USDA
United States Department of Agriculture

RESOURCE UPDATE FS-102

FORESTS OF South Carolina, 2015

This resource update provides an overview of forest resources in South Carolina 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 South Carolina 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 2015 with comparisons made to data reported previously.

Data collection in 2015 consisted of 729 plots out of over 3,600, or about 20 percent of the sample population. The remaining 80 percent come from data collected from 2011 through 2014. The data used in this publication were accessed from the FIA database in October of 2016 unless otherwise indicated (http://fia.fs.fed.us/tools-data/).

Definitions for terms used in this resource update can be found in the FIADB user's manual at http://fia.fs.fed.us/tools-data/docs/default.asp.

Overview

South Carolina covers a range of landforms, from mountains through piedmont, and finally to coastal flats. The forests of the State form an integral part of its culture and economy. South Carolina is home to 12.9 million acres of forest land, plus or minus 92,977 acres (table 1). Ninety-nine percent of this forest is not specifically reserved by law and is therefore potentially available for timber production. Average annual growth on South Carolina's timberland was 1.5 times the volume of average annual removals from timberland. Average removals equate to roughly 3 percent of standing volume on timberland, annually.

Table 1—South Carolina forest statistics, change between 2010 and 2015

Forest statistics	2010 Estimate	Sampling error percent	2015 Estimate	Sampling error percent	Change since 2010
Forest land					
Area (*thousand acres*)	13,112.70	0.751	12,931.39	0.719	-181.32
Number of live trees ≥1 inch d.b.h. (*million trees*)	10,186.13	1.786	9,587.49	1.692	-598.63
Net volume live trees ≥5 inches d.b.h. (*million cubic feet*)	23,738.94	1.629	25,719.31	1.512	1,980.37
Live trees aboveground biomass (*thousand oven-dry tons*)	589,990.03	1.462	629,029.82	1.352	39,039.79
Net growth live trees ≥5 inches d.b.h. (*million cubic feet per year*)	1,295.26	1.936	1,306.83	1.895	11.57
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet per year*)	830.473	5.588	868.193	5.265	37.72
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet per year*)	166.954	4.655	191.638	4.776	24.68
Timberland					
Area (*thousand acres*)	12,931.96	0.794	12,756.34	0.756	-175.62
Number of live trees ≥1 inch d.b.h (*million trees*)	10,085.05	1.814	9,484.17	1.717	-600.89
Net volume live trees ≥5 inches d.b.h. (*million cubic feet*)	23,241.24	1.653	25,201.30	1.529	1,960.06
Live trees aboveground biomass (*thousand oven-dry tons*)	578,120.28	1.489	616,740.88	1.373	38,620.59
Net growth live trees ≥5 inches d.b.h. (*million cubic feet per year*)	1,290.51	1.97	1,303.22	1.906	12.71
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet per year*)	834.078	5.571	867.297	5.27	33.22
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet per year*)	164.383	4.703	187.511	4.83	23.13

Forest Area

Total land area of South Carolina was 20.5 million acres, not including census water. Of this, 12.9 million acres (63 percent) was forested in 2015, a decrease of 1.4 percent from 2010 (table 1). South Carolina is divided into three survey units (fig. 1). Each of the three units was between 61 percent and 66 percent forested (fig. 2).

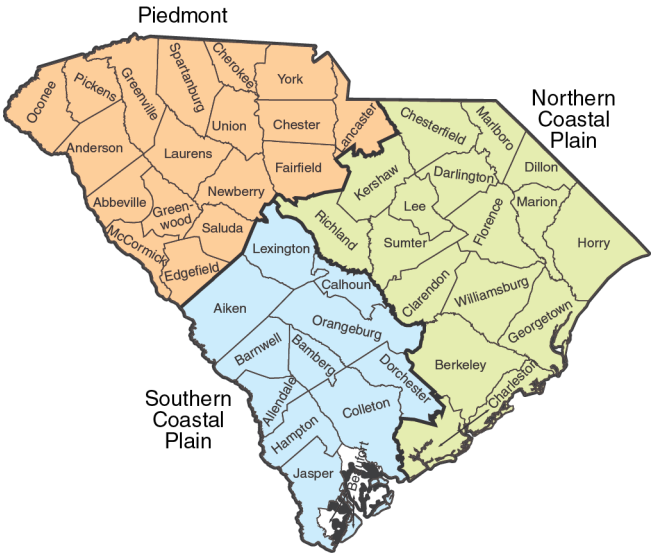

Figure 1—Forest survey units in South Carolina.

