USDA
United States Department of Agriculture

# Alabama's Forests, 2015

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Forest Service

Southern Research Station

Resource Bulletin SRS–220

## About the Authors

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All photos taken by Andrew J. Hartsell.

Front cover: top left, a cypress swamp in southern Alabama.; top right, fall foliage brings color to the States northern counties.; bottom, white-tailed deer such as this one are one of the State's most abundant wildlife species. Back cover: top left, sunrise in Alabama.; top right, a cypress swamp in southern Alabama.; bottom, Alabama's landscape is a mosaic of forests and agriculture.

Shortleaf pine prefers hillsides and ridgetops.

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*A snowy egret.*

## FOREWORD

The Forest Inventory and Analysis (FIA) research work unit of the U.S. Department of Agriculture Forest Service, Southern Research Station (SRS), 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).

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 are 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 (U.S. Department of Agriculture 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 at https://fia.fs.fed.us/tools-data/default.asp. Additional information about the FIA program can be obtained at https://fia.fs.fed.us/.

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

U.S. Department of Agriculture
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Southern Research Station
Forest Inventory and Analysis
Research Work Unit
4700 Old Kingston Pike
Knoxville, TN 37919
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## ACKNOWLEDGMENTS

The Southern Research Station gratefully acknowledges the cooperation and invaluable assistance provided by the Alabama Forestry Commission (AFC) in the collection of field data. The information provided in this report would not have been possible without the efforts of Brian Hendricks, Jerry McGhee, Josh Angel, Rickey Fields, Wendell Atkins, Adam Ziegenbein, Shannon Hotch, John Henderson, Gary Kolb, and Greyson Matthews of the AFC. This report was made possible through the collaboration of the Forest Service Forest Inventory and Analysis personnel (including those in Data Collection, Information Management, Analysis, and Publication Management). We also appreciate the cooperation of other public agencies and private landowners for providing access to measurement plots.

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Openings in forests offer a diverse mixture of grasses, flowers, and shrubs.



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# HIGHLIGHTS FROM THE TENTH FOREST INVENTORY OF ALABAMA

## Area

• The total land area for Alabama in 2015 was 33.5 million acres, of which 23.1 million acres are forested.

• Alabama's timberland has increased 22 percent since 1936.

• Loblolly-shortleaf is the predominant forest type in Alabama, accounting for 39 percent or 9.0 million acres of forests.

• Southern yellow-pine plantations currently occupy 6.5 million acres, about one-third, of the State's forest lands.

• Private landowners owned almost 93 percent of all forests statewide.

## Volume

• Alabama's timberlands contain 18.1 billion cubic feet of all-live softwood species and 20.3 billion cubic feet of all-live hardwood.

• All-live softwood volume on forest land increased 66 percent since 1972, while hardwood volume rose 92 percent.

## Species

• Loblolly pine is the predominant softwood species statewide, accounting for over 14 billion cubic feet, almost 80 percent of Alabama's all-live softwood volume.

• Sweetgum, water oak, yellow-poplar, white oaks, and southern red oaks are the most frequently occurring hardwood species.

## Growth and Removals

• Over 1.4 billion cubic feet of all-live softwood is grown each year on Alabama timberlands, a 23-percent increase over the previous survey period.

• Alabama is growing 1.5 times more softwood growing stock each year than is being removed.

• Presently, 633 million cubic feet of hardwood is grown each year, while 351 million is removed.

• Loblolly pine and shortleaf pine account for 92 percent of all softwood growth.

## Forest Health

• During the 2015 survey period, annual mortality of softwood and hardwood trees averages 164.6 and 238.8 million cubic feet, respectively.

• Japanese honeysuckle is the most frequently detected invasive plant species in Alabama.

• Southern pine beetle infestation levels peaked in 2005, and have declined each survey since that survey period.

*Bees play an important role in pollinating the flowers and plants of Alabama's forests.*

Fire towers such as this one in the Talladega National Forest are remnants of a bygone era.

# FOREST AREA

## Trends in Forest Area

The total land area for Alabama in 2015 was 33.5 million acres (table 1). Almost 69 percent, or 23.1 million acres, of this land area was classified forested by Forest Inventory and Analysis (FIA). Forest land was composed of two components, as listed here from largest to smallest in area: timberland (23 million acres) and reserved (97,900 acres). The Southeast survey unit accounted for over one-quarter (27 percent) of the forest land in the State, while the North Central unit was second in total forested area, containing > 4.4 million acres (19 percent) of the State's forests. All other survey units each accounted for 9 to 16 percent of Alabama's forested acreage (fig. 1).

The proportion of land area in forests for Alabama's 67 counties ranged from 30 to 91 percent. Thirty counties had > 75 percent of their land area in forests (fig. 2). Only one county, Limestone, had 30 percent of its land area in forested conditions. All other counties had over one-third of their land base covered in forests. The counties with the densest concentrations of forests are Clarke and Choctaw, both of which have just over 90 percent of their area in forests.

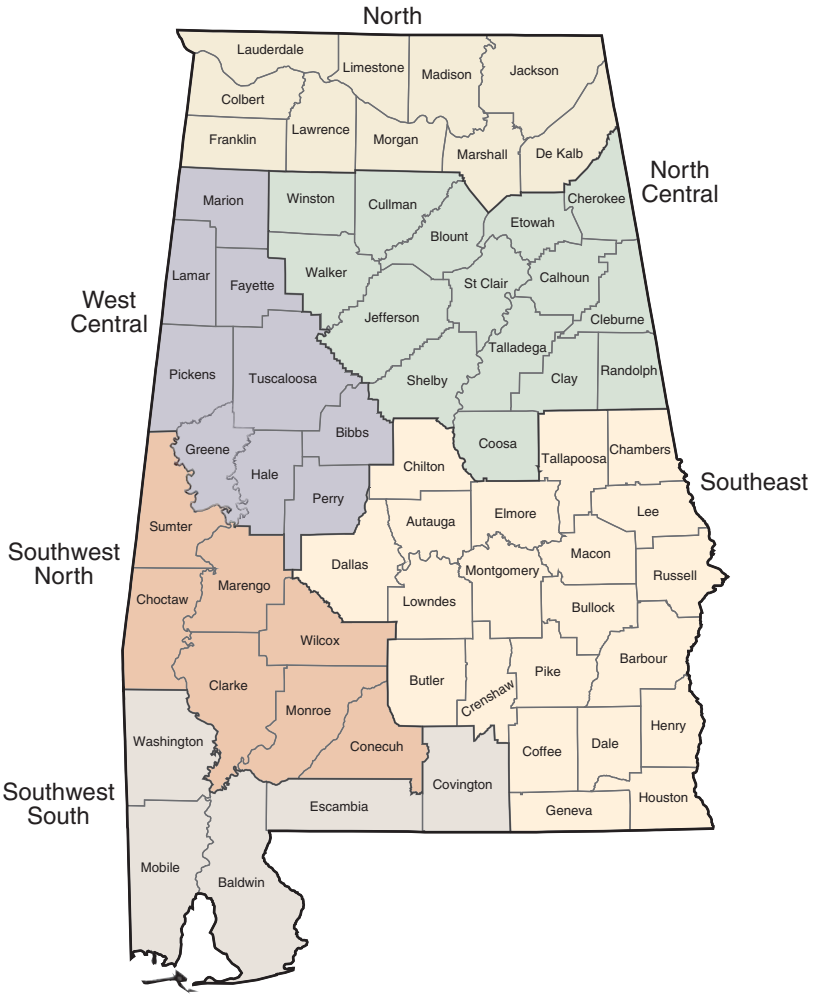


Figure 1—Forest survey regions in Alabama.

**Table 1—Area by survey unit and land status, Alabama, 2015**

| Unit | Total area | All forest | Unreserved | | | Reserved | | | Nonforest land | Census water |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Total | Timber-land | Unpro-ductive | Total | Pro-ductive | Unpro-ductive | | |
| | *thousand acres* | | | | | | | | | |
| Southwest-South | 4,336.9 | 2,831.4 | 2,829.9 | 2,829.9 | 0.0 | 1.4 | 1.4 | 0.0 | 976.7 | 528.8 |
| Southwest-North | 4,393.0 | 3,732.1 | 3,726.2 | 3,726.2 | 0.0 | 5.9 | 5.9 | 0.0 | 628.2 | 32.7 |
| Southeast | 9,161.3 | 6,436.6 | 6,436.6 | 6,436.6 | 0.0 | 0.0 | 0.0 | 0.0 | 2,572.5 | 152.2 |
| West Central | 4,420.4 | 3,511.4 | 3,505.2 | 3,505.2 | 0.0 | 6.2 | 6.2 | 0.0 | 874.2 | 34.8 |
| North Central | 6,608.2 | 4,402.5 | 4,380.6 | 4,380.6 | 0.0 | 21.9 | 21.9 | 0.0 | 2,016.1 | 189.6 |
| North | 4,628.9 | 2,212.6 | 2,150.1 | 2,150.1 | 0.0 | 62.4 | 62.4 | 0.0 | 2,275.8 | 140.5 |
| All survey units | 33,548.7 | 23,126.6 | 23,028.7 | 23,028.7 | 0.0 | 97.9 | 97.9 | 0.0 | 9,343.6 | 1,078.6 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of >0.0 but <0.05.

