelers. From pies to sandies, brittle, and even garnishes on salad, the pecan has proven its versatility in the kitchens of Alabamians for over a century.

Unfortunately, pecan production in Alabama has seen a decline over the past decades. Strong storms, especially in the southern regions of our state, have large impacts on pecan orchards. A hurricane can wipe out decades of hard work and dedication, often causing farmers to move away from the industry. Pecans are often referred to as a 'generational crop,' and for small family-run farms, the costs can outweigh the benefits of replanting. The devastation of Hurricane Sally in 2020 completely demolished much of the pecan crop from the Coastal Plain. This catastrophic event left farmers reeling over the next steps and how to continue their family's legacy. While some chose to persevere, others moved to other crops or dropped out of the farming business altogether.

While overall production in Alabama has taken a dip, the iconic 'state nut' would not go down without a fight. This time-honored classic has a story of strength and resiliency bringing Alabamians together, one orchard at a time.

Photos courtesy of the Alabama Trails Foundation

Alabama Tourism Department Designates 2025 - *The Year of Alabama Trails* -

Contributed by the Alabama Trails Foundation

The Alabama Trails Foundation is excited to announce our partnership with the Alabama Tourism Department for the 2025 Year of Alabama Trails, a statewide initiative celebrating the many trails that crisscross the state. From spectacular mountain trails to serene waterways and historic pathways, Alabama offers a wealth of outdoor experiences for visitors and residents alike.

Throughout 2025 and 2026, the Year of Alabama Trails will showcase the state's natural beauty and promote healthy lifestyles through a variety of events, hikes, community activities, and educational programs. This initiative aims to highlight the unique character of Alabama's trails, encourage exploration, and foster a deeper appreciation for the state's natural resources.

"Alabama is a treasure trove of outdoor adventures, and our trails are at the heart of it all," said Paul DeMarco, Alabama Trails Foundation Board Chair. "The Year of Alabama Trails is an opportunity to showcase the incredible diversity of Alabama's trails. From the rugged terrain of our Appalachian Mountains and the quiet beauty of our rivers and lakes, to the white sands of our coastal beaches, there's something for everyone in Alabama. Join us in exploring these natural wonders and discovering the numerous benefits of spending time outdoors."

"I can't recall as many phone calls supporting a "year of" campaign that we have had for the Year of Trails. It is already a winner," Lee Sentell, Alabama Tourism Department Director, said. "Twenty years ago, tourism was a $6 billion industry in Alabama. This year, it is a $24 billion business. "This is the kick-off for not just The Year of Alabama Trails; it's going to last for two years because there is so much to do that we couldn't cram everything into one year."

While The Year of Alabama Trails highlights 25 top trails for 2025, the Alabama Trails Foundation will continue our work to improve Alabama's trail networks, from hiking and biking to horseback riding and canoeing opportunities across our great state, helping to ensure trails that are here for everyone to benefit from and enjoy.

As part of our partnership with the Alabama Tourism Department, the Alabama Trails Foundation is working with local communities, organizations, and businesses to create a memorable and comprehensive experience for all trail users. Whether you're a seasoned hiker, a casual walker, a cyclist, a paddler, or simply someone who enjoys spending time in nature, the Year of Alabama Trails has something for everyone.

For the top 25 Trails, visit *alabama.travel/experience-alabama/outdoor/year-of-trails*.

Photo by Chris Granger

GIVING IT YOUR ALL TODAY, DOING IT ALL AGAIN TOMORROW. SOME DON'T GET IT, BUT WE DO.

Natural resources sometimes need human resources. That's why since 1916, Alabama Ag Credit has helped timberland owners purchase timber tracts, replant after a harvest, manage their agribusiness, and refinance property. With the financial support for everything from timber processing equipment to general business operations, we can offer you customized long-term or short-term credit options. Call us today about our competitive rates and how our relationship lending can help your timber land business grow.

ALABAMA AG CREDIT
LAND & FARM LENDERS

AlabamaAgCredit.com
***Call* 800.579.5471**

MEMBER FARM CREDIT


It's easy to say...
"I support forestry education."
GMC
SIERRA
AT4
ALABAMA
LOGGER
Alabama's 2024 Outstanding Logger of the Year
Douthit Timber shows it.
FORESTS FOREVER
Show your love for the great outdoors by asking your local probate office for the Forests Forever tag. Personalization is FREE with your tax-deductible vanity Forests Forever tag. Proceeds provide educational materials and workshops for teachers, including grants for forestry education.
ALABAMA
OUTDRZ
ALABAMA
FOREST
To find out more about the programs these car tags support, go to: www.alaforestry.org/AFFF

ALABAMA'S Underwater Forest

By Al Jones, Senior Economic Development Representative
Alabama Forestry Commission

On September 16, 2004, Hurricane Ivan, a powerful Category 3 Hurricane, made landfall near Gulf Shores, Alabama. It reached shore sustaining 120-mile-per-hour winds, with the highest wind gust of 145 miles per hour recorded at Wolf Bay. Ivan maintained its hurricane status for an incredible 153 miles inland before being downgraded to a tropical storm near Uniontown in Perry County. There were 54 deaths in the U.S. due to the storm; however, Alabama was extremely fortunate to record no fatalities.

The Alabama Forestry Commission's final 'Hurricane Ivan Timber Damage Report,' released on October 7, 2004, indicated the agency had done an intensive study in the 12 southwest Alabama counties which received the most timber damage: Baldwin, Butler, Clarke, Coffee, Conecuh, Covington, Crenshaw, Escambia, Geneva, Mobile, Monroe, and Wilcox. These counties contained 2,728,800 acres of merchantable forestland with an estimated financial loss of $473,277,304. The AFC estimated this to be a catastrophic loss of more than 2.44 times the amount of timber harvested in this area in 2003. An additional 9,073,600 acres of merchantable forestland were estimated to have been damaged in the 55 remaining disaster-declared Alabama counties, adding another $136,950,609 of timber damage for a total loss of $610,227,913 across the entire state. In today's dollars, this total would increase to $994,671,498.

Unlike any other tropical event in history, Hurricane Ivan offset some of its forest destruction by leaving behind an invaluable and previously unknown resource for the state. Ten miles off the coast of Gulf Shores, 60 feet under the Gulf of Mexico, lies Alabama's 'Underwater Forest.'

