

FORESTS OF Kentucky, 2013

This resource update provides an overview of forest resource attributes for Kentucky based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program at the Southern Research Station of the Forest Service, U.S. Department of Agriculture in cooperation with the Kentucky Department of Natural Resources Division of Forestry. These estimates, along with Web-posted supplemental tables, will be updated annually. For more information regarding past inventory reports for Kentucky, inventory program information, field sampling methodology, and estimation procedures, please refer to the citations at the end of this report. The estimates presented in this update are for the measurement year 2013 with comparisons made to data reported in 2012. The sample plot population in Kentucky consists of 4,356 plots of which 2,465 contained a forested condition, collected across a period of 5 years. Approximately 98.7 percent (2,433 plots) of forested plots were measured previously with an average

of a 5-year remeasurement period. The data used in this publication were accessed from the FIA database (FIADB) at <http://fia.fs.fed.us/tools-data/> in September of 2015.

Overview

Kentucky forest resources have changed very little since the 2012 annual inventory. In 2013, Kentucky forests accounted for an estimated 12.5 million acres (table 1) of which 12.3 million acres (99 percent) are considered available for timber production (timberland). Approximately 7.4 billion live trees are estimated to be growing in Kentucky forests. Contained in those trees ≥ 5 inches diameter at breast height (d.b.h.), there is over 25 billion cubic feet of wood volume in the State's forests. Average annual net growth has declined since 2012, while removals have increased slightly and mortality has remained unchanged (table 1).

Table 1-Kentucky forest statistics, sampling error, and change^a between 2012 and 2013

Forest statistics	2013	Sampling error (percent)	Change since 2012 (percent)
Forest land estimates^b			
Area (acres)	12,461,532	0.80	0.00
Number of live trees ≥ 1 inch diameter (trees)	7,385,220,738	1.48	0.02
Net Volume in live trees ≥ 5 inch diameter (ft ³)	25,362,011,546	1.39	0.01
Net volume of growing stock trees (ft ³)	21,432,568,981	1.52	0.00
All live tree aboveground biomass ≥ 1 inch diameter (oven-dry short tons)	675,514,766	1.28	0.01
Annual net growth of live trees ≥ 5 inch (ft ³ /year)	542,833,289	3.60	-0.02
Annual removals of live trees ≥ 5 inch (ft ³ /year)	249,270,331	8.57	0.05
Annual mortality of live trees ≥ 5 inch (ft ³ /year)	259,191,737	4.19	0.00
Timberland estimates^c			
Area (acres)	12,260,838	0.85	0.00
Number of live trees ≥ 1 inch diameter (trees)	7,294,590,451	1.51	0.02
Net Volume in live trees ≥ 5 inch diameter (ft ³)	24,792,522,359	1.42	0.01
Net volume of growing stock trees (ft ³)	20,901,555,107	1.55	0.00
All live tree aboveground biomass ≥ 5 inch diameter (oven-dry short tons)	661,029,102	1.31	0.41
Annual net growth of live trees ≥ 5 inch (ft ³ /year)	453,410,625	3.29	-0.18
Annual removals of live trees ≥ 5 inch (ft ³ /year)	249,270,331	8.57	0.05
Annual mortality of live trees ≥ 5 inch (ft ³ /year)	253,874,361	4.25	0.00

^aChange estimates are based on a comparison of plots measured from 2004-2008 to the same plots measured from 2009-2013

^bForest land is defined as land currently or recently at least 10 percent stocked by forest trees and not currently developed for non-forest use with a minimum area of 1 acre and 120 feet wide.

^cTimberland is defined as forest land capable of producing at least 20 cubic feet of industrial wood per acre per year and not withdrawn from timber utilization.



Forest Area

In 2013, forest land in the State of Kentucky (table 2) covered an estimated 12.5 million acres. The Kentucky landscape has remained >45 percent forested for approximately the past 50 years. In fact, forest land has increased over that time period from an estimate of 11.7 million acres in 1963 to the 2013 estimate of 12.5 million acres, an increase of nearly 7 percent. Essentially, while small fluctuations have occurred over the last 5 decades, Kentucky forests are more plentiful today than they were in the 1960s.

Table 2—Area of Kentucky forest land and percent forest, 1963-2013

Year	Forest land	
	Area (thousand acres)	Percent ^a
1963	11,700	45
1975	11,900	46
1988	12,675	49
2004	12,283	47
2005	12,071	47
2006	12,121	47
2007	12,369	48
2008	12,426	48
2009	12,401	48
2010	12,411	48
2011	12,472	48
2012	12,510	48
2013	12,462	48

^a Based on the current US Census Bureau estimate of 25.9 million acres of land in KY

The vast majority of forest land within the State of Kentucky is within private holdings (fig. 1). In fact, greater than 88 percent (11.0 million acres) of all forest land in the State is in private hands.

