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RESOURCE UPDATE FS-72

FORESTS OF Georgia, 2014

This resource update provides an overview of forest resources in Georgia 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 Georgia 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 with comparisons made to data reported in 2013 and prior years.

A successful data collection season in 2014 resulted in the remeasurement of 977 forested plots by field technicians of the Georgia Forestry Commission. As per the 5-year remeasurement cycle, this sample represents about 20 percent of the over 4,600 forested plots. The 2014 plots marked the completion of the tenth forest inventory of the State of Georgia conducted by the FIA program. The data used in this publication were accessed from the FIA database on November 6, 2015.

Overview

Previous reports have shown the stability of Georgia's forest resources (Harper 2012, Harper and others 2009, Brandeis 2015). Forest land acreage remained relatively constant in 2014, totaling 24.7 million acres, plus or minus 124,878 acres (table 1). Ninety-eight percent of this forest land is not specifically reserved by law and therefore potentially available for timber production, thus it supports one of the Nation's most important forest industry sectors.

Table 1—Georgia forest statistics, change between 2013 and 2014

Forest statistics	2013 estimate	Sampling error (percent)	2014 estimate	Sampling error (percent)	Change since 2013
Forest land					
Area (*thousand acres*)	24,744.7	0.55	24,728.4	0.51	-16.30
Number of live trees ≥1 inch diameter (*million trees*)	15,355.7	1.41	15,164.1	1.31	-191.69
Net volume live trees ≥5 inches diameter (*million cubic feet*)	43,142.5	1.24	43,658.1	1.09	515.62
Live trees aboveground biomass (*thousand oven-dry tons*)	1,076,461.1	1.12	1,086,316.5	0.97	9,855.40
Net growth live trees ≥5 inches diameter (*million cubic feet*)	1,940.9	1.78	1,970.0	1.69	29.07
Annual removals of live trees ≥5 inches diameter (*million cubic feet*)	1,354.6	3.95	1,362.3	3.99	7.68
Annual mortality of live trees ≥5 inches diameter (*million cubic feet*)	456.4	4.13	455.6	4.02	-0.8
Timberland					
Area (*thousand acres*)	24,164.2	0.59	24,158.0	0.53	-6.21
Number of live trees ≥1 inch diameter (*million trees*)	15,086.6	1.42	14,880.7	1.32	-205.90
Net volume live trees ≥5 inches diameter (*million cubic feet*)	42,125.5	1.27	42,690.4	1.12	564.90
Live trees aboveground biomass (*thousand oven-dry tons*)	1,051,034.6	1.16	1,061,804.2	1.00	10,769.55
Net growth live trees ≥5 inches diameter (*million cubic feet*)	1,965.2	1.67	1,997.0	1.59	31.80
Annual removals of live trees ≥5 inches diameter (*million cubic feet*)	1,351.3	3.95	1,361.5	4.00	10.22
Annual mortality of live trees ≥5 inches diameter (*million cubic feet*)	400.9	3.82	398.6	3.68	-2.29

Forest Area

The number of live trees; the amount of volume and biomass they contain; and their growth, removals and mortality on both forest land and timberland, as well as change since 2013, are summarized in table 1. Of the five survey units of Georgia (subdivisions of the State based on a combination of ecological regions and political boundaries shown in figure 1), the Southeast and Central units hold the most forest land (fig. 2). The Central survey unit has the highest percent forest cover (72 percent) while the Southwest and North Central survey units have the lowest (52 and 51 percent, respectively).

