



FORESTS OF Arkansas, 2016

This resource update is a brief look at some of the basic metrics that describe the status of and changes to forest resources in Arkansas. Estimates presented here are for the survey year 2016 with resource changes compared against the 2015 survey year. This information is based on field data collected using the Forest Inventory and Analysis (FIA) annualized sample design, and it is updated yearly. Arkansas has about 5,700 sample plots across the State; each year, 20 percent of these plots (one panel) are visited and measured by field crews, the data compiled, and new estimates produced. It is important that users keep in mind that each year of new estimates, and the subsequent resource changes, are influenced by the newest 20 percent of the sample; the older, and unchanged, data make up the remaining 80 percent of the sample. This small sample may result in some rather sharp spikes in estimates when comparing successive survey years, but in most instances the annualized design should give a reasonable indication of directional trends in the resource such as increasing, decreasing, or no change. After 5 years of measurements, the full sample complement (a cycle) is complete and a new survey cycle begins. Because the 20-percent panel sample size is rather small, the strongest and most reliable trend information (especially that concerning magnitude of change) comes from comparing two full cycles of data.

Data used in this update were accessed from the FIA database on July 21, 2017 at <https://fia.fs.fed.us/tools-data/>. Some of the data may not match previously published reports because of changes made in reprocessing. Users can also access previously published Arkansas updates at <https://srsfia2.fs.fed.us/states/arkansas.shtml> to evaluate longer time spans: Resource Updates 2009, 2010, 2011, 2012, 2013, 2014, and 2015. Most of the tables throughout the updates are similar to facilitate comparisons.

Overview

The update includes estimates of various parameters along with descriptive statistics (table 1), forest land area (table 2), ownership (table 3), forest-type groups (table 4), forest plantation area (table 5), volume (tables 6 and 7), biomass (tables 8 and 9), and species volumes (table 10), along with maps of Arkansas’s survey units (fig. 1) and percent of county in forest area (fig. 2) plus effective density of softwood (fig. 3) and hardwood growth (fig. 4). The estimates are presented by survey unit so users can assess resource attributes and change in a specific region of interest.

Table 1—Arkansas forest statistics, change between 2015 and 2016

Forest statistics	2015 estimate	Sampling error (percent)	2016 estimate	Sampling error (percent)	Change since 2015
Forest land					
Area (thousand acres)	19,039.8	0.53	19,002.5	0.53	-37.3
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,836.1	1.34	11,851.3	1.37	15.2
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	31,564.4	1.20	32,055.3	1.20	490.9
Live tree aboveground biomass (thousand oven-dry tons)	817,027.4	1.05	827,384.9	1.05	10,357.6
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,149.8	2.38	1,114.7	2.43	-35.1
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	694.0	5.39	699.0	5.45	5.0
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	370.3	3.69	395.8	3.49	25.5
Timberland					
Area (thousand acres)	18,492.4	0.60	18,456.8	0.60	-35.6
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,634.7	1.38	11,656.5	1.41	21.8
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	30,311.3	1.26	30,803.5	1.26	492.2
Live tree aboveground biomass (thousand oven-dry tons)	785,157.6	1.12	795,725.0	1.11	10,567.4
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,147.9	2.48	1,116.1	2.53	-31.8
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	689.6	5.38	696.5	5.42	6.9
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	353.2	3.76	375.7	3.57	22.5



Forest Area

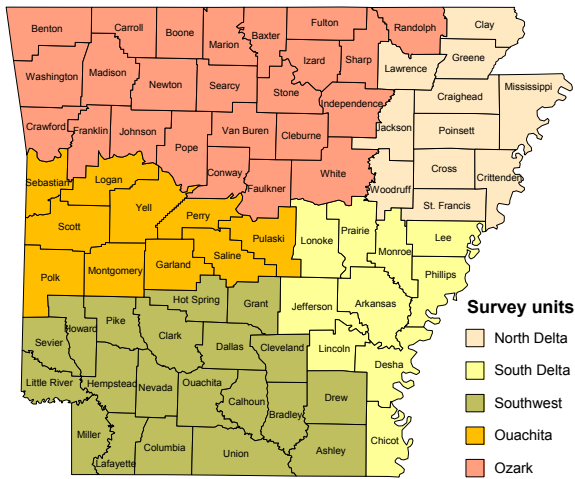


Figure 1—Forest survey units and counties in Arkansas.

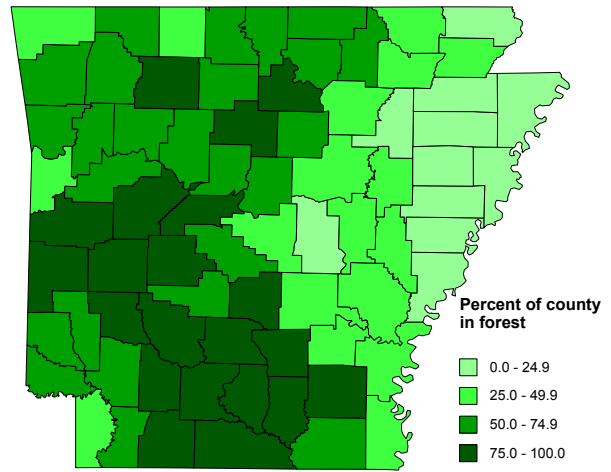


Figure 2—Percent of county area in forest land, 2016.