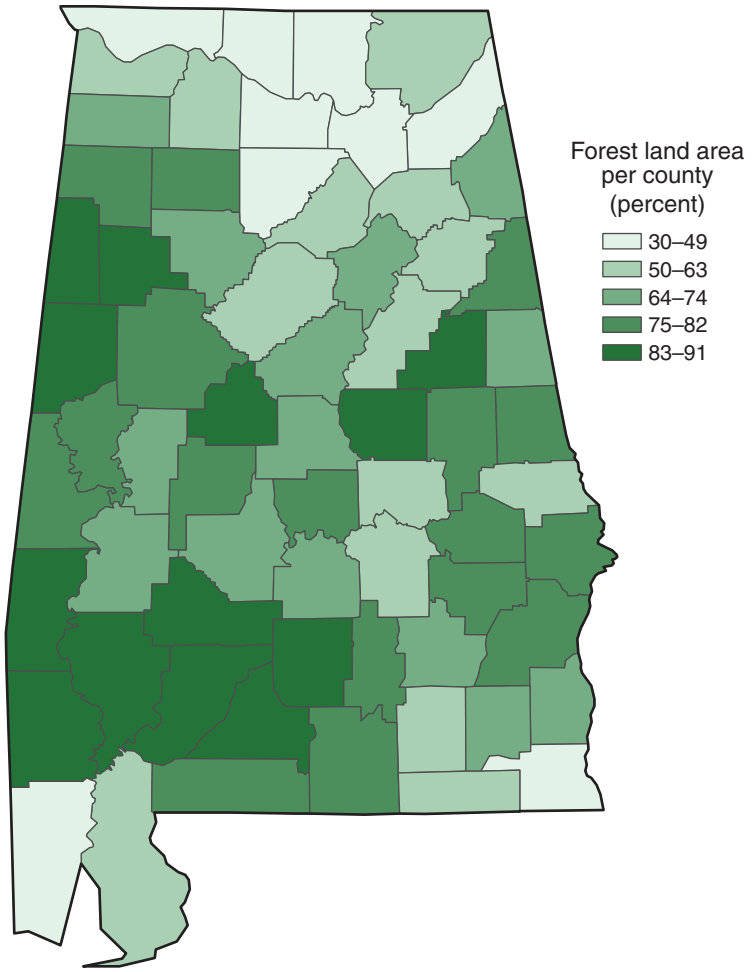


Figure 2—Percent of county in forest land, Alabama, 2015.

A general statewide trend exists where the most densely forested counties lie in the southwest, and the least densely forested in the north-northeast. Three exceptions are Mobile and Baldwin Counties in the southwest, and Jackson County in the northeast. Mobile and Baldwin Counties lie along the Gulf of Mexico and therefore contain coastlines and developed areas associated with coasts. Jackson County is on the southern tip of the Appalachian mountain range, and the topography, soils, and other characteristics of this mountain range impacts land use.

Total area of timberland in Alabama has steadily increased since 1936. In fact, the State's timberland base has grown almost 22 percent since that initial survey. The majority of the additional acreage was added between 1936 and 1963. Since 1963, total timberland area has never fluctuated by >1.6 million acres. The 2015 estimate of 23.0 million acres is the highest statewide estimate of timberland ever recorded for Alabama (fig. 3).

While total timberland area has remained stable since 1963, the area of planted stands has increased substantially. Planted stands were first identified as a separate classification during the 1972 survey. At that time, they accounted for 1.7 million acres, or about 8 percent of Alabama's timberland base. In 2015, one-third of Alabama's timberland area is in plantations. These stands currently occupy 7.5 million acres or 33 percent of timberland statewide.

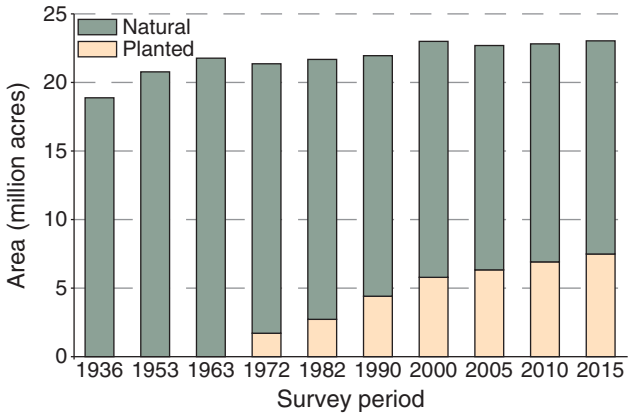


Figure 3—Area of Alabama timberland by survey period and stand origin.

Southern yellow pine plantations account for one-third of Alabama's forest area.

## Forest-type Group

The increased prominence of planted pine forests in Alabama has impacted forest type distribution in the State. Many of the State's natural stands have been converted to planted stands, particularly natural pine and oak-pine. Additionally, many lands that were under agriculture have been planted in pines and converted to forests. The area of natural loblolly pine forests has decreased almost 50 percent since 1972, while the area of oak-pine stands has dropped 42 percent over the same period (fig. 4). Conversely, the area of planted loblolly pine forests has increased over sixfold over the last 40 years. Oak-hickory forests have increased as well. There were 5.7 million acres of oak-hickory forests across the State in 1972. Today, there are 7 million, an increase of 24 percent.

The loss in oak-gum-cypress forests and gain in elm-ash-cottonwood types are linked. Changes in FIA methodology and definitions often confound long-term analysis, and this is one such case. Earlier surveys typed almost all bottomland types as oak-gum-cypress. Current procedures type many of these stands as elm-ash-cottonwood. Therefore, it is often best to combine data for these two types when considering bottomland forest types. In 1972, these two types combined represented 2.5 million acres of Alabama's forests. Today, they account for 2.7 million acres. Thus, there has been little overall change in area for Alabama's bottomland forests.

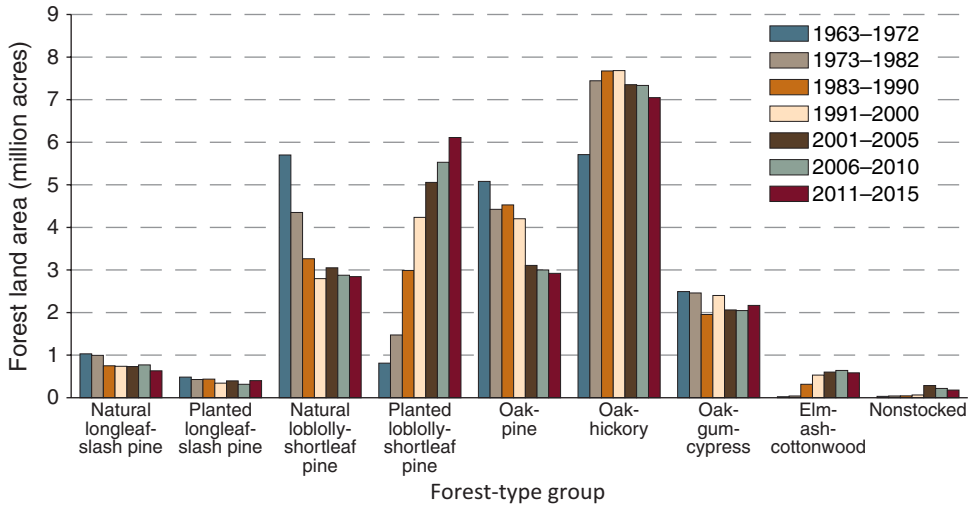


Figure 4—Area of Alabama forest land by forest-type group and survey period.

## Ownership

Alabama's forests have always been predominantly owned by private landowners, which include both forest industry and nonindustrial private entities. In 1972, 95 percent of the State's forests were classified as being privately owned (fig. 5). Today that estimate has decreased to 93 percent (fig. 6). However, forest ownership patterns have changed over this time. As reported previously in Hartsell and Conner (2013), divesture of timberland by traditional forest industry, defined as companies that own wood processing facilities, has continued, as has concurrent acquisition of these lands by other corporate owners, in particular Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs). In 1972, almost 20 percent of Alabama's forests were owned by forest industry. Contrastingly, today only 6 percent of Alabama's forests are owned by traditional forest industry. As stated above, many of the former industry lands have been sold off to TIMOs, REITs, or private individuals.

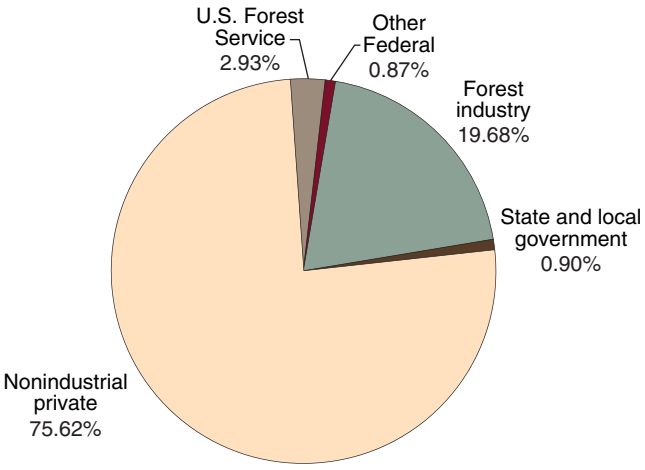


Figure 5—Alabama forest land proportioned by ownership group, 1972.

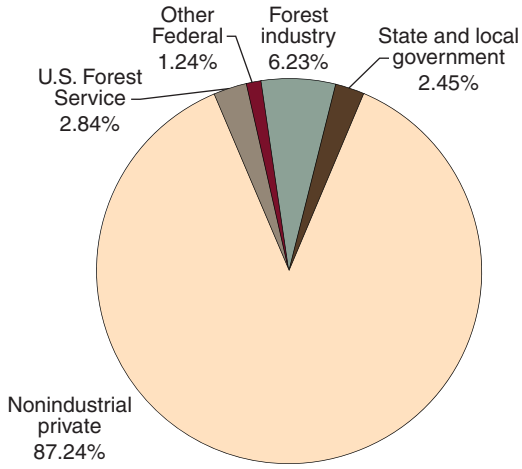


Figure 6— Alabama forest land proportioned by ownership group, 2015.

