



FORESTS OF Alabama, 2016

This resource update provides an overview of forest resources in Alabama based on an inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program at the Southern Research Station in cooperation with the Alabama Forestry Commission. Estimates are based on field data collected using the FIA annualized sample design and are updated yearly. The estimates presented in this update are for the measurement year 2016 and are compared to data reported in 2015. The sample plot population in Alabama consists of 5,657 plots, collected across a period of about 8 years (approximately 707 plots, or 12.5 percent of the data per year).

Growth, removals, and mortality estimates are based on 96 percent of the total sample, or 5,446 plots, and should be viewed accordingly. The data used in this publication were

accessed from the FIA database on January 30, 2017.

Early FIA publications concentrated primarily on growing stock trees on timberlands, i.e., commercially important tree species and sizes on forests that could sustain harvest operations. Current FIA reports focus on all forest resources, i.e., live trees on forest land.

Overview

Alabama is home to 23.1 million acres of forest land. Forested area has decreased by <0.1 percent since 2015 (table 1). The number of live trees on Alabama's forest land in 2016 is estimated at 16.98 billion trees, the same as last year's number. Net volume and average annual net growth increased, while average annual removals and average annual mortality decreased since 2015. Estimates of average annual growth of all live species on forests (2.1 million cubic feet) exceed average annual removals (1.2 million cubic feet).

Table 1—Alabama forest statistics, change between 2015 and 2016^{a, b}

Forest statistics	2015 estimate	Sampling error (percent)	2016 estimate	Sampling error (percent)	Change since 2015
Forest land					
Area (<i>thousand acres</i>)	23,126.6	0.48	23,105.9	0.48	-20.7
Number of live trees \geq 1.0 inch d.b.h. (<i>million trees</i>)	16,946.1	1.22	16,981.6	1.23	35.5
Net volume of live trees \geq 5.0 inches d.b.h. (<i>million cubic feet</i>)	38,498.5	1.17	39,521.1	1.14	1,022.6
Live tree aboveground biomass (<i>thousand oven dry tons</i>)	1,036,258.5	1.04	1,061,151.0	1.02	24,892.50
Net growth live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	2,032.5	1.64	2,103.7	1.51	71.2
Annual removals of live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	1,271.8	3.64	1,235.5	3.63	-36.3
Annual mortality of live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	403.4	3.37	388.4	3.30	-15.0
Timberland					
Area (<i>thousand acres</i>)	23,028.7	0.49	23,013.8	0.49	-14.9
Number of live trees \geq 1.0 inch d.b.h. (<i>million trees</i>)	16,885.5	1.23	16,924.0	1.23	38.5
Net volume of live trees \geq 5.0 inches d.b.h. (<i>million cubic feet</i>)	38,246.6	1.18	39,521.1	1.14	1,274.5
Live tree aboveground biomass (<i>thousand oven dry tons</i>)	1,029,890.3	1.04	1,054,686.4	1.03	24,796.1
Net growth live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	2,027.5	1.65	2,099.7	1.51	72.18
Annual removals of live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	1,271.8	3.64	1,235.5	3.63	-36.31
Annual mortality of live trees \geq 5.0 inches (<i>million cubic feet per year</i>)	399.6	2.99	384.4	3.32	-15.2

^a Estimates for 2016 comprise 10 panels of data (2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016).

^b Years 2007 and 2008 comprise only 0.4% of the sample population and result from changes in sampling intensity which occurred in 2010.



Forest Area

Alabama is divided into six survey units (fig. 1). The total of forested land in all of the survey units is 23.1 ± 0.11 million acres, and forests occupy 69 percent of the land area in the State. The Southeast survey unit supports more forest acres than any other unit (6.4 million acres) and is 70 percent forested (fig. 2). The North Central unit is ranked second, with 4.4 million acres of forests occupying 67 percent of the region's land area. The Southwest-North and West Central units are more densely forested, with 85 percent and 79 percent of their total land area in forest, respectively, but with fewer total forest acres (3.7 million and 3.5 million acres, respectively). The North unit has the least amount of forest area and lowest forest density, as its 2.2 million acres of forests occupy less than one-half (48 percent) of the region's land area.

The variation in Alabama's forest types is shown in figure 3. Loblolly-shortleaf pine is the predominant type in the State, accounting for over one-third of all forests. Oak-hickory is the second most recorded forest type in 2016, representing almost 31 percent of the forest base. Oak-pine and oak-gum-cypress account for 12.7 percent and 9.4 percent, respectively. Longleaf-slash pine, elm-ash-cottonwood, and other hardwoods and softwoods each represent < 5 percent of the total forest land base.