Kristine L. DeLong, Ph.D., Professor, Louisiana State University (LSU), Department of Geography and Anthropology, has led in-depth studies on the underwater forest and generously given her time to provide *Alabama's TREASURED Forests* magazine readers with her valuable insights as follows.

Tell us about Alabama's Underwater Forest and how it was first located. There is now fairly strong evidence that Hurricane Ivan was the storm that originally exposed this site. I was in graduate school at the University of South Florida at that time, and my colleagues and I were watching reports from the buoys offshore. The wave heights became so large, the buoys eventually went offline because they were either lost or damaged. Ivan reached Category 5 status in the southern Gulf of Mexico but dropped to a Category 3 right before landfall.

Because of those large wave heights, there was quite a bit of scour that happened on the seafloor. Subsequently, the National Oceanic and Atmospheric Administration (NOAA), in conjunction with the Naval Research Laboratory buoy group at Stennis Space Center, published papers about how much seafloor scouring had happened around their buoys, and these are further offshore than the underwater forest. If you get seafloor scouring at a depth of 200 feet, where the Stennis group was monitoring, there will be scouring at 60 feet, which is the depth of the Alabama underwater forest. That is strong evidence that Ivan triggered these exposures to start happening. Soon after Ivan, local fishermen started noticing a lot of fish with their fish finders at particular locations and kept going back to these same spots for a number of years. Eventually, they had a friend who was a scuba diver drop down to see what was there. He came back and said there were tree stumps all over the seafloor.

How did you get involved? There was local lore in Mobile around this one dive shop, indicating they knew where these stumps were located. A local diver heard the story and was able to go dive it. Soon after, a video was posted on Facebook, and seeing that video is what got me interested. I'm thinking, okay, this is in 60 feet of water. Knowing about sea level curves, if you were to drop sea level 60 feet, that would put you at about 10,000 years ago, which is a really important time in our recent geologic history. I got excited about this, thinking maybe these trees were from more than 10,000 years ago. Eventually, I contacted the guy who made the video. We started chatting, and he invited me to go out and dive the site. It was amazing to see this depression in the seafloor.

(Continued on page 20)

Alabama's Underwater Forest

(Continued from page 19)

You physically visited the site yourself? Yes, and that's one of the reasons I got involved in the project, because people who typically study tree rings are good at hiking and going up mountains, but they are not necessarily scuba divers. There are not too many people who scuba dive and work with tree rings. There's one picture of me taking a tree core underwater with an increment borer, and at a couple of conferences, attendees said, "Here's Dr. DeLong, the only person who's cored a tree underwater."

We went out, took some sediment cores, some tree cores, and collected some wood. We sent the wood to be radiocarbon dated, and I was shocked when the dates came back. I remember being at a conference talking to my colleague who was dating the wood for us, and again, I'm thinking they're going to be at most 10,000 years old. He said, "Well, these trees are radiocarbon dead." I asked what that meant. "They are dead," he said, "They are too old. I can't date them." Then I asked, "So how old is that?" He answered, "They are older than 48,000 years." I was floored. When I asked if he was sure, he responded affirmatively. He had tried dating them three times.

At that point, I realized we had a mystery here. About that time, I started working with Grant Harley, a colleague at the University of Idaho, who was formerly at the University of Southern Mississippi. We started talking about the site, and I showed him some samples of wood I had collected. That is when we started seeking grant funds for studying the site.

Dr. Delong coring a tree

How did you navigate the process for obtaining grant funding to study the site? We talked to people about grant funding to study the site but were not getting traction from anyone. Funding agencies have their partitions; people in certain sections do tree ring work. We went to them, and they said, "Well, this site is not on land; it's in the ocean. You need to go talk to oceanographers." The oceanographers said, "This is trees. We don't do trees."

It was frustrating because we have this interesting site – unlike any other I am aware of – that is this old and has this much wood preserved on the seafloor. My fear was that because the site was exposed by a hurricane, another hurricane could bury it again, and we would not have access to the stumps anymore. Or possibly shipworms could get in the wood, and it would be eroded; then there's nothing left. Part of the problem was that the wood was so old we couldn't get an absolute age. When you are going through the grant process, you must have an age, and obviously we did not.

Eventually, we did get seed money from the Wallace Foundation, which helped us do some work offshore, estimate dates, and just really get the project started. We also received lots of media coverage, which was great, but it's not the way we typically do science. We usually have media coverage once our papers are published, but in this case, it helped get the project going because we weren't getting anywhere otherwise.

So, through that news coverage, one of the program officers at the Bureau of Ocean & Energy Management (BOEM) heard about it. A marine archaeologist contacted us and said she was really interested in the project. Her interests came from several directions. How is wood this old so well preserved? What happened that allowed this site to be preserved from an archaeological standpoint?

BOEM wanted to understand those characteristics because they are trying to find preserved archaeological sites offshore and make sure they are protected. We wanted to share our research on this forest with the archaeologists to help them find early Native American sites from the 10,000-year period because the sea level was lower then, and people were living on the coast at sites that are now underwater.

That is what finally got us major funding for the project. We've been working with BOEM since 2015, and we've learned a lot about the site through two funding cycles.

Is it true that there has been interest from individuals wanting to harvest this wood? Yes, we have taken many precautions to ensure that when we are doing our work that we are protecting the site. In our publications and presentations, the exact coordinates for the underwater forest are never given. Even so, we have been approached by people who want to go out and log the site. They hear that it is bald cypress and think there are sinker cypress out there (logs that have been harvested, floated down river toward a processing site, and have instead sunk and been preserved on the riverbed). That's not what's down there. We let them know it is mostly tree stumps. We have seen some small logs, but nothing like the huge logs people expect to find with sinker cypress.

Are there species other than bald cypress on the site? Yes, we have a student who's working on the wood analysis and identifying the species. It is mostly bald cypress, but there are some white Atlantic cedars and a pine tree we found when diving and collecting wood. We also brought up a palm tree.

Are all these trees from species we would expect to find in Alabama today? The short answer is yes; however, the climate


Photo by Ben Raines

Diver collecting wood

was different. Identifying the climate these trees lived in was part of Phase I of our study. All the wood that we collected was brought back to the lab in Hattiesburg, Mississippi, where tree ring chronology was performed and compared to modern bald cypress chronologies, all from the International Tree Ring Database. By comparing that chronology, we found these trees' rings do not look like modern trees in Alabama; they look like trees that are further north in the Carolinas or up the Mississippi River Valley. We can, therefore, infer that the climate conditions in coastal Alabama when these trees were alive would be like what we see in the Carolinas today.

