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Arkansas's Forests, 2020



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Cover photo: A rocky stream pool in Logan County, AR, bordered by mixed hardwood and pine forest. (Courtesy photo by Arkansas Division of Forestry)

Following page photo: Pine cone hanging from a branch. (U.S. Forest Service photo by Andrew Hartsell)

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FOREWORD

The U.S. Department of Agriculture Forest Service, Southern Research Station's (SRS) Forest Inventory and Analysis (FIA) research work unit and cooperating State forestry agencies conduct annual forest inventories of resources in the 13 Southern States (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia), the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. In order to provide more frequent and nationally consistent information on America's forest resources, all research stations and their respective FIA work units conduct annual surveys with a common sample design. These surveys are mandated by law through the Agricultural Research Extension and Education Reform Act of 1998 (Farm Bill) (AREERA 1998) and updated in Title VIII of the 2014 Farm Bill (Agricultural Act of 2014).

The primary objective in conducting these inventories is to gather the multi-resource information needed to formulate sound forest policies, provide information for economic development, develop forest programs, and provide a scientific basis to monitor forest ecosystems. These data are used to provide an overview of forest resources that may include, but not limited to, forest area, forest ownership, forest type, stand structure, timber volume, growth, removals, mortality, management activity, down woody material, and invasive species. The information presented is applicable at the State and survey unit level; although it provides the background for more intensive studies of critical situations, it is not designed to reflect resource conditions at small scales.

More information about Forest Service resource inventories is available in *Forest Resource Inventories: An Overview* (USDA Forest Service 1992). More detailed information about sampling methodologies used in the annual FIA inventories can be found in *The Enhanced Forest Inventory and Analysis Program-National Sampling Design and Estimation Procedures* (Bechtold and Patterson 2005).

Data tables included in FIA reports are designed to provide an array of forest resource estimates, but additional tables can be obtained from the "Data and Tools" section of the national FIA program website (USDA Forest Service 2025a). Additional information about the FIA program can be obtained at the USDA Forest Service Research and Development website (USDA Forest Service 2025b).

Additional information about any aspect of this or other FIA surveys may be obtained from:

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CONTENTS

FOREWORD	ii
ACKNOWLEDGMENTS	iii
HIGHLIGHTS	1
Area	1
Volume	1
Species	1
Net Growth and Removals	1
Forest Health	1
Timber Products Output	1
INTRODUCTION	2
PHYSIOGRAPHY	2
FOREST AREA	4
Trends in Forest Area	4
Ownership	5
Stand Origin	6
Forest Type	6
Stand-age	7
Land-use Change and Trends	8
STAND INVENTORY	8
SPECIES	11
GROWTH AND REMOVALS	13
FOREST HEALTH	19
Mortality	20
TIMBER PRODUCT OUTPUT AND UTILIZATION	21
Timber Products	21
Mill Residue	27
Land Use Removals	31
Logging Residue	32

LITERATURE CITED	34
GLOSSARY	36
APPENDIX 1—INVENTORY METHODS	50
What Is Forest Inventory and Analysis?	50
What Is a Tree?	50
What Is a Forest?	50
History of Arkansas's Forest Inventory	53
Annualized Forest Inventory	54
Area	54
Sample Design and Plot Placement	54
Plot Design	54
Volume Estimation	55
Growth, Removals, and Mortality Estimation	56
What Is in This Resource Bulletin?	56
Where to Find Additional Information?	56
Dot Map Methodology	57
Summary	57
Literature Cited	57
APPENDIX 2—DATA RELIABILITY	59
Measurement Error	59
Sampling Error	59
Literature Cited	60
APPENDIX 3—SUPPLEMENTAL TABLES	61

LIST OF FIGURES

Figure 1 —Forest survey units of Arkansas.	3
Figure 2 —Physiographic sections of Arkansas.	3
Figure 3 —Percent of county in forests, Arkansas, 2020.	5
Figure 4 —Area of forest land by major ownership groups, Arkansas, 2020.	6
Figure 5 —Area of forest land by stand origin and survey period, Arkansas.	6
Figure 6 —Area of forest land by forest type groups and survey period, Arkansas.	7
Figure 7 —Area of forest land by stand-age class and survey period, Arkansas.	7
Figure 8 —Annualized land-use change, Arkansas, 2009–2020.	8
Figure 9 —All-live softwood volume, Arkansas, 2020. Each dot represents 1 million cubic feet of live-tree volume. See Methods section for map methodology.	9
Figure 10 —All-live hardwood volume, Arkansas, 2020. Each dot represents 1 million cubic feet of live-tree volume. See Methods section for map methodology.	10
Figure 11 —Total all-live volume of softwoods on forest land by diameter class and survey period, Arkansas.	11
Figure 12 —Total all-live volume of hardwoods on forest land by diameter class and survey period, Arkansas.	11
Figure 13 —Volume of all-live softwoods on forest land by species group, Arkansas 2020, and change since 2015.	13
Figure 14 —Volume of all-live hardwoods on forest land by species group, Arkansas 2020, and change since 2015.	13
Figure 15 —Average annual net growth and average annual net removals of all-live softwood species on forest land, Arkansas.	13
Figure 16 —Average annual net growth and average annual net removals of all-live hardwood species on forest land, Arkansas.	14
Figure 17 —Average annual softwood growth of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual growth. See Methods section for map methodology.	17
Figure 18 —Average annual softwood growth of all-live hardwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual growth. See Methods section for map methodology.	17
Figure 19 —Average annual softwood removals of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual removals. See Methods section for map methodology.	17
Figure 20 —Average annual hardwood removals of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual removals. See Methods section for map methodology.	17

Figure 21 —All-live softwood growth-to-removals ratio of forest land, Arkansas 2015–2020.	18
Figure 22 —All-live hardwood growth-to-removals ratio of forest land, Arkansas 2015–2020.	19
Figure 23 —Allocation (percentage) of merchantable and nonmerchantable volume by species group and product type, Arkansas 2020.	21
Figure 24 —Primary wood processing mill locations, Arkansas 2020.	23
Figure 25 —Forest products volume harvested and delivered for products (including residential fuelwood) from all sources, Arkansas 2011–2020.	25
Figure 26 —Total (a), softwood (b), and hardwood (c) roundwood production by county, Arkansas, 2020. .	25
Figure 27 —Volume of mill residue by roundwood and residue type, Arkansas 2015–2020.	29
Figure 28 —Mill residue volume by use, Arkansas 2015–2020.	31
Figure A1.1 —Layout of fixed radius plot.	55
Figure A1.2 —Structural components of trees.	56

LIST OF TABLES

Table 1 —Area by survey unit and land status, Arkansas, 2020	4
Table 2 —Area of forest land by survey unit, year of survey, and change, Arkansas 2015 and 2020	5
Table 3 —Volume of all-live species on forest land by survey unit and major species group, Arkansas, 2015 and 2020	8
Table 4 —Net volume of live trees on forest land by forest-type and ownership group, Arkansas, 2020 ...	10
Table 5 —Top 50 tree species dominant for volume (≥ 5.0 inches d.b.h) on forest land, Arkansas, 2020	12
Table 6 —Average net annual growth and net annual removals of all-live trees on forest land by species group and stand origin, Arkansas, 2016–2020	15
Table 7 —Average annual net growth and net annual removals of all-live trees on forest land by forest type and major species group, Alabama, 2016–2020	16
Table 8 —Average net annual growth and net annual removals of all-live trees on forest land by ownership group and major species group, Arkansas, 2016–2020	16
Table 9 —Average annual mortality of live trees on forest land by agent of mortality, survey period, and major species group, Arkansas	20
Table 10 —Output of Industrial roundwood products by product, species group, and year	24
Table 11 —Primary mill residue volume by roundwood type, species group, and residue type, Arkansas ..	28
Table 12 —Disposal of residue at primary wood-using plants by product, species group, and type of residue, Arkansas 2015–2020	30
Table 13 —Volume of timber removals by survey, species group, removals class and source	32
Table A1.1 —Common name, scientific name, and FIA species code of live tree species ≥ 1.0 inches in d.b.h. occurring on forest land in the FIA sample, Arkansas, 2020	50
Table A2.1 —Statistical reliability of forest land area estimates for Arkansas, 2020	59
Table A2.2 —Statistical reliability of all-live volume estimates for Arkansas, 2020	59
Table A2.3 —Statistical reliability of growth, removals, and mortality estimates for Arkansas, 2020	60
Table A3.1 —Area of forest land by ownership class and land status, Arkansas, 2020	61
Table A3.2 —Area of forest land by forest-type group and ownership group, Arkansas, 2020	62
Table A3.3 —Area of forest land by forest-type group and stand origin, Arkansas, 2020	62
Table A3.4 —Area of timberland by forest-type group and stand-size class, Arkansas, 2020	63
Table A3.5 —Number of live trees on forest land by species group and diameter class, Arkansas, 2020 ...	64

Table A3.6 —Net merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020	65
Table A3.7 —Net merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020	66
Table A3.8 —Net merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by species group and diameter class, Arkansas, 2020	67
Table A3.9 —Net merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand origin, Arkansas, 2020	68
Table A3.10 —Aboveground dry weight of live trees on forest land by ownership class and land status, Arkansas, 2020	68
Table A3.11 —Aboveground and belowground carbon in live trees (at least 1 inch d.b.h./d.r.c.) on forest land by ownership class and land status, Arkansas, 2020	69
Table A3.12 —Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) by ownership class and land status, Arkansas, 2020	69
Table A3.13 —Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020	70
Table A3.14 —Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020	71
Table A3.15 —Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) by ownership class and land status, Arkansas, 2020	72
Table A3.16 —Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020	72
Table A3.17 —Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020	73
Table A3.18 —Average annual removals of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020	74
Table A3.19 —Average annual removals of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020	75
Table A3.20 —Average annual removals of merchantable bole wood volume of growing-stock trees (at least 5 inches d.b.h.) on timberland by species group and ownership group, Arkansas, 2020	76

HIGHLIGHTS

Area

- In 2020, the total forest land area for Arkansas was 18.9 million acres.
- Arkansas's forest land increased 3 percent since 2005.
- In 2020, loblolly-shortleaf was the predominate forest type in Arkansas and accounted for 6.2 million acres (33 percent) of forest.
- Southern yellow-pine plantations occupied 3.8 million acres (4 percent) of the State's forest lands.
- Private landowners owned 80 percent of all forests statewide.

Volume

- Arkansas forests contain 15.2 billion cubic feet of all-live softwood species and 20.8 billion cubic feet of all-live hardwood species.
- Forests owned by nonindustrial private landowners hold 23 billion cubic feet of live tree volume, accounting for 64 percent of the State's total tree volume.

Species

- Loblolly pine was the predominant softwood species statewide and accounted for over 9 billion cubic feet (70 percent) of Arkansas's all-live softwood volume.
- In 2020, red oaks, sweetgum, yellow-poplar, white oaks, and hickory species were the most frequently occurring hardwood species.

Net Growth and Removals

- From 2015 to 2020, Arkansas forests produced 1.4 billion cubic feet of all-live volume each year, 952 million cubic feet per year from softwood growth and 492 million in hardwood species.

- Since 2015, a total of 765 million cubic feet were removed from the State's forests each year. The majority, 566 million cubic feet, were from softwood species, while the remaining 199 million cubic feet were from hardwood species.

Forest Health

- The annual mortality of softwood and annual mortality of hardwood trees averaged 75.7 and 226.2 million cubic feet, respectively.
- Emerald Ash Borer (EAB), (*Agrilus planipennis*), was detected in 25 Arkansas counties.

Timber Products Output

- In 2015, there were 76 primary wood using mills, 109 in 2017, 116 in 2018, 104 in 2019, and 103 in 2020.
- In 2020, volume harvested for softwood products was 487.4 million cubic feet (16.9 million green tons). The percentage of softwood roundwood harvested increased to a high of 87 percent in 2020. Total roundwood volume harvested for products showed some volatility but trended upward over the report period for softwood roundwood.
- Hardwood output volume showed more volatility for the report period, and trended downward overall, from 131.2 million cubic feet (4.9 million green tons) in 2015 to 75.9 million cubic feet (2.9 million green tons) in 2020.
- Pulpwood production ranged from a high of 276.1 million cubic feet (9.8 million green tons) in 2017 to a low of 185.2 million cubic feet (6.6 million green tons) in 2020.
- Overall roundwood mill residue increased 18 percent from the 2015 total of 211.8 million cubic feet to 249.6 million cubic feet in 2020, while logging residue volume increased from 148.4 million cubic feet in 2015 to 154.7 million cubic feet in 2020.

INTRODUCTION

This report presents findings of the 11th forest survey (cycle 11) of Arkansas (survey year dated 2020). The survey presents estimates based upon the third full cycle of data of the fixed-plot sample design implemented in 2000. Trend information in the report is based on comparisons with cycle 10 data (survey year dated 2015). The 2015 survey estimates have been modified slightly since published in the 2015 report (Rosson 2023); therefore, some of the 2015 numbers may not match exactly to previously published numbers. The revised 2015 numbers are used for comparisons. More detailed information concerning methods and trends is provided in the Methods section of appendix 1.

Numerous publications have been produced from previous State surveys of Arkansas. Except for the first survey, all other Arkansas surveys were summarized into a document commonly referred to as a State analytical report. In 1935, the first survey of Arkansas covered only areas most highly affected by harvesting in the early part of the 20th century: the Mississippi River Delta, the south and southwest areas, and the Ouachita Mountain area. The north and northwest areas of the State were not surveyed until 1951. Manuscripts from the 1935 survey of Arkansas were numerous (USDA Forest Service 1937b, 1938a, 1938b; Winters 1939). Additionally, two regional reports included information from the first survey of Arkansas (USDA Forest Service 1937a, 1937c). The first full survey was completed for the State of Arkansas in 1951 (USDA Forest Service 1953). Other State surveys were completed in 1959 (Sternitzke 1960), 1968 (Van Sickle 1970), 1978 (Van Hees 1980), 1988 (Beltz et al. 1992), 1995 (Rosson 2002), 2005 (Rosson and Rose 2010), 2010 (Rosson and Rose 2015), and 2015 (Rosson 2023).

Arkansas's 75 counties were divided into five forest survey units (fig. 1): North Delta (11 counties), South Delta (10 counties), Ouachita (10 counties), Ozark (24 counties), and Southwest (20 counties). In addition to their close alignment with physiographic and physiognomic features

of the State, the units facilitate certain processes in data analysis (an increase in the homogeneity of the data within each survey unit decreases the variance).

Field work began on January 7, 2016 and was completed on December 29, 2020. The survey was dated 2020. During the 2020 survey, 5,667 sample plots were visited by field crews and there were 4,573 forest conditions identified on 3,555 sample plots. The tables and figures throughout the report show estimates for the 2020 survey and revised estimates from the 2015 survey. An important element of this report is the detailed comparisons of the 2015 survey with the 2020 survey. Most of the tables and figures are the same in both reports, facilitating direct comparisons. Estimates were derived from data processed and posted in 2023 for both the 2015 and 2020 surveys. The appendix describes survey methods and data reliability, defines terms, and lists tree species sampled in the survey.

PHYSIOGRAPHY

The total land cover inside the State boundary of Arkansas is 34.0 million acres (USDC Bureau of the Census 2011). In area, it is the 29th largest of the 50 States. Arkansas is situated close to the western edge (limit) of tree cover for the eastern deciduous forest. The landscape across the State is very diverse, ranging from lowlands in the south, deltaic expanses along the Mississippi River, and mountains and highlands to the west and north. The highest point in Arkansas is Mount Magazine at 2,753 feet above sea level; the lowest point is the Ouachita River at 55 feet above sea level at the Louisiana State line. The mean elevation of Arkansas is 650 feet above sea level. Major rivers are the Arkansas River, Mississippi River, White River, and Ouachita River. Major lakes are Lake Ouachita and Bull Shoals Lake, both artificial impoundments on the Ouachita and White Rivers, respectively.

This diverse landscape is situated on three physiographic provinces: (1) the Coastal Plain, (2) the Ouachita, and (3) the Ozark. Six physiographic

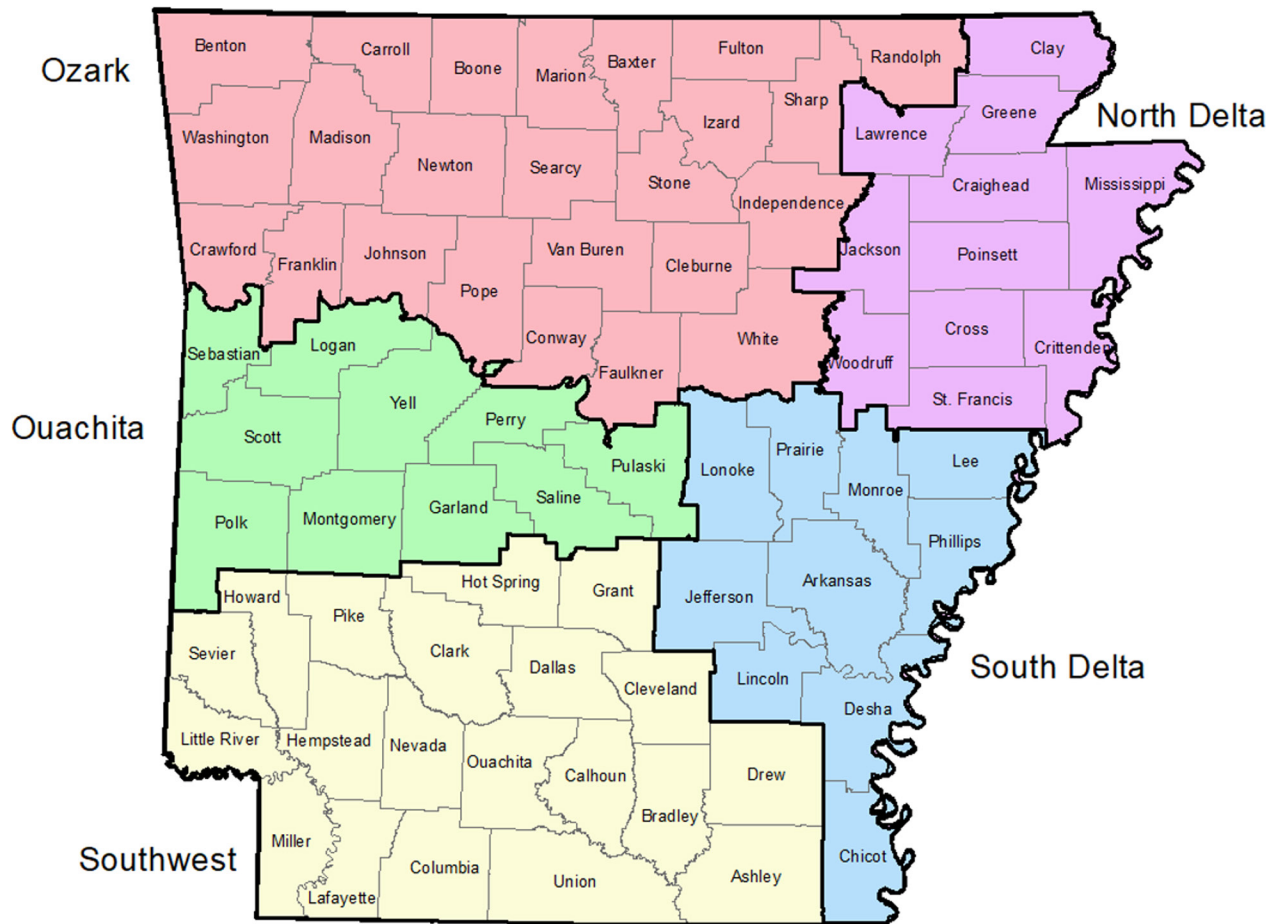


Figure 1—Forest survey units of Arkansas.

sections were adapted from Fenneman (1938). These sections occur on the three provinces (fig. 2). The section boundaries are similar to the Forest Inventory and Analysis (FIA) unit boundaries (fig. 1). The Springfield-Salem Plateaus, Boston Mountains, and Arkansas Valley sections are closely aligned with the FIA Ozark unit; the Ouachita Mountains section is aligned with the Ouachita unit; the west Gulf Coastal Plain section aligns with the Southwest unit; and the Mississippi Alluvial Plain section aligns with the North Delta and South Delta units. Because of past and continuous geological evolution and development, these regions have influenced the forest vegetation cover that occupied these lands in 2020. This section was adapted from Arkansas's Forests, 2015 (Rosson 2023).

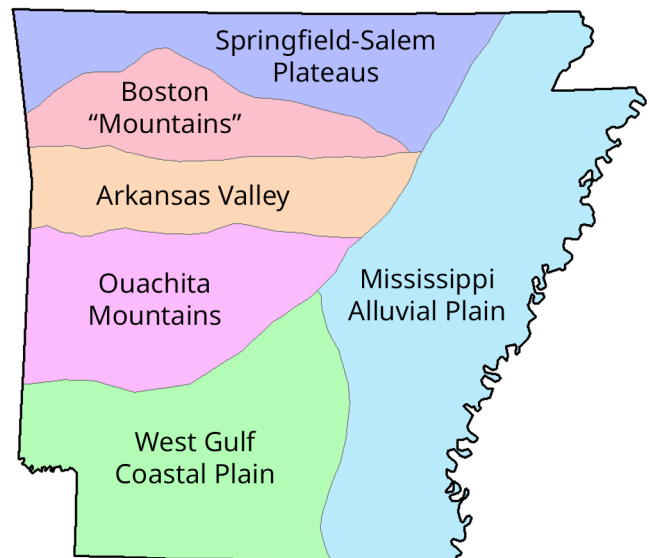


Figure 2—Physiographic sections of Arkansas.

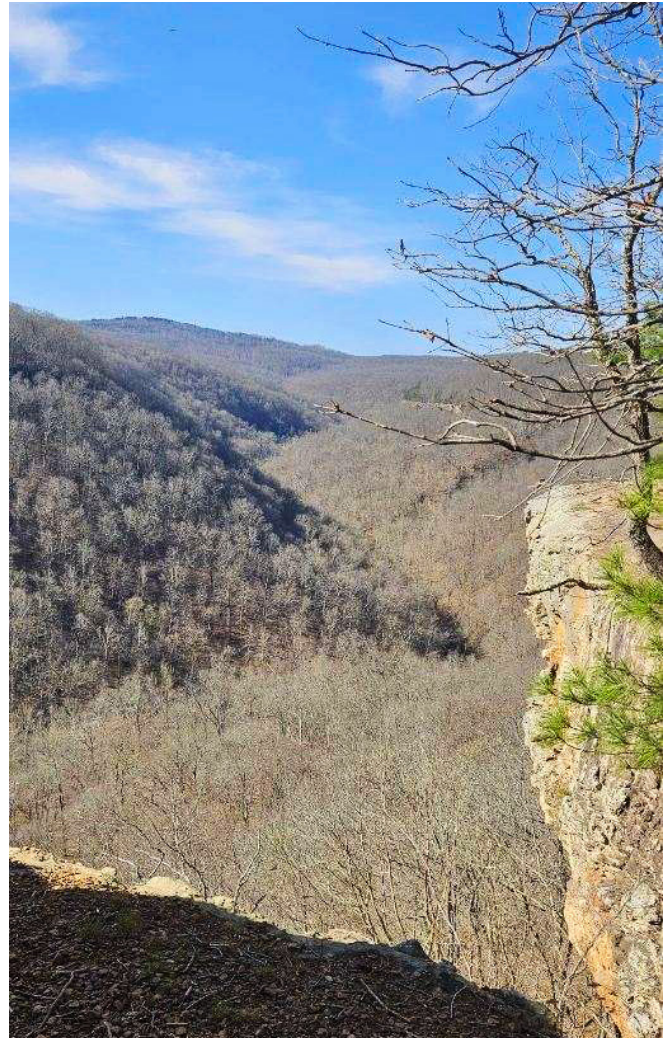
FOREST AREA

Trends in Forest Area

In 2020, 55 percent (18.9 million acres) of the State's 34.0 million total area, was classified as forested by FIA. Forest land was composed of two components, timberland at 18.4 million acres and reserved land at 494,400 acres (table 1). The Southwest and Ozark survey units accounted for over one-third of the forest land in the State at 6.9 and 6.3 million acres, respectively. The Ouachita unit is third with 3.4 million acres of forest. The Delta units combined contain the least amount of forest at 2.3 million acres.

The proportion of land area in forests for Arkansas's 75 counties ranged from 6 to 92 percent. Twenty counties had >75 percent of their land area in forests (fig. 3). Only one county, Mississippi, had <10 percent of its land area in forested conditions. Fifty-six of the 75 counties had over one-third of their land base covered in forests. The counties with the densest concentrations of forests were Grant, Union, and Dallas, all having just over 90 percent of their area in forests. A general statewide trend exists where the densest counties lie in the south-central and southwest, while the least dense occur in the Northeast.

Total area of forests decreased almost 1 percent over the last 5 years. The only survey unit that experienced a gain in forest area is the North



A high elevation overlook in Newton County, AR, with wooded ridges stretching across a deep valley. (Courtesy photo by Arkansas Division of Forestry.)

Table 1—Area by survey unit and land status, Arkansas, 2020

Survey unit	Total area	All forest	Unreserved			Reserved			Nonforest land	Census water
			Total	Timberland	Unproductive	Total	Productive	Unproductive		
thousand acres										
South Delta	4,787.8	1,446.0	1,264.8	1,264.80	0.0	181.3	181.3	0.0	3,174.8	166.9
North Delta	4,701.5	806.5	774.2	774.2	0.0	32.4	32.4	0.0	3,844.9	50.1
Southwest	8,907.8	6,944.8	6,853.3	6,853.3	0.0	91.4	91.4	0.0	1,831.3	131.7
Ouachita	4,869.1	3,419.0	3,372.9	3,351.6	21.4	46	46	0.0	1,312.1	138.1
Ozark	10,767.9	6,266.8	6,123.5	6,113.1	10.4	143.3	143.3	0.0	4,290.5	210.6
All survey units	34,034.1	18,883.2	18,388.7	18,356.9	31.8	494.4	494.4	0.0	14,453.6	697.4

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

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0.0 = a value of >0.0 but <0.05.

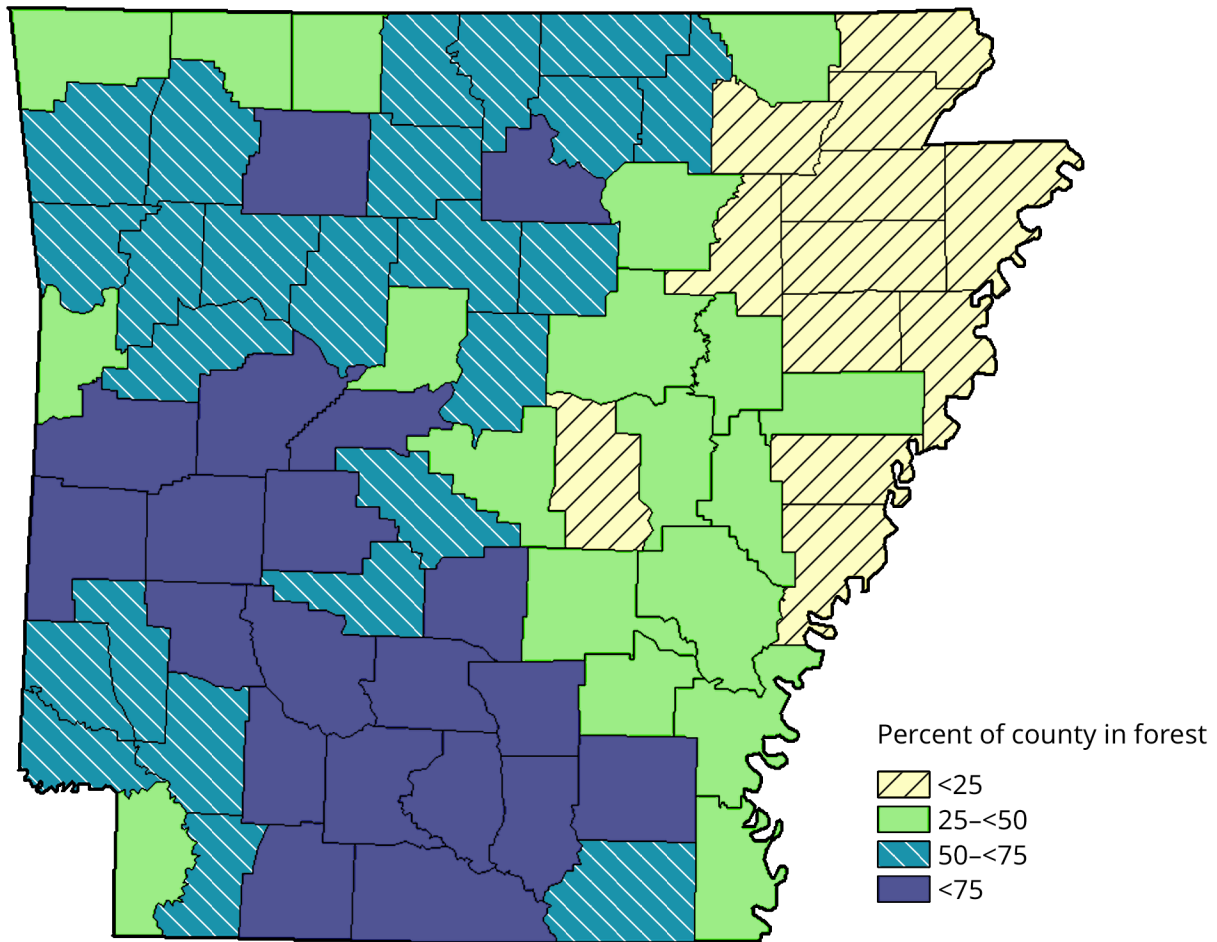


Figure 3—Percent of county in forests, Arkansas, 2020.

Delta unit, but this increase was almost negligible. The survey units with the largest loss of forest area were the South Delta and Ozark (table 2).

Ownership

Arkansas's forests have always been largely owned by private landowners, which include both forest industry and nonindustrial private entities (fig. 4). Both ownerships account for over 80 percent of the State's forests. National forests play a vital role in the forest landscape, as over 2.5 million (13 percent) of the forest area, occur on U.S. Department of Agriculture, Forest Service lands. Finally, other federal and State and local lands accounted for 3 percent of the State's forest each in 2020.