## Stand Size and Age

In a State with an active forest products sector and intensive pine plantation management, we expect considerable forest acreage to be the age of the typical forest management rotation length or younger. We can see this more clearly by looking just at the stand age distribution of forest land acreage (fig. 7). Two features are outstanding in figure 7. First is the relatively abrupt drop in acreage >25 years old that indicates the typical age at which forests are harvested and replanted. Second, we can see that in more recent years the numbers of acres in the 26–30 years has been increasing. Taking a more comprehensive look, we see that forest stands are getting older, that is, the distribution curve has been shifting to the right over time such that the peak of the curve has moved from 1–5 years old in 2000 to 11–15 through 21–25 years in 2015. If the number of acres was stable for this time period and all acres were harvested at the same age and then replanted, we would have seen the distribution curve remaining in place for all four time periods. Instead, the shift toward older stands almost certainly reflects two socioeconomic events from the past. First, we can speculate that the current plantation acreage largely originated in the 1980s through the mid-1990s. Second, while total planted acreage has remained stable, acres that were clearcut and presumably replanted have decreased in recent years, possibly in response to changes in ownership and weakened markets (Brandeis and others 2012). Forest industry divestiture of their lands and their acquisition by TIMOs and REITs have been long documented (Hartsell and Conner 2013). One could assume that the nonmill-

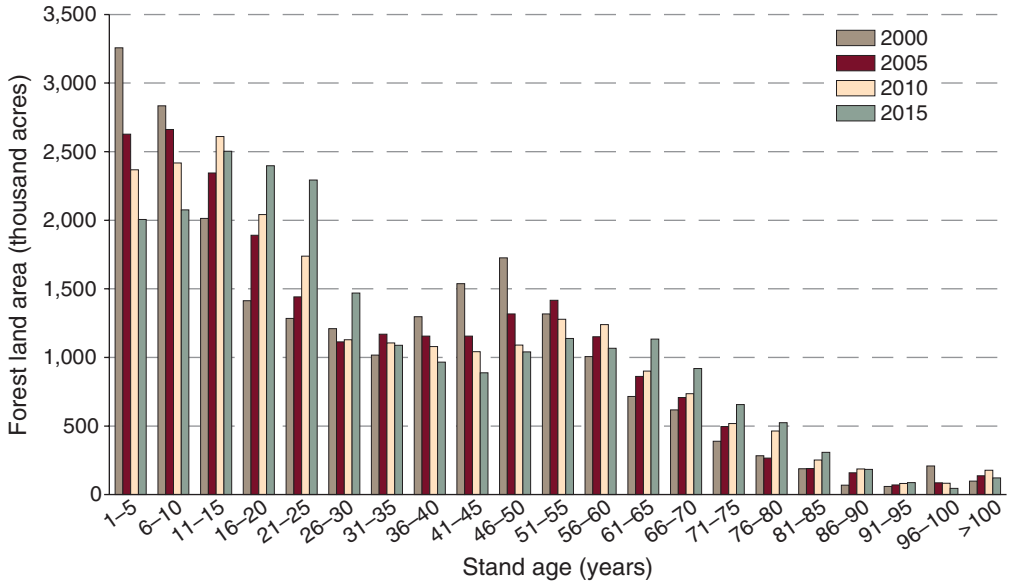


Figure 7—Area of Alabama forest land by stand age and survey period.

owning TIMOs and REITs are not bound to harvest regularly by the needs to supply their wood processing facilities as were the previous forest industry owners; therefore, they can refrain from harvesting their forests until timber products markets are their most favorable. The weakened markets experienced during the economic downturn of 2007 to approximately 2011 would not have been an economically favorable time to harvest stands so much of Alabama's pine plantations have been tended and continue to age and accumulate volume.

Looking back at the entire range of stand-size distribution on forest land, there is an interesting peak in the 61–65 year old category that precedes a steady decrease in forest that is over 65 years old. There appears to be a cohort of forest acres that has been aging together, moving through time. These acres could be naturally regenerated forest, or planted forest that has aged into a natural-appearing mix of conifers and hardwoods, that was established around 65 years ago in the early-1950s. Wheeler's (1953) report on the 1951–1953 forest survey of Alabama noted forest area increasing 10 percent over the 1935–36 survey. He further stated that softwood acreage increased 6 percent, while hardwood forests rose 19 percent. Sternitzke (1963) reported commercial forest land gains of 5–8 percent for most of the survey regions over the 10-year inventory cycle. Both reports state that many of these new forests were established on cropland that had been idled or abandoned. Current increases in forest area for the older age classes can be attributed to many of these early reforestation efforts. Therefore, what we see is another example of how the forests reflect the history of social and economic change in the State of Alabama.

*Harvesting of forests is common throughout the State as it provides income for owners and, with proper management and planting, ensures that future generations have forests to enjoy.*

## STANDING INVENTORY

Current estimates of Alabama's all-live volume reveal long-term increases in both hardwood and softwood species. All-live volume is a measure that includes all tree species and size classes on all forest lands, commercial or not.

The 2015 estimate of all-live softwood volume for Alabama is 18.1 billion cubic feet, an increase of 66 percent since 1972 (fig. 8). Softwood volume fell during the 1990 survey; however, it has steadily risen since 1990 and is currently at the highest level ever recorded.

Total all-live hardwood volume has increased each survey in Alabama. Hardwood volume increased dramatically in 2000, gaining 31 percent over the 1990 estimate. Hardwood volume increases then leveled out after 2000 for the next 10 years. Between 2000 and 2010, statewide hardwood volume increased 6 percent, slightly less than the almost 9 percent increase between 2010 and 2015. The current estimate of all-live hardwood volume for the State is 20.3 billion cubic feet, a 92-percent gain over the 1972 estimate (fig. 8).

Artificial regeneration is one of the drivers behind the increase in softwood volume. All-live softwood volume in planted stands has increased 996 percent since 1972, while softwood volume from natural stands has decreased 10 percent during the same time period. The biggest decrease in softwood volume in natural stands occurred between the 1982 and 1990 inventories. The 1990 estimate of softwood volume in natural stands dropped 14 percent over that 8-year period. Since 1990, softwood volume in natural stands has remained fairly stable, with the current estimate of 9.1 billion cubic feet being <4 percent higher than the 1990 estimate. In 1972, only 7 percent of the total all-live softwood volume was found on planted stands; today it is 50 percent (fig. 9).

Ninety-one percent of all-live volume occurs on nonindustrial private forests (NIPF), while 4 percent is found on forests owned by the U.S. Forest Service. A majority of this volume (68 percent) is concentrated in two forest-type groups, loblolly-shortleaf and oak-hickory, as these two forest types contain 39 percent and 29 percent of the State's all-live volume, respectively. Curiously, the only maple-beech-birch forest types found in the State occur on U.S. Forest Service lands (table 2).

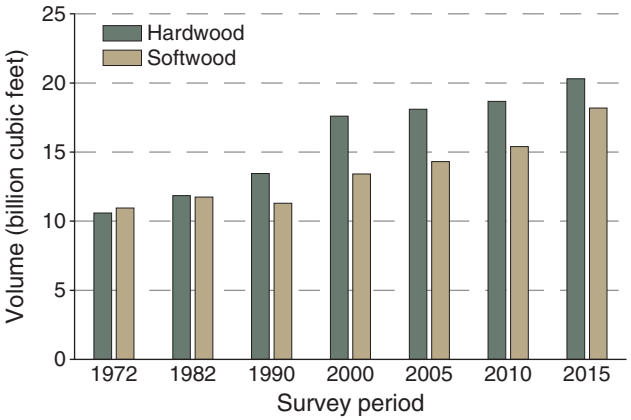


Figure 8—Total all-live volume of softwoods and hardwoods on forest land by survey period, Alabama.

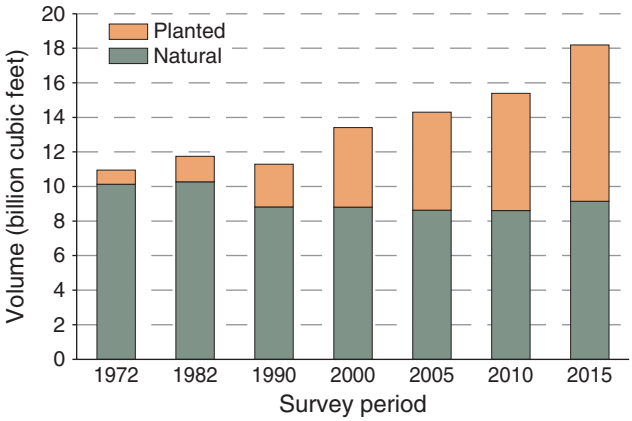


Figure 9—Total all-live volume of softwoods on forest land by survey period and stand origin, Alabama.

*Alabama's mixed pine-hardwood forests are some of the most diverse is the State.*

**Table 2—Volume[a] of all-live species by forest-type group and ownership group, Alabama, 2015**

| Forest-type group | Ownership group | | | | | |
|---|---|---|---|---|---|---|
| | All owners | U.S. Forest Service | Other Federal | State and local government | Forest industry | NIPF |
| | *million cubic feet* | | | | | |
| White-red-jack pine | 25.4 | 9.7 | 0.0 | 0.0 | 0.0 | 15.7 |
| Longleaf-slash pine | 1,610.3 | 313.8 | 10.3 | 76.0 | 71.7 | 1,210.2 |
| Loblolly-shortleaf pine | 14,826.5 | 375.1 | 134.4 | 307.6 | 1,248.2 | 14,009.5 |
| Other eastern softwoods | 53.5 | 0.0 | 0.0 | 0.0 | 0.0 | 53.5 |
| Oak-pine | 4,457.3 | 333.6 | 87.8 | 77.6 | 129.1 | 3,958.3 |
| Oak-hickory | 11,361.7 | 476.2 | 164.7 | 446.2 | 302.3 | 10,274.6 |
| Oak-gum-cypress | 5,108.5 | 70.0 | 195.8 | 387.0 | 202.3 | 4,455.8 |
| Elm-ash-cottonwood | 1,010.8 | 0.0 | 47.6 | 2.2 | 35.4 | 961.0 |
| Maple-beech-birch | 23.5 | 23.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 2.7 | 0.0 | 0.0 | 0.0 | 0.0 | 2.7 |
| Exotic hardwoods | 9.3 | 0.0 | 0.0 | 0.0 | 0.6 | 9.3 |
| Nonstocked | 9.0 | 0.0 | 0.0 | 0.0 | 0.3 | 9.0 |
| Total | 38,498.5 | 1,601.9 | 640.6 | 1,296.5 | 1,989.9 | 34,959.5 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Excludes rotten, missing, and form cull defects volume.

