



FORESTS OF Kentucky, 2014

This resource update provides an overview of forest resources in Kentucky based on an inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program at the Southern Research Station. 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. The sample plot population in Kentucky consists of 4,356 plots (2,469 forested plots), collected across a period of 5 years (about 20 percent of the data per year). Growth, removals, and mortality estimates are based on 98 percent of the total sample, or about 4,266 plots. The data used in this publication were accessed from the FIA database in November of 2016 (<http://fia.fs.fed.us/tools-data/>).

Overview

Kentucky is home to 12.4 ± 0.10 million acres of forest land. Total forested area has not changed significantly since 2013 (table 1). The number of live trees with a diameter at breast height (d.b.h.) 1 inch or larger on Kentucky’s forest land in 2014 was estimated at 7.4 billion, as in 2013. Net timberland volume remained stable at 25.0 billion cubic feet. The net growth to removals ratio on timberland in Kentucky was 2.2, with net growth averaging 546.1 million cubic feet annually and removals averaging 249.4 million cubic feet annually. Mortality on timberland averaged 260.1 million cubic feet annually.

Table 1—Kentucky 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 (<i>thousand acres</i>)	12,461.53	0.801	12,442.48	0.724	-19.06
Number of live trees ≥ 1 inch d.b.h. (<i>million trees</i>)	7,385.22	1.476	7,421.30	1.454	36.0
Net volume live trees ≥ 5 inches d.b.h. (<i>million cubic feet</i>)	25,362.01	1.389	25,618.98	1.311	256.97
Live tree aboveground biomass (<i>thousand oven-dry tons</i>)	675,514.77	1.277	680,531.07	1.185	5,016.30
Net annual growth of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	544.814	3.586	550.993	3.527	6.18
Annual removals of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	250.781	8.581	249.242	8.554	-1.54
Annual mortality of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	265.375	4.11	264.708	4.209	-0.67
Timberland					
Area (<i>thousand acres</i>)	12,260.84	0.851	12,246.28	0.779	-14.56
Number of live trees ≥ 1 inch d.b.h. (<i>million trees</i>)	7,294.59	1.512	7,333.63	1.489	39.04
Net volume of live trees ≥ 5 inches d.b.h. (<i>million cubic feet</i>)	24,792.52	1.423	24,963.56	1.348	171.04
Live tree aboveground biomass (<i>thousand oven-dry tons</i>)	661,029.10	1.314	664,333.82	1.228	3,304.72
Net annual growth of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	540.377	3.604	546.066	3.551	5.69
Annual removals of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	251.237	8.566	249.436	8.547	-1.8
Annual mortality of live trees ≥ 5 inches d.b.h. (<i>million cubic feet per year</i>)	260.048	4.169	260.134	4.263	0.09



Forest Area

Kentucky is divided into seven survey units, which are subdivisions of the State based on a combination of ecological regions and political boundaries. As of 2014, the Pennyroyal and Southern Cumberland units hold the most forest land (fig. 1). The Eastern survey unit has the highest percent forest cover (82 percent) while the Bluegrass and Western Coalfield survey units have the lowest (31 and 33 percent, respectively).

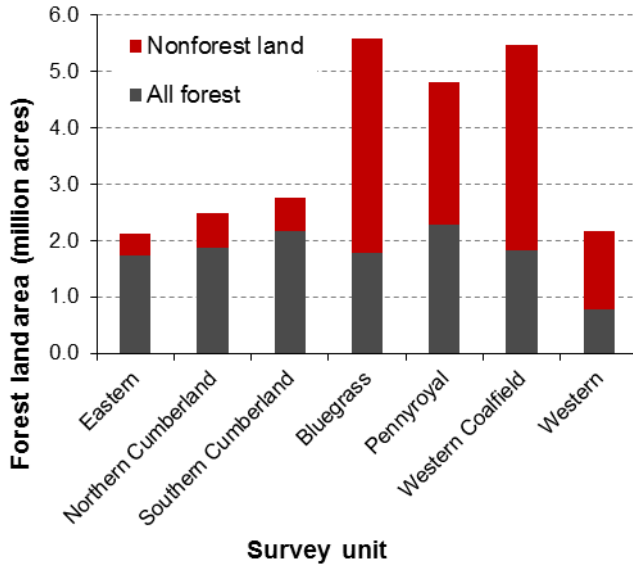


Figure 1—Forest and nonforest land area by survey unit, Kentucky, 2014.

