

# The Southern Forests: *A Legacy of Nations*

by DON BURDETTE, Alabama Forestry Commission

**Q**uite suddenly, people from a broad range of viewpoints are very interested in the history of our Southern forests. Why? For various reasons, we all want to know what the original forests were like before people came on the scene; how the forests were affected by human civilization; and how the forests that we see around us today came to be.

The continually changing forests of the South are the result of many natural and human events that have occurred through the centuries. In reviewing the past, we are reminded of important lessons about the conservation of natural resources, which we must continue to appreciate and practice.

In this article we will look at the South's original primeval forest, the last great natural transformation of the forest as witnessed by native Americans, the manipulated forests as the Europeans discovered them, as well as the effect of early logging and land use practices during the settlement of our country. In the next issue of *Alabama's TREASURED Forests* we will follow through with a look at the development of the South's second, third and fourth generation forests which were made possible by concerted conservation efforts.

## America's Primeval Forests Develop

**Primeval** is defined in the American Heritage Dictionary as "belonging to the first or earliest age or ages; original." We know that eons ago forests of the South were huge, club moss trees that flourished in swamps. Our only record of what took place during this time occurs in coal bed fossils, and scientific evidence indicates that those forests were as complex as today's.

Clearly, over a long period of time, the character of the Southern forest went through phenomenal modification in response to changes in atmospheric composition, climate and geologic turmoil. The forest evolved from club mosses and ferns to the first gymnosperms (relatives of modern pine trees) and finally to mixed forests of gymnosperms and angiosperms (broad-leaved, deciduous species). The glacial period of geologic history caused species hardiness zones to migrate north and south as the ice fields ebbed and flowed out of Canada. By the time the last glacier receded to the north (20,000 years ago), a boreal forest of hemlock, pine and fir trees had extended as far south as north Alabama. These species occur today in a Canadian hardiness zone far to the north; only remnants of the eastern hemlock remain in some cool ravines of north Alabama. Perhaps the most interesting aspect of this transformation is that change is a natural process, and whole ecosystems emerged and became extinct without the presence of man.

Most people's interest in the Southern forests, however, is in more recent developments in which man is included as a part of the ecosystem. The forests and times of prehistoric man are interesting stories about the development of a human civilization that had to adjust to—and also helped create—a changing environment.

The first people to migrate into the South after the last glacier had receded to the north were called Paleo Indians by anthropologists. They came into north Alabama about 10,000 B.C. following herds of mastodons, giant bison and ground sloths that they depended upon for food and clothing. The South they discovered was dominated by beech and maple—the same forest type found today in the Midwest.

By 8,000 B.C. a changing ecosystem forced new developments in the human population. As the climate grew warmer and drier the forest types that we are familiar with in the South today—oak-hickory and mixed pine-hardwood—began to dominate and eventually stabilized by about 5,000 B.C. The megafauna hunted by Paleo Indians had become extinct in part due to an inability to adapt to ecological changes and partly due to severe hunting pressure. Archaic people were forced to switch to the hunting of deer, turkey and small game animals for sustenance. As the forest changed, Archaic people learned how to make better use of the forest for food, shelter, medicine and more sophisticated tools. As they learned how to live off what they could hunt and gather around them, a transition was made from a fully nomadic way of life to a semi-nomadic rotation between seasonal opportunities.

By 1,000 B.C., the Woodland people had discovered two new technologies that significantly improved their manner of living: rudimentary agriculture and pottery making. They found that by clearing patches in the forest and cultivating plants such as sunflower, squash and gourds, they could provide more food close to home. Settlements and clearings meant that the Indians were beginning to exert greater influence on the forests' condition.

Between A.D. 800 and A.D. 1500, the Mississippian culture continued to develop their agriculture, social structure, art, trade and religion. This prosperous native American society reached its zenith with the construction of temple mound cities such as Moundville, Alabama. These centers of a feudal system required large areas of the forest to be cleared for mounds, structures, ceremonial fields and cropland. By this time fire was a tool commonly used by the Indians to influence the forest to better provide for their needs. However, even before the arrival of Europeans, the Mississippian culture had begun a mysterious decline.

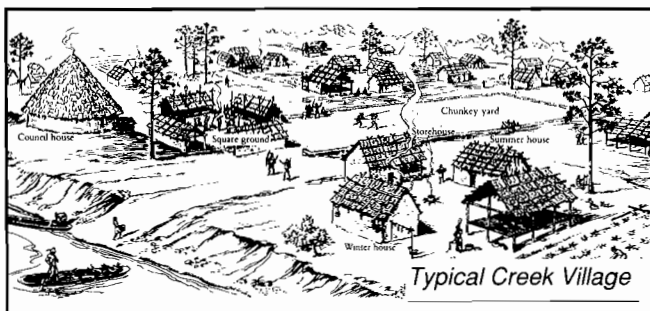
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## History

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### 1500s: America's Open Southeastern Forests Are Discovered

The journals written during the Spanish exploration of the mid-1500s give the first historical account of how the native Americans lived and interacted with the natural resources of the South. The native American lifestyle throughout the Southeast at that time could best be described as dependent upon a combination of floodplain farming, hunting, fishing and gathering of natural foods and materials. Most Indian settlements were found within alluvial valleys of major rivers, where it was advantageous to cultivate corn, beans, squash, gourds and tobacco in the moist but well-drained, fertile and easily tilled soils.



