

# Alabama's Trees for Generations To Come

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## Abstract

Alabama's forest and reforestation efforts are a result of many different interests over decades and even centuries. These interests involve landowners, industry, markets, government agencies, universities, and the public. This report provides a snapshot of where Alabama forests have come from, where they are now, and where they will hopefully be in the future.

## History of Alabama's Forests

Some of the earliest documentation of Alabama's forests can be found in the writings of William Bartram, a naturalist who traveled extensively throughout the southeastern United States during the 1700s. His writings provide detailed accounts of the forests and wildlife in the Southeast during this time (Bartram 1791). He described the northern half of Alabama as having pines (*Pinus* sp.) on upland sites sometimes mixed with oaks (*Quercus* sp.) and other hardwoods, including American chestnut (*Castanea dentata* [Marshall] Borkh.). The Coastal Plain was reported to have longleaf pine (*Pinus palustris* Mill.) on uplands where fires were common, hardwoods in bottomlands, pine barrens, and natural prairies. The lower Coastal Plain was covered in bottomlands with bald cypress (*Taxodium distichum* [L.] Rich.), wet prairies, and cane thickets.

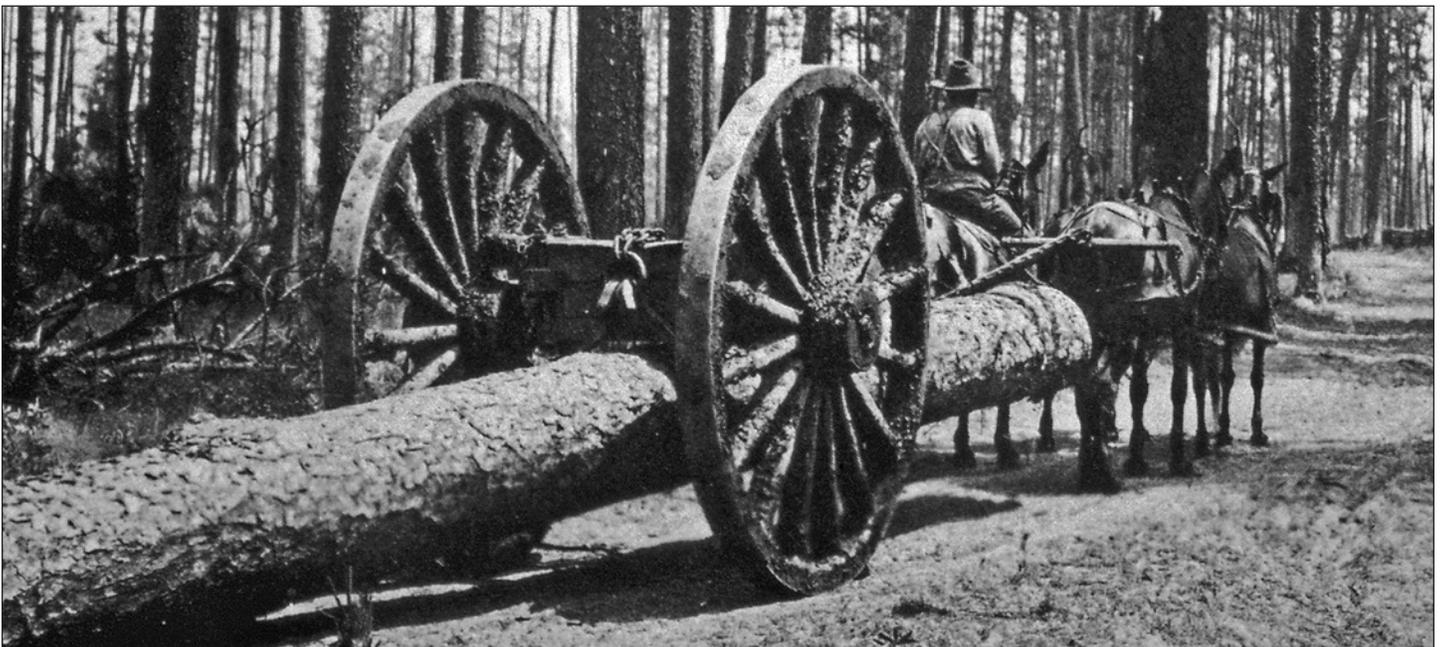
By the mid-1700s, most sawmills in Alabama were located along smaller streams. These mills cut boards and other products to supply growing local communities. On December 14, 1819, Alabama became a State. Large-scale timber harvests were not common in Alabama at that time, but in the Atlantic States, tensions with England grew in part due to forest-use rights,

and in the Lake States, timber harvesting pressures increased causing timber cruisers to look to Southern States for forest resources.

Before the 20th century, fires were common in almost all of Alabama's forests and were often caused by lightning strikes. Struck trees might burn for days, then eventually fall and catch the surrounding ground vegetation on fire. Fires were often low intensity and were more of an inconvenience than a danger to settlers. These regular fires promoted growth of native grasses in the forest understory used by grazing livestock. Fires also stimulated natural regeneration and growth of longleaf pine and fire-tolerant hardwoods.

By the early 1900s, timber harvesting was at its peak in the Southeastern United States, with little regard for the future of forests or land management (figure 1). The U.S. Department of Agriculture (USDA), Forest Service saw the shortsightedness of this mentality and therefore helped States to conduct forest inventories. Alabama accepted the offer, and in 1908, J.H. Foster began inventorying the State's remaining forests. By this time, much of the State's forests had been harvested. The most important forest issues for Alabama identified at the time were losses from fire and livestock damage, overharvesting, lack of regeneration, and restrictive tax laws (Foster 1909). The largest areas of timber were left in southwest Alabama and the area around Birmingham where much of the land was owned by mining companies that harvested longleaf pine and shortleaf pine (*Pinus echinata* Mill.) to support the charcoal iron furnaces in the region. It was said to take 100 bushels of charcoal, which was mostly pine, to make a ton of iron (Williams 2005).

Not only was Alabama's forested landscape drastically altered by extensive harvesting, but the role of fire



**Figure 1.** Extensive harvesting in the late 1800s and early 1900s drastically altered Alabama's landscape. (Photos courtesy of Alabama Forestry Commission)

on forests was altered. In 1923, the Alabama Forestry Commission (established in 1907) began to focus on fire protection. In the 1930s, members of the Civilian Conservation Corps helped with fire protection and construction of fire lookout towers. In the 1940s, 70 percent of forest fires occurred in the Southern United States. At that time, lightning fires accounted for just 1 percent of wildfires whereas smoker and arson fires were responsible for 38 and 53 percent, respectively, of all wildfires.

By the middle of the 20th century, lack of natural fire and forest regeneration failures caused land to be reforested with faster growing southern pine species, such as loblolly pine (*Pinus taeda* L.) and slash pine (*Pinus elliottii* Engelm.). The shift in forest composition, coupled with the rising use of paper and paper products (especially wrapping paper) and limited pulpwood supplies in the Lake States, resulted in paper mill developers setting up in the South. Some of the more notable companies during that time included International Paper in Panama City, FL; Westervelt Company in Tuscaloosa, AL; and the E-Z Opener Bag Company in Holt, AL (inventor of the foldable paper bag).

