USDA
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RESOURCE UPDATE FS-69

FORESTS OF Alabama, 2014

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 2014 and are compared to data reported in 2013. The sample plot population in Alabama consists of 5,620 plots, collected across a period of 8 years (about 707 plots, or about 12.5 percent of the data per year).

Growth, removals, and mortality estimates are based on 95 percent of the total sample or about 5,348 plots, and should be viewed accordingly. The data used in this publication were accessed from the FIA database on May 28, 2015.

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 increased by <1 percent since 2013 (table 1). The number of live trees on Alabama's forest land in 2014 is estimated at 17.0 billion trees, an increase of 2.0 percent from 2013. Net volume increased by 3.9 percent. Average annual net growth increased while average net annual removals decreased. Estimates of average annual growth of all live species on forests (1.9 million cubic feet) exceed average annual removals (1.2 million cubic feet). These estimates reveal a positive growth-to-removals ratio for the State (table 1).

Table 1—Alabama forest statistics, change between 2013 and 2014[a]

Forest statistics	2013 estimate	Sampling error (percent)	2014 estimate	Sampling error (percent)	Change since 2013
Forest land					
Area (*thousand acres)*	22,910.7	0.52	23,126.9	0.48	216.2
Number of live trees ≥1 inch d.b.h. (*million trees)*	16,637.7	1.31	16,977.5	1.22	339.8
Net volume live trees ≥5 inches d.b.h. (*million cubic feet)*	36,228.9	1.26	37,659.0	1.17	1,430.1
Live tree aboveground biomass (*thousand oven-dry tons)*	981,213.9	1.13	1,017,194.5	1.04	35,980.6
Net growth live trees ≥5 inches d.b.h. (*million cubic feet)*	1,846.5	1.79	1,951.9	1.64	105.4
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet)*	1,305.2	3.67	1,247.7	3.64	-57.5
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet)*	434.6	3.70	424.8	3.37	-9.8
Timberland					
Area (*thousand acres)*	22,810.2	0.53	23,029.2	0.49	219.0
Number of live trees ≥1 inch d.b.h. (*million trees)*	16,581.4	1.30	16,918.9	1.23	337.5
Net volume live trees ≥5 inches d.b.h. (*million cubic feet)*	35,981.3	1.26	37,415.3	1.18	1,434.0
Live tree aboveground biomass (*thousand oven-dry tons)*	974,956.1	1.14	1,011,010.8	1.04	36,054.7
Net growth live trees ≥5 inches d.b.h. (*million cubic feet)*	1,840.4	1.80	1,947.0	1.65	106.6
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet)*	1,305.2	3.67	1,247.7	3.64	-57.5
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet)*	432.8	3.71	421.5	2.99	-11.3

[a] Estimates for 2014 comprise eight panels of data (2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014).

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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 (3.5 million and 3.7 million acres). 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 2014, representing almost 31 percent of the forest base. Oak-pine and oak-gum-cypress account for 12.9 percent and 9.3 percent, respectively. Longleaf-slash, elm-ash-cottonwood, and other hardwoods and softwoods each represent < 5 percent of the total forest land base.

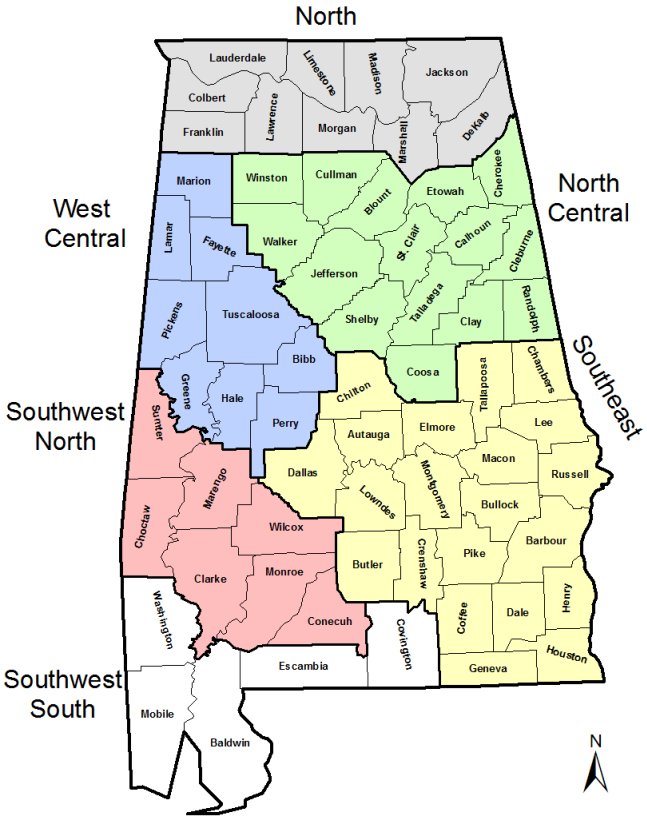

Figure 1—Forest survey units in Alabama by county.