All-live softwood volume in the middle diameter classes has jumped considerably the past four surveys. Between the 1990 and 2015 inventories, volume in the 8- and 10-inch diameter classes rose 72 and 75 percent, respectively. This increase in volume for softwood species <14 inches in diameter can be attributed directly to the establishment of pine plantations. Presently, softwood volume for every diameter class is at its highest recorded level (fig. 10).

All-live hardwood volume of Alabama's forests has risen as well. However, unlike softwood volume, which has a spike in the 7–14-inch diameter classes, hardwood volume has been increasing over all diameter classes for the last 40 years. This increase is proportional to tree size. For example, 2015 hardwood volume in the 12-inch class is 60 percent higher than in 1972. The 2015 inventory volumes in the 16-, 20-, and 24-inch classes were 117, 211, and 339 percent greater, respectively, than the corresponding 1972 estimates (fig. 11).

At the time of the 2015 inventory, 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 Clarke, Washington, Baldwin, and Choctaw. The counties with the least amount of all-live softwood volume were Limestone and Lauderdale (fig. 12).

Hardwoods occur throughout the State. All-live hardwood volume increased slightly from east to west and south to north; however, these trends are small. The counties with the highest all-live hardwood volume were Jackson and Tuscaloosa. The counties with the lowest amount of all-live hardwood volume were Coffee and Escambia (fig. 13).

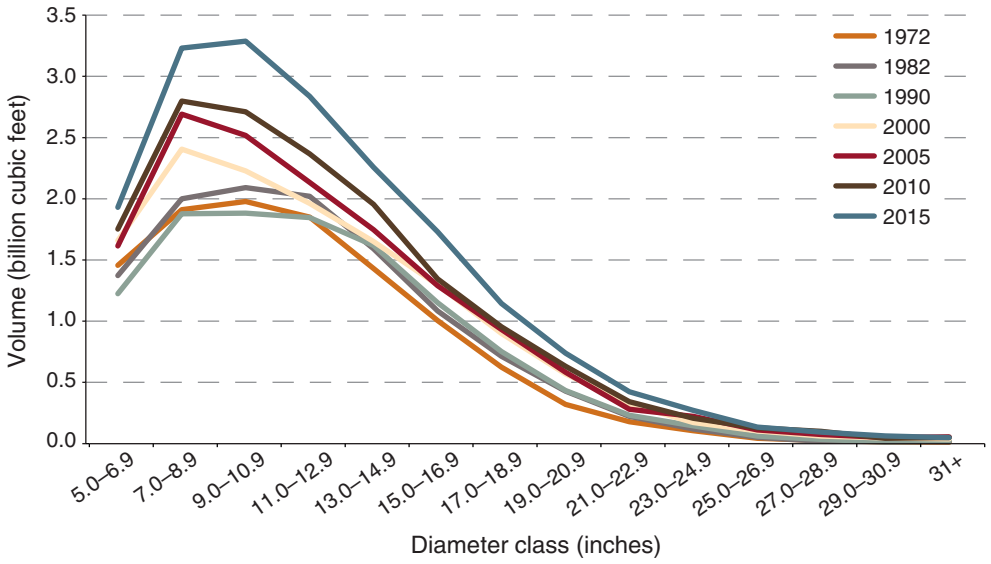


Figure 10—Total all-live volume of softwoods on forest land by diameter class and survey period, Alabama.

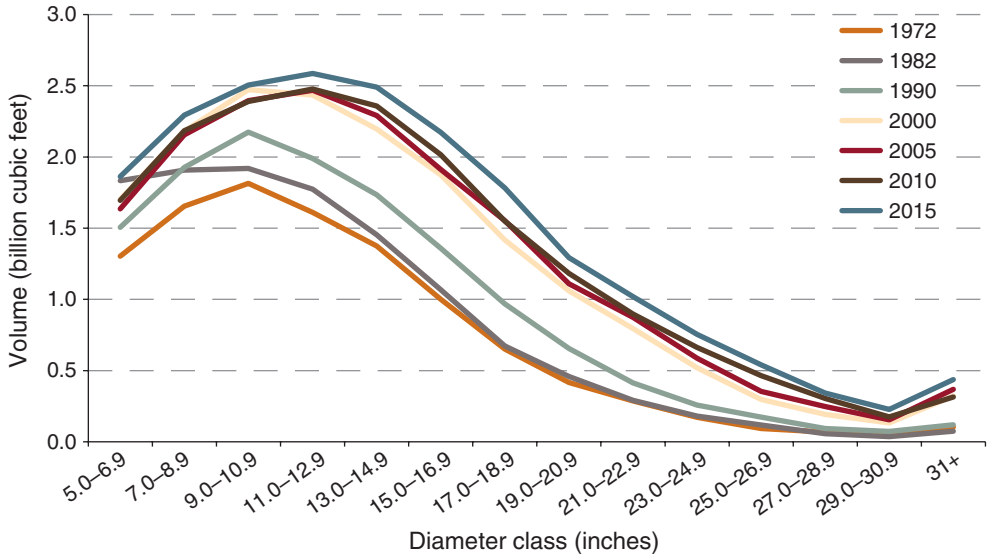


Figure 11—Total all-live volume of hardwoods on forest land by diameter class and survey period, Alabama.

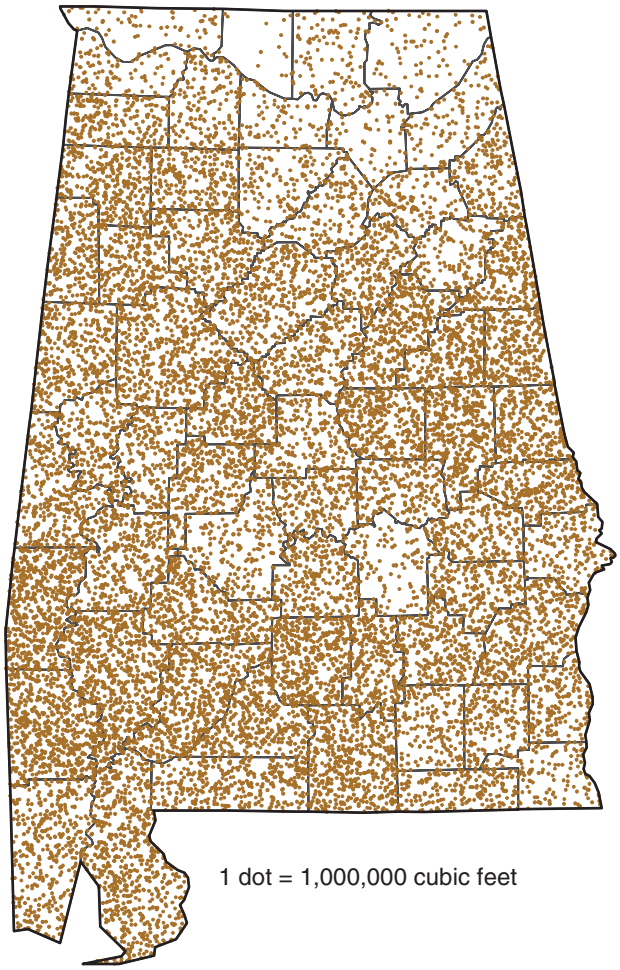


Figure 12—All-live softwood volume, Alabama, 2015. Each dot represents 1 million cubic feet of live-tree volume. See Appendix A for map methodology.

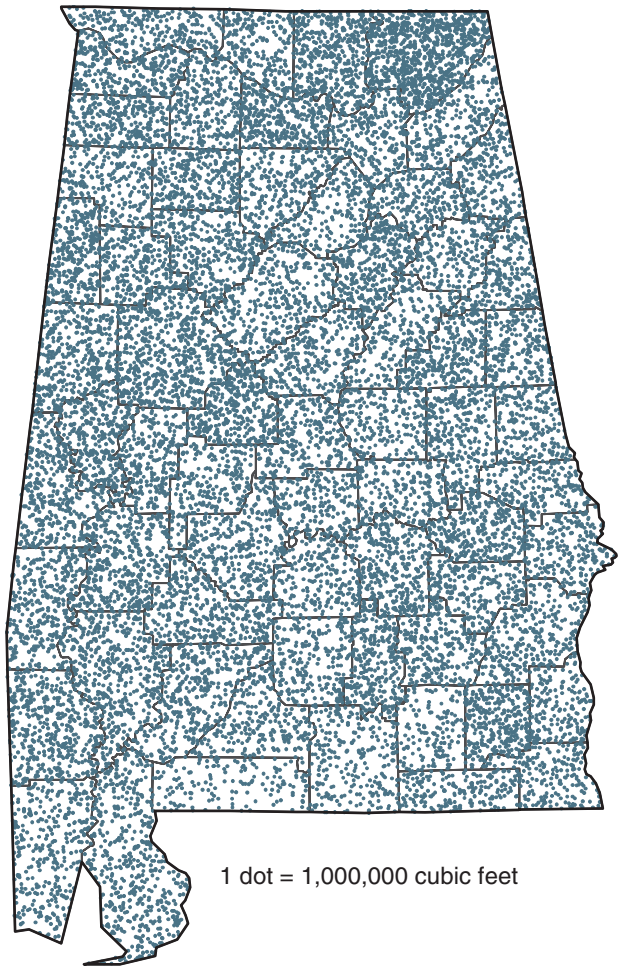


Figure 13—All-live hardwood volume, Alabama, 2015. Each dot represents 1 million cubic feet of live-tree volume. See Appendix A for map methodology.

Loblolly pine is the most prevalent tree species in Alabama.