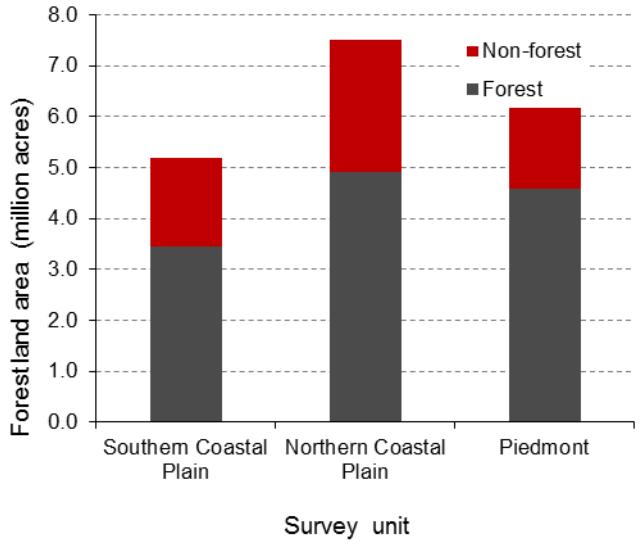

Figure 2—Area of forest land by survey unit, South Carolina, 2015.

FIA tracks changes in forest ownership in South Carolina (fig. 3). 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). In 2001, forest industry owned just over 2.1 million acres of forestland (Harper and Rominger 2013). By 2015, that number dropped by 92 percent to 173.3 thousand acres.

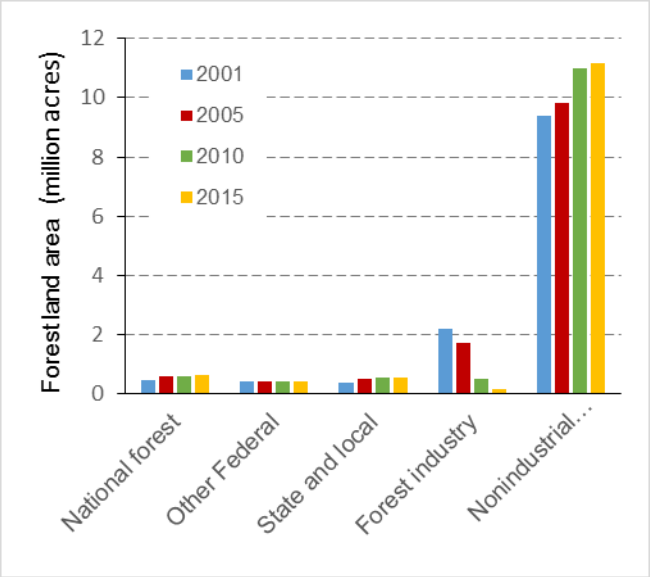

Figure 3—Area of forest land by inventory year and ownership group, South Carolina.

The area of large diameter forest stands in South Carolina is increasing, while that of medium- and small-diameter stands has been decreasing (fig. 4). Factors contributing to this trend include: aging of Conservation Reserve Program stands planted in the 1980s, post-Hurricane Hugo recovery efforts, and landowners delaying final harvest due to low stumpage rates. 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 25 percent. This is in contrast to 22 percent decreases in small -diameter stands over the same time period.

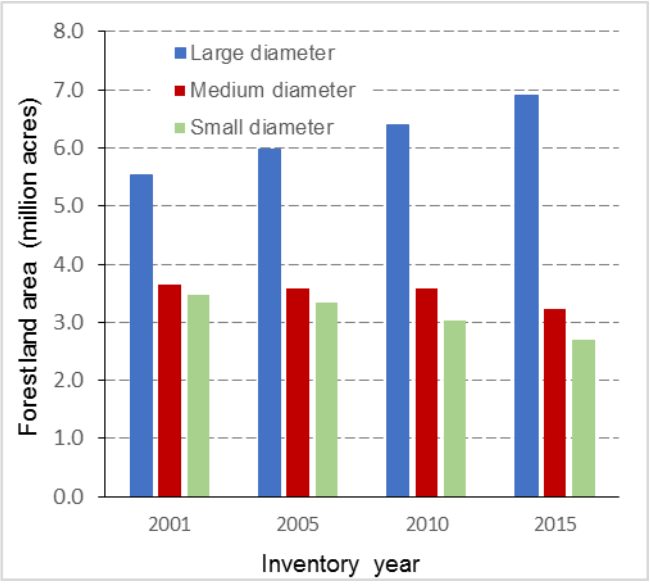

Figure 4—Area of forest land by inventory year and stand-size class, South Carolina.

