USDA
United States Department of Agriculture

RESOURCE UPDATE FS-62

FORESTS OF Oklahoma, 2014

This resource update provides an overview of forest resources in Oklahoma 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 Oklahoma Forestry Services. Estimates are based on field data collected using the FIA annualized sample design and are updated yearly, creating a moving average. Where appropriate, the estimates presented in this update compare data from the 2014 measurement year with data reported in 2013 (table 1). The Oklahoma sample plot population in 2014 consists of 7,535 plots for all units, collected across a 5 year cycle in the east (units 1, 2) and a 10-year cycle for the central and west (units 3-7), for a total of 4,959 plots for all units. Growth, removals, and mortality estimates are based solely on units 1 and 2. Prior to 2010, only units 1 and 2 were surveyed; however, all of Oklahoma's forest land is currently being sampled. Forested area (acres) was calculated for all seven units. The data used in this publication were accessed from the FIA database, July 20, 2015.

Overview

Oklahoma's 77 counties are partitioned into seven FIA survey units (fig.1): Southeast (unit 1), Northeast (unit 2), North Central (unit 3), South Central (unit 4), Southwest (unit 5), High Plains (unit 6), and Great Plains (unit 7). Eastern Oklahoma comprises units 1 and 2, while central and western Oklahoma consists of units 3 through 7. This Resource Update represents plot data from the 2014 annual inventory. Data for east Oklahoma include the initial establishment of fixed plots in 2008. Plot collection in central and west Oklahoma started in 2009. Currently east Oklahoma is 100 percent complete (5-year cycle), while central and west Oklahoma is 70 percent complete (10-year cycle).

Table 1—Oklahoma 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 (*thousand acres)*	12,362.7	1.5	12,273.9	1.3	-88.8
Number of live trees ≥1 inch d.b.h. (*million trees)*	5,371.2	2.5	5,393.3	2.2	22.1
Net volume live trees ≥5 inches d.b.h. (*million cubic feet)*	9,510.8	2.3	9,472.2	2.0	-38.7
Live trees aboveground biomass (*thousand oven-dry tons)*	279,682.6	2.0	277,456.3	1.7	-2,226.3
Net growth live trees ≥5 inches d.b.h. (*million cubic feet per year)*[a]	157.6	7.8	150.8	7.1	-6.8
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet per year)*[b]	103.9	16.3	105.0	13.8	1.1
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet per year)*[c]	85.7	8.0	89.3	6.8	3.6
Timberland					
Area (*thousand acres)*	7,282.2	2.1	7,140.9	1.9	-141.3
Number of live trees ≥1 inch d.b.h. (*million trees)*	3,650.4	3.2	3,635.1	2.9	-15.4
Net volume live trees ≥5 inches d.b.h. (*million cubic feet)*	7,293.4	3.0	7,259.3	2.7	-34.2
Live trees aboveground biomass (*thousand oven-dry tons)*	209,124.3	2.7	206,989.2	2.5	-2,135.2
Net growth live trees ≥5 inches d.b.h. (*million cubic feet per year)*[a]	154.1	7.9	148.7	7.1	-5.4
Annual removals of live trees ≥5 inches d.b.h. (*million cubic feet per year)*[b]	121.4	14.5	122.9	12.3	1.5
Annual mortality of live trees ≥5 inches d.b.h. (*million cubic feet per year)*[c]	76.0	8.6	79.1	7.4	3.1

[a] Net growth estimates based on units 1 and 2.

[b] Annual removals estimates based on units 1 and 2.

[c] Annual mortality estimates based on units 1 and 2.

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Forest Area

Figure 1—County names and survey units in Oklahoma, 2014.

Of the surveyed land area, Oklahoma's 2014 data (table 1) show total forest area of 12.3 million acres. Additionally, 7.1 million acres (58 percent) of the total forest area were considered available for timber production (known as timberland). The remaining forest area was either reserved forest land where timber removals are prohibited by law or unproductive forest land (produces ≤20 cubic feet per acre per year). Forest land in 2014 showed a net decrease of almost 88,812 acres (table 2).

