



Arkansas's Forests, 2021: 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 2021 with resource changes compared against the 2020 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 15, 2022 at <https://www.fia.fs.usda.gov/tools-data/index.php>. 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, 2016, 2017, 2018, 2019, and 2020. 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 information about older forests (fig. 3 and 4) and their distribution across the State (fig. 5). 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 2020 and 2021

Forest statistics	2020 estimate	Sampling error (percent)	2021 estimate	Sampling error (percent)	Change since 2020
Forest land					
Area (thousand acres)	18,883.2	0.54	18,866.9	0.54	-16.3
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,854.6	1.37	11,742.3	1.37	-112.3
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	34,943.5	1.23	35,713.3	1.24	769.8
Live tree aboveground biomass ≥1.0 inches d.b.h. (thousand oven dry tons)	892,806.3	1.08	910,027.6	1.09	17,221.3
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,432.4	1.98	1,554.3	1.88	121.9
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	759.5	5.35	821.9	5.26	62.4
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	293.7	3.64	270.8	3.99	-22.9
Timberland					
Area (thousand acres)	18,356.9	0.61	18,355.3	0.62	-1.6
Number of live trees ≥1.0 inch d.b.h. (million trees)	11,663.5	1.41	11,557.1	1.40	-106.4
Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	33,585.8	1.29	34,332.1	1.32	746.3
Live tree aboveground biomass ≥1.0 inches d.b.h. (thousand oven dry tons)	858,944.3	1.14	924,473.7	1.22	65,529.4
Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,420.3	2.00	1,534.4	2.23	114.1
Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	768.2	5.40	829.5	5.18	61.3
Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	278.6	3.72	257.5	3.92	-21.1



Forest Area

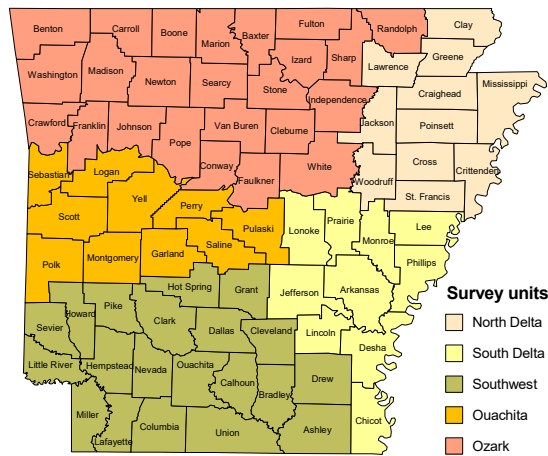


Figure 1—Forest survey units and counties in Arkansas.

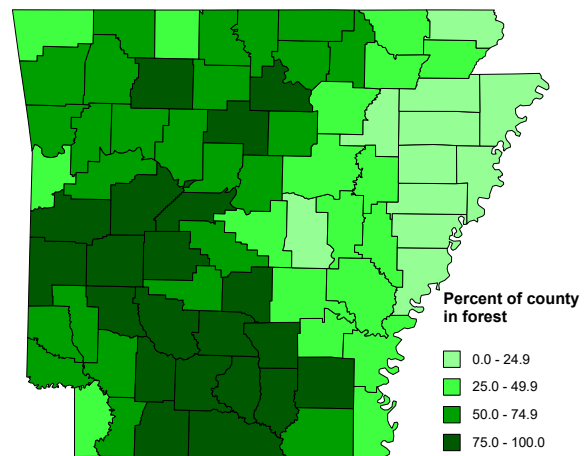


Figure 2—Percent of county area in forest land, 2021.

Table 2—Area of forest land and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>thousand acres</i>			
South Delta	1,446.00	1,434.50	-11.5
North Delta	806.5	819.5	13
Southwest	6,944.80	6,949.20	4.4
Ouachita	3,419.00	3,428.40	9.4
Ozark	6,266.80	6,235.40	-31.4
All units	18,883.20	18,866.90	-16.3

Table 4—Area of forest land and change, by forest-type group, Arkansas, 2020 and 2021

Forest-type group	2020	2021	Change
<i>thousand acres</i>			
Loblolly-shortleaf pine	6,189.0	6,170.1	-18.9
Eastern redcedar	279.2	278.4	-0.8
Oak-pine	1,878.1	1,916.8	38.7
Oak-hickory	7,419.0	7,358.7	-60.3
Bottomland hardwoods	2,943.9	2,970.1	26.2
Miscellaneous types	33.9	29.3	-4.6
Nontyped	140.1	143.5	3.4
All groups	18,883.2	18,866.9	-16.3

Table 3—Area of forest land and change, by ownership, Arkansas, 2020 and 2021

Ownership	2020	2021	Change
<i>thousand acres</i>			
National forest	2,532.30	2,531.90	-0.4
Other public	1,182.20	1,183.10	0.9
Forest industry	2,675.70	2,623.10	-52.6
NIPF	12,493.00	12,528.80	35.8
All owners	18,883.20	18,866.90	-16.3

NIPF = nonindustrial private forest.

