



Arkansas's Forests, 2017: Annual Update

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 2017 with resource changes compared against the 2016 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 August 20, 2018 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://www.fs.usda.gov/srsfia/states/arkansas.shtml> to evaluate longer time spans: Resource Updates 2009, 2010, 2011, 2012, 2013, 2014, 2015, and 2016. 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 shortleaf pine regeneration information (tables 11 and 12). Many of 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 2016 and 2017

Forest statistics	2016 estimate	Sampling error (percent)	2017 estimate	Sampling error (percent)	Change since 2016
Forest land					
Area (thousand acres)	19,002.5	0.53	18,969.9	0.53	-32.6
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,851.3	1.37	11,917.0	1.38	65.7
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	32,055.5	1.20	32,628.0	1.20	572.5
Live tree aboveground biomass (thousand oven-dry tons)	827,385.4	1.05	840,976.8	1.05	13,591.4
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,116.0	2.43	1,151.3	2.34	35.3
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	699.0	5.45	724.5	5.55	25.5
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	395.8	3.49	382.7	3.46	-13.1
Timberland					
Area (thousand acres)	18,450.1	0.60	18,428.2	0.60	-21.9
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,654.0	1.41	11,728.6	1.42	74.6
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	30,788.3	1.26	31,348.3	1.26	560.0
Live tree aboveground biomass (thousand oven-dry tons)	795,334.4	1.11	808,690.8	1.11	13,356.4
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,115.8	2.53	1,151.7	2.44	35.9
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	696.5	5.42	722.3	5.52	25.8
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	375.7	3.57	363.0	3.55	-12.7



Forest Area

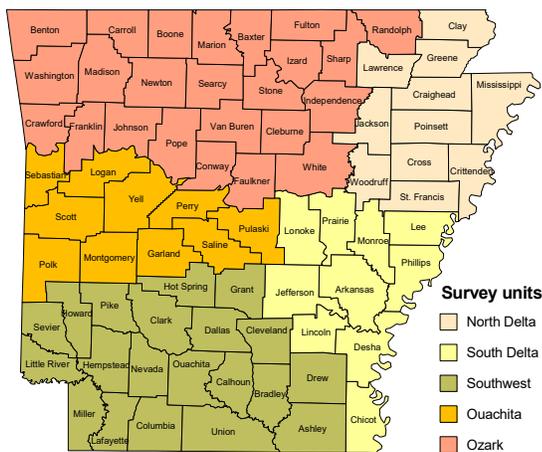


Figure 1—Forest survey units and counties in Arkansas.

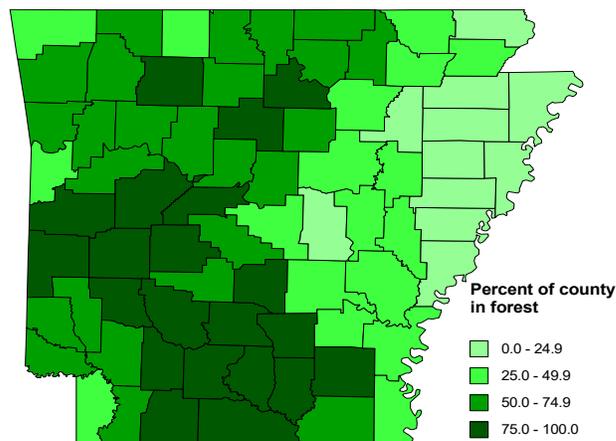


Figure 2—Percent of county area in forest land, 2017.

Table 2—Area of forest land and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
	<i>thousand acres</i>		
South Delta	1,455.0	1,448.5	-6.5
North Delta	803.4	809.8	6.4
Southwest	6,939.8	6,949.7	9.9
Ouachita	3,453.1	3,439.3	-13.8
Ozark	6,351.1	6,322.6	-28.5
All units	19,002.5	18,969.9	-32.6

Table 4—Area of forest land and change, by forest-type group, Arkansas, 2016 and 2017