Table 2—Area of forest land and change by survey unit, Oklahoma, 2013 and 2014

Survey unit	2013	2014	Change
	thousand acres		
Unit 1: Southeast	4,226.8	4,278.0	51.2
Unit 2: Northeast	1,523.2	1,441.8	-81.4
Unit 3: North Central	1,505.2	1,514.5	9.3
Unit 4: South Central	2,745.1	2,703.2	-42.0
Unit 5: Southwest	1,754.1	17,55.3	1.2
Unit 6: High Plains	120.3	114.2	-6.1
Unit 7: Great Plains	488.0	466.9	-21.1
Total	12,362.7	12,273.9	-88.8

Oklahoma's largest forest-type group is oak-hickory (fig. 2). Loblolly-shortleaf pine is the largest forest-type group in unit 1, while the elm-ash-cottonwood forest-type is present in most units. Ninety-two softwood and hardwood tree species were tallied on FIA plots within Oklahoma's seven units. On a plot, the percent stocking of these species determines the forest-type group. Loblolly-shortleaf pine and other softwood forest type groups accounted for 1.7 million acres(15 percent), of the forest land, compared to 10.6 million acres (85 percent) for hardwoods-others. The predominant hardwood forest typegroups are oak-hickory, oak-gum-cypress, oak-pine, and elm-ash-cottonwood.

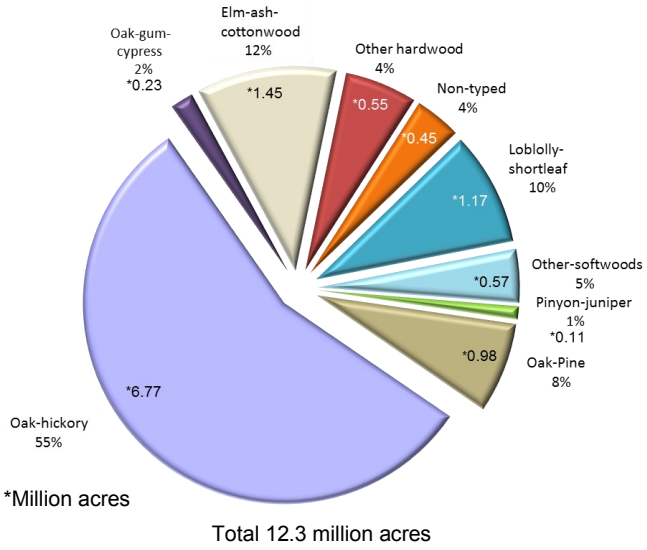

Figure 2—Area of forest land and forest-type group, Oklahoma, 2014.

There are more than 7.1 million acres of timberland in Oklahoma (table 3). Stand origin identifies whether the *condition* is planted or of natural origin (coded). The proportion of timberland regenerated naturally or by planting seeds and seedlings has increased slightly from 2013 to 2014.

Table 3—Area of timberland acres by stand origin and survey unit, Oklahoma, 2013 and 2014

Stand origin	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7
			thousand acres				
2013							
Natural	2,942.4	1,323.7	674.7	1,315.2	280.3	0.0	83.4
Planted	648.5	0.0	7.4	6.5	0.0	0.0	0.0
Total	3,590.9	1,323.7	682.1	1,321.7	280.3	0.0	83.4
2014							
Natural	2,924.6	1,238.2	692.7	1,261.3	256.6	0.0	80.8
Planted	675.3	0.0	5.8	5.8	0.0	0.0	0.0
Total	3,599.9	1,238.2	698.5	1,267.1	256.6	0.0	80.8

Volume, Biomass, and Trends

Results of the 2014 inventory show a 2.3 billion cubic feet net volume of softwoods on forest land (fig. 3). Of that, 1.9 billion cubic feet (82.6 percent) was concentrated in east Oklahoma, units 1 and 2. The remaining 0.4 million cubic feet (17.4 percent) was in central and west Oklahoma, units 3-7. As stated previously, the inventory in central and west Oklahoma (units 3-7) is only 70 percent complete and should be viewed as an incomplete estimate.