What is happening on the site right now? We are wrapping up our Phase II project right now. One of the things with this phase was to bring in a 3D Chirp System from the UK, which they use to find buried shipwrecks and World War II ordnance in Europe. It is very good at finding smaller buried objects.

Prior geophysical surveys found objects that we thought were buried tree stumps, but didn't have the resolution to tell exactly. This 3D Chirp System confirmed that the objects were buried tree stumps. We are seeing a lot of buried wood out there, and our sediment cores are confirming that. Whenever we core down through the sand, we hit wood every single time, which makes me happy. We pull up the core, and a big chunk of wood is at the bottom. We can't go any deeper because we keep hitting wood, and the corers don't like wood. We know that more forest is buried out there, and we have been looking for where we think other sites may be.

One fascinating thing has been discovered with the shipworm research at the site. Unique shipworms and mussels are colonizing this old bald cypress wood, which normally occurs in deeper water. Another discovery is that after shipworms die, little mussels go into the holes and set up a home inside the shipworm channels. One of the mussel species is a new species that has recently been named (Altamia et al., 2024), and it was all because of the underwater forest.

Another interesting experiment on the site was dropping a piece of pine plywood and a piece of modern bald cypress to see how fast the shipworms would colonize it. The pine was pretty much gone within a month, so the shipworms colonized it quickly and eroded it. While the cypress lasted a little longer, it was still gone within about six months to a year. There is nothing left. The old cypress stumps have been exposed since 2004. That is 20 years, and they are still not completely gone. We certainly want to know why this is happening. That was one of the things I was concerned about at first, that the site would decompose quickly, and it has not. We would like to understand why the shipworms are colonizing this wood but not completely eating it. Maybe they are looking for a particular type of cellulose in the wood to consume and are not finding enough of it, or possibly some other properties of these older cypress trees are keeping the shipworms from completely consuming it.

It is wonderful to go dive the site because you can see so much sea life. Crabs, many fish, and a turtle live down there. Where it would normally be flat, mostly uninhabited sand on the seafloor, the wood in these stumps provides habitat for animal life and fish that are congregating on this new offshore habitat. That is why the fishermen have been fishing there for so long, because there are lots of fish. It's a unique place on the seafloor that Hurricane Ivan exposed, with new sea life coming in and occupying it.

Another of my students found a little insect's remains, which were still together enough that it could be identified. We have even found little fish bones in some of the sediment cores, so anything that died in that water has been preserved.

One researcher at LSU is looking through our sediments for grass seeds. She is studying the DNA of those seeds that have been preserved, trying to understand how grass has evolved over this period. We have found bald cypress seeds. I think we were able to identify eight different types of seeds. The first time I invited one of the U.S. Geological Service scientists over to look at our cores, she was sitting there, just poking around in the mud. She said, "Here is a bald cypress seed, and here is this seed, and there is that one." She was not even looking under a microscope, but she could pick out the different types of seeds.

The bald cypress seeds do not stay viable for very long, so we do not think we can grow any of them. We may be able to grow some of the grass seeds, so that is one of the things we will try. There are many different potential research projects at this site.

Why do you think the discovery of this forest is happening now? It's interesting to wonder, "Why now?" There are several possibilities. Is it because hurricanes are getting stronger, causing more seafloor scour? Is it because we have dammed rivers, and there is less sediment going out to the continental shelf? If you cut off that sediment supply, sediment will not drop on top of the site. So now, when a hurricane comes through, it can be exposed. It could be both, or it could be one or the other.

What future benefits could we see because of studies in the underwater forest? Researchers at Northeastern University (NU) study shipworms and how they digest the wood cellulose. Some of the chemicals the shipworms produce and use for digestion can be used for medical purposes, including new antibiotics. NU received a grant from NOAA that provided funding that will allow us to go to the underwater forest and look for these novel chemicals that occur in this location because it is old wood, and it has a unique set of shipworms colonizing the wood.

As a scientist, what are your hopes for the future of the underwater forest? For me, it is the whole mystery of the site. Every time we think we have solved a problem, we get a new question or something else comes up. It's just the discovery part. I like asking questions for which nobody knows the answers, such as finding out what these ecosystems were like, how they responded to climate change, and why they were so well preserved.

With so much animal life down there, I would love to see it as a diving site. People should be able to see all the different crabs and little octopuses that are inside the wood and the turtles.

(Continued on page 22)

I would like to see Alabama's Underwater Forest protected as a marine sanctuary at either the state or federal level. The site needs to be protected before allowing the location to go public.

What studies would you like to see now? Continued monitoring of the site is needed to see if it is changing. We know that after Hurricane Sally, the depression became bigger. The sand around the site is not as thick as it was in the past. If another hurricane hits Alabama, we'll need to go back to make sure that the site is not buried with sand again or determine if more stumps were exposed. If fresh wood is exposed to the marine environment, then we would see how quickly shipworms and other kinds of marine life come in.

Another possible research objective would be to core through the entire site to estimate the total volume of wood-bearing sediment that is out there. We have tried, but to core through that entire thickness, we need a larger vessel and a different coring system.

The underwater forest is obviously very important to you as a coastal scientist. If you could step back and view this site with the eyes of a scientist with no career involvement, how important is it to the scientific community? It is unique and important. People who study the climate of the past do not have any records from this period. This site is preserved out on the continental shelf, so it gives a rare glimpse into what ecosystems were like at that time. One of the few ways we can understand what happened during this interval is pollen records from lakes that have preserved leaves and wood, but these are typically a good distance from the coast. For understanding coastal dynamics of the past, there is nothing else like it.

Tell us about the professional support you have received while studying Alabama's Underwater Forest. LSU has been great in supporting this project, and our researchers from across campus are part of the LSU Coastal Studies Institute.

Our vessel, the R/V Coastal Profiler, is a converted shrimp boat we use for doing research. Our crew is awesome in supporting us in our research. We would not be able to do our jobs without them.

