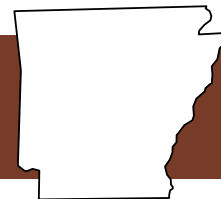


Arkansas's Forests, 2022: Annual Update



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 are for the 2022 survey year with resource changes compared to the 2021 survey year (Rosson 2022). This information is based on field data collected using the U.S. Department of Agriculture, Forest Service, 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. 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 the 2022 update were accessed from the FIA database (USDA Forest Service 2024). Users can also access previously published Arkansas resource updates (2009–2021) to evaluate longer time spans (Rosson 2011a, 2011b, 2012, 2013, 2014, 2015, 2016, 2017, 2020a, 2020b, 2020c, 2021, 2022). Most of the tables within the updates are similar to facilitate comparisons. Some of the data in the 2022 resource update may not match previously published reports because of changes made in reprocessing. It is important to keep procedural changes in mind when comparing new resource updates in Arkansas with those published prior to the 2022 update. See an important note concerning trend on the last page of this resource update.

OVERVIEW

The 2022 update includes estimates of various parameters along with descriptive statistics (table 1), forest land area by survey unit (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 percentage of county in forest area (fig. 2), plus information about cutting activity (table 11) and the distribution of cutting activity across the State (figs. 3 and 4). Many of the 2022 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 2021 and 2022

Forest statistics		2021 estimate	Sampling error ¹ (percent)	2022 estimate	Sampling error ¹ (percent)	Change since 2021
Forest land	Area (thousand acres)	18,866.9	0.54	18,819.0	0.55	-47.9
	Number of live trees ≥1.0 inch d.b.h. (million trees)	11,742.3	1.36	11,661.0	1.37	-81.3
	Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	36,841.6	1.22	37,492.3	1.21	650.7
	Live tree aboveground biomass ≥1.0 inch d.b.h. (thousand oven dry tons)	1,029,610.9	1.04	1,044,712.2	1.03	15,101.3
	Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,570.8	1.82	1,583.8	1.88	13.0
	Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	829.4	5.31	816.4	5.24	-13.0
	Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	275.9	3.92	294.8	4.40	18.9
Timberland	Area (thousand acres)	18,355.3	0.62	18,301.4	0.62	-53.9
	Number of live trees ≥1.0 inch d.b.h. (million trees)	11,557.1	1.40	11,471.0	1.40	-86.1
	Net volume of live trees ≥5.0 inches d.b.h. (million cubic feet)	35,431.4	1.28	36,056.1	1.27	624.6
	Live tree aboveground biomass ≥1.0 inch d.b.h. (thousand oven dry tons)	992,129.2	1.10	1,066,789.2	1.10	74,660.0
	Net annual growth of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	1,553.9	1.86	1,564.9	1.92	11.0
	Annual removals of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	835.4	5.35	822.3	5.29	-13.1
	Annual mortality of live trees ≥5.0 inches d.b.h. (million cubic feet per year)	263.2	4.00	281.6	4.50	18.4

¹ At one standard error (0.6827). The 95-percent confidence interval can be derived by multiplying the sampling error by 1.96.

Table 2—Area of forest land and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>thousand acres</i>			
South Delta	1,434.5	1,449.5	15.0
North Delta	819.5	808.9	-10.6
Southwest	6,949.2	6,937.5	-11.7
Ouachita	3,428.4	3,413.7	-14.7
Ozark	6,235.4	6,209.4	-26.0
All units	18,866.9	18,819.0	-47.9

Numbers in columns may not sum to totals due to rounding.

Table 3—Area of forest land and change, by ownership, Arkansas, 2021 and 2022

Ownership	2021	2022	Change
<i>thousand acres</i>			
National forest	2,531.9	2,531.5	-0.4
Other public	1,183.1	1,182.9	-0.2
Forest industry	2,623.1	2,574.1	-49.0
NIPF	12,528.8	12,530.5	1.7
All owners	18,866.9	18,819.0	-47.9

NIPF = nonindustrial private forest.

Numbers in columns may not sum to totals due to rounding.

Table 4—Area of forest land and change, by forest-type group, Arkansas, 2021 and 2022

Forest-type group	2021	2022	Change
<i>thousand acres</i>			
Loblolly-shortleaf pine	6,170.1	6,176.9	6.8
Eastern redcedar	278.4	259.9	-18.5
Oak-pine	1,916.8	1,918.6	1.8
Oak-hickory	7,358.7	7,332.8	-25.9
Bottomland hardwoods	2,970.1	2,925.7	-44.4
Miscellaneous types	29.3	53.2	23.9
Nontyped	143.5	151.9	8.4
All groups	18,866.9	18,819.0	-47.9

Numbers in columns may not sum to totals due to rounding.

