



# FORESTS OF Tennessee, 2013

This resource update provides an overview of forest resource attributes for the State of Tennessee based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program at the Southern Research Station of the Forest Service, United States Department of Agriculture in cooperation with the Tennessee Department of Agriculture Division of Forestry. These estimates, along with Web-posted supplemental tables, will be updated annually. For more information regarding past inventory reports for this State, inventory program information, field sampling methodology, and estimation procedures, please refer to the citations at the end of this report.

## Overview

In 2013, Tennessee forests accounted for an estimated 14 million acres (table 1) of which 13.4 million acres (96 percent) were considered available for timber production (timberland). Nearly 8.2 billion live trees were estimated to be growing in Tennessee forests, over 1,200 trees for every person living in the State. In those trees >5 inches diameter at breast height (d.b.h.), the State’s forests contained 30 billion cubic feet of wood volume. Average annual removals and mortality have declined since 2012, while net growth has increased (table 1).

Table 1—Tennessee forest statistics, change<sup>a</sup> between 2012 and 2013

Forest statistics	2013 estimate	2013 Sampling error (percent)	Change since 2012 (percent)
<b>Forest land estimates<sup>b</sup></b>			
Area (acres)	13,967,140	0.75	0.34
Number of live trees ≥1 inch d.b.h. (trees)	8,192,581,363	1.59	1.88
Net volume in live trees ≥5 inches d.b.h. (cubic feet)	30,083,421,402	1.35	1.63
Net volume of growing-stock trees (cubic feet)	25,896,385,072	1.49	1.32
All live tree aboveground biomass ≥1 inch d.b.h. (dry short tons)	787,078,490	1.23	1.41
Annual net growth of live trees ≥5 inches d.b.h. (cubic feet/year)	685,137,712	3.01	3.08
Annual removals of live trees ≥5 inches d.b.h. (cubic feet/year)	420,177,991	6.98	-7.66
Annual mortality of live trees ≥5 inches d.b.h. (cubic feet/year)	306,570,587	4.33	-1.18
<b>Timberland estimates<sup>c</sup></b>			
Area (acres)	13,407,151	0.84	-0.63
Number of live trees ≥1 inch d.b.h. (trees)	7,915,292,771	1.66	1.01
Net volume in live trees ≥5 inches d.b.h. (cubic feet)	28,359,665,255	1.44	0.26
Net volume of growing-stock trees (cubic feet)	24,361,238,580	1.58	-0.14
All live tree aboveground biomass ≥1 inch d.b.h. (dry short tons)	745,153,583	1.32	0.10
Annual net growth of live trees ≥5 inches d.b.h. (cubic feet/year)	669,331,828	3.07	1.15
Annual removals of live trees ≥5 inches d.b.h. (cubic feet/year)	419,786,557	6.99	-7.71
Annual mortality of live trees ≥5 inches d.b.h. (cubic feet/year)	282,319,678	4.26	-2.73

<sup>a</sup> Change estimates are based on a comparison of plots measured from 2004–08 to the same plots measured from 2009–13.

<sup>b</sup> Forest land is defined as land currently or recently at least 10 percent stocked by forest trees and not currently developed for

<sup>c</sup> Timberland is defined as forest land capable of producing at least 20 cubic feet of industrial wood per acre per year and not



# Forest Area

In 2013, forest land in the State of Tennessee covered an estimated 14.0 million acres. The Tennessee landscape has remained  $\geq 50$  percent forested for about 50 years. In fact, forest land has increased over that time period (table 2). From an estimate in 1961 of 13.7 million acres to the 2013 estimate of 14.0 million acres, forest land has increased about 2 percent. Essentially, while small fluctuations have occurred over the last 5 decades, Tennessee forests are more plentiful today than in the 1960s. Since the 1999 inventory, there has been very little change (fig. 1) with the exception of a slight increase in the West unit.

Tennessee forests are largely held within private ownerships across the State. In fact, 83 percent, or 11.6 million acres, of all forest land in Tennessee is privately owned (fig. 2). About 10 percent, or 1.4 million acres, is Federally owned and managed. The remaining 7 percent of forest land across the State is owned by State and local governments.