Training our students is important – the next generation of professionals who are going to work on the coast, supporting the blue economy, bringing our oceans and land together. LSU has been supportive of that also and is working with our colleagues at the University of Southern Mississippi, the University of Alabama, and the University of South Alabama. The folks at the Dauphin Island Sea Lab have been awesome in helping us do this research. It has been a great group to work with, being able to bring in lots of different scientists and students.

Any final thoughts? As we get more storms and people find wood or things they think could be linked to the underwater forest, I would love to hear about it.

I really appreciate the Forestry Commission's interest in Alabama's Underwater Forest. It is a great project, and hopefully, your readers would like to hear more about this old forest as research continues and information becomes available.

Alabama Forestry Commission Assists Cities with 'Trees4AL' Urban Forestry Grant

By Dale F. Dickens, Registered Forester/Urban Forestry Coordinator
Alabama Forestry Commission

In 2024, the Alabama Forestry Commission (AFC) awarded eight grants to groups in Alabama for urban tree planting. The grants total more than $630,000. Each competitive grant ranges from $41,000 to $100,000, and includes projects such as shade for campuses, replacing non-native invasive trees in parks with native trees, and improving the beauty of downtown areas. Because the grants are restricted to 'disadvantaged areas' as defined by the Climate and Economic Justice Screening Tool, the federal government waived the matching fund requirement, making these some of the more affordable resources available to municipalities for tree planting.

The Trees4AL grant is derived from the Inflation Reduction Act through the USDA Forest Service, and there is unanimous praise from the awarded communities. Savannah Nelson, Business and Grants Manager for the City of Northport, Alabama, said, "The City of Northport is happy to receive this funding for tree planting from the Alabama Forestry Commission to supplement the River Run Park Project, providing an inviting outdoor space for families and community members to enjoy."

Shannon Levitzke, Dean of Instruction at Lurleen B. Wallace Community College, commented, "LBW Community College is thankful for its partnership with the Alabama Forestry Commission and will use funding to plant additional trees on its Andalusia Campus. In addition to providing a valuable laboratory field space for students in our Forestry and Wildlife Sciences Program, the trees will address heat mitigation, reduce stormwater run-off, and create a greenspace on our campus that is accessible to the community."

These are two of the eight projects that are responsibly planned by local leaders and closely monitored by the AFC to maximize the positive impact on these communities. Trees truly are an asset to any place where the right tree is planted in the right place.

The map below shows the distribution of award recipients across the state. There were 19 successful submissions from the request for applications, which was sent on July 1 of last year. From this 19, the eight projects selected by the review team will add over 4,000 trees to cities and towns within Alabama. These trees will provide shade for children's playgrounds, reduce surge stormflows to mitigate flooding, minimize erosion to help keep water supplies clean, add beauty to our parks and city landscapes, and increase property values. Trees as large as two inches in diameter and over eight feet tall at planting will yield immediate impact once planted. These trees, planted near schools, public streets, and local parks, will provide public benefit over many years.

Trees4AL grant recipients and their project titles:

City of Brewton	The Place to Grow: Reforestation
City of Dothan	Tree Planting to Enhance the Environment and Enjoyment of the Public in Disadvantaged Communities in Dothan, Alabama
City of Gadsden	STEEL PLANT: Sowing Transformative Environmental Elements Leveraging Planted Lush and Native Trees
City of Hoover	Hoover Municipal District Ecosystem Restoration
City of Northport	River Run Park - Effectuating Environmental and Economic Equity
Friends of Downtown Jasper	Trees in Downtown Jasper
Operation Green Team Foundation	Cavalry Hill Community Urban Forest Stewardship Initiative
Lurleen B. Wallace Community College	LBW Urban Tree Planting

Trees4AL Grant Recipients

Endemic Species of Alabama

By Ray Metzler, Threatened & Endangered Species Specialist/Certified Wildlife Biologist
Alabama Forestry Commission

I remember my mother asking me if I would like a dictionary for Christmas in 1977. While it isn't a typical present for a 17-year-old, I responded that it would be useful to have when I started college in the fall of 1978. Without surprise, I received a *Webster's Seventh New Collegiate Dictionary* as a Christmas present that year. I appreciated the gift and used it quite a bit during my college and early career days, before computers and smartphones. Recently, I retrieved it from its shelf in my office to get an official definition for 'endemic' to begin the thought process for this article. Webster defines it as "peculiar to or native to a particular area or region."

Searching the internet for 'Alabama endemic plant or animal species' shows results from several different publications. Wayne Barger, a botanist with the Department of Conservation and Natural Resources, stated that Alabama is home to 29 endemic plant species. Various publications indicate that we have up to 63 animal endemics. These statistics rank really high when compared to other states. The numbers vary a little depending on which list you view, but overall, Alabama ranks high. California reportedly has the most endemic species, and also ranks higher than Alabama in the number of threatened or endangered species. Alabama's geological history, climate, and extensive river systems have created conditions that allowed for tremendous biodiversity and endemism. It's really cool to be able to see a species that occurs in Alabama and nowhere else in the world!

Endemic species often occupy small, isolated habitats such as an island, a lake, or a portion of a mountain range. Environmental conditions often lead to specialized adaptations that allow them to survive in their unique habitats. They are much more likely to become threatened or endangered for several reasons, including 1) small geographical range, 2) a very small number of populations, 3) little genetic diversity, 4) over-exploitation by people, and 5) declining habitat conditions.

The Bibb County Glades, a 480-acre parcel owned by the Nature Conservancy, were discovered by Georgia botanist James Allison while canoeing the Little Cahaba River in 1992. His explorations led to the discovery of eight Alabama endemic plant species. The glades are areas of ketona dolomite rock outcrops

Alabama sandstone oak

Photo by Dante Fenolio

Red hills salamander

with shallow soils. A robust prescribed burning program maintains the area in an open understory rich in native wildflowers, forbs, and herbs. Without a prescribed fire regime, areas surrounding rock outcrops often become shrubby with little biological diversity. Not only do the more than 60 plant species of concern occurring on or near these glades make it the most botanically diverse area in Alabama, but it is also one of the most botanically diverse areas in the eastern United States. The eight Alabama endemics occurring in the glades are *Castilleja kraliana, Coreopsis grandiflora var. inclinata, Dalea cahaba, Erigeron strigosus var. dolomiticola, Liatris oligocephala, Onosmodium decipiens, Silphium glutinosum,* and *Spigelia alabamensis*.