Table 5—Area of forest land in forest plantations and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>thousand acres</i>			
South Delta	212.3	229.1	16.8
North Delta	48.9	48.1	-0.8
Southwest	2,882.0	2,939.0	57.0
Ouachita	572.1	588.2	16.1
Ozark	205.1	205.8	0.7
All units	3,920.5	4,010.1	89.6

Numbers in columns may not sum to totals due to rounding.

Table 6—Volume of softwoods on forest land and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>million cubic feet</i>			
South Delta	656.3	689.0	32.7
North Delta	195.3	202.5	7.2
Southwest	8,436.6	8,628.0	191.4
Ouachita	3,942.0	4,065.5	123.5
Ozark	2,408.0	2,436.5	28.5
All units	15,638.1	16,021.6	383.5

Numbers in columns may not sum to totals due to rounding.

Table 7—Volume of hardwoods on forest land and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>million cubic feet</i>			
South Delta	2,754.1	2,827.8	73.7
North Delta	1,595.3	1,626.7	31.4
Southwest	5,007.7	5,052.8	45.1
Ouachita	2,973.3	3,025.6	52.3
Ozark	8,873.0	8,937.8	64.8
All units	21,203.4	21,470.7	267.3

Numbers in columns may not sum to totals due to rounding.

Table 8—Biomass dry weight of softwoods on forest land and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>thousand tons</i>			
South Delta	10,864.5	11,451.9	587.4
North Delta	2,997.6	3,149.9	152.3
Southwest	179,367.8	182,792.0	3,424.2
Ouachita	83,544.1	85,922.9	2,378.8
Ozark	56,521.4	57,185.3	663.9
All units	333,295.4	340,501.9	7,206.5

Numbers in columns may not sum to totals due to rounding.

Table 9—Biomass dry weight of hardwoods on forest land and change, by survey unit, Arkansas, 2021 and 2022

Survey unit	2021	2022	Change
<i>thousand tons</i>			
South Delta	79,926.4	81,831.7	1,905.3
North Delta	47,784.6	48,717.7	933.1
Southwest	166,376.1	167,336.6	960.5
Ouachita	103,530.7	105,227.0	1,696.3
Ozark	298,696.3	301,095.9	2,399.6
All units	696,314.0	704,208.8	7,894.8

Numbers in columns may not sum to totals due to rounding.

Table 10—Volume of 15 most dominant species on forest land by 5-inch diameter classes, Arkansas, 2022

		Diameter class (inches)					
Species	Total	5.0–9.9	10.0–14.9	15.0–19.9	20.0–24.9	25.0–29.9	30+
million cubic feet							
Loblolly pine	9,909.8	2,716.3	3,700.8	2,211.0	934.3	305.2	42.2
Shortleaf pine	4,633.3	696.9	1,843.5	1,612.6	459.4	20.8	0.0
White oak	3,311.5	589.4	1,171.4	937.4	419.2	140.1	54.2
Sweetgum	2,440.6	621.3	786.9	557.8	270.2	114.4	90.0
Post oak	1,813.3	423.1	698.8	418.9	222.6	23.5	26.5
Northern red oak	1,094.8	124.7	337.6	395.1	156.1	73.4	7.8
Southern red oak	920.3	110.8	252.6	297.1	130.9	88.8	40.0
Black oak	896.9	119.5	323.8	260.9	118.1	58.5	16.1
Water oak	856.6	152.0	204.0	232.6	135.8	71.8	60.6
Cherrybark oak	820.8	59.4	119.5	145.3	225.3	109.6	161.6
Black hickory	810.9	370.6	310.8	110.7	11.1	7.7	0.0
Eastern redcedar	750.3	428.3	266.3	53.6	2.2	0.0	0.0
Mockernut hickory	739.9	280.7	281.0	130.8	47.5	0.0	0.0
Baldcypress	725.4	20.5	84.7	107.1	116.4	113.3	283.3
Willow oak	634.7	78.4	123.2	148.3	177.7	76.6	30.4
Other species	7,129.2	1,923.1	1,891.8	1,433.5	960.1	523.7	396.8
All species	37,492.3	8,715.0	12,396.7	9,052.7	4,386.9	1,727.4	1,209.5

0.0 = no sample for the cell or a value >0.0 but <0.05.

Numbers in columns may not sum to totals due to rounding.