## SPECIES

Loblolly pine (*Pinus taeda*) is the predominant softwood species in Alabama, accounting for over 14 billion cubic feet, or 38 percent, of all-live volume (table 3). The amount of volume in this one species is 16 times greater than the second ranked softwood species, longleaf pine (*P. palustris*). The current inventory of loblolly pine accounts for almost 80 percent of the State's total softwood volume. Loblolly pine and cypress (*Taxodium* sp.) are the only softwood species that have increased in volume substantially over the last 15 years, with loblolly pine increasing 60 percent and cypress gaining 35 percent over their 2000 estimates. All other softwood species volumes either declined or experienced slight increases (fig. 14).

The softwood species with the greatest loss in volume is shortleaf pine (*P. echinata*). The current estimate of 725 million cubic feet is 515 million cubic feet less than the 2000 estimate. Longleaf pine ranked second in softwood volume loss. The volume of longleaf pine fell from 1.0 billion cubic feet to 889 million cubic feet in just 10 years, a decline of 12 percent.

**Table 3—Top 50 tree species dominant for volume (≥ 5.0 inches d.b.h.) on forest land, Alabama, 2015**

| Common name | Genus | Species | Volume[a] |
|---|---|---|---|
| | | | *million cubic feet* |
| Loblolly pine | *Pinus* | *taeda* | 14,461 |
| Sweetgum | *Liquidambar* | *styraciflua* | 2,984 |
| Water oak | *Quercus* | *nigra* | 2,132 |
| Yellow-poplar | *Liriodendron* | *tulipifera* | 2,064 |
| White oak | *Quercus* | *alba* | 1,528 |
| Longleaf pine | *Pinus* | *palustris* | 889 |
| Southern red oak | *Quercus* | *falcata* | 878 |
| Chestnut oak | *Q.* | *prinus* | 862 |
| Slash pine | *Pinus* | *elliottii* | 812 |
| Shortleaf pine | *P.* | *echinata* | 725 |
| Red maple | *Acer* | *rubrum* | 672 |

*(Continued)*

**Table 3 (continued)—Top 50 tree species dominant for volume (≥ 5.0 inches d.b.h.) on forest land, Alabama, 2015**

| Common name | Genus | Species | Volume[a] |
|---|---|---|---|
| | | | *million cubic feet* |
| Pignut hickory | *Carya* | *glabra* | 651 |
| Blackgum | *Nyssa* | *sylvatica* | 627 |
| Laurel oak | *Quercus* | *laurifolia* | 591 |
| Virginia pine | *Pinus* | *virginiana* | 519 |
| Mockernut hickory | *Carya* | *alba* | 515 |
| Sweetbay | *Magnolia* | *virginiana* | 508 |
| Swamp tupelo | *Nyssa* | *biflora* | 456 |
| Post oak | *Quercus* | *stellata* | 438 |
| Cherrybark oak | *Q.* | *pagoda* | 381 |
| Water tupelo | *Nyssa* | *aquatica* | 374 |
| Willow oak | *Quercus* | *phellos* | 336 |
| Baldcypress | *Taxodium* | *distichum* | 331 |
| Green ash | *Fraxinus* | *pennsylvanica* | 329 |
| Northern red oak | *Quercus* | *rubra* | 280 |
| American beech | *Fagus* | *grandifolia* | 265 |
| Scarlet oak | *Quercus* | *coccinea* | 260 |
| Black oak | *Q.* | *velutina* | 252 |
| Sugarberry | *Celtis* | *laevigata* | 237 |
| Eastern redcedar | *Juniperus* | *virginiana* | 229 |
| Shagbark hickory | *Carya* | *ovata* | 216 |
| Black cherry | *Prunus* | *serotina* | 201 |
| Spruce pine | *Pinus* | *glabra* | 177 |
| American sycamore | *Platanus* | *occidentalis* | 175 |
| Sourwood | *Oxydendrum* | *arboreum* | 163 |
| Winged elm | *Ulmus* | *alata* | 155 |
| American elm | *U.* | *americana* | 124 |
| Overcup oak | *Quercus* | *lyrata* | 114 |
| White ash | *Fraxinus* | *americana* | 113 |
| Florida maple | *Acer* | *barbatum* | 105 |
| River birch | *Betula* | *nigra* | 95 |
| Chinkapin oak | *Quercus* | *muehlenbergii* | 77 |
| American hornbeam, musclewood | *Carpinus* | *caroliniana* | 77 |
| Southern magnolia | *Magnolia* | *grandiflora* | 75 |
| Swamp chestnut oak | *Quercus* | *michauxii* | 73 |
| Common persimmon | *Diospyros* | *virginiana* | 50 |
| Pecan | *Carya* | *illinoinensis* | 48 |
| American basswood | *Tilia* | *americana* | 45 |
| Boxelder | *Acer* | *negundo* | 42 |
| Black willow | *Salix* | *nigra* | 42 |
| Total | | | 38,498 |

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

[a] Excludes rotten, missing, and form cull defects volume.

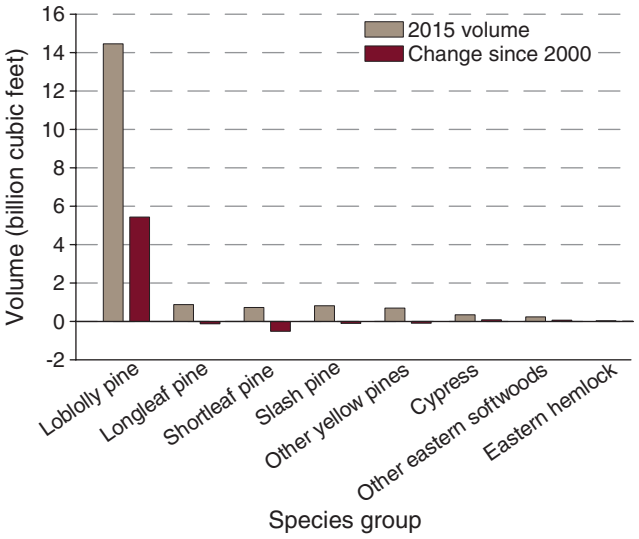


Figure 14—Volume of all-live softwoods on forest land by species group, Alabama, 2015, and change since 2000.

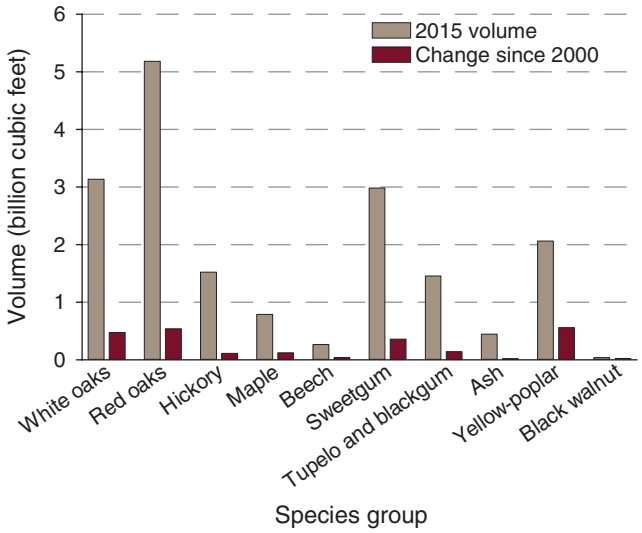


Figure 15—Volume of all-live hardwoods on forest land by species group, Alabama, 2015, and change since 2000.

Unlike its softwoods resource, Alabama's hardwoods are not dominated by a single species. The red oak group contains the most all-live volume, 5.1 billion cubic feet, followed by white oaks with 3.1 billion cubic feet, sweetgum (*Liquidambar styraciflua*) with 3.0 billion cubic feet, and yellow-poplar (*Liriodendron tulipifera*) with 2.0 billion cubic feet (fig. 15). It is important to note that both sweetgum and yellow-poplar are individual species, while red and white oaks are species groups which include numerous tree species that fall under those classifications.

All hardwood species groups experienced increases in volume since the 2000 survey. The yellow-poplar group experienced the greatest increase over the last 10 years by adding an additional 558 million cubic feet of all-live volume. Red oaks and white oaks were the next big gainers in hardwood volume, increasing 539 million cubic feet and 475 million cubic feet, respectively, over the last 15 years.

# GROWTH AND REMOVALS

## Average Annual Growth of All-Live Species

Currently, 1.4 billion cubic feet of all-live softwood volume is produced each year in Alabama, a 23-percent increase in annual volume increment over the prior inventory period (fig. 16). Conversely, 920.6 million cubic feet are removed each year in harvest operations, a 2-percent gain from the earlier survey. The 2005 survey marked the first time that the average annual growing stock growth-to-removals ratio for softwoods exceeded one since the 1962–1971 survey. The impact of the economic recession of 2008 is revealed in the removal estimates for the last two inventory periods. While removals did not decrease, they did level off for the first time in over 50 years. The current growth-to-removals ratio for the State's softwoods is 1.5, indicating that for every cubic foot of hardwood cut, 1.5 cubic feet is grown.

Alabama's forests have historically produced more hardwood all-live volume than has been removed. The latest survey results are no different. Presently, 633 million cubic feet of hardwood is grown each year in Alabama, while 351 million cubic feet is removed (fig. 17). The current estimate of annual hardwood growth is the highest recorded for the State. The current results show a decrease in annual removals for the last two survey periods. The economic recession of 2008 is one of the drivers of this decrease in hardwood removals. The growth-to-removals ratio for hardwoods is 1.8, the highest in 25 years.

The reader may notice that the inventory periods for the last two surveys overlap. This is an artifact of the annual inventory system that is currently being utilized. The annual inventory began in 2000. A complete description of the annual versus periodic inventories as well as their impact on analysis is located in Appendix A—Inventory Methods. Additionally, average annual estimates of all-live growth and removals of all-live species on forest land were not calculated for the 1990–2000 survey. Only estimates pertaining to timberlands were produced for that inventory. This occurred at a time when FIA units across the country were consolidating to a national system, and timberland was the resource being reported by all FIA units at that time.