The glades are also home to seven Alabama species that occur outside of Alabama but nowhere else within our state: *Solanum pumilum* (last collected in 1837 and presumed extinct), *Astrolepis integerrima* (disjunct from Texas), *Paronychia virginica* (bridging a gap between Arkansas and Virginia), *Baptisia australis var. australis, Rhynchospora capillacea, Rhynchospora thornei,* and *Spiranthes lucida*. The Bibb County Glades are open to the public and are accessible via an access point off Bibb County Road 65.

Alabama's only endemic tree species is the **Alabama sandstone oak**, *Quercus boyntonii,* a member of the beech family, Fagaceae. The Alabama Plant Atlas indicates it has been documented in nine counties, ranging from Autauga County to as far north as Cullman and Etowah counties. It is not listed as threatened or endangered by the U.S. Fish & Wildlife Service (USFWS), but is thought to be a species of high conservation concern on a state and global level. It is most typically found on sandstone outcrops from Birmingham to Gadsden but has been documented in pine/oak/hickory savannas at Oak Mountain State Park and in rocky riverbank habitats within the Locust Fork drainage. Occurrences in Chilton and Autauga counties were the first to document the species in the Coastal Plain ecoregion. It is a long-lived, slow-growing plant that grows in a variety of shapes, ranging from single-stemmed trunks up to 15-20 feet tall to small multi-stemmed shrubby bushes and even low-growing stoloniferous (plants that reproduce asexually using stolons, which are horizontal stems that grow above or below ground) clonal groups. A survey team at Oak Mountain State Park found a 90-foot by 60-foot collection of stems that appeared to be a single clonal individual tree. This specimen could possibly have taken hundreds of years to grow, given the extremely poor soils of the rocky ridges of Oak Mountain. While gathering information for this article, I read one account that stated the Alabama sandstone oak is suited to survive in one of Alabama's "most punishing habitats."

The **red hills salamander** is an Alabama endemic and was formally named Alabama's state amphibian in the year 2000 after a campaign led by third graders at Fairhope Elementary School. The USFWS lists it as a threatened species and reports they are known or believed to occur only in a 55,000-acre area in parts of Butler, Conecuh, Covington, Crenshaw, Monroe, and Wilcox counties. All of the habitat for red hills salamanders is associated with two siltstone formations called the Tallahatta and the Hatchetigbee. It is the largest fully terrestrial salamander in the United

(Continued on page 26)

Endemic Species of Alabama

(Continued from page 25)

States, growing up to about 10 inches in length with a dark brown tail and body. It breathes through its skin and lays its eggs on land. It spends almost all of its time in its burrow on shady, steep bluff sites, coming to the mouth on warm, humid nights to feed on invertebrate prey. Shady, moist conditions on the bluffs where the salamander lives are critical to its survival. Loss of shade and cover leads to drying by sunlight and wind, and negatively impacts both the salamander and its food. The Alabama Forever Wild Trust, The Nature Conservancy, and the Alabama Department of Conservation and Natural Resources have worked cooperatively to purchase suitable habitat within its range to provide assurances for the continued existence of our state amphibian.

Alabama leads the nation in aquatic freshwater species diversity, so it should be no surprise that there are many endemic freshwater fish, snails, and mussels. I will focus on just a few of them that have very limited distribution. The watercress darter is endemic to four springs in Jefferson County – two in the Watercress Darter National Wildlife Refuge and two in the Powderly neighborhood of Birmingham. The vermilion darter is known to occur in only 7.5 miles of stream habitat located in the upper reaches of Turkey Creek and the lower reaches of two tributaries. Pygmy sculpins are endemic to Coldwater Spring in Calhoun County, the water source for many residents in and around Calhoun County. The **Alabama cavefish** is one of the rarest fish in the world and is only found in Key Cave, located in Lauderdale County. Surveys of the vast underground cave system in northwest Alabama have failed to document additional specimens, and the largest number documented in any one survey is ten. Fewer than 100 specimens are believed to occur in the entire population. All of these fish species are listed as either threatened or endangered by the USFWS.

Photo by Dante Fenolio

Alabama cavefish

Photo by Dylan Shaw/Alabama Power Co.

Black Warrior waterdog

Flattened musk turtle
Photo by James Godwin/Alabama Natural Heritage Program.

The Black Warrior waterdog (*Necturus alabamensis*) and the flattened musk turtle (*Sternotherus depressus*) are two aquatic species found only in the upper Black Warrior River system. The **Black Warrior waterdog** is a large, completely aquatic salamander that is gilled throughout life. Only known to occur in the upper Black Warrior River drainage, including the Locust Fork, Mulberry Fork, Sipsey Fork, North River, and their tributaries in Blount, Tuscaloosa, Walker, and Winston counties. It grows to a maximum recorded length of 9.8 inches and is medium-sized when compared to other necturids. Suitable habitat is generally free of sand or sediment and has abundant rock crevices, rock slabs, and other needed physical and biological features. The Black Warrior waterdog was listed as an endangered species and provided protection under the Endangered Species Act on February 2, 2018.

The **flattened musk turtle** is a small freshwater turtle less than 5 inches in length with a distinctly flattened top shell (carapace) that is dark brown to orange in color with dark-bordered seams. It is a threatened species found only in the Black Warrior River system above the Bankhead Dam. It needs free-flowing creeks or small rivers where it feeds on invertebrates such as snails and mussels. The Sipsey Fork of the Black Warrior River within the Bankhead National Forest appears to contain the healthiest populations of black warrior waterdogs and flattened musk turtles. Most biologists agree this is primarily due to watershed protection efforts initiated on the Bankhead National Forest.

All the above-mentioned species certainly meet Webster's definition of endemic.

I will finish this article by revisiting my childhood and my college days. My herpetology professor at Auburn University, Dr. Robert Mount (who is now deceased), outwardly showed his enthusiasm for better management to maintain our rich biodiversity and level of endemism. He was an advocate for good stewardship and would often engage on issues focused on the management of our natural resources, especially amphibians and reptiles.

We are fortunate to live in a state with tremendous biodiversity and a high number of endemics. Conserving endemics generally comes down to protecting or enhancing habitat. Alabama's high biodiversity and endemism come with a responsibility to our natural resources. These responsibilities should not be taken lightly. As a child, I was always taught that you should try to leave a place better than you found it. This is all any of us can do, and I encourage you to do the same!

RELIABLE *WARRIOR* IN THE WOODS.

