



# FORESTS OF South Carolina, 2013

This resource update provides an overview of forest resources in South Carolina. Information for this factsheet was updated by means of the Forest Inventory and Analysis (FIA) annualized sample design. Each year 20 percent of the sample plots (one panel) in South Carolina are measured by field crews, the data compiled, and new estimates produced. After 5 years of measurements, the full sample (a cycle) is complete and a new survey cycle begins. The most reliable trend information (especially that concerning magnitude of change) comes from comparing two full cycles of data. Estimates presented here are for the measurement year 2013, with comparisons made to 2011. Generally speaking, for the 2013 inventory, estimates for variables such as area and volume are based on 3,445 plots measured between 2009 and 2013. Growth, removals, and mortality estimates for the 2013 inventory are based on plots measured between 2003 and 2008, and remeasured between 2009 and 2013.

This update is based on data processed and posted on the FIA database (FIADB) on June 30, 2013 (<http://fia.fs.fed.us/tools-data/>). Definitions can be found in the FIADB user’s manual at <http://fia.fs.fed.us/tools-data/docs/default.asp>. Additional information can be found in the report South Carolina’s Forests, 2006 (RB-SRS-158) (<http://treesearch.fs.fed.us/pubs/33449>).

## Overview

Overall, area of forest land in South Carolina remained stable between 2011 and 2013 (table 1). Number of live trees on forest land decreased by 2 percent between 2011 and 2013, from 10.1 billion to 9.9 billion. Volume increased by 4.4 percent, from 24.1 billion cubic feet to 25.2 billion cubic feet. There was a 0.8-percent increase in growth, a 5.1-percent decrease in annual removals, and an 8.6-percent increase in annual mortality.

Table 1—South Carolina forest statistics, change between 2011 and 2013

Forest statistics	2011	Sampling	2013	Sampling	Change
	estimate	error	estimate	error	since 2011
		(percent)		(percent)	(percent)
<b>Forest land</b>					
Area (thousand acres)	13,120.5	0.76	13,044.0	0.75	-0.58
Number of live trees ≥1.0 inch d.b.h. (million trees)	10,110.8	1.79	9,913.4	1.77	-1.95
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	24,123.2	1.61	25,185.4	1.62	4.40
Live trees aboveground biomass (thousand oven-dry tons)	597,846.3	1.45	620,124.8	1.46	3.73
Net growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,289.5	1.92	1,299.8	1.97	0.80
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	834.0	5.52	791.2	5.41	-5.13
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	171.3	4.46	185.9	4.98	8.57
<b>Timberland</b>					
Area (thousand acres)	12,941.5	0.80	12,876.0	0.79	-0.51
Number of live trees ≥1.0 inch d.b.h. (million trees)	10,010.2	1.82	9,822.7	1.79	-1.87
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	23,624.2	1.64	24,686.2	1.64	4.50
Live trees aboveground biomass (thousand oven-dry tons)	585,952.6	1.48	608,288.2	1.48	3.81
Net growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,286.9	1.96	1,292.9	1.99	0.47
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	837.5	5.51	793.2	5.41	-5.29
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	168.9	4.50	183.9	5.02	8.88



# Forest Area

Total land area of South Carolina is 19.3 million acres, not including census water. Of this, 13.0 million acres (68 percent) was forested in 2013, a decrease of 0.6 percent from 2011 (table 1). South Carolina is divided into three survey units (fig. 1). Each of the three units was between 66 percent and 68 percent forested. The Southern Coastal Plain saw a slight increase in forest land (0.7 percent), while the other two units saw decreases (table 2).

Across the State, approximately 88 percent of the forest land in South Carolina is privately owned, a number that has remained consistent over the years. One noticeable change in ownership in South Carolina has been that of forest industry-owned land. In 2001, forest industry owned just over 2.0 million acres of timberland (Harper and Rominger 2013). Between 2011 and 2013, that number dropped by 57 percent, from a little over 336,000 acres of timberland to 144,000 acres. This continues a trend going back many years in the State as well as in the South.

The loblolly-shortleaf pine forest-type group occupied the largest proportion of forest land in South Carolina at 5.6

million acres, a little over one-half of which was planted (fig. 2). Between 2011 and 2013 the area of loblolly-shortleaf pine increased by almost 1 percent. The next most predominate forest-type group was oak-hickory, at 2.8 million acres. Overall, about 74 percent of the forest land in South Carolina was naturally regenerated and about 26 percent artificially regenerated. This ratio has remained consistent over the last few years.