Forest-type group	2016	2017	Change
	<i>thousand acres</i>		
Loblolly-shortleaf pine	5,890.7	5,974.8	84.1
Eastern redcedar	293.3	303.5	10.2
Oak-pine	1,889.1	1,906.1	17.0
Oak-hickory	7,770.2	7,624.6	-145.6
Bottomland hardwoods	2,977.1	2,993.2	16.1
Miscellaneous types	30.5	30.5	0.0
Nontyped	151.6	137.2	-14.4
All groups	19,002.5	18,969.9	-32.6

Table 3—Area of forest land and change, by ownership, Arkansas, 2016 and 2017

Ownership	2016	2017	Change
	<i>thousand acres</i>		
National forest	2,539.0	2,524.7	-14.3
Other public	1,153.7	1,158.0	4.3
Forest industry	2,294.7	2,421.3	126.6
NIPF	13,015.1	12,865.9	-149.2
All owners	19,002.5	18,969.9	-32.6

NIPF = nonindustrial private forest.

Table 5—Area of forest land in forest plantations and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
	<i>thousand acres</i>		
South Delta	184.6	180.6	-4.0
North Delta	59.5	54.4	-5.1
Southwest	2,410.2	2,458.7	48.5
Ouachita	636.6	594.7	-41.9
Ozark	224.7	219.3	-5.4
All units	3,515.7	3,507.6	-8.1

Volume, Biomass, and Trends

Table 6—Volume of softwoods on forest land and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
<i>million cubic feet</i>			
South Delta	588.1	580.7	-7.4
North Delta	184.6	170.3	-14.3
Southwest	7,252.3	7,442.6	190.3
Ouachita	3,268.8	3,364.4	95.6
Ozark	1,983.3	2,014.4	31.1
All units	13,277.1	13,572.4	295.3

Table 8—Biomass dry weight of softwoods on forest land and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
<i>thousand tons</i>			
South Delta	11,950.2	11,736.9	-213.3
North Delta	3,674.6	3,387.5	-287.1
Southwest	154,099.0	158,119.0	4,020.0
Ouachita	67,998.7	70,049.0	2,050.3
Ozark	42,358.9	43,048.6	689.7
All units	280,081.5	286,341.1	6,259.6

Table 7—Volume of hardwoods on forest land and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
<i>million cubic feet</i>			
South Delta	2,597.1	2,622.9	25.8
North Delta	1,367.1	1,435.8	68.7
Southwest	4,716.5	4,731.4	14.9
Ouachita	2,519.5	2,563.0	43.5
Ozark	7,578.1	7,702.4	124.3
All units	18,778.3	19,055.6	277.3

Table 9—Biomass dry weight of hardwoods on forest land and change, by survey unit, Arkansas, 2016 and 2017

Survey unit	2016	2017	Change
<i>thousand tons</i>			
South Delta	67,525.2	68,151.8	626.6
North Delta	36,725.2	38,709.7	1,984.5
Southwest	139,922.5	140,058.7	136.2
Ouachita	77,504.4	78,756.6	1,252.2
Ozark	225,626.0	228,958.7	3,332.7
All units	547,303.4	554,635.5	7,332.1

Table 10—Volume of 15 most dominant species on forest land by 5-inch diameter classes, Arkansas, 2017

Species	Total	Diameter class (inches)					
		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	8,431.4	2,512.8	3,176.3	1,742.0	752.6	221.5	26.1
Shortleaf pine	3,888.7	705.0	1,614.2	1,234.2	314.0	21.3	0.0
White oak	2,954.4	576.9	1,084.1	810.3	333.6	102.0	47.5
Sweetgum	2,179.0	583.3	717.4	501.3	200.4	115.5	61.0
Post oak	1,589.6	414.7	619.5	373.4	145.2	20.0	16.9
Northern red oak	958.3	131.7	337.7	307.0	137.2	38.3	6.4
Southern red oak	826.4	109.9	235.7	262.3	133.8	53.7	30.8
Black oak	755.3	118.8	278.2	214.8	107.5	29.3	6.7
Water oak	728.0	124.2	179.1	208.0	110.5	70.4	35.8
Cherrybark oak	713.9	57.1	106.8	163.2	158.4	102.6	125.7
Black hickory	653.8	307.3	258.4	74.2	10.1	3.8	0.0
Willow oak	650.9	73.5	112.9	179.3	174.8	68.0	42.4
Eastern redcedar	624.8	369.6	212.9	41.2	1.0	0.0	0.0
Overcup oak	602.6	39.5	96.0	118.0	177.7	106.5	64.9
Baldcypress	588.4	25.8	83.9	82.4	127.4	73.9	195.1
Other species	6,482.3	1,923.4	1,837.3	1,315.8	747.0	371.5	287.6
All species	32,628.0	8,073.5	10,950.4	7,627.0	3,631.5	1,398.3	947.1