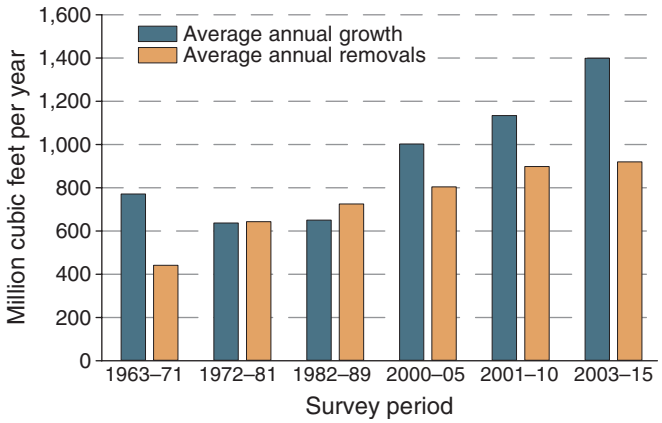


Figure 16—Average annual net growth and average annual removals of all-live softwood species on forest land, Alabama, 1962–2015.

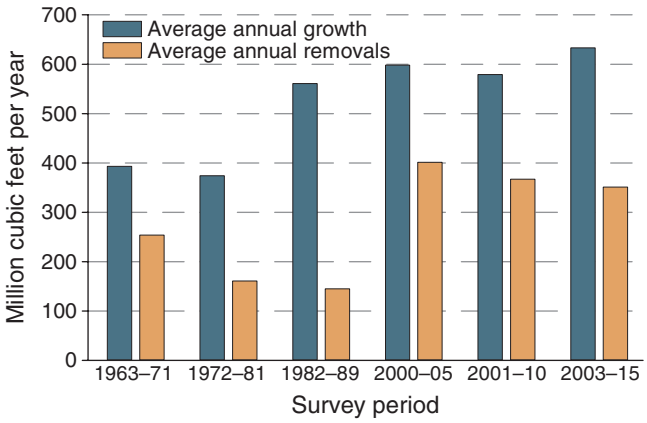


Figure 17—Average annual net growth and average annual removals of all-live hardwood species on forest land, Alabama, 1962–2015.

Alabama's forests grew at a rate of 2.0 billion cubic feet of all-live trees per year. Softwood net growth was double hardwood growth: 1.4 billion versus 0.63 billion cubic feet per year (table 4). Ninety-two percent of the softwood net growth was accounted for by one species group, loblolly and shortleaf pines. The top ranked hardwood species group was red oaks, which represents 28 percent of the total annual all-live hardwood net growth, followed by sweetgum, white oaks, and yellow-poplar. These three hardwood species groups account for > 44 percent of all hardwood growth in the State.

As loblolly and shortleaf pines, red oaks, and sweetgum account for the most growth amongst species groups, one would expect that forest-type groups that contain these species would be likewise have the most annual growth. This proves to be true as the 1.2 billion cubic feet of average annual all-live growth occurs on the loblolly-shortleaf

**Table 4—Average net annual growth and net annual removals of all-live trees on forest land by species group and stand origin, Alabama, 2015**

| Species group | Net growth | Net removals | Stand origin | | | |
|---|---|---|---|---|---|---|
| | | | Natural stands | | Planted stands | |
| | | | Growth | Removals | Growth | Removals |
| | *million cubic feet* | | | | | |
| Softwood | | | | | | |
| Longleaf and slash pines | 74.5 | 79.3 | 69.3 | 73.7 | 5.2 | 5.6 |
| Loblolly and shortleaf pines | 1,281.2 | 809.9 | 1,149.2 | 719.6 | 132.0 | 90.4 |
| Other yellow pines | 27.2 | 24.5 | 26.4 | 24.0 | 0.7 | 0.5 |
| Eastern hemlock | 1.4 | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 |
| Cypress | 7.3 | 4.0 | 7.2 | 4.0 | 0.0 | 0.0 |
| Other eastern softwoods | 7.7 | 2.8 | 7.6 | 2.8 | 0.1 | 0.0 |
| Total softwoods | 1,399.2 | 920.6 | 1,261.3 | 824.1 | 138.0 | 96.5 |
| Hardwood | | | | | | |
| White oaks | 89.1 | 40.6 | 86.9 | 38.1 | 2.2 | 2.5 |
| Red oaks | 174.6 | 110.3 | 169.8 | 101.3 | 4.8 | 9.0 |
| Hickory | 26.3 | 16.7 | 26.4 | 16.0 | -0.1 | 0.7 |
| Hard maple | 3.9 | 2.2 | 3.8 | 1.9 | 0.1 | 0.3 |
| Soft maple | 19.9 | 11.0 | 19.9 | 9.7 | 0.0 | 1.3 |
| Beech | 7.7 | 1.1 | 7.4 | 1.1 | 0.3 | 0.0 |
| Sweetgum | 115.9 | 72.6 | 109.1 | 68.1 | 6.8 | 4.5 |
| Tupelo and blackgum | 33.2 | 16.8 | 32.0 | 15.8 | 1.2 | 1.0 |
| Ash | 10.2 | 8.1 | 10.1 | 7.5 | 0.1 | 0.6 |
| Cottonwood and aspen | 0.6 | 3.1 | 0.5 | 3.1 | 0.1 | 0.0 |
| Basswood | 0.8 | 0.2 | 0.7 | 0.2 | 0.1 | 0.0 |
| Yellow-poplar | 76.8 | 34.6 | 73.5 | 31.6 | 3.3 | 3.0 |
| Black walnut | 1.4 | 0.0 | 1.4 | 0.0 | 0.0 | 0.0 |
| Other eastern soft hardwoods | 43.7 | 17.6 | 41.9 | 16.9 | 1.8 | 0.7 |
| Other eastern hardwoods | 2.2 | 3.1 | 2.0 | 2.8 | 0.2 | 0.3 |
| Eastern noncommercial hardwoods | 26.9 | 13.1 | 26.4 | 11.4 | 0.5 | 1.7 |
| Total hardwoods | 633.2 | 351.2 | 611.8 | 325.6 | 21.4 | 25.6 |
| All species | 2,032.5 | 1,271.8 | 1,873.1 | 1,149.6 | 159.4 | 122.2 |

forest type, 58 percent of all average annual growth (table 5). Oak-hickory and oak-pine are the next two largest types in terms of average annual growth.

Table 5 illustrates the degree to which Alabama's softwood stands are dominated by one species group. Ninety-four percent of the average annual growth and 91 percent of the average annual removals in planted stands are from the loblolly and shortleaf pine species group. Loblolly pine is the main species in this group as revealed in the previous section on species dominance.

The majority of average net annual all-live tree growth in Alabama occurs on private forests (NIPF). Ninety-seven percent of softwood growth and 94 percent of hardwood growth occurs on NIPF lands (table 6).

**Table 5—Average annual net growth and net annual removals of all-live trees on forest land by forest-type group and major species group, Alabama, 2015**

| | Average annual growth | | | Average annual removals | | |
|---|---|---|---|---|---|---|
| Forest-type group | All species | Softwoods | Hardwoods | All species | Softwoods | Hardwoods |
| | *million cubic feet* | | | | | |
| Softwood types | | | | | | |
| White-red-jack pine | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 71.5 | 65.5 | 6.0 | 74.2 | 68.0 | 6.2 |
| Loblolly-shortleaf pine | 1,169.7 | 1,084.1 | 85.6 | 800.3 | 749.9 | 50.3 |
| Other eastern softwoods | 3.5 | 3.1 | 0.4 | 0.2 | 0.2 | 0.0 |
| Total softwoods | 1,244.9 | 1,152.9 | 92.0 | 874.7 | 818.2 | 56.5 |
| Hardwood types | | | | | | |
| Oak-pine | 226.7 | 144.8 | 82.0 | 114.0 | 66.2 | 47.8 |
| Oak-hickory | 392.6 | 77.8 | 314.8 | 176.2 | 22.0 | 154.1 |
| Oak-gum-cypress | 118.6 | 14.7 | 103.9 | 87.2 | 13.0 | 74.3 |
| Elm-ash-cottonwood | 40.4 | 3.3 | 37.2 | 18.0 | 1.0 | 17.0 |
| Maple-beech-birch | 0.8 | 0.5 | 0.2 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 1.3 | 0.6 | 0.7 | 0.2 | 0.0 | 0.1 |
| Exotic hardwoods | 1.7 | 0.9 | 0.8 | 1.1 | 0.0 | 1.1 |
| Total hardwoods | 782.2 | 242.5 | 539.6 | 396.6 | 102.2 | 294.4 |
| Nonstocked | 5.4 | 3.8 | 1.6 | 0.5 | 0.2 | 0.3 |
| All groups | 2,032.5 | 1,399.2 | 633.2 | 1,271.8 | 920.6 | 351.2 |

**Table 6—Average net annual growth and net annual removals of all-live trees on forest land by ownership group and major species group, Alabama, 2003–15**

| | Net growth | | | Net removals | | |
|---|---|---|---|---|---|---|
| Ownership group | All species | Softwood | Hardwood | All species | Softwood | Hardwood |
| | *million cubic feet* | | | | | |
| National forest | 28.213 | 16.319 | 11.894 | 4.551 | 3.597 | 0.954 |
| Other Federal | 17.391 | 6.348 | 11.043 | 6.185 | 5.164 | 1.021 |
| State and local government | 38.091 | 20.488 | 17.603 | 23.918 | 14.515 | 9.403 |
| Private | 1,948.777 | 1,356.076 | 592.701 | 1,237.157 | 897.342 | 339.815 |
| Total | 2,032.472 | 1,399.231 | 633.241 | 1,271.812 | 920.619 | 351.193 |

## Average Annual Removals of All-Live Species

Softwood removals occur across the State, but the highest concentrations of average annual removal volumes occur in the southwest portion of the State (fig. 18). Hardwood removals exhibit a similar pattern; however, it is not as strong as in softwoods (fig. 19).

Just as with average annual growth, the forest-type groups with the highest amount of removals were those that had the three highest removed species groups in them. An average of 800 million cubic feet per year were removed from loblolly-shortleaf forests, followed by oak-hickory and oak-pine with 176 and 114 million cubic feet, respectively, removed yearly (table 5).