Table 5—Area of forest land in forest plantations and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>thousand acres</i>			
South Delta	190.3	212.3	22
North Delta	49.2	48.9	-0.3
Southwest	2,761.90	2,882.00	120.1
Ouachita	580.6	572.1	-8.5
Ozark	210.3	205.1	-5.2
All units	3,792.30	3,920.50	128.2

Volume, Biomass, and Trends

Table 6—Volume of softwoods on forest land and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>million cubic feet</i>			
South Delta	620.8	638.2	17.4
North Delta	177.8	182.9	5.1
Southwest	8,219.30	8,455.70	236.4
Ouachita	3,645.00	3,736.30	91.3
Ozark	2,239.40	2,316.00	76.6
All units	14,902.30	15,329.00	426.7

Table 7—Volume of hardwoods on forest land and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>million cubic feet</i>			
South Delta	2,728.80	2,751.30	22.5
North Delta	1,523.20	1,593.80	70.6
Southwest	4,859.00	4,909.60	50.6
Ouachita	2,784.00	2,841.10	57.1
Ozark	8,146.20	8,288.60	142.4
All units	20,041.20	20,384.40	343.2

Table 8—Biomass dry weight of softwoods on forest land and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>thousand tons</i>			
South Delta	12,490.1	12,759.6	269.5
North Delta	3,544.3	3,660.3	116.0
Southwest	173,179.4	177,365.0	4,185.6
Ouachita	75,683.1	77,487.3	1,804.2
Ozark	47,546.4	49,016.5	1,470.1
All units	312,443.3	320,288.7	7,845.4

Table 9—Biomass dry weight of hardwoods on forest land and change, by survey unit, Arkansas, 2020 and 2021

Survey unit	2020	2021	Change
<i>thousand tons</i>			
South Delta	70,446.20	71,199.70	753.5
North Delta	40,936.10	42,616.20	1,680.10
Southwest	143,692.00	144,875.20	1,183.20
Ouachita	84,832.90	86,658.20	1,825.30
Ozark	240,453.90	244,388.70	3,934.80
All units	580,361.10	589,737.90	9,376.80

Table 10—Volume of 15 most dominant species on forest land by 5-inch diameter classes, Arkansas, 2021

		Diameter class (<i>inches</i>)					
Species	Total	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	9,713.3	2,817.0	3,641.6	2,082.6	851.9	279.3	41.0
Shortleaf pine	4,202.5	663.7	1,700.8	1,419.8	397.9	20.3	0.0
White oak	3,134.5	569.0	1,109.3	876.4	396.0	128.3	55.5
Sweetgum	2,401.2	593.9	764.9	565.2	263.6	118.6	95.0
Post oak	1,669.1	408.1	640.8	382.7	194.0	21.5	22.0
Northern red oak	1,019.7	127.1	324.8	340.4	153.2	67.7	6.5
Southern red oak	893.8	110.1	242.7	284.6	130.2	90.5	35.7
Water oak	822.5	151.7	185.3	222.7	141.1	68.3	53.4
Black oak	779.8	111.0	270.3	223.4	110.3	49.6	15.3
Cherrybark oak	769.0	63.2	113.5	139.3	200.7	97.9	154.4
Eastern redcedar	716.5	403.5	256.5	54.1	2.5	0.0	0.0
Black hickory	697.0	309.6	270.0	102.2	7.8	7.5	0.0
Willow oak	667.4	77.7	122.8	147.4	191.2	85.6	42.6
Baldcypress	657.8	23.7	84.0	91.4	109.7	86.8	262.2
Overcup oak	616.8	36.8	87.3	123.6	151.9	128.7	88.4
Other species	6,952.5	2,045.9	1,943.6	1,387.6	820.0	402.4	352.6
All species	35,713.4	8,512.0	11,758.2	8,443.4	4,122.0	1,653.0	1,224.6