You're never alone in the woods with John Deere Forestry Core Technology Features.

With JDLink™, Connected Support, Remote Diagnostics and Programming, combined with Machine Health monitoring, we have all the tools you need to manage your fleet.

Warrior Tractor & Equipment continues to serve Alabama counties and its surrounding areas with some of the finest, state of the art products John Deere has to offer.

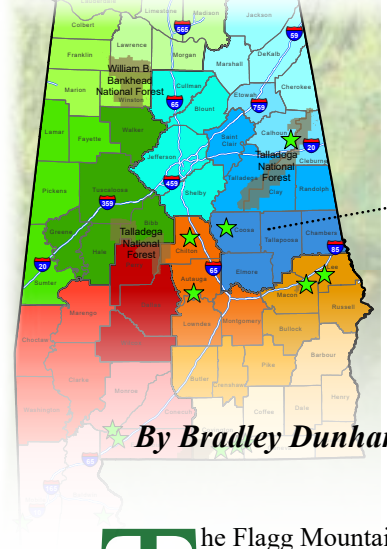
Warrior is proud to continue to grow with our customers, employees, and communities we serve.

SCAN QR CODE BELOW TO VISIT OUR WEBSITE AND SEE THE FULL JOHN DEERE FORESTRY LINE-UP.

SCAN ME SCAN ME SCAN ME SCAN ME

WWW.WARRIORTRACTOR.COM

JOHN DEERE | WARRIOR Tractor and Equipment



Flagg Mountain Work Unit

By Bradley Dunham, Registered Forester/Forest Management Specialist, & Braxton Lashley, Forester
Alabama Forestry Commission

The Flagg Mountain Work Unit is located within the Northeast Region of the state and is comprised of Tallapoosa, Coosa, Chambers, and Elmore counties. Each of the counties within the work unit has two or three full-time personnel, with Coosa County being the exception because of the hiring of a full-time caretaker for the famed Flagg Mountain. Our work unit takes part in multiple prescribed fire, educational, training, and wildfire suppression events that require all hands on deck.

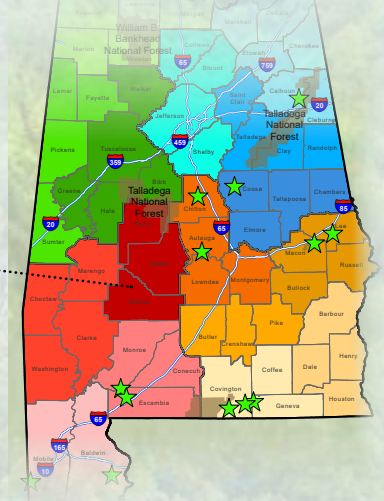
One of the main features in this work unit is Flagg Mountain, which resides in the quiet boundaries of Weogufka, Alabama, within the Weogufka State Forest. This mountain has a rich history and is incredibly significant to the residents of Coosa County and many others across the nation. A sign-in sheet is kept within some of the structures on the mountain to keep a record of those who visit, and it is very common to see a lot of visitors from other states. Multiple projects have been completed for the health of the surrounding forests and the overall aesthetics of Flagg Mountain throughout the last few years, with many planned projects scheduled for the future. The Alabama Forestry Commission and multiple agencies have worked diligently to ensure that the fire tower and shelters, built by the Civilian Conservation Corps in the 1930s, are in operation and accessible to the public. Multiple prescribed burns and ceremonies have also taken place on the mountain, some of which involved our neighboring Muscogee Creek (Mvskoke) community called Ekvn-Yefolecv (pronounced ee-gun yee-full-lee-juh). While some history mentions Flagg Mountain as the "state park that never was," it still undoubtedly shines like a jewel to those who have come to know it.

Having Flagg Mountain in our work unit certainly generates additional projects and work outside of the normal scope of the Alabama Forestry Commission. However, these projects are viewed as opportunities or challenges that break up the normal day-to-day workload. A good motto for the Flagg Mountain work unit is "With teamwork, we will adapt and overcome." Simply put, when our guys are given a challenge, they figure it out. That is something that we take pride in. Each member of the work unit has a strong suit, and we position people in roles where they will succeed. One day we may be installing fire breaks and prescribed burning, the next day we may be constructing pedestrian bridges at creek crossings along the Pinhoti Trail, building metal gates to control access around the mountain, replumbing a frozen well pump, conducting educational programs, or planning a visit from the Governor. At this point, nothing surprises us, so we roll with the punches and get it done. Having additional projects at Flagg does not exempt us from the typical duties of county work. Landowner visits, stand management recommendations, sending southern pine beetle letters, wildfire suppression, landowner tours, firebreaks, prescribed burning, and equipment maintenance must be completed. In the Flagg Mountain Work Unit, it's a total team effort.

The personnel in the Flagg Mountain Work Unit includes Forester Matthew Lowe and Forestry Specialist Jimbo Robinson in Chambers County; Forestry Management Specialist Brad Dunham, Forester Braxton Lashley, Forestry Specialists Ryan Dunham and Milton Ellington, and Park Manager Mary Thurman in Coosa County; Forester Brian Frederick and Forestry Specialist Tyler James in Elmore County; Forestry Specialist Andy Cotney, Forest Ranger Phil Hall, and Work Unit Manager David Kelly In Tallapoosa County.

Black Belt Work Unit

By Cedric Hudson, Registered Forester/Work Unit Manager
Alabama Forestry Commission



The Blackbelt Work Unit consists of Perry, Dallas, and Wilcox counties. Its name originates from the region's rich prairie soil, which is found in all three counties. This area is renowned for having some of the best deer hunting in the Southeast, attracting hunters from across the nation.

A key forest practice of the Blackbelt Work Unit is prescribed burning. Not only does it benefit wildlife, but it also helps control competition in pine stands, reduces wildfire intensity, and enhances the aesthetics of forested land. The team gains valuable training by installing firebreaks with bulldozers and refining their skills with various prescribed burn techniques. The work unit actively supports forest landowners by offering stand management recommendations and creating customized forest management plans. We also provide strategies to address challenges with forest pests such as pine beetles, or invasive species such as cogongrass. Additionally, we play a critical role in wildfire suppression and work closely with volunteer fire departments to protect communities and natural resources.