Companies realized that they needed to rely on landowners to assist them with sourcing trees for their mills. In 1940, Weyerhaeuser established its Clemons Tree Farm and the USDA encouraged the growth of “repeated crops of timber” on tree farms throughout the country (Randall 1954). These ideas spread to the Southern States, with Alabama being the first State to recognize tree farm landowners. In 1942, Emmett N. McCall of Dixonville, AL (near Brewton) was recognized as the first tree farmer in the State (Johnson 2012).

## Current Forest Conditions

Alabama is known for its ecosystem diversity. In fact, 64 different ecosystems have been documented in the State, 25 of which are forests and woodlands (Duncan 2013). The variety of ecosystems makes Alabama the fifth most biologically diverse State in the United States. This diversity is due, in part, to the warm, moist climate, where average air temperatures range from about 36 °F (2.2 °C) in January to 93 °F (33.9 °C) in July and rainfall is abundant (an annual average of 56 in [142 cm]). Furthermore, Alabama is geologically diverse.

Alabama is generally recognized as having six physiographic regions: Interior Plateau, Southwestern Appalachians, Ridge and Valley, Piedmont, Southeastern Plains, and Southern Coastal Plain (figure 2). These regions vary in soil type, mineral resources, elevation, and topography, resulting in the unique forest types found across the State.

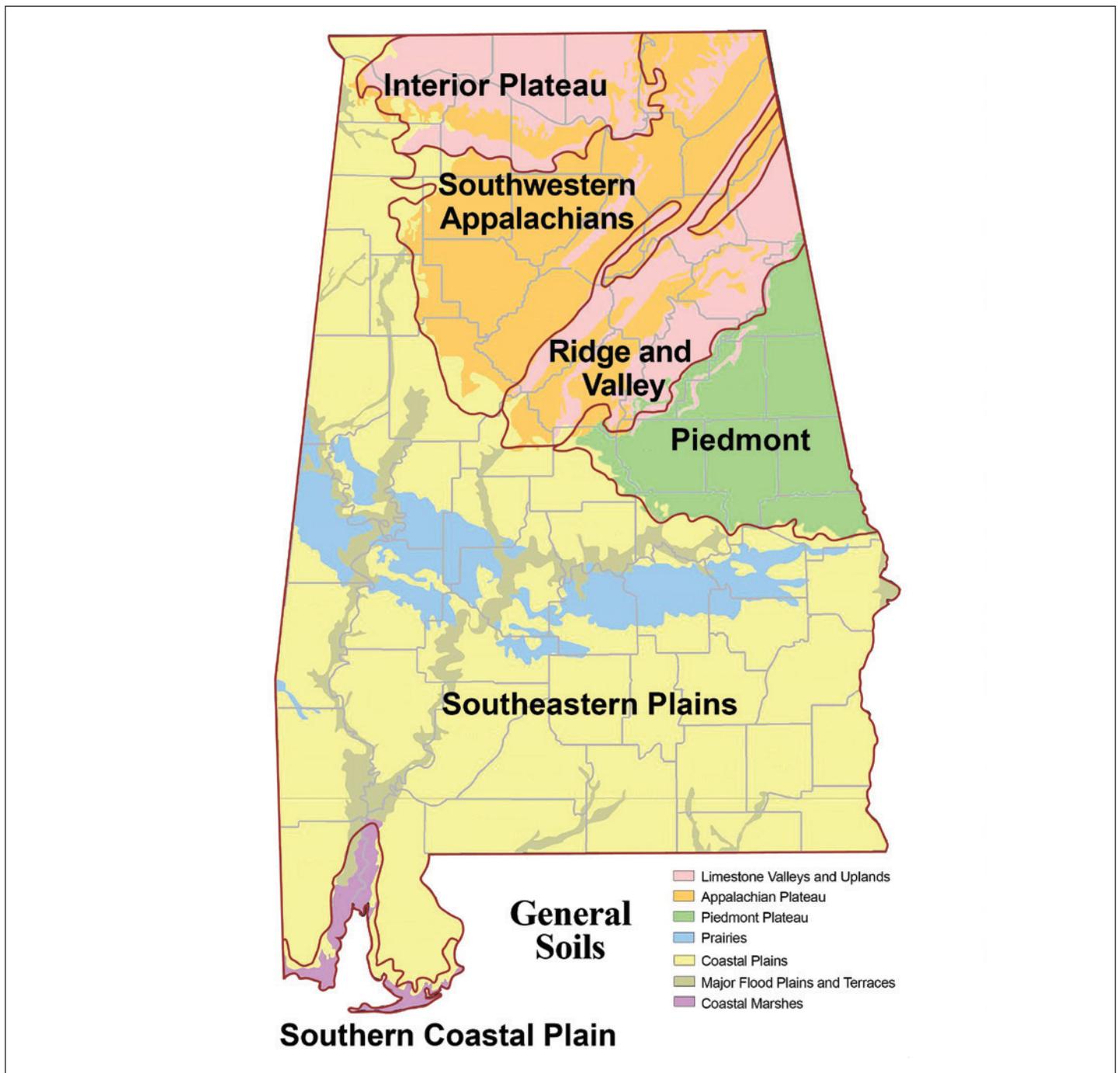
The Interior Plateau is in northern Alabama along the Tennessee border. Elevations are lower than the Appalachian region to the east. Limestone, chert, sandstone, siltstone, and shale compose landforms of hills, irregular plains, and tablelands in this region. Native vegetation is primarily oak-hickory forest with some mixed forest and areas of cedar glades. Springs, lime sinks, and caves are common.

The low mountains of the Southwestern Appalachians reach into northeast and north central Alabama, where forests are scattered with cropland and pasture. Forests are often limited to the deeper ravines and steep slopes, which are dominated by mixed oaks with shortleaf pine.

The Ridge and Valley region is a relatively low-lying region between the Piedmont to the east and the Southwestern Appalachians to the west. The ridges and valleys are composed of limestone, shale, sandstone, and marble. Springs and caves are common. Longleaf pine was native in the southern part of this region, and shortleaf and loblolly pines naturally regenerated cut-over areas and old fields. Loblolly pine was generally found naturally only in stream margins and was considered low-value and susceptible to rot.

The Piedmont is a transitional area between the more mountainous regions of the Southwestern Appalachians to the northwest and the relatively flat Southern Coastal Plain to the southeast. Longleaf pine forests were common until most of this region was harvested and heavily farmed in the late 1800s. As farms were abandoned, this region reverted to loblolly pine and hardwood forests. The soils tend to be more clayey and eroded than those in the coastal plain region.