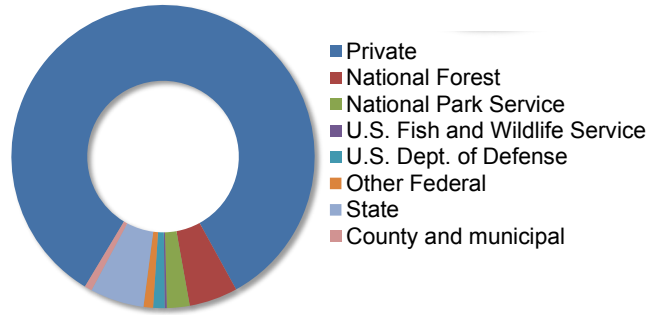


Figure 2—Relative area of forest land by ownership, Tennessee, 2013.

In 2013, the oak-hickory forest-type group represented nearly three-fourths (72 percent) of all forests across the State, with 10.0 million acres (fig. 3). The loblolly-shortleaf pine forest-type group was the second largest group with an estimated 1.0 million acres distributed across Tennessee. The oak-pine and elm-ash-cottonwood forest-type groups were found on 974,000 and 809,000 acres, respectively.

Table 2 - Area of land (thousands of acres) by class for Tennessee, 1961-2013

Land class	1961	1971	1980	1989	1999	2004	2009	2011	2012	2013
Timberland	13,432	12,820	12,879	13,265	13,305	13,254	13,549	13,499	13,491	13,407
Other/reserved	264	317	430	337	407	566	456	442	420	551.1
Total forest	13,696	13,136	13,309	13,603	13,712	13,821	14,004	13,941	13,920	13,967
Nonforestland	12,826	13,339	13,142	12,845	13,260	13,151	12,313	12,370	12,394	13,005
Total land area	26,522	26,475	26,450	26,447	26,972	26,972	26,972	26,972	26,972	26,972
Percent forested <sup>1</sup>	52	50	50	51	51	51	52	52	52	52

<sup>1</sup> Based on the current US Census Bureau estimate of 26.9 million acres of land in TN

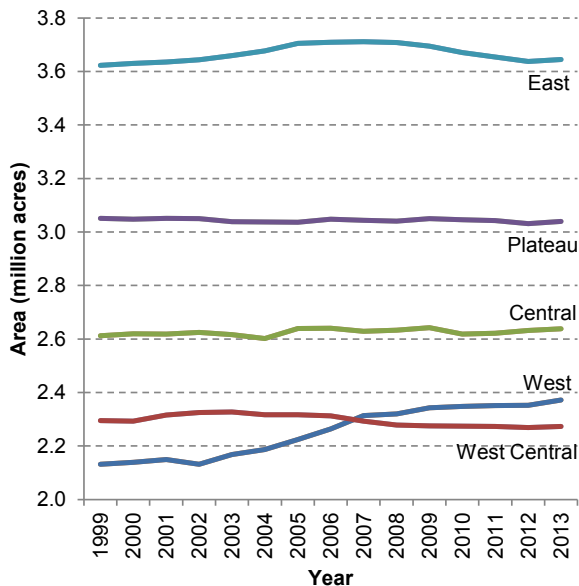


Figure 1—Forest land area by survey unit, Tennessee, 2013.

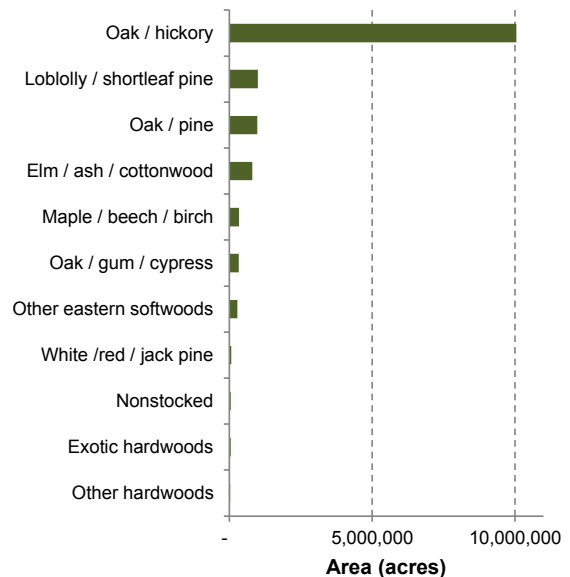


Figure 3—Relative area of forest land by forest-type group, Tennessee, 2013.