Table 2—Area of forest land and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>thousand acres</i>			
South Delta	1,472.9	1,455.0	-17.9
North Delta	805.2	803.4	-1.8
Southwest	6,945.2	6,939.8	-5.4
Ouachita	3,448.5	3,453.1	4.6
Ozark	6,368.0	6,351.1	-16.9
All units	19,039.8	19,002.5	-37.3

Table 4—Area of forest land and change, by forest-type group, Arkansas, 2015 and 2016

Forest-type group	2015	2016	Change
<i>thousand acres</i>			
Loblolly-shortleaf pine	5,858.2	5,890.7	32.5
Eastern redcedar	301.9	293.3	-8.6
Oak-pine	1,892.7	1,889.1	-3.6
Oak-hickory	7,805.9	7,770.2	-35.7
Bottomland hardwoods	2,996.2	2,977.1	-19.1
Miscellaneous types	25.6	30.5	4.9
Nontyped	159.3	151.6	-7.7
All groups	19,039.8	19,002.5	-37.3

Table 3—Area of forest land and change, by ownership, Arkansas, 2015 and 2016

Ownership	2015	2016	Change
<i>thousand acres</i>			
National forest	2,537.6	2,539.0	1.4
Other public	1,158.6	1,153.7	-4.9
Forest industry	2,247.6	2,294.7	47.1
NIPF	13,095.9	13,015.1	-80.8
All owners	19,039.8	19,002.5	-37.3

NIPF = nonindustrial private forest.

Table 5—Area of forest land in forest plantations and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>thousand acres</i>			
South Delta	208.0	184.6	-23.4
North Delta	58.9	59.5	0.6
Southwest	2,460.1	2,410.2	-49.9
Ouachita	643.3	636.6	-6.7
Ozark	220.0	224.7	4.7
All units	3,590.3	3,515.7	-74.6

Volume, Biomass, and Trends

Table 6—Volume of softwoods on forest land and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>million cubic feet</i>			
South Delta	585.2	588.1	2.9
North Delta	175.3	184.6	9.3
Southwest	7,003.2	7,252.3	249.1
Ouachita	3,230.7	3,268.8	38.1
Ozark	1,926.4	1,983.3	56.9
All units	12,920.9	13,277.1	356.2

Table 8—Biomass dry weight of softwoods on forest land and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>thousand tons</i>			
South Delta	11,933.9	11,950.2	16.3
North Delta	3,495.1	3,674.6	179.5
Southwest	148,939.4	154,099.0	5,159.6
Ouachita	67,023.9	67,998.7	974.8
Ozark	41,295.1	42,358.9	1,063.8
All units	272,687.4	280,081.5	7,394.1

Table 7—Volume of hardwoods on forest land and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>million cubic feet</i>			
South Delta	2,554.1	2,597.1	43.0
North Delta	1,341.5	1,367.1	25.6
Southwest	4,732.0	4,716.5	-15.5
Ouachita	2,496.3	2,519.5	23.2
Ozark	7,519.7	7,578.1	58.4
All units	18,643.5	18,778.3	134.8

Table 9—Biomass dry weight of hardwoods on forest land and change, by survey unit, Arkansas, 2015 and 2016

Survey unit	2015	2016	Change
<i>thousand tons</i>			
South Delta	66,563.1	67,525.2	962.1
North Delta	36,143.7	36,725.2	581.5
Southwest	140,418.8	139,922.5	-496.3
Ouachita	76,917.6	77,504.4	586.8
Ozark	224,296.3	225,626.0	1,329.7
All units	544,339.6	547,303.4	2,963.8

Table 10—Volume of 15 most dominant species on forest land by 5-inch diameter classes, Arkansas, 2016

Species	Total	Diameter class (<i>inches</i>)					
		5.0-9.9	10.0-14.9	15.0-19.9	20.0-24.9	25.0-29.9	30+
<i>million cubic feet</i>							
Loblolly pine	8,210.3	2,425.7	3,100.8	1,724.5	723.8	216.8	18.6
Shortleaf pine	3,837.4	703.7	1,620.8	1,224.6	271.3	17.1	0.0
White oak	2,908.0	590.0	1,063.6	797.8	312.4	104.1	40.1
Sweetgum	2,137.6	576.2	686.5	496.9	199.7	111.5	66.7
Post oak	1,573.4	421.1	619.8	355.2	139.9	21.4	15.9
Northern red oak	944.1	132.7	340.3	291.0	131.7	43.0	5.5
Southern red oak	822.1	112.0	242.8	261.4	132.5	52.6	20.7
Black oak	760.0	120.3	289.8	214.1	100.5	28.0	7.2
Water oak	710.5	117.5	171.9	203.5	112.8	80.5	24.3
Cherrybark oak	691.8	58.1	109.4	168.3	156.1	85.1	114.7
Willow oak	665.4	75.2	111.4	186.2	185.3	66.1	41.3
Black hickory	642.5	301.5	253.1	73.8	10.3	3.8	0.0
Eastern redcedar	604.8	360.6	200.9	40.7	2.6	0.0	0.0
Overcup oak	598.5	39.2	96.5	112.1	174.3	118.8	57.6
Baldcypress	584.9	26.4	81.2	77.5	121.7	92.0	186.1
Other species	6,364.1	1,892.3	1,840.6	1,273.2	744.5	328.1	285.6
All species	32,055.4	7,952.5	10,829.4	7,500.8	3,519.4	1,368.9	884.3