The Southeastern Plains region has an assortment of cropland, pasture, woodland, and forest. Natural vegetation is mostly oak-hickory-pine forests. Elevations are higher than in the Southern Coastal Plain, but generally lower than in much of the Piedmont. Streams in this area are low and sandy. This region also contains prairie areas with distinctive chalk and

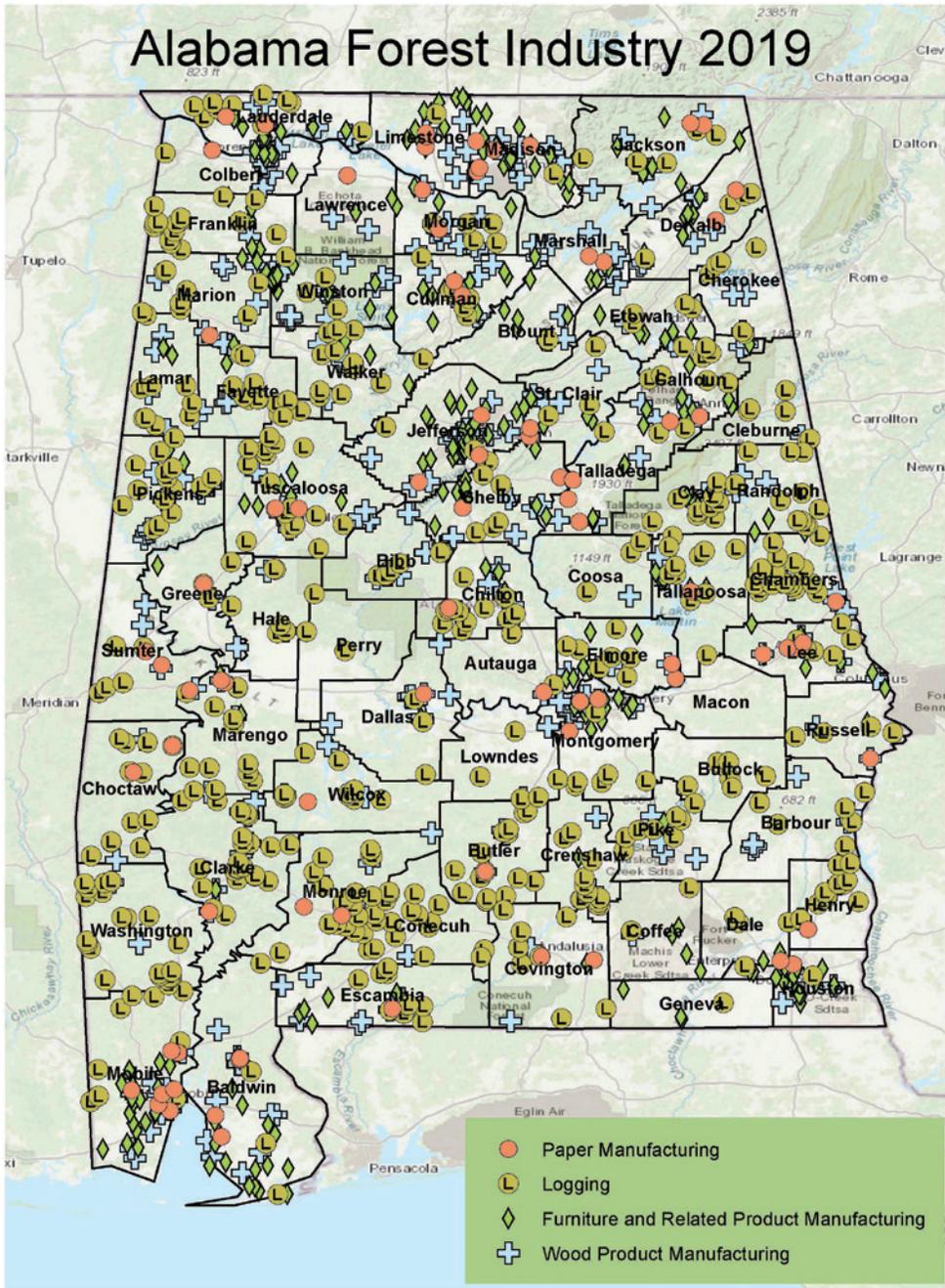


**Figure 2.** Alabama has distinct physiographic regions and a diversity of soil types. (Adapted from general soils map produced by Department of Geography, University of Alabama)

clay soils. These soils tend to shrink and crack when dry and swell when wet. Native prairie vegetation is mostly sweetgum (*Liquidambar styraciflua* L.), post oak (*Quercus stellata* Wangenh.), and eastern redcedar (*Juniperus virginiana* L.), along with patches of bluestem prairie species.

The Southern Coastal Plain extends along the Gulf coast lowlands of the Florida Panhandle, Alabama,

and Mississippi. This region is generally low in elevation and flat with wet soils. Once covered by longleaf pine, slash pine, pond pine (*Pinus serotina* Michx.), American beech (*Fagus grandifolia* Ehrh.), sweetgum, southern magnolia (*Magnolia grandiflora* L.), white oak (*Quercus alba* L.), and laurel oak (*Q. laurifolia* Michx.) forests, land cover in the region is now mostly slash pine and loblolly pine with oak-gum-cypress forest in some low-lying areas.



Alabama Department of Labor  
Labor Market Information Division

Source: Alabama's Quarterly Census  
of Employment and Wages, 2019

**Figure 3.** Alabama's forest industry is a major economic contributor to the State, the Nation, and beyond. (Map source: Alabama Department of Labor, Labor Market Information Division, 2019)

### The Forest Economy

Alabama's forestry industry is exceptional for the State's economy due to its massive, sustainable timberlands (Fickle 2014). The industry ranks in the top five nationally for lumber and pulp and paper/paperboard production and in the top ten when including panels. The forest industry is a key component in the State's extensive fiber value-added sup-

ply chain and is among the top three manufacturing sectors within the State (Fickle 2014). Further, it is the State's most important rural manufacturing industry (figure 3).

Forest economic numbers in Alabama are impressive: 123,477 jobs, \$6.6 billion labor income, \$27.7 billion economic output, \$1.3 billion in exports, total value-added of \$11.1 billion, and 1,472 payrollled

industry locations (Alabama Forestry Commission 2021). Alabama's forest industry job concentration is 2.57 times the national average, with average regional job earnings of \$65,100. In addition, Alabama ranks in the top five States in electricity generated from biomass (nearly all of which is from the forest products industry) (U.S. Energy Information Administration 2021).

Harvested timber is distributed as follows in the State: 51 percent pulpwood, 31 percent sawlogs, 6 percent composite panels, 5 percent bioenergy and fuelwood, 6 percent veneer logs, and 1 percent poles (USDA Forest Service 2021). The majority of total roundwood production is softwood (southern yellow pine).

To support the State's forest industry, the Alabama Forest Workforce Training Institute established the first and only workforce development program specifically dedicated to the forest industry (<https://www.forestryworks.com/>). The forest industry sector is also a priority in the State's strategic plan (Alabama Economic Development Alliance 2017).

Alabama's contribution to the Nation's wood product markets is significant. The State's forests continually sustain fiber, create jobs, provide economic contributions for communities, and manufacture products for use not only by the Nation, but by the world as well.

## Alabama's Forest Agencies and Partners

### The Alabama Forestry Commission

The 1900 census data revealed that forested areas in Alabama at that time was 24.5 million acres (Alabama Forestry Commission 2020). With decreasing longleaf pine stands that once covered 50 percent of the forest canopy, Alabama had significant forested areas that needed to be protected and sustained. Thus, the Alabama Forestry Commission (AFC) was established in 1924, primarily to protect the State's forests from wildfires. Under the Forestry Act of 1923, Alabama established a statewide commission that appointed Colonel Page S. Bunker as the first State forester to head the agency (Yahn 2019). Eventually, the agency's responsibilities to the State's forests expanded beyond fire suppression and included conservation management and public education.