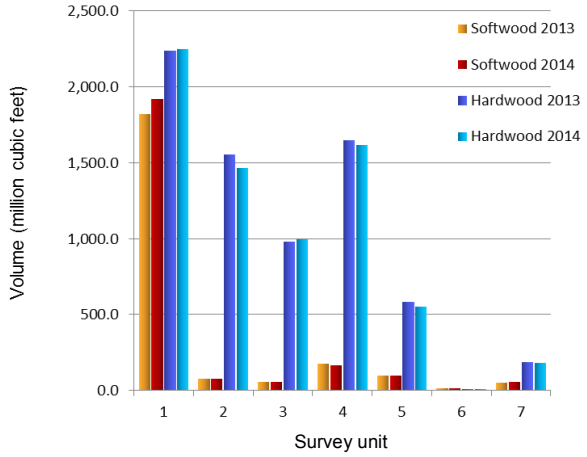

Figure 3—Net volume of softwood and hardwood (≥5 inches d.b.h.), in cubic feet by survey unit, Oklahoma, 2013 and 2014.

The 2014 inventory also shows a total of 7.1 billion cubic feet of hardwood volume on forest land in Oklahoma (fig. 3). Of that, 3.7 billion cubic feet (52.1 percent), was in east Oklahoma, units 1 and 2, with the remaining 3.4 million cubic feet (47.9 percent) in central and west Oklahoma (units 3-7).

The inventory also shows the number of trees (≥1 inch d.b.h.) totals 5.4 billion trees for Oklahoma 2014 (table 4). The majority of trees, 3.6 billion (66.7 percent) were on timberland, while the remaining 1.8 billion trees (32.3 percent) were on forest land (both reserved and other).

Table 4—Number of live trees (at least ≥1 inch d.b.h.), on forest land, by survey units and land use, Oklahoma, 2014

Survey unit	Total	Timberland	Reserved forest land	Other forest land
		million trees		
Unit 1	2,335.2	2,008.0	49.8	277.4
Unit 2	665.5	577.0	1.7	86.8
Unit 3	574.5	286.2	0.0	288.3
Unit 4	1,147.1	632.7	12.3	502.1
Unit 5	512.9	102.9	27.2	382.7
Unit 6	19.1	0.0	0.0	19.1
Unit 7	139.1	28.3	0.0	110.8
Total	5,393.3	3,635.1	91.0	1,667.2

Biomass is an important resource component in Oklahoma. FIA has been assessing biomass numbers for many years (fig. 4). The 2014 data show 52,500 (oven dry) tons of softwoods on all forest land in Oklahoma. The majority of biomass was in east Oklahoma (units 1 and 2), with over 43,800 tons (83.4 percent) of softwood biomass aboveground on forested land. Central and west Oklahoma (units 3-7) had 8,700 tons (16.6 percent) of softwood biomass.

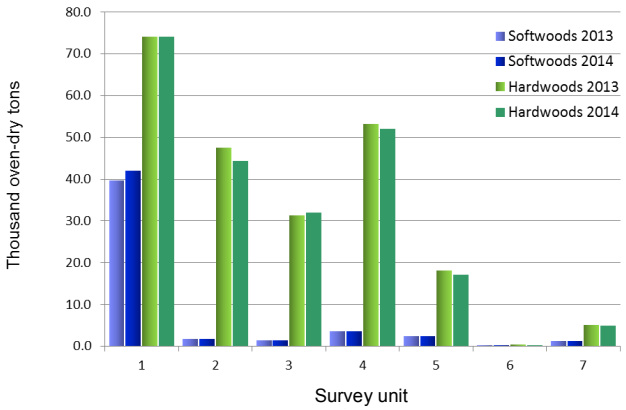

Figure 4—Biomass dry weight of softwoods and hardwoods on forest land by survey unit, Oklahoma, 2013 and 2014.