Open burning was used for the initial clearing of new garden sites. Little effort may have been made to confine the fire and it spread to areas of adjacent woodlands and previous clearings. The trees in the garden area that survived the wildfire were girdled either with stone axes or by burning additional brush at the base. The vegetables planted beneath the deadened trees were then cultivated with simple hand tools.

Fires were also intentionally set outside the garden areas to open up and improve the surrounding upland forests for hunting and gathering purposes. Intensity and frequency of resulting wildfires probably varied with fuel, topography and weather conditions around the Southeast.

The result of intense, annual fires in the Lower Coastal Plains was that longleaf pine trees and other fire tolerant plant species usually dominated the landscape. The fires in this region removed or severely restricted most of the fire intolerant species from the forest composition. In addition, young regeneration of even the fire tolerant species was often destroyed resulting in open, grassy and park-like conditions throughout much of the coastal areas. Eventually, as the regular fires continued to prevent natural regeneration and the older trees died out, vast grassy savannas devoid of trees were maintained along the Atlantic and Gulf of Mexico coasts.

The fires that occurred outside the Coastal Plains do not appear to have been of a frequency or intensity to result in wholesale conversion of the forest to a fire climax composition. At least half of the South was most likely oak-hickory climax forest but with evidence of fire and storm damage interrupting the landscape.

Throughout the South there were places and times when fire was kept in check either by wet climatic spells or sustained moisture. Lulls in the burning regimes allowed periodic regeneration of natural longleaf pine and even upland hardwood stands in the Lower Coastal Plains. Also, the forests of huge bottomland hardwood and cypress trees in the swamps and wettest river floodplains could not have developed under pressure of frequent fires. The magnificent stands in these places were probably the only true old growth forests that were in the Southeast at the time Columbus discovered America.

It's a good thing fire didn't keep the forest bare forever! Wood was essential to the Indians as fuel and as a primary construction material for dwellings and other buildings, tools, implements, palisade walls, weapons and ceremonial objects. Several species of hardwood trees also produced food, medicine, and other properties which were important components of Indian survival and culture.

Historical records and archeological evidence indicate that the Indian settlements were moved frequently for a variety of reasons, including depletion of wood supplies, reduction in soil productivity, flooding and intertribal turmoil. Given the substantial Indian population in the Southeast at the time of the Spanish explorers, their use of fire, and the tendency to move whole communities fairly frequently, the native American impact on the forest was to create a mosaic of stand types, ages and conditions as well as open prairies. The gradually changing mosaic also provided habitat diversity which allowed, and may even have guaranteed, the sustenance of a wide variety of wildlife species during the Indian influence on the forests.

The Spanish explorers in the region introduced common European diseases to which the Indians had little or no immunity. Millions of people, an estimated 60-80 percent of the Indian population, died between the Spanish expeditions and the next wave of European contact. While natural and man-caused fires still continued during this time, they were less frequent so the forests had a greater chance to regenerate themselves. Pine and hardwood quantity and quality increased everywhere.

### 1600-1700s: America's Colonial Southeastern Forests Are Explored

During the 1600s and 1700s, territory in Southeastern North America was constantly claimed, taken by force or traded between Spain, Britain, and France before the founding of the United States.

The forests the British and French encountered were somewhat different from what the Spanish had described. Less frequent and intense burning as had been done by a well developed Indian society 150-200 years earlier, had allowed natural plant succession to increase both the quantity and quality of hardwood and pine stocking.

William Bartram, a noted English botanist of the late 1700s, described "grassy savannas of scattered longleaf pines, abundant cane, and narrow groves of hardwood forests on the banks of streams" within the Lower Coastal Plains of the South. This indicated that the Indians were still practicing burning in this area of the South. Bartram described stands of cypress and bottomland hardwoods in the Mobile swamps that were so tall,

straight and enormous that he was afraid of jeopardizing his credibility by giving the dimensions. He described "vast open forests without any considerable variation," almost entirely hardwood species, in the Upper Coastal Plains of Alabama. And finally, Bartram described "grand, high forests of stately trees," again almost entirely hardwoods though of different species, in the Appalachian and Piedmont mountains from Carolina to Alabama.

The first explorers made their living trading with the surviving descendants of the Indians. These survivors had regrouped into federations of tribes whom we know today by such names as Cherokee, Creek, Choctaw, Chickasaw and Natchez. Traders used ornamental items, iron axes and kettles to trade for furs and deerskins. The Indians in turn shared their techniques of girdling trees and using fire to open up the woodlands for agriculture and improved game habitat and hunting.

The fur traders had little more impact on the forests and land than the Indians but they opened up opportunities for early European settlements to establish, grow and spread inland from the coasts along waterways and Indian trade trails. As settlers came into the South, their first need was open land on which to grow crops and build their homesteads. They also needed grazing land for their livestock.

Early in colonial American history, an attitude developed toward the forests which regarded them as both an inexhaustible resource and an impediment to the advancement of civilization that had to be cleared out of the way. This belief prevailed for nearly two centuries during the early settlement and expansion period of American history. Besides the techniques of tree girdling learned from the Indians, the settlers brought beasts of burden, iron axes and buck saws, plows and guns to carve a living out of the wilderness.

After the initial clearing of the land, the settlers took on a greater appreciation of wood. Virtually every object on a farm and in a home was wholly or partly made of wood. Obviously the first uses for the trees found along the Lower Coastal Plains by the European pioneers were for homes, barns, rail fences, tools, implements, wagons and furniture. By far the greatest demand for wood was for fuel to heat, cook and forge by. Inefficient, open fireplaces required 20-40 cords of wood per year and soon created wood shortages near the larger and older settlements.