Effective Density for Softwood and Hardwood Growth

Between 2011 and 2016, Arkansas forest lands grew at the rate of 1.2 billion cubic feet per year. Softwood live-tree growth on forest land was 778.3 million cubic feet per year (fig. 3); hardwood live-tree growth was 336.4 million cubic feet per year (fig. 4).

The rate of net growth of softwoods and hardwoods, in Arkansas, was not evenly dispersed across all forest land. Depending on site conditions, stocking levels, past disturbance, etc., stands grew at different rates. No attempt was made to define a stand as softwood or hardwood so stands that were composed of 100 percent hardwoods would show no growth or area in softwoods, and vice versa.

Effective density analysis illustrates how the growth of softwoods and hardwoods is distributed by growth classes across Arkansas. The 1.2 billion cubic feet per year of growth comes from forest land in varying degrees of productivity. Sixty-one percent of Arkansas forest lands were growing at a rate of <50 cubic feet of softwood volume per acre per year (fig. 3). Another 15 percent were growing 50 to 99 cubic feet per acre per year. In total, 75 percent of forest land was growing softwood volume at a rate of <100 cubic feet per acre per year. Twenty-six percent of softwood growth was in this class. In contrast, fewer acres of forest land were growing at high rates. Approximately 9 percent of forest land was growing at a rate of ≥ 200 cubic feet per acre per year. More importantly, about

40 percent of Arkansas softwood growth was in these high yielding stands. This means that 40 percent of all softwood growth occurred on 9 percent of softwood forest land (1.1 million acres). The largest classes of Arkansas softwood growth (66 percent) were in stands growing at the rate of 50 to 249 cubic feet per acre per year (fig. 3).

The effective density analysis for hardwood growth was similar to the softwood situation but with slightly more forest land in lower productivity classes. There were high amounts of forest land with low growth and few acres with high growth rates (fig. 4). Eighty-two percent of forest land stands had hardwood growth rates of <50 cubic feet per year. Altogether, 57 percent of hardwood growth was on forest land growing <100 cubic feet per acre per year. Very few acres were growing hardwoods at high rates (≥ 200 cubic feet per acre per year), less than 1 percent of forest land. However, slightly more than 15 percent of the growth volume came from these forest lands.

One productivity improvement would be to concentrate efforts toward increasing the growth on forest land that is growing at the rate of <50 cubic feet per acre per year. If stands are understocked, improve stocking; if establishing new stands, make sure stocking (and survival stocking) is adequate. Additionally, regeneration lag times should be kept to a minimum. Idle lands produce no growth.

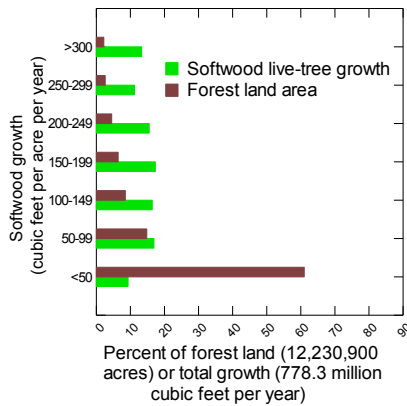


Figure 3—Effective density for softwood live-tree net annual growth on forest land by cubic feet per acre class Arkansas, 2011-2016.

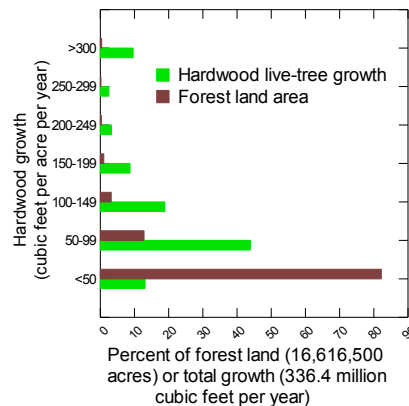


Figure 4—Effective density for hardwood live-tree net annual growth on forest land by cubic feet per acre class Arkansas, 2011-2016.

How to Cite This Publication

Rosson, James F., Jr. 2017. Forests of Arkansas, 2016. Resource Update FS-140. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.

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