Today, the AFC's organizational structure and eminent mission remain relatively the same. The agency's mission has three basic goals: to protect the forests from harmful agents such as pests and wildfires, to assist landowners in responsible forest management on their property, and to educate the public on the value of Alabama's forests. Wildfires, insects, diseases, and invasive plants are detected by various means from ground reconnaissance to aerial surveys. The AFC encourages landowners to be responsible stewards of their properties through forest certification programs that promote sustainable management practices. These conservation regimes may include monitoring for threatened and endangered species, implementing harvesting activities that maintain water quality, and managing sensitive habitat for aquatic animals and terrestrial wildlife. The AFC also provides forest landowners with financial and technical assistance through cost-share programs and management services, as well as direct services such as prescribed burns, fire lane maintenance, and drone mapping. The AFC's educational programs are not only designed to inform landowners but all citizens about the value of the State's forests. AFC representatives give presentations to schoolchildren through programs like Classroom in the Forest and Forestry Awareness Week Now. The AFC collaborates with the USDA Farm Service Agency (FSA) to present wildfire prevention programs through Smokey Bear events. The agency also produces a quarterly magazine called "Treasured Forests" that contains interesting articles on various topics of conservation management (figure 4).

The AFC's obligations to tree planting and forest restoration mainly occur through internal programs and agency partnerships. The AFC administers a cost-share program that assists nonindustrial private landowners to implement management practices for pine stands that will reduce the risk of beetle infestation. Through funding from the USDA Forest Service, this financial assistance is called the Southern Pine Beetle Prevention Cost-Share Program. The management practices include noncommercial first thinning, mixed tree species planting, low-density loblolly pine planting, and longleaf pine planting. With approximately 800 ac (324 ha) planted with longleaf pine and 100 ac (40 ha) planted with loblolly pine under this program during the last 5 years, the AFC plans to continue assisting landowners and encouraging them to reestablish and maintain healthy, sustainable pine stands.



**Figure 4.** The Alabama Forestry Commission has published “Treasured Forests” since 1982. This quarterly publication is provided to forest landowners and is filled with technical assistance designed to assist in making informed land-management decisions. (Issues are available online: [https://forestry.alabama.gov/Pages/Informational/Treasured\\_Forest.aspx](https://forestry.alabama.gov/Pages/Informational/Treasured_Forest.aspx))

For other forest management and tree planting practices, the AFC partners with the USDA Natural Resources Conservation Service (NRCS) and the FSA to assist nonindustrial private landowners under various programs. In an agreement with these Federal agencies, the AFC’s role in these programs is the technical assistance provider.

The AFC conducts site visits to verify that forest stand establishment and improvement practices are being completed by the landowners enrolled in these programs. During fiscal year 2021 (October 1, 2020 to September 30, 2021), the AFC completed and verified 2,360 ac (955 ha) of tree planting under these combined programs.

### USDA Forest Service

The mission of the Forest Service is “to sustain the health, diversity, and productivity of the Nation's

forests and grasslands to meet the needs of present and future generations.” Alabama’s four national forests—Bankhead, Conecuh, Talladega, and Tuskegee—are working forests that cover more than 670,000 ac (271,140 ha) These forests are managed for multiple purposes and provide products and services to the public.

Reforestation is a top priority for national forest management and stands at the core of efforts to protect water quality both on national forests and on adjacent lands. The Forest Service and numerous partners under the America’s Longleaf Restoration Initiative (ALRI) are cooperating to restore longleaf pine forests because of the species’ ability to evolve and adapt to fire management. Annually, National Forests in Alabama plant approximately 700 ac (283 ha) of longleaf pine containerized seedlings (476,700 annually), 170 ac (69 ha) of containerized shortleaf pine seedlings (115,770 annually), and 75 ac (30 ha) of natural longleaf pine regeneration in support of the ALRI.

The Forest Service is committed to working with partners and communities to restore longleaf pine and takes the following eight steps to create and maintain healthy national forests in Alabama:

1. Use prescribed burning to renew vegetation growth and remove excess debris that fuel wildfire.
2. Manage forest lands that provide habitat for wildlife, clean air, and water resources.
3. Plant native trees, such as longleaf pine, that have a natural resistance to wildfire, wind, disease, and the southern pine beetle.
4. Manage understory plants to reduce nonnative invasive species, such as cogongrass (*Imperata cylindrica* [L.] P. Beauv.) and kudzu (*Pueraria montana* [Lour.] Merr.), that displace native plants essential for wildlife.
5. Manage aquatic biodiversity by altering conditions to ensure construction projects conform to habitat maintenance standards.
6. Conduct forest inventories to collect forest information for analysis.
7. Implement Geographic Information Systems (GIS) mapping to enhance ecosystem management.
8. Expand partnerships by encouraging members of the public to care for the environment by planting trees or volunteering.

## Farm Service Agency

The USDA Farm Service Agency (FSA) plays a vital role in the implementation of the Conservation Reserve Program (CRP), so that environmentally sensitive land is devoted to conservation benefits. CRP participants establish long-term, resource-conserving, vegetative species, such as approved grasses and trees (known as covers) to control soil erosion, improve water quality and enhance wildlife habitat. In return, FSA provides participants with annual rental payments and cost-share assistance. In Alabama, tree planting has been one of the major uses of CRP over the past 10 years.

FSA offers three types of CRP enrollments:

1. General enrollment is announced periodically and offers are ranked at the national office to determine acceptable offers.
2. Continuous enrollment provides ongoing benefits.
3. Grasslands enrollment is a voluntary program that contracts with agricultural producers to help landowners and operations, including rangeland and pastureland, and is considered a “Working Land” program.

The Emergency Forest Restoration Program (EFRP) administered by the FSA is a contingent program that offers financial assistance to landowners for restoring forests damaged by natural disasters. The enrolled stands are restored through applied practices that include debris removal, site preparation, and forest regeneration.

## Natural Resources Conservation Service

The USDA Natural Resources Conservation Services (NRCS) works at the local level to help people conserve natural resources on private lands. This assistance includes tree planting for various purposes, such as forest products (saw timber, pulpwood), energy biomass, wildlife habitat, long-term erosion control, water-quality improvement, waste treatment, reduction of air pollution, carbon storage in biomass, energy conservation, improvement or restoration of natural diversity, and aesthetic enhancements. Under the Environmental Quality Incentives Program (EQIP) administered by the NRCS, approved landowners receive financial assistance to implement management conservation practices, such as tree establishment and precommercial thinning that optimize environmental

benefits for working agricultural lands. NRCS also supports three species-specific tree-planting initiatives in Alabama (see the “Tree Planting” section in this article).

## Fish and Wildlife Service

The U.S. Department of the Interior (DOI), Fish and Wildlife Service (FWS) has a long-term commitment to work with private landowners seeking to improve wildlife habitats for species at risk, most visibly through their Partners for Fish and Wildlife Program. In the last 15 years, this program has established 42,632 ac (17,253 ha) of longleaf pine to improve upland habitats in Alabama, with an additional 829 ac (335 ha) planted with a variety of other tree species. These projects typically restore sites by removing offsite species and by treating unburned, mixed, and overstocked stands. Landowners who partner with FWS in this program share a commitment to improving their properties for the benefit of at-risk species, particularly the gopher tortoise (*Gopherus polyphemus*). Because the gopher tortoise is a keystone species, program activities also directly benefit several other wildlife species.