Table 11—Area of forest land by survey unit and cutting class, Arkansas, 2017–2022

Cutting class ¹ (percent)	Survey units					
	All units	South Delta	North Delta	Southwest	Ouachita	Ozark
<i>thousand acres</i>						
<1.0	16,818.1	1,323.7	785.3	5,671.1	3,139.2	5,898.9
1.0–9.9	242.5	19.7	0.0	91.1	54.3	77.4
10.0–19.9	201.8	5.9	7.5	83.6	26.2	78.6
20.0–29.9	249.1	20.8	6.0	161.8	16.3	44.3
30.0–39.9	247.7	7.4	0.0	168.2	30.5	41.6
40.0–49.9	222.1	9.5	6.0	158.5	24.1	24.0
50.0–59.9	195.7	11.9	0.0	139.6	26.0	0.0
60.0–69.9	110.4	11.9	0.0	54.7	43.8	18.2
70.0–79.9	80.1	5.9	0.0	49.3	18.6	6.3
80.0–89.9	144.1	5.6	0.0	114.4	8.3	15.8
≥90.0	307.4	27.1	4.2	245.2	26.6	4.3
All classes	18,819.0	1,449.5	808.9	6,937.5	3,413.8	6,209.4

0.0 = no sample for the cell or a value >0.0 but <0.05.

Numbers in columns may not sum to totals due to rounding.

¹Percentage of total stand basal area removed by cutting.

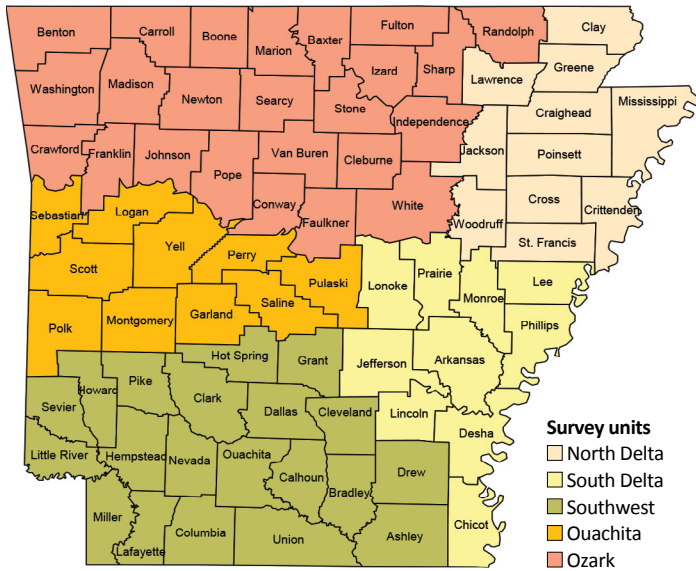


Figure 1—Arkansas counties and forest survey units.

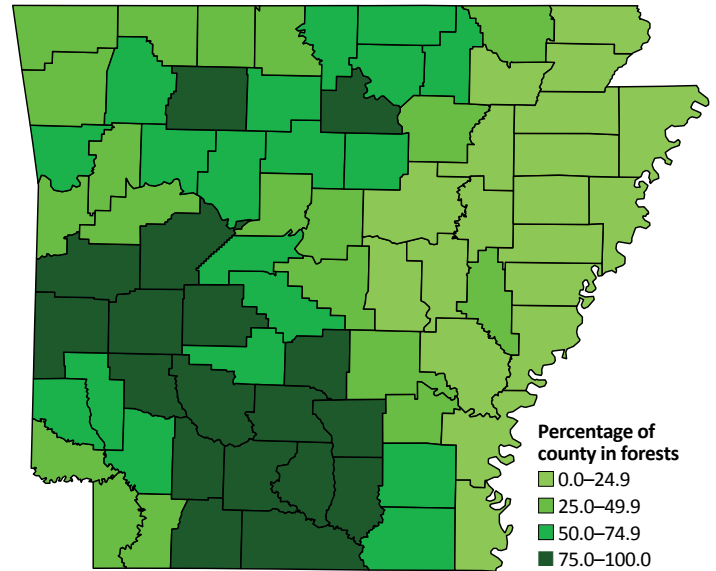


Figure 2—Percentage of county spatial area in forest land, Arkansas, 2022.

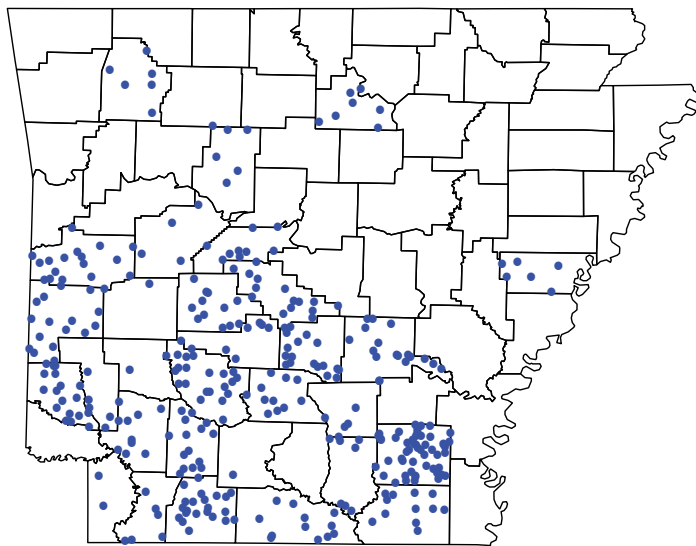


Figure 3—Spatial distribution of forest land that had 50.0 to 74.9 percent of stand basal area removed by cutting, 2017–2022. Each dot represents 1,000 acres of cut forest land. There are 344,208 acres represented in this map.