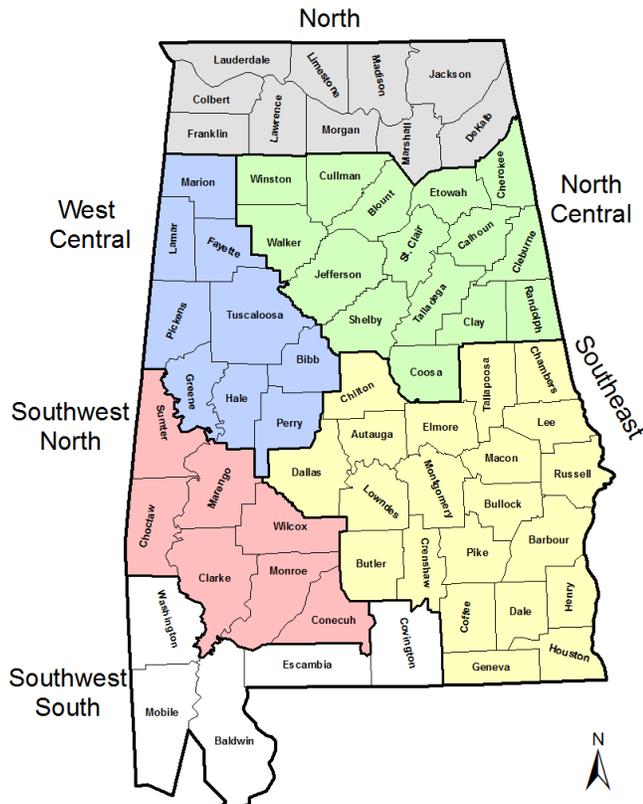


Figure 1—Forest survey units in Alabama by county.

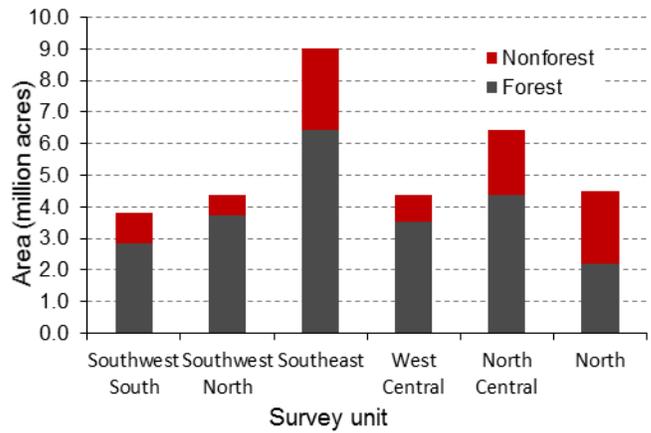


Figure 2—Total land area (minus census water) in Alabama, by land class and survey unit, 2016.

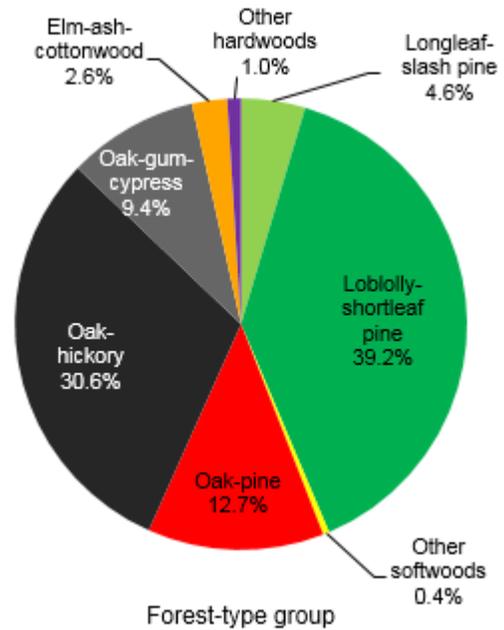


Figure 3—Distribution of forest-type groups in Alabama's forests, 2016.



Fox squirrel in southern Alabama. (photo by Andrew J. Hartsell)

Volume, Biomass, and Trends

Crews recorded 122 species (including unknowns collected to the genus level) on Alabama forest land in the measurement years included in the 2016 dataset. Loblolly pine (*Pinus taeda*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), red maple (*Acer rubrum*), and yellow-poplar (*Liriodendron tulipifera*) are the most numerous species in Alabama (table 2).