To succeed during these times, farmers needed to be part-time lumbermen, carpenters and coopers who learned the distinctive properties and potential of each wood species. Even though almost everything the settlers used required wood, the fine timber that stood in those days was far in excess of their immediate needs and had little to no commercial value.

Because of transportation problems, early lumbering enterprises remained small and supplied mainly local needs. The best trees were felled with axes, the branchless portion of the tree cut into logs which were dragged by oxen to a homesite. They were squared with broadaxe and adz and fitted into log cabins or other buildings. Because only the clear limbless portion of the tree was utilized for lumber, everything else (usually a sizeable portion of the tree) was burned for fuel, consumed in brush fires or left as waste to decay in the woodlands. Early harvesting and sawmilling

technology were altogether human or animal powered. The earliest method of cutting logs into planks was by pit sawing. Productivity was very low and inefficient.

Beyond the immediate needs for the homestead, one of the first export industries was the harvesting of oak, chestnut and red cedar timber, pine masts and naval stores for shipbuilding. Naval stores refers to pine sap which was extracted from longleaf and slash pines and made into pitch, tar and rosin used to waterproof wooden boats and ships.

During the time of exploration and early settlement along the Atlantic and Gulf Coasts, the Southeastern forests continued to increase in stocking. Burning the pine forests continued as a cultural practice by both Indians and white settlers for improving range conditions for semi-domesticated livestock. However, this burning and the beginning of land clearing and timber harvesting by a sparse white population did not yet have a significant overall impact on the forest condition in the Coastal Plains.

The interior hardwood forests probably showed considerably less impact by either Indian tribes or early European trappers and explorers at first. However, sustained contact by the Indian tribes with French and British deerskin traders resulted in rapid acculturation of European technology and standards of living. This meant that the Indians began to adopt and utilize the white man's iron axe, plow and beast of burden to make life in the interior forestlands easier and more prosperous.

By the mid-1700s sawmills began to be built along dammed streams where a waterwheel generated the mechanical power for sawing. This new technology increased the feasibility and affordability of uniform lumber production. In the late 1700s small communities grew up around the sawmills which produced planks, clapboards, shingles, barrel staves and shipbuilding parts.

As settlers moved into the Piedmont and Appalachians, charcoal production from hardwoods became another important forest product from beyond the Coastal Plains. Charcoal was used in iron and glass making, production of soap, gunpowder, filters, deodorizers and insulation.

At first, Americans may have felt hostility toward the forest as an immediate obstacle to their plans and purposes. When they became settled, however, it did not take long for them to realize how dependent they were on the forest. Early America was not only made possible, but it was made beautiful by wood. ♣

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# The Southern Forests: 1800-1850

by DON BURDETTE, Alabama Forestry Commission

Colonial America had relatively little impact on the southern forests except along the Atlantic and Gulf Coasts (see Part I in the Fall 1995 issue of *Alabama's TREASURED Forests*). It had taken almost two centuries for America's population to reach 5 million people. But during the 19th century, the population multiplied more than 15 times to over 76 million people. One result of the United States' burgeoning population was an accelerating demand for and impact upon the nation's natural resources.

By 1819, the new country of the United States of America had claimed all territory east of the Mississippi River. As American pioneers

began to move into the Southeast to settle and develop the new U.S. territories, they discovered that there was more virgin, old-growth forest than when DeSoto had traveled through 250 years earlier. During the 1800s, these pioneers continued the philosophy of earlier European colonists who equated progress with the removal of the all-over-shadowing forest. Fledgling communities in the developing South depended and prospered mostly upon the export and trade of agricultural

commodities produced on open ground and the continuous forests were an obstacle to their plans. And yet pioneer families designed ingenious ways to use the forest and its products to support life, civilization and progressive development.

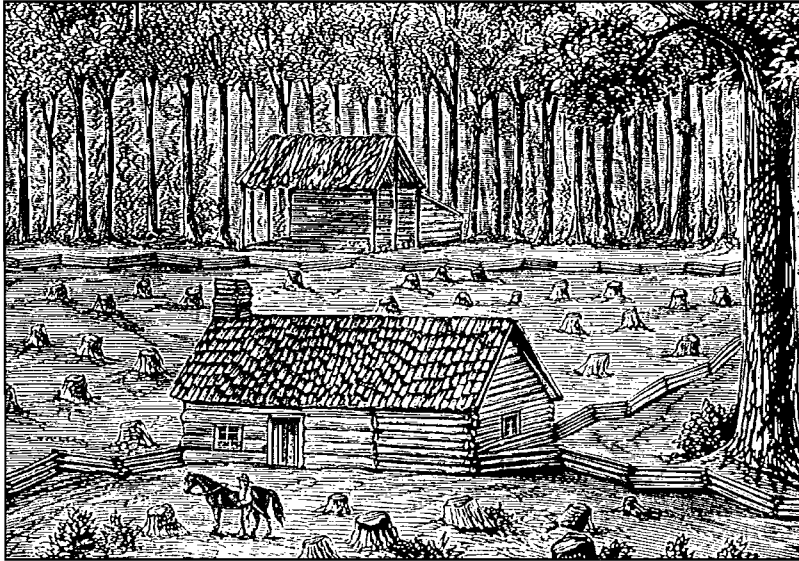
Continued intrusions by white settlers onto Indian land within U.S. territory finally touched off skirmishes that led to two separate wars with factions from both the Creek and the Seminole tribes. While there may have been pros and cons to either side of the issue, both wars were settled decisively by General Andrew Jackson of Tennessee in 1814 and 1818. The consequence paid by all Indians in the Southeast was the gradual dispossession of their best farming and hunting lands by the U.S. government. Under duress, the "Five Civilized Tribes"

were coerced into ceding their remaining territory to the U.S. government and leaving the Southeastern region. Between 1832 and 1835, the U.S. Army supervised the forced removal of the last organized Indian settlements along the "Trail of Tears" to Oklahoma.