Our team's outreach extends to education as well, with school programs that teach students about wildfire prevention and sustainable forest management. We collaborate with agencies like the Natural Resources Conservation Service and the Farm Service Agency, offering technical support for their landowner assistance programs. We partner with the Forest Service to aid in wildfire suppression efforts on national forest lands and help cities achieve Tree City USA designation. These activities reflect our commitment to promoting healthy forests and sustainable practices across all levels of the community.

Each county in the Blackbelt Work Unit is unique, with dedicated employees from the Alabama Forestry Commission serving their respective communities.

Wilcox County offers beautiful forestland and is known for its rich history and influential residents. Forestry Specialist Supervisor Steve Smith and Forestry Specialist Shannon Hollinger proudly serve this county. It has produced many notable figures, including Alabama Governor Kay Ivey, former U.S. Attorney General Jeff Sessions, and former University of Alabama President Judy Bonner. Jo Bonner, President of the University of South Alabama, also hails from this area. The county is also home to the historic Gee's Bend Ferry, which connects Camden to the famous Gee's Bend community, internationally recognized for its quilting tradition. International Paper and GD Copper USA are major employers, contributing significantly to the local economy.

Nature lovers will appreciate the county's stunning landscapes, featuring the William 'Bill' Dannelly Reservoir at Millers Ferry Lock and Dam on the Alabama River. Popular outdoor spots include the East Bank Campground and Bridgeport City Landing, as well as Roland Cooper State Park, which offers excellent opportunities for hiking, bird watching, and fishing.

Rich in historical significance and cultural impact, **Dallas County** is one of Alabama's most well-known counties. Forester Harris Carter, Forestry Specialist Jeffery D. Baity, Sr., and Forest Ranger Michael Smyly serve the citizens of this county.

Dallas County is home to several historic landmarks, including Old Cahaba, Alabama's first capital, and the Edmund Pettus Bridge, a pivotal site in the Civil Rights Movement. The county also played a role in the Civil War, notably during the Battle of Selma. Annual events like Riverfront Market Day and the Jubilee Bridge Crossing celebrate the area's heritage. Visitors can explore the historic St. James Hotel, one of Alabama's oldest operating hotels. Education is a cornerstone of the county, with institutions such as Wallace Community College and Selma University. The local economy benefits from industries like International Paper. For outdoor enthusiasts, the Cahaba and Alabama rivers offer excellent opportunities for fishing, boating, and relaxation. Paul Grist State Park and Kenan's Mill provide additional recreational activities.

With its blend of history and natural beauty, **Perry County** is another treasured part of Alabama. Forestry Specialist Eddie Dozier and Work Unit Manager Cedric Hudson serve this county.

Perry County is home to Marion Military Institute, one of the oldest military colleges in the nation, and Judson College, a historic institution for women's education. The county played a crucial role in the Civil Rights Movement as the home of Jimmie Lee Jackson, whose tragic death was a catalyst for the Selma to Montgomery marches. The Lincoln Normal School, an important educational institution for African Americans, further underscores Perry County's historical importance.

The local economy is bolstered by industries such as Harvest Select Catfish, a leading producer of high-quality catfish, and Tekpak, a prominent manufacturing company. Agriculture remains a vital industry, with Uniontown Stockyard serving as a hub for livestock trade. For outdoor enthusiasts, Perry County offers breathtaking landscapes. The Talladega National Forest provides excellent hiking, camping, and wildlife-watching opportunities. The scenic Cahaba River flows through the county, offering prime fishing and canoeing experiences, along with views of the rare Cahaba lilies. Perry Lakes Park features walking trails and birdwatching spots, making it a peaceful retreat for nature lovers.

The Blackbelt Work Unit is dedicated to forestry management, environmental stewardship, and community engagement. Whether through prescribed burning or assisting landowners, the work unit plays a crucial role in sustaining and enhancing its forests and communities.

MEMORIAL

Remembering
James D. Spears
January 17, 1932 – January 10, 2025

Mr. Jim Spears of Hoover died on January 10, 2025. A celebration of his life was held by family and friends on January 16 at Atmore United Methodist Church in Atmore, with burial at Auburn Memorial Park Cemetery on January 17, 2025.

Mr. Spears was a true southern gentleman, kind, compassionate, and led by example with a servant's heart. He loved God, his family, and the Auburn Tigers. As an avid hunter and fisherman, you could find him in the woods when he wasn't coaching football or baseball. With great integrity and love, he was exceptional in the role of husband, father, grandfather, and great-grandfather. He was a loyal stepfather, uncle, and friend to all who knew him.

James Doyle Spears was born in Greenbrier, Arkansas, on January 17, 1932, to Virgil Dean Spears and Mary Ruth Ward Spears. In 1950, he graduated from Conway High School with athletic scholarships in baseball, track, and football. He attended and played at Arkansas State Teachers College [now known as the University of Central Arkansas]. Once the Korean War began, he left college, joining the US Navy, eventually serving as a Navy Medic aboard the USS Valley Forge (1950-53). Entering Utah State University (1954-56), he pursued a degree in Wildlife Management, and continued playing baseball, pitching for the Utes until his transfer to Alabama Polytechnic Institute [now known as Auburn University] (1956-58). As a walk-on at Auburn, he struggled to work, practice, and study. Deciding to focus on his education, he left baseball and graduated with a degree in Forest Management in 1958.

Spears joined St. Regis Paper Company and held several positions, retiring as Timberlands General Manager from Champion International. He served as Chairman of the Advisory Council for the Auburn School of Forestry (1991-99), was a member of the Society of American Foresters, and past president of the Alabama Forestry Association. He was appointed by Gov. Fob James to the Alabama Forestry Commission and was later appointed by Gov. Guy Hunt to the Foresters Licensing Board. In 1992, he was awarded the Auburn University Outstanding Forestry Alumni, and in 1994 was inducted into the Alabama Forestry Hall of Fame.

In addition to his parents, Jim was preceded in death by his first wife of 56 years, Billie Charles Dewberry Spears, two sisters, three brothers, and a nephew. He is survived by his loving wife of seven years, Bobbie Bracken Herrington; daughter, Leigh Ann Horst; son, Stan (Liz) Spears; two grandsons; two great-grandsons; stepchildren; numerous step-grandchildren; nephews and nieces.

Donations may be made in honor of James D. Spears to Atmore United Methodist Church, More Than Bricks.