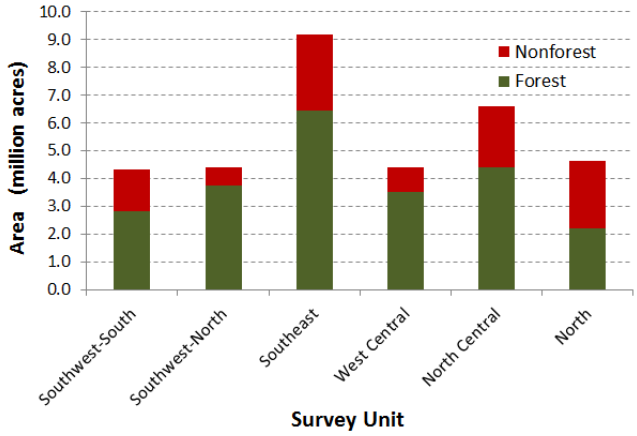

Figure 2—Total land area (minus census water) in Alabama, by land class and survey unit, 2014.

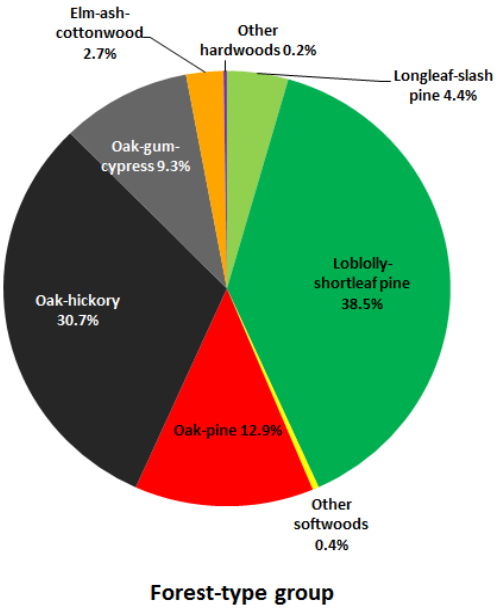

Figure 3—Distribution of forest-type groups in Alabama's forests, 2014.

A road winding through Alabama's forests. (photo by Andrew J. Hartsell)

Volume, Biomass, and Trends

Crews recorded 116 species (including unknowns collected to the genus level) on Alabama forest land in the measurement years included in the 2013 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 percent of Alabama's live tree volume, hardwoods are still dominant overall. Fifty-three percent of Alabama's 37.4 million cubic feet of live tree volume is in hardwood species. All oak species account for almost 22 percent of hardwood tree volume in the State.

Except for annual softwood growth, which has steadily increased, all measures of annual growth, removals, and mortality of both softwoods and hardwoods have remained stable since 2010 (fig. 4). Hardwood removals have slightly decreased while hardwood mortality has increased, 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 hardwood growth has remained mostly unchanged, with only a small increase over the time frame.

Table 2—Number and volume of all-live trees (top 15 species), Alabama 2014

Species	Number	Volume
	(million trees)	*(million ft^3)*
Loblolly pine	3,682.1	13,050.0
Sweetgum	2,263.8	2,868.6
Water oak	1,223.8	1,968.2
Red maple	1,057.8	650.6
Yellow-poplar	544.5	1,920.5
Blackgum	501.4	626.1
Flowering dogwood	464.9	40.4
Sweetbay	385.0	496.5
Black cherry	364.2	185.8
American hornbeam, musclewood	352.4	71.5
Laurel oak	345.4	553.4
White oak	340.2	1,464.5
Winged elm	310.4	142.8
Mockernut hickory	295.0	502.4
Virginia pine	287.7	498.5

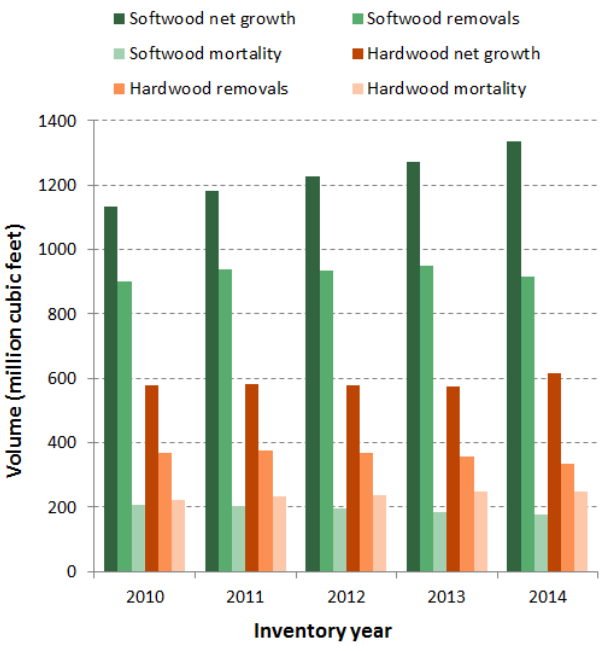

Figure 4—Net annual growth, removals, and mortality for softwood and hardwood species in Alabama, 2010–2014.