The private ownership group accounted for 97 percent of all average net annual removals. Only 2.7 percent of all statewide removals occurred on publicly owned forests (table 6).

Average annual net growth exceeds removals for all but three species groups. Removals of longleaf and slash pines, 79.3 million cubic feet per year, are slightly higher than the annual growth estimate of 74.5 million cubic feet per year (table 4).

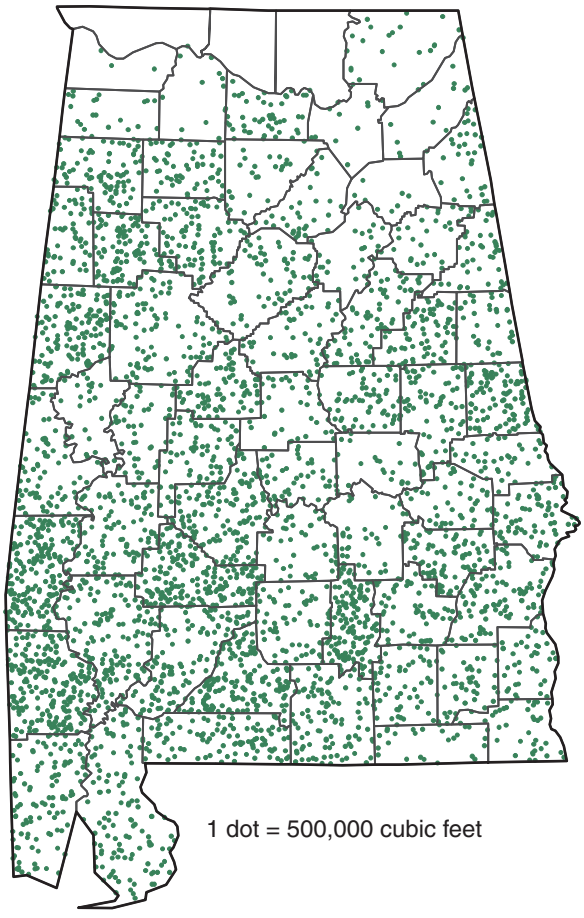


Figure 18—Average annual softwood removals volume, Alabama, 2003–15. Each dot represents 500,000 cubic feet of softwood live-tree volume removed each year on forest land. See Appendix A for map methodology.

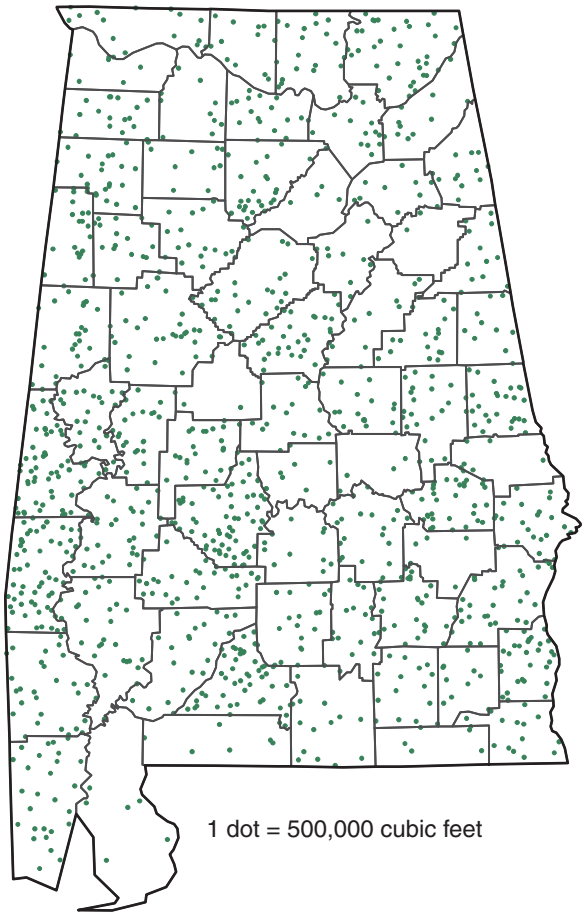


Figure 19—Average annual hardwood removals volume, Alabama, 2003–15. Each dot represents 500,000 cubic feet of hardwood live-tree volume removed each year on forest land. See Appendix A for map methodology.

Longleaf pine has been in decline for decades across the South, and a primary cause for this decline is the replacement of other tree species in lieu of regenerating harvested stands back to longleaf. These numbers indicate that this is continuing to occur in Alabama. However, the 2015 estimate of average annual removals of this species group is less than the 2010 estimate. Cottonwood and aspen along with other eastern hard hardwoods are the other two species groups where annual removals exceed growth.

Stand origin has an impact on growth-to-removals ratios. Natural stands exhibit similar results as those found for all stands discussed in the previous paragraph. Ratios for most species groups are almost the same, and the three species groups with ratios <1.0 are the same three mentioned above, that is longleaf and slash pines, cottonwood and aspen, and other eastern hardwoods. The results are different for planted stands. The majority of the average net annual growth and removals in these forests is from softwood species. Over 86 percent of the total average annual growth and 79 percent of the average annual removals estimates on planted stands are from softwood species. The total growth-to-removals ratios for all softwood species is >1.0 for planted stands; conversely, half of the hardwood species have growth-to-removals ratios <1.0. Total growth-to-removals ratio for all hardwood species in planted stands is 0.84 (table 4).

Seven counties had removals exceeding growth of softwood species (fig. 20). This is a decrease from the previous survey period when 22 counties had growth-to-removals ratios <1.0. Four of these counties have a growth-to-removals ratio >0.9, which is close to unity (one-to-one). The softwood growth-to-removals ratios for these counties are based on a small amount of softwood volume within the counties and therefore subject to large fluctuations. The economic downturn in 2008 could have an impact

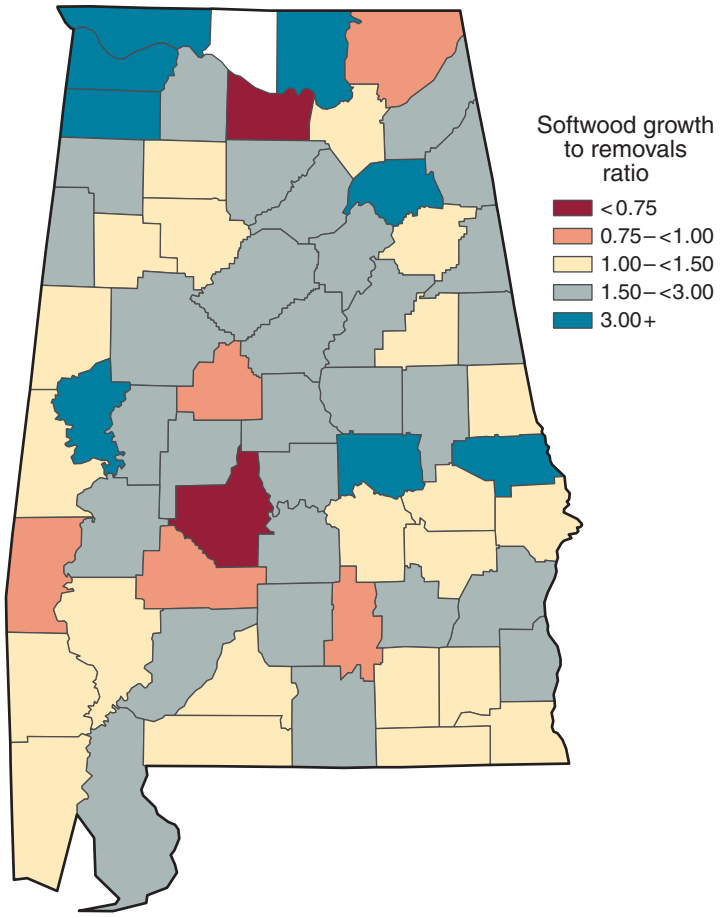


Figure 20—All-live softwood growth-to-removals ratio on forest land, Alabama, 2003–15.

on softwood removals and growth-to-removals ratios, due to the fact that housing starts dropped dramatically during this time. This led to a decrease in average annual removals for several years after the downturn (Brandeis and others 2012).

The counties with the highest softwood growth-to-removals ratios were in the northern portion of the State. These counties were: Lauderdale, Madison, and Colbert. The top three counties contained little softwood volume and are subject to large changes even with little change to the actual resource. In fact, almost no softwood removals occurred in Madison and Limestone Counties. Therefore, their

corresponding growth-to-removals ratios are exceedingly high. According to Alabama Forestry Commission representatives, the closing of International Paper Company's Courtland mill in 2012 had a big impact on removals in those areas.

Average annual all-live hardwood growth exceeded removals in 61 Alabama counties between 2010 and 2015 (fig. 21). This is a notable increase from the 2010 report which noted only 14 counties with ratios >1.0. Only six counties have hardwood growth-to-removals ratios <1.0. Three of these counties had ratios ≥0.9, and thus close to unity. Conecuh County had the lowest ratio, followed by Dallas and Choctaw Counties. Bibb County had the highest hardwood growth-to-removals ratio at almost 15.0. Other counties with the largest growth-to-removals ratios were Calhoun, Elmore, Baldwin, and Bullock Counties.