Though the loblolly-shortleaf pine forest-type group accounts for 38.2 percent of Alabama’s live tree volume, hardwoods are still dominant overall. Fifty-two percent of Alabama’s 39.5 million cubic feet of live tree volume is in hardwood species.

Estimates for annual softwood growth has steadily increased, while average annual removals of softwood tree species decreased since the 2011 estimates (fig. 4). Average annual estimates of hardwood growth rose, while hardwood removals have gradually declined, but the degree of these changes are not out of line with natural variation. These trends may become significant if they continue into the future. Average annual mortality of both hardwoods and softwoods has been on a steady decline since 2011.

Focusing on planted southern yellow pine volume, here defined as volume of shortleaf (*P. echinata*), slash (*P. elliottii*), longleaf (*P. palustris*), loblolly, and Virginia pine (*P. virginiana*) trees, net volume on forest land continues to increase, up from 6.7 billion cubic feet in 2010 to 9.2 billion in 2016 (fig. 5). With the exception of the 6-10 year class, all

Table 2—Number and volume of all-live trees (top 15 species), Alabama 2016

Species	Number (million trees)	Volume (million ft ³)
Loblolly pine	3,716.8	15,103.2
Sweetgum	2,319.8	3,041.8
Water oak	1,246.5	2,173.2
Red maple	1,060.2	680.8
Yellow-poplar	522.0	2,127.5
Blackgum	488.6	626.9
Laurel oak	411.3	609.6
Flowering dogwood	401.3	33.3
Sweetbay	386.7	516.6
Black cherry	368.5	202.9
American hornbeam, musclewood	363.0	78.1
White oak	345.4	1,553.2
Winged elm	334.6	161.2
Mockernut hickory	293.2	523.2
Pignut hickory	263.0	656.2

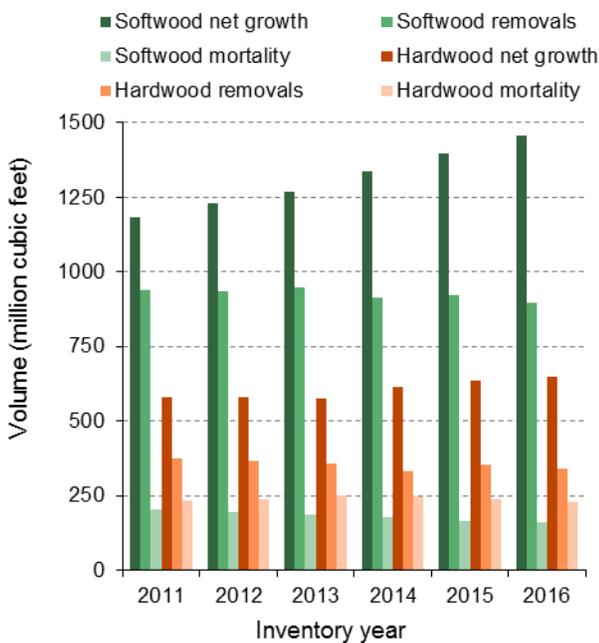


Figure 4—Net annual growth, removals, and mortality for softwood and hardwood species in Alabama, 2011-2016.

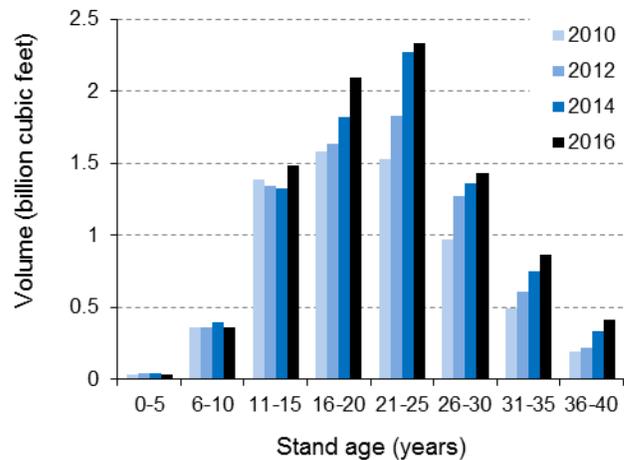


Figure 5—Distribution of planted southern yellow pine cubic foot volume on Alabama’s forest lands, 2010, 2012, 2014, and 2016.

age classes generally have more volume in them than in previous inventories. The difference in the 0-5 year age class is negligible and statistically insignificant.