Volume, Biomass, and Trends

Estimated aboveground live-tree biomass on forest land increased 6.6 percent between 2010 and 2015 to 629 million dry tons (table 1). Volume of all-live trees with a diameter at breast height (d.b.h.) ≥ 5 inches on forest land in 2015 reached an estimated 25.7 billion cubic feet, an 8.3 percent increase compared to 2010 estimates (table 1). Total number of trees with d.b.h ≥ 1 inch on forest land decreased by nearly 6 percent over the same period. Based on total number of trees with d.b.h ≥ 5 inches, loblolly pine was the most common tree species in 2015, accounting for 44.7 percent of all-live trees on forest land (table 2). Loblolly also ranked first in terms of standing volume representing 42 percent of the total volume from all-live trees on forest land. Sweetgum ranked second in both number of trees and standing volume while red maple ranked third in tree count and yellow-poplar third in standing volume importance.

Table 2—Number and volume of all-live trees, South Carolina 2015

Species	Number		Volume
	d.b.h ≥ 1 inches	d.b.h ≥ 5 inches	
	----------million trees ----------		*million cubic feet*
Loblolly pine	2,228	936	10,875
Sweetgum	1,646	201	2,299
Yellow-poplar	166	45	1,095
Water oak	683	96	994
Red maple	836	103	984
White oak	141	41	919
Swamp tupelo	186	59	801
Laurel oak	179	36	666
Longleaf pine	212	67	663
Water tupelo	34	21	402
Other	3,276	487	6,021
Total	9,587	2,092	25,719

Overall, volume was distributed relatively equally across softwood and hardwood species groups (52 and 48 percent of the total volume, respectively). A large portion of the standing volume for both softwoods and hardwoods is found in the large diameter stand-size class. Volume on this stand-size class trended upwards during the 2005-2015 period (fig. 5). Volume on medium diameter stand-size class slightly decreased for softwoods and displayed a mixed trend in hardwoods, increasing from 2005 to 2010 and decreasing between 2010 and 2015. Volume on small diameter stands increased for both species groups, with softwood and hardwood volumes close to 18 percent and 24 percent higher in 2015 compared to 2005 estimates, respectively.

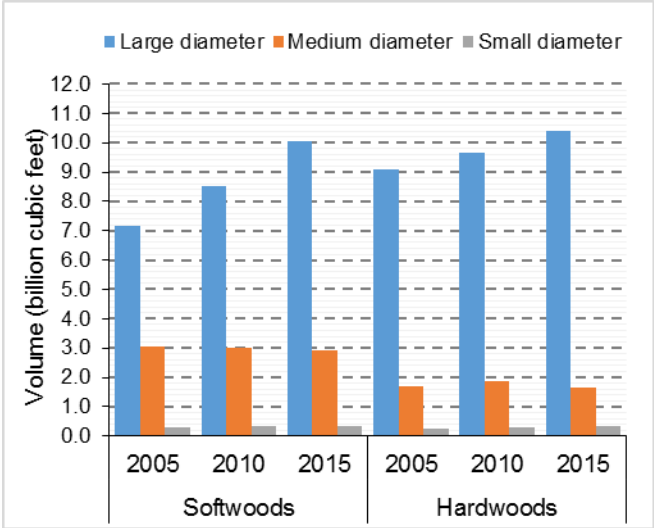

Figure 5—Volume of live trees on forest land by major species

Growth, removals, and mortality estimates provide a measure of inventory change. Softwood species average annual net growth trended upwards, with increasing removals and slight decrease in mortality (fig. 6). Hardwoods display a drop in net growth from 2010 to 2015 with decreasing removals and increasing mortality over the same period. Softwood annual growth and removals volumes more than double that of hardwood species group. Conversely, hardwoods display slightly higher mortality volumes than softwoods (fig. 6).

