ALABAMA

Forest Health Highlights 2019

The Resource

Climate change has been a topic of conversation for many years and is still very relevant. Climate variation is often debatable, even with some extreme environmental episodes occurring in different parts of the world. There are opposing opinions about climate change; the cause and the extent of it are always a topic of discussion. Some scientists claim that these changes are natural while others state that they are primarily incited by human activities. The result of greenhouse gas emissions is always a focal point of most discussions pertaining to climate change. However, scientists continue researching existing climates trying to pinpoint the pace and causal agents of these constant variations.

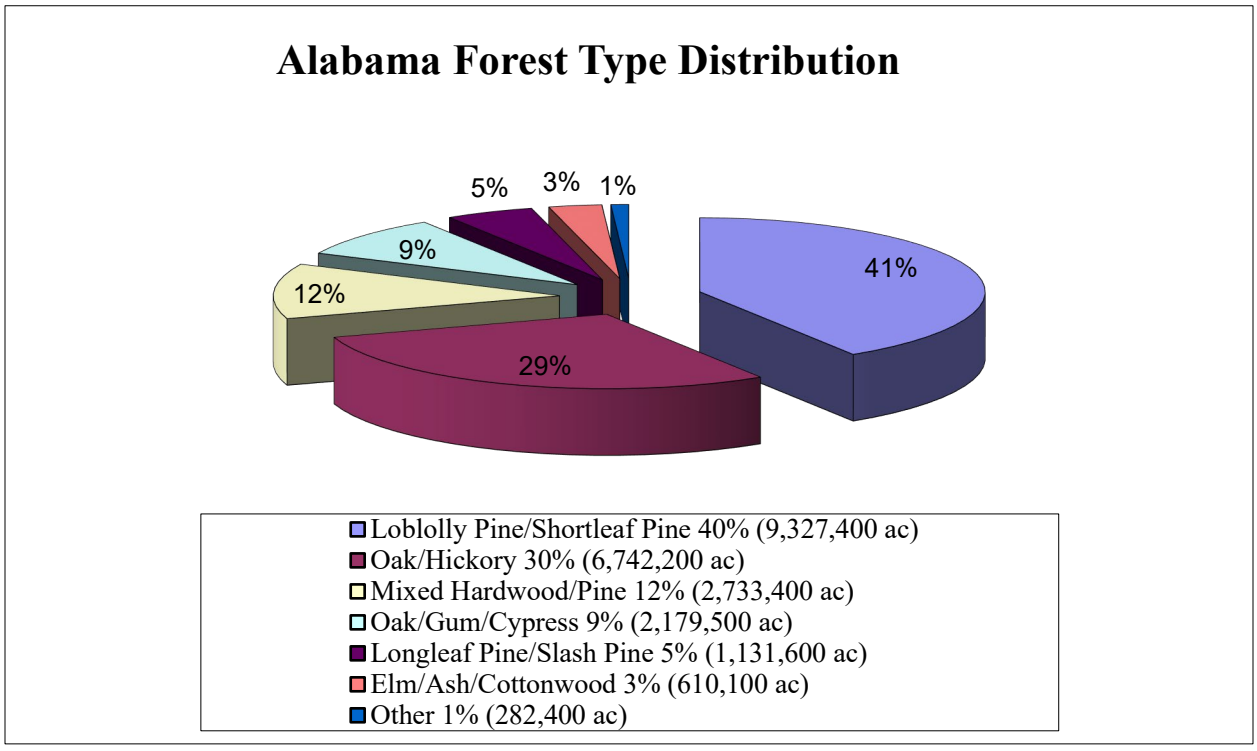
Alabama has experienced some climate variations during the last few years. This state has fared through periodic drought, excessive rain, several hurricanes, destructive tornadoes, and abnormally high and cold temperatures. Reviewing the climate report for fiscal year 2019, Alabama has phased through some noticeable environmental adversities. In October of 2018, the climate was rather dry and warm with the following month becoming cooler and wetter than normal. The proceeding spring season maintained its average temperatures and precipitation and continued this trend through the early summer. By the end of August, however, the temperature increased higher than normal with limited precipitation. For the entire month of September, the temperature was high and some areas in Alabama received no rain for weeks. This periodic drought progressed through the first half of October. By mid-October, Alabama was finally relieved from the drought. A cold front traversed the state causing an extreme weather transition. By late October, Alabama received excessive amount of rain with extremely cold temperatures.