## Settlers Clear Land, Depend on Wood

After the Indian removal, there was a new vigorous rush into southern territories to claim land. A new wave of white settlers streamed into the deep South from the Virginias, the Carolinas, Georgia, Tennessee and Kentucky by means of established

Indian trails, new federal highways and riverboats. As settlers continued to spread throughout the land, there was hardly a thought given to conservation of natural resources. Forests, wildlife, good soil and water were all so abundant relative to the still sparse population that it didn't seem possible that there would ever be any shortages. The only concern was to exploit these resources in order to, first, survive in the wilderness, then to make life more comfortable and convenient, and eventually to produce



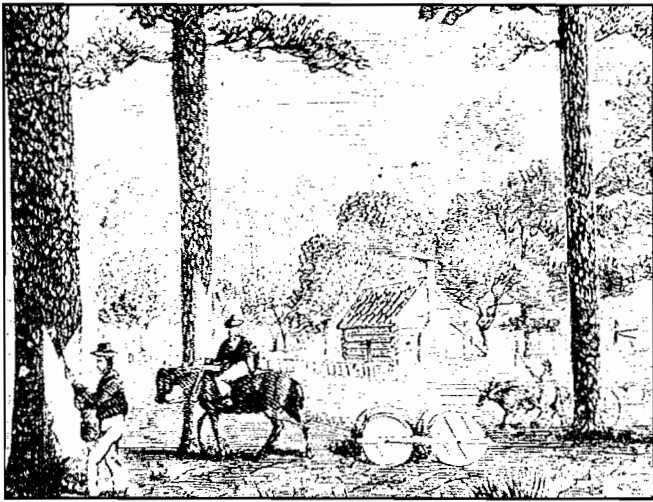
*Forestland was cleared for farming and homesteading.*

great personal wealth. The southern landscape was transformed as its forests were cleared for agriculture, fuelwood and building materials.

Ninety-five percent of the population at this time was rural. Most people in the Southeast lived on small, self-sufficient farms usually located in the fertile soils of stream flood plains. In hilly and mountainous terrain, clearings were also made on ridge tops with the side slopes utilized as wood lots and/or burned annually to improve livestock grazing. Large antebellum plantation farms, the envy of every farmer, eventually began to be cleared from rich river bottom and other prime forestlands. A wealthy, aristocratic southern society developed that was dependent upon slaves in order to clear, cultivate and

harvest lucrative crops of tobacco, wheat, rice, indigo, and eventually cotton. Poor farming and soil management techniques frequently resulted in depleted, eroded and abandoned farm land which may or may not have reverted back to naturally regenerated forests.

It took an average of three acres of cropland to support each person. It also took at least an equal amount of land for pasture and hay to support a farm's draft animals. Land was cleared for agriculture, towns, roads and other uses at about the same rate as the population growth and was by far the primary cause of forest loss. Such clearing resulted in an 18 percent reduction of forestland in the Southeast between 1800-1850; by 1860 an



A chief forest product of the southern coastal plain forests in the early 1800s was turpentine and naval stores.

estimated 43 percent of the South was in farmland. In addition, tens of thousands of acres were burned to improve grazing for free roaming livestock.

Wood was virtually the only fuel used in this country until the latter half of the 19th century. Consumption of fuelwood averaged about four cords per person per year through most of the 19th century. In 1800, about 80 percent of the timber removed from the forest was used for fuel. By mid-century, wood still supplied more than 90 percent of the nation's heat energy needs; domestic heating and cooking accounted for the largest use of fuelwood. As fuelwood around the older and larger settlements grew scarce and expensive, cast-iron wood stoves, which were four to six times more efficient in using wood than fireplaces, came into use.

While wood stoves decreased the domestic demand for fuelwood, industrial demands of the forests for iron-making, steamboat and railroad locomotive fuel increased continuously throughout the first half of the century. As the country began to turn to coal, and later to oil and gas, wood dropped from supplying more than 90 percent of the nation's energy needs in 1850 to about 10 percent in 1920. Yet even the move to coal increased the demand for timber in the form of millions of mine props to support deep mining operations in the mountains.

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## Navel Store Industry Grows

Besides fuelwood, the chief forest product of the southern coastal plain forests in the early 1800s continued to be turpentine and naval stores for waterproofing wooden ships. The turpentine industry could not be duplicated in any other part of the continent outside of the 125-mile-wide longleaf/slash pine belt that followed the coasts from the Chesapeake Bay of Virginia to the Trinity River in Texas. The industry began as mere collection of raw pine sap throughout the Atlantic Coast to be shipped to a centralized iron kettle processing plant in present-day North Carolina. In 1834 an improved process for distilling the turpentine using copper stills resulted in new processing plants all along the Atlantic and Gulf Coasts. This increased the profitability and value of pine trees to local economies.