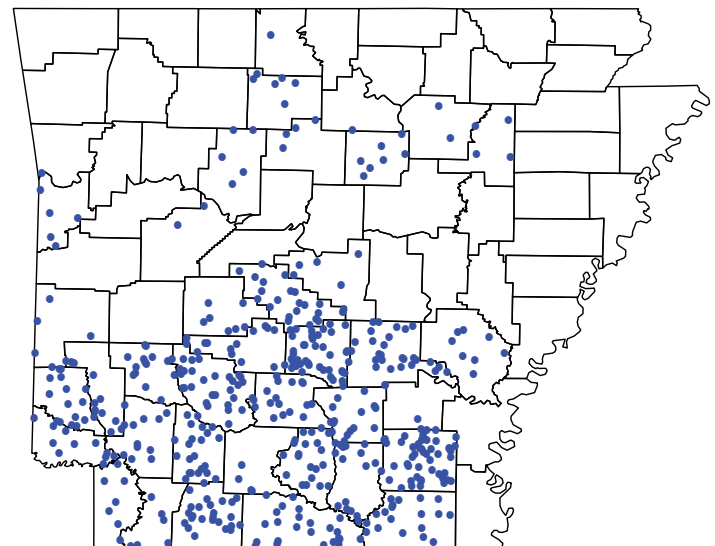


Figure 4—Spatial distribution of forest land that had 75.0 to 100.0 percent of stand basal area removed by cutting, 2017–2022. Each dot represents 1,000 acres of cut forest land. There are 493,452 acres represented in this map.

FOREST LAND CUTTING ACTIVITY

Cutting (comprised of harvesting, thinning, and stand improvement) can be depicted in two different ways: (1) by the amount of timber volume removed, or (2) by the amount of forest land area impacted by cutting activity. This brief overview reports the amount of forest land cutting activity between 2017 and 2022. In addition, the area by level of cutting is also reported.

Between 2017 and 2022, 2,000.9 thousand acres underwent cutting activity in Arkansas (table 11). Most of the cutting was in the Southwest unit, 1,266.4 thousand acres.

Heaviest cutting (>80 percent of stand basal area removed) occurred on 451,500 acres (table 11). Again, most of this high degree of cutting was in the Southwest unit, 359,600 acres.

Figures 3 and 4 show the spatial distribution of two levels of cutting activity: (1) stands with 50.0–74.9 percent of basal area removed (fig. 3), and (2) stands with ≥75.0 percent of basal area removed (fig. 4). Most of the cutting was in the southern region of Arkansas with a sprinkling of activity in some northern counties. The heaviest cutting activity was in Drew County for 50.0–74.9 percent of basal area removed, and Drew and Grant Counties for ≥75.0 percent of basal area removed.

The primary area of forestry activity remains in the Southwest unit. These baseline estimates are important tools to help forest managers and State officials monitor and shape forest policy into the future.

A NOTE ON TREND

Beginning with the 2022 resource update, FIA has adopted new models and equations to derive volume, biomass, and carbon estimates. The older Arkansas data in the FIA database, beginning with implementation of the new sample design (2000), have been reprocessed to reflect these changes. However, the written publications (2009–2021 resource updates) were not updated and revised.

Users can see the impact of these equation changes by comparing the 2021 estimates in the 2022 resource update with the 2021 estimates published in the 2021 resource update (Rosson 2022). Area estimates were not impacted; only volume, growth, removal, mortality, biomass, and carbon estimates changed. The largest impact was in biomass and carbon with much smaller differences in volume, growth, removals, and mortality. Absolute comparisons, especially for biomass and carbon, would not be valid.

The magnitudes of change in Arkansas were greatest for biomass and carbon. There was a 13-percent increase in the total biomass estimate. For example, the 2021 biomass estimate (new equations) is 1,029,610.9 thousand tons (table 1). The 2021 biomass estimate with old equations was 910,027.6 thousand tons (Rosson 2022). This equates to a 119,583.3 thousand-ton difference, a 13-percent increase. The net volume change was much less at only 3 percent. The smallest differences were in growth (1 percent), removals (slightly <1 percent), and mortality (2 percent). Users can compare unit-level estimates between tables in the 2022 resource update and the 2021 resource update (Rosson 2022).

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FIA: <https://www.fs.usda.gov/research/programs/fia>
Southern FIA: <https://www.fs.usda.gov/srsfia/>

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