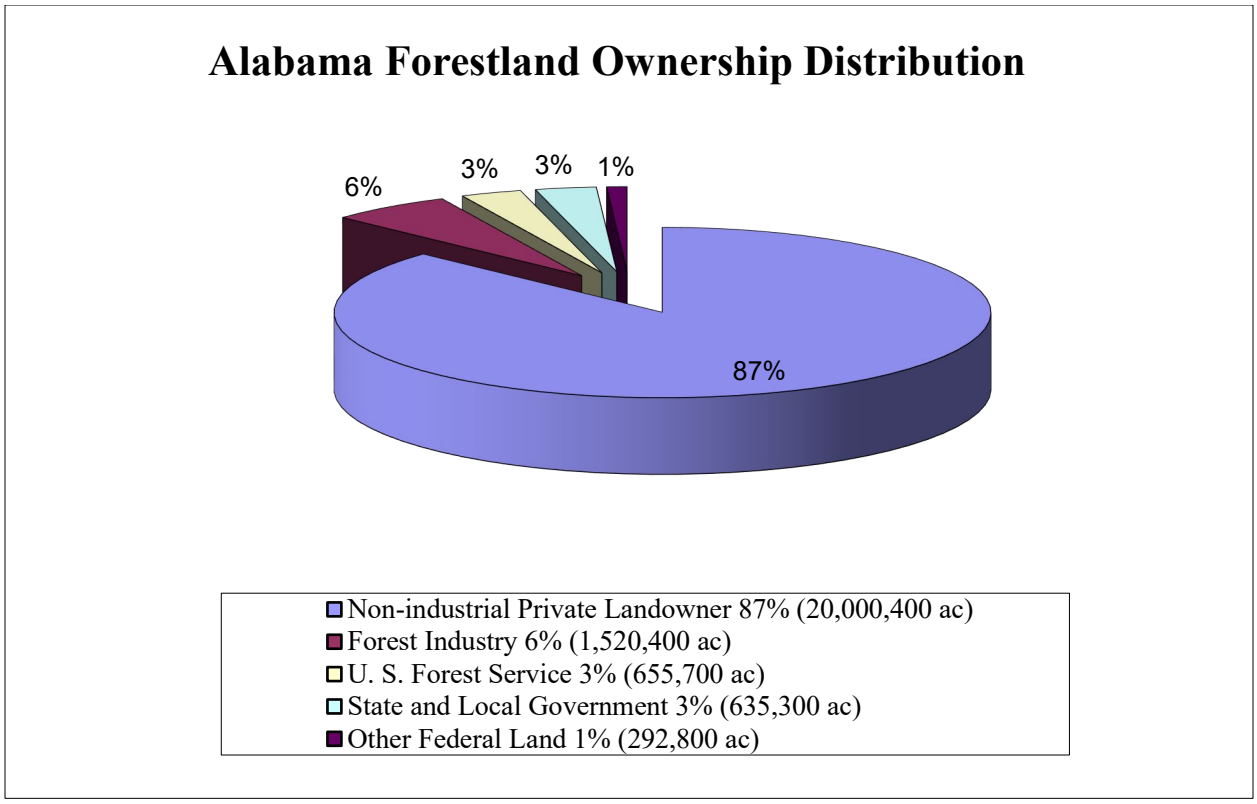
The timber industry is one of the most prosperous and staple economies in Alabama. This state relies on forests for financial prosperity, recreational opportunities, and aesthetic beauty. If climate variation exists, how would it affect the nature of Alabama's forests and the state's lucrative timber industry? Extreme temperatures and acute weather changes could have profound consequences like biological changes of forest pests, modified growth patterns of trees, and catastrophic storms of greater intensity. Alabama is making accomplishments in forestry to adapt to these possible environmental changes. According to most scientists, reforestation is one of the most significant solutions in stabilizing and reverting climate change. Currently, Alabama is sustaining its forests. According to Alabama's Forest Inventory and Analysis report, more acres are being regenerated than harvested. In part, Alabama is planting and regenerating more trees by informing landowners about the importance of sustainable forestry and encouraging them to implement management practices that will reduce the risk of harmful agents. These implemented practices will allow stands to adapt to adverse changes and thus remain sustainable.