Extracting gum or pitch was a destructive process during the 1800s. Until the turn of the 20th century, workers gathered the raw pitch by cutting deep boxes into young trees. The weakened trees were thus greatly susceptible to insect and disease attacks, wind breakage and fire, usually resulting in the trees being unusable for lumber production later. A less destructive "cup and gutter method" was developed in 1901 which allowed longer gum production and, later, utilization for lumber. Naval store production and supply eventually exceeded demand when shipbuilders began converting from wooden to steel hull construction. Production peaked in 1875 then began to decline at the turn of the century until pulp mills began producing tall oil as a byproduct in the 1920s.

Also in the early 1800s, use of southern timber for American ship-building grew as the industry expanded and then shifted from the Atlantic to the Gulf Coast. John Landreth was sent by the U.S. Navy in 1818 to survey timber resources along the major river systems in Alabama for large tracts of red cedar, white and live oaks, and longleaf pine that could be used in the new shipyards at Mobile. ♣

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## Next Issue

The third part of this series of articles on "The Southern Forests" will appear in the Spring issue of *Alabama's TREASURED Forests* magazine.

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# The Southern Forests: 1850-1930

by DON BURDETTE, Alabama Forestry Commission

**F**rom time to time you may hear environmental prophets of doom who are predicting the utter destruction of our forests, wildlife and rivers in the not-too-distant future. Most of the time these concerns are based on a misunderstanding or misrepresentation of two very significant points: Nature is often much more resilient than we give her credit for, and natural resource managers have come a long way in cooperating with her to achieve sustainable productivity and other benefits.

However, in the late 1800s and early 1900s there really was a legitimate cause for concern. Our country and the Southeast in particular were facing near environmental and economic ruin because of the depletion of our natural resources. This deplorable condition wasn't simply the quick work of a few greedy opportunists. There are many reasons our country went from an unbelievable surplus of resources to only remnants of these same amenities in a little more than a century. The story of the depleted forest is woven into the fabric of American history and there are lessons learned that we must never forget.



*By the late 1920s, millions of acres of forestland in the Southeast had been cleared, depleted or degraded.*

By the late 1850s a well-established timber trade had developed in the South. Prices of lumber had finally begun to rise as demand increased due to rising population and increasing urbanization. As Southern states began to recognize the potential economic benefit of forest product industries, a concerned few passed laws to discourage unreasonable timber management practices. Unfortunately these early laws were in name only and usually ignored by the general population and law enforcement officials.

In 1860 the Southern states tried to secede from the Union after a long debate with the federal government over slavery, trade tariffs and state's rights issues. The Civil War that ensued for the next five years placed heavy demands on forest resources for fuel, equipment, supplies and fortifications. The South's most pressing need immediately after the war was restoration or reorganization of the regional culture, economy, labor force and infrastructure that had been destroyed by the war. Large quantities of wood were needed for local reconstruction projects.

Also, the nation as a whole began concentrating on westward expansion, renewed economic growth and industrialization. Rapid domestic and immigrant population growth and technological revolution had a major impact on the nation's and the South's forests. Demand for Southern timber from other regions where wood was either getting scarce (the Northeast and Lake States) or practically unavailable (the Plains and parts of the West) increased steadily throughout the remainder of the 19th century. The settlers on the treeless plains needed supplies of lumber for houses, fences and other construction. New cities in the Midwest were being built mostly of wood, while expanding older cities in the Northeast could not depend on their almost depleted local forests. Accelerated expansions in railroads, telegraph lines, plank roads and other outdoor wood-using industries consumed immense quantities of untreated wood that had to be replaced at frequent intervals. Demands for hardwood lumber for construction, furniture, cooperage, tools and implements also increased with the rise in population. Charcoal production had become an important support industry to the iron foundries and steel mills in the Heart of Dixie by 1876.

As the physical distance between consumers and forests grew, sawmilling became an increasingly large-scale, industrial opera-

## **National Growth, Westward Expansion, and Industrialization Deplete the Southern Forests**

After 1850, railroads began expanding rapidly, linking growing cities and providing access to markets for agricultural and forest products. Although called the "iron road," railroads used far more wood than iron. Except for the engine and rails, the cars, ties, fuel, bridges, trestles, station houses, fences and telegraph poles all required huge quantities of timber from the forests. By far the most significant railroad use of timber was for crossties. Each mile of track required over 2,500 ties which had to be replaced every five to seven years.

The first paper mill in the South was erected in 1856 on Three Mile Creek near Mobile, Alabama. Early manufacturing facilities used a process that converted old cotton and wool rags into paper. The refinement of the wood pulp-making process by the late 1800s enabled production of a much cheaper and higher quality paper for newspapers and books. This allowed the printing business to increase coverage, advertising and circulation, thus greatly affecting their political and social influence.