Forest land in South Carolina is maturing (fig. 3). Area of large-diameter sized stands has been increasing, while that of medium- and small-diameter stands has been decreasing. Large-diameter stands now account for 53 percent of the forest land in South Carolina. Since 2001, forest land area in large-diameter stands increased by 24 percent. This is in contrast to decreases in large-diameter stands between 1986 and 2001, partially due to Hurricane Hugo related mortality of large-diameter trees (Conner and others 2004).

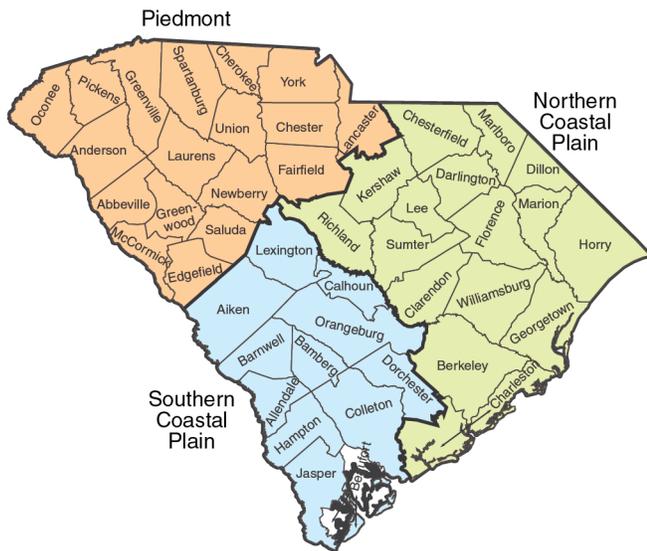


Figure 1—Forest survey units in South Carolina.

**Table 2—Area of forest land by survey unit and year, South Carolina**

Survey unit	2006	2011	2013	Change since 2011 percent
	-----thousand acres-----			
Southern Coastal Plain	3,426.6	3,502.0	3,526.2	0.69
Northern Coastal Plain	4,936.9	4,955.7	4,938.4	-0.35
Piedmont	4,684.0	4,662.8	4,579.3	-1.79
<b>Total</b>	<b>13,047.6</b>	<b>13,120.5</b>	<b>13,044.0</b>	<b>-0.58</b>

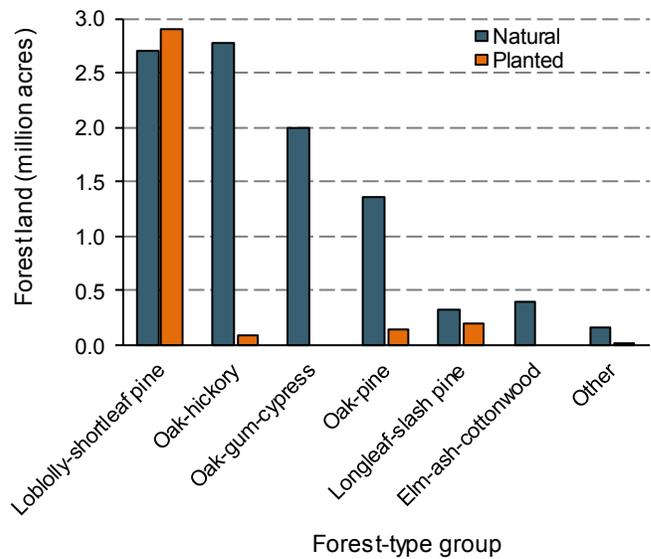


Figure 2—Area of forest land by forest-type group and stand origin, South Carolina, 2013.

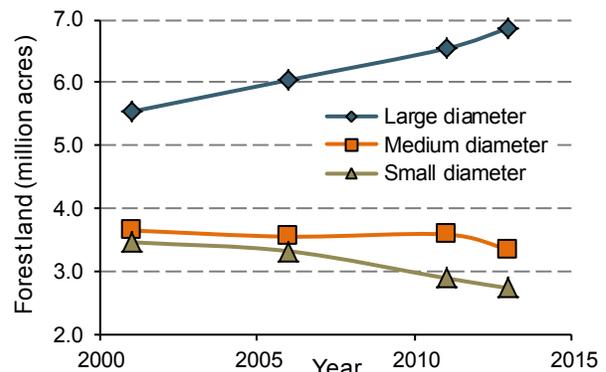


Figure 3—Area of forest land by year and stand-size class, South Carolina.