Alabama still maintains its thriving forests, from the longleaf pines of the Gulf Coast to the oak-pine stands of the northern Appalachian region. These forest types exist with little change over the last 10 years. Just in the last 5 years, there were three forest types that maintained a constant trend. The Loblolly Pine/Shortleaf Pine forest type continues to increase from 8,682,576 acres in

2014 to 9,327,400 acres in 2019. The Oak/Hickory and the Mixed Hardwood/Pine forest types are consistently reducing their acreage in the state from 7,116,447 to 6,742,200 and from 3,009,252 to 2,733,400, respectively. Surprisingly, the Longleaf Pine/Slash Pine forest type is increasing from 1,017,447 to 1,131,600 acres since 2016 partly due to the longleaf pine initiative, an initiative informing landowners about the benefits of planting this tree species on suitable sites.

From 2014 to 2017, three forestland ownership types were consistent with non-industrial private landowners owning the most property in the state and increasing their total amount of acreage. Forest Industry and U.S. Forest Service ownership types were gradually decreasing land holdings. This trend suggested that forest industry and U.S. Forest Service were divesting their properties and being purchased primarily by private landowners. By 2018, the pattern of forestland ownership changed, especially for Non-industrial Private Landowner and Forest Industry types. Divesting of property appeared to have ceased as forest industry increased its land ownership. Non-industrial private landowners were showing a decrease in the amount of forestland ownership. The trend in the percentage of forestland ownership may have shifted for certain types, but the total amount of forested acres in the state was gradually increasing. Even with urban expansion around major metropolitan areas, the total number of forested acres continued to increase. For example, in 2018 there were 23,095,400 acres of forests and in 2019 there were 23,104,600 acres.





The Influences

Pine Engraver Beetle, *Ips spp.:*

After the 2016 devastating drought, Alabama received a significant amount of rain and warm temperatures throughout 2017 and 2018 providing the opportunity for drought-affected trees to recover. This climate trend continued through the first part of 2019. At the start of the 2019 summer season, there were occasional reports of pine engraver beetle infestations, but nothing too significant. The only area of the state that experienced a noticeable quantity of beetle spots was Houston County. Residual pines that were damaged by Hurricane Michael in October 2018 were now succumbing to a pine engraver beetle attack. These infestations were so extreme that they were spreading in a pattern that resembled a southern pine beetle spot.

Despite the numerous beetle spots in Houston County, the rest of the state remained constant with limited infestations. Aerial surveys, therefore, were initiated in June for monitoring beetle infestations but accelerated in July and August. By late summer, however, the trend shifted. August approached with certain areas of the state receiving minimal rainfall. By September, however, the state was engrossed in a prolonged drought. Continuing into October, some areas in the state did not receive rain for several weeks. Reports of pine engraver beetle infestations started to increase. Most of these infestations were confirmed from ground visits. By mid-October, persistent rains relieved the state from the extended drought and aerial surveys were completed for the year. Of the 52 aerially detected spots infesting 2,945 pines, 22 were pine engraver beetle infestations consuming 2,230 pines.

Southern Pine Beetle, *Dendroctonus frontalis:*

After the heightened number of southern pine beetle spots in 2017, the number of infestations started to decline drastically. The climate from 2017 to 2019 was a significant factor in restoring the vigor of trees after the devastating drought of 2016. However, by late summer of 2019, another prolonged drought occurred where several areas of Alabama did not receive rain for several weeks. Periodic pine engraver beetle infestations were being reported throughout the growing season, but there were very few reports of southern pine beetle infestations. As the summer months progressed and temperatures increased, there were still only a few spots detected. Unlike the previous years, there were very few infestations found on the National Forests.

The Alabama Forestry Commission conducted the southern pine beetle spring pheromone survey this year using frontalin, Sirex lure, and *endo*-brevicomin. Traps were deployed in the usual four counties – Lowndes, Clarke, Barbour, and Tallapoosa. One trap was also deployed in Monroe County. The results from the pheromone survey showed an overall decline in the southern pine beetle population. The results also predicted that Alabama will have a low occurrence of southern pine beetle infestations.