FIA tracks changes in forest ownership in the State (fig. 2). Forest area has remained fairly stable across all ownerships. Less than one percent of the State’s forests are controlled by forest industry.

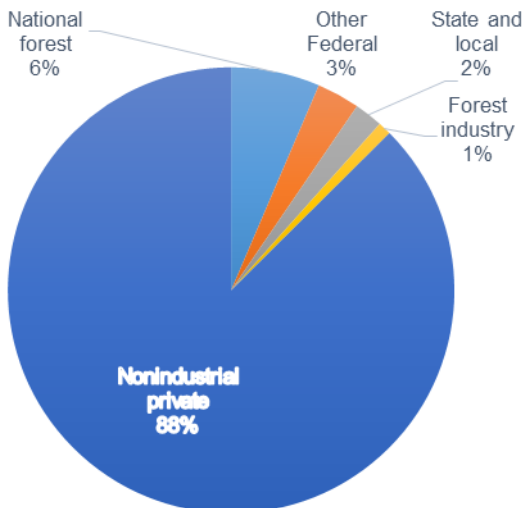


Figure 2—Forest land area by ownership in Kentucky, 2014.

In 2014, the oak-hickory forest-type group was found on an estimated 9.5 million acres, or greater than three-fourths of all forests across the State (fig. 3). The maple-beech-birch forest-type group was the second largest group with an estimated 1.0 million acres distributed across Kentucky. The elm-ash-cottonwood and oak-pine forest-type groups were found on 735 thousand and 519 thousand acres, respectively.

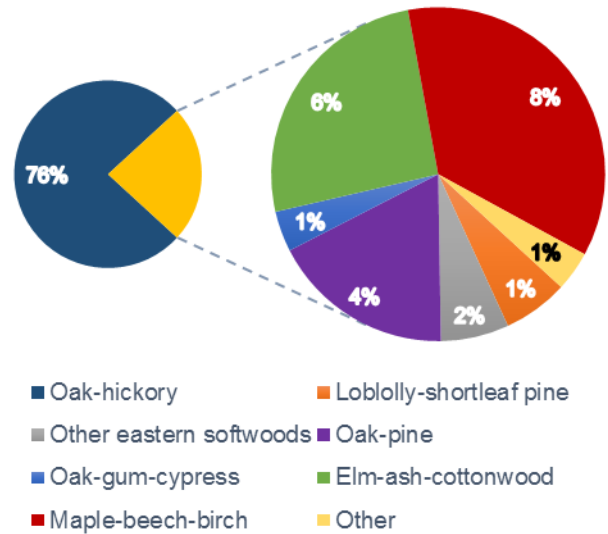


Figure 3—Proportion of forest land area by forest-type group, Kentucky, 2014.

Acres of large-diameter stands in Kentucky is increasing while acreage of medium- and small-diameter stands has been decreasing (fig. 4). Since 2004, forest land area in large-diameter stands increased by 20 percent. This is in contrast to a 17-percent decrease in medium-diameter stands and an 8-percent decrease in small-diameter stands over the same time period.

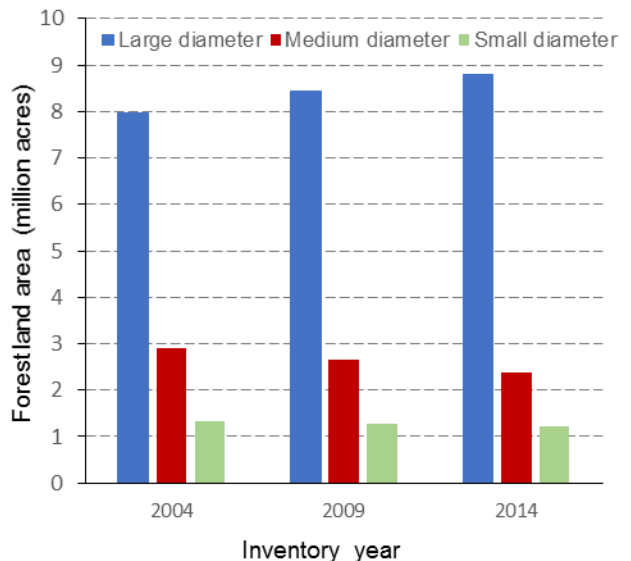


Figure 4—Forest land area by stand size, Kentucky 2014.