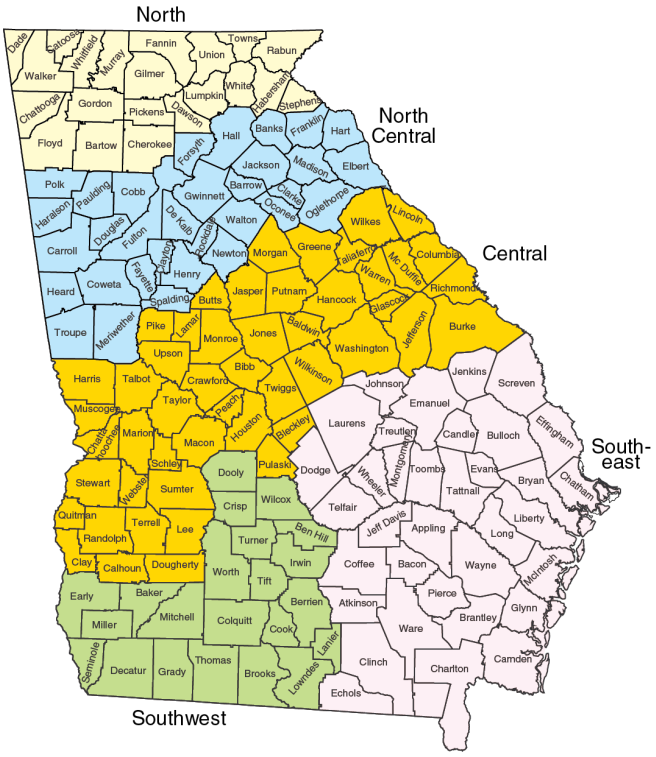

Figure 1—Counties and forest survey units in Georgia.

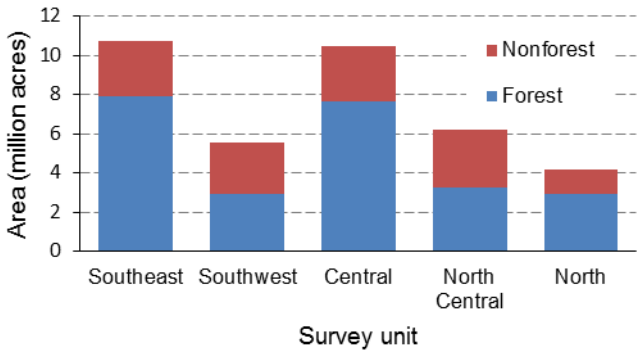

Figure 2—Total land area (minus census water) in Georgia, by land class and survey unit, 2014.

Georgia's pine forest patrimony has changed over time in response to social and economic needs. The conversion of naturally-regenerated pine forests to planted pine that took place during the decades of the 1970s, 1980s and 1990s slowed and stabilized in the 2000s to create the highly productive, economically and ecologically important resource we find today (fig. 3).

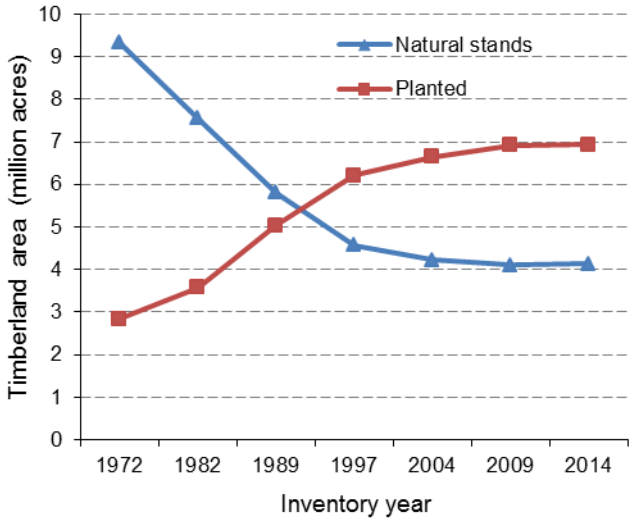

Figure 3—Timberland area of natural and planted pine stands in Georgia, 1972 to 2014.

We track changes in forest ownership in Georgia (fig. 4). The most notable trend has been the divestiture of forest industry of its timberland and its acquisition by nonindustrial corporate entities, primarily Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs). The forest acreage held by public land management agencies has increased very slightly, while nonindustrial landowner holdings have gone down over time.

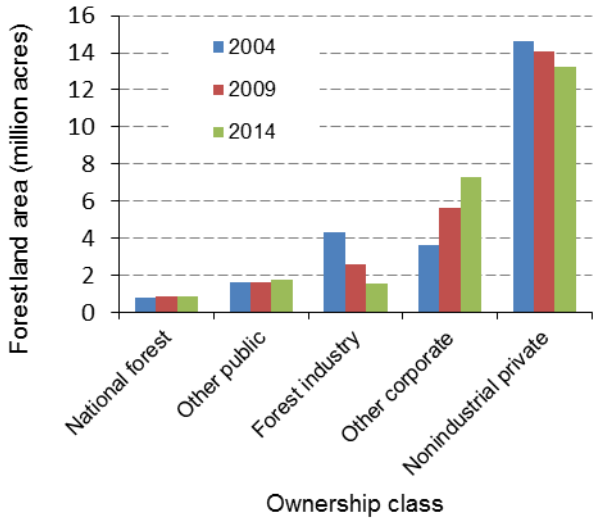

Figure 4—Forest land area by landowner class in Georgia, 2004–14.