## Alabama Forest Association

The Alabama Forest Association (AFA) conducts social-media marketing to connect landowners with the Alabama Landowners Resource Center. After landowners answer a few questions, they are contacted by an AFA-registered forester or certified wildlife biologist. These resource professionals typically meet with landowners on their property and make forest management recommendations based on the landowner’s activities to date, priorities, and vision. Recommendations include planting trees (often southern yellow pines, but hardwood species as well). Resource professionals also direct landowners to cost-share programs that allow them to get more accomplished with limited resources of their own. Resource professionals also offer recommendations related to invasive species control, habitat management for threatened and endangered species, and improvements in habitat for game and nongame species. In addition, resource professionals encourage landowners to manage riparian zones in a way that enhances water quality and aquatic habitat.

# Alabama's Longleaf Ecosystem Restoration Team

Providing Technical Assistance in Managing Longleaf Pine



## Current Partner Resources on the Technical Assistance Team



Updated 6/2020



**Figure 5.** A technical assistance team consisting of several partner agencies and organizations assists in the implementation of the Longleaf Pine Initiative. The team provides technical guidance to help train associated partners and landowners in longleaf pine habitat management. (Images courtesy of The Longleaf Alliance)

### The Longleaf Alliance

The Longleaf Alliance (TLA) was founded in 1995 and is headquartered in Alabama. TLA works throughout the Southeastern United States to guide longleaf pine restoration, stewardship, and conservation using science-based outreach, partnership engagement, and on-the-ground assistance. TLA works with all landowners, managers, and partners who share an interest

in longleaf pine, helping each reach their own objectives. TLA connects landowners to the many forms of assistance available, helps to make investments more successful, and shares innovations and learnings with others facing similar challenges. Through grants and awards, TLA provides additional support to advance planting, restoration, and management activities across a variety of landscapes. TLA directly contributed to

planting nearly 500,000 longleaf pine seedlings in Alabama in the 2020–2021 planting season. By reporting and sharing the combined accomplishments of all landowners and organizations engaged in longleaf pine restoration, TLA continues to grow additional support and investment for restoration of this once-imperiled species. TLA is also part of a technical assistance team that assists landowners in longleaf pine management through workshops and field days (figure 5).

## The Nature Conservancy – Alabama Chapter

The goal of The Nature Conservancy–Alabama Chapter (TNC-AL) is to facilitate native, resilient, and connected habitats where ecosystems can adapt and thrive with a changing climate. TNC-AL works with The Talladega Mountains Longleaf Conservation Project (TMLCP) through a partnership of various public and private entities located in the mountains of central Alabama and northwest Georgia. The partnership helps to lead and guide restoration in this part of the longleaf pine range. The coalition consists of Federal and State partners, including the Forest Service; FWS; National Park Service; AFC; Georgia Department of Natural Resources; Alabama State Parks; Wild Turkey Federation; Alabama Department of Conservation and Natural Resources; TLA; Berry College; Alabama and Georgia chapters of The Nature Conservancy; Alabama Wildlife Federation; Munford Schools; and others. These partners work collaboratively to restore longleaf pine across the 7 million ac (2.8 million ha) of the partnership boundary. Working together, this group facilitates longleaf pine restoration through prescribed burning and annual plantings on suitable sites. Through the partnerships' work, longleaf pine has a more resilient future in this important and unique part of its range. Through the past 5 years, the partnership has awarded more than \$600,000 in grant funds to complete longleaf pine restoration work across the TMLCP landscape. In addition to the TMLCP, TNC-AL also works across the vast coastal plain of the State to restore longleaf pine and its native habitat through many other avenues, such as assisting local, Federal, private, and industrial landowners, as well as through acquisition and management of ecologically significant lands within the longleaf pine range.

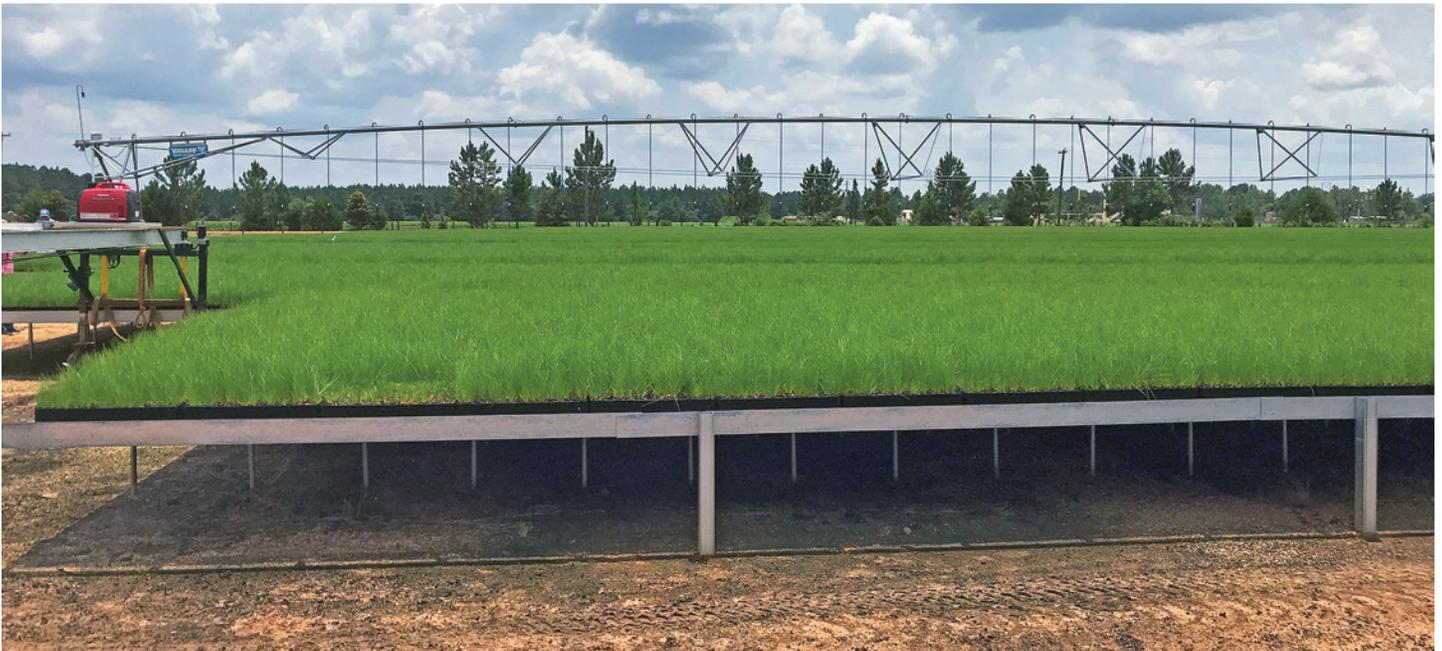
## Nurseries

Alabama's first State nursery was established in 1926 in Sumter County and was later replaced by a new nursery near Autaugaville, later named the John A. Miller Nursery (Patterson et al. 1960). In 1949 and 1952, two more nurseries were established (Auburn Nursery and E.A. Hauss Nursery, respectively). State nursery production was approximately 27 million seedlings in 1954 and increased to nearly 141 million by 1960 (Patterson et al. 1960). Over time, however, all three of these nurseries eventually closed. A large, private nursery is now located at the site of the former E.A. Hauss nursery near Atmore (figure 6).