Table 2—Area of forest land by survey unit, year of survey, and change, Arkansas 2015 and 2020

Survey unit	2015	2020	Change
	thousand acres		percent
South Delta	1,472.9	1,446.0	-1.83
North Delta	805.2	806.5	0.16
Southwest	6,945.2	6,944.8	-0.01
Ouachita	3,448.5	3,419.0	-0.86
Ozark	6,368.0	6,266.8	-1.59
All units	19,039.8	18,883.1	-0.82

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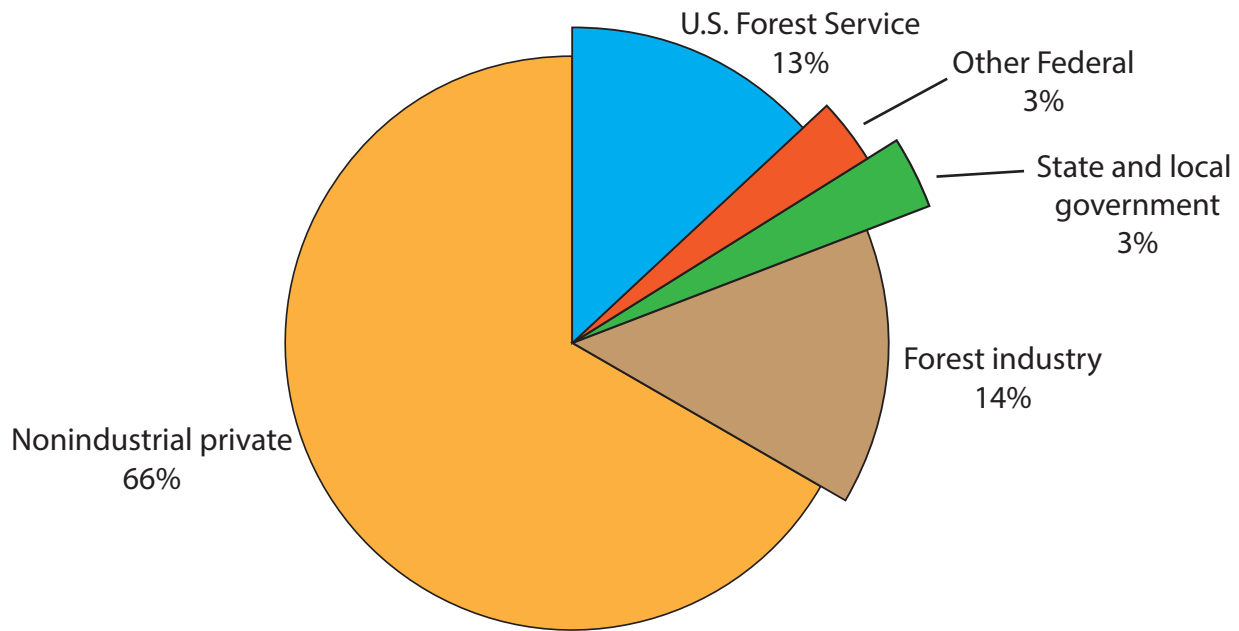


Figure 4—Area of forest land by major ownership groups, Arkansas, 2020.

Stand Origin

As of 2020, planted forests accounted for 1 in 5 acres across the State (fig. 5). While natural stands have historically dominated the landscape, plantation acreage has gradually increased. Planted stands have increased almost 30 percent

since 2005. Most of these planted forests are in southern yellow pine.

Forest Type

Arkansas's forests are dominated by two forest types: oak-hickory and loblolly-shortleaf pine, with oak-hickory being the dominant type (fig. 6). However, the changes in the acreages of these two types differ. Loblolly-shortleaf pines are gaining in area with each successive survey, increasing 17 percent since 2005. During the same time, oak-hickory acreage has fallen over 6 percent. Much of this is due to the conversion of older forests to planted loblolly forests described in the previous section.

Oak-pine and elm-ash-cottonwood forests form a second tier of forest types, with the former decreasing from 1.8 and 2.0 million acres over time and the latter increasing from 0.9 to 1.0 million acres. There were 263,000 acres of eastern softwoods and 140,000 acres of nonstocked forests. Pinyon-juniper, maple-beech-birch and other hardwood types also occur in Arkansas, none of them accounting for more than 29,000 acres and are not represented on the graph.

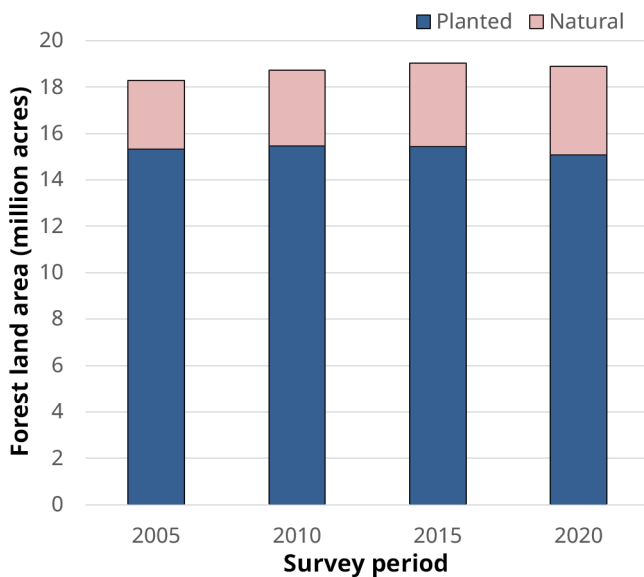


Figure 5—Area of forest land by stand origin and survey period, Arkansas.

ARKANSAS'S FORESTS, 2020

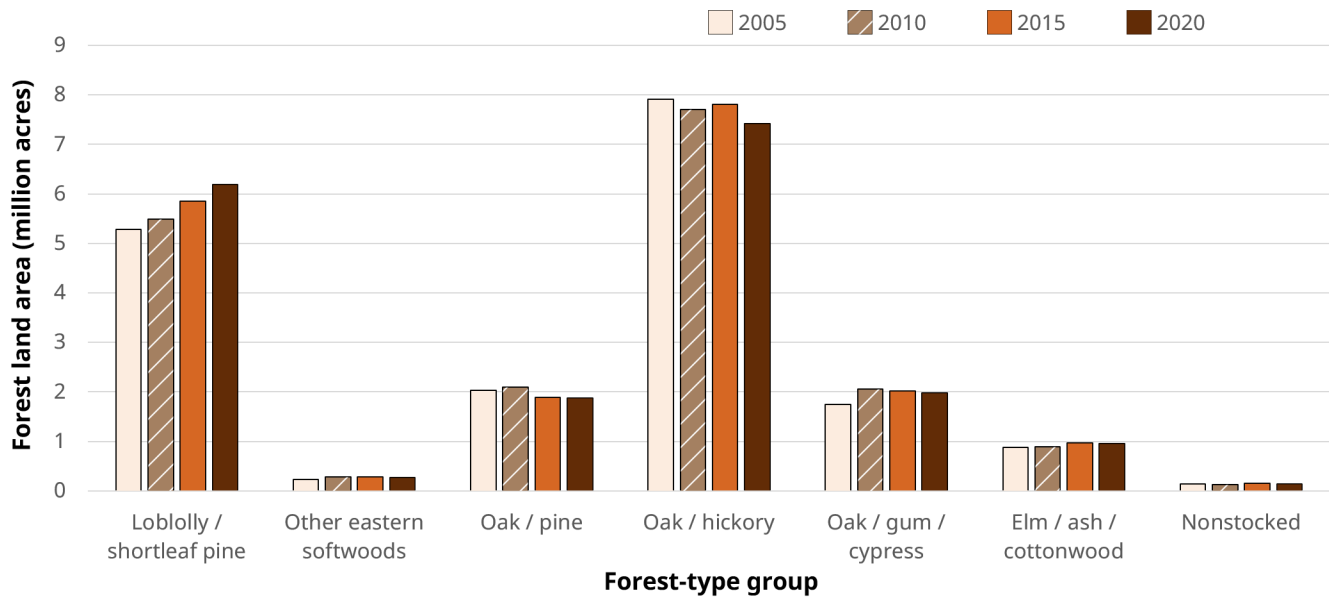


Figure 6—Area of forest land by forest type groups and survey period, Arkansas.

Stand-age

Plotting out forest land acreage by age class reveals a bi-modal or “two humped” distribution across Arkansas’s forests. There is a small peak at the early age classes, 15 years and younger, and a larger peak in the 50- to 75-year classes (fig. 7). The younger peak appears to be impacted by a large number of younger stands that came on in 2005 and 2010. Over 1.4 million acres in the first age class appeared in the 2010 survey. Figure 7 shows this spike moving to the 6- to <10-year class

in 2015 and eventually the 1- to <15-year class in 2020. The latest survey reveals that almost 1.3 million acres of forests occur in the 15- to <20-year class.

At the same time, what was the largest peak in the 55- to <60-age class for the 2010 survey has matured into the current peak at the 65- to <70-age class. The overall trend suggests that Arkansas’s forests continue to mature and a significant amount of acreage occurs in the older age classes.

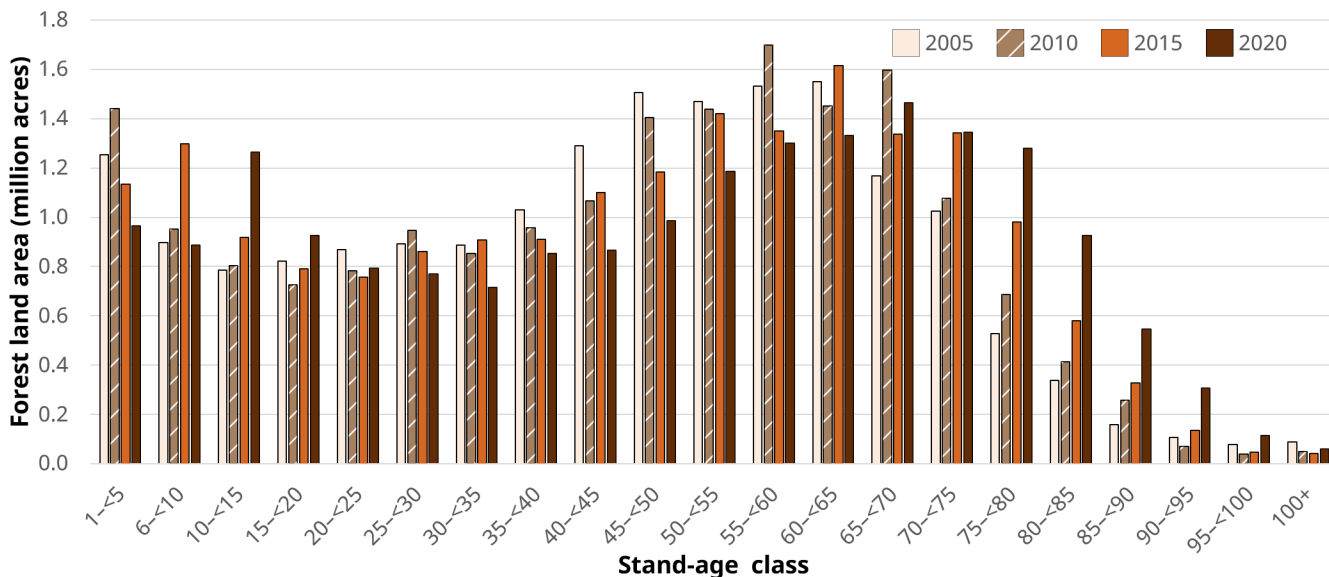


Figure 7—Area of forest land by stand-age class and survey period, Arkansas.

Land-use Change and Trends

This is the first report on the forests of Arkansas to present a matrix of land-use change by using the remeasured plots that are also used to calculate tree-level growth, removals, and mortality [see Scott et al. (2005) for the methods used to calculate these components of change, Roesch (2014) for the FIA field guide on field plot data collection and the FIA plot layout, and Brandeis et al. (2016) for the limitations of this approach]. Annualized area change was estimated in Arkansas from 2009 to 2020. Looking at land-use change over time shows not only how many acres changed land use on average each year but also trends in the rate of those changes.

Figure 8 reveals that this most recent period (2009–2020) features a slow decline in reforestation of agricultural land. That is, lands that were formerly under agriculture are reverting back to forests, but at a slower rate. In 2009, 138,000 acres of agriculture were converted to forests. As of 2020, that estimate has decreased to just over 29,000 acres per year. All other land use changes have remained relatively steady and offset each other. The impact to total forest area of the State is the gradual increase over time revealed in figure 5.

Table 3—Volume of all-live species on forest land by survey unit and major species group, Arkansas, 2015 and 2020

Survey unit	Softwoods		Hardwoods		All species	
	2015	2020	2015	2020	2015	2020
<i>million cubic feet</i>						
South Delta	592.6	637.2	2,566.5	2,728.7	3,159.1	3,365.8
North Delta	182.1	189.3	1,350.8	1,523.4	1,532.9	1,712.7
Southwest	7,049.8	8,205.9	4,825.4	4,955.6	11,875.2	13,161.5
Ouachita	3,384.8	3,843.2	2,616.9	2,913.4	6,001.7	6,756.6
Ozark	1,992.4	2,329.9	8,058.3	8,720.6	10,050.7	11,050.5
Total	13,201.7	15,205.5	19,417.9	20,841.6	32,619.6	36,047.1

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

Table created: 09-OCT-20.

STAND INVENTORY

Current estimates of Arkansas's all-live volume reveal increases in both hardwood and softwood species. All-live volume is a measure that includes all species and size classes on all forest lands, commercial or not. Total all-live volume has risen over 10 percent since the 2015 inventory. The standing all-live volume of all species for the Southwest and Ozark units are 13.1 billion and 11.1 billion cubic feet, respectively (table 3). These two units are responsible for over 67 percent of the State's all-live inventory.

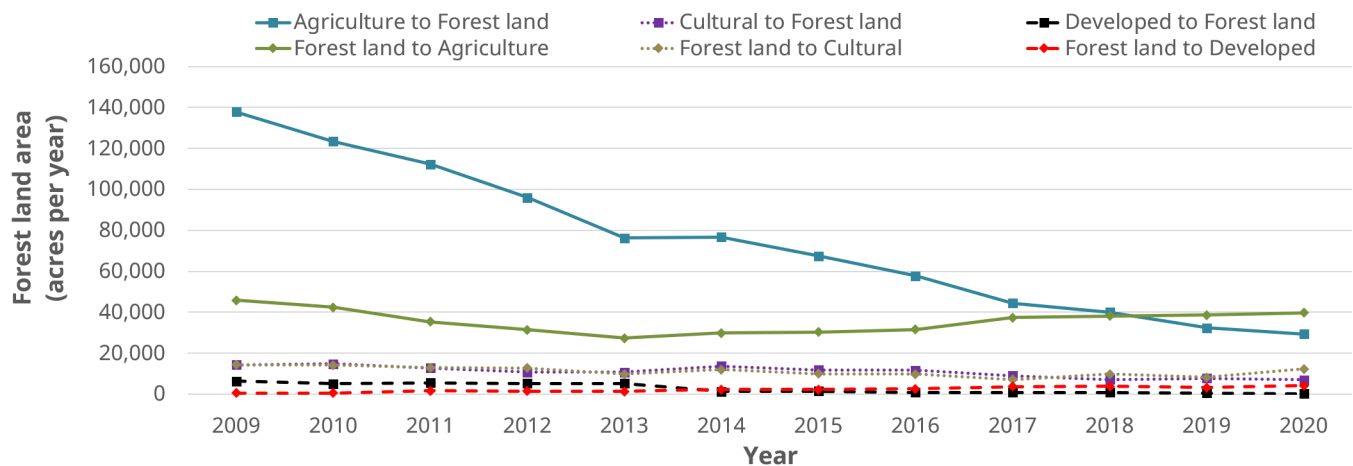


Figure 8—Annualized land-use change, Arkansas, 2009–2020.



A panoramic overlook from Mount Magazine in Logan County, AR, showing forested mountains and distant lowlands under a wide sky. (Courtesy photo by Arkansas Division of Forestry)

The 2020 estimate of all-live softwood volume for Arkansas is 15.2 billion cubic feet, an increase of 7.5 percent since 2015 (table 3). The Southwest unit contains 8.2 billion cubic feet of softwood species, over one-half (54 percent) of the State's softwood volume. The Ouachita and Ozark units are next with 3.8 billion and 2.3 billion cubic feet of live softwood. The South Delta and North Delta units have little softwood volume, with each unit containing less than 1 billion cubic feet each.

Total all-live hardwood exceeds the softwood inventory. As of 2020, 20.8 billion cubic feet of all-live hardwood volume exist within the State, with the Ozark and Southwest units leading the way with 8.7 billion and 4.9 billion cubic feet, respectively (table 3).

In 2020, all-live softwood volume was distributed unevenly across the State. It was greatest in the southwest portion of the State, and lowest in the northern counties. The counties with the most all-live softwood volume were Union, Scott, Columbia, and Yell. The counties with the least amount of all-live softwood volume were Cross and Crittenden (fig. 9).

Hardwoods occurred throughout the State. All-live hardwood volume increased slightly from south to north. The counties with the highest all-live hardwood volume were Newton and Pope. The counties with the lowest amounts of all-live hardwood volume were Cross and Mississippi (fig. 10).

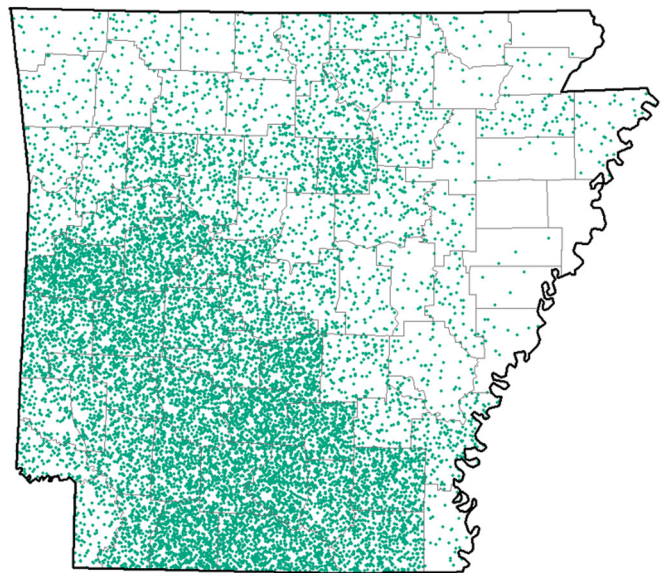


Figure 9—All-live softwood volume, Arkansas, 2020. Each dot represents 1 million cubic feet of live-tree volume. See Methods section for map methodology.

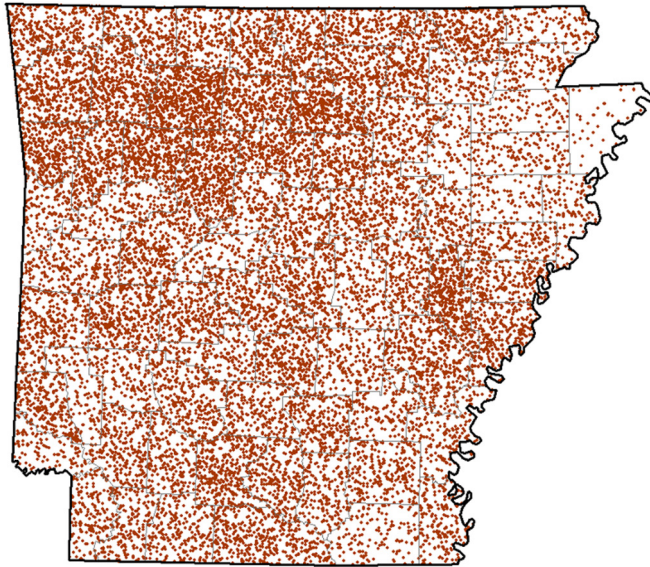


Figure 10—All-live hardwood volume, Arkansas, 2020. Each dot represents 1 million cubic feet of live-tree volume. See Methods section for map methodology.

Sixty-four percent of all-live volume occurred on nonindustrial private forests (NIPF), 17 percent was found on forests owned by the Forest Service and 10 percent on forests owned by forest industry (table 4). Most of this volume (70 percent) was concentrated in two forest-type groups, loblolly-shortleaf and oak-hickory, as these two forest types contained 36 percent and 34 percent of the State's all-live volume, respectively.

All-live softwood volume in the middle diameter classes has jumped considerably over the past four surveys. Between 2005 and 2020 inventories, volume in the 8- and 12-inch diameter classes rose 36 and 39 percent, respectively. All diameter classes between 6- and 26-inch experienced gains of at least 30 percent, while some rose over 50 percent. This increase in volume for softwood species between 8 and 20 inches in diameter can

Table 4—Net¹ volume of live trees on forest land by forest-type and ownership group, Arkansas, 2020

Species group	Forest-type group	All ownerships	Ownership group				
			U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwood	Loblolly/shortleaf pine	12,982.2	2,680.6	189.3	249.7	2,646.9	7,215.6
	Other eastern softwoods	290.6	18.5	10.9	0.0	5.3	255.9
	Pinyon/juniper	4.5	0.0	0.0	0.0	1.32	3.2
	Total softwoods	13,277.3	2,699.1	200.2	249.7	2,653.5	7,474.7
Hardwood	Oak/pine	3,339.5	764.2	122.5	168.9	222.7	2,061.1
	Oak/hickory	12,367.3	2,478.0	313.6	240.9	487.0	8,847.8
	Oak/gum/cypress	5,329.7	20.5	808.0	892.1	388.9	3,220.2
	Elm/ash/cottonwood	1,712.2	18.6	206.1	108.8	31.7	1,347.0
	Other hardwoods	10.6	3.5	0.0	0.0	0.0	7.1
	Exotic hardwoods	4.4	0.0	0.0	0.0	0.0	4.4
	Total hardwoods	22,763.7	3,284.9	1,450.2	1,410.7	1,130.4	15,487.6
Nonstocked		6.2	0.2	0.0	0.0	0.31	5.7
Total		36,047.1	5,984.2	1,650.3	1,660.4	3,784.2	22,967.9

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

Table created: 24-March-21.

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

¹ Excludes rotten, missing, and form cull defects volume.

be attributed directly to the establishment of pine plantations. Except for the 28-inch class, softwood volume for every diameter class was at its highest recorded level (fig. 11).

All-live hardwood volume of Arkansas's forests has risen as well. However, unlike softwood volume, which had a spike in the 8- to 16-inch diameter classes, hardwood volume has increased over all diameter classes for the last 15 years. This increase is proportional to tree size. For example, 2020 hardwood volume in the 12-inch class is 5 percent higher than in 2005. The 2020 inventory volumes in the 16-, 20-, and 26-inch classes were 21, 34, and 51 percent greater, respectively,

than the corresponding 2005 estimates. In 2020, hardwood volume for every diameter class was greater than the 2005 estimate (fig. 12).

SPECIES

Loblolly pine (*Pinus taeda*) was the predominant softwood species in Arkansas, accounting for over 9.2 billion cubic feet (26 percent) of all-live volume in 2020 (table 5). The volume in this one species was over twice as much as the second ranked softwood species, shortleaf pine (*Pinus echinata*). The 2020 inventory of loblolly pine accounted for over 61 percent of the State's total softwood volume. All softwood species experienced gains

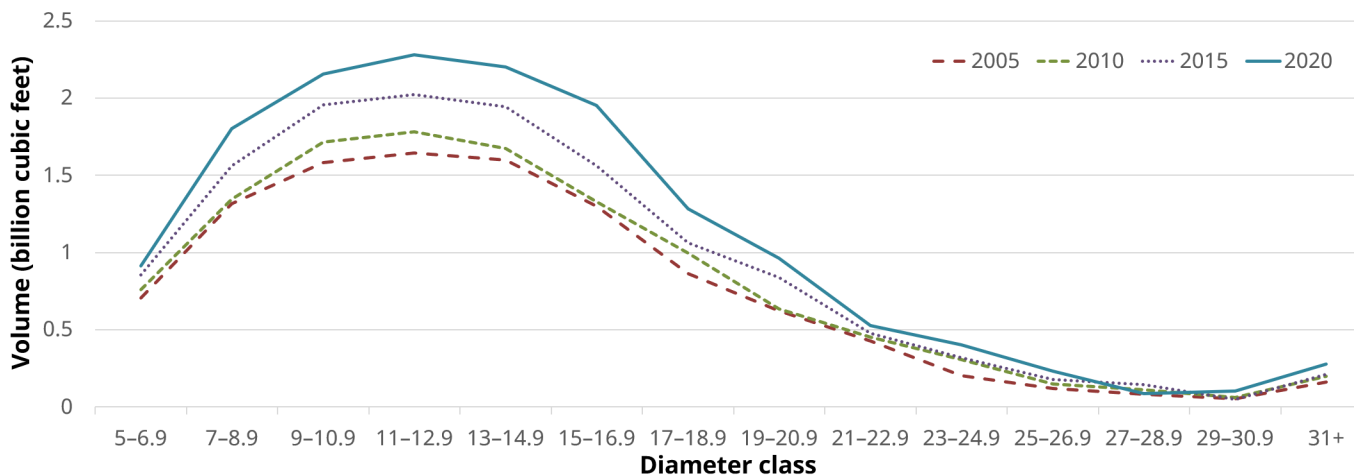


Figure 11—Total all-live volume of softwoods on forest land by diameter class and survey period, Arkansas.

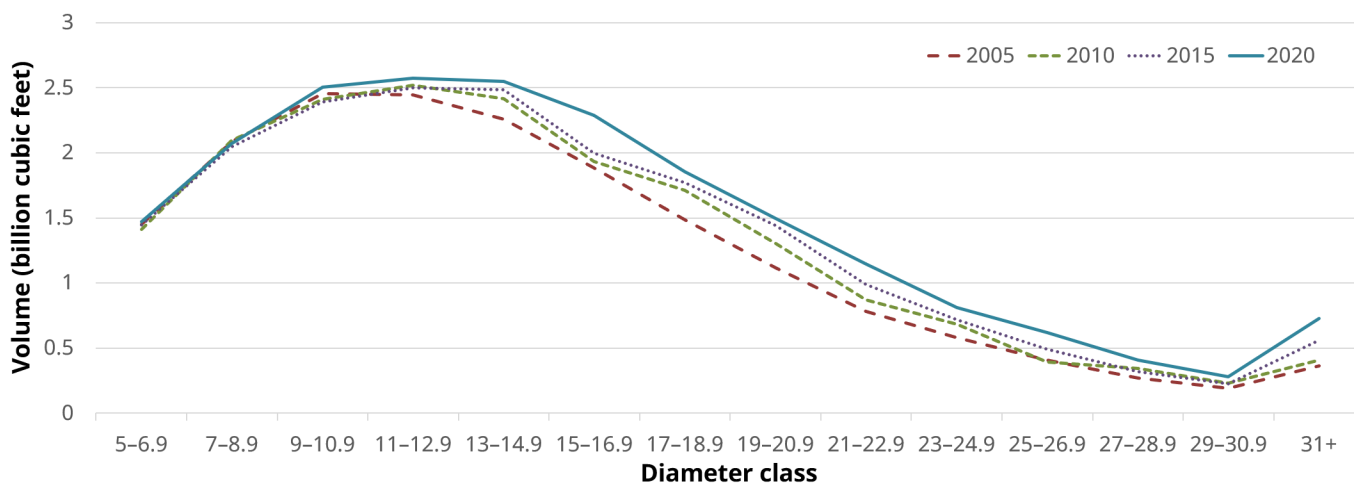


Figure 12—Total all-live volume of hardwoods on forest land by diameter class and survey period, Arkansas.

ARKANSAS'S FORESTS, 2020

Table 5—Top 50 tree species dominant for volume (≥ 5.0 inches d.b.h) on forest land, Arkansas, 2020

Common name	Genus	Species	Volume
			<i>million cubic feet</i>
Loblolly pine	<i>Pinus</i>	<i>taeda</i>	9,293.6
Shortleaf pine	<i>Pinus</i>	<i>echinata</i>	4,507.5
White oak	<i>Quercus</i>	<i>alba</i>	3,219.3
Sweetgum	<i>Liquidambar</i>	<i>styraciflua</i>	2,348.4
Post oak	<i>Quercus</i>	<i>stellata</i>	1,748.9
Northern red oak	<i>Quercus</i>	<i>rubra</i>	1,058.3
Southern red oak	<i>Quercus</i>	<i>falcata</i>	905.3
Black oak	<i>Quercus</i>	<i>velutina</i>	880.2
Water oak	<i>Quercus</i>	<i>nigra</i>	826.7
Black hickory	<i>Carya</i>	<i>texana</i>	779.2
Cherrybark oak	<i>Quercus</i>	<i>pagoda</i>	767.2
Mockernut hickory	<i>Carya</i>	<i>alba</i>	721.6
Eastern redcedar	<i>Juniperus</i>	<i>virginiana</i>	712.4
Baldcypress	<i>Taxodium</i>	<i>distichum</i>	689.2
Willow oak	<i>Quercus</i>	<i>phellos</i>	630.8
Overcup oak	<i>Quercus</i>	<i>lyrata</i>	584.4
Blackgum	<i>Nyssa</i>	<i>sylvatica</i>	523.4
Green ash	<i>Fraxinus</i>	<i>pennsylvanica</i>	440.8
Nuttall oak	<i>Quercus</i>	<i>texana</i>	348.6
Sugarberry	<i>Celtis</i>	<i>laevigata</i>	344.7
Water tupelo	<i>Nyssa</i>	<i>aquatica</i>	341.7
Red maple	<i>Acer</i>	<i>rubrum</i>	328.0
Winged elm	<i>Ulmus</i>	<i>alata</i>	303.7
Shaghark hickory	<i>Carya</i>	<i>ovata</i>	271.2
American sycamore	<i>Platanus</i>	<i>occidentalis</i>	218.8
American elm	<i>Ulmus</i>	<i>americana</i>	216.8

in volume since the 2015 inventory. Loblolly pine volume has increased 18 percent during that timeframe, while shortleaf pine and cypress species (*Taxodium* spp.) increased 10 percent and 11 percent, respectively (fig. 13).