## Volume, Biomass, and Trends

Volume of all-live trees  $\geq 5.0$  inches diameter at breast height (d.b.h.) on forest land in 2013 totaled 25.2 billion cubic feet, the most ever recorded in the State (fig. 4). This volume was split nearly evenly between softwoods and hardwoods and represents an increase of 4.4 percent since 2011. In addition, volume increased by 23 percent between 2001 and 2013; this continues a trend that extends back several decades in South Carolina. Analysis of all-live volume by diameter class showed increases in all classes. In addition, volume of all-live trees increased in both large- and small-diameter stands, with volume of medium-diameter stands remaining basically constant.

Crews recorded 117 species (not including unknowns) on forest land in South Carolina. Loblolly pine, sweetgum, and yellow-poplar were the most voluminous species (table 3). Between 2011 and 2013, volume of loblolly pine increased by 6.4 percent and that of sweetgum increased by 3.2 percent. Over the last 12 years, volume of loblolly pine increased by nearly 40 percent. This continues the trend in this species noted between 1986 and 2001 (Conner and others 2004).

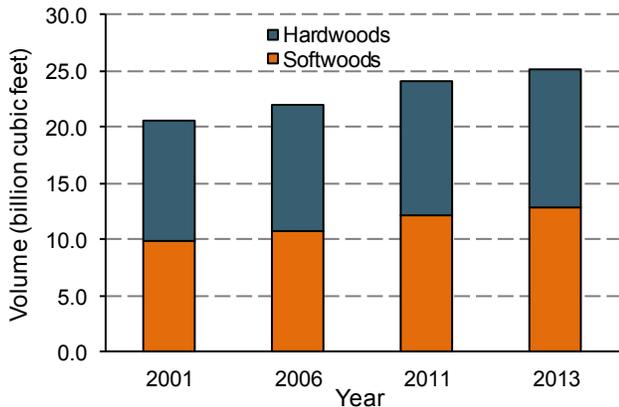


Figure 4—Volume of live trees  $\geq 5.0$  inches d.b.h. on forest land by year and major species group, South Carolina.

South Carolina had 620 million dry tons of live-tree biomass on forest land across the State (table 1). This was an increase of 3.7 percent since 2011. This change mirrored the increased in volume, which was up by 4.4 percent.

Overall, net growth of live trees remained stable at 1.3 billion cubic feet per year (table 4). Growth of softwoods, which increased in all three units, accounted for nearly 73 percent of all growth. In contrast, growth of hardwoods decreased in all three units between 2011 and 2013. Removals declined by 5 percent across the State, but actually increased in two of three units. Softwood removals accounted for 80 percent of the total. Mortality was up in all units, particularly the Northern Coastal Plain, but was still less than the 2006 survey, when it averaged 198.1 million cubic feet per year. Hardwoods accounted for about 57 percent of the mortality volume, and hardwood mortality increased in all survey units.

**Table 3—Number of live trees  $\geq 1.0$  inch d.b.h. and volume of live trees  $\geq 5.0$  inches d.b.h. (top 10 species for volume) on forest land, South Carolina, 2013**

Species	Number	Volume
	<i>million trees</i>	<i>million ft<sup>3</sup></i>
Loblolly pine	2,328.6	10,526.6
Sweetgum	1,650.1	2,250.4
Yellow-poplar	172.0	1,079.8
Water oak	712.6	998.2
Red maple	892.9	997.0
White oak	147.5	905.9
Swamp tupelo	184.2	841.1
Laurel oak	189.7	647.1
Longleaf pine	207.5	605.8
Willow oak	96.6	384.4

**Table 4—Average annual net growth, removals, and mortality of live trees on forest land by survey unit and major species group, South Carolina**

Survey year and unit	Total			Softwoods			Hardwoods		
	Growth	Removals	Mortality	Growth	Removals	Mortality	Growth	Removals	Mortality
<i>million cubic feet per year</i>									
2011									
Southern Coastal Plain	362.7	232.6	47.3	277.4	190.1	20.1	85.3	42.5	27.1
Northern Coastal Plain	510.7	363.2	52.7	360.0	258.2	22.8	150.7	105.0	29.9
Piedmont	416.1	238.1	71.3	268.4	172.7	37.9	147.7	65.4	33.4
All units	1,289.5	834.0	171.3	905.9	621.0	80.9	383.7	213.0	90.4
2013									
Southern Coastal Plain	373.5	239.4	49.7	294.8	209.3	18.5	78.7	30.1	31.2
Northern Coastal Plain	515.7	306.9	59.2	377.7	239.4	21.6	138.0	67.6	37.6
Piedmont	410.5	244.8	77.0	270.4	184.4	39.9	140.1	60.5	37.1
All units	1,299.8	791.2	185.9	942.9	633.0	80.0	356.8	158.1	105.9