When the last Alabama State-owned nursery ceased operations in 2006, production of seedlings for reforestation shifted to the private sector. Mergers of forest product companies and their divestitures of land in the early 2000s further decreased the number of seedling nurseries operating in the State. Since that time, however, the number of privately owned forest-tree seedling nurseries whose primary business is seedling production has grown tremendously. Two of the largest private seedling producers in the country currently operate a total of three large nurseries in Alabama. These companies own no land-base or manufacturing facilities; their sole product is seedlings for reforestation across the Southeast. Three other large seedling producers are in Alabama along with various smaller operations serving specialized markets (figure 7).

In 2020, more than 121 million seedlings were grown by Alabama nurseries (Haase et al. 2021), providing seedlings to plant more than 220,000 ac (89,030 ha). Of the total seedlings grown, approximately 116 million were conifers and 5 million were hardwoods. The growth of containerized conifer seedling production has increased significantly during the last decade (figure 6). In 2008, only 3 percent of conifer seedlings were grown in containers in Alabama; that number grew to 24 percent in 2020 as the demand for this stock type increased. The most common conifer seedling grown in Alabama is loblolly pine (81 percent). Other major conifer species grown in the State are longleaf pine, shortleaf pine, and slash pine. All production of longleaf pine (more than 11 million seedlings) in Alabama is in containerized growing systems.

Alabama is home to the only research cooperative in the country whose sole focus is to provide relevant



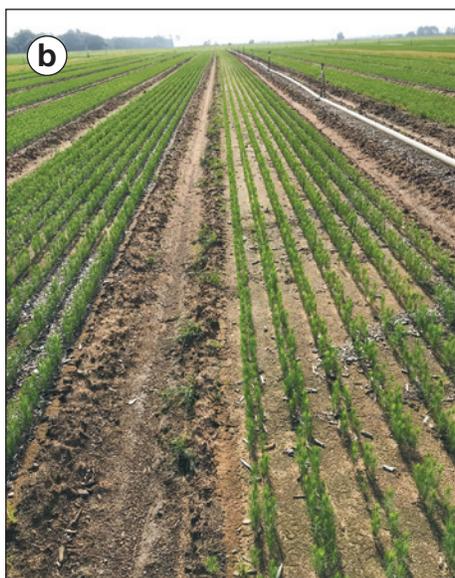
**Figure 6.** Although Alabama's State nurseries are no longer in operation, several private nurseries provide millions of seedlings annually for reforestation, including this large longleaf pine container facility at the previous site of the State's E.A. Hauss nursery. (Photo by Tim Albritton)

research to forest nurseries in the South. The Southern Forest Nursery Management Cooperative (SFNMC) was established in 1972. The SFNMC works closely with its members to develop and disseminate new technologies for the economical production and outplanting of tree seedlings in the Southern United States. The Cooperative is comprised of four private seedling producers, three forest product companies operating nurseries, and seven State-operated nurseries. The SFNMC staff is housed at the School of Forestry and Wildlife Sciences at Auburn University (Auburn, AL).

Most SFNMC members also belong to the Tree Improvement Cooperative at North Carolina State University (Raleigh, NC), which provides research on genetic improvement of forest trees to its members.

## Tree Planting

Currently the NRCS supports three initiatives in Alabama targeting special species important to the State's forests.



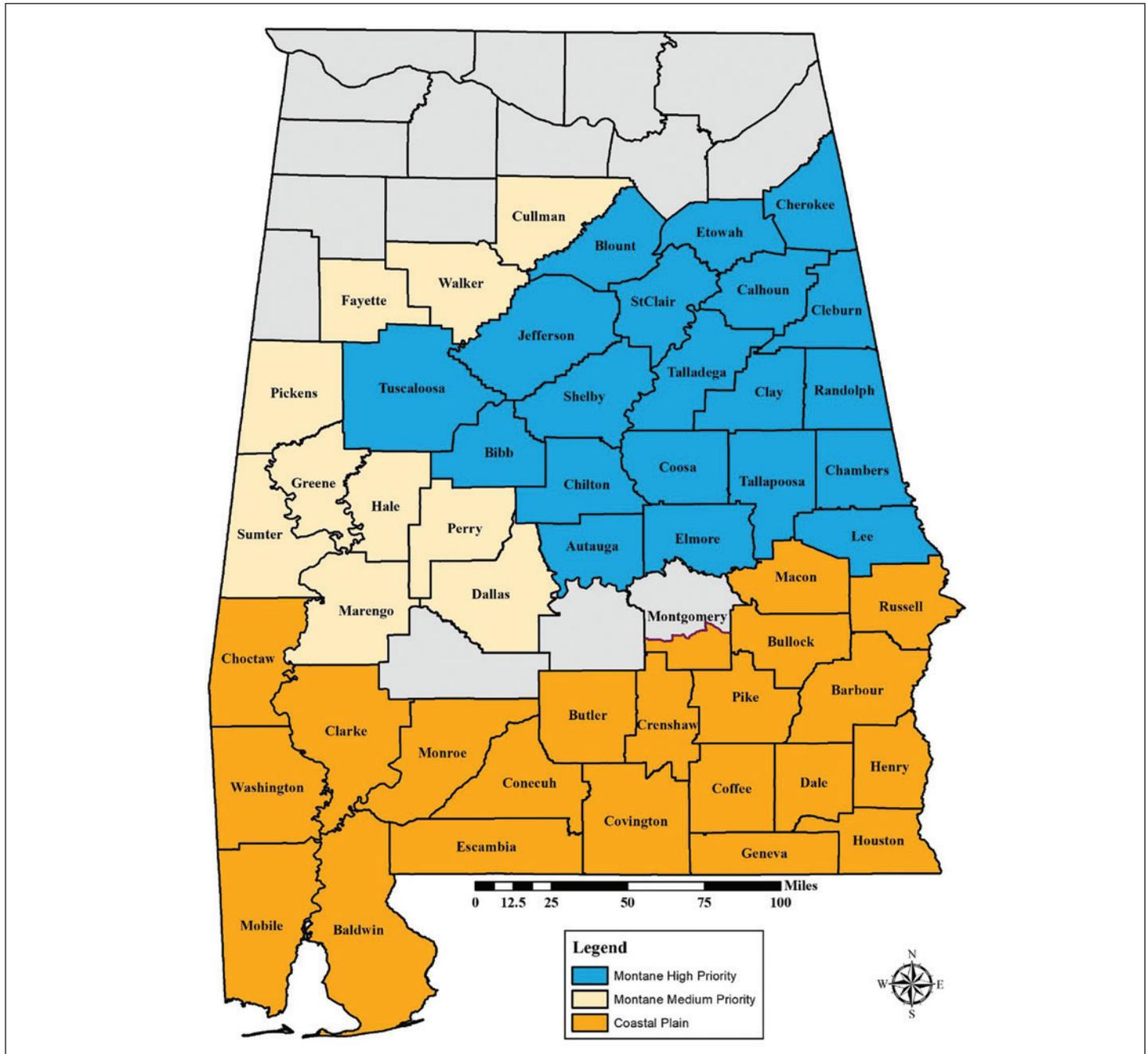
**Figure 7.** Alabama nurseries produce both (a) container and (b) bareroot seedlings. While most seedlings grown in the State are conifers, about 5 percent are (c) hardwood seedlings. (Photos by Tim Albritton)