Volume, Biomass, and Trends

Estimated aboveground live-tree biomass on forest land increased nearly 1 percent between 2013 and 2014 to nearly 681 billion dry tons (table 1). Volume of all-live trees with a d.b.h. \geq 5 inches on forest land in 2014 reached an estimated 25.6 million cubic feet, a 1-percent increase compared to 2013 estimates (table 1). Based on total number of trees with d.b.h. \geq 5 inches, red maple was the most common tree species in 2014, accounting for nearly 9 percent of all-live trees on forest land (table 2). Yellow-poplar ranked first in terms of standing volume, representing 12 percent of the total volume from all-live trees on forest land and placed second in number of trees. White oak ranked second in standing volume followed by chestnut oak.

Table 2—Number and volume of all-live trees (\geq 5 inch d.b.h), Kentucky 2014

Species	Number	Volume
	<i>million trees</i>	<i>million cubic feet</i>
Yellow-poplar	148	3,073
White oak	109	2,695
Chestnut oak	73	1,628
Sugar maple	141	1,566
Red maple	149	1,487
Pignut hickory	66	1,107
American beech	59	1,097
Northern red oak	30	916
Black oak	33	903
Scarlet oak	31	826
Other	888	10,321
Total	1,728	25,619

Hardwoods accounted for 93 percent of the total volume, which is found primarily in the large-diameter stand-size class (fig. 5). Volume in the large-diameter stand-size class trended upwards from 2004 to 2014 for both hardwood and softwood species groups. Volume in the medium-diameter stand-size class trended downwards in hardwoods and increased slightly in softwoods. Volume in the small-diameter stand-size class was slightly lower in 2014 compared to 2004 estimates in both species groups.

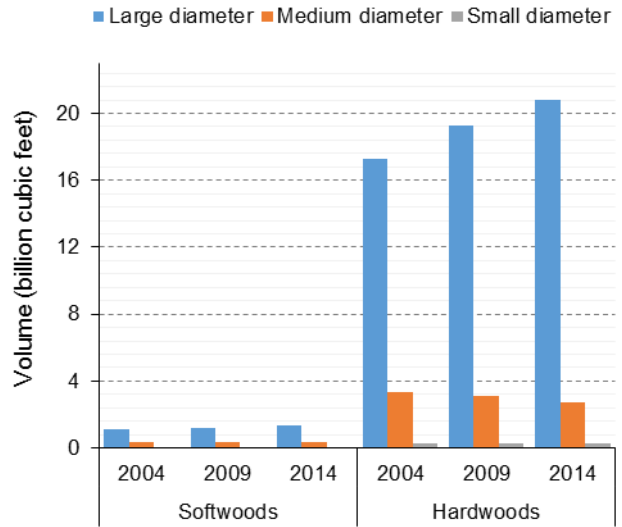


Figure 5—Volume of all-live trees on forest land by stand-size class and major species group, Kentucky 2004-2014.

Growth, removals, and mortality estimates provide a measure of inventory change. Between 2009 and 2014, hardwood species average annual net growth trended downwards, with decreasing removals and increasing mortality (fig. 6). Softwoods displayed similar trends although not as markedly as hardwoods.

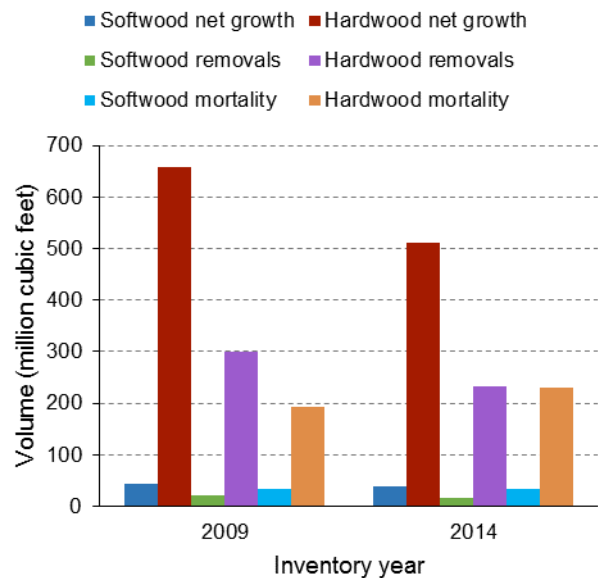


Figure 6—All-live average annual cubic-foot volume growth, removals, and mortality on forest land by survey year, Kentucky, 2009 and 2014.