Table 5—Top 50 tree species dominant for volume (≥ 5.0 inches d.b.h) on forest land, Arkansas, 2020 (continued)

Common name	Genus	Species	Volume
			<i>million cubic feet</i>
Black cherry	<i>Prunus</i>	<i>serotina</i>	195.5
Slippery elm	<i>Ulmus</i>	<i>rubra</i>	193.1
Water hickory	<i>Carya</i>	<i>aquatica</i>	183.9
Black willow	<i>Salix</i>	<i>nigra</i>	167.8
Eastern cottonwood	<i>Populus</i>	<i>deltoides</i>	159.5
White ash	<i>Fraxinus</i>	<i>americana</i>	154.4
Bitternut hickory	<i>Carya</i>	<i>cordiformis</i>	153.9
Florida maple	<i>Acer</i>	<i>barbatum</i>	138.2
American beech	<i>Fagus</i>	<i>grandifolia</i>	128.0
Pecan	<i>Carya</i>	<i>illinoensis</i>	117.4
Black walnut	<i>Juglans</i>	<i>nigra</i>	113.0
Chinkapin oak	<i>Quercus</i>	<i>muehlenbergii</i>	110.3
Swamp chestnut oak	<i>Quercus</i>	<i>michauxii</i>	99.5
Shumard oak	<i>Quercus</i>	<i>shumardii</i>	95.4
Boxelder	<i>Acer</i>	<i>negundo</i>	93.6
Pignut hickory	<i>Carya</i>	<i>glabra</i>	88.9
Hackberry	<i>Celtis</i>	<i>occidentalis</i>	84.1
Blackjack oak	<i>Quercus</i>	<i>marilandica</i>	70.5
Honeylocust	<i>Gleditsia</i>	<i>triacanthos</i>	65.0
Common persimmon	<i>Diospyros</i>	<i>virginiana</i>	60.7
Silver maple	<i>Acer</i>	<i>saccharinum</i>	59.8
American holly	<i>Ilex</i>	<i>opaca</i>	44.8
Planertree	<i>Planera</i>	<i>aquatica</i>	44.8
River birch	<i>Betula</i>	<i>nigra</i>	40.9
Total			35,673.7

Numbers in rows and columns may not sum to totals due to rounding.
Table created: 10-Feb-16.

Unlike its softwoods resource, Arkansas's hardwoods were not dominated by a single species. In 2020, the white oak group contained the most all-live volume, 5.4 billion cubic feet, followed closely by red oaks with 5.3 billion cubic

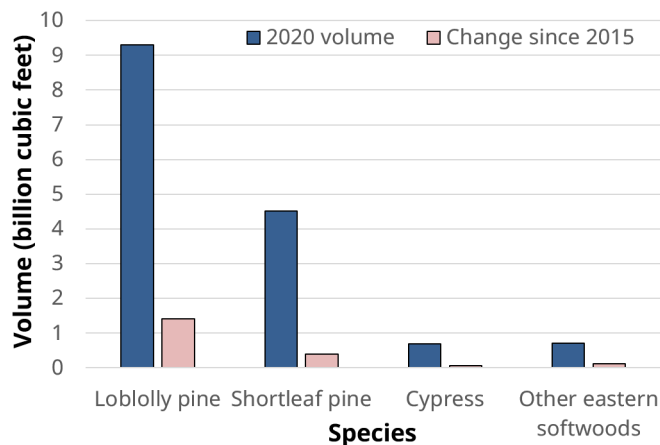


Figure 13—Volume of all-live softwoods on forest land by species group, Arkansas 2020, and change since 2015.

feet. Sweetgum (*Liquidambar styraciflua*) and hickory species (*Carya* spp.) each accounted for 2.3 billion cubic feet (fig. 14). It is important to note that sweetgum is an individual species, while red oaks, white oaks, and hickory are species groups which include numerous tree species that fall under those classifications. All hardwood species groups experienced increases in volume or remained stable since the 2015 survey. The white oak and red oak groups each experienced the greatest volume increase over the last 5 years by adding an additional 330 million and 320 million cubic feet of all-live volume.

GROWTH AND REMOVALS

In 2020, 952 million cubic feet of softwood volume was produced each year in Arkansas, a 21-percent

increase in annual volume increment over the 2015 inventory (fig. 15). Conversely, 566 million cubic feet of softwood volume are removed each year in harvest operations, almost the same 21 percent increase over 2015 as seen in softwood growth. The current growth-to-removals ratio for the State's softwoods is 1.7, indicating that for every cubic foot of softwood cut, 1.7 cubic feet are grown.

Arkansas's forests grew 1.4 billion cubic feet of all-live trees annually. In 2020, 492 million cubic feet of hardwood were grown each year in Arkansas, while 199 million cubic feet were removed (fig. 16). The 2020 estimate of annual hardwood growth was the highest recorded for the State. The growth-to-removals ratio for hardwoods was 2.5. Softwood growth was almost

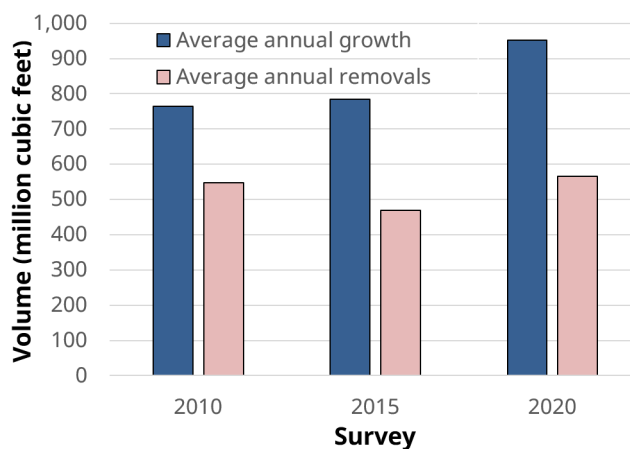


Figure 15—Average annual net growth and average annual net removals of all-live softwood species on forest land by survey period, Arkansas.

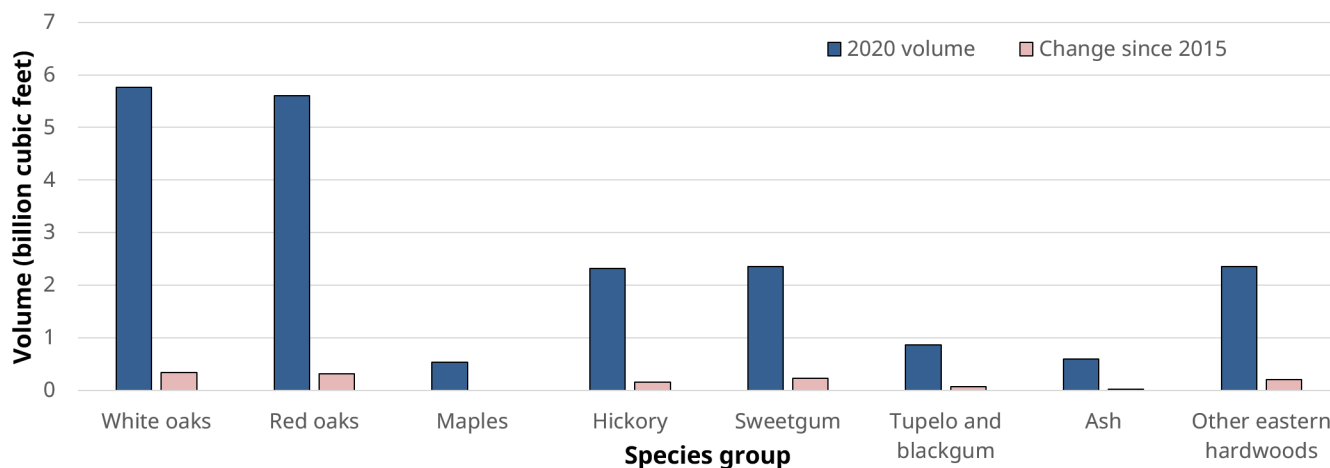


Figure 14—Volume of all-live hardwoods on forest land by species group, Arkansas 2020, and change since 2015.

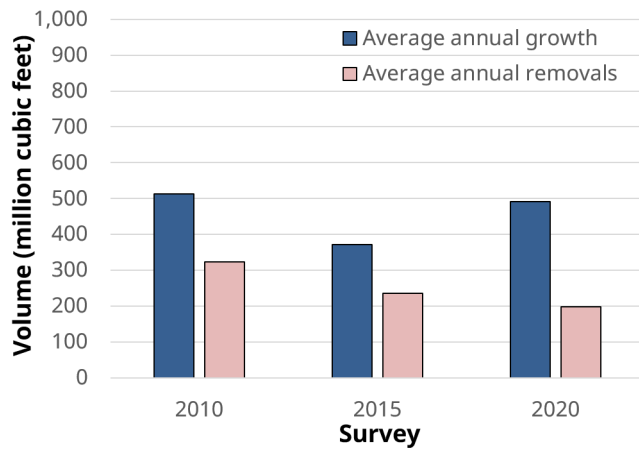


Figure 16—Average annual net growth and average annual net removals of all-live hardwood species on forest land by survey period, Arkansas.

double hardwood growth, 952 million versus 491 million cubic feet per year. Ninety-five percent of the softwood growth was accounted for by one species group, loblolly and shortleaf pine. The top ranked hardwood species group was select and other red oaks, which represented 27 percent of

the total annual live hardwood growth, followed by white oaks, sweetgum, and hickory species. These four hardwood species accounted for more than 78 percent of all hardwood growth in the State. Average annual growth exceeded removals for all species groups (table 6).

Stand origin had an impact on average annual growth to removals. While planted stands comprise just 20 percent of the total forest land area (fig. 5), these forests accounted for 57 percent of the State's softwood growth and 60 percent of softwood removals in 2020 (table 6). Conversely 94 percent and 79 percent of hardwood growth and removals happen on stands of natural origin. Softwood species (loblolly and shortleaf pines) accounted for 66 and 74 percent of Arkansas average annual growth and removals, respectively. The growth-to-removals ratios for both softwood and hardwood species were greater than one for all stand origins.



A fully loaded log truck travels along a dusty woods road while a field worker stands nearby during timber-transport operations. (U.S. Forest Service photo by Jason Cooper)

ARKANSAS'S FORESTS, 2020

Table 6—Average net annual growth and net annual removals of all-live trees on forest land by species group and stand origin, Arkansas, 2016–2020

Species group	Forest-type group	Net growth	Net removals	Stand origin			
				Natural stands		Planted stands	
				Growth	Removals	Growth	Removals
million cubic feet							
Softwoods	Loblolly and shortleaf pines	904.4	560.0	366.2	218.5	538.2	341.5
	Other yellow pines	0.4	—	0.1	—	0.3	—
	Cypress	20.1	1.5	20.1	1.5	0.0	—
	Other eastern softwoods	27.2	5.0	26.8	4.5	0.4	0.5
	Total softwoods	952.1	566.5	413.2	224.5	538.9	342.0
Hardwoods	Select white oaks	76.2	35.1	73.8	22.8	2.4	12.3
	Select red oaks	44.0	20.8	42.5	16.6	1.5	4.2
	Other white oaks	48.2	20.7	47.2	17.9	1.0	2.8
	Other red oaks	89.3	45.0	78.9	36.1	10.4	8.9
	Hickory	47.7	15.4	46.8	13.9	0.9	1.5
	Hard maple	3.5	—	3.5	—	—	—
	Soft maple	8.6	5.0	8.3	4.1	0.3	0.9
	Beech	0.4	0.1	0.3	0.1	0.1	0.0
	Sweetgum	77.3	32.7	70.0	25.3	7.3	7.4
	Tupelo and blackgum	22.2	4.3	21.8	2.9	0.4	1.4
	Ash	7.7	2.2	7.4	2.1	0.3	0.1
	Cottonwood and aspen (East)	3.6	0.0	3.4	—	0.2	—
	Basswood	1.0	—	1.0	—	—	—
	Yellow-poplar	1.8	—	1.8	—	—	—
	Black walnut	2.4	1.3	2.4	1.3	—	—
	Other eastern soft hardwoods	51.3	11.8	48.4	10.2	2.9	1.6
	Other eastern hard hardwoods	2.9	2.7	2.6	2.1	0.3	0.6
	Eastern noncommercial hardwoods	3.2	1.7	3.1	1.5	0.1	0.2
	Urban-specific hardwoods	0.2	—	—	—	—	—
	Total hardwoods	491.5	198.8	463.2	156.9	28.1	41.9
All species		1,443.6	765.3	876.4	381.4	567.0	383.9

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

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

Table created: 09-OCT-20.

As loblolly and shortleaf pine, red oaks, white oaks and sweetgum account for the most growth amongst species groups, one would expect that forest types that contain these species would likewise have the most annual growth. This proves to be true as the 869 million cubic feet of live growth occurred on the loblolly-shortleaf forest type, 61 percent of all growth (table 7). Oak-hickory and oak-gum-cypress were the next two largest types in terms of average annual growth.

The majority of annual all-live tree growth and removals in Arkansas occurred on privately owned lands, either NIPF or forest industry owned. Forty-four percent of all growth and 36 percent of all-live removals occurred on NIPF lands, while 42 percent all-live growth and 60 percent of removals occurred on forests owned by forest industry. Sixty-nine percent of softwood removals were on forest-industry lands, highlighting the point that this ownership group manages specifically for these species (table 8).

Table 8—Average net annual growth and net annual removals of all-live trees on forest land by ownership group and major species group, Arkansas, 2016–2020

Ownership group	Net growth			Net removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
National Forest	135.4	81.5	53.9	23.3	19.0	4.2
Other federal	27.0	10.5	16.4	0.3	0.0	0.3
State and local	40.4	15.5	24.9	7.8	3.2	4.7
Non-industrial private	633.6	331.3	302.2	275.3	155.2	120.1
Forest industry	607.3	513.4	93.9	458.5	389.0	69.5
Total	1,443.7	952.1	491.4	765.3	566.4	198.8

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

Table created: 09-OCT-20.

0.0 = a value of >0.0 but <0.05.

Table 7—Average annual net growth and net annual removals of all-live trees on forest land by forest type and major species group, Alabama, 2016–2020

Species group	Forest-type group	Average annual growth			Average annual removals		
		All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
million cubic feet							
Softwoods	Loblolly/shortleaf pine group	868.8	816.1	52.7	430.6	387.4	43.1
	Other eastern softwoods group	10.2	8.3	1.9	4.9	4.3	0.6
	Pinyon/juniper group	0.1	0.1	0.0	—	—	—
	Total softwoods	879.0	824.5	54.5	435.5	391.7	43.8
Hardwoods	Oak/pine group	111.0	63.3	47.7	59.5	47.6	11.9
	Oak/hickory group	285.7	33.1	252.5	128.2	67.8	60.4
	Oak/gum/cypress group	122.2	23.0	99.2	40.2	0.7	39.5
	Elm/ash/cottonwood group	38.0	1.9	36.1	15.6	9.1	6.5
	Other hardwoods group	1.5	0.7	0.8	2.2	2.2	0.0
	Exotic hardwoods group	0.7	0.0	0.7	—	—	—
	Total hardwoods	559.1	122.1	437.0	245.6	127.4	118.3
Nonstocked		5.5	5.5	0.0	84.2	47.4	36.8
All groups		1,443.7	952.1	491.6	765.3	566.4	198.8

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

Table created: 09-OCT-20.

— = no sample for the cell and 0.0 = a value of >0.0 but <0.05.

Average annual softwood growth was concentrated in the southwest portion of the State (fig. 17). This is because these counties have higher concentrations of pine plantations and southern pine management. Conversely, average annual hardwood growth was more evenly distributed across the landscape (fig. 18). Average annual hardwood growth was slightly higher in the northern counties, but the difference was small.

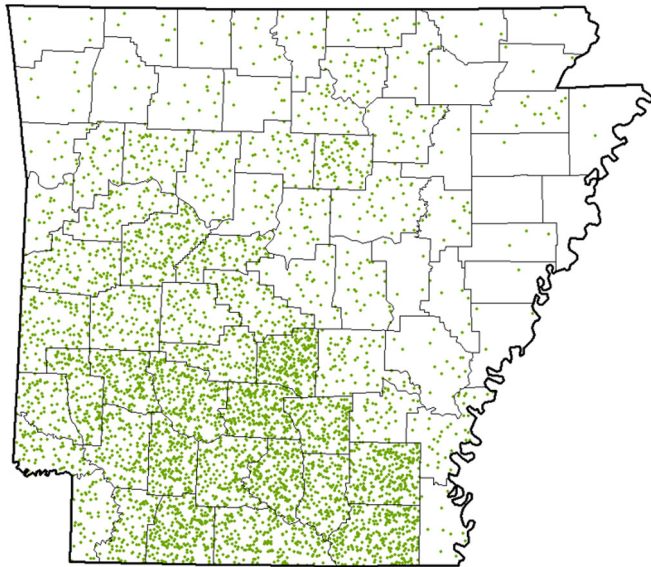


Figure 17—Average annual softwood growth of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual growth. See Methods section for map methodology.

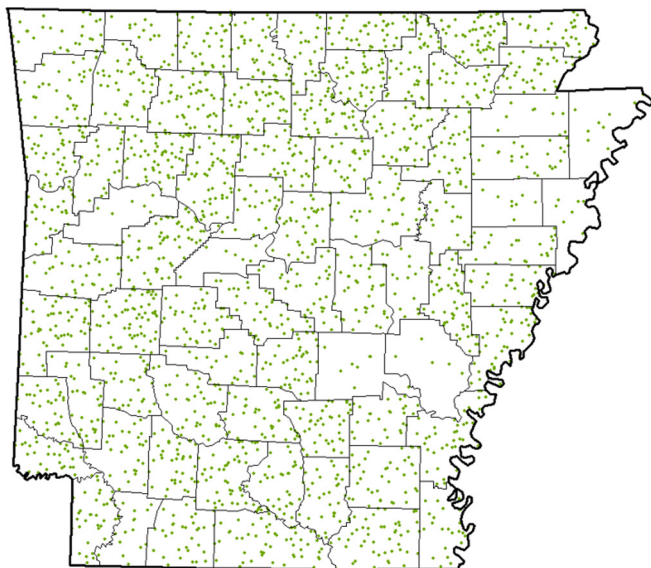


Figure 18—Average annual softwood growth of all-live hardwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual growth. See Methods section for map methodology.

The maps of average annual all-live removals of softwood species (fig. 19) and hardwood species (fig. 20) mimic the maps of average annual growth. Softwood removals occurred at a greater frequency in the southwest part of the State, while average annual hardwood removals occurred across the State, except for the eastern Delta counties where forest area is lower.

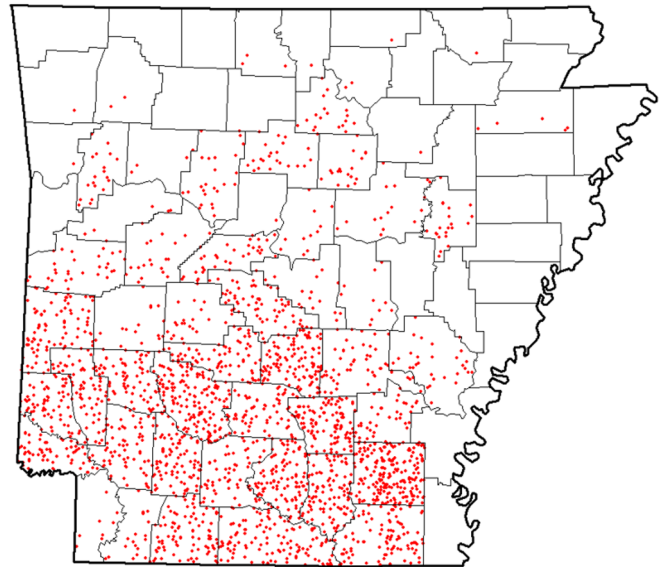


Figure 19—Average annual softwood removals of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual removals. See Methods section for map methodology.

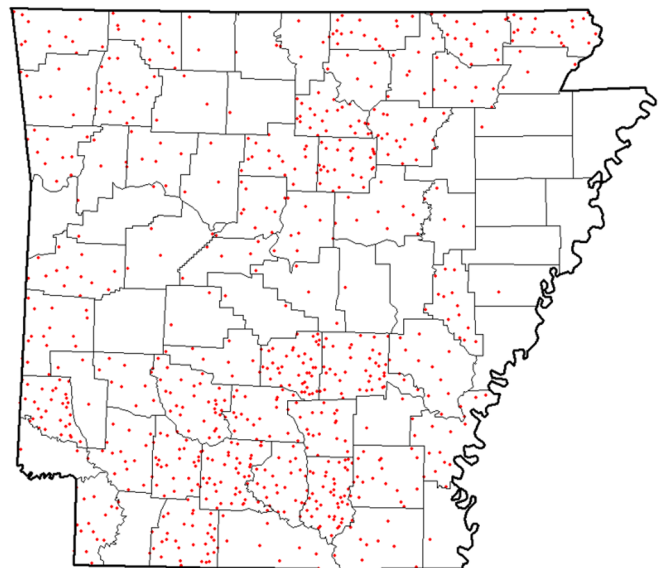


Figure 20—Average annual hardwood removals of all-live softwood species, Arkansas 2015–2020. Each dot represents 250 million cubic feet of annual removals. See Methods section for map methodology.

Six counties—Arkansas, Woodruff, Sevier, Little River, Drew, Lincoln—had removals exceeding or equal to growth for softwood species (fig. 21). Seventeen counties have either no softwood growth or removals, naturally resulting in a ratio of zero. All other counties have a growth-to-removals ratio greater than 1, indicating that growth exceeds removals. Fifteen counties—Desha, Sebastian, Sharp, Chicot, Benton, Prairie, Phillips, Greene, St. Francis, Boone, Jackson, Mississippi, Poinsett, Clay, Lee—have little or no softwood removals, resulting in inordinately high ratios, even though there was little growth in these forests.

For 2020, seven Arkansas counties had average annual hardwood growth-to-removals ratios ≤ 1 (fig. 22). Four of these counties, Grant, Columbia, Sevier, and Cleburne had ratios greater than 0.8, indicating that growth and removals were almost equal. The other three counties with ratios less than one are Jefferson, Arkansas, and Bradley. Eight counties—Crittenden, Cross, Mississippi, Prairie, St. Francis, Poinsett, Jackson, Phillips—had no evidence of hardwood removals, resulting in high growth-to-removals ratios for hardwoods. Note that some of these counties are the same as counties with little or no softwood removals mentioned in the paragraph above.

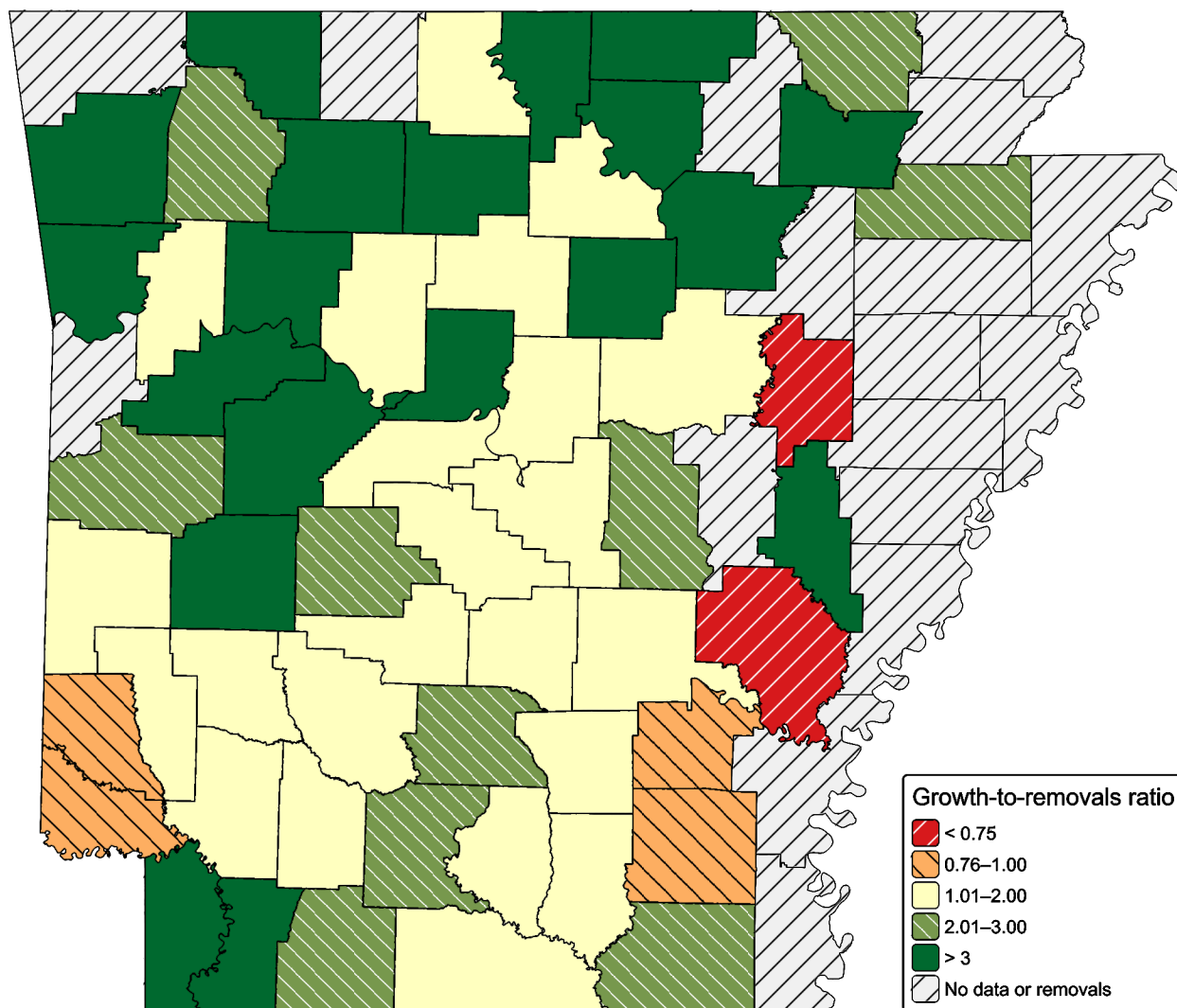


Figure 21—All-live softwood growth-to-removals ratio of forest land, Arkansas 2015–2020.

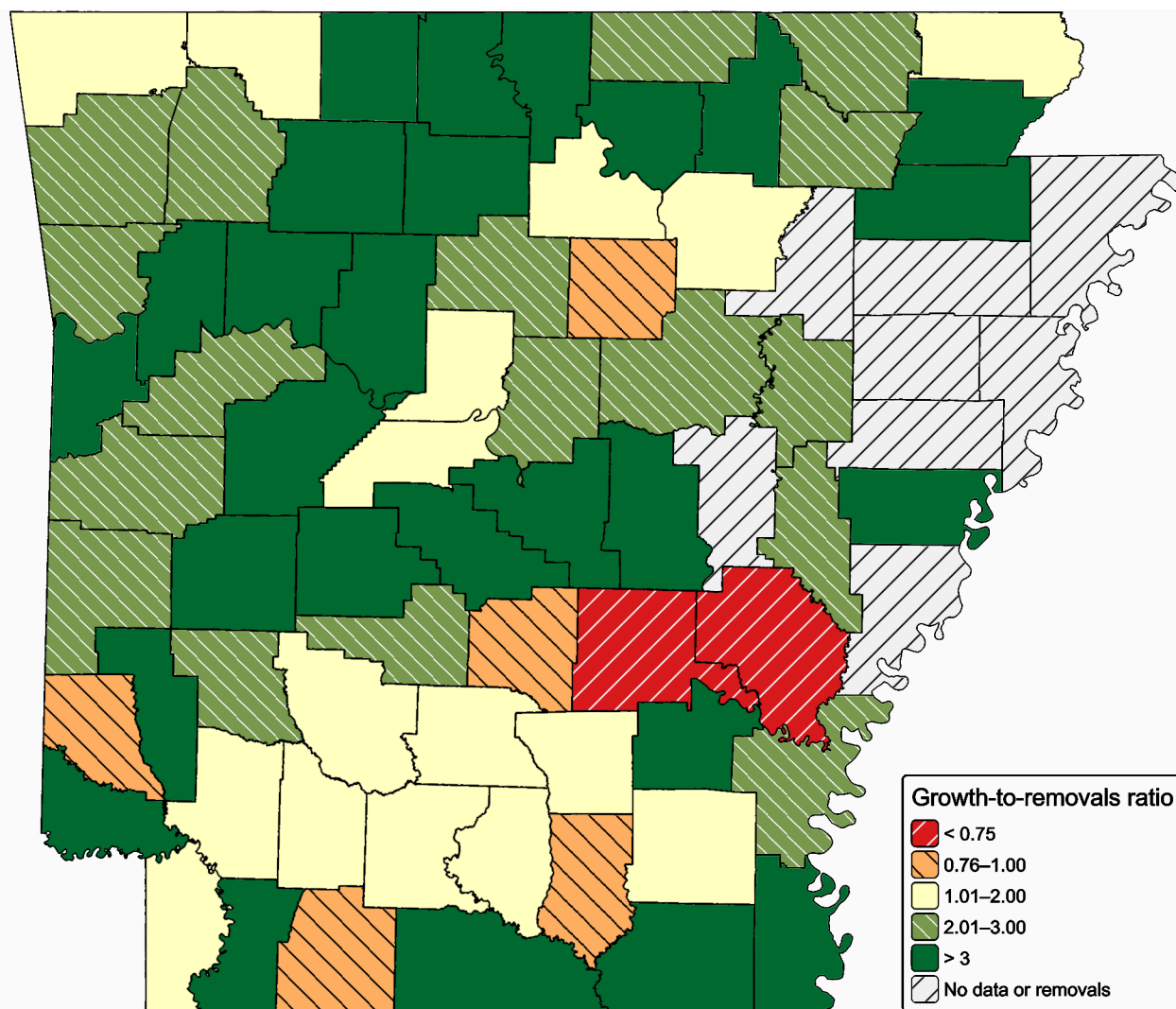


Figure 22—All-live hardwood growth-to-removals ratio of forest land, Arkansas 2015–2020.

FOREST HEALTH

The health and condition of America's forests have always been of major concern to the Forest Service, as well as the scientific community and the public at large. The Forest Health Protection (FHP) program was created to study the condition and long-term health of this country's forest lands. In 2000, FHP merged with FIA as both programs shared many features. Forest health monitoring information is collected on a subset of FIA plots. About 1 out of 16 FIA plots are selected

for additional forest health sampling. Information from both sets of data, FIA and FHP, can be used to make inferences about the health of the State's forests.

The information in this section is derived from either tree and plot information collected on FIA plots for the 2016-2020 inventory period, or from the *Forest Health Highlights for 2020* produced by the Arkansas Department of Agriculture, Forestry Division [ADA Forestry Division 2026].