## Longleaf Pine Initiative

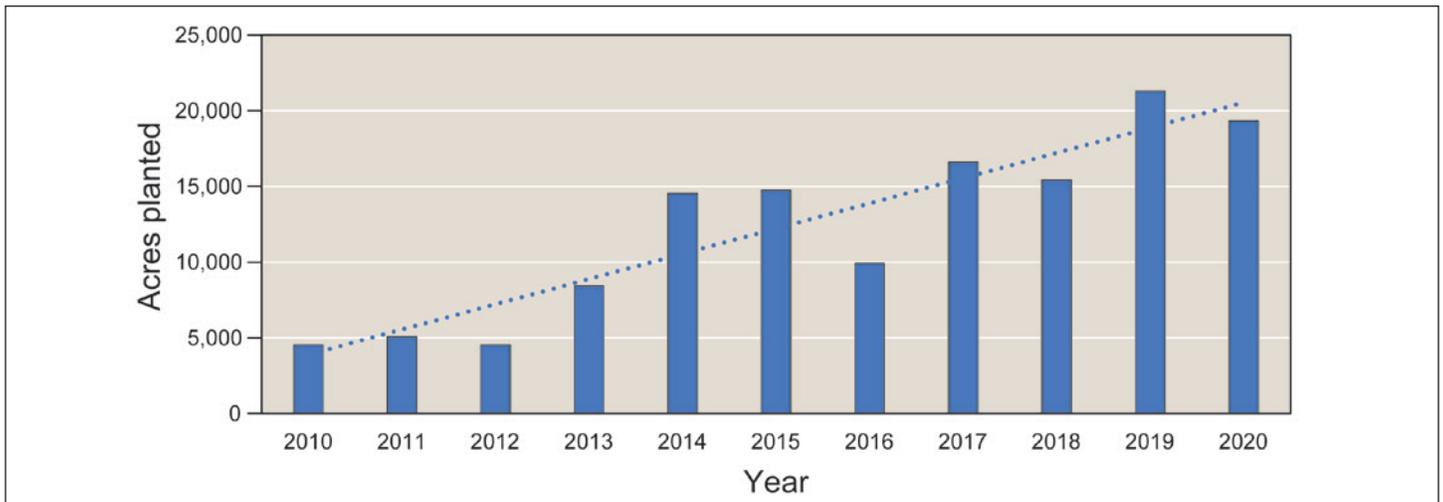
Before extensive logging in the region, longleaf pine covered about 90 million ac (36.4 million ha) from Virginia to Texas. Now, less than 4 percent remains. Thus, widespread efforts are underway to restore this important species. One of these efforts is the Longleaf Pine Initiative (LLPI), launched in 2010 to work with landowners in nine States to improve and restore longleaf pine ecosystems. In Alabama, two fund pools are available for the LLPI: Coastal Plain Longleaf and Montane Longleaf. All counties within the coastal

plain longleaf area are within the nationally designated high-priority boundary. The montane longleaf area has both high- and medium-priority designations at the county level (figure 8).

The focus of the LLPI in Alabama is the management of existing longleaf pine stands. This priority is captured through the ranking process, with burning/thinning applications ranking higher than tree establishment applications. Since 2010, an increasing number of acres have been planted annually in Alabama to support the LLPI program (figure 9). Prior to planting



**Figure 8.** The Longleaf Pine Initiative determines priority areas for management of existing longleaf pine stands and planting longleaf seedlings.



**Figure 9.** The Longleaf Pine Initiative has been instrumental in restoring many acres of longleaf pine stands in Alabama since it was launched in 2010.

longleaf pine, a full micronutrient soil test is done to determine suitability on sites previously managed as agricultural fields or pastures. Landowner’s knowledge of recent management practices and all chemical or nutrient applications help to determine suitability and preparation needs. Soil test results may prevent planting failures due to:

1. Excess compaction.
2. High soil pH.
3. High levels of P<sub>2</sub>O<sub>5</sub>, which may be indicative of previous applications of chicken litter or high-phosphorus, inorganic fertilizers that can affect nutrient availability and seedling root development.
4. High levels of zinc, copper, manganese, or other micronutrients.

### Shortleaf Pine Initiative

The Shortleaf Pine Initiative (SPI) was created in 2013 to address multiple threats affecting the shortleaf pine ecosystem. Shortleaf pine forests and associated habitats once covered a vast area of North America, stretching from eastern Texas and Oklahoma to the eastern seaboard (from New Jersey down to Florida). Over the last 30 years, more than 50 percent of this ecosystem has been lost with most of the decline occurring east of the Mississippi River. The SPI includes a range of public and private organizations and agencies working in the shortleaf pine ecosystem. All forestry practices within eligible counties qualify for this program; however, forest stand improvement practices of existing shortleaf pine stands and the establishment of new stands are prioritized.

### White Oak Initiative

According to the Forest Service Forest Inventory and Analysis program, white oak regeneration is not keeping up with harvest of white oak sawtimber. The target landscape has mixed hardwood or mixed pine/hardwood uplands and mixed hardwood bottomlands with a significant component of white oak. Ideally, this white oak component not only includes trees in a dominant/codominant position within the forest, but also some trees in the intermediate canopy position and some regeneration in the sapling and seedling positions. Two other at-risk species in the white oak family are included in this initiative due to their high value and low recruitment of smaller size classes: chinquapin oak (*Quercus muehlenbergii* Engelm.) and swamp chestnut oak (*Q. michauxii* Nutt.). These two species can comprise up to 25 percent of white oak species planted. Within eligible counties, up to 50 percent of the planting can be composed of “trainer” tree species to be planted in alternating or third rows, such as yellow poplar (*Liriodendron tulipifera* L.), black cherry (*Prunus serotina* Ehrh.), sweetgum, shortleaf pine, or other species as approved by the NRCS State staff forester.