## Volume, Biomass, and Trends

In 2013, there was an estimated 30 billion cubic feet of standing tree ( $\geq 5$  inches d.b.h.) wood volume distributed across Tennessee forests. An overwhelming 87 percent of the standing volume in Tennessee is represented by hardwood species. Pine species and other softwood species accounted for 13 percent of the total standing tree wood volume.

An estimated 8 billion trees accounted for 787 million dry tons of aboveground woody biomass in 2013. Species such as red maple, yellow-poplar, and sweetgum have the largest state-wide populations (table 3), while white oak, chestnut oak, and yellow-poplar account for the greatest biomass.

**Table 3—Estimates of live tree count and biomass for the 25 most numerous species on forest land, Tennessee, 2013**

Species	Live tree count	
	no.	short tons
Red maple	795,135,947	43,478,954
Yellow-poplar	484,757,758	65,757,541
Sweetgum	460,962,099	28,620,509
Sugar maple	431,043,545	29,729,293
Blackgum	427,431,528	12,036,352
Eastern redcedar	402,751,780	14,230,802
Sourwood	385,325,910	11,337,703
Winged elm	305,731,176	7,715,705
Loblolly pine	291,287,497	23,437,615
White oak	284,667,951	85,448,414
Virginia pine	246,531,214	14,774,448
Eastern hophornbeam	221,267,944	1,924,742
American beech	211,188,331	15,681,297
Flowering dogwood	207,540,192	2,455,922
Black cherry	196,110,751	9,556,837
Pignut hickory	171,679,703	35,409,621
Chestnut oak	169,363,777	72,506,373
Sassafras	142,396,288	5,625,032
Eastern redbud	129,643,584	1,083,060
Mockernut hickory	125,914,101	19,293,197
Hackberry	112,717,470	7,415,542
Green ash	109,054,950	11,893,060
Eastern white pine	100,061,061	8,739,616
Eastern hemlock	96,105,092	6,239,702
American elm	95,648,679	5,201,278

Average annual net growth was greatest for hard hardwood species followed by soft hardwood species (table 4). All hardwood species combined accounted for that majority of annual growth state-wide. Similarly, hardwood species accounted for three-quarters of removals across the State (table 4).

**Table 4—Net growth, mortality, and removals by broad species group on forest land, Tennessee, 2013**

Net Growth		$ft^3 \text{ year}^{-1}$
Pines		138,172,857
Other softwoods		8,646,788
Soft hardwoods		232,093,688
Hard hardwoods		306,224,378
Total		685,137,712
Mortality		$ft^3 \text{ year}^{-1}$
Pines		33,107,936
Other softwoods		30,115,456
Soft hardwoods		85,474,657
Hard hardwoods		157,872,539
Total		306,570,587
Removals		$ft^3 \text{ year}^{-1}$
Pines		71,957,741
Other softwoods		6,076,410
Soft hardwoods		101,061,074
Hard hardwoods		241,082,765
Total		420,177,990

### Additional Tennessee Inventory Information

- Nowak, D.J.; Cumming, A.B.; Twardus, D. [and others]. 2011. Urban forests of Tennessee, 2009. Gen. Tech. Rep. SRS-149. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 52 p.
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- Oswalt, C.M.; Oswalt, S.N.; Johnson, T.G. [and others]. 2012. Tennessee's forests, 2009. Resour. Bull. SRS-189. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 136 p.

# Removals in Tennessee

While average annual removals (AAR) declined between 2012 and 2013 approximately 8 percent (table 1), estimates have largely been at or near the same level since 2006 (fig. 4). Since 2002, however, AAR has declined about 26 percent. Softwoods AAR has declined 50 percent since 2002 while hardwood removals have only declined about 16 percent over the same period (fig. 4).