Forest industry plays a vital role in the State's economy by harvesting timber products. (U.S. Forest Service photo by Andy Hartsell)

Mortality

Average annual mortality, collected on all remeasured FIA plots, is the metric used to describe trees that die from natural causes such as insects, disease, fire, competition, weather, or old age. During the most recent survey period,

the annual mortality of softwood and annual mortality of hardwood trees averaged 75.7 and 226.2 million cubic feet, respectively. Mean annual mortality of hardwoods decreased 22 percent since the previous survey. At the same time, softwood mortality was down 18 percent for the same period (table 9).

Table 9—Average annual mortality of live trees on forest land by agent of mortality, survey period, and major species group, Arkansas

Mortality agent	2005–2010			2011–2015			2016–2020		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
<i>million cubic feet</i>									
Animal	4.1	0.1	4.0	2.7	0.7	2.0	2.8	0.9	1.9
Disease	44.4	3.0	41.4	131.9	10.2	121.7	127.4	16.5	110.9
Fire	5.0	2.7	2.3	3.5	1.2	2.3	2.1	0.8	1.3
Insect	19.2	6.3	13.0	60.8	33.1	27.7	30.6	18.4	12.2
Vegetation	38.1	9.4	28.7	43.6	9.9	33.6	32.8	13.6	19.2
Weather	83.7	25.9	57.9	135.0	35.2	99.8	104.8	25.3	79.5
Unknown/other	36.7	10.1	26.5	6.2	1.8	4.3	1.4	0.1	1.3
Total	231.2	57.4	173.8	383.5	92.0	291.5	301.9	75.7	226.2

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

Table created: 09-OCT-20.

As of 2020, the greatest agent of mortality to Arkansas forests is disease at 127 million cubic feet, followed by weather. The causes of mortality differ between softwood and hardwood species. Weather is the greatest cause of mortality for the State's softwood species, followed by insects and vegetation. At the same time, disease has the largest effect on Arkansas's hardwood resource, with weather coming in second (table 9).

The *Forest Health Highlights for 2020* publication reported that Emerald Ash Borer (*Agrilus planipennis*) presence was detected in 25 Arkansas counties (ADA Forestry Division 2026). Emerald Ash Borer is an evasive beetle from Asia that attacks and kills ash trees. The 2020 report goes on to note that Southern Pine Beetle (SPB), (*Dendroctonus frontalis*), outbreaks have not occurred in Arkansas or any State west of the Mississippi River in over two decades. The best defense recommended for the prevention of SPB outbreaks is more resilient forest structures brought about by sound forest management.

TIMBER PRODUCT OUTPUT AND UTILIZATION

Timber Products

This section presents estimates from FIA's National Resource Use Monitoring (NRUM) program, which includes data from Arkansas's Timber Products Output (TPO) surveys and Harvest Utilization (HU) studies, covering the years 2015, 2017, 2018, 2019, and 2020. TPO surveys are used to determine the types and amount of roundwood products (i.e., sawlogs, plywood and veneer logs, poles) received by primary wood using mills, the county of origin, species used, and how the mills disposed of wood residues produced. Harvest utilization studies help determine the utilization of merchantable and nonmerchantable tree sections removed during harvest operations. Figure 23 shows the allocation of merchantable and nonmerchantable volume by species group and product type, with the largest amount of merchantable volume coming from

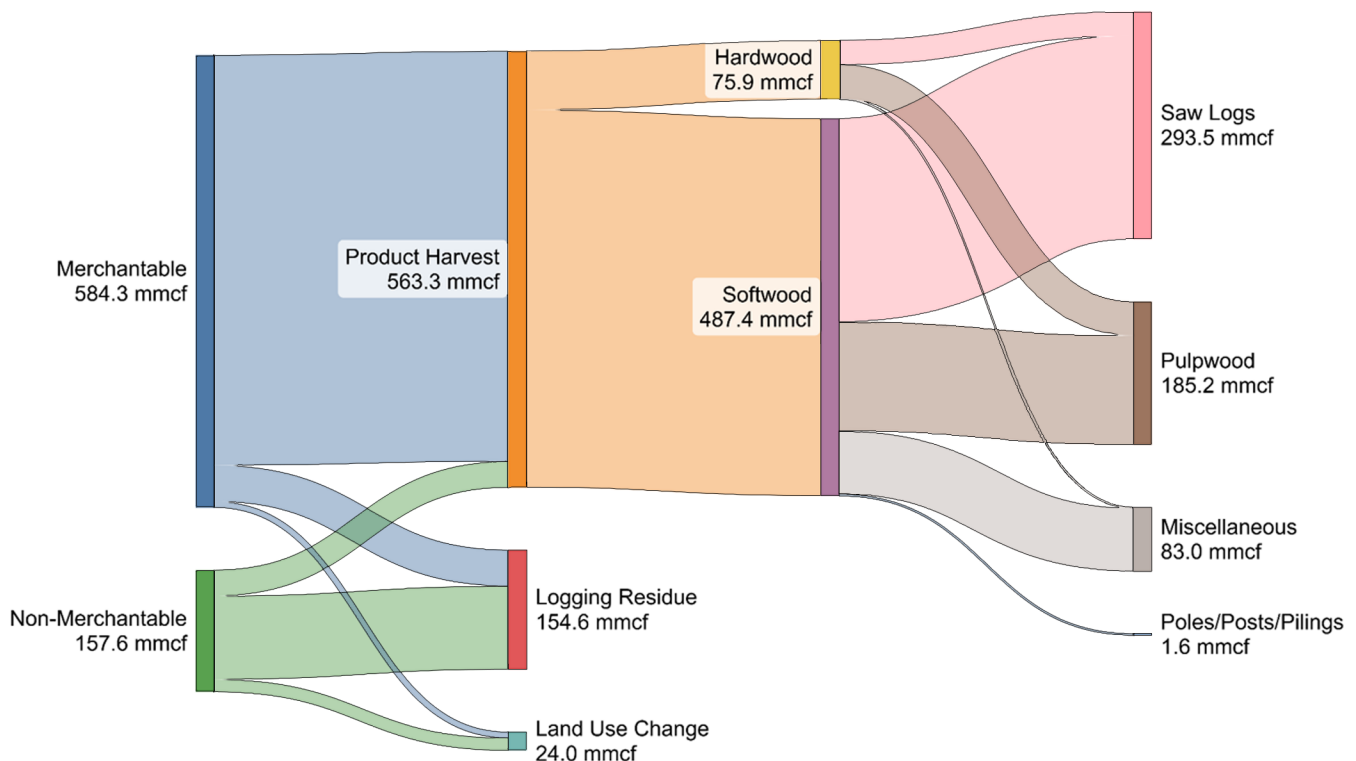


Figure 23—Allocation (percentage) of merchantable and nonmerchantable volume by species group and product type, Arkansas 2020.



A riparian vegetation stand along a calm waterbody in Johnson County, AR, showing dense green rushes, leaf litter, and a marked tree at the shoreline. The scene reflects typical streamside conditions in western Arkansas and supports ongoing monitoring and forest stewardship activities. (Courtesy photo by Arkansas Division of Forestry)

softwoods and going into sawlogs and pulpwood. Prior to 2018, FIA collected TPO information through a biennial survey of all active primary mills. From 2018 forward, data collection has been based on an annual mill sample where roughly 40 percent of active mills are sampled using a stratified sample design (Coulston 2022).

Mill surveys are conducted by personnel from the Southern Research Station (SRS). Additionally, Arkansas Forestry Commission personnel collect HU study data at several active logging operations across the State. Timber Product Output and HU data are used to derive the proportions of FIA's all-live annual average harvest removals that are used for timber products and left behind as

logging residue. Data used for this section were compiled from the Timber Product Output (TPO) Interactive Reporting Tool (USDA Forest Service 2025c).

A diverse forest products industry in Arkansas is made up of a variety of mills ranging from small- to large-sized softwood and hardwood sawmills, post/pole, veneer, composite, bioenergy and other miscellaneous mills to very large pulpmills. In 2015, there were 76 primary wood using mills, 109 in 2017, 116 in 2018, 104 in 2019, and 103 in 2020. From 2015 to 2018, the total number of sawmills, pulpwood mills, and other primary wood-processing plants distributed across the State increased by 53 percent. From 2018 to 2020, the

number of mills moderately decreased. Figure 24 is a map showing Arkansas's active primary wood using mills as of 2020.

In 2015, volume harvested and delivered for products (including residential fuelwood) from all sources totaled 576.9 million cubic feet (20.5 million green tons) (table 10, fig. 25). Output volumes moderately increased in 2017 to 691.9 million cubic feet (24.6 million green tons) then slightly declined in 2018 to 686.3 million cubic feet (24.2 million green tons). Output volumes slightly increased in 2019 to 689.9 million cubic feet (24.4 million green tons) then moderately decreased in

2020 to 588.5 million cubic feet (20.8 million green tons). In 2020 most roundwood production within the State occurred in South Central Arkansas (fig. 26). Volume harvested for softwood products in 2015 totaled 403.2 million cubic feet (14.0 million green tons) and accounted for 75 percent of the total industrial product volume, while the volume increased in 2017 to 522.4 million cubic feet (18.2 million green tons) (table 10). In 2018, there was a moderate increase from the 2017 output softwood volume totals to 538.1 million cubic feet (18.7 million green tons). Volume harvested for softwood products increased slightly in 2019 to 539.5 million cubic feet (18.7 million green

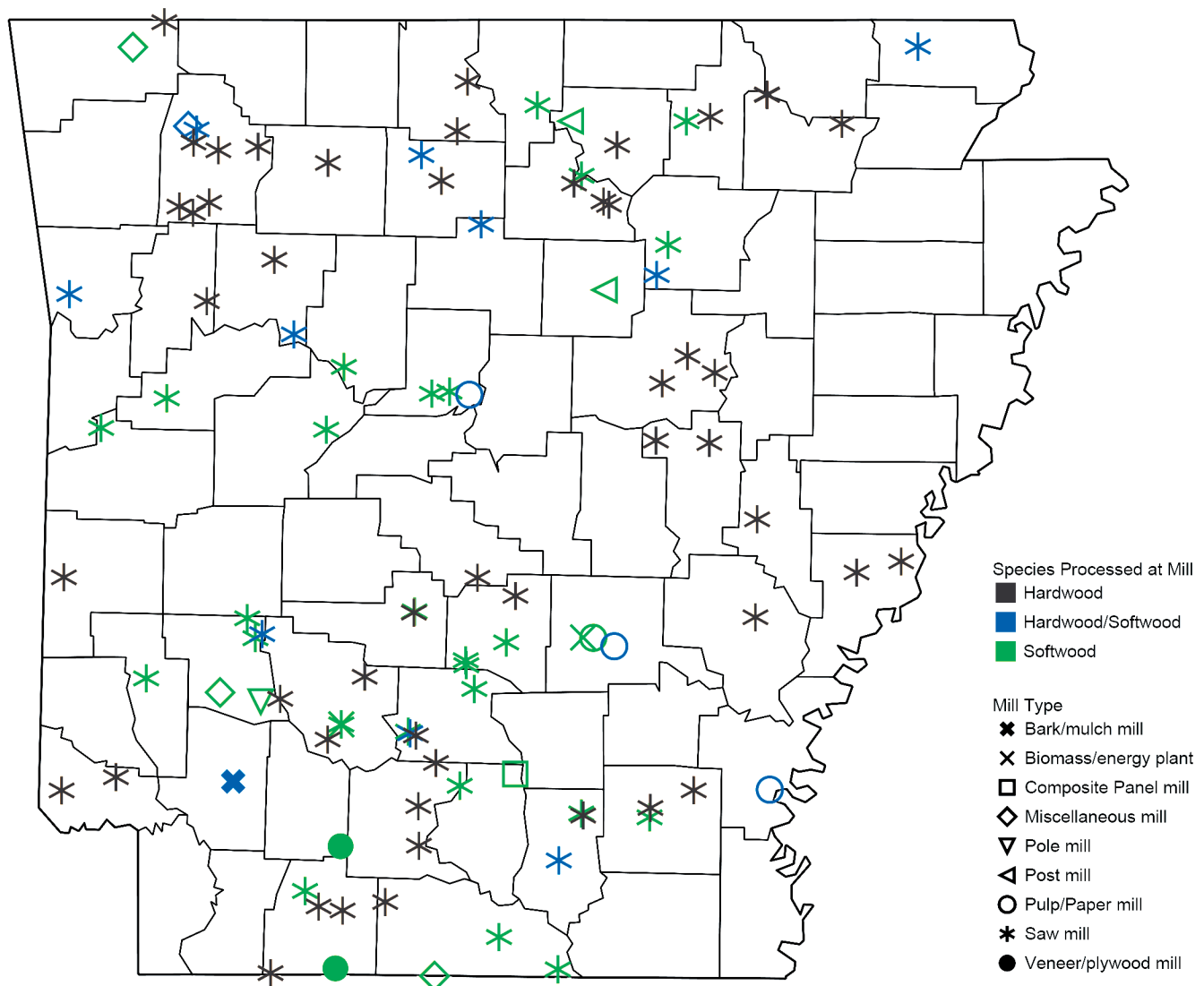


Figure 24—Primary wood processing mill locations, Arkansas 2020.

ARKANSAS'S FORESTS, 2020

Table 10—Output of Industrial roundwood products by product, species group, and year

Product	Species group	2015	2017	2018	2019	2020	2015	2017	2018	2019	2020
<i>thousand cubic feet</i>						<i>green tons</i>					
Saw logs	Softwood	183,710	258,706	275,310	278,373	262,312	6,345,458	8,943,821	9,506,781	9,618,858	9,068,512
	Hardwood	41,331	55,251	38,259	40,422	31,223	1,550,022	2,179,592	1,457,161	1,568,499	1,230,702
	Total	225,041	313,957	313,569	318,795	293,535	7,895,480	11,123,413	10,963,942	11,187,357	10,299,214
Veneer logs	Softwood	28,061	31,899	0	0	0	969,818	1,102,773	0	0	0
	Hardwood	240	71	0	0	0	6,352	2,796	0	0	0
	Total	28,301	31,970	0	0	0	976,169	1,105,569	0	0	0
Pulpwood	Softwood	161,025	192,207	182,938	176,693	141,102	5,640,350	6,737,449	6,409,962	6,196,250	4,964,994
	Hardwood	84,695	83,927	79,096	79,848	44,070	3,125,101	3,097,489	2,914,755	2,940,000	1,637,693
	Total	245,720	276,134	262,034	256,541	185,172	8,765,451	9,834,938	9,324,717	9,136,250	6,602,687
Composite panel	Softwood	0	0	0	0	0	0	0	0	0	0
	Hardwood	0	0	0	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0	0	0	0
Bioenergy/ fuelwood	Softwood	0	15,556	19,179	20,050	0	0	545,486	672,507	703,056	0
	Hardwood	0	4,980	5,033	4,873	0	0	184,682	186,638	180,730	0
	Total	0	20,536	24,212	24,923	0	0	730,168	859,145	883,786	0
Poles, posts, pilings	Softwood	0	1,841	1,551	1,570	1,563	0	49,803	44,671	45,240	45,029
	Hardwood	0	0	0	0	0	0	0	0	0	0
	Total	0	1,841	1,551	1,570	1,563	0	49,803	44,671	45,240	45,029
Miscellaneous ¹	Softwood	30,434	22,238	59,178	62,807	82,379	1,049,969	771,114	2,049,862	2,176,747	2,861,733
	Hardwood	4,959	0	500	0	595	183,189	0	18,750	0	22,267
	Total	35,392	22,238	59,678	62,807	82,974	1,233,158	771,114	2,068,612	2,176,747	2,884,000
Total (Industrial)	Softwood	403,230	522,447	538,156	539,493	487,356	14,005,594	18,150,446	18,683,783	18,740,151	16,940,268
	Hardwood	131,225	144,229	122,888	125,143	75,888	4,864,664	5,464,559	4,577,304	4,689,229	2,890,662
	Total	534,455	666,676	661,044	664,636	563,244	18,870,258	23,615,005	23,261,087	23,429,380	19,830,930
Residential fuelwood ²	Undifferentiated	42,408	25,232	25,232	25,232	25,232	1,590,300	946,200	946,200	946,200	946,200
	Total	42,408	25,232	25,232	25,232	25,232	1,590,300	946,200	946,200	946,200	946,200
Total	Softwood	403,230	522,447	538,156	539,493	487,356	14,005,594	18,150,446	18,683,783	18,740,151	16,940,268
	Hardwood	131,225	144,229	122,888	125,143	75,888	4,864,664	5,464,559	4,577,304	4,689,229	2,890,662
	Undifferentiated	42,408	25,232	25,232	25,232	25,232	1,590,300	946,200	946,200	946,200	946,200
	Total	576,863	691,908	686,276	689,868	588,476	20,460,558	24,561,205	24,207,287	24,375,580	20,777,130

Numbers in rows and columns may not add to totals due to rounding.

¹ Includes veneer, composite, bioenergy, poles, posts, pilings, mulch, shavings and other miscellaneous products if not already represented.² Residential fuelwood volume from the latest U.S. Dept. of Energy estimates.

ARKANSAS'S FORESTS, 2020

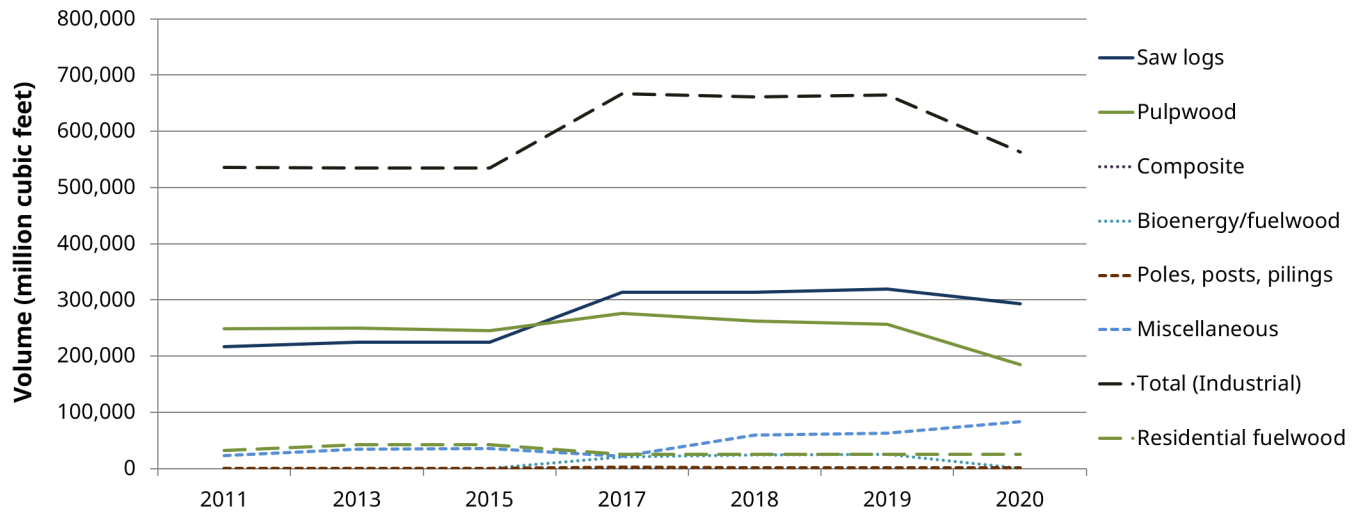


Figure 25—Forest products volume harvested and delivered for products (including residential fuelwood) from all sources, Arkansas 2011–2020.

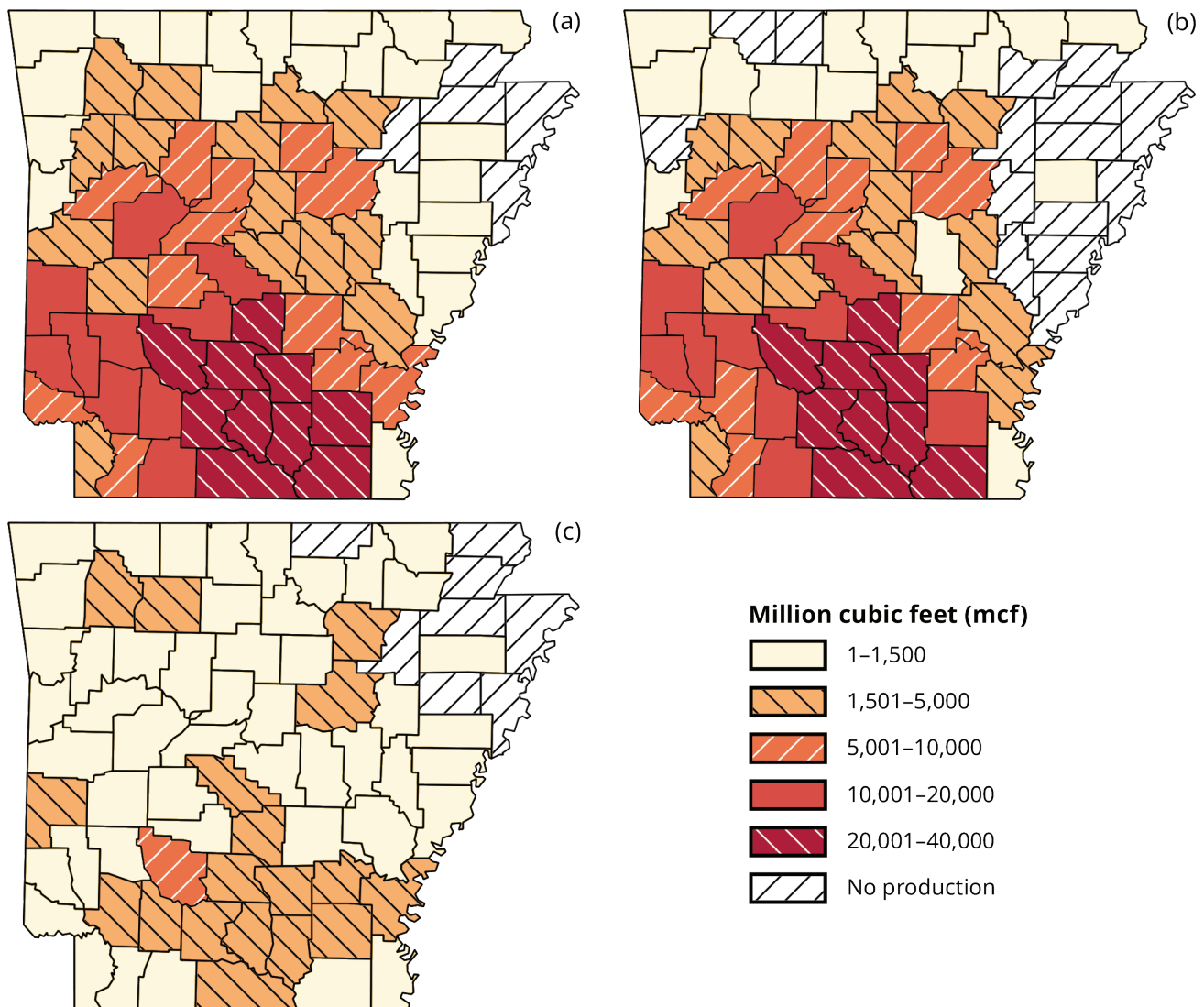


Figure 26—Total (a), softwood (b), and hardwood (c) roundwood production by county, Arkansas, 2020.

tons) and moderately decreased in 2020 to 487.4 million cubic feet (16.9 million green tons). The percentage of softwood roundwood harvested increased to a high of 87 percent in 2020. Volume of total roundwood harvested for products showed some volatility but trended upward over the report period for softwood roundwood. Hardwood output volume showed more volatility for the report period, and trended downward overall, from 131.2 million cubic feet (4.9 million green tons) in 2015 to 75.9 million cubic feet (2.9 million green tons) in 2020.

There was a notable increase in the number of sawmills from 2015 to 2017 with 60 and 91 mills, respectively. The number of sawmills increased slightly in 2018 to 96 mills then decreased to 84 mills in 2019. In 2020, the number of sawmills increased slightly to 86. The number of sawmills increased 43 percent over the report period. The saw-log output increased 42 percent from 225.0 million cubic feet in 2015 to 318.8 million cubic feet in 2019, then decreased 8 percent to 293.5 million cubic feet in 2020. Saw-log output increased 30 percent over the 2015–2020 report period and 36 percent from 2011 to 2020. In 2015, softwoods accounted for 82 percent of saw-log output volume (183.7 million cubic feet) and hardwoods accounted for 18 percent of saw-log output volume (41.3 million cubic feet). In 2020, softwood saw-log output volume was 262.3 million cubic feet (9.1 million green tons) and accounted for 89 percent of saw-log output volume, while hardwood output volume decreased to 31.2 million cubic feet (1.2 million green tons).

Pulpwood production ranged from a high of 276.1 million cubic feet (9.8 million green tons) in 2017 to a low of 185.2 million cubic feet (6.6 million green tons) in 2020. Over the 2015–2020 report period, the amount of roundwood used for pulp generally decreased. From 2011 to 2015, pulpwood was the leading product produced in the State. However, from 2017 to 2020 saw logs became the leading product by volume in the State as pulpwood production decreased. Yet, the four pulpmills in the 2020 survey accounted

for almost a third of the 563.2 million cubic feet total industrial product output. Over the report period, softwood pulpwood production peaked at 192.2 million cubic feet (6.7 million green tons) in 2017, 31.2 million cubic feet (1.1 million green tons) more than in 2015. In 2018, 2019, and 2020 softwood pulpwood production decreased every year from 182.9 million cubic feet (6.4 million green tons) to 176.7 million cubic feet (6.2 million green tons), and to 141.1 million cubic feet (5.0 million green tons), respectively. The proportion of softwood roundwood used for pulpwood production was stable from 2015 to 2019, ranging from 66 to 70 percent. The proportion increased in 2020 to 76 percent. Hardwood pulpwood production in 2015 totaled 84.7 million cubic feet (3.1 million green tons) and trended downward during the 2015–2020 period. Hardwood pulpwood production decreased 48 percent from 2015 to 44.1 million cubic feet (1.6 million green tons) in 2020.

Volume of roundwood harvested for veneer products totaled 28.3 million cubic feet (1.0 million green tons) in 2015, or 5 percent of the State's total product output. Volume increased to 31.9 million cubic feet (1.1 million green tons) in 2017 and again accounted for 5 percent of the State's total product output. To ensure confidentiality of individual mill data, volume estimates are not available for 2018, 2019, and 2020. Volumes in these years are grouped with “miscellaneous” products.

Volume of roundwood harvested for bioenergy and industrial fuelwood products totaled 20.5 million cubic feet (0.7 million green tons) in 2017, or 3 percent of the State's total product output. Volume increased in 2018 and 2019 to 24.2 million cubic feet (0.9 million green tons) and 24.9 million cubic feet (0.9 million green tons), respectively. In both 2018 and 2019, bioenergy and industrial fuelwood accounted for 4 percent of the State's total product output. Data are not available for years 2015 and 2020 to ensure mill confidentiality. Volumes in these years are grouped with “miscellaneous” products.



A cliffside view on Mount Magazine in Arkansas, overlooking expansive forested valleys below. (Courtesy photo by Arkansas Division of Forestry)

Volume harvested for poles, posts, and pilings in 2017 totaled 1.8 million cubic feet (50,000 green tons), or <1 percent of the State's total product output. From 2018 to 2020, posts, poles, and pilings product volume remained steady at 1.6 million cubic feet (45,000 green tons) and accounted for <1 percent of total products for the State. Volumes for 2015 are grouped with "miscellaneous" products to protect individual mill data.

Volume harvested for other roundwood products including veneer, composites, bioenergy, poles/posts/pilings, mulch, and shavings totaled 35.4 million cubic feet (1.2 million green tons) and accounted for 6 percent of total product output in 2015. Other industrial production decreased to 22.2 million cubic feet (0.8 million green tons) from 2015 to 2017. From 2018 to 2020, production increased each year, peaking in 2020 at 83.0 million cubic feet (2.9 million green tons) and 14 percent of total product output. Other industrial production increased 134 percent over the 2015–2020 period.

Mill Residue

Mill or plant residues are defined as wood material generated in the production of

timber products from roundwood at primary manufacturing plants. This material falls into three main categories:

1. coarse residues, or material, such as slabs, edgings, trim, veneer cores and ends, which are suitable for chipping
2. fine residues, or material, such as sawdust, shavings, and veneer residue, which are not suitable for chipping
3. bark which is used mainly for industrial fuel

For many years, most mill residue produced in Arkansas has been utilized either for primary products such as pulp and bioenergy or in secondary products such as mulch and animal bedding, or as fuel at wood product mills.

Table 11 and figure 27 depict the volume of mill residue by roundwood and residue type. Data on mill residue production and disposal generated from the 2015 through 2020 forest industry surveys indicated 211.8 million cubic feet of wood and bark residue was generated from primary processors in 2015. This total fluctuated from 2015 to 2020, with peak residue production of 281.5

Table 11—Primary mill residue volume by roundwood type, species group, and residue type, Arkansas

Roundwood type and species group	All types					Residue type																				
	Bark					Coarse					Sawdust					Shavings										
2015	2017	2018	2019	2020	2015	2017	2018	2019	2020	2015	2017	2018	2019	2020	2015	2017	2018	2019	2020							
thousand cubic feet																										
Saw logs	Softwood	135,191	184,938	192,953	198,516	190,257	14,381	19,737	20,703	21,337	20,406	63,278	86,841	91,092	93,883	89,785	37,995	52,143	54,695	56,371	53,911	19,537	26,217	26,463	26,925	26,155
	Hardwood	24,810	32,783	23,043	26,800	20,813	3,865	5,153	3,671	4,170	3,304	12,839	17,116	12,195	13,850	10,975	7,505	10,005	7,128	8,096	6,415	601	509	49	684	119
	Total	160,001	217,721	215,996	225,316	211,070	18,246	24,890	24,374	25,507	23,710	76,117	103,957	103,287	107,733	100,760	45,500	62,148	61,823	64,467	60,326	20,138	26,726	26,512	27,609	26,274
	Softwood	21,845	22,098	0	0	0	2,935	2,969	0	0	0	14,048	14,211	0	0	0	4,862	4,918	0	0	0	0	0	0	0	0
Veneer logs	Hardwood	29	26	0	0	0	8	0	0	0	14	12	0	0	0	7	6	0	0	0	0	0	0	0	0	
	Total	21,874	22,124	0	0	0	2,943	2,977	0	0	0	14,062	14,223	0	0	0	4,869	4,924	0	0	0	0	0	0	0	
	Softwood	12,629	14,827	14,509	13,916	7,575	12,629	14,827	14,509	13,916	7,575	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pulpwood	Hardwood	15,265	15,685	15,390	15,976	5,090	15,265	15,685	15,390	15,976	5,090	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	27,894	30,512	29,899	29,892	12,665	27,894	30,512	29,899	29,892	12,665	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Softwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Composite panel	Hardwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Softwood	0	1,047	1,577	1,577	0	0	1,047	1,577	1,577	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bioenergy/fuelwood	Hardwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	1,047	1,577	1,577	0	0	1,047	1,577	1,577	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Softwood	0	199	227	223	223	0	122	150	146	146	0	77	77	77	77	0	0	0	0	0	0	0	0	0	
Poles, Posts, Pilings	Hardwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	199	227	223	223	0	122	150	146	146	0	77	77	77	77	0	0	0	0	0	0	0	0	0	
	Softwood	1,997	1,676	24,117	24,505	25,668	1,920	1,676	4,988	5,376	6,539	77	0	14,211	14,211	14,211	0	4,918	4,918	4,918	0	0	0	0	0	
Miscellaneous ¹	Hardwood	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	1,997	1,676	24,117	24,505	25,668	1,920	1,676	4,988	5,376	6,539	77	0	14,211	14,211	14,211	0	4,918	4,918	4,918	0	0	0	0	0	
	Softwood	171,662	224,785	233,383	238,737	223,723	31,865	40,378	41,927	42,352	34,666	77,403	101,129	105,380	108,171	104,073	42,857	57,061	59,613	61,289	58,829	19,537	26,217	26,463	26,925	26,155
Total	Hardwood	40,104	48,494	38,433	42,776	25,903	19,138	20,846	19,061	20,146	8,394	12,853	17,128	12,195	13,850	10,975	7,512	10,011	7,128	8,096	6,415	601	509	49	684	119
	Total	211,766	273,279	271,816	281,513	249,626	51,003	61,224	60,988	62,498	43,060	90,256	118,257	117,575	122,021	115,048	50,369	67,072	66,741	69,385	65,244	20,138	26,726	26,512	27,609	26,274

Numbers in rows and columns may not add to totals due to rounding.