# Longleaf Pine Resources in South Carolina

Longleaf pine is important because it is a keystone species in a unique ecosystem, one that is vital to the survival of many plants and animals, such as the red-cockaded woodpecker (*Picoides borealis*). The number of live stems of this species was at an all-time high in 2013, at 207.5 million trees. This was an increase of 3.5 percent since the 2011 survey. Since 2001, the number of trees of this species nearly doubled, from 104.4 million trees to 207.5 million trees. Significant increases were noted in both natural and planted stands (fig. 5). As expected, nearly one-half of live trees were in the smallest size class (1.0-2.9 inches d.b.h.). The significant increases in this species over the short term are a testament to the planting efforts that have been taking place across the State.

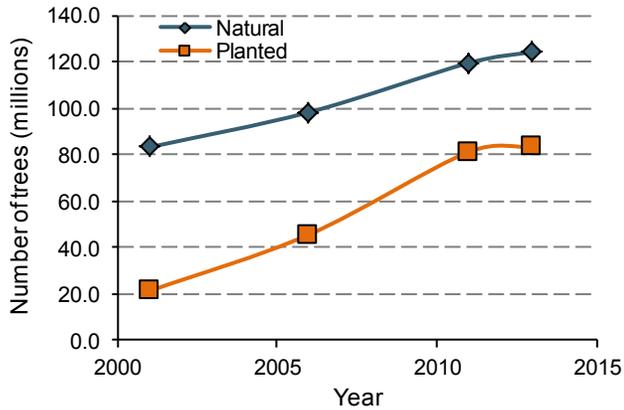


Figure 5—Number of live longleaf pine trees ≥1.0 inch d.b.h. on forest land by year and stand origin, South Carolina.

Volume of longleaf pine, which ranked ninth overall (table 3), increased by almost 3 percent between 2011 and 2013. Nearly one-half of the volume of this species was in trees 11.0-16.9 inches d.b.h. (fig. 6).

For the 2013 survey, net growth of longleaf pine on forest land averaged 24.1 million cubic feet per year (table 5). This was an increase of just over 20 percent between 2011 and 2013. Removals averaged about 12 million cubic feet per year, nearly double removals for the 2011 survey (table 5). Mortality of longleaf pine remained fairly stable at about 3.0 million cubic feet per year.

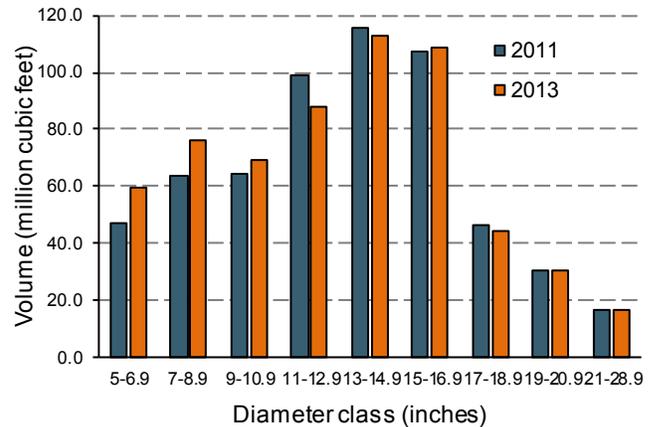


Figure 6—Volume of longleaf pine ≥5.0 inches d.b.h. on forest land by diameter class and year, South Carolina.

## Literature Cited

Conner, R.C.; Adams, T.; Butler, B. [and others]. 2004. The State of South Carolina's forests, 2001. Resour. Bull. SRS-96. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 67 p.

Harper, R.A.; Rominger, B. 2013. South Carolina, 2012—forest inventory and analysis factsheet. e-Science Update SRS-083. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 5 p.

Table 5—Average annual net growth, removals, and mortality of longleaf pine on forest land by survey year, South Carolina

Estimate	2006	2011	2013
	<i>million cubic feet per year</i>		
Net growth	14.38	19.93	24.10
Removals	12.31	6.12	11.72
Mortality	2.27	2.96	3.25

### How to Cite This Publication

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