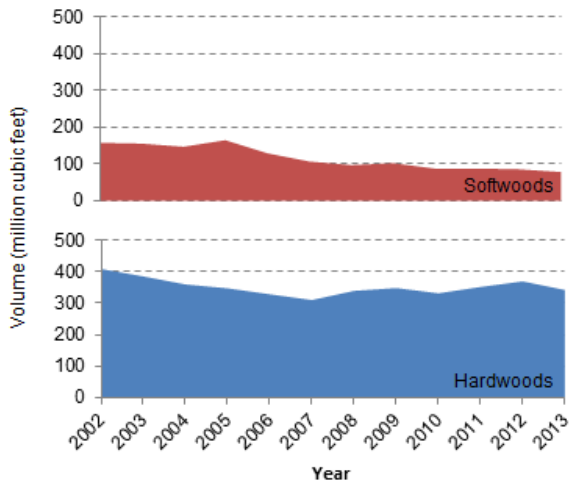


Figure 4—Average annual removals (cubic feet) for hardwoods (blue) and softwoods (red) in Tennessee, 2002-2013.

AAR account for an estimated 420 million cubic feet per year. With a standing stock volume of over 30 billion cubic feet across the State, only 1 percent of wood volume is removed annually (fig. 5). At the current rate of removals, it would take nearly 100 years to remove the current stock.

According to Timber Product Output data compiled by FIA, Tennessee retains 70 percent of removals from the State and exports 30 percent. Alabama and Kentucky receive 75 percent of exported Tennessee wood volume (fig. 6).

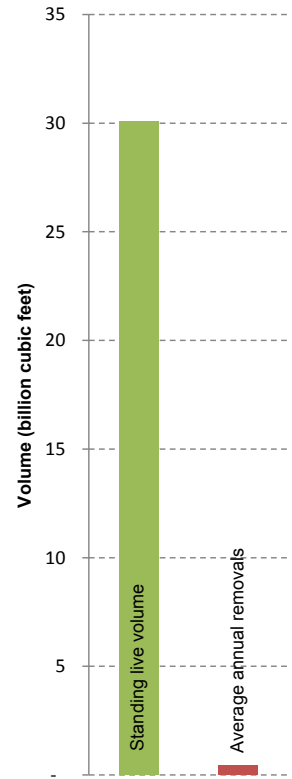


Figure 5—Total standing volume (cubic feet) of all live trees and average annual removals (cubic feet) in Tennessee, 2013.

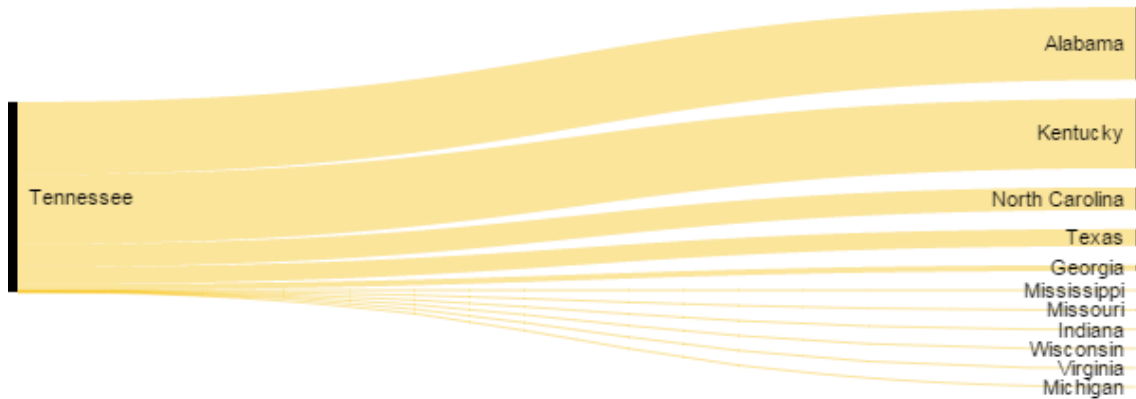


Figure 6—Total timber exports from Tennessee to nearby States. The size of each bar represents the relative size of exports to the target State.

### How to Cite This Publication

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