¹ Includes mulch, shavings, and other industrial products.

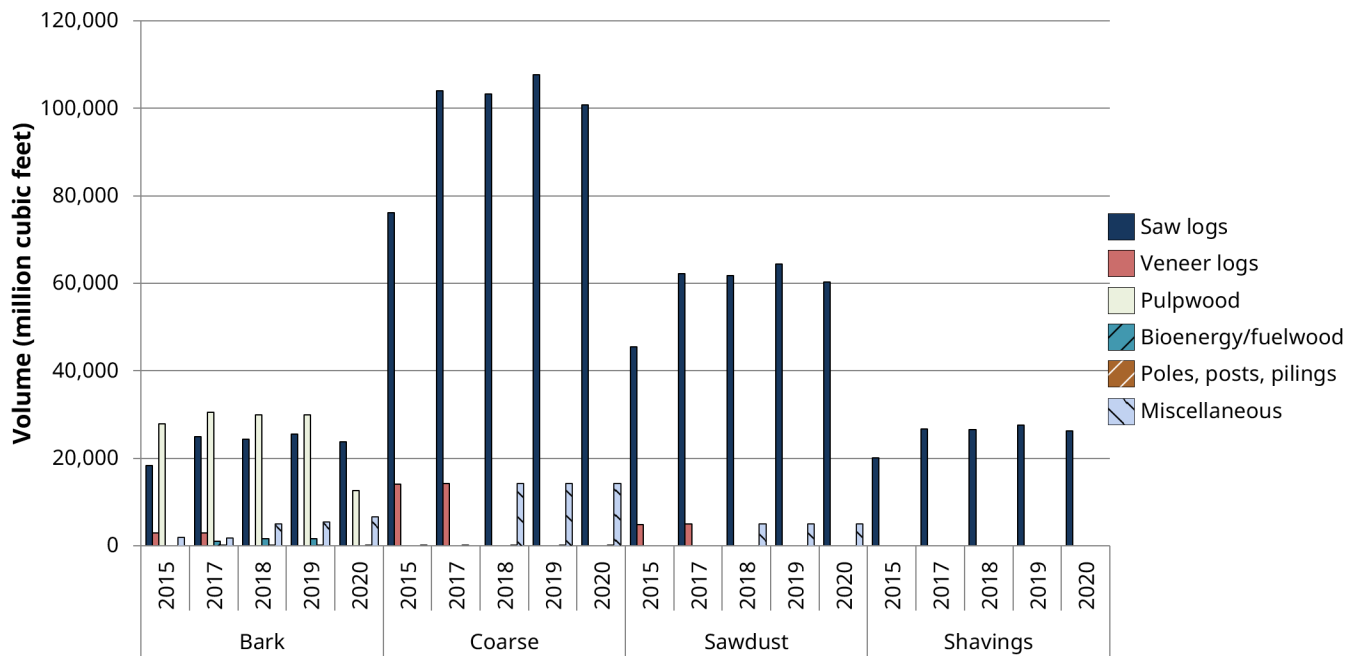


Figure 27—Volume of mill residue by roundwood and residue type, Arkansas 2015–2020.

million cubic feet in 2019. Mill residue decreased to 249.6 million cubic feet from 2019 to 2020. The most recent survey in 2020 shows sawmills generated most of the mill residue produced totaling 211.1 million cubic feet. In 2020 bark accounted for 43.1 million cubic feet (17 percent), coarse residues accounted for 115.0 million cubic feet (46 percent), and sawdust and shavings accounted for 91.5 million cubic feet (37 percent) of mill residue produced. Residue totals show the largest increase, 29 percent, for all residue types from 2015 to 2017. Overall roundwood residue increased 18 percent from the 2015 total of 211.8 million cubic feet to 249.6 million cubic feet in 2020.

In 2015 nearly 107.0 million cubic feet, or 51 percent, of mill residue produced was used for industrial fuel either at pulp mills for boiler fuel or at sawmills for dry kiln operations, pellets, or residential fuelwood (table 12, fig. 28). This amount increased each year through 2019 then dropped to 111.1 million cubic feet in 2020. Overall, the total mill residue used for industrial fuel increased 4 percent from 2015 to 2020. Bark and fine residues, at 36.7 and 66.9 million cubic feet, respectively, accounted for 93 percent of



A waterfall in the Upper Buffalo Wilderness of Newton County, AR, flowing through a wooded hollow during winter. (Courtesy photo by Arkansas Division of Forestry)

Table 12—Disposal of residue at primary wood-using plants by product, species group, and type of residue, Arkansas 2015–2020

Product	Species group	All types					Bark					Coarse					Fines (sawdust and shavings)				
		2015	2017	2018	2019	2020	2015	2017	2018	2019	2020	2015	2017	2018	2019	2020	2015	2017	2018	2019	2020
		thousand cubic feet																			
Fiber products	Softwood	91,237	114,724	106,928	103,148	100,407	0	0	0	0	983	76,490	89,834	88,003	84,294	81,821	14,747	24,890	18,925	18,854	17,603
	Hardwood	8,198	10,390	4,701	7,658	4,889	0	0	0	0	0	8,098	9,779	4,701	7,658	4,889	100	611	0	0	0
	Total	99,435	125,114	111,629	110,806	105,296	0	0	0	0	983	84,588	99,613	92,704	91,952	86,710	14,847	25,501	18,925	18,854	17,603
Industrial fuel	Softwood	78,849	100,430	108,310	111,978	98,810	30,764	36,353	37,258	37,167	29,843	705	8,404	10,301	11,184	5,650	47,380	55,673	60,751	63,627	63,317
	Hardwood	28,128	30,861	23,559	29,477	12,243	17,598	19,349	17,154	18,884	6,819	3,702	3,824	2,273	3,157	1,839	6,828	7,688	4,132	7,436	3,585
	Total	106,977	131,291	131,869	141,455	111,053	48,362	55,702	54,412	56,051	36,662	4,407	12,228	12,574	14,341	7,489	54,208	63,361	64,883	71,063	66,902
Miscellaneous	Softwood	1,542	5,738	12,244	19,351	22,556	1,097	2,576	2,218	2,616	2,779	195	1,370	4,907	11,636	16,105	250	1,792	5,119	5,099	3,672
	Hardwood	3,620	2,428	826	1,306	1,059	1,516	730	415	570	450	971	981	264	736	135	1,133	717	147	0	474
	Total	5,162	8,166	13,070	20,657	23,615	2,613	3,306	2,633	3,186	3,229	1,166	2,351	5,171	12,372	16,240	1,383	2,509	5,266	5,099	4,146
Not used	Softwood	35	3,894	5,902	4,260	1,820	3	1,449	2,451	2,569	1,024	14	1,522	2,169	1,057	497	18	923	1,282	634	299
	Hardwood	156	4,814	9,346	4,335	7,045	24	766	1,492	692	1,125	81	2,544	4,957	2,299	3,736	51	1,504	2,897	1,344	2,184
	Total	191	8,708	15,248	8,595	8,865	27	2,215	3,943	3,261	2,149	95	4,066	7,126	3,356	4,233	69	2,427	4,179	1,978	2,483
All products	Softwood	171,663	224,786	233,384	238,737	223,593	31,864	40,378	41,927	42,352	34,629	77,404	101,130	105,380	108,171	104,073	62,395	83,278	86,077	88,214	84,891
	Hardwood	40,102	48,493	38,432	42,776	25,236	19,138	20,845	19,061	20,146	8,394	12,852	17,128	12,195	13,850	10,599	8,112	10,520	7,176	8,780	6,243
	Total	211,765	273,279	271,816	281,513	248,829	51,002	61,223	60,988	62,498	43,023	90,256	118,258	117,575	122,021	114,672	70,507	93,798	93,253	96,994	91,134

Numbers in rows and columns may not add to totals due to rounding.

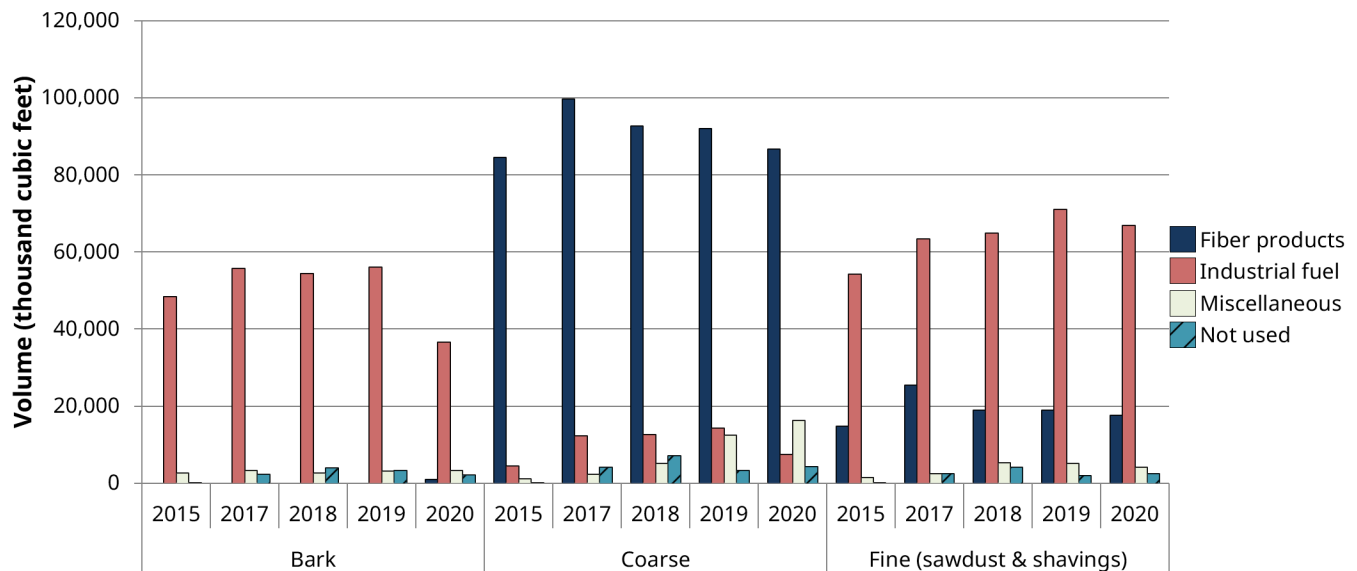


Figure 28—Mill residue volume by use, Arkansas 2015–2020.

mill residue utilized for industrial fuel in 2020, which was just above the average of 92 percent for the 2015–2020 period. In 2020, 85 percent of bark residue produced was utilized for fuel, with a miniscule portion that was not used, and the remainder of the utilized bark going for miscellaneous and fiber products. Mill residue produced in Arkansas from 2015 to 2020 was predominately used for industrial fuel. During 2015, 2017, 2018, 2019 and 2020, 94, 84, 79, 75, and 76 percent of the coarse residue produced was utilized for fiber products, respectively. Bark and wood residues not utilized over the 2015–2020 report period averaged just over 3 percent of all residues produced in Arkansas.

Land Use Removals

Land use removals (land clearing or set aside forest land), or removal volume attributed to land-use change, accounted for 2 to 3 percent of total removals for each year surveyed during the 2015–2020 period (table 13). The volume of land use removals during the report period fluctuated, with a maximum volume of 28.2 million cubic feet in 2018. Land use removals in 2020 totaled 24.0 million cubic feet. The nonmerchantable (nongrowing stock) portion of live trees accounted for 67 percent of land-use change removals for the entire 2015–2020 reporting period. The hardwood species group accounted for 69 to 85 percent of the land-use change removals from 2015 to 2020.



A panoramic overlook from Mount Magazine in Logan County, Arkansas, showing forested mountains and distant lowlands under a wide sky. (Courtesy photo by Arkansas Division of Forestry)

Table 13—Volume of timber removals by survey, species group, removals class and source

Year	Species group	Roundwood products			Logging residues			Other removals			All removals		
		Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources
thousand cubic feet													
2015	Softwood	382,585	20,646	403,231	19,975	51,784	71,759	641	1,663	2,304	403,201	74,093	477,294
	Hardwood	126,637	4,899	131,536	26,037	50,631	76,668	4,505	8,760	13,265	157,179	64,290	221,469
	Total	509,222	25,545	534,767	46,012	102,415	148,427	5,146	10,423	15,569	560,380	138,383	698,763
2017	Softwood	491,162	31,285	522,447	23,549	61,050	84,599	1,247	3,232	4,479	515,958	95,567	611,525
	Hardwood	139,173	5,055	144,228	25,295	49,189	74,484	4,687	9,114	13,801	169,155	63,358	232,513
	Total	630,335	36,340	666,675	48,844	110,239	159,083	5,934	12,346	18,280	685,113	158,925	844,038
2018	Softwood	504,712	33,444	538,156	24,328	63,069	87,397	1,441	3,736	5,177	530,481	100,249	630,730
	Hardwood	118,268	4,620	122,888	24,492	47,628	72,120	7,808	15,184	22,992	150,568	67,432	218,000
	Total	622,980	38,064	661,044	48,820	110,697	159,517	9,249	18,920	28,169	681,049	167,681	848,730
2019	Softwood	505,803	33,690	539,493	24,491	63,494	87,985	1,372	3,558	4,930	531,666	100,742	632,408
	Hardwood	120,486	4,657	125,143	22,052	42,882	64,934	3,647	7,091	10,738	146,185	54,630	200,815
	Total	626,289	38,347	664,636	46,543	106,376	152,919	5,019	10,649	15,668	677,851	155,372	833,223
2020	Softwood	456,255	31,101	487,356	25,838	66,984	92,822	1,543	4,000	5,543	483,636	102,085	585,721
	Hardwood	73,422	2,466	75,888	21,010	40,856	61,866	6,258	12,169	18,427	100,690	55,491	156,181
	Total	529,677	33,567	563,244	46,848	107,840	154,688	7,801	16,169	23,970	584,326	157,576	741,902

Numbers in rows and columns may not add to totals due to rounding.

Logging Residue

The merchantable (growing stock) portions of trees cut and left onsite are underutilized removals by FIA merchantability standards, while the nonmerchantable (nongrowing stock) portions of trees (part of the 1-foot stump or volume in tops <4 inches in diameter) used for products are considered overutilized removals by FIA merchantability standards. Under- and over-utilization factors used to determine average annual logging residue estimates used in this section were derived from estimates in the Arkansas harvest and utilization studies conducted from 2015 through 2020. Logging residue has been considered a possible source for bioenergy and other timber products during recent years. It is important to keep in mind that logging residue, traditionally, has not had a marketable value. Retrieval of logging residue is a

matter of economics and markets. If markets are available and a willingness to pay a reasonable price exists, then more total tree volume (including what has been left as logging residues) is utilized for products.

Woody material typically left on a logging site includes:

1. whole trees, ≥ 5 inches diameter at breast height (d.b.h.), or portions of the merchantable boles of severed trees broken and left during the felling operation (merchantable)
2. small trees, <5 inches d.b.h., damaged or killed during harvesting operations (nonmerchantable)
3. residual stump portions, tops, and limbs or forks not utilized because of insufficient size or quality to fit on the trailers (nonmerchantable).

This wood material left on the site is known as merchantable and nonmerchantable logging residues.

FIA calculates the merchantable portion of logging residue in a two-stage process. First, for those plots that were classified as timberland during the previous inventory and stayed in timberland for the current inventory cycle, the volume of whole trees cut and not utilized are identified by FIA field crews during the remeasurement phase of the inventory. A removal volume is derived for trees that are classified in this category. Second, underutilization factors derived from felled-tree utilization studies are applied to the volume classified as utilized by field crews for the remainder of the merchantable portion of logging residue.

The total removal volume is made up of volume from the merchantable and nonmerchantable portions of removal trees. Over-utilization factors from the utilization studies were used to determine how much of the nonmerchantable portion of removals was used for timber products. The nonmerchantable volume is calculated for the land-use change removal estimate and added to the merchantable volume for a total land-use change removal volume. With the nonmerchantable portion of timber products and land-use change values calculated and subtracted from total nonmerchantable removals volume the remainder is the volume of nonmerchantable logging residues.

The logging residue volume in Arkansas for 2015 totaled 148.4 million cubic feet, showing an increase to 159.1 million cubic feet in 2017, a slight increase to 159.5 million cubic feet in 2018, a decrease to 152.9 million cubic feet in

2019, and an increase to 154.7 million cubic feet in 2020 (table 13). This volume accounted for 18-21 percent or less of total timber removals for the previously stated survey years. During 2015, logging residue from the merchantable portion of all-live removals totaled 46.0 million cubic feet, or 31 percent of total logging residue. Logging residue from the merchantable portion of all-live tree removals fluctuated in volume slightly but maintained a similar proportion of total logging residues each year of the reporting period from 48.8 million cubic feet (31 percent of total logging residue) in 2017 and 2018 to 46.5 million cubic feet (30 percent of total logging residue) in 2019, to 46.8 million cubic feet (30 percent of total logging residue) in 2020. Over the survey period, the merchantable portion of logging residue for both softwood and hardwood combined accounted for 6 to 7 percent of total live removals. For softwoods, the merchantable portion of logging residue accounted for 4 percent of the total softwood all-live tree removals for the 2015 through 2020 surveys. The merchantable portion of hardwood logging residue proportion remained stable at 34 percent for 2015, 2017, 2018, 2019, and 2020 (26.0, 25.3, 24.5, 22.1, and 21.0 million cubic feet, respectively). Nonmerchantable sources (such as the residual stump, forks, tops, and limbs) accounted for 102.4 million cubic feet (69 percent) of total logging residue in 2015. This percentage remained consistent for 2017 and 2018 and increased to 70 percent in 2019 and 2020. Nonmerchantable source volume increased for 2017 and 2018 with amounts of 110.2 and 110.7 million cubic feet, respectively. In 2019, the amount decreased to 106.4 million cubic feet then increased slightly to 107.8 million cubic feet in 2020.

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GLOSSARY

A

Average annual mortality—The average annual volume of trees 5.0 inches d.b.h./d.r.c. and larger that died from natural causes.

Average annual mortality of growing stock—The average cubic-foot volume of sound wood in growing-stock trees that died in one year. Average annual mortality of sawtimber. The average board-foot volume of sound wood in sawtimber trees that died in one year.

Average annual net growth—Average annual net change in volume of trees 5.0 inches d.b.h./d.r.c. and larger in the absence of cutting (average annual gross growth minus average annual mortality).

Average annual net growth of growing stock—The annual change in cubic-foot volume of sound wood in live sawtimber and poletimber trees, and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Average annual net growth of sawtimber—The annual change in the board-foot volume of live sawtimber trees, and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Average annual removals from growing stock—The average net growing-stock volume in growing-stock trees removed annually for roundwood forest products, in addition to the volume of logging residues and the volume of other removals.

Average annual removals from sawtimber—The average net board-foot volume of live sawtimber trees removed annually for roundwood forest products, in addition to the volume of logging residues and the volume of other removals.

B

Basal area (BA)—The cross-sectional area of a tree stem/bole (trunk) at the point where diameter is measured, inclusive of bark. BA is calculated for trees 1.0 inch and larger in diameter and is expressed in square feet. For timber species, the calculation is based on diameter at breast height (d.b.h.); for woodland species, it is based on diameter at root collar (d.r.c.). When the basal areas of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass—The quantity of wood fiber, for trees 1.0-inch d.b.h./d.r.c. and larger, expressed in terms of green or oven-dry weight. It includes above-ground portions of trees: bole/stem (trunk), bark, and branches. Foliage is excluded. Biomass estimates can be computed for live and/or dead trees.

Board-foot volume—A unit of measure indicating the amount of wood contained in an unfinished board 1.0 foot wide, 1.0 foot long, and 1.0 inch thick. Board-foot volume is computed for the sawlog portion of a sawtimber-size tree; the sawlog portion includes the part of the bole on sawtimber-size tree from a 1-foot stump to a minimum sawlog top of 7.0 inches diameter outside bark (d.o.b.) for softwoods, or 9.0 inches d.o.b. for hardwoods. Net board-foot volume is calculated as the gross board-foot volume in the sawlog portion of a sawtimber-size tree, less deductions for cull. Board-foot cull deductions include rotten/missing material and form defect. Board-foot volume estimates and can be calculated for live and/or dead (standing or down) trees. All FIA work units compute board-foot estimates using the International 1/4-inch rule.

Bole—Trunk or main stem of a tree.

Boundary (condition class)—The border between two distinctly different condition classes.

Boundary (population)—The border of a population or subpopulation.

C

Canopy cover—The percentage of the ground surface area covered by a vertical projection of plant crowns. Tree canopy cover for a sample site includes the combined cover of timber and woodland trees 1.0 inch d.b.h./d.r.c. and larger. Maximum canopy cover for a site is 100 percent; overlapping cover is not double counted.

Census water—Streams, sloughs, estuaries, canals, and other moving bodies of water 200 feet wide and greater, and lakes, reservoirs, ponds, and other permanent bodies of water 4.5 acres in area and greater.

Coarse residue—See “Logging residue/products.”

Coarse woody debris—Down pieces of wood leaning more than 45 degrees from vertical with a diameter of at least 3.0 inches and a length of at least 3.0 feet.

Commercial species—Tree species suitable for industrial wood products.

Compacted live crown ratio—The percent of the total length of the tree which supports a full, live crown. For trees that have uneven length crowns, the percent is based on ocularly transferring lower branches to fill holes in the upper portions of the crown, until a full, even crown is created.

Components of change—The different subdivisions of the changes that can occur to attributes based on tree measurements (e.g., volume, biomass) between measurements, such as growth, mortality, and removals.

Condition class—The combination of discrete landscape and forest attributers that identify, define, and stratify the area associated with a plot. Such attributes include reserved status, owner group, forest type, stand-size class, stand origin, and tree density.

County and municipal—An ownership class of public lands owned by counties or local public agencies, or lands leased by these governmental units for more than 50 years.

Crown—The part of a tree or woody plant bearing live branches or foliage.

Crown dieback—This is recent mortality of branches with fine twigs, which begins at the terminal portion of a branch and proceeds toward the trunk. Dieback is considered only when it occurs in the upper and outer portions of the tree. When whole branches are dead in the upper crown, without obvious signs of damage such as breaks or animal injury, it is assumed that the branches died from the terminal portion of the branch. Dead branches in the lower portion of the live crown are assumed to have died from competition and shading. Dead branches in the lower live crown are not considered as part of crown dieback, unless there is continuous dieback from the upper and outer crown down to those branches.

Cubic-foot volume (merchantable)—A unit of measure indicating the amount of wood contained in a cube 1 by 1 by 1 foot. Cubic-foot volume is computed for the merchantable portion of timber and woodland species; the merchantable portion for timber species includes that part of a bole from a 1-foot stump to a minimum 4.0-inch top d.o.b., or above the place(s) of diameter measurement for any woodland tree with a single 5.0-inch stem or larger or a cumulative (calculated) d.r.c. of at least 5.0 inches to the 1.5-inch ends of all branches. Net cubic-foot volume is calculated as the gross cubic-foot volume in the merchantable portion of a tree, less deductions for cull.

Cull—Portions of a tree that are unusable for industrial wood products because of rot, form, or other defect.

Cull tree—Live trees that are unsuitable for the production of some roundwood products, now or prospectively. Cull trees can include those with decay (rotten cull) or poor form, limbiness, or splits (rough cull). Rough cull is suitable for pulpwood and other fiber products.

Cycle number—A number assigned to a set of plots, measured over a particular period of time from which a State estimate using all possible plots is obtained. A cycle number >1 does not necessarily mean that information for previous cycles resides in the database. A cycle is relevant for periodic and annual inventories.

Cycle length—The period of time required to measure a complete set of panels (synonymous with measurement cycle). See “Panel” for further details.

D

Diameter at breast height (d.b.h.)—The diameter of a tree bole/stem (trunk) measured at breast height (4.5 feet [1.37 m] above ground), measured outside the bark. The point of diameter measurement may vary for abnormally formed trees.

Diameter at root collar (d.r.c.)—The diameter of a tree stem(s) measured at root collar or at the point nearest the ground line (whichever is higher) that represents the basal area of the tree, measured outside the bark. For multi-stemmed trees, d.r.c. is calculated from an equation that incorporates the individual stem diameter measurements. The point of diameter measurement may vary for woodland trees with stems that are abnormally formed. With the exception of seedlings, woodland stems qualifying for measurement must be at least 1.0 inch in diameter or larger and at least 1.0 foot in length.

Diameter class—A grouping of tree diameters (d.b.h. or d.r.c.) into classes of a specified range. Diameter classes are commonly in 2-inch (5 cm) increments, beginning with 2 inches (5 cm). Each class provides a range of values with the class name being the approximate mid-point. For example, the 6-inch class (15-cm class) includes trees 5.0 through 6.9 inches (12.7 cm through 17.5 cm) in diameter, inclusive.

Diameter outside bark (d.o.b.)—Tree diameter measurement inclusive of the outside perimeter of the tree bark. The d.o.b. measurement may be taken at various points on a tree (e.g., breast height, tree top) or log, and it is sometimes estimated.

Down woody material (DWM)—Dead material on the ground in various stages of decay. It includes coarse and fine wood material. Down woody material (DWM) was previously named down woody debris (DWD). The depth of duff layer, litter layer, and overall fuelbed; fuel loading on the microplot; and residue piles are also measured as part of the DWM indicator for FIA.

Duff—A soil layer dominated by organic material derived from the decomposition of plant and animal litter and deposited on either an organic or a mineral surface. This layer is distinguished from the litter layer in that the original organic material has undergone sufficient decomposition that the source of this material (e.g., individual plant parts) can no longer be identified.

E

Expansion factor—See “Tree expansion factor.”

F

Federal land—An ownership class of public lands owned by the U.S. Government.

FIA work unit (regional unit)—Any one of four regionally distributed work units of the national FIA program that are coordinated by a National Office in Washington, DC. The four FIA work units are named by the research station in which they reside and are defined as Northern Research Station (NRS), Pacific Northwest Research Station (PNWRS), Rocky Mountain Research Station (RMRS), and Southern Research Station (SRS). NRS was formed from the merger of North Central Research Station (NCRS) and Northeastern Research Station (NERS); some data items still retain these designations. Each FIA work unit is assigned a specific management area and has its own internal set of customers and partners who collaborate in program implementation.

Fine materials—Wood residues not suitable for chipping, such as planer shavings and sawdust.

Fine residue—See “Logging residue/products.”

Fine woody debris (FWD)—Downed, dead branches, twigs, and small tree or shrub boles <3 inches (7.4 cm) in diameter not attached to a living or standing dead source.

Fixed-radius plot—A circular sample plot of a specified horizontal radius: 1/300 acre = 6.8-foot radius; 1/24 acre = 24.0-foot radius; 1/4 acre = 58.9-foot radius.

Forest industry land—An ownership class of private lands owned by a company or individual(s) operating a primary wood-processing (wood-using) plants.

Forest land—Forest land has at least 10 percent canopy cover of trees of any size, or has had at least 10-percent canopy cover of trees in the past, based on the presence of stumps, snags, or other evidence, and that will be naturally or artificially regenerated. Additionally, the land is not subject to nonforest use(s) that prevent normal tree regeneration and succession, such as

regular mowing, intensive grazing, or recreation activities. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10-percent canopy cover with trees and forest areas adjacent to urban and built-up lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre (0.4 ha) in size and 120 feet (36.6 m) wide measured stem-to-stem from the outer-most edge. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide. This is the domestic reporting definition which is different from the definition used in international reporting (which includes a minimum tree canopy height criteria).

Forest type—A classification of forest land based upon and named for the tree species that forms the plurality of live-tree stocking. A forest-type classification for a field location indicates the predominant live-tree species cover for the field location; hardwoods and softwoods are first grouped to determine predominant group, and forest type is selected from the predominant group.

Forest type group—A combination of forest types that share closely associated species or site requirements.

Fuzzing—One of the methods used to preserve confidentiality of exact plot locations. Plot coordinates, when published, are randomly moved up to a half mile from the actual location. Fuzzing is sometimes combined with another method that is referred to as “swapping.” See “Swapping.”

G

Gross growth—The annual increase in volume of trees 5.0 inches d.b.h. and larger in absence of cutting and mortality. Gross growth includes survivor growth, ingrowth, growth on ingrowth, growth on removals before removal, and growth on mortality prior to death.

Growing-stock tree—All live trees of commercial species that meet minimum merchantability standards. In general, these trees have at least one solid 8-foot section, are reasonably free of form defect on the merchantable bole, and at least 34 percent or more of the volume is merchantable. For the California, Oregon, Washington, and Alaska inventories, a 26 percent or more merchantable volume standard is applied, rather than 34 percent or more. Excludes rough or rotten cull trees.