Volume, Biomass, and Trends

The total number of trees found in Georgia's forests had been on the rise historically but has not changed substantially in recent years. In 2014, there were 15.2 billion trees with a diameter at breast height (d.b.h.) of ≥1.0 inch (table 2). In trees with d.b.h. of ≥5.0 inches, there were 22.0 billion cubic feet of wood volume in softwoods and 21.7 billion cubic feet in hardwoods, for a total of 43.7 billion cubic feet. Total volume on timberland was only slightly lower at 42.7 billion cubic feet. As in other recent years, the most commonly encountered tree species in the 2014 survey was loblolly pine (*Pinus taeda*), which also had the greatest volume of any species (table 2).

Table 2—Number and volume of all-live trees, Georgia, 2014

Species	Number	Volume
	million trees	*million cubic feet*
Loblolly pine	2,735	13,505
Slash pine	976	4,708
Sweetgum	2,042	2,720
Yellow-poplar	411	2,624
White oak	229	1,874
Water oak	1,142	1,853
Swamp tupelo	770	1,677
Red maple	1,426	1,457
Laurel oak	443	1,159
Chestnut oak	97	1,078
Southern red oak	174	821
Shortleaf pine	95	763
Longleaf pine	149	682
Scarlet oak	49	680
Other	4,428	8,059
Total	15,164	43,658

The value of Georgia's forests extends well beyond the timber products that can be harvested from them. Amongst the many non-commodity values and ecosystem services forests provide is the sequestration and storage of atmospheric carbon. Georgia's forests store an estimated 1.8 billion tons of carbon. While we might think that most of this carbon is found in tree branches and stems, in fact only 30.5 percent (543.1 million tons) is found in the aboveground portions of trees (fig. 5). More than half the carbon stored in Georgia's forests is held in the soil. When this soil carbon is added to the carbon in tree roots, down woody material, and litter, these belowground and forest floor deposits account for over 66 percent of the carbon stored in the forest.

Despite the stability in forest area, numbers of trees and volume, Georgia's forests are dynamic and in a continual state of flux. Trees grow, die naturally, or are cut to harvest timber products or make way for land use change.

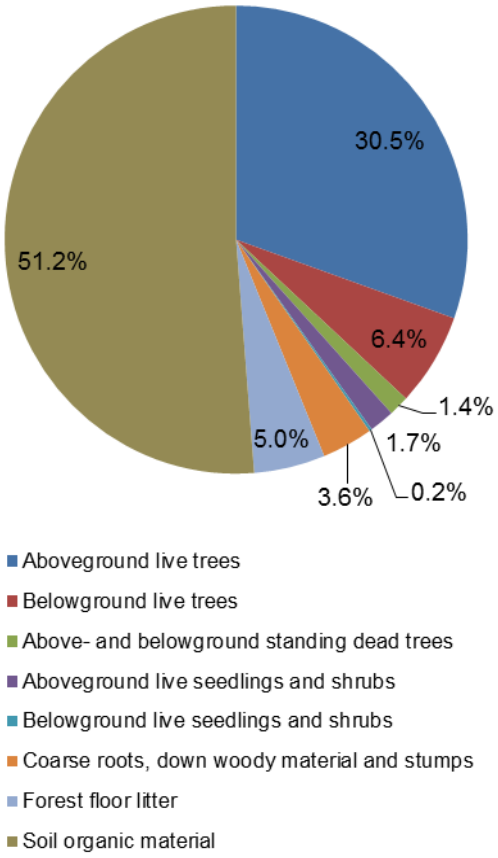

Figure 5—Carbon stored in the forest of Georgia, 2014.

Overall, there is an indication of slight decreases in hardwood growth and increases in mortality (fig. 6). Softwoods, on the other hand, continue to show slight net growth increases with relatively stable levels of removals and mortality, as was observed in Brandeis (2015).