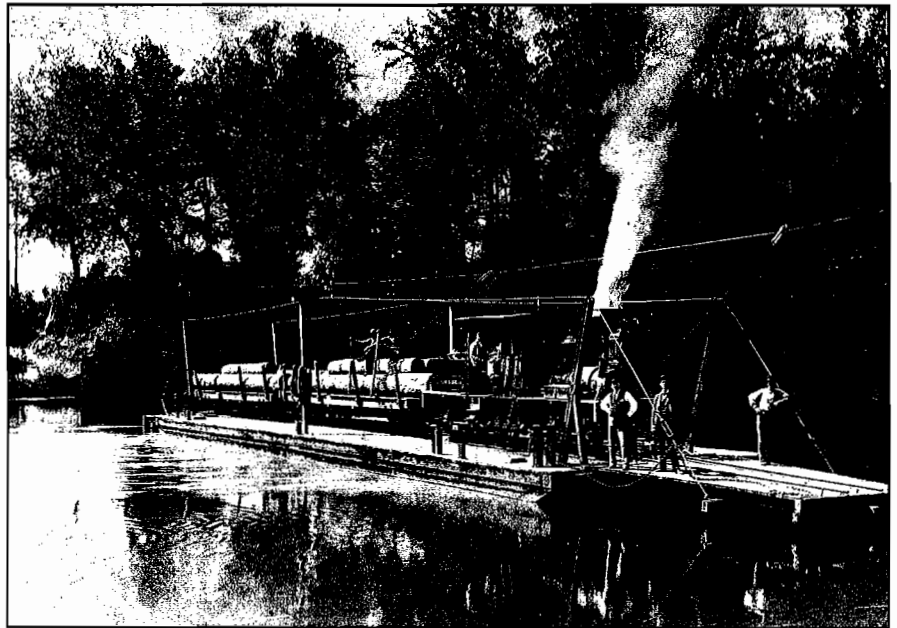
tion. By the late 1860s, improvements in steam-powered sawmilling equipment were making the lumber production process faster and more efficient. Circular saws replaced the single-bladed upright saws and were in turn being replaced by band saws. Rich, 300 plus year old longleaf pine timber was the incentive for the nation's lumber industry to develop and expand in the South. As the Plains were settled, sawmill towns and lumber depots sprang up along the Mississippi River. Southern lumber regions began to export cypress and oak as well as pine. By the 1880s, sawmills had become the dominant industry in the Southern economy.

Logging in the entire United States had become a fiercely competitive and highly speculative business depending on quick profits. This encouraged careless and extravagantly wasteful methods of logging during "cut-out-and-get-out" operations. Mechanization of the Southern forest products industry increased its capability to harvest timber and produce products needed and desired by the American public. Loggers were just beginning to use cross-cut saws and specialized wagons to speed up the timber harvesting process. Narrow-gauge tramlines were lain all over the South to open up large areas of old-growth timber to steam powered railroad equipment. Poor utilization of wood biomass was standard practice and vast tracts of timber were blatantly stripped without regard for future needs. The debris left after logging operations sometimes fueled enormous forest fires that killed residual timber, natural reproduction, and occasionally, people. Repeated high-grading, the practice of select cutting the best quality trees for harvest and leaving inferior trees to compose the residual forest, continually degraded the quality of the Southern forests, particularly in hardwood stands. The tall tales of Paul Bunyan, which had originated in the Northeast between 1850 and 1870, eventually spread and continued to flourish in Southern forests.

Predictions of a wood famine and losses of forests and wildlife also originated in the depleted forests of the Northeast and Lake States and were eventually heard in the South; but the carnage continued at a steady pace until the original, naturally regenerated, old-growth forests were almost exhausted in the late 1920s. By this time millions of acres of forestland in the Southeast had been cleared, depleted or degraded. Reasons for the Southern forests' decline were many: losses to agriculture and development, overcutting with poor utilization, no reforestation effort, destruction of naturally regenerated and standing timber by repeated wildfire, grazing of tree seedlings by free roaming livestock, overhunting, and erosion. The capability of technology had outpaced the resiliency and our understanding of natural resources.

Wildlife had also been devastated. Beaver had been eradicated from the Eastern forest, deer and turkey were almost completely gone. Some species such as the passenger pigeon and Carolina parakeet had been driven out of existence by

market hunting, eradication by farmers and destruction of habitat by loggers. Soil erosion on a huge scale had resulted in phenomenal losses of farm productivity and degradation of water quality and fish habitat.



A ferry transports a logging train across the Tallapoosa River from Elmore County in 1898.

In spite of the deplorable condition in the early part of this century, all was not lost or we wouldn't be here today looking at and depending upon the bountiful environment that exists around us. There were still millions of acres of residual forests, remnants of wildlife populations and enough soil productivity left with which to sustain continuity until time, nature and conservation efforts could restore these resources to their former glory.

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#### Next Issue

The final part of this series, *The Southern Forests: An Environmental and Economic Success Story*, will appear in the Summer issue of *Alabama's TREASURED Forests* magazine.

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# The Southern Forests:

## *An Environmental and Economic Success Story*

by DON BURDETTE, Alabama Forestry Commission

**A**s North America was settled, the forests and trees were seen as inexhaustible resources and impediments to progress. By the late 1920s most of the “first forests” of the South had been either cleared, depleted or degraded (see Parts 2 and 3). Even while the carnage was in full swing, a few farsighted individuals had raised questions about the future of America’s natural resources and heritage. Slowly, the general public, scientists, businessmen and politicians began to accept the fact that the nation’s natural resources weren’t inexhaustible; they were in desperate need of protection, conservation and renewal. The second, third and fourth generation forests that we see today are the result of natural regeneration, concerted conservation efforts, and demographic shifts that have taken place during this century.

### Formation of the Second Forest

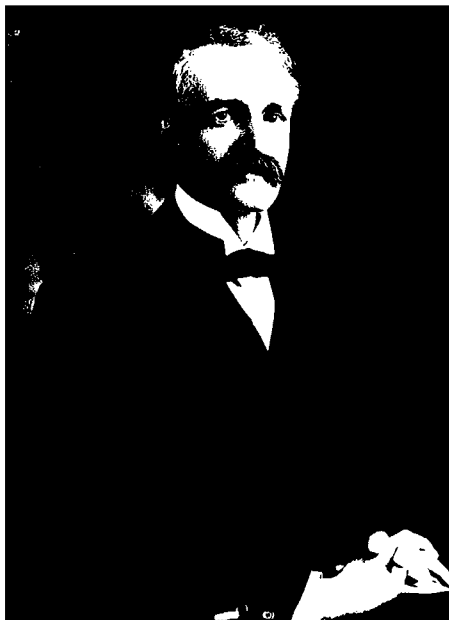
Gifford Pinchot is most often credited with setting American forest conservation into motion. He was America’s first native-born citizen trained in forest science—by necessity, in Europe.