Growing-stock volume—The cubic-foot volume of sound wood in growing-stock trees at least 5.0 inches d.b.h. from a 1.0-foot stump to a minimum 4.0-inch top d.o.b. to the central stem.

H

Hardwood trees—Tree species belonging to the botanical subdivision Angiospermae, class Dicotyledonous, usually broad-leaved and deciduous.

I

Industrial wood—See “Logging residue/products.”

Inventory year—The year in which a plot was scheduled to be completed. Inventory year may differ from measurement year.

L

Land—The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains.

Land cover—The dominant vegetation or other kind of material that covers the land surface. A given land cover may have many land uses.

Land use—The classification of a land condition by use or type.

Litter—The uppermost layer of organic debris on a forest floor; that is, essentially the freshly fallen, or only slightly decomposed material,

mainly foliage, but also bark fragments, twigs, flowers, fruits, and so forth. Humus is the organic layer, unrecognizable as to origin, immediately beneath the litter layer from which it is derived. Litter and humus together are often termed duff.

Live cull—A classification that includes live, cull trees. When associated with volume, it is the net volume in live, cull trees that are 5.0 inches d.b.h. and larger.

Log grade—A log classification based on external characteristics as indicators of quality or value.

Logging residue/products

- Bolt—A short piece of pulpwood; a short log.
- Industrial wood—All commercial roundwood products, excluding fuelwood.
- Logging residue—The unused portions of trees cut or destroyed during logging operations and left in the woods.
- Mill or plant residue—Wood material from mills or other primary manufacturing plants that is not used for the mill or plant primary products. Mill or plant residue includes bark, slabs, edgings, trimmings, miscuts, sawdust, and shavings. Much of the mill and plant residue is used as fuel and as the raw material for such products as pulp, palletized fuel, fiberwood, mulch, and animal bedding.
- Coarse residue—Wood material suitable for chipping, such as slabs, edgings, and trim.
- Fine residue—Wood material unsuitable for chipping, such as sawdust and shavings.
- Pulpwood—Roundwood, whole-tree chips, or wood residues that are used for the production of wood pulp.
- Roundwood—Logs, bolts, or other round sections cut from trees.

M

Macroplot—A core optional variant of the FIA national plot design. This plot design includes four macroplots, each with a radius of 58.9 feet (approximately $\frac{1}{4}$ acre) that originate at the centers of the 24.0-foot radius subplots. A macroplot breakpoint diameter is the diameter (either d.b.h. or d.r.c.) above which trees are measured on the macroplot. Examples of different breakpoint diameters used by western FIA work units are 24 inches or 30 inches (Pacific Northwest), or 21 inches (Rocky Mountain).

Mapped-plot design—A sampling technique that identifies (delineates or maps) and separately classifies distinct “conditions” on the field location sample area. Each condition must meet minimum size requirements. At the most basic level, condition class delineations include forest land, nonforest land and water. Forest land conditions can be further subdivided into separate condition classes if there are distinct variations in reserved status, owner group, forest type, stand-size class, stand origin, and stand density, given that each distinct area meets minimum size requirements.

Measurement quality objectives

(MQOs)—Specific objectives that define the range of precision that is allowable for any given field measurement. These data quality goals are developed from knowledge of measurement processes in forestry and forest ecology. MQOs generally consist of two parts: a compliance standard and a measurement tolerance.

Measurement year—The measurement year of a plot visit. Measurement year may differ from inventory year.

Merchantable—A term referring to a pulpwood or sawlog section that meets pulpwood or sawlog specifications, respectively.

Merchantable portion—For trees measured at d.b.h. and 5.0 inches d.b.h. and larger, the merchantable portion (or “merchantable bole”)

includes the part of the tree bole from a 1.0-foot stump to a 4.0-inch top (d.o.b.). For trees measured at d.r.c., the merchantable portion includes all qualifying segments above the place(s) of diameter measurement for any tree with a single 5.0-inch stem or larger or a cumulative (calculated) d.r.c. of at least 5.0 inches to the 1.5-inch ends of all branches; sections below the place(s) of diameter measurement are not included. Qualifying segments are stems or branches that are a minimum of 1.0 foot in length and at least 1.0 inch in diameter; portions of stems or branches smaller than 1.0 inch in diameter, such as branch tips, are not included in the merchantable portion of the tree.

Merchantable top—The point on the bole of trees above which merchantable material cannot be produced. Merchantable top is 1.5 inches for woodland species and 4.0 inches for all other species.

Microplot—For the FIA national plot design, a circular, fixed-radius plot with a radius of 6.8 feet (0.003 acre) on which trees 1.0-4.9 inches in diameter (d.b.h./d.r.c.) are measured. The FIA national plot design consists of four subplots. Within each subplot is a nested microplot. See “Subplot.”

Mill or plant residue—See “Logging residue/products.”

Mortality tree—All standing or down dead trees 5.0 inches d.b.h./d.r.c. and larger that were alive at the previous inventory, or within the previous 5 years for the initial annual measurement.

N

National Forest System (NFS) lands—Public lands administered by the USDA Forest Service, such as national forests, national grasslands, and some national recreation areas.

National Park lands—Public lands administered by the Park Service, U.S. Department of the Interior, such as national parks, national monuments, national historic sites (such as national memorials and national battlefields), and some national recreation areas.

Net annual growth—The average annual net increase in the volume of trees during the period between inventories. Components include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that died during the year, and minus the net volume of trees that became cull trees during the year.

Net volume in cubic feet—The gross volume in cubic feet less deductions for rot, roughness, and poor form. Volume is computed for the central stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs.

Noncensus water—Portions of rivers, streams, sloughs, estuaries, and canals that are 30 to 200 feet (9.1 to 61.0 m) wide and at least 1 acre (0.4 ha) in size; and lakes, reservoirs, and ponds 1 to 4.5 acres in size. Portions of rivers and streams not meeting the criteria for census water, but at least 30 feet wide and 1 acre in size, are considered noncensus water. Portions of braided streams not meeting the criteria for census water, but at least 30 feet in width and 1 acre in size, and more than 50 percent water at normal high-water level are also considered noncensus water.

Noncommercial species—Tree species of typically small size, poor form, or inferior quality, which normally do not develop into trees suitable for industrial wood products.

Nonforest land—Land that does not support, or has never supported, forests, and lands formerly forested where tree regeneration is precluded by development for other uses. Includes areas used for crops, improved pasture,

residential areas, city parks, improved roads of any width and adjoining rights-of-way, power line clearings of any width, and noncensus water. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet (36.6 m) wide, and clearings, etc., more than 1 acre (0.4 ha) in size, to qualify as nonforest land.

Nonindustrial private—An ownership class of private lands where the owner does not operate wood-processing (wood using) plants.

Nonstocked areas—Timberland less than 10 percent stocked with all live trees.

Nonstocked stand—A formerly stocked stand that currently has less than 10 percent stocking but has the potential to again become 10 percent stocked. For example, recently harvested, burned, or windthrow-damaged areas.

O

Other Federal lands—Public lands administered by Federal agencies other than the USDA Forest Service or the Bureau of Land Management, U.S. Department of the Interior.

Other forest land—Forest land other than timberland and reserved forest land. It includes available and reserved low-productivity forest land, which is incapable of producing 20 cubic feet of growing stock per acre annually under natural conditions because of adverse site conditions such as sterile soil, dry climate, poor drainage, high elevation, steepness, or rockiness.

Other public lands—Public lands administered by agencies other than the Forest Service. Includes lands administered by other Federal, State, county, and local government agencies, including lands leased by these agencies for more than 50 years.

Owner group—A variable that identifies broad categories of ownership. FIA recognizes four owner groups: Forest Service, Other Federal, State and Local Government, and Private.

Ownership—A legal entity having control of a parcel or group of parcels of land. An ownership may be an individual; a combination of persons; a legal entity such as corporation, partnership, club, or trust; or a public agency.

P

Panel—A sample in which the same elements are scheduled to be measured during the same inventory year. For the traditional FIA inventory, FIA typically divides plots into five panels (NRS and SRS) or ten panels (PNWRS and RMRS) that can be used to independently sample the population.

- **Physiographic class**—A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are as follows:
- **Xeric**—Very dry soils where excessive drainage seriously limits both growth and species occurrence. These sites are usually on upland and upper half slopes.
- **Xeromesic**—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. These sites are usually on the lower half slopes.
- **Mesic**—Deep, well-drained soils. Growth and species occurrence are limited only by climate. These include all cove sites and bottomlands along intermittent streams.
- **Hydromesic**—Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent.
- **Hydric**—Very wet sites where excess water seriously limits both growth and species occurrence.

Plot (plot design)—For the traditional FIA inventory, the national plot design consists of four 24-foot fixed-radius subplots for trees ≥ 5 inches d.b.h., and four 6.8-foot fixed-radius microplots for seedlings and trees ≥ 1 and < 5 inches d.b.h. Subplot 1 is the center plot, and subplots 2, 3, and 4 are

located 120.0 feet, horizontal, at azimuths of 360, 120, and 240, respectively. The microplot center is 12 feet east of the subplot center. Four 58.9-foot fixed-radius macroplots are optional. A plot may sample more than one condition. When multiple conditions are encountered, condition boundaries are delineated (mapped).

Plot status—A classification that describes the sampling status of the plot. For the traditional FIA inventory, all plots are assigned one of the following classifications: (1) sampled - at least one accessible forest land condition present on plot, (2) sampled - no accessible forest land condition present on plot, and (3) nonsampled.

Poletimber-size trees—For trees measured at d.b.h., softwoods 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h. For trees measured at d.r.c., all live trees 5.0 to 8.9 inches d.r.c.

Population—A defined geographic area for which estimates of population attributes are desired.

Private lands—All lands not owned or managed by a Federal, State, or other public entity, including lands owned by corporations, trusts, or individuals, as well as Tribal lands.

Productive forest land—Forest land capable of producing 20 cubic feet per acre per year of wood from trees classified as timber species (see “Timber species”) and designated as a timber forest type.

Productivity—The potential yield capability of a stand calculated as a function of site index (expressed in terms of cubic-foot growth per acre per year at age of culmination of mean annual increment). Productivity values for forest land provide an indication of biological potential. Timberland stands are classified by the potential net annual growth attainable in fully stocked natural stands. For FIA reporting, productivity class is an attribute that groups stand productivity values into categories of a specified range.

Productivity is sometimes referred to as “yield” or “mean annual increment.”

Productivity class—A classification of forest land in terms of potential annual cubic-foot volume growth per acre at culmination of mean annual increment in fully stocked natural stands.

Pulpwood—See “Logging residue/products.”

Q

Quality assessment (QA)—Evaluation of independent observations to determine whether measurement quality objectives (MQOs) are being met. Note: The acronym QA is used to indicate quality assurance and/or quality assessment.

Quality assurance (QA)—The total integrated program for ensuring that the uncertainties inherent in FIA data are known and do not exceed acceptable magnitudes, within a stated level of confidence. Quality assurance encompasses the plans, specifications, and policies affecting the collection, processing, and reporting of data. It is the system of activities designed to provide program managers and project leaders with independent assurance that total system quality control is being effectively implemented. Note: The acronym QA is used to indicate quality assurance and/or quality assessment.

Quality control (QC)—The routine application of prescribed field and laboratory procedures (e.g., random check cruising, periodic calibration, instrument maintenance, use of certified standards) to reduce random and systematic errors and ensure that data are generated within known and acceptable performance limits. Quality control also ensures the use of qualified personnel; reliable equipment and supplies; training of personnel; good field and laboratory practices; and strict adherence to standard operating procedures.

R

Regeneration status—A stand descriptor that indicates whether a stand has been naturally or artificially regenerated. Regeneration status is either natural, with no clear evidence of planting or seeding, or artificial, having clear evidence of planting or seeding.

Regional unit—See “FIA work unit.”

Regional variables—Attributes that are only collected by a single FIA work unit or that are collected using alternative methods that are defined by the region.

Remote sensing—The process of obtaining information about the earth from a distance, typically from data recorded by sensors attached to satellites or high-flying aircraft.

Removals—The net volume of sound (growing-stock) trees removed from the inventory by harvesting or other cultural operations (such as timber-stand improvement), by land clearing, or by changes in land use (such as a wilderness designation).

Reserved land—Land withdrawn from management for production of wood products through statute or administrative designation. Examples include designated Federal wilderness areas, national parks and monuments, and most State parks.

Residues—Bark and woody materials that are generated in primary wood-processing (wood-using) mills when roundwood products are converted to other products. Examples are slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and pulp screenings. Includes bark residues and wood residues (both coarse and fine materials) but excludes logging residues.

Resources Planning Act Assessment

(RPA)—A report on the conditions and trends of renewable natural resources on the Nation's forests and rangelands. It is legally mandated that FIA produce an RPA report every 10 years. RPA assessments are based on 50-year projections of global population and economic growth, global wood energy consumption, U.S. population and economic growth, land use change, and global climate change.

Rotten cull tree—All live trees with 67 percent or more of the merchantable volume cull, and more than half of this cull is due to rotten or missing cubic-foot volume loss. California, Oregon, Washington, and Alaska inventories use a 75 percent cutoff. For dead trees, this classification indicates that the tree is nonsalvable (not sound).

Rough cull tree—All live trees that do not now, or prospectively, have at least one solid 8-foot section, reasonably free of form defect on the merchantable bole, or have 67 percent or more of the merchantable volume cull; and more than half of this cull is due to sound dead wood cubic-foot loss or severe form defect volume loss. For the California, Oregon, Washington, and Alaska inventories, 75 percent or more cull, rather than 67 percent or more cull, applies. This class also contains all trees of noncommercial species. It also contains the following species groups: woodland softwoods, woodland hardwoods, and eastern noncommercial hardwoods. For dead trees, this classification indicates that the tree is salvable (sound).

Roundwood—See “Logging residue/products.”

S

Salvable dead tree—A downed or standing dead tree considered currently or potentially merchantable by regional standards.

Sample—A subset of a larger population that is taken for measurement to generate population estimates.

Sample design—The framework for the selection of a survey sample from a population of interest. Characteristics of a sample design include the definition of the population and sample unit (in FIA, these are typically a State and a plot, respectively), the sample size, and the sampling strategy (e.g., simple random sample, systematic sample). Sample designs are selected to meet specific precision targets for a given attribute. FIA's sample design is semi-systematic, using a random sample applied to a systematic hexagonal grid, with plots typically measured in 5–10-year measurement cycles.

Sample tree—See “Tally tree species.”

Sampling error—A statistical term used to describe the accuracy of the inventory estimates. Expressed on a percentage basis to enable comparisons between the precision of different estimates. Sampling errors are computed by dividing the estimate into the square root of its variance.

Sampling unit—The basic unit of selection and observation. For the traditional FIA inventory, all FIA work units use the center point of a 4-point cluster of subplots as the primary sample unit for point-based, plot-level observations. The collective area of the 4 subplots is the sample unit for inferring population attributes such as area and volume.

Saplings—Live trees 1.0 to 4.9 inches (2.5–12.5 cm) in diameter (d.b.h./d.r.c.).

Sawlog—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods, or meeting other combinations of size and defect specified by regional standards.

Sawlog portion—The part of the bole of sawtimber-size trees between a 1.0-foot stump and the sawlog top.

Sawlog top—The point on the bole of sawtimber-size trees above which a sawlog cannot be produced. The minimum sawlog top is 7.0 inches d.o.b. (diameter outside of bark) for softwoods, and 9.0 inches d.o.b. for hardwoods.

Sawtimber tree—A live tree of commercial species containing at least a 12-foot sawlog or two noncontiguous sawlogs 8 feet or longer and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. Hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume—Net volume of the sawlog portion of live sawtimber in board feet, International 1/4-inch Rule (unless specified otherwise), from stump to a minimum 7.0 inches top d.o.b. for softwoods and a minimum 9.0 inches top d.o.b. for hardwoods.

Seedlings—Live trees smaller than 1.0 inch (2.5 cm) d.b.h./d.r.c. that are at least 6 inches (15.2 cm) in height for softwoods and 12 inches (30.5 cm) in height for hardwoods.

Site index—A measure of forest productivity for a timberland tree/stand. Expressed in terms of the expected height (in feet) of trees on the site at an index age, which is typically 25 or 50 years (or 80 years for some hardwood species, such as quaking aspen and cottonwood). Calculated from height-to-age equations.

Site tree—A tree used to provide an index of site quality. Timber species selected for site index calculations must meet specified criteria with regards to age, diameter, crown class, and damage.

Snag—A standing dead tree. See “Standing dead tree” for tally qualifications.

Softwood trees—Coniferous trees, usually evergreen, having needles or scale-like leaves.

Sound dead—The net volume in salvable dead trees.

Stand—A community of trees on a minimum of 1 acre (0.4 ha) that can be distinguished from adjacent communities due to similarities and uniformity in tree and site characteristics, such as age-class distribution, species composition, spatial arrangement, structure, etc.

Stand age—A stand descriptor that indicates the average age of the live dominant and codominant trees in the predominant stand-size class of a condition.

Stand density—A relative measure that quantifies the relationship between trees per acre, stand basal area, average stand diameter, and stocking of a forested stand.

Stand density index (SDI)—A widely used measure developed by Reineke (1933) and is an index that expresses relative stand density based on a comparison of measured stand values with some standard condition; relative stand density is the ratio, proportion, or percent of absolute stand density to a reference level defined by some standard level of competition. For FIA reporting, the SDI for a site is usually presented as a percentage of the maximum SDI for the forest type. Site SDI values are sometimes grouped into SDI classes of a specified percentage range. Maximum SDI values vary by species and region.

Standard error—The square root of the variance and expressed in the same units as the estimate.

Standing dead tree—To qualify as a standing dead tally tree, the dead tree must be at least 1.0 inch d.b.h., have a bole that has an unbroken actual length of at least 4.5 feet, and lean less than 45 degrees from vertical as measured from the base of the tree to 4.5 feet. Portions of boles on dead trees that are separated greater than 50 percent (either above or below 4.5 feet) are considered severed and are included in down woody material (DWM) if they otherwise meet DWM tally criteria. For woodland species with multiple stems, a tree is considered down if more than two-thirds of the volume is no longer

attached or upright; cut and removed volume is not considered. For woodland species with single stems to qualify as a standing dead tally tree, the dead tree must be at least 1.0 inches in diameter, be at least 1.0 foot in unbroken actual length, and lean less than 45 degrees from vertical.

Stand-size class—A classification of forest land based on the predominant diameter size of live trees presently forming the plurality of live-tree stocking. Classes are defined as follows:

- **Sawtimber stand (large-tree stand)**—A stand at least 10 percent stocked with live trees, in which half or more of the total stocking is from live trees 5.0 inches or larger in diameter, and with sawtimber (large tree) stocking equal to or greater than poletimber (medium tree) stocking.
- **Poletimber stand (medium-tree stand)**—A stand at least 10 percent stocked with live trees, in which half or more of the total stocking is from live trees 5.0 inches or larger in diameter, and with poletimber (medium tree) stocking exceeding sawtimber (large tree) stocking.
- **Sapling/seedling stand**—A stand at least 10 percent stocked with live trees, in which half or more of the total stocking is from live trees less than 5.0 inches in diameter.
- **Nonstocked stand**—A formerly stocked stand that currently has less than 10 percent stocking but has the potential to again become 10 percent stocked. For example, recently harvested, burned, or windthrow-damaged areas.

State land—An ownership class of public lands owned by States or lands leased by States for more than 50 years.

Stocking—An expression of the extent to which growing space is effectively utilized by live trees.

- **Tree-level stocking**—The density value assigned to a sampled tree (usually in terms of numbers of trees or basal area per acre), expressed as a percent of the total tree density required to fully utilize the growth potential of the land.

- **Stand-level stocking**—The sum of the stocking values of all trees sampled.

Subplot—For the FIA national plot design, a circular, fixed-radius plot with a radius of 24.0 feet (1/24 acre) on which trees 5.0 inches and greater in diameter (d.b.h./d.r.c.) are measured. The FIA national plot design consists of four subplots. Within each subplot is a nested microplot. See “Microplot.”

Swapping—One of the methods used to preserve the confidentiality of plot locations on private forested land. Published plot coordinates may be switched or “swapped” with the fuzzed coordinates of other, ecologically similar plots. Swapping, when combined with another method that is referred to as “fuzzing,” creates a high level of uncertainty regarding plot location, to satisfy legal requirements for confidentiality.

Systematic sample—A method of selecting n sample units out of the N units in the population, where sample units are selected based on a random starting point and a fixed interval between subsequent sample units. Because the starting point is random, this is considered a probabilistic sample.

T

Tally tree species (sample tree)—Tree species listed on the FIA Master Tree Species List (available at web address: <https://usfs-public.box.com/v/FIA-TreeSpeciesList>).

Timber products output—All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Timber species—Tally tree species that are measured for diameter at breast height (d.b.h.).

Timber-stand improvement—A term comprising all intermediate cuttings or treatments, such as thinning, pruning, release cutting, girdling, weeding, or poisoning, made to improve the composition, health, and growth of the remaining trees in the stand.

Timberland—Unreserved forest land capable of producing 20 cubic feet per acre per year of wood from trees classified as timber species (see “Timber species”) and designated as a timber forest type.

Tree—A woody perennial plant, typically large, with a single well-defined stem carrying a more or less definite crown; sometimes defined as attaining a minimum diameter of 3 inches (7.6) and a minimum height of 15 ft (4.6 m) at maturity.

Tree density—A relative classification based on the number of stems per unit area, basal area, tree cover, or stocking of all live trees, seedlings, and saplings in the condition that are not overtopped.

Tree expansion factor—A factor used to scale each sample tree on a plot to a per-unit basis (e.g., trees per acre). The expansion factor used is dependent on the plot design. For fixed-plot designs, scaling is straightforward, with the number of trees per acre (TPA) represented by one tree equal to the inverse of the plot area in acres. For the FIA national plot design, TPA expansion factors are as follows:

- Subplot TPA = 6.018046; each tree (5.0 inches and greater in diameter) sampled on all four 24.0-foot radius subplots represents approximately 6 trees per acre.
- Microplot TPA = 74.965282; each sapling (1.0-4.9 inches in diameter) sampled on all four 6.8-foot radius microplots represents approximately 75 trees per acre.

- Macroplot TPA = 0.999188; each tree (5.0 inches and greater in diameter) sampled on all four 58.9-foot radius macroplots represents approximately 1 tree per acre.

Tree-size class—A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Tree top—The wood of a tree above the merchantable height (or above the point on the stem 4.0 inches diameter outside bark [d.o.b.]).

U

Unproductive forest land—Forest land not capable of producing 20 cubic feet per acre per year of wood from trees classified as timber species (see “Timber species”) and designated as a timber forest type. Also, all forest lands designated as a woodland forest type (see “Woodland species”).

Unreserved forest land—Forest land not withdrawn from management for production of wood products through statute or administrative designation.

Urban forest land—Land that would otherwise meet the criteria for timberland but is in an urban-suburban area surrounded by commercial, industrial, or residential development and not likely to be managed for the production of industrial wood products on a continuing basis. Wood removed would be for land clearing, fuelwood, or esthetic purposes. Such forest land may be associated with industrial, commercial, residential subdivision, industrial parks, golf course perimeters, airport buffer strips, and public urban parks that qualify as forest land.

V

Variable radius plot—A point-based plot design, where the decision to measure each tree (i.e., whether the tree is “in”) is based on the size of the tree relative to a basal area factor (BAF)

on a prism angle gauge and its distance from the center point. In variable-radius plot designs, the per-acre expansion factor is determined by the diameter of the tree, the basal area factor (BAF, or prism), and the number of subplots used in the plot design (usually 5, 7, or 10). Variable radius plots were commonly used in FIA's older periodic inventories, in contrast to FIA's fixed-radius plot design currently in use, which measures every tree within a fixed radius, regardless of size or proximity to the center point.

Variance—A statistical measurement of dispersion, identifying how far a set of values is spread out from their average value. Variance indicates the precision (or imprecision) in the estimate. A variance of zero would indicate that all estimated values were identical.

Veneer log—A roundwood product from which veneer is sliced or sawn and that usually meets certain standards of minimum diameter and length and maximum defect.

W

Weight—The weight of wood and bark. Weight can be expressed in terms of oven-dry (approximately 12 percent moisture content) or green weight.

Wilderness area—An area of undeveloped land currently included in the Wilderness System, managed to preserve its natural conditions, and retain its primeval character and influence.

Wood volume—A measure of the solid content of the tree stem used to measure wood quantity.

Woodland species—Tally tree species that are measured for diameter at root collar (d.r.c.). Most woodland trees are extremely variable in form. Woodland species are identified with a “w” under the “Woodland” column on the FIA Master Tree Species List (available from external Box: <https://usfs-public.box.com/v/FIA-TreeSpeciesList>).

APPENDIX 1—INVENTORY METHODS

What Is Forest Inventory and Analysis?

The U.S. Department of Agriculture, Forest Service, Forest Inventory and Analysis (FIA) program was created in 1928 to provide comprehensive information on the Nation's forest resources necessary for economic and forest management planning. Forest inventories were conducted periodically in each State until the Agricultural Research, Extension, and Education Reform Act of 1998 (the Farm Bill) (AREERA 1998) mandated a nationally consistent methodology in which a portion of all plots in each State were measured each year. The States in the Southern Research Station (SRS) FIA unit are on a 5- to 10-year measurement cycle.

What Is a Tree?

A tree is a perennial woody plant with a central stem and a distinct crown. FIA defines a tree as any perennial woody plant species that can attain a height of 15 feet at maturity. A complete list of the tree species measured in the Arkansas 2020 inventory is shown in table A1.1. Throughout this bulletin, the size of a tree is usually expressed as diameter at breast height (d.b.h.) in inches. This is the diameter, outside the bark, at a point 4.5 feet above the ground.

What Is a Forest?

FIA collects data only in forested areas; therefore, the definition used for forest land affects the estimates produced in each inventory year. The FIA program defines a forest as currently or formerly (within 30 years) at least 10-percent canopy cover of trees of any size and not currently developed for nonforest use. Forests must be at least 1 acre in size where a minimum width of 120 feet is maintained.

Table A1.1—Common name, scientific name, and FIA species code of live tree species ≥ 1.0 inches in d.b.h. occurring on forest land in the FIA sample, Arkansas, 2020

Common name	Scientific name	FIA species code	Trees tallied in sample
			number
Loblolly pine	<i>Pinus taeda</i>	131	25,697
Shortleaf pine	<i>Pinus echinata</i>	110	7,094
Sweetgum	<i>Liquidambar styraciflua</i>	611	7,080
White oak	<i>Quercus alba</i>	802	6,296
Eastern redcedar	<i>Juniperus virginiana</i>	68	4,704
Post oak	<i>Quercus stellata</i>	835	4,593
Black hickory	<i>Carya texana</i>	408	3,594
Winged elm	<i>Ulmus alata</i>	971	3,494
Mockernut hickory	<i>Carya alba</i>	409	2,595
Red maple	<i>Acer rubrum</i>	316	2,476
Blackgum	<i>Nyssa sylvatica</i>	693	2,415
Southern red oak	<i>Quercus falcata</i>	812	1,749
Northern red oak	<i>Quercus rubra</i>	833	1,672
Black oak	<i>Quercus velutina</i>	837	1,671

ARKANSAS'S FORESTS, 2020

Common name	Scientific name	FIA species code	Trees tallied in sample
			number
Water oak	<i>Quercus nigra</i>	827	1,652
Green ash	<i>Fraxinus pennsylvanica</i>	544	1,395
Eastern hophornbeam	<i>Ostrya virginiana</i>	701	1,255
Black cherry	<i>Prunus serotina</i>	762	1,080
Sugarberry	<i>Celtis laevigata</i>	461	1,011
Willow oak	<i>Quercus phellos</i>	831	1,004
American hornbeam	<i>Carpinus caroliniana</i>	391	896
Cherrybark oak	<i>Quercus pagoda</i>	813	826
American holly	<i>Ilex opaca</i>	591	777
Slippery elm	<i>Ulmus rubra</i>	975	763
Flowering dogwood	<i>Cornus florida</i>	491	659
Florida maple	<i>Acer barbatum</i>	311	613
White ash	<i>Fraxinus americana</i>	541	588
American elm	<i>Ulmus americana</i>	972	587
Common persimmon	<i>Diospyros virginiana</i>	521	581
Shagbark hickory	<i>Carya ovata</i>	407	548
Overcup oak	<i>Quercus lyrata</i>	822	539
Blackjack oak	<i>Quercus marilandica</i>	824	486
Bitternut hickory	<i>Carya cordiformis</i>	402	426
Nuttall oak	<i>Quercus texana</i>	828	419
Planertree	<i>Planera aquatica</i>	722	412
Water tupelo	<i>Nyssa aquatica</i>	691	407
Boxelder	<i>Acer negundo</i>	313	399
Baldcypress	<i>Taxodium distichum</i>	221	375
Hackberry	<i>Celtis occidentalis</i>	462	359
Sassafras	<i>Sassafras albidum</i>	931	334
Chinkapin oak	<i>Quercus muehlenbergii</i>	826	333
Black willow	<i>Salix nigra</i>	922	315
Eastern redbud	<i>Cercis canadensis</i>	471	297
American sycamore	<i>Platanus occidentalis</i>	731	284
Water hickory	<i>Carya aquatica</i>	401	241
Black walnut	<i>Juglans nigra</i>	602	240
American beech	<i>Fagus grandifolia</i>	531	221
Honeylocust	<i>Gleditsia triacanthos</i>	552	201

ARKANSAS'S FORESTS, 2020

Common name	Scientific name	FIA species code	Trees tallied in sample
			number
Black locust	<i>Robinia pseudoacacia</i>	901	182
Pecan	<i>Carya illinoensis</i>	404	162
Ashe juniper	<i>Juniperus ashei</i>	61	161
Serviceberry spp.	<i>Amelanchier</i> spp.	356	146
Red mulberry	<i>Morus rubra</i>	682	123
Pignut hickory	<i>Carya glabra</i>	403	122
Silver maple	<i>Acer saccharinum</i>	317	118
Swamp chestnut oak	<i>Quercus michauxii</i>	825	115
Pawpaw	<i>Asimina triloba</i>	367	98
Shumard oak	<i>Quercus shumardii</i>	834	90
Sweetbay	<i>Magnolia virginiana</i>	653	89
Osage-orange	<i>Maclura pomifera</i>	641	76
American plum	<i>Prunus americana</i>	766	70
American basswood	<i>Tilia americana</i>	951	60
Eastern cottonwood	<i>Populus deltoides</i>	742	60
Yellow-poplar	<i>Liriodendron tulipifera</i>	621	54
Cedar elm	<i>Ulmus crassifolia</i>	973	54
River birch	<i>Betula nigra</i>	373	49
Hawthorn spp.	<i>Crataegus</i> spp.	500	39
Laurel oak	<i>Quercus laurifolia</i>	820	36
Waterlocust	<i>Gleditsia aquatica</i>	551	34
Other or unknown live tree	Tree unknown	999	28
Gum bumelia	<i>Sideroxylon lanuginosum</i>	381	27
Sugar maple	<i>Acer saccharum</i>	318	26
Chinaberrytree	<i>Melia azedarach</i>	993	25
Virginia pine	<i>Pinus virginiana</i>	132	25
Umbrella magnolia	<i>Magnolia tripetala</i>	658	23
Blue ash	<i>Fraxinus quadrangulata</i>	546	20
Ailanthus	<i>Ailanthus altissima</i>	341	17
Cucumbertree	<i>Magnolia acuminata</i>	651	14
Mimosa	<i>Albizia julibrissin</i>	345	14
Ozark chinkapin	<i>Castanea pumila</i>	423	13
Pin oak	<i>Quercus palustris</i>	830	12
Paulownia	<i>Paulownia tomentosa</i>	712	11

Common name	Scientific name	FIA species code	Trees tallied in sample
			number
Shingle oak	<i>Quercus imbricaria</i>	817	10
Butternut	<i>Juglans cinerea</i>	601	8
Chinese tallow	<i>Triadica sebifera</i>	994	8
Smoketree	<i>Cotinus obovatus</i>	996	7
Sawtooth oak	<i>Quercus acutissima</i>	8427	6
Hercules' club	<i>Zanthoxylum clava-herculis</i>	8944	6
Northern catalpa	<i>Catalpa speciosa</i>	452	3
Bur oak	<i>Quercus macrocarpa</i>	823	3
Roughleaf dogwood	<i>Cornus drummondii</i>	6748	3
Carolina silverbell	<i>Halesia carolina</i>	581	2
White mulberry	<i>Morus alba</i>	681	2
Sourwood	<i>Oxydendrum arboreum</i>	711	2
Southern crab apple	<i>Malus angustifolia</i>	662	2
Southern magnolia	<i>Magnolia grandiflora</i>	652	2
Nutmeg hickory	<i>Carya myristiciformis</i>	406	2
Swamp tupelo	<i>Nyssa biflora</i>	694	2
Silver poplar	<i>Populus alba</i>	752	1
Ohio buckeye	<i>Aesculus glabra</i>	331	1
Pear spp.	<i>Pyrus</i> spp.	8420	1
Swamp cottonwood	<i>Populus heterophylla</i>	744	1
Pin cherry	<i>Prunus pensylvanica</i>	761	1
Apple spp.	<i>Malus</i> spp.	660	1

There were 97,920 trees tallied by field crews. Nomenclature follows Little (1979).
D.b.h. = diameter at breast height; FIA = Forest Inventory and Analysis.