Because of the predicted low number of southern pine beetle spots, the Alabama Forestry Commission conducted one aerial survey for the entire state. The first survey was implemented on June 12, 2019 and the last survey was done on October 3, 2019. Of the 67 counties in the state, 31 were surveyed. The limited number of counties surveyed was due to the unprecedented summer drought. All National Forest Ranger Districts were also surveyed for beetle infestations. As predicted, the number of southern pine beetle spots decreased despite the prolonged drought. Approximately half of the 52 spots detected were caused by the southern pine beetle.

Pine Needle Diseases, *Coleosporium spp., Lophodermium spp., Dothistroma spp., and Lecanosticta spp.:*

Alabama continued to experience some level of climate variation, from a persistent drought to abundant precipitation and from abnormally high to excessively cold temperatures. Certain species of trees were quite vulnerable to these extreme climatic conditions. As pines being the main commodity of the timber industry, these trees received the most attention pertaining to health and vigor. Approximately 5 years ago, several loblolly pines in the blackbelt area were declining from some type of needle disease. Mortality occurred for a few of these stands. Climate variation may have influenced the virulence of certain pine needle diseases. Even though there were few new reports in 2019, there were stands still affected by pine needle diseases. With the significant consequence of this pest, Auburn University has committed to conduct research on this unusual phenomenon of pine needle diseases and their virulence on loblolly pine stands. Needle cast and pine needle rust are generally weak pathogens that do not cause mortality to host trees, but many of these stands were infected with both pathogens and therefore, succumbed to the disease.

Laurel Wilt Disease, Fungus-*Raffaelea lauricola* and Redbay Ambrosia Beetle-*Xyleborus glabratus*:

In 2018, several southeastern states participated in a forest health project administered by the USDA Forest Service to monitor the spread and impact of laurel wilt disease in sassafras beyond the Gulf-Atlantic Coastal Plain. This was the second consecutive year of this project where several sites containing a stand of sassafras were selected for monitoring.

In Alabama, 8 sites participated in the sassafras monitoring project. For two sites, one in Bibb County and the other in Chilton County, redbay ambrosia beetle traps were deployed. Two traps per site were deployed in the sassafras stand for 8 weeks during the summer (August and September). While checking the traps in Chilton County, symptomatic sassafras trees were noticed. Wood samples from one large symptomatic sassafras tree were collected and sent to the Forest Service laboratory for analysis. The test results confirmed that the sassafras tree was infected with laurel wilt disease. Chilton County was the latest one during fiscal year 2019 in Alabama to be confirmed of having this non-native invasive pest.

Gulf Coastal Plain Ecosystem Partnership Cogongrass (*Imperata cylindrica*) Project

In 2018, several partnering agencies and organizations in South Alabama and Northwest Florida began to address the threat of rapidly expanding cogongrass infestations in the area. The partners collaborated to form a Working Group that focused coordinated control and prevention efforts within a targeted landscape, the Cogongrass Partnership Area. In 2019, partners in the Working Group continued to coordinate control and prevention efforts within this targeted landscape. To complete the goals of control treatment and public education of cogongrass more efficiently, a Cogongrass Coordinator was hired this year by The Longleaf Alliance to administer the program. The Coordinator that was hired will work with landowners in the partnership area that includes state and federal properties as well as non-industrial private lands and industry holdings located in this partnership area.

When initiating the project, control efforts were conducted in a limited part of the partnership area – Covington County. The Alabama Forestry Commission employees implemented control treatments on cogongrass infestations enrolled into the Covington County Soil and Water Conservation District Landowner Incentive Program for the second consecutive year. Small spots on private lands were directly treated by Alabama Forestry Commission personnel. The information was recorded into the EDDMapS Pro application. There were 25 landowners or contracts approved into the program for spray treatment. A total of 177 spots was treated that encompassed 26.35 acres.