Older Forest Stands

Older forests are an important and essential component of the full complement of forest succession stages. Studies of old growth forests in the 1990s by the U.S. Department of Agriculture, Forest Service have emphasized this fact. This is an assessment of the older forests in Arkansas captured in the FIA sample. These older forest stands were arbitrarily defined by the following minimum plot parameters: a quadratic mean diameter (QMD) of overstory trees ≥ 15.0 inches; a basal area of overstory trees ≥ 100 square feet per acre; a stand density of ≥ 50 overstory trees per acre; a plot condition proportion ≥ 0.50 . Overstory trees are defined as those ≥ 5.0 inches d.b.h. Note that these parameters may not capture all older forests in Arkansas. Examples are the post oak-black hickory and shortleaf forest types where the smaller diameter trees in these xeric forests may be very old. A different approach (type parameters) needs to be taken to identify this special set of older forests in the FIA data set, therefore they may not be represented in this brief update.

The assessment shows 460,498 acres in the older stands of Arkansas, 2.4 percent of all forest land. Surprisingly, most of the older forests are on NIPF forest land followed by other public lands (fig. 3). Fewer acres are on national forest and forest industry lands.

Few forest stands are in the larger size classes (fig. 4). Over 61 percent of the older forests are in the smallest 15.0-16.9 inch size class.

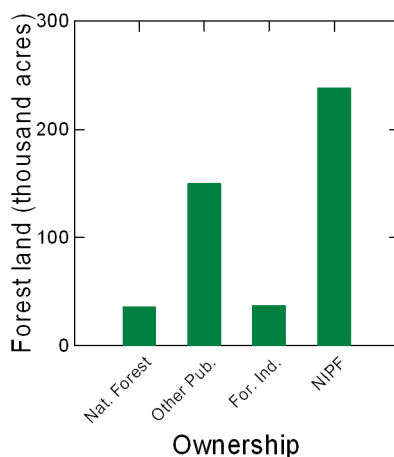


Figure 3—Area of forest land in older stands by ownership, Arkansas, 2021. This graph represents 460,498 acres.

Figure 5 shows the spatial distribution of FIA plots representing older forests. Most occur in the Mississippi Delta and Coastal Plain regions.

Most of these older stands were dominated by six species (four commonly in lowland habitats): loblolly pine (*Pinus taeda*), bald cypress (*Taxodium distichum*), sweetgum (*Liquidambar styraciflua*), white oak (*Quercus alba*), cherrybark oak (*Q. pagoda*), and overcup oak (*Q. lyrata*) (61 percent of all the older stands).

These baseline estimates are important tools to help forest managers and State officials monitor and shape forest policy into the future for this important forest ecosystem component.

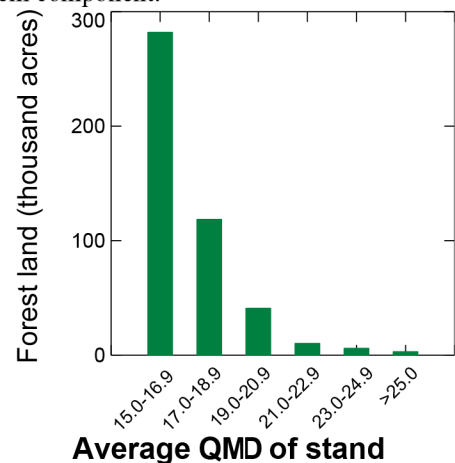


Figure 4—Area of forest land in older stands by QMD 2-inch d.b.h. classes, Arkansas, 2021. This graph represents 460,498 acres.

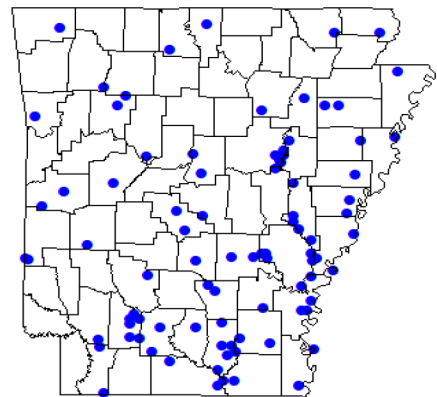


Figure 5—Spatial distribution of FIA plots representing older forest land stands, Arkansas, 2021. There are 89 plots in this map, representing 460,498 acres.

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