Laurel Wilt Disease in Alabama

Laurel wilt disease (LWD) is a lethal vascular wilt that effects redbay (*Persea borbonia*), sassafras (*Sassafras albidum*), and other members of the family Lauraceae. The fungal pathogen that causes LWD, *Raffaelea lauricola*, is transmitted by the redbay ambrosia beetle (*Xyleborus glabratus*). Native to southeast Asia, the beetle was discovered near Savannah, GA in 2002 (Fraedrich and others 2008). Since that time, LWD has spread rapidly and is now found in nine States, including five counties in Alabama (fig. 6).

In 2016, there were an estimated 4.65 billion live sassafras and redbay trees ≥ 1.0 inch d.b.h. in Alabama. By survey unit, sassafras and redbay are most abundant in the North Central unit and least abundant in the Southwest-North unit, with 24 percent and 9 percent of the State’s total inventory for these two species, respectively (fig. 7).

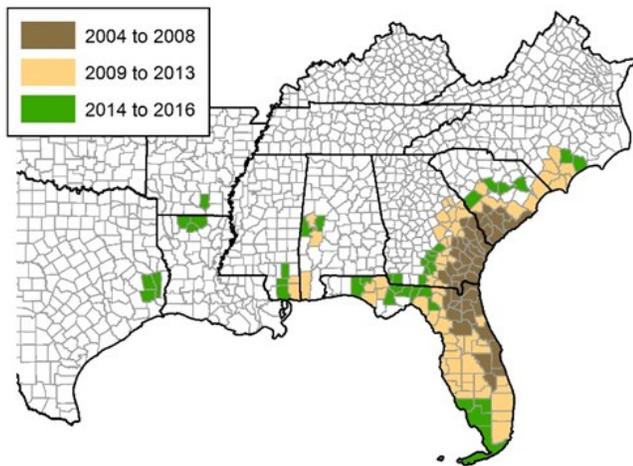


Figure 6—Distribution of counties with laurel wilt disease as of April 7, 2016, by year of initial detection. Source: [http:// southern-foresthhealth.net/fungi/laurel-wilt/distribution-map](http://southern-foresthhealth.net/fungi/laurel-wilt/distribution-map) [Date Accessed September 22, 2016].

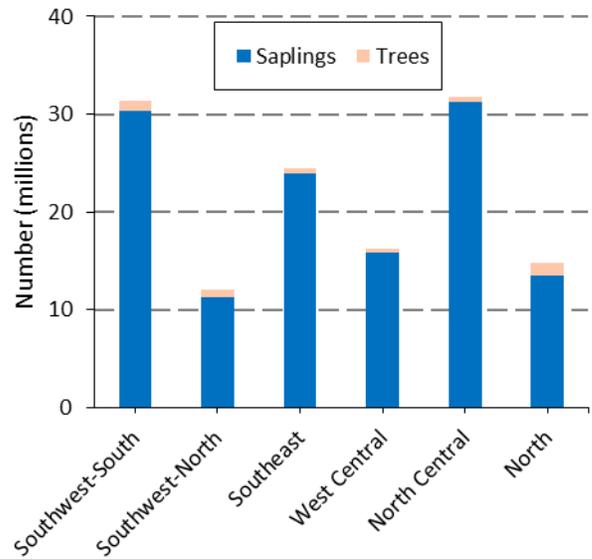


Figure 7—Number of live sassafras and redbay trees (d.b.h. ≥ 5.0 inches) and saplings (1.0 inch \leq d.b.h. < 5.0 inches) in Alabama,



Young pine stand in Pickens County, Alabama. (photo by Andrew J. Hartsell)

Literature Cited

- Fraedrich, S.W.; Harrington, T.C.; Rabaglia, R.J. [and others]. 2008. A fungal symbiont of the redbay ambrosia beetle causes a lethal wilt in redbay and other Lauraceae in the Southeastern United States. *Plant Disease*. 92: 215–224.

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Contact Information

Andrew J. Hartsell, Research Forester
Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike
Knoxville, TN 37919
Phone: 865-862-2032 / Fax: 865-862-0262
Email: ahartsell@fs.fed.us
Southern FIA: <http://srsfia2.fs.fed.us>
National FIA: <http://fia.fs.fed.us>

Dan Chappell, FIA Coordinator
Alabama Forestry Commission
P.O. Box 302550
Montgomery, AL 36130-2550
Phone: 334-240-9370
Email: James.Chappell@forestry.alabama.gov

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