History of Arkansas's Forest Inventory

The Forest Service initiated a comprehensive forest inventory program in the South in 1931 (Eldredge 1934). The first inventory of Arkansas was completed in 1935 (1937a, 1937b, 1937c, 1938a, 1938b; Eldridge 1938; Spillers 1939, Winters 1939). A line-plot method was used to collect data for this survey. This system was labor and time intensive, so alternative methods were researched. The outbreak of World War II put a halt on all forest inventory programs but resumed after the war in the late 1940s (Van Hooser et al. 1992).

The initial mandate for the Forest Survey was to measure and monitor the Nation's timber supply. This meant that all resources were devoted to reporting on productive forests that produced commercially important tree species. These productive forests were classified as "timberlands" and the species of importance were labeled as "commercial" or "growing stock" species. By the 1970s, public awareness of the interconnectivity of all forests had grown. This growing concern led to the forest inventory to measure all tree species on all forest lands, even those that were deemed unavailable for timber harvest, such as wilderness areas, or incapable

of producing commercially viable forests. Thus, the focus shifted from “timberlands” to “forest lands” and “growing stock” species to “all-live” species. Users of historic data need to take these definitional changes into account when comparing early forest inventory data across time.

Prior to 1970, average annual removals were based on timber-mill surveys, or timber product output data, and severance tax data. After 1970, Arkansas estimates of average annual growth, removals, and mortality were based on remeasurement of the same trees on the same population. At each visit, cruisers would account for the old trees and added any additional trees that grew onto the plot.

Annualized Forest Inventory

Arkansas switched to a 5-year annual inventory in 2005. In the 5-year annual inventory 20 percent of the plots across the State were sampled each year. Each year’s sample was spatially distributed evenly across the State. Thus, after 5 years, a complete set of data, called a cycle, was obtained. The Arkansas 2005, 2010, 2015, and 2020 reports (Rosson and Rose 2010, 2015; Rosson 2023) are based on this 5-year system. The annual inventory provides users with up-to-date information, but only 20 percent of the full cycle of data each year.

Area

The current approach in the determination of forest area applies a stratification technique to improve the precision of the estimate, i.e., it reduces the variance of the estimate. With this method, the placement (on the ground) and subsequent classification (by land use) of the sample plot carries much of the weight in determining forest area. The area of control was the forest survey unit. FIA used NLCD for the stratification platform. The NLCD has a land classification produced by the U.S. Geological Survey, derived from Landsat Thematic Mapper data. Using these data, FIA identifies various strata to improve the variance estimate. The estimation of forest area is then summed across all strata from respective pixel counts (based on placement within the above strata) and the mean area from

the ground sample plots. See Westfall et al. (2022) for more details.

Sample Design and Plot Placement

The current sampling method is based upon a hexagonal grid laid across the landscape, used for sample placement on the ground. In general, this involves placement of a single FIA sample plot inside each hexagon grid cell where measurements of sample variables were made by field crews. The grid ensures systematic coverage with sample plots across the sample domain (a State). The hexagons in the grid represent approximately 6,000 acres. To ensure systematic coverage across the sample domain (a State), the procedure is to place one sample plot in each hexagonal grid cell boundary.

Plot Design

The design of the ground sample plots is described in Bechtold and Patterson (2005) and Westfall et al. (2022). These plots are clusters of four subplots arranged so that one point is central and the other three lie 120 feet from it at azimuths of 0, 120, and 240 degrees (fig. A1.1). Each point is the center of a circular subplot with a fixed 24-foot radius. Trees ≥ 5.0 inches in d.b.h. are measured in these subplots. Each subplot in turn contains a circular microplot with a fixed 6.8-foot radius. Trees ≥ 1.0 to 4.9 inches in d.b.h. and seedlings (< 1.0 inch in d.b.h.) are measured on these microplots.

Sometimes a plot cluster straddles two or more land-use or forest condition classes (Bechtold and Patterson 2005). There are seven condition-class variables that require mapping of a unique condition on a plot: land use, forest type, stand size, ownership, stand density, regeneration status, and reserved status. A new condition is defined and mapped each time the aerial extent of one of these variables is encountered during plot measurement. The process of mapping any of these conditions on a plot changes the plot size for a respective condition, i.e., the condition size will be smaller than a full plot complement and this may increase the variance of this respective estimate.

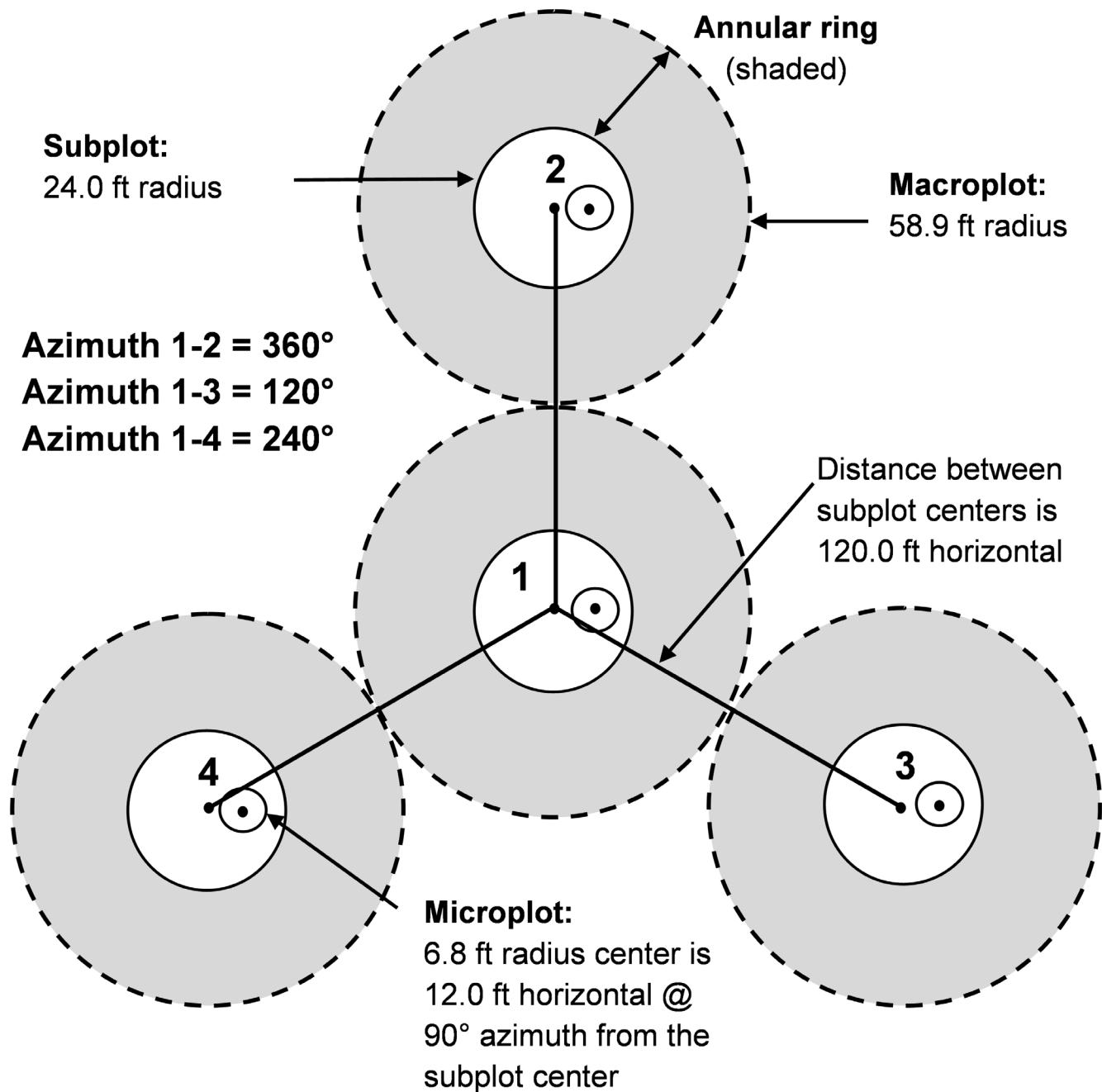


Figure A1.1—Layout of fixed radius plot.

Volume Estimation

The FIA program published a new modeling system in September 2024 for predicting tree cubic-foot volume, biomass, and carbon attributes. The general technical report (GTR) detailing methods and equations completed a goal of the 2015 FIA Strategic Plan (Westfall et al. 2024).

This system, termed National Scale Volume and Biomass Estimators (NSVB), provides a more consistent and accurate accounting of structural components of trees (fig. A1.2) across the United States for total tree cubic-foot volume, biomass, and carbon. The NSVB models were released on September 30, 2023 and used to compute

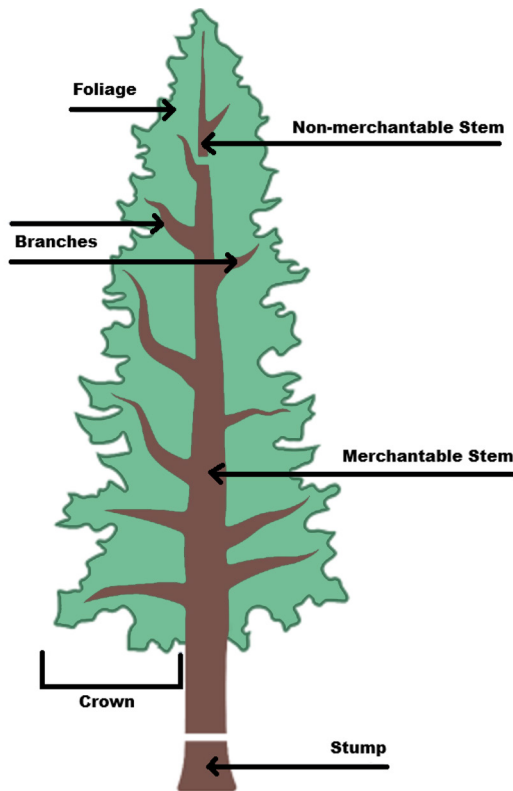


Figure A1.2—Structural components of trees.

all current and past volumes reported in this publication. Users wishing to learn more about the impacts of changing volume computation procedures should refer to the GTR mentioned previously.

Growth, Removals, and Mortality Estimation

Growth, removal, and mortality (GRM) estimates were determined from the remeasurement of 5,648 sample plots measured in the 2020 inventory. The estimates are presented in an annual format, e.g., cubic feet per acre per year, and were based on the latest survey period.

What Is in This Resource Bulletin?

This resource bulletin presents a summary of Arkansas's forest resources, highlighting key forest characteristics estimated from inventory field plots sampled across the State over the 5-year period from 2016 through 2020. For the 2020 inventory cycle, 5,667 locations in the State were selected for measurement. Of these plots, 3,555

contained at least one condition in forest, 3,162 had conditions classified as nonforest. A sample plot may contain both forest and nonforest conditions, thus may be double counted in the estimates in the preceding sentence. To get reliable estimates of change (e.g., forest area change, growth, mortality, and removals), FIA uses only those plots sampled during both the 2015 cycle and the previous cycle (dated as 2010). Online information pertaining to previous State reports for Arkansas and 70 summary data tables, along with additional information and online tools can be found at the Inventory and Monitoring Assessment website (USDA Forest Service 2026a). The tables provide estimates of forest area, number of trees, volume, biomass, carbon and forest change for the State. A reduced list of online tables is available in appendix 3 of this report.

Where to Find Additional Information?

Rosson and Rose (2010, 2015) and Rosson (2023) provide detailed information on annual inventory methods and definitions as well as prior periodic inventories implemented in Arkansas. The SRS FIA website has most of the data used in this report accessible through the Forest Inventory and Analysis Database (FIADB) application that contains both national core data and regional variables collected only by the SRS FIA unit (USDA Forest Service 2026a). This site has up-to-date reports and statistics for each State in the SRS FIA unit and field guides that include SRS FIA regional variables, as well as links that lead to resources such as publications or data and tools. EVALIDator and DATIM are the primary estimation tools that allow users to generate custom summaries from the most recent data in FIADB. Definitions of tables and fields are available in the FIADB user manual (Burrill et al. 2024), and core FIA field guides contain details on how each data item was collected. A glossary of FIA terms can be found at the website "Forest Inventory and Analysis Glossary—Standard Terminology" (USDA Forest Service 2026b). Methods summary users wishing to make rigorous comparisons of data between surveys should be aware of any

changes in methodologies between measurements and the evolving nature of the FIA program. The most valuable and powerful trend information is obtained when the same plots are revisited from one survey to the next and measured in the same way. Determining the strength of a trend or determining the level of confidence associated with a trend is difficult or impossible when sampling methods change over time. Fortunately, FIA data collection in Arkansas has followed the national annualized inventory protocols for four full cycles Rosson and Rose (2010, 2015), Rosson (2021, 2023) allowing us to track change over time with a high degree of confidence.

Dot Map Methodology

Dot maps are a valuable tool to portray the areal distribution of volumetric data. In forestry these data may be tree volume, tree growth, forest area, etc. They are especially useful in displaying relative densities of resource attributes across State regions. There are three factors that affect the usefulness and accuracy of dot maps: (1) the size of the dots, (2) the value assigned to each dot, and (3) the placement of the dots on a map (Robinson et al. 1984). The choices of values for factors (1) and (2) are mostly arbitrary but the important function of the maps was to show relative densities of resource attributes across the State of Arkansas.

Regarding factor three, placement of the dots, the area of control was the county. A minimum volumetric value (cubic-foot volume or area) for a species (or forest-type group) was needed for a given county for it to be represented on the map. For example, for one dot to be placed in a county representing loblolly pine volume, there had to be a minimum of 1.0 million cubic feet of loblolly pine in that county. For two dots, 2.0 million cubic feet were needed and so on. The dots were placed randomly in each county by geographic information system software; there was no location accuracy inside any county. However, there was adequate accuracy at the regional (survey unit) and State level of scale to portray specific species distributions and relative densities.

Summary

Users wishing to make rigorous comparisons of data between surveys should be aware of any changes in methodologies between measurements. The most valuable and powerful trend information is obtained when the same plots are revisited from one survey to the next and measured in the same way. Determining the strength of a trend or determining the level of confidence associated with a trend, is difficult or impossible when sampling methods change over time.

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APPENDIX 2—DATA RELIABILITY

A relative standard of accuracy has been incorporated into the forest survey. This standard satisfies user demands, minimizes human and instrumental sources of error, and keeps costs within prescribed limits. The two primary types of error are measurement error and sampling error.

Measurement Error

There are three elements of measurement error: (1) biased error, caused by instruments not properly calibrated; (2) compensating error, caused by instruments of moderate precision; and (3) accidental error, caused by human error in measuring and compiling. All of these are held to a minimum by the Forest Inventory and Analysis (FIA) quality assurance (QA) program. The goal of the QA program is to provide a framework of quality control procedures to assure the production of complete, accurate, and unbiased forest assessments for given standards. These methods include the use of nationally standardized field manuals, portable data recorders, thorough entry-level training, periodic review training, supervision, use of check plots, editing checks, and an emphasis on careful work. Additionally, data quality is assessed and documented by using performance measurements and post-survey assessments. These assessments are then used to identify areas of the data collection process that need improvement or refinement in order to meet the program's quality objectives.

Each variable collected by FIA is assigned a measurement quality objective (MQO) and a measurement tolerance level. The MQOs are documented in the FIA National Field Manual (USDA Forest Service 2024). In some instances, the MQOs are a “best guess” of what experienced field crews should be able to consistently achieve. Tolerances are somewhat arbitrary and are based on the crews' ability to make repeatable measurements or observations within the assigned MQO.

Evaluation of field crew performance is accomplished by calculating the differences

between data collected by the field crew and data collected by the QA crew on blind-check plots. Results of these calculations are compared to the established MQOs. In the analysis of blind-check data, an observation is within tolerance when the difference between the field crew observation and the QA crew observation does not exceed the assigned tolerance for that variable. For many categorical variables, the tolerance is “no error” allowed, so only observations that are identical are within the tolerance level.

Sampling Error

Sampling error is associated with the natural and expected deviation of the sample from the true population mean. This deviation is susceptible to a mathematical evaluation of the probability of error. Sampling errors for State totals are based on one standard deviation. That is, there is a 68.27 percent probability that the confidence interval given for each sample estimate will cover the true population mean (tables A2.1–A2.3).

Table A2.1—Statistical reliability of forest land area estimates for Arkansas, 2020

	Area estimates (forest land)		
	<i>thousand acres</i>	<i>percent</i>	
Survey unit	18,883.2	± 102.2	0.5
South Delta	1,446.0	± 38.1	2.6
North Delta	806.5	± 28.2	3.5
Southwest	6,944.8	± 56.4	0.8
Ouachita	3,419.0	± 47.0	1.4
Ozark	6,266.8	± 64.4	1.0

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

Table created: 06-AUG-25.

Table A2.2—Statistical reliability of all-live volume estimates for Arkansas, 2020

Volume estimates (all-live)			
	million cubic feet		percent
Species group	6,886	± 62.0	1.1
Softwoods	3,057	± 13.8	2.2
Hardwoods	3,828	± 25.4	1.5

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

Table created: 06-AUG-25.

Table A2.3—Statistical reliability of growth, removals, and mortality estimates for Arkansas, 2020

Volume estimates (growth, removals, mortality)				
		million cubic feet		percent
Net annual growth	Total	1,443.7	± 7.5	1.9
	Softwoods	952.1	± 3.7	2.6
	Hardwoods	491.4	± 1.5	3.2
Annual removals	Total	765.3	± 1.4	5.4
	Softwoods	566.4	± 0.9	6.2
	Hardwoods	198.8	± 0.2	9.1
Annual mortality	Total	301.9	± 0.8	3.6
	Softwoods	75.7	± 0.1	7.0
	Hardwoods	226.2	± 0.5	4.3

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

Table created: 06-AUG-25.

The size of the sampling error generally increases as the size of the area examined decreases. In addition, as area or volume totals are stratified by forest type, species, diameter class, ownership, or other subunits, the sampling error may increase and be greatest for the smallest divisions. However, there may be instances where a smaller component does not have a proportionately larger sampling error. This can happen when the post-defined strata are more homogeneous than the larger strata, thereby having a smaller variance. For specific post-defined strata, the sampling error can be calculated using the following formula:

$$SE_s = SE_t \frac{\sqrt{X_t}}{\sqrt{X_s}}$$

where

SE_s = sampling error for subdivision of survey unit or State total

SE_t = sampling error for survey unit or State total

X_s = sum of values for the variable of interest (area or volume) for subdivision of survey unit or State

X_t = total area or volume for survey unit or State

For example, the estimate of sampling error for total forest land area of the Southwest unit is estimated at 6,944.8 thousand acres (table A2.1). The sample error for the State's forest land area is 0.5 (table A2.1). The estimate of the sampling error for this example is computed as:

$$SEs = 0.5 \frac{\sqrt{18,883.1}}{\sqrt{6,944.8}} = 0.824$$

Thus, the sampling error is 0.824 percent, and the resulting confidence interval for total forest land acres in the Southwest unit is 6,944.8 ± 57.3 thousand acres. To achieve the 95-percent confidence interval, the standard error is multiplied by 1.96 or 6,944.8 ± 96.7 thousand acres.

Sampling errors obtained by this method are only approximations of reliability because this process assumes constant variance across all subdivisions of totals. The resulting errors derived by this approximation method should be considered very liberal, i.e., it usually produces sampling errors much better than those derived by the actual random sampling formula. Users are free to use more conservative variance estimators based on their specific applications.

Literature Cited

U.S. Department of Agriculture Forest Service [USDA Forest Service]. 2024. Forest Inventory and Analysis national core field guide for the nationwide forest inventory. Version 9.4. Internal report. https://research.fs.usda.gov/sites/default/files/2024-09/wo-v9-4_sep2024_fg_nfi_natl.pdf. [Date accessed: 03 April 2026].

APPENDIX 3—SUPPLEMENTAL TABLES

Table A3.1—Area of forest land by ownership class and land status, Arkansas, 2020

Ownership class	Ownership	All forest land	Unreserved			Reserved		
			Total	Timberland	Unproductive	Total	Productive	Unproductive
thousand acres								
U.S. Forest Service	National forest	2,532.3	2,433.3	2,430.6	2.7	99.0	99.0	0.0
	Total	2,532.3	2,433.3	2,430.6	2.7	99.0	99.0	0.0
Other Federal	National Park Service	55.3	0.0	0.0	0.0	55.3	55.3	0.0
	U.S. Fish and Wildlife Service	293.5	0.0	0.0	0.0	293.5	293.5	0.0
	U.S. Dept. of Defense/U.S. Dept. of Energy	283.5	283.5	264.8	18.7	0.0	0.0	0.0
	Other Federal	3.5	3.5	3.5	0.0	0.0	0.0	0.0
	Total	635.8	287.1	268.4	18.7	348.7	348.7	0.0
State and local government	State	463.3	416.6	416.6	0.0	46.8	46.8	0.0
	Local	76.3	76.3	76.3	0.0	0.0	0.0	0.0
	Other nonfederal public	6.8	6.8	6.8	0.0	0.0	0.0	0.0
	Total	546.4	499.6	499.6	0.0	46.8	46.8	0.0
Forest industry	Corporate	2,591.8	2,591.8	2,591.8	0.0	0.0	0.0	0.0
	Unincorporated local partnership/association/club	38.5	38.5	38.5	0.0	0.0	0.0	0.0
	Individual	45.4	45.4	45.4	0.0	0.0	0.0	0.0
	Total	2,675.7	2,675.7	2,675.7	0.0	0.0	0.0	0.0
Nonindustrial private	Corporate	3,116.6	3,116.6	3,110.1	6.5	0.0	0.0	0.0
	Conservation/natural resources organization	49.9	49.9	49.9	0.0	0.0	0.0	0.0
	Unincorporated local partnership/association/club	835.4	835.4	831.5	3.9	0.0	0.0	0.0
	Individual	8,491.0	8,491.0	8,491.0	0.0	0.0	0.0	0.0
	Total	12,493.0	12,493.0	12,482.6	10.4	0.0	0.0	0.0
All classes		18,883.2	18,388.7	18,356.9	31.8	494.4	494.4	0.0

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

0.0 = a value of >0.0 but <0.05.

ARKANSAS'S FORESTS, 2020

Table A3.2—Area of forest land by forest-type group and ownership group, Arkansas, 2020

Forest-type group	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
<i>thousand acres</i>						
Loblolly-shortleaf pine	6,189.0	890.9	36.8	76.4	1,870.0	3,314.9
Other eastern softwoods	263.2	12.5	12.7	0.0	6.0	232.0
Pinyon-juniper	16.0	0.0	0.0	0.0	4.3	11.6
Total softwoods	6,468.2	903.4	49.5	76.4	1,880.3	3,558.6
Oak-pine	1,878.1	342.8	43.7	46.9	205.5	1,239.2
Oak-hickory	7,419.0	1,257.3	204.2	142.5	331.9	5,483.2
Oak-gum-cypress	1,982.7	5.0	246.6	224.6	176.7	1,329.8
Elm-ash-cottonwood	961.2	13.4	89.1	51.1	41.0	766.6
Other hardwoods	27.3	7.3	0.0	0.0	6.0	14.0
Exotic hardwoods	6.6	0.0	0.0	0.0	0.0	6.6
Total hardwoods	12,274.9	1,625.8	583.5	465.1	761.1	8,839.4
Nonstocked	140.1	3.1	2.8	4.8	34.3	95.0
All groups	18,883.2	2,532.3	635.8	546.4	2,675.7	12,493.0

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

0.0 = a value of >0.0 but <0.05.

Table A3.3—Area of forest land by forest-type group and stand origin, Arkansas, 2020

Forest-type group	Total	Stand origin	
		Natural stands	Artificial regeneration
		thousand acres	
Loblolly-shortleaf pine	6,189.0	2,850.5	3,338.5
Other eastern softwoods	263.2	263.2	0.0
Pinyon-juniper	16.0	16.0	0.0
Total softwoods	6,468.2	3,129.7	3,338.5
Oak-pine	1,878.1	1,713.4	164.7
Oak-hickory	7,419.0	7,328.9	90.1
Oak-gum-cypress	1,982.7	1,850.3	132.4
Elm-ash-cottonwood	961.2	923.2	37.9
Other hardwoods	27.3	27.3	0.0
Exotic hardwoods	6.6	6.6	0.0
Total hardwoods	12,274.9	11,849.8	425.0
Nonstocked	140.1	111.3	28.8
All groups	18,883.2	15,090.9	3,792.3

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

0.0 = a value of >0.0 but <0.05.

Table A3.4—Area of timberland by forest-type group and stand-size class, Arkansas, 2020

Species group	Forest-type group	Stand-size class				
		All classes	Large diameter	Medium diameter	Small diameter	Nonstocked
thousand acres						
Softwoods	Loblolly-shortleaf pine	6,132.6	3,644.1	1,545.9	942.7	0.0
	Other eastern softwoods	263.0	83.3	117.6	62.1	0.0
	Pinyon-juniper	16.0	10.9	5.1	0.0	0.0
	Total softwoods	6,411.7	3,738.3	1,668.5	1,004.8	0.0
Hardwoods	Oak-pine	1,843.7	1,054.8	485.7	303.1	0.0
	Oak-hickory	7,248.0	4,479.6	1,930.4	838.0	0.0
	Oak-gum-cypress	1,769.4	1,304.9	301.5	163.0	0.0
	Elm-ash-cottonwood	911.5	582.5	179.1	150.0	0.0
	Other hardwoods	27.3	0.0	6.5	20.8	0.0
	Exotic hardwoods	6.6	4.8	1.5	0.2	0.0
Total hardwoods		11,806.5	7,426.7	2,904.7	1,475.2	0.0
Nonstocked		138.8	0.0	0.0	0.0	138.8
All groups		18,356.9	11,165.0	4,573.2	2,480.0	138.8

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

0.0 = a value of >0.0 but <0.05.