Environmental and Climatic Events

Wildfires

The number of wildfires was significantly low in 2018. Last year, there were 967 wildfires that burned 11,312.57 acres. Adequate rainfall started in 2017 and continued throughout most of 2018 and into 2019. The start of 2019 appeared to be quite calm with very few wildfires reported

in the state. This situation changed by late summer. By September, the state was engrossed with a prolonged drought. Wildfires began to erupt throughout the state causing forest damage and wreaking havoc on property. The situation almost resembled the one that occurred in October of 2016. The drought was short-lived but extreme with several areas of Alabama not receiving rain for 7 weeks. Most of the aerial surveys and other management activities were halted to divert resources for detecting and suppressing wildfires. On September 16, 2019, the Alabama Forestry Commission issued a Fire Danger Advisory for all 67 counties because of the drought conditions and the persistent high temperatures. In September alone, there were 471 wildfires that burned 6,107.86 acres. The climate situation continued leading the Alabama Forestry Commission to issue a Fire Alert on October 11, 2019. Several days after the Fire Alert, persistent rains relieved the state from the extended drought. On October 22, 2019 the Fire Alert was lifted allowing Alabama Forestry Commission to issue burning permits. During fiscal year 2019, there were 1,294 wildfires that consumed 17,554.88 acres with approximately 36 percent of these fires occurring in September.

Hurricanes, Tornadoes, and Storms

Climate variation patterns have caused warmer than normal temperatures and greater than normal amount of precipitation. In some instances, periodic droughts and extreme cold fronts spanned the state. Exceptionally warm temperatures outside of the normal season have caused devastating storms. This unusual weather pattern incited several hurricanes and tornadoes. Unfortunately, the southeastern states received the worst of the hurricane season. There were two recordable storms in Alabama that caused significant damage to structures and forests, Hurricane Michael that pummeled Southeast Alabama and the March tornadoes that caused severe destruction in Barbour, Macon, and Lee Counties.

At the beginning of the fiscal year, one of the most destructive storms in history traversed the southeastern states. On Wednesday, October 10, 2018, Hurricane Michael came from the Gulf of Mexico across the Florida panhandle with tremendous force. The eye of the storm reached land near Mexico Beach, Florida moving northeast bringing strong winds and heavy rain to parts of Southeast Alabama. Hurricane Michael, a category 4 storm, was fierce but moved rather quickly through the Southeast simultaneously decreasing in strength. Despite the deceleration of wind speed as it progressed towards the eastern coast, extreme damage occurred in areas that laid in the direct path of the storm. Areas in Houston County, Alabama received the most damage. There were 42,357 forested acres in Houston County damaged by Hurricane Michael, with 1,011,819 tons of timber destroyed at a value of $19,916,759.

A low-pressure storm system from Texas moved east bringing strong winds, precipitation, and tornadoes. Once the storm traversed Alabama, tornadoes descended in Macon and Lee Counties on March 3, 2019. The first tornado traveled from Beauregard moving northeast into Georgia as an EF-4. It remained on the ground for approximately 70 miles from Alabama into Georgia. The second tornado descended in Macon County and traveled through Beauregard as an EF-2. It eventually rescinded before reaching Smiths Station. Receiving national attention, both tornadoes caused significant damage. Some homes were demolished along the tornado path. Other buildings, structures, and trees were also destroyed. The most concerning and unfortunate news was the loss of lives. Hours after the storm, there were 23 fatalities in Alabama and 91

injuries with 18 individuals missing. The number of fatalities from this tornado event in Alabama was more than twice the total number of deaths from tornadoes across the United States in 2018. A spawning tornado from this weather system also occurred in Barbour County causing recordable damage. In summary, 5,888 forested acres were damaged by tornadoes in Macon, Lee, and Barbour Counties, with 149,130 tons of timber destroyed at a value of $3,369,071.

Other reported storms and tornadoes this year occurred on January 19, 2019, March 14, 2019, April 13, 2019 and April 18, 2019. Even though noticeable forest damage and destruction of property were reported, the loss of timber was not significant enough for formal documentation.

References

- Alabama Climate Report – The University of Alabama in Huntsville
- Alabama Forest Resource Information – Alabama Forestry Commission, Forest Inventory and Analysis (FIA) Data
- Alabama Wildfire Information – Alabama Forestry Commission, Fire Operations Section Alabama Forest Health Information – Alabama Forestry Commission, Forest Health Section
- Article, Climate and Change: Rising Temperatures Transforming Alabama by Brian Lyman with Montgomery Advertiser, August 29, 2019. Climate Change Article
- Article, What Climate Change Means for Alabama by the United States Environmental Protection Agency, August 2016, EPA 430-F-16-003.

For more information about Alabama's forest health program, go to the Alabama Forestry Commission's website: http://www.forestry.alabama.gov.

Forest Health Assistance in Alabama

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