Letters from Landowners & Others

Change of Address & New Subscription Form

Are you receiving *Alabama's TREASURED Forests* at the correct address?

If not, please complete this form and return to:
Alabama's TREASURED Forests Magazine
P.O. Box 302550 Montgomery, AL 36130-2550

New Address:

Name:_____
Address:_____
City:_____ State:_____ Zip:_____

Old Address as it appears on mailing label:

Name:_____
Address:_____
City:_____ State:_____ Zip:_____

Please check here if receiving duplicate copies and enclose both mailing labels.
E-mail changes of address to: tfmag@forestry.alabama.gov

January 22, 2025
Dear State Foresters,

As my tenure as Oregon State Forester comes to a close, I want to express my sincere gratitude for the incredible support you provided during Oregon's devastating fire season in 2024. Your decision to dispatch dedicated firefighters to our state played a crucial role in battling the wildfires that caused widespread destruction across our communities, landscapes, and natural resources. Oregon experienced the burning of 1.9 million acres in 2024, with a peak of 12,000 firefighters on the front lines.

Your brave teams worked tirelessly alongside our local firefighters, both on the line and in support roles, often putting themselves in dangerous situations, to safeguard lives, homes, and wildlife. Your firefighters' courage, expertise, and selflessness were exceptional. Their endeavors not only helped contain the fires but also brought a sense of hope and resilience to those impacted by the calamity.

The unity and cooperation exhibited during this challenging period emphasized the significance of mutual assistance and solidarity among states. Your timely assistance undoubtedly saved lives and homes and minimized further harm to our beloved environment.

On behalf of all Oregon residents, please extend our heartfelt thanks to every firefighter who bravely responded to the call for aid. Their sacrifices and hard work will always be remembered, and we are forever grateful for their dedication.

I had hoped to attend the NASF national convention to personally express my appreciation, but the financial strain of the fire season made it unfeasible. Therefore, I want to once again convey my deep gratitude for your steadfast support and commitment.

Sincerely,
Cal Mukumoto
Oregon State Forester

April 14, 2025
To Rick Oates,

I subscribe to *Alabama's TREASURED Forests* magazine and look forward to your column along with all other informative features in every issue.

Here in the Huntsville region of North Alabama, my interest in forestry has continued to grow for many years, both as a landowner and simply from having a passion for the forestry industry. One of my most recent Forestry 101 ventures was learning that all southern yellow pines are not the same. A friend of mine from a local church owns a 40-acre tract of land near Gurley where loblolly pine grows right at the foot of Sharp's Mountain, a Cumberland outlier near Paint Rock. While doing some ornamental landscaping back at the church, Mr. Daugherty offered me free access to his land where the pine straw was harvested to use for mulch. This quickly led to learning more about these trees, including their cousin, the southern yellow longleaf pine found deeper near the Black Belt region in Alabama. Finally, I also learned about the shortleaf pine (pinus echinata) and its history being a true native to the region.

Through efforts to learn more regarding the shortleaf pine, many great resources were found, including the Shortleaf Pine Initiative (www.shortleafpine.org). Interest in this tree has also led to seed collection, stratification, and germination of new trees along with the transplanting of small saplings found adjacent to power line easements and public street rights-of-way. After carefully transplanting some 12 saplings last fall, all are showing signs of newer growth as they await transfer over into a larger potting container.

Looking over the Forestry Facts of Alabama, the best part of forestry does not just come from having a $27.7 Billion Total Economic Output, but even more so, how well the forestry of the state is being valued and preserved.

As always, we greatly appreciate everything your team does with the Forests of Alabama and hope that this email sends a clear message in that "Never should there come a day spent without admiring an Alabama Tree!"

Best,
Bob Baudendistel
Huntsville, Alabama

Alabama's TREASURED Forests
513 Madison Avenue
P.O. Box 302550
Montgomery, Alabama 36130-2550

CHANGE SERVICE REQUESTED

PRESORTED
STANDARD
U.S. POSTAGE PAID
MONTGOMERY AL
PERMIT NO 275

TREES OF ALABAMA

The Pecan

Carya illinoensis

By Dan Chappell
Registered Forester/Assistant Director, Forest Management Division, Alabama Forestry Commission

The pecan *(Carya illinoensis)* is taxonomically a member of the Walnut Family *(Juglandaceae)*, and is a close relative of the hickories, which is Genus *Carya*.

Of all the native hickory species, pecan has the potential to grow the largest. Although you are not likely to see great heights attained by open-grown orchard trees, on prime sites with good moisture, pecan can grow to 150 feet tall, with 180 feet recorded on occasion. Like other hickories, the leaves occur in an alternate pattern and are deciduous, meaning they drop off for the winter months. Each individual leaf can be very long and contains 9 to 17 leaflets. The bark ranges in color from a grayish brown to a silvery-gray, and very commonly will have holes pecked in it by woodpeckers.

The well-known fruit is a nut, with the edible part known as the kernel. While on the tree, the nuts grow to 1-2 inches in length and reach maturity in the fall. While growing, the husks are green, but they will ripen to a brown or black color as summer ends. Fruit-bearing trees tend to alternate between years of bumper crops of nuts, known as 'mast years,' and years with much-reduced nut production. This is thought to be an adaptation to the high desirability of the nut as a food source for humans, squirrels, foxes, raccoons, and certain birds. By overwhelming the forest with supply, it is more likely that at least some of the nuts will be missed by the foragers and go on to germinate into new seedlings.

Pecan trees that are available for purchase have been bred to reach nut production early, and in favorable conditions, this can occur as early as two to four years. For pecan in its natural setting, nut production was not typical until the tree reached 20 years of age. Nut production has been recorded for individuals as old as 300 years, although that would be uncommon.

The pecan is a sun-loving tree and not tolerant of much shade, although it is less intolerant than some hardwoods. If in a shaded position in the canopy, the tree will respond well to release. As would be expected from a tree that is naturally at home in moist, but not inundated soil, it is not fire-adapted. Young reproduction will likely be killed by fire, and mature trees are vulnerable to damage.

If you encounter what looks like a pecan in the forest, but something does not quite match up to what the guidebook says, you may be looking at a hybrid, which is not uncommon among the Genus *Carya*. Known examples of naturally hybridized pecans involve crosses with water hickory, bitternut hickory, shellbark hickory, shagbark hickory, and mockernut hickory.