ARKANSAS'S FORESTS, 2020

Table A3.5—Number of live trees on forest land by species group and diameter class, Arkansas, 2020

Species group	Forest-type group	All classes	Diameter class (inches)														
			1.0–2.9	3.0–4.9	5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–24.9	26.0–28.9	29.0–32.9	33.0–36.9	37.0+
million trees																	
Softwoods	Loblolly and shortleaf pines	2,432.3	818.8	519.8	372.1	286.9	174.4	107.9	68.3	42.5	20.4	11.5	7.6	1.5	0.4	–	–
	Other yellow pines	2.8	1.0	1.0	0.6	0.2	0.1	–	–	–	–	–	–	–	–	–	–
	Cypress	19.9	4.5	2.3	1.6	1.8	1.6	1.9	1.4	0.9	0.6	0.6	1.1	0.6	0.3	0.3	0.4
	Other eastern softwoods	627.3	348.9	146.8	64.7	35.9	18.1	7.7	3.4	1.1	0.5	0.2	–	–	–	–	–
	Woodland softwoods	20.0	11.5	3.7	1.4	1.3	0.7	0.6	0.5	0.3	0.1	0.0	–	–	–	–	–
	Total softwoods	3,102.3	1,184.7	673.6	440.5	326.0	194.9	118.0	73.6	44.8	21.6	12.3	8.8	2.1	0.7	0.3	0.4
Hardwoods	Select white oaks	553.9	247.0	89.4	58.1	46.7	37.6	27.2	18.7	12.4	7.3	4.5	3.6	1.1	0.2	0.1	0.0
	Select red oaks	215.3	100.9	31.5	19.4	13.0	12.5	9.6	8.9	7.0	3.9	3.3	3.0	1.3	0.4	0.3	0.2
	Other white oaks	371.3	131.8	69.6	48.7	38.0	30.2	19.6	12.1	8.2	4.4	3.4	3.6	1.2	0.5	0.1	0.0
	Other red oaks	850.6	518.3	128.6	65.0	38.0	27.6	20.9	16.7	12.3	8.5	4.9	6.1	2.3	0.9	0.3	0.2
	Hickory	907.0	525.4	157.6	94.4	56.3	33.9	17.9	10.4	5.2	3.0	1.0	1.5	0.3	0.1	0.0	0.0
	Hard maple	76.6	41.6	16.7	9.1	4.5	1.8	1.3	0.7	0.4	0.2	0.1	0.1	–	–	–	–
	Soft maple	540.5	415.4	69.2	29.8	13.3	6.1	2.7	1.6	0.8	0.9	0.3	0.3	0.1	0.0	–	–
	Beech	28.6	19.0	3.3	2.2	1.1	0.4	0.6	0.4	0.3	0.4	0.3	0.4	0.2	0.0	–	–
	Sweetgum	1,143.8	746.2	216.5	74.1	41.2	25.8	15.3	9.7	5.7	3.8	2.4	1.7	0.8	0.3	0.1	–
	Tupelo and blackgum	436.7	281.8	81.5	29.2	15.5	9.6	7.1	4.0	2.8	1.9	1.1	1.2	0.6	0.2	0.0	0.1
	Ash	302.8	191.4	58.6	21.8	12.1	6.4	4.4	2.4	2.0	1.2	0.9	0.9	0.2	0.2	0.0	0.1
	Cottonwood and aspen (East)	4.2	0.9	1.3	0.5	0.4	0.1	0.1	–	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
	Basswood	5.4	3.1	0.4	0.6	0.4	0.6	0.1	0.0	0.1	0.0	–	0.0	0.0	–	–	–
	Yellow-poplar	4.9	2.8	0.4	0.4	0.4	0.4	0.2	0.0	0.0	0.1	0.1	0.0	–	–	–	–
	Black walnut	14.7	4.9	1.7	2.3	2.0	1.1	0.8	0.7	0.5	0.3	0.3	0.1	0.1	–	–	–
	Other eastern soft hardwoods	1,555.4	1,061.8	282.4	99.1	49.0	26.3	13.7	9.7	5.7	2.7	1.6	2.3	0.6	0.2	0.1	0.0
	Other eastern hard hardwoods	692.0	540.9	110.3	23.2	8.5	4.4	2.3	1.3	0.4	0.3	0.3	0.1	–	–	–	–
	Eastern noncommercial hardwoods	1,046.3	867.7	130.4	32.1	10.7	3.3	1.2	0.5	0.3	0.0	0.1	0.0	–	–	–	–
	Urban-specific hardwoods	2.2	1.3	0.5	0.3	0.1	0.1	0.0	–	–	–	–	–	–	–	–	–
	Total hardwoods	8,752.4	5,702.1	1,450.0	610.2	351.2	228.1	145.2	97.8	64.1	39.1	24.8	25.3	9.0	3.2	1.3	0.8
All species		11,854.7	6,886.8	2,123.7	1,050.7	677.1	423.1	263.2	171.4	109.0	60.7	37.2	34.0	11.2	4.0	1.6	1.2

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

– = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

ARKANSAS'S FORESTS, 2020

Table A3.6—Net¹ merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020

Species group	Forest-type group	Stand-size class				
		All classes	Large diameter	Medium diameter	Small diameter	Nonstocked
million cubic feet						
Softwoods	Loblolly-shortleaf pine	12,982.2	10,844.1	2,047.5	90.6	0.0
	Other eastern softwoods	290.6	119.7	148.7	22.2	0.0
	Pinyon-juniper	4.5	3.0	1.5	0.0	0.0
	Total Softwood	13,277.3	10,966.7	2,197.8	112.7	0.0
Hardwoods	Oak-pine	3,339.5	2,644.8	620.0	74.7	0.0
	Oak-hickory	12,367.3	9,947.5	2,244.3	175.5	0.0
	Oak-gum-cypress	5,329.7	4,967.1	337.6	25.0	0.0
	Elm-ash-cottonwood	1,712.2	1,499.9	186.2	26.1	0.0
	Other hardwoods	10.6	0.0	6.9	3.7	0.0
	Exotic hardwoods	4.4	2.8	1.6	0.0	0.0
	Total Hardwood	22,763.7	19,062.1	3,396.6	305.0	0.0
Nonstocked		6.2	0.0	0.0	0.0	6.2
All classes		36,047.1	30,028.8	5,594.4	417.8	6.2

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

0.0 = a value of >0.0 but <0.05.

¹ Excludes rotten, missing, and form cull defects volume.

ARKANSAS'S FORESTS, 2020

Table A3.7—Net¹ merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020

Species group	Forest-type group	All ownerships	Ownership group				
			U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwoods	Loblolly and shortleaf pines	13,801.1	2,828.5	251.2	308.0	2,670.4	7,742.9
	Other yellow pines	2.8	0.0	0.0	0.0	0.0	2.8
	Cypress	689.2	0.0	122.1	156.5	38.3	372.2
	Other eastern softwoods	712.4	72.9	25.2	6.9	11.0	596.4
	Total softwoods	15,205.5	2,901.4	398.6	471.4	2,719.8	8,714.3
Hardwoods	Select white oaks	3,431.7	1,063.4	77.1	79.7	180.6	2,030.8
	Select red oaks	1,920.8	486.0	29.1	110.0	79.9	1,215.8
	Other white oaks	2,333.4	192.8	217.9	188.0	72.3	1,662.3
	Other red oaks	3,682.1	228.6	286.7	232.0	204.9	2,729.8
	Hickory	2,317.1	369.6	122.9	83.1	88.6	1,652.9
	Hard maple	143.2	35.5	0.9	1.1	0.8	104.8
	Soft maple	387.7	50.0	12.5	7.0	24.2	294.0
	Beech	128.0	62.1	0.3	8.1	8.4	49.1
	Sweetgum	2,348.4	223.5	145.3	135.3	237.7	1,606.5
	Tupelo and blackgum	866.4	137.6	61.5	123.4	33.4	510.5
	Ash	597.4	42.4	77.1	64.8	13.6	399.5
	Cottonwood and aspen (East)	160.7	0.0	42.5	12.2	0.7	105.3
	Basswood	29.1	12.7	0.0	0.0	0.7	15.8
	Yellow-poplar	31.8	14.4	0.0	0.0	0.0	17.4
	Black walnut	113.0	9.8	0.8	1.4	0.6	100.4
	Other eastern soft hardwoods	1,932.3	127.9	149.3	119.6	85.0	1,450.5
	Other eastern hard hardwoods	241.9	17.3	20.1	14.0	13.8	176.8
	Eastern noncommercial hardwoods	174.8	9.4	7.4	9.1	19.3	129.7
	Urban-specific hardwoods	2.0	0.0	0.4	0.0	0.0	1.6
	Total hardwoods	20,841.6	3,082.8	1,251.7	1,189.0	1,064.4	14,253.6
All species		36,047.1	5,984.2	1,650.3	1,660.4	3,784.2	22,967.9

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

0.0 = a value of >0.0 but <0.05.

¹ Excludes rotten, missing, and form cull defects volume.

ARKANSAS'S FORESTS, 2020

Table A3.8—Net¹ merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by species group and diameter class, Arkansas, 2020

Species group	Forest-type group	All classes	Diameter class (inches)												
			5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–24.9	25.0–28.9	29.0–32.9	33.0–36.9	37.0+
million cubic feet															
Softwoods	Loblolly and shortleaf pines	13,801.1	766.9	1,606.3	1,972.9	2,140.6	2,099.7	1,888.3	1,234.9	914.5	848.9	232.0	96.2	0.0	0.0
	Other yellow pines	2.8	1.1	0.6	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Cypress	689.2	3.3	10.5	18.7	35.3	38.8	34.4	34.6	39.4	104.3	88.3	51.6	64.7	165.1
	Other eastern softwoods	712.4	143.9	183.5	164.6	104.2	64.0	29.4	14.4	8.5	0.0	0.0	0.0	0.0	0.0
	Total softwoods	15,205.5	915.1	1,800.9	2,157.3	2,280.1	2,202.5	1,952.2	1,284.0	962.3	953.2	320.3	147.8	64.7	165.1
Hardwoods	Select white oaks	3,431.7	147.2	289.1	429.6	496.7	502.8	447.9	357.3	279.6	293.6	127.1	36.0	15.2	9.7
	Select red oaks	1,920.8	48.1	77.8	138.6	169.1	226.4	247.7	186.0	210.3	258.5	150.8	81.4	76.8	49.1
	Other white oaks	2,333.4	111.0	210.0	307.5	312.8	285.2	264.6	172.0	187.7	246.0	122.8	83.3	17.3	13.1
	Other red oaks	3,682.1	152.0	217.3	303.2	379.6	435.1	454.7	416.1	304.8	502.5	276.5	136.5	57.2	46.7
	Hickory	2,317.1	247.8	360.4	404.5	348.7	303.8	201.8	172.7	72.0	144.7	31.1	9.4	7.0	13.2
	Hard maple	143.2	23.8	26.5	17.9	23.6	16.5	14.2	8.6	7.3	4.6	0.0	0.0	0.0	0.0
	Soft maple	387.7	72.4	73.3	58.3	37.4	35.4	23.9	35.9	18.3	18.6	12.1	2.1	0.0	0.0
	Beech	128.0	5.9	7.2	4.9	10.6	10.2	8.7	15.2	11.3	28.7	21.8	3.5	0.0	0.0
	Sweetgum	2,348.4	186.9	268.1	314.6	308.7	286.7	235.3	205.3	168.7	163.3	106.8	60.2	43.8	0.0
	Tupelo and blackgum	866.4	65.9	87.1	100.2	120.0	101.6	84.7	81.4	54.6	74.7	54.5	16.5	4.9	20.1
	Ash	597.4	58.5	70.6	67.3	68.5	58.8	63.1	47.2	44.3	60.5	17.3	21.9	4.2	15.1
	Cottonwood and aspen (east)	160.7	1.8	4.0	0.9	1.5	0.0	4.3	5.6	3.8	17.0	21.2	27.5	21.5	51.7
	Basswood	29.1	1.6	2.5	7.7	2.3	1.0	3.8	2.6	0.0	3.4	4.3	0.0	0.0	0.0
	Yellow-poplar	31.8	1.0	2.5	4.6	3.6	1.0	1.2	9.4	5.0	3.4	0.0	0.0	0.0	0.0
	Black walnut	113.0	5.0	9.6	9.7	13.3	15.9	15.3	12.1	16.2	8.2	7.6	0.0	0.0	0.0
	Other eastern soft hardwoods	1,932.3	231.1	273.5	267.8	228.3	228.7	194.8	117.9	88.0	166.8	70.8	28.2	32.4	3.9
	Other eastern hard hardwoods	241.9	47.5	42.4	39.6	35.8	30.4	12.2	9.2	18.9	6.0	0.0	0.0	0.0	0.0
	Eastern noncommercial hardwoods	174.8	64.8	46.2	25.2	14.1	7.7	8.6	1.2	6.1	0.9	0.0	0.0	0.0	0.0
	Urban-specific hardwoods	2.0	0.3	0.5	0.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total hardwoods		20,841.6	1,472.6	2,068.7	2,502.8	2,575.3	2,547.1	2,286.9	1,855.6	1,497.1	2,001.6	1,024.6	506.5	280.4
All species		36,047.1	2,387.7	3,869.6	4,660.1	4,855.4	4,749.6	4,239.0	3,139.6	2,459.4	2,954.8	1,345.0	654.2	345.1	387.7

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

0.0 = a value of >0.0 but <0.05.

¹ Excludes rotten, missing, and form cull defects volume.

ARKANSAS'S FORESTS, 2020

Table A3.9—Net¹ merchantable bole wood volume of live trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand origin, Arkansas, 2020

Species group	Forest-type group	Total	Stand origin	
			Natural stands	Artificial regeneration
million cubic feet				
Softwoods	Loblolly-shortleaf pine	12,982.2	7,950.9	5,031.2
	Other eastern softwoods	290.6	290.6	0.0
	Pinyon-juniper	4.5	4.5	0.0
	Total softwoods	13,277.3	8,246.0	5,031.2
Hardwoods	Oak-pine	3,339.5	3,276.7	62.8
	Oak-hickory	12,367.3	12,339.5	27.8
	Oak-gum-cypress	5,329.7	5,266.8	62.9
	Elm-ash-cottonwood	1,712.2	1,703.6	8.6
	Other hardwoods	10.6	10.6	0.0
	Exotic hardwoods	4.4	4.4	0.0
	Total hardwoods	22,763.7	22,601.6	162.1
Nonstocked		6.2	5.8	0.4
All groups		36,047.1	30,853.4	5,193.7

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

0.0 = a value of >0.0 but <0.05.

¹ Excludes rotten, missing, and form cull defects volume.

Table A3.10—Aboveground dry weight¹ of live trees on forest land by ownership class and land status, Arkansas, 2020

Ownership class	All forest land	Unreserved			Reserved		
		Total	Timberland	Unproductive	Total	Productive	Unproductive
thousand tons							
U.S. Forest Service	162,927.2	156,319.9	156,318.6	1.3	6,607.3	6,607.3	0.0
Other Federal	43,578.0	16,755.9	16,486.4	269.5	26,822.1	26,822.1	0.0
State and local government	42,266.8	39,333.2	39,333.2	0.0	2,933.6	2,933.6	0.0
Forest Industry	99,944.1	99,944.1	99,944.1	0.0	0.0	0.0	0.0
Nonindustrial private	662,060.2	662,060.2	661,772.1	288.0	0.0	0.0	0.0
All ownerships	1,010,776.2	974,413.2	973,854.4	558.8	36,363.0	36,363.0	0.0

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

0.0 = a value of >0.0 but <0.05.

¹ Calculations based on TREE_REGIONAL_BIOMASS.REGIONAL_DRYBIOT.

ARKANSAS'S FORESTS, 2020

Table A3.11—Aboveground and belowground carbon in live trees (at least 1 inch d.b.h./d.r.c.) on forest land by ownership class and land status, Arkansas, 2020

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timberland	Unproductive	Total	Productive	Unproductive
thousand tons							
U.S. Forest Service	93,050.6	89,304.3	89,303.4	0.9	3,746.3	3,746.3	0.0
Other Federal	24,495.3	9,450.4	9,303.4	147.1	15,044.9	15,044.9	0.0
State and local government	23,886.3	22,229.1	22,229.1	0.0	1,657.2	1,657.2	0.0
Forest Industry	57,162.7	57,162.7	57,162.7	0.0	0.0	0.0	0.0
Nonindustrial private	374,134.1	374,134.1	373,968.7	165.4	0.0	0.0	0.0
All ownerships	572,729.1	552,280.7	551,967.4	313.3	20,448.4	20,448.4	0.0

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

0.0 = a value of >0.0 but <0.05.

Table A3.12—Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) by ownership class and land status, Arkansas, 2020

Ownership group ¹	Timberland	Forest land
<i>million cubic feet</i>		
U.S. Forest Service	132.3	135.4
Other Federal	13.8	27.1
State and local government	37.1	40.5
Forest Industry	317.2	313.3
Nonindustrial private	931.0	927.4
All ownerships	1,431.4	1,443.7

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

0.0 = a value of >0.0 but <0.05.

¹ Based on current conditions.

ARKANSAS'S FORESTS, 2020

Table A3.13—Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020

Species group	Forest-type group ¹	Stand-size class ¹				
		All classes	Large diameter	Medium diameter	Small diameter	Nonstocked
million cubic feet						
Softwoods	Loblolly-shortleaf pine	934.6	792.0	143.0	-0.4	0.0
	Other eastern softwoods	6.5	1.4	4.5	0.6	0.0
	Pinyon-juniper	0.4	0.1	0.3	0.0	0.0
	Total softwood	941.5	793.5	147.8	0.2	0.0
Hardwoods	Oak-pine	99.4	92.4	9.3	-2.3	0.0
	Oak-hickory	246.3	291.9	-42.2	-3.5	0.0
	Oak-gum-cypress	104.3	115.0	-7.6	-3.0	0.0
	Elm-ash-cottonwood	51.1	55.7	-1.2	-3.4	0.0
	Other hardwoods	0.3	-0.3	1.2	-0.7	0.0
	Exotic hardwoods	0.9	0.6	0.3	0.0	0.0
	Total hardwood	502.4	555.3	-40.2	-12.8	0.0
Nonstocked		-0.2	0.0	0.0	0.0	-0.2
All groups		1,443.7	1,348.8	107.6	-12.6	-0.2

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

0.0 = a value of >0.0 but <0.05.

¹ Based on growth accounting method.

ARKANSAS'S FORESTS, 2020

Table A3.14—Average annual net growth of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020

Species group	Forest-type group	All ownerships	Ownership group ¹				
			U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwoods	Loblolly and shortleaf pines	904.4	82.0	7.4	16.7	319.5	478.9
	Other yellow pines	0.4	0.0	0.0	0.0	0.0	0.4
	Cypress	20.1	0.0	3.4	2.2	-6.0	20.5
	Other eastern softwoods	27.2	3.3	0.8	0.2	0.8	22.1
	Total softwoods	952.1	85.3	11.6	19.1	314.3	521.9
Hardwoods	Select white oaks	76.2	22.0	1.4	3.8	2.1	47.0
	Select red oaks	44.0	4.2	-0.1	3.0	0.9	36.0
	Other white oaks	48.2	2.2	0.7	5.8	1.1	38.5
	Other red oaks	89.3	-1.2	4.2	8.9	4.0	73.5
	Hickory	47.7	6.5	-1.3	2.7	1.0	38.8
	Hard maple	3.5	1.3	0.0	0.0	-0.2	2.4
	Soft maple	8.6	1.7	0.3	0.1	0.4	6.1
	Beech	0.4	-0.8	0.0	-0.1	0.8	0.4
	Sweetgum	77.3	6.5	2.9	2.4	13.0	52.5
	Tupelo and blackgum	22.2	3.3	9.1	-5.5	-0.2	15.4
	Ash	7.7	-0.9	-0.2	2.8	-1.8	7.8
	Cottonwood and aspen (East)	3.6	0.0	0.7	2.4	-3.1	3.5
	Basswood	1.0	0.2	0.0	0.0	0.0	0.8
	Yellow-poplar	1.8	0.5	0.0	0.0	0.0	1.4
	Black walnut	2.4	0.2	-0.5	0.2	0.1	2.4
	Other eastern soft hardwoods	51.3	4.3	-1.4	9.6	-5.1	43.9
	Other eastern hard hardwoods	2.9	0.1	-0.4	-0.4	0.2	3.3
	Eastern noncommercial hardwoods	3.2	0.3	0.1	0.4	0.2	2.4
	Urban-specific hardwoods	0.2	0.0	0.1	0.0	0.0	0.1
	Total hardwoods	491.6	50.4	15.7	36.1	13.3	376.1
All groups		1,443.7	135.7	27.3	55.2	327.6	897.9

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

0.0 = a value of >0.0 but <0.05.

¹ Based on growth accounting method.

ARKANSAS'S FORESTS, 2020

Table A3.15—Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) by ownership class and land status, Arkansas, 2020

Ownership group ¹	Timberland	Forest land
<i>million cubic feet</i>		
U.S. Forest Service	49.3	52.5
Other Federal	5.8	16.5
State and local government	9.8	10.4
Forest Industry	24.5	24.7
Nonindustrial private	197.5	197.8
All ownerships	286.8	301.9

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

0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.**Table A3.16**—Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020

Species group	Forest-type group ¹	Stand-size class ¹				
		All classes	Large diameter	Medium diameter	Small diameter	Nonstocked
million cubic feet						
Softwoods	Loblolly-shortleaf pine	62.8	48.0	13.0	1.9	0.0
	Other eastern softwoods	2.0	0.6	1.2	0.2	0.0
	Pinyon-juniper	0.0	0.0	0.0	0.0	0.0
	Total softwoods	64.9	48.7	14.2	2.0	0.0
Hardwoods	Oak-pine	28.5	21.6	5.9	1.0	0.0
	Oak-hickory	127.2	96.4	29.3	1.5	0.0
	Oak-gum-cypress	55.5	48.4	6.5	0.7	0.0
	Elm-ash-cottonwood	25.1	20.3	3.9	0.9	0.0
	Other hardwoods	0.3	0.1	0.0	0.3	0.0
	Exotic hardwoods	—	—	—	—	—
Total hardwoods		236.7	186.8	45.5	4.3	0.0
Nonstocked		0.4	0.0	0.0	0.0	0.4
All groups		301.9	235.5	59.7	6.3	0.4

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

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.

ARKANSAS'S FORESTS, 2020

Table A3.17—Average annual mortality of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020

Species group	Forest-type group	All ownerships	Ownership group ¹				
			U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwoods	Loblolly and shortleaf pines	72.3	17.9	0.6	1.2	12.8	39.9
	Other yellow pines	—	—	—	—	—	—
	Cypress	0.1	0.0	0.0	0.1	0.0	0.0
	Other eastern softwoods	3.3	0.1	0.1	0.0	0.0	3.0
	Total softwoods	75.7	18.0	0.8	1.3	12.8	42.9
Hardwoods	Select white oaks	18.3	4.3	0.4	0.1	0.6	12.9
	Select red oaks	22.5	9.3	0.1	1.2	0.5	11.4
	Other white oaks	14.1	1.8	1.7	0.4	0.0	10.2
	Other red oaks	56.1	7.4	4.2	1.1	1.8	41.7
	Hickory	22.0	4.1	1.7	0.7	1.7	13.8
	Hard maple	0.8	0.0	0.0	0.0	0.0	0.7
	Soft maple	7.2	0.8	0.3	0.0	0.5	5.6
	Beech	0.6	0.6	0.0	0.0	0.0	0.0
	Sweetgum	16.3	1.0	0.3	1.2	2.4	11.4
	Tupelo and blackgum	2.9	0.4	0.0	0.5	0.5	1.5
	Ash	16.4	2.0	1.0	1.1	1.0	11.3
	Cottonwood and aspen (east)	0.9	0.0	0.0	0.0	0.0	0.9
	Basswood	0.1	0.1	0.0	0.0	0.0	0.1
	Yellow-poplar	—	—	—	—	—	—
	Black walnut	2.7	0.1	0.5	0.0	0.0	2.1
	Other eastern soft hardwoods	34.5	2.1	4.8	1.6	1.8	24.2
	Other eastern hard hardwoods	6.4	0.5	0.7	0.9	0.5	3.8
	Eastern noncommercial hardwoods	4.4	0.3	0.1	0.1	0.5	3.4
	Urban-specific hardwoods	—	—	—	—	—	—
	Total hardwoods	226.2	34.6	15.7	9.1	11.9	154.9
All groups	301.9	52.5	16.5	10.4	24.7	197.8	

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

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.

ARKANSAS'S FORESTS, 2020

Table A3.18—Average annual removals of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by forest-type group and stand-size class, Arkansas, 2020

Species group	Forest-type group ¹	Stand-size class ¹				
		All classes	Large diameter	Medium diameter	Small diameter	Nonstocked
million cubic feet						
Softwoods	Loblolly-shortleaf pine	554.0	433.1	116.2	4.7	0.0
	Other eastern softwoods	1.6	0.4	0.8	0.4	0.0
	Pinyon-juniper	—	—	—	—	—
	Total softwoods	555.6	433.4	117.1	5.1	0.0
Hardwoods	Oak-pine	36.7	26.3	7.9	2.5	0.0
	Oak-hickory	114.8	95.3	14.0	5.5	0.0
	Oak-gum-cypress	51.4	49.7	1.8	0.0	0.0
	Elm-ash-cottonwood	6.6	5.4	1.2	0.1	0.0
	Other hardwoods	0.0	0.0	0.0	0.0	0.0
	Exotic hardwoods	0.0	0.0	0.0	0.0	0.0
	Total hardwoods	209.6	176.7	24.8	8.1	0.0
Nonstocked		0.0	0.0	0.0	0.0	0.0
All groups		765.3	610.1	141.9	13.3	0.0

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

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.

ARKANSAS'S FORESTS, 2020

Table A3.19—Average annual removals of sound bole wood volume of trees (timber species at least 5 inches d.b.h.) on forest land by species group and ownership group, Arkansas, 2020

Species group	Forest-type group	Ownership group ¹					
		All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwoods	Loblolly and shortleaf pines	560.0	19.0	0.0	3.5	233.5	303.9
	Other yellow pines	—	—	—	—	—	—
	Cypress	1.5	0.0	0.0	0.0	0.0	1.5
	Other eastern softwoods	5.0	0.3	0.0	0.0	0.3	4.4
	Total softwoods	566.4	19.2	0.0	3.5	233.9	309.8
Hardwoods	Select white oaks	35.1	1.1	0.0	0.0	6.5	27.6
	Select red oaks	20.8	0.1	0.0	1.3	5.7	13.7
	Other white oaks	20.7	0.3	0.1	1.7	1.1	17.4
	Other red oaks	45.0	1.0	0.0	0.7	6.3	37.0
	Hickory	15.4	1.1	0.8	0.4	1.9	11.3
	Hard maple	—	—	—	—	—	—
	Soft maple	5.0	0.1	1.0	0.0	1.1	2.8
	Beech	0.1	0.0	0.0	0.0	0.0	0.0
	Sweetgum	32.7	0.0	0.0	0.9	6.4	25.3
	Tupelo and blackgum	4.3	0.4	0.0	0.0	0.6	3.3
	Ash	2.2	0.0	0.0	0.0	0.3	1.9
	Cottonwood and aspen (east)	0.0	0.0	0.0	0.0	0.0	0.0
	Basswood	—	—	—	—	—	—
	Yellow-poplar	—	—	—	—	—	—
	Black walnut	1.3	0.0	0.0	0.0	0.0	1.3
	Other eastern soft hardwoods	11.8	0.2	0.1	0.5	3.3	7.7
	Other eastern hard hardwoods	2.7	0.0	0.4	0.0	0.5	1.8
	Eastern noncommercial hardwoods	1.7	0.0	0.0	0.0	0.4	1.2
	Urban-specific hardwoods	—	—	—	—	—	—
	Total hardwoods	198.8	4.2	2.4	5.6	34.2	152.4
All groups		765.3	23.5	2.4	9.1	268.1	462.2

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

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.

ARKANSAS'S FORESTS, 2020

Table A3.20—Average annual removals of merchantable bole wood volume of growing-stock trees (at least 5 inches d.b.h.) on timberland by species group and ownership group, Arkansas, 2020

Species group	Forest-type group	Ownership group ¹					
		All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
million cubic feet							
Softwoods	Loblolly and shortleaf pines	552.7	18.5	0.0	3.4	231.2	299.6
	Other yellow pines	—	—	—	—	—	—
	Cypress	1.5	0.0	0.0	0.0	0.0	1.5
	Other eastern softwoods	2.3	0.2	0.0	0.0	0.1	1.9
	Total softwoods	556.5	18.7	0.0	3.4	231.4	303.0
Hardwoods	Select white oaks	33.5	1.1	0.0	0.0	5.9	26.6
	Select red oaks	20.1	0.1	0.0	1.3	5.6	13.1
	Other white oaks	17.7	0.3	0.4	1.7	1.1	14.1
	Other red oaks	40.9	1.0	0.0	0.6	6.0	33.4
	Hickory	13.2	0.9	0.2	0.3	1.9	9.9
	Hard maple	—	—	—	—	—	—
	Soft maple	1.5	0.0	0.0	0.0	0.2	1.3
	Beech	0.0	0.0	0.0	0.0	0.0	0.0
	Sweetgum	28.2	0.0	0.0	0.7	5.6	21.9
	Tupelo and blackgum	12.0	0.4	8.1	0.0	0.5	3.0
	Ash	1.7	0.0	0.0	0.0	0.2	1.5
	Cottonwood and aspen (east)	—	—	—	—	—	—
	Basswood	—	—	—	—	—	—
	Yellow-poplar	—	—	—	—	—	—
	Black walnut	1.2	0.0	0.0	0.0	0.0	1.2
	Other eastern soft hardwoods	8.5	0.0	0.0	0.2	2.5	5.8
	Other eastern hard hardwoods	1.0	0.0	0.0	0.0	0.3	0.7
	Eastern noncommercial hardwoods	—	—	—	—	—	—
	Urban-specific hardwoods	—	—	—	—	—	—
	Total hardwoods		179.5	3.7	8.7	4.9	29.7
All groups		736.0	22.5	8.7	8.2	261.1	435.5

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

— = no sample for the cell; 0.0 = a value of >0.0 but <0.05.

¹ Based on past conditions.

Hartsell, A.J.; Brandeis, T.J.; Winn, M.F. 2026. Arkansas's Forests, 2020. Resour. Bull. SRS-254, Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 76 p. <https://doi.org/10.2737/SRS-RB-254>.

In 2020, 18.9 million acres (55 percent) of Arkansas's total forest land was classified as forested by the Forest Inventory and Analysis program, of which 18.4 million acres were timberland and 494,400 acres were reserved forest land. More than 80 percent of Arkansas's forests are privately owned, 13 percent were in National Forests, and 3 percent in other public lands. The 2020 estimates revealed increases in both hardwood and softwood tree volume, with total volume up over 10 percent since 2015. Softwood volume was reported at 15.2 billion cubic feet, while hardwood volume was 20.8 billion cubic feet. In 2020, loblolly pine was the predominant softwood species, accounted for over 9.2 billion cubic feet (26 percent) of volume. For hardwoods, the white oak group contained the most volume, 5.4 billion cubic feet, followed closely by red oaks with 5.3 billion cubic feet. Sweetgum and hickory species each accounted for 2.3 billion cubic feet. In 2020, 952 million cubic feet of softwood volume was produced each year, a 21 percent increase since 2015. Conversely, 566 million cubic feet of softwood volume were removed each year in harvest operations. Annual mortality of softwood and hardwood trees averaged 75.7 and 226.2 million cubic feet, respectively. Volume harvested for softwood products for use by the State's 103 primary wood mills was 487.4 million cubic feet. Volume of total roundwood harvested for products trended upward for softwoods. Hardwood output volume showed more volatility and trended downward overall, from 131.2 million cubic feet in 2015 to 75.9 million cubic feet in 2020.

Keywords: Forest inventory, FIA, forest trends, timber volume, forest health.

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