At George Vanderbilt’s Biltmore Forest in North Carolina, Pinchot was also the first to demonstrate that forestry is a renewable practice. He was also instrumental in establishing the first American school for foresters at Vanderbilt’s Biltmore Estate. These experiences helped propel him into President Theodore Roosevelt’s Cabinet as the first head of the USDA-Forest Service in 1905. Roosevelt and Pinchot enthusiastically promoted a scientific approach to managing, using and renewing forests and other natural resources. They advocated that any current use of resources should protect the productivity of the land and its ability to serve future generations.

Fire protection was the most important factor in allowing nature to renew the South’s forests through natural regeneration and succession. The practice of annual burning was a deep-seated Southern tradition that was slow and difficult to change. In the first decade of the century several modestly funded state fire control agencies, including the Alabama Forestry Commission, were established. In the 1920s, significant federal matching funds helped to establish



*One of the first tractor and plow units of the Alabama Department of Conservation, Division of Forestry.*



*Gifford Pinchot, 1865-1946*

federal, state and private cooperative fire control systems in the states. It took several years to develop the capability to detect, suppress and prevent wildfires effectively. State range laws that eliminated free roaming livestock also helped protect young forest reproduction from grazing.

Changes taking place in agriculture also had a positive effect on forestlands. As farmers began trading draft animals for motorized equipment, they no longer needed as much pasture or cropland to feed their animals. These acres were used either to raise more food for people or were allowed to revert back to forestland. Large scale clearing of forestlands for new farmlands was no longer necessary. Mechanization, soil conservation techniques, fertilization, liming, pesticides and genetic improvements in hybrid crops improved productivity so much that farm produce supply exceeded

demand. The resulting lower prices forced many farmers of marginally productive lands out of business, particularly during the Great Depression years of the late 1920s and early



1930s. The Agricultural Conservation Program (ACP) was started during this period to help farmers convert marginal farmlands back into forestlands. These events marked the first migration of a rural, agrarian society toward an urban, industrial and service-oriented economy.

At the same time, the USDA-Forest Service was given the authority to purchase lands for national timber reserves, watershed protection and flood control. Most of the land that the government acquired had been considered worthless by their previous users: worn out, eroded farmland as well as cutover and burned forestland. The Forest Service immediately set out to reclaim these lands and convert them back into healthy, productive forests. In addition to protecting the forests from wildfire to encourage natural regeneration, the Civilian Conservation Corps put thousands of people to work planting trees, improving wildlife habitat and creating developed recreation sites. The National Forests served as forestry research and demonstration sites throughout the South.

Until this time forest industry and private landowners had not been interested in forest renewal and management because of the threat of wildfires, grazing and poor markets. Cooperative fire control, the success enjoyed on the National Forests, and increasing value for Southern wood encouraged progressive thinkers to invest in reforestation and sound management on their own lands. The result was that forest growth gradually began to exceed forest removals on private lands in the South.

The second forests that developed from these pioneering conservation efforts were composed primarily of pine and other early succession species. The range and dominance of loblolly pine in particular were expanded by natural seeding and tree planting. While there are almost no virgin (or first) forests left in the South today, most of what we see and call old growth is actually a remnant of this second forest. Such forest holdings on federal, state and private preserves are being allowed to gradually change to the oak-hickory forest type until natural death or disturbance restarts the process of succession all over again.

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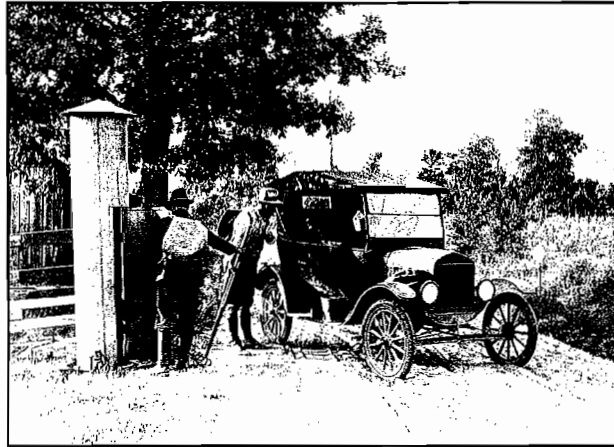
### Transition into the Third Forest

World War II brought several developments that helped to reshape the Southern forests. The war effort itself had depleted the timber on many industry and private lands. In addition, National Forest timber reserves were opened up for the first

time and hit hard to support the war effort and local economies. The reduction of available workers forced mechanization of fire control, tree planting and timber harvesting. A shortage of firefighters evoked a major fire prevention campaign at the close of the war that produced Smokey Bear as its very effective mascot. Agricultural production had recovered during the war to provide for the needs of Allied soldiers and citizens. However, a glut of produce after the war caused another mass exodus from farms to the cities, leaving abandoned farms to be reforested by natural succession. Soldiers returning from the war created a great demand for forest products for new housing and business starts. In the late 1950s the short supply and high demand for wood pushed the value of timber up as high as it had ever been.

The practice of taxing land and timber annually before World War II had the effect of persuading people to keep their timber stocking low to reduce their tax burden. In 1944, a federal tax revision treated timber harvest income as a capital gain rather than straight income. By the 1960s many states also changed their laws to tax timber only when it was harvested. These changes eliminated the disincentives to manage timber as a long-term investment.

Increasing demand for wood products, rising values for timber and favorable tax treatment spurred economic growth and development within the Southern forest products industry. Increased fire protection prompted a dramatic increase in reforestation and forest management on industry lands. The forest products industry started the Tree Farm program in 1942 to help private, nonindustrial landowners realize the growth potential of their forestlands. Soon after,



*Forest Rangers gather tools from a fire cache to fight a wildfire on the Alabama National Forest (now the Bankhead) in 1927.*



*A civilian Conservation Corps enrollee helps to restore the Conecuh National Forest by planting trees in 1939.*

*(Continued on page 23)*

## Food Plots

*Continued from page 20*

tion should consider soil fertility, soil moisture, topography, adjacent timber type, accessibility, and flooding potential. Care should be taken to locate plots adjacent to streamside management zones, established plantations or natural timber stands instead of the middle of a clearcut.

The importance of taking soil samples three months prior to planting cannot be stressed enough. Soil fertility and pH dramatically influence the quantity and quality of forage produced. Soil samples should be taken to determine the lime and fertilizer needs, and plots should be treated accordingly. Soil sample kits and soil analysis are available from the Cooperative Extension Service.

Since deer generally feed at the edges of plots, several small plots may be more effective than one large plot. Generally, plots should be 1/2 to 3 acres. A good rule of thumb is to plant 1 to 3 percent of the total area in food plots. Best results can be achieved by evenly distributing plots over the property, taking care to place one plot in each 160-acre block. For example, a 640-acre area should have four well-spaced plots.

Large plots are generally more beneficial if they are long and narrow instead of square. These plots provide more edge and include more deer home ranges. If the area adjacent to the plot is timber (natural stands or pine plantations), don't forget to make the plots wide enough to minimize competition from trees for sunlight and moisture.

## Planting

Planting food plots can be accomplished with a farm tractor large enough to pull 5-foot-wide implements. Required implements include a disk, broadcast seeder/fertilizer distributor, and a bush-hog. A large gang disk may be required for first-time plot establishment.

Lime and fertilizer should be applied according to soil test recommendations prior to disking so they can be worked into the soil. In some instances, plots may need bush-hogging prior to lime and/or fertilizer application.

After the plot has been limed, fertilized and disked prior to seeding, level it by dragging a piece of railroad rail over the plot. If you will be planting clover, leveling the plot will improve chances of a well-established stand. After leveling, broadcast or drill the seed at the recommended seeding rate. Lightly cover the seed with a harrow, or by dragging a heavy log chain, a piece of chain link fence or other device over the plot. If you're planting a combination plot of cool-season grass and clover, which is highly recommended, plant the clover last, after you have lightly covered the grass seed.

Be sure to inoculate the clover seed if it has not been pre-inoculated. A broadcast seeder that fits on the back of a four-wheeler is the most effective way to plant clover. Safety glasses should be worn while planting clover.

After the required amount of seed has been broadcast over the plot, simply move along to the next plot. Some peo-

ple cover the clover seed, but in most instances it is not necessary. To be successful with combination grass-clover plots, you must match the soil type with the correct clover variety, as noted earlier, and the plots need to be uniform and level. Clover germination on rough plots with big clods of soil usually results in all cool-season grass and very little clover.

Soil type plays a major role in which grass and/or clover combination you choose. Research has shown that combination plantings of grasses and clover are better than grass-only plantings.

As a single planting, ryegrass and crimson clover should be seeded at a rate of 30-40 pounds per acre, and 15-20 pounds per acre, respectively. For combination ryegrass-crimson clover plantings, these rates should be reduced to 25 pounds per acre of ryegrass and 10 pounds per acre of crimson clover.

Heavier ryegrass seeding rates have resulted in all ryegrass and very little clover. Wheat or rye can be substituted for ryegrass, and arrowleaf, ladino, or subterranean clover can be substituted for crimson clover. Wheat-ladino or wheat-crimson combinations are utilized heavily by deer. To be most effective, more than one type of clover should be established. Each clover is used at a different time of year, and therefore, complements each other.

Well planned and maintained food plots will enhance the wildlife habitat on your property. Consult your local county agent for more information and publications relating to plantings for wildlife. ♣

## Alabama's Forests

*Continued from page 21*

in these classes since the beginning of the program.

The shift of the proportion of trees from the "good" to the "average" crown density class and from the "none" to "light" crown dieback class in 1992 is partially due to the occurrence of a statewide drought during the growing season in 1992. When precipitation patterns returned to normal in 1993, those

trees that survived the drought showed improvements in crown conditions.

## Conclusions

In general, the forests of Alabama are in good shape. However, there are some localized areas and particular species with forest health concerns (flowering dogwood). Southern pine beetle continues to have an impact on the pine resource in Alabama, although not as severe as in the late 1980s. Only the continual monitoring of the forests of Alaba-

ma will provide the early warning for potential management actions.

Signs of a healthy forest are increased timber productivity, more forested acres than ever, more wildlife, more acres under management plans, better stewardship, more TREASURE Forests, increased membership in landowner associations, quicker response to pests such as the Southern pine beetle, etc. As the "forest doctor" would say, "The forest's health is excellent but should be reviewed in an annual checkup." ♣