In 2013, 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. 2). The maple-beech-birch forest-type group was the second largest group with an estimated 1.1 million acres distributed across Kentucky. The elm-ash-cottonwood and oak-pine forest-type groups were found on 733,000 and 520,000 acres, respectively.

While the state of Kentucky is dominated by hardwood forest types those forests are also dominated by late successional or older stands of large-diameter stems (fig. 3).

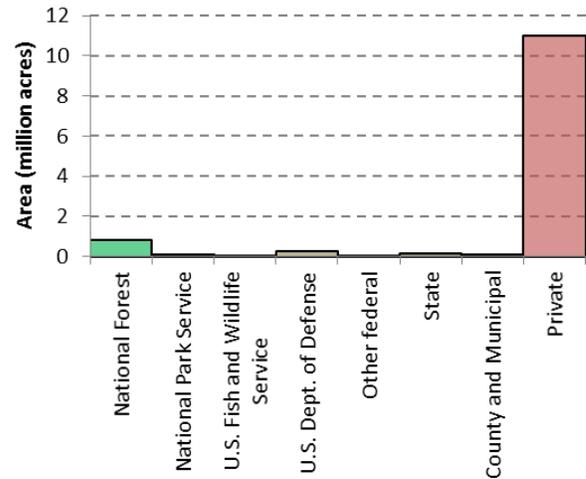


Figure 1—Forest land area by ownership in Kentucky, 2013.

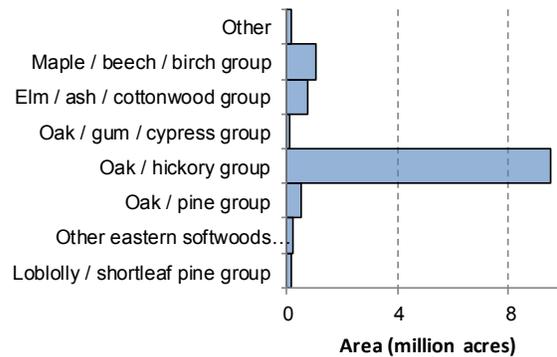


Figure 2—Forest land area in Kentucky by forest type group, 2013.

Approximately 71 percent of all forests in Kentucky are classified as “large-diameter” by the FIA program. This equates to almost three quarters of forests in the State being sawtimber size and only 10 percent as early successional or young. The imbalance is not as significant in softwood dominated forests. However, softwood forests account for only a small fraction of forests across Kentucky.

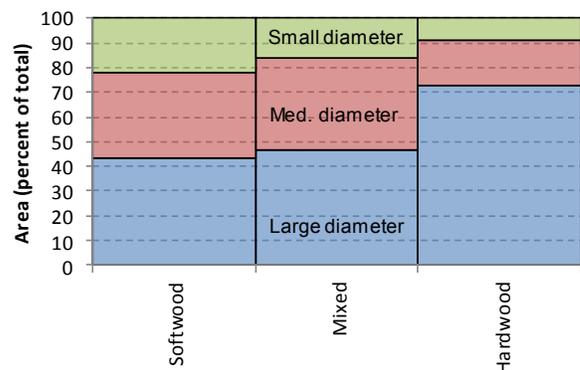


Figure 3—Proportion of forest land area by forest type group, Kentucky 2013.

Volume, Biomass, and Trends

Over 100 different species were observed and measured during the 2013 inventory of Kentucky forests. The most common tree species in 2013, ranked by the estimated size of the population (number of trees) across all forest land in Kentucky, was red maple, found in the soft maple species group (table 3). Red maple accounted for over 12 percent of all trees in Kentucky forests. Sugar maple accounted for 9.4 percent of all trees on forest land in the Commonwealth. All maples combined (Soft and Hard maple species groups) accounted for nearly 22 percent of all trees in Kentucky (table 3). The Cypress species group was one of the rarest across the State (table 3). All oak species groups combined accounted for nearly 10 percent (715 million trees) of all trees across Kentucky.