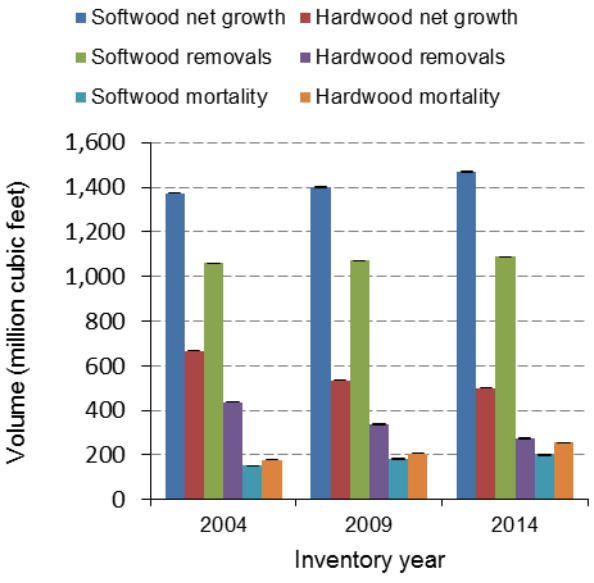

Figure 6—Net annual growth, removals and mortality in volume for

Annual land use change

Annual area change was estimated from the same plots used to calculate tree level growth, removals and mortality annualized rates. The acres that the condition represents were divided by the plot remeasurement period for an annualized acreage estimate. An entire plot on average represents 6,000 acres. If the elapsed time period between plot measurements was 5 years, then the annual area estimate is 1,200 acres. If a plot was converted from forest land to a developed land use, then that would represent 1,200 acres per year of forest land area that changed to a developed land use. All of these annually changed acres were then summed for state-wide annual change totals.

Two land use change trends stand out in Georgia from 2004 to 2014. The rate at which the State gained forest land acreage from converted agricultural land decreased until 2009 and after that time remained stable (fig. 7). The rate at which forest was lost to development decreased steadily since about 2007. The latter trend may reflect the economic downturn experienced across the country beginning that year. We might have expected a greater slow-down in the conversion of forest to developed land during the downturn.

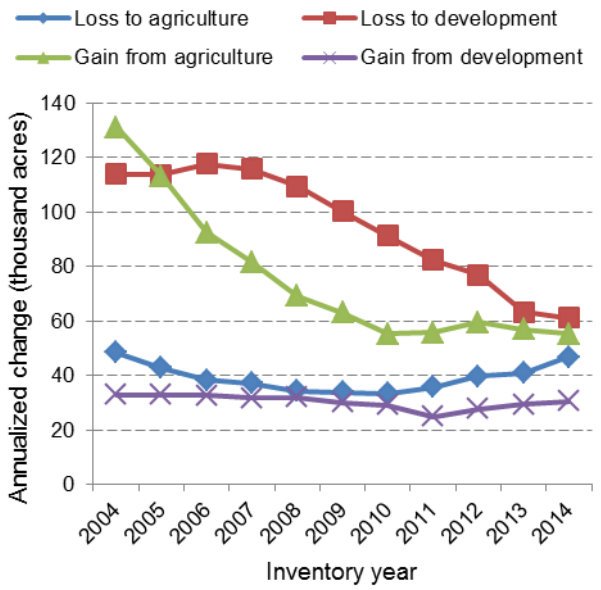

Figure 7—Annualized land use change in Georgia, 2004-14.

But in a given year, FIA estimates are made from the current year and 4 prior years of data, so we often see some lag time and a degree of buffering, or muting, of trends. When limited to planted pine acreage, the decrease in the rate of plantation gain from agricultural land conversion is notable (fig. 8). Remember that this does not represent forest loss, rather a slowing in the rate of gain and movement toward stable acreages.

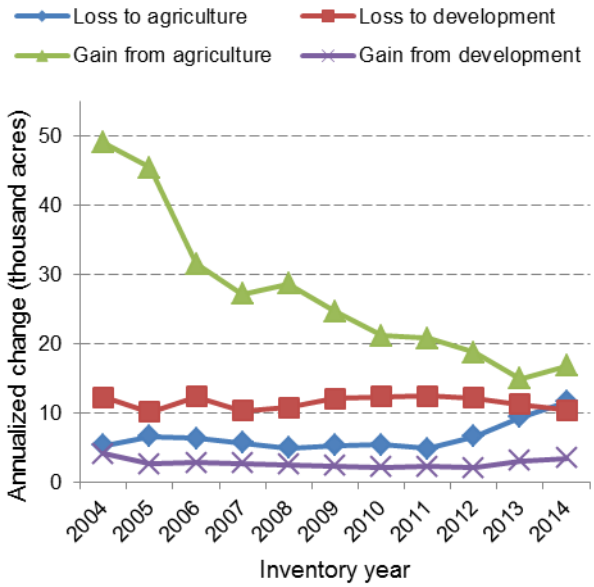

Figure 8—Annualized planted pine land use change in Georgia, 2004-14.

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