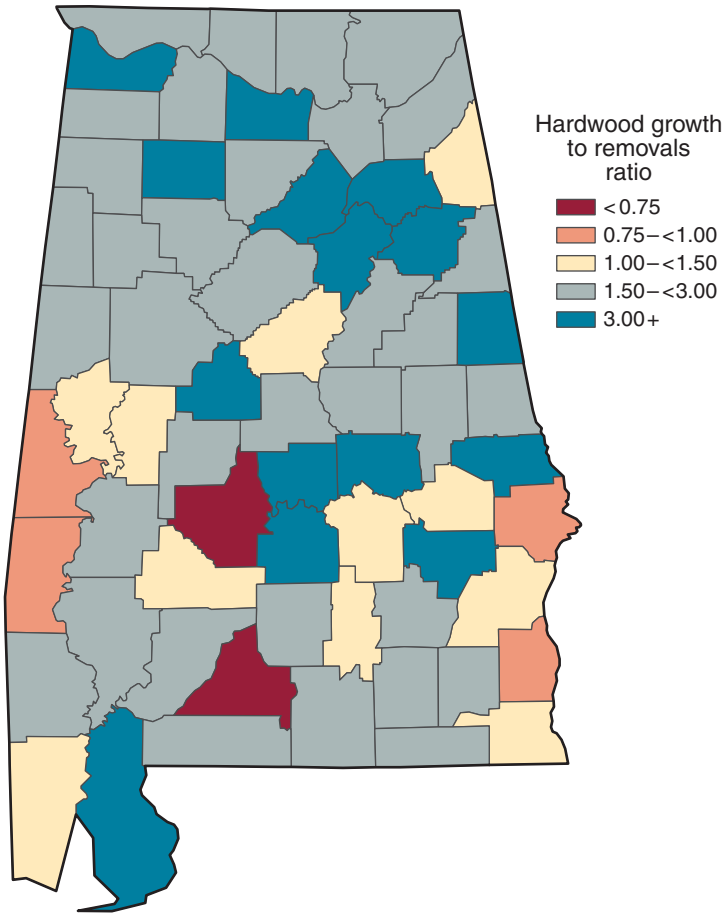


Figure 21—All-live hardwood growth-to-removals ratio on forest land, Alabama, 2003–15.

## 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 Monitoring (FHM) program was created to study the condition and long-term health of this country's forest lands. In 2000, FHM was merged with FIA, as both programs shared many features. Forest Health Monitoring information is collected on a subset of FIA plots. About one out of 16 FIA plots is selected for additional forest health sampling. Information from both sets of data, FIA and FHM, can be used to make inferences about the health of the State's forests.

Fire is a natural component of forest ecosystems and is often used by forest managers to control understory vegetation.

### 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, annual mortality of softwood and hardwood trees averaged 164.6 and 238.8 million cubic feet, respectively. Mean annual mortality of hardwoods increased 7 percent since the previous survey, and 24 percent since the conclusion of the 2005 survey. At the same time, softwood mortality was down 19 percent and 23 percent for the same time periods (table 7).

The pine forests of the southeastern United States experienced a southern pine beetle (*Dendroctonus frontalis* Z.) outbreak at the turn of the 21st century. Over half of the softwood mortality reported in 2005 was due to this insect. Since then, the infestations have been in decline. The decrease in southern pine beetle infestations is the primary driver for the decline in softwood mortality over these three inventory periods. Alabama forests were also impacted by Hurricanes Ivan and Katrina in 2004 and 2005. These storms impacted the hardwood resource of the State more than the softwood. Increases in average annual hardwood mortality can be linked to damage caused by these storms.

**Table 7—Average annual mortality of live trees on forest land by agent of mortality, survey period, and major species group, Alabama**

| | 2000–05 | | | 2001–10 | | | 2003–15 | | |
|---|---|---|---|---|---|---|---|---|---|
| Agent | All species | Soft-woods | Hard-woods | All species | Soft-woods | Hard-woods | All species | Soft-woods | Hard-woods |
| | *million cubic feet per year* | | | | | | | | |
| Insect | 113.117 | 112.417 | 0.7 | 81.234 | 80.722 | 0.512 | 60.545 | 60.453 | 0.092 |
| Disease | 104.055 | 28.134 | 75.921 | 62.721 | 16.843 | 45.878 | 55.8 | 15.304 | 40.496 |
| Fire | 4.145 | 1.113 | 3.032 | 5.369 | 2.385 | 2.984 | 10.388 | 4.525 | 5.863 |
| Animal | 10.859 | 1.676 | 9.183 | 12.151 | 1.456 | 10.695 | 8.198 | 0.179 | 8.019 |
| Weather | 72.576 | 27.547 | 45.029 | 183.796 | 72.378 | 111.417 | 141.941 | 41.13 | 100.81 |
| Vegetation | 42.459 | 18.095 | 24.364 | 41.867 | 18.095 | 23.773 | 52.185 | 19.884 | 32.301 |
| Unknown | 59.625 | 26.143 | 33.482 | 40.436 | 13.152 | 27.284 | 74.384 | 23.13 | 51.254 |
| Total | 406.836 | 215.125 | 191.711 | 427.574 | 205.031 | 222.543 | 403.441 | 164.605 | 238.835 |

Table 7 reveals the amount of volume lost to natural causes each year (annual mortality) for the State by survey period and mortality agent. Insects and diseases were the agents that caused the most mortality for the 2000–2005 survey period. This was primarily due to southern pine beetle outbreaks that occurred during this time. Weather damage, primarily due to hurricanes, was the dominant agent for the 2001–2010 survey period. These two forces are still reasonable for the majority of the latest mortality estimates.

Mortality-to-volume ratios are useful in determining the significance of tree mortality impacts on specified tree species and forests. This ratio describes the impact average annual mortality has upon the current standing volume of trees, and to what degree this mortality impacts the forest resources of the State. The current mortality-to-volume ratios for softwoods and hardwoods in Alabama are 0.009 and 0.011, respectively. Thus, just over 0.9 percent of the standing volume of softwoods and 1.1 percent of the volume of hardwoods die each year (fig. 22). The softwood mortality-to-volume ratio has decreased since 2000–2005, indicating that softwood mortality is decreasing as softwood volume is increasing for this species group. Hardwood mortality-to-volume ratios increased during the period of the hurricanes and has slightly decreased since then.

## Invasive Plants

The increasing spread of nonnative species of plants, animals, and other organisms is thought to be responsible for 42 percent of the decline of native species now listed as endangered or threatened (Hassan and others 2005). These invasive species have the potential to pose losses in biodiversity and ecosystem processes, as well as displace native species. A Southern Research Station e-Science update by Oswalt and Oswalt (2012) discusses the current status of these nonnative species within the State. The information in the following section is based on these findings. It is important to note that the data used by Oswalt and Oswalt (2012) are based on data collected up to 2009 and do not include 2010 plot information. Therefore, the plot counts listed will not match those in other sections.

Japanese honeysuckle (*Lonicera japonica*) is the most frequently detected invasive plant species in Alabama as it occurred on >58 percent of the plots visited by field crews between 2001 and 2009 (table 8). Chinese and European privets (*Ligustrum sinense*/*L. vulgare*) combined to form a group that was the second most frequently recorded species.

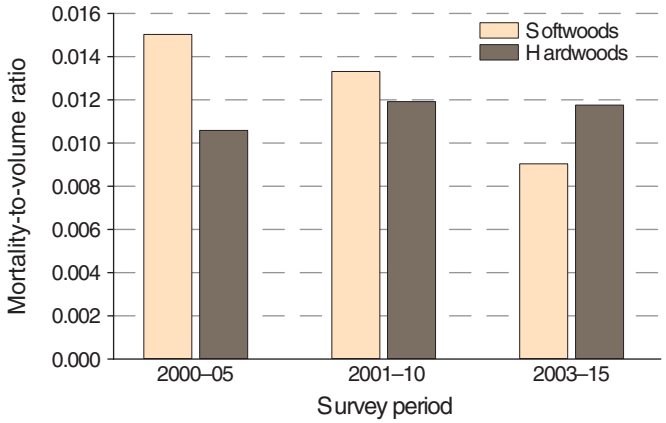


Figure 22—Average annual mortality-to-volume ratio of all-live trees on forest land by survey period and major species group, Alabama.

Japanese honeysuckle is the most frequently occurring invasive plant species found in the State's forests.

**Table 8—Invasive species detected on Alabama forest land with frequency of plot detections and percentage of plot detections, 2009**

| Common name | Scientific name | Plot detections[a] | Percent of all forested plots[b] |
|---|---|---|---|
| Japanese honeysuckle | *Lonicera japonica* | 2,444 | 58.25 |
| Privet | *Ligustrum* | 1,235 | 29.43 |
| Japanese climbing fern | *Lygodium japonicum* | 191 | 4.55 |
| Silk tree/Mimosa | *Albizia julibrissin* | 126 | 3.00 |
| Japanese/glossy privet | *Ligustrum japonicum* | 121 | 2.88 |
| Chinese lespedeza | *Lespedeza cuneata* | 97 | 2.31 |
| Chinese tallow | *Triadica sebifera* | 84 | 2.00 |
| Nonnative roses | *Rosa* spp. | 76 | 1.81 |
| Kudzu | *Pueraria montana* var. *lobata* | 71 | 1.69 |
| Chinaberrytree | *Melia azedarach* | 63 | 1.50 |
| Cogongrass | *Imperata cylindrica* | 63 | 1.50 |
| Nepalese browntop | *Microstegium vimineum* | 42 | 1.00 |
| Shrubby lespedeza | *Lespedeza bicolor* | 34 | 0.81 |
| Sacred bamboo, Nandina | *Nandina domestica* | 22 | 0.52 |
| Chinese/Japanese wisteria | *Wistera sinensis/W. floribunda* | 16 | 0.38 |
| Tree-of-heaven | *Ailanthus altissima* | 10 | 0.24 |
| Tall fescue | *Lolium arundinaceum* | 10 | 0.24 |
| Princesstree, Royal paulownia | *Paulownia tomentosa* | 9 | 0.21 |
| English ivy | *Hedera helix* | 5 | 0.12 |
| Tropical soda apple | *Solanum viarum* | 5 | 0.12 |
| Nonnative climbing yams—air yam/Chinese yam | *Dioscorea bulbifera/D. oppositifolia* | 4 | 0.10 |
| Nonnative bamboos | *Phyllostachys* spp., *Bambusa* spp. | 4 | 0.10 |
| Nonnative vincas, Periwinkles | *Vinca minor/V. major* | 3 | 0.07 |
| Autumn olive | *Alaeagnus umbellate* | 1 | 0.02 |
| Bush honeysuckles | *Lonicera* spp. | 1 | 0.02 |
| Giant reed | *Arundo donax* | 1 | