



Riches to Rags to Riches

Alabama's Longleaf Turpentine Industry

By Ed Lewis, Forestry Management Specialist and Forest History Lover, Alabama Forestry Commission

It's very, very hard to imagine: an almost continuous forest, stretching over 1,000 miles, consisting of huge stands of mature trees covering large portions of eight states that stretched from east Texas through Louisiana, Mississippi, Alabama, Florida, North and South Carolina, and into Virginia. A forest that was established on over 90 million acres, and an area almost three times the size of the state of Alabama! That forest was reduced to less than 3 million acres by 1995, about 3 percent of its original range. What happened to it?

Longleaf pine in the southeastern United States is a 'riches to rags' story about the use of a once-thought 'endless resource' that was nearly destroyed by overuse and mismanagement. Thankfully, longleaf is slowly making a 'rags to riches' comeback. This is an abbreviated story of the industry that almost destroyed it, and the ongoing re-birth of the Southern Longleaf Pine Forest.

Turpentine in Alabama: The Beginning

Records indicate that turpentine in Alabama has its roots back to the late 1770s. Mobile County was the natural place for the beginning of the naval stores industry in Alabama, which made sense for a couple of reasons. Many wooden ships were nearby that required the pitch that waterproofed their vessels, and ac-

cess to the Mobile Bay overseas shipping trade that transported barrels of pine pitch was equally close. The term 'naval stores' refers to the extraction of turpentine gum, pitch, and resin which were used for waterproofing ships by coating the exterior of their surfaces with pine pitch. The story of large industrial turpentine in Alabama did not begin until around 1840, when copper turpentine stills were made that were small enough to be transported near to the forest resource. The Gulf Coast counties of Mobile, Baldwin, Escambia, Washington, and Choctaw had extensive natural longleaf pine forests that were exploited for the naval stores industry. Even Tuscaloosa County in the northern part of the state had a longleaf resource large enough to exploit for its large supply of pine resin.

The year 1875 brought the largest production of naval stores to Mobile Bay when the receipts reached a value of \$1.2 million. That value would translate into approximately \$34 million in today's dollars! Quite a nice sum for pine sap, don't you think?

Turpentine in Alabama: The Evolution of the Industry

In the early 1900s, it was widely recognized that almost half of the original longleaf forest in the United States had been exhausted for utilization of the turpentine industry, with no hope
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for renewal. The forests of Virginia, the Carolinas, and the Atlantic Coast of Georgia were no longer economically viable for obtaining pine sap products, so the industry moved to Florida, southwestern Georgia, Alabama, and Mississippi in the early 1800s. The increase of turpentine production in Alabama became possible through the invention of copper turpentine distilleries, or 'stills,' that greatly increased the ability to produce larger quantities of products.

Turpentine in Alabama: The Past Process

Let's briefly discuss some of the industry terms used in the early days. 'Chipping' was a term that described the removal of bark with V-shaped cuts in the trees to allow the sap to drip from the trees. Sap is the liquid that oozes from trees scarred to produce turpentine products. Gum is a thicker form of sap, having lost some of its moisture content through 'dipping,' the process which was the removal of that resin from the cups cut into the trees, collection tins, or clay collection pots. Pine tar is a type of wood tar produced by the high-temperature carbonization of pine wood in anoxic conditions. Pine pitch is a slightly more viscous, thicker type of pine tar, but those two terms have been used interchangeably.

The longleaf pines were chipped, forming an unusual recurring V-shaped pattern called a 'catface,' so named because of its cat-whisker appearance. As the sap began to slowly come out of the chipped face, it would accumulate in the cups, tins, or clay pots that were situated below the chipped edge. The cups, tins, or pots were then dipped, and the gum was delivered to the stills. The stills would cook the gum and separate it into turpentine and other products.

The laborers who worked in this forest industry deserve an article to



Section of an old pine tree and collection tin

themselves, but space does not allow it to be written here. They were the hardest workers; however, they were also the poorest of the poor, the meanest of the mean, and many were the most unfortunate of the unfortunate. Wages were low if anything; many of the workers were slaves, and others were prisoners that were considered safe enough to present a low risk of escape. Work was excruciatingly hard, hours were long, and dangers included yellow jackets, wasps, and rattlesnakes, just to name a few.