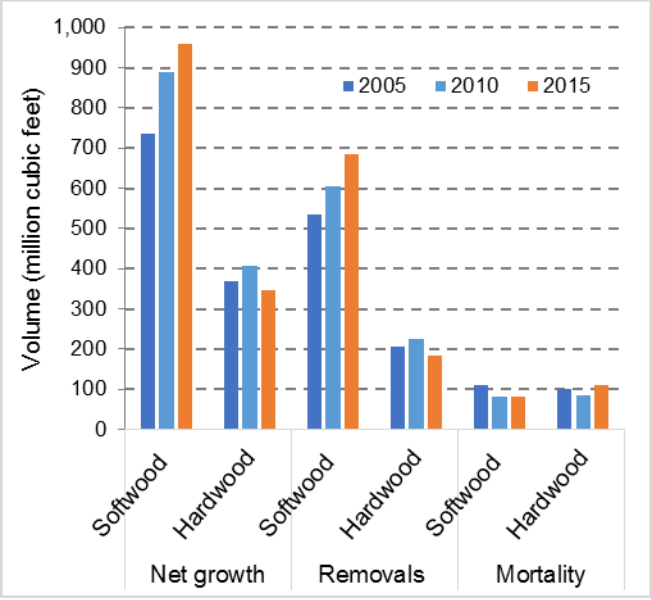

Figure 6—Net growth, removals and mortality by major species group and inventory year, South Carolina.

Laurel Wilt Disease in South Carolina

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 18 counties in South Carolina (fig. 7).

Redbay has been observed only in the Coastal Plain survey units of South Carolina. Mortality of the redbay trees and saplings that were observed in the 2005 inventory has been considerable. In the southern Coastal Plain, where LWD has been present the longest, 81 percent of the remeasured redbay trees ≥ 5.0 inches d.b.h. are now dead compared to only 46 percent in the northern Coastal Plain (fig. 8). Sapling-sized trees (1.0 inch ≤ d.b.h. < 5.0 inches) in the southern Coastal Plain have suffered a similar fate, whereas saplings in the northern Coastal Plain have fared somewhat better (fig. 8). As LWD progresses throughout the northern Coastal Plain, redbay mortality is likely to increase.

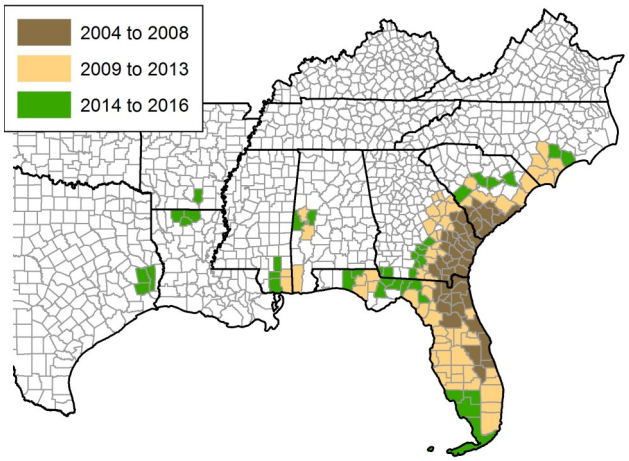

Figure 7—Distribution of counties with laurel wilt disease as of April 7, 2016, by year of initial detection. Source: http://southernforesthealth.net/fungi/laurel-wilt/distribution-map [Date accessed September 22, 2016].

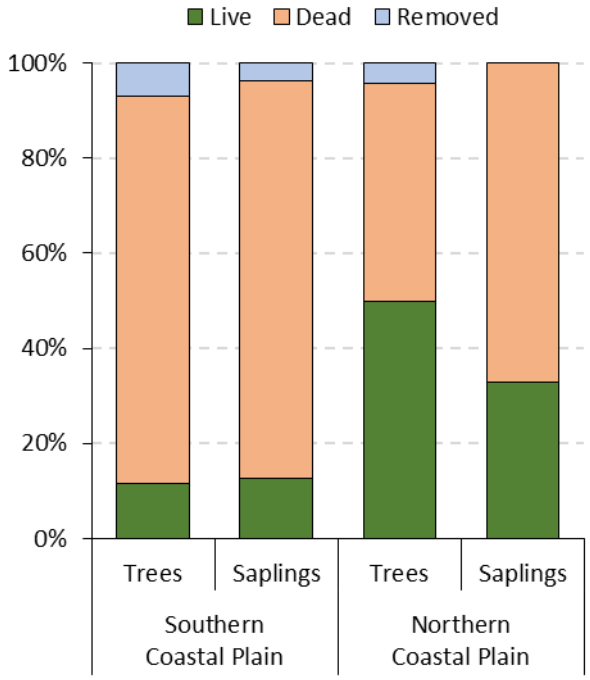

Figure 8—Current status of remeasured redbay trees and saplings that had a status code of 'live' during the 2005 inventory.

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.

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

How to Cite This Publication
Brandeis, T.J.; Hartsell, A; Brandeis, C., Randolph, K. and Oswalt, S. 2016. Forests of South Carolina, 2015. Resource Update FS–102. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

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