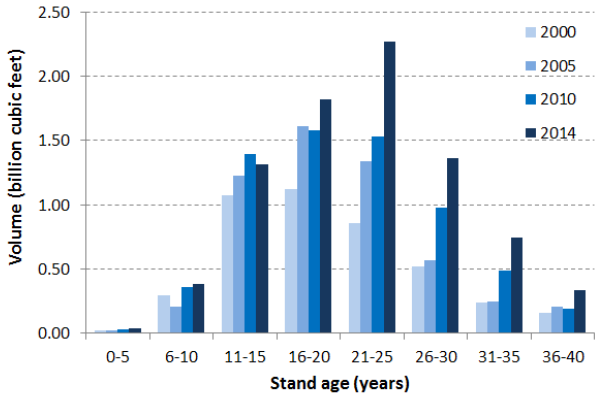

Figure 5—Distribution of planted southern yellow pine cubic foot volume on Alabama's forest lands, 2000, 2005, 2010, and 2014.

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 4.5 billion cubic feet in 2000 to 8.5 billion in 2014. (fig. 5) With the exception of the 11-15 year class, all age classes generally have more volume in them than in previous inventories. Interestingly, the 11-15 class reveals a 5-percent decrease from the 2010 inventory. Reasons for this are not known at this time, but future research and subsequent surveys may reveal if this is a pattern and, if so, possible causes for this phenomenon.

Southern Yellow Pine Plantation Demographics

As noted previously, overall forest land volume has increased, and acreage has remained stable. However, the composition of these forests has changed. Figure 6 shows the transition from natural southern yellow pine to planted stands from 1972 to 2014. (Note that southern yellow pine is defined here as stands that were predominately longleaf-slash or loblolly-shortleaf pine.) In 1972, planted stands accounted for 1.3 million acres across the State. Today, this type represents 6.4 million acres. At the same time, natural stands have decreased from 6.7 million acres to 3.5 million acres, almost half of the 1972 estimate. The biggest increases in plantation acreage occurred in the 1980s and 1990s when natural pine stands were converted to managed, more highly productive plantations.

While average annual removals of southern yellow pine has remained stable across the State, the silvicultural methods used to achieve these results has changed. Acres clearcut continues to increase, however the degree of the increase is not as great as in the past (fig. 7). Acres that have been partially harvested have decreased since 2010 while thinning operations have increased. Part of this may be due to the economic downturn that started in 2007–2008. A decline in housing starts led to a drop in timber prices. This may have led to many landowners delaying final harvest and engaging in more thinnings to receive some income from their timberland investments while waiting for the economy, and subsequently timber prices, to return to post-recession levels (Brandeis and others 2012).

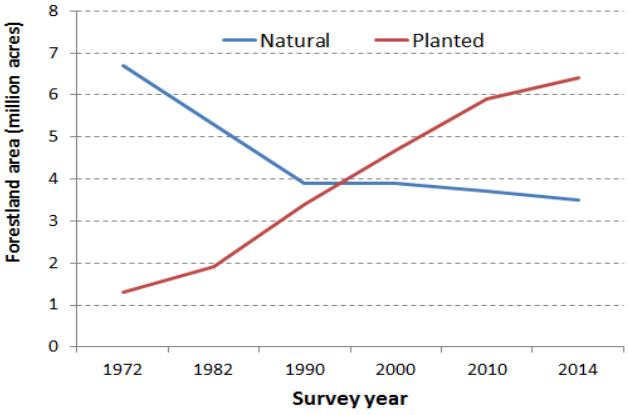

Figure 6—Area of southern yellow pine forest type on forest land by stand origin, Alabama 1972–2014.

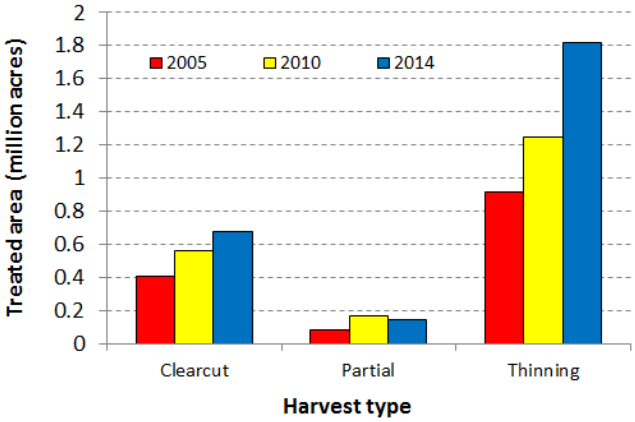

Figure 7—Area of southern yellow pine forests by cutting type, Alabama, 2005, 2010, and 2014.

References

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UPDATE: This resource update was revised in August 2016. Figure 5 estimates and discussion were originally based on incorrect data.

How to Cite This Publication

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