The hardwood biomass data show 225,000 (oven dry) tons on all forest land in Oklahoma (fig. 4). The majority of hardwood biomass was in east Oklahoma (units 1 and 2), with 118,500 tons (52.7 percent) aboveground on all forested land. Central and west Oklahoma (units 3-7) had 106,400 tons (47.3 percent) of hardwood biomass. The 2014 trend shows a slight increase in softwood volume and biomass (all units totaled) and a decrease in hardwood volume and biomass (all units totaled) in Oklahoma.

Canadian River Watershed 2013. (photo courtesy of Carri Abner).

Special Topic: Thousand Cankers Disease Potential Impact on Oklahoma Forests

Thousand cankers disease (TCD) is a disease complex that swiftly kills eastern black walnut (*Juglans nigra*). Until the year 2010, TCD had been limited to the Western United States; however, TCD now poses a serious threat in the Eastern United States (fig. 5).

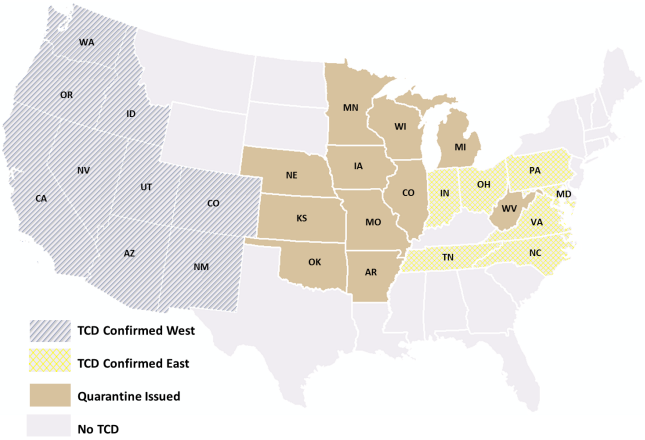

Figure 5—Distribution of thousand cankers disease, April 2015.

Native to the Southwestern United States, TCD is spread by the walnut twig beetle (*Pityophthorus juglandis*), a tiny insect that carries a fungus (*Geosmithia morbida*) that causes numerous cankers to develop under the bark of the host tree.

Early symptoms of TCD include leaf yellowing (fig. 6), wilting, and branch mortality. These symptoms also accompany other insects, diseases, and environmental stressors such as drought. Once infected, black walnut trees typically die within 2 to 3 years. TCD has not been found in Oklahoma yet, but recent and ongoing discoveries in the eastern United States suggest that its establishment in the State is possible.

Black walnut trees occur throughout Oklahoma in both forest (fig. 7) and urban settings and provide economic, ecological, and sociological benefits. Oklahoma has much to lose if TCD becomes established in the State. To impede its potential arrival, a quarantine limiting the movement of black walnut material into and through Oklahoma has been issued by the Oklahoma State Board of Agriculture.

Figure 6—Yellowing foliage is symptomatic of the TCD disease complex spread by the walnut twig beetle (inset left) and resulting in numerous cankers underneath the bark (inset right). (photo courtesy of www.thousandcankers.com).

To assist in the early detection of the disease, individual landowners are encouraged to track the condition of black walnuts on their property and notify State forestry officials if symptoms are present.

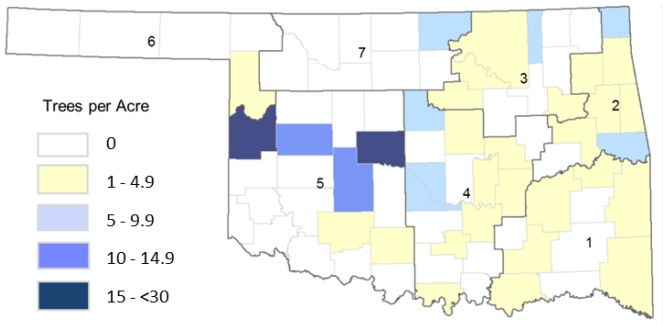

Figure 7—Estimated number of live black walnut trees (≥1.0 inches d.b.h.) per acre of forest land, by county and unit in Oklahoma 2014.

How to Cite This Publication

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