Table 3 Number of live trees (≥ 1 inch d.b.h./d.r.c.), in trees, on forest land in Kentucky, 2013

Species group	Trees (number)
Loblolly and shortleaf pine	32,572,388
Other yellow pines	127,348,704
Eastern white and red pine	21,210,560
Eastern hemlock	83,306,928
Cypress	596,136
Other eastern softwoods	359,293,344
Select white oaks	267,351,408
Select red oaks	97,715,904
Other white oaks	173,919,264
Other red oaks	176,075,936
Hickory	363,009,792
Yellow birch	1,015,931
Hard maple	692,815,040
Soft maple	919,017,408
Beech	428,389,184
Sweetgum	111,218,272
Tupelo and blackgum	285,723,392
Ash	274,891,008
Cottonwood and aspen	3,601,948
Basswood	36,262,368
Yellow-poplar	483,373,376
Black walnut	52,377,736
Other eastern soft hardwoods	961,460,608
Other eastern hard hardwoods	496,060,192
Eastern noncommercial hardwoods	936,613,888
Total	7,385,220,608

In addition to accounting for the greatest number of trees (≥ 1 inch diameter at breast height) red maple has the largest population of tree seedlings across the State (table 4). Red maple has an estimated seedling population of greater than 3.6 billion individuals or 6.5 percent of all tree seedlings in forests all across Kentucky. As a comparison, one of the most economically valuable species in Kentucky, white oak, accounts for only 2.7 percent of all seedlings. All oaks combined represent 4.2 billion seedlings across 14 different species accounting for about 11 percent of all seedlings.

Table 4 Number of seedlings by species on forest land in Kentucky, 2013

	Species	Seedlings (number)
Top 10	red maple	3,671,691,408
	green ash	3,142,383,542
	sugar maple	2,944,094,187
	sassafras	1,900,275,691
	white ash	1,767,738,041
	American beech	1,752,979,412
	blackgum	1,657,127,787
	white oak	1,499,317,704
	eastern hophornbeam	1,479,157,310
	pawpaw	1,402,908,284
	Others (75 genera/species)	35,241,534,663
Bottom 10	swamp white oak	1,433,241
	American plum	1,409,752
	butternut	1,404,725
	yellowwood	1,232,916
	Chinese chestnut	983,312
	pin cherry	907,692
	swamp tupelo	821,944
	downy hawthorn	491,656
	yellow birch	478,798
	bur oak	404,118

Kentucky Wood Imports and Exports

Kentucky wood imports and exports are an important component of the State economy. Kentucky is a hardwood State and currently maintains over 73 billion board feet of material standing in forests across the state (fig. 4). Yellow-poplar and oaks are the dominant species.

According to Timber Product Output data compiled by FIA (Bentley and others 2014) Kentucky produced nearly 154 million cubic feet of industrial roundwood products in 2011 and imported another 46 million cubic feet. The State retains, for local processing, 84 percent of removals from the State and exports the remaining 16 percent. Tennessee and Mississippi are two of the most important neighboring States that both receive Kentucky exports and provide imported material (fig. 5).

Bentley, James W.; Cooper, Jason A.; Howell, Michael 2014. Kentucky's timber industry, 2011 - timber product output and use - forest inventory and analysis factsheet. e-Science Update SRS-SU-091. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

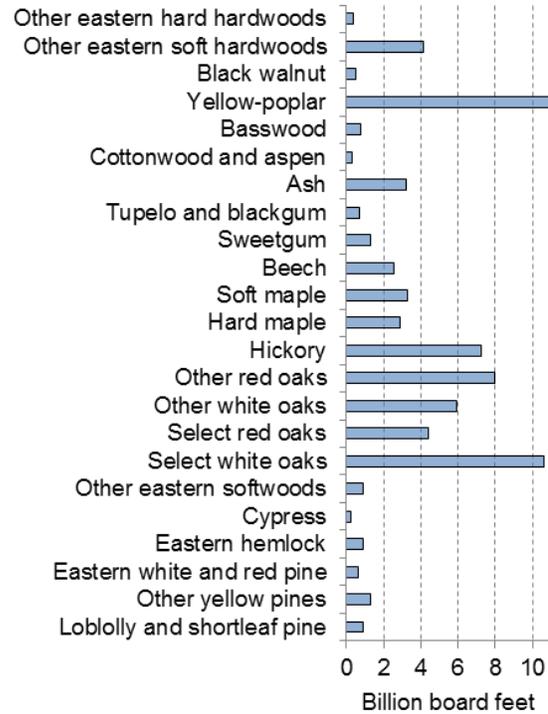


Figure 4—Volume of sawtimber on timberland, Kentucky 2013.



Figure 5—Relative flow of harvested forest resources from forest land in Kentucky to surrounding States.

Note: These data were accessed and compiled from the FIA Database (FIADB) in September of 2015. Publicly available data from the FIADB are regularly updated when data collection and/or processing anomalies are found and corrected. Additionally, new data are added on a regular basis which may be reflected by small changes in the past or current estimates.

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