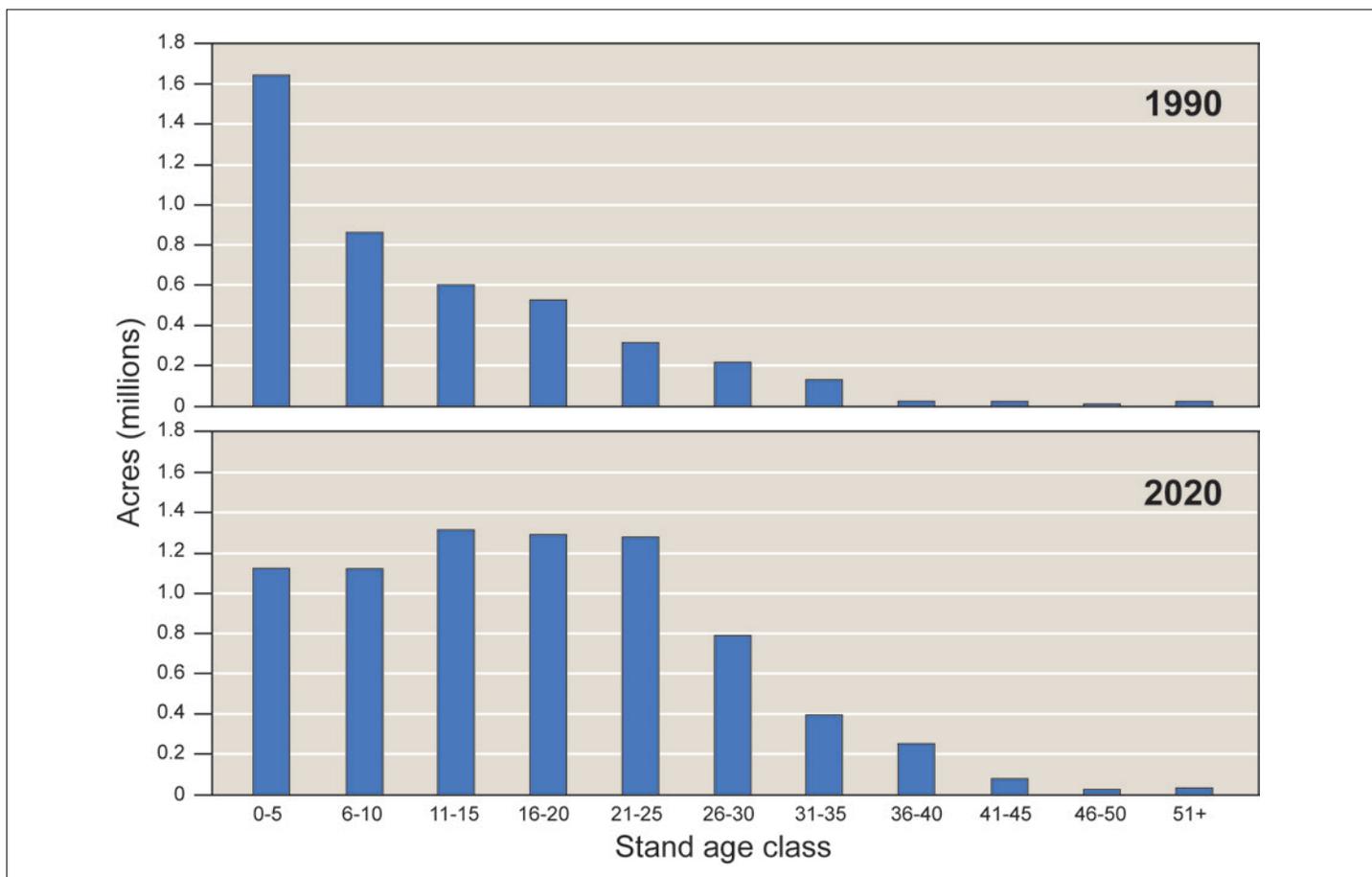
### Challenges

Tree planting in Alabama has many complex challenges. Many of these challenges are also opportunities for further education. Current challenges can be summarized as follows:

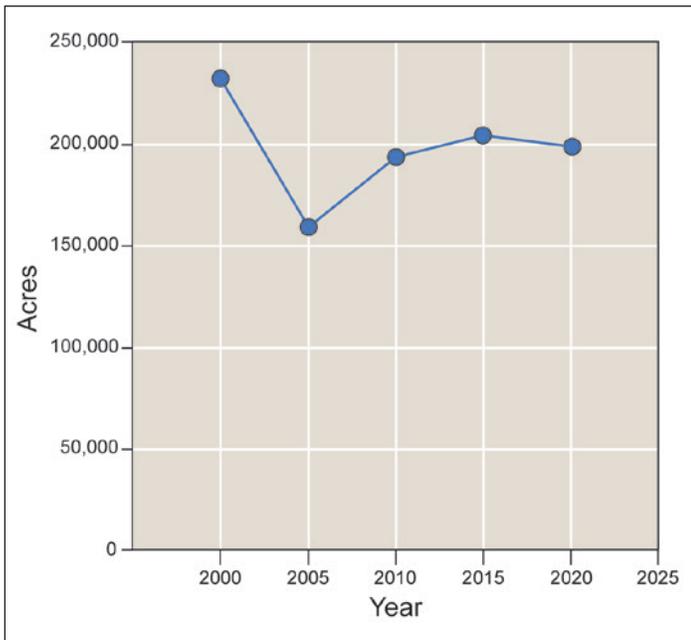
1. Government programs offer incentives for planting certain species, such as longleaf pine. These incentives, however, result in some people signing up for these programs who have no interest in properly managing longleaf pine with prescribed burning. Longleaf pine is a native species and should be promoted for its many benefits, but it needs to be managed with burning on a regular basis to create the desired ecosystem. Many efforts are underway to remove barriers to landowner implementation of safe and effective prescribed burning.
2. Planting projects need more diversity, but landowners often plant loblolly pine. This glut of loblolly pine causes pine prices to flatline. Thus, a more diverse approach is prudent, though convincing landowners to add species diversity to their planting projects can be challenging.
3. Staffing and staff retention within the agencies that traditionally serve landowners has been challenging to maintain. Rebuilding organizational capacity and retaining institutional knowledge in place is needed.
4. An array of markets is needed, along with growing forest inventories, to support expanding manufacturing of commodity products. Better premium markets would encourage increased management for higher quality products and thus better diversify Alabama's forest investments. Markets must include those for ecosystem services in carbon, water, wildlife, and climate.
5. Research and planning are needed to better understand and implement the establishment of more resilient and diverse future forests for a changing world, whether due to development, fragmentation of ownerships, emerging markets, climate, or social/political influences.

## Growing Forward

Tree planting has progressed a great deal in Alabama over the preceding few decades. Not only do planted stands cover 67 percent more acres than they did just 30 years ago, but they are spread across a wider age and diameter range and contain significantly more volume (figure 10). Over the past 20 years, the State



**Figure 10.** The amount of tree planting and the diameter range of planted forests has changed significantly in Alabama from 1990 to 2020.



**Figure 11.** Approximately 200,000 ac (80,935 ha) of forest have been planted annually in Alabama in the past 20 years. (USDA Forest Service, Forest Inventory and Analysis, Evaluator program)

has planted approximately 200,000 ac (80,935 ha) per year (figure 11). Although annual planted acres were sometimes higher in the past, current planted stands tend to be maintained for longer periods than in the past (often beyond 30 years). Thus, less acres are devoted to short-rotation stands, resulting in high-volume stands.

Looking forward, Alabama expects to continue its high levels of seedling production and tree planting (figure 12). In addition, the State expects to continue building diverse markets and take necessary actions to sustain healthy forest ecosystems for generations to come.

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**Figure 12.** Tree planters in Alabama working hard to get trees planted. (Photo by Ted DeVos, Bach and DeVos Forestry and Wildlife Services, Inc.)

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