The process of using longleaf pine was extremely wasteful, often resulting in the ultimate death of the longleaf trees. Many were killed by (1) over-use, that is, too much of the bark was removed to restrict the trees' life processes of moving water and nutrients to the needles, and moving of nutrients and sugars that enable roots to grow. (2) The catfaces on the trees eventually turned into fat lighter, a densely packed bunch of tree cells loaded with flammable tree resin. Wildfires easily consumed the trees which had catfaces and flammable sap exuding from the sides of the trees. (3) The ever-present pine beetles also consumed and killed their share, girdling the trees' cambiums while raising their brood of future pine beetles.

As longleaf forests were used up, the understories of many of these abandoned pine forests grew into a dense coverage of hardwoods, shading out the forest floor, and thereby sentencing the future longleaf forest to death. Longleaf pine seedlings will generally not grow in a shaded forest, so many of these stands were considered to be forever lost to longleaf.



Old Turpentine Distillery



Turpentine in Alabama: The Present

The state's first permanent, continuous paper mill to use pine as a raw product was built near Tuscaloosa in 1929. Alabama's vast pine and hardwood forests provided an abundant resource, making the state a hotbed for paper mills over the next several decades. At present, at least 13 paper mills operate in the state.

The process by which paper is made contributes to the present turpentine industry operation. In overly simple terms, pine trees are harvested from a forest, hauled by trucks to a paper mill, debarked (having the bark removed), and chipped into small pieces which are cooked with sulfite compounds in a large pressure cooker called a 'digester.' The chips are cooked until the wood fibers can be separated from the lignin and turpentine by-products. These by-products are separated from the chemical liquid 'soup,' sent to chemical companies and other customers around the world, ending up in shampoo, soap, plastics, and thousands of different products you use daily that you had no idea contained ingredients derived from a pine tree!

Turpentine in Alabama: The Future of the Longleaf Forest

The science behind getting longleaf pine seedlings to grow and prosper is understood more now than ever before. That knowledge, coupled with hard work by many landowners, has provided an amazing result. Just before the year 2000, the first recorded increase in longleaf acres was measured in Alabama, amounting to a 38,000-acre increase. Since previous forest inventories for decades had shown consecutive losses of longleaf acres, this achievement was considered a milestone at the time. The accomplishment was largely due to both public and private landowners planting longleaf through federal and state programs, as well as landowners investing their own hard-earned money to help restore this unique pine habitat.

Today, pine trees of several species can be seen along roads planted in rows, just like peanuts, corn, soybeans, cotton, and other crops. That's because trees are a crop – a natural resource that is similar to the other agricultural products mentioned above, but with one primary difference: it takes many years for a tree to grow to maturity. However, during that growth process, the tree is removing carbon from the air, using that carbon to produce wood for future use, producing oxygen for us to breathe, reducing temperature, recycling and filtering water, producing and providing wildlife cover and browse, giving a multitude of endangered plants and animals habitat in which to thrive, offering numerous recreational opportunities, and providing many more benefits too numerous to mention here.

The 'rags to riches' moral of this story lies not only in the longleaf trees themselves but in the multitude of benefits that the special longleaf ecosystem brings to Alabama. 🌲



Barrels of Turpentine

Much of the information for this article was derived from:

1. A publication by the U.S. Department of Agriculture, Bureau of Forestry - Circular No. 24, and U.S. Department of Agriculture, Bureau of Forestry - Bulletin No. 40, entitled "A New Method of Turpentine Orcharding," by Gifford Pinchot, Forester, 1903.
2. *A History of State Forestry in Alabama*. Originally issued by the Alabama Department of Conservation, Division of Forestry, by J.M. Stauffer, State Forester, and George Kyle, Information Writer, 1960. Revised, 1993.
3. Thanks to Dan Chappell, Alabama Forestry Commission Assistant Director of the Forest Management Division, for providing information for some of the content.