Sassafras Resource in Kentucky

Sassafras (*Sassafras albidum*) is an ecologically important tree species that is widely distributed throughout the Eastern United States. In 2002, an insect known as the redbay ambrosia beetle was discovered near Savannah, GA. This beetle carries a fungus that blocks water and nutrient movement in trees, a condition known as laurel wilt disease (LWD). The disease is fatal to trees in the family Lauraceae, primarily redbay (*Persea borbonia*) and sassafras (Fraedrich and others 2008). Since 2002, LWD has spread rapidly and is now found in nine States, including areas where sassafras is present without redbay such as southern Arkansas and northern Louisiana (fig. 7). Recent research suggests that the redbay ambrosia beetle may be able to survive farther north than previously thought, perhaps even into parts of Kentucky (Formby and others 2013).

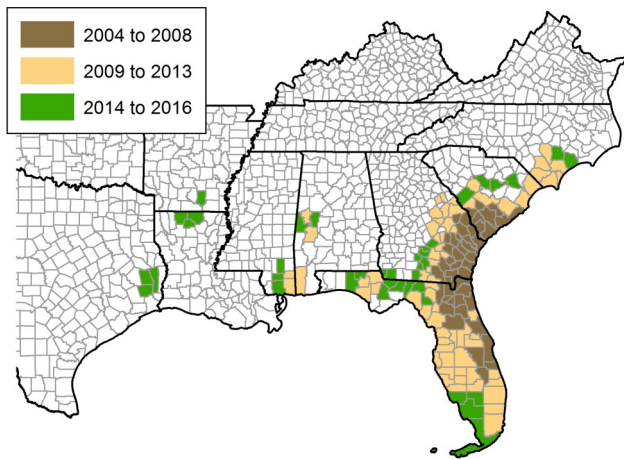


Figure 7—Distribution of counties with laurel wilt disease as of April 7, 2016, by year of initial detection. Source: <http://southernforesthealth.net/fungi/laurel-wilt/distribution-map> [Accessed September 22, 2016].

In 2014, there were an estimated 202.9 million live sassafras trees ≥ 1.0 inch d.b.h. in Kentucky. By survey unit, sassafras is most abundant in the Pennyroyal unit and least abundant in the Western unit, with 21.4 percent and 6.2 percent of the State’s total sassafras inventory,

respectively. Sassafras trees ≥ 5.0 inches d.b.h. are most abundant in the Pennyroyal (6.7 million trees) and Western Coalfield (5.5 million trees) survey units (fig. 8).

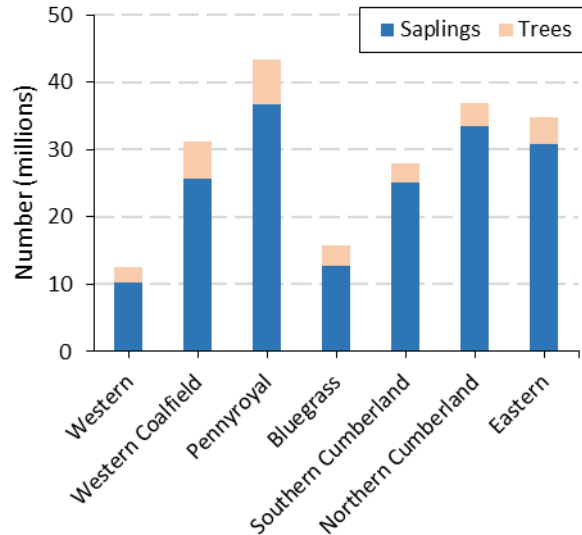


Figure 8—Number of live sassafras trees (d.b.h. ≥ 5.0 inches) and saplings (1.0 inch \leq d.b.h. < 5.0 inches) in Kentucky by survey unit, 2014.

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- 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.

How to Cite This Publication

Brandeis, T.J.; Hartsell, A.; Randolph, K.; Oswalt, S.; Brandeis, C. 2016. Forests of Kentucky, 2014. Resource Update FS-106. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

Contact Information

Thomas Brandeis, Research Forester
Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike
Knoxville, TN 37919
Phone: 865-862-2030 / Fax: 865-862-0262
Email: tjbrandeis@fs.fed.us
Southern FIA: <http://srsfia2.fs.fed.us>

Raymond Campbell, FIA Coordinator
Kentucky Division of Forestry
627 Comanche Trail
Frankfort, KY 40601
Phone: 502-564-4496 / Fax: 502-564-6553
Email: raymond.campbell@ky.gov
<http://forestry.ky.gov>



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