Shortleaf Pine Regeneration

There have been recent concerns about declines in shortleaf pine across the Eastern United States. Although the shortleaf pine situation seems to have stabilized in Arkansas, it has dropped substantially from its dominance in 1978, when it was ranked the number one species (by volume). Currently there are 4,299,445 acres of forest land in Arkansas with established shortleaf pine trees present (at least 1 shortleaf pine \geq 1.0 inch in dbh [trees]). When monitoring tree population fluctuations of shortleaf pine, it is important to look at the status of the regeneration phase of the population. In this brief overview, the presence of shortleaf pine seedlings (trees \geq 0.5 feet tall but $<$ 1.0 inch in diameter) is a critical metric for sustainability. This is because very little planting is being done with shortleaf pine. The current survey shows only 71,334 acres planted in shortleaf pine (compared to 3,507,588 acres planted in loblolly pine). However, the presence of shortleaf pine regeneration beneath a shortleaf pine overstory points to the importance of viewing shortleaf pine regeneration as advance reproduction, as foresters do for oak reproduction. By this metric, Arkansas has 959,900 acres of shortleaf pine forests where seedlings and saplings might respond to release after disturbance such as logging or weather-related overstory mortality. Management should emphasize efforts such as prescribed fire to recruit shortleaf pine seedlings and saplings in the understory of stands without shortleaf pine in the overstory.

There are 14,427,700 acres of forest land in Arkansas without any shortleaf pine either as seedlings, saplings, or trees (table 11). Shortleaf pine seedlings are present on 1,202,100 acres. A substantial amount of forest land with

shortleaf trees present has no shortleaf seedlings in the understory, 3,339,600 acres. This is 78 percent of all forest land with a shortleaf pine \geq 1.0 inches dbh.

Not only is it important to know about the occurrence of shortleaf pine seedling regeneration, it is also important to know if the seedling stocking density is adequate. Table 12 lists 11 seedling density classes. The second column shows the respective seedling area across all forest land. There are 17,767,400 acres without any shortleaf pine seedlings. Where seedlings are present, approximately 464,000 acres are inadequately stocked ($<$ 200 seedlings per acre). Where shortleaf pine is present in the overstory there are approximately 296,600 acres with low stocking in the seedling layer (table 12) or no seedling stocking (3,235,600 acres).

This type of monitoring effort is an important first step in risk assessment. It helps provide managers with a part of the necessary information needed to ensure and enhance the sustainability of the shortleaf pine resource in Arkansas. In this case, managers and policymakers can determine the amount of acreage that may be at risk of losing shortleaf pine and take steps to ensure the appropriate management practices are in place for the sustainability of shortleaf pine over the long term.

Table 11—Area of forest land by shortleaf pine presence and absence categories, Arkansas, 2017

Shortleaf pine occurrence category	thousand acres
Shortleaf seedlings +	242.8
Shortleaf trees -	
Shortleaf seedlings -	3,339.6
Shortleaf trees +	
Shortleaf seedlings +	959.9
Shortleaf trees +	
Shortleaf seedlings -	14,427.7
Shortleaf trees -	
All forest land	18,969.9

+ = present; - = not present; see text for definition of seedlings and trees.

Table 12—Area of forest land by shortleaf pine seedling density (per acre) classes, Arkansas, 2017

Shortleaf seedlings per acre	All forest land	Forest land with shortleaf in overstory
thousand acres		
0	17,767.4	3,235.6
0.1 - 100	310.9	181.5
101 - 200	153.1	115.1
201 - 300	197.9	159.9
301 - 400	71.6	60.6
401 - 500	65.6	51.9
501 - 600	108.9	90.0
601 - 700	36.5	36.5
701 - 800	6.1	0.0
801 - 900	33.5	29.5
>900	218.4	188.9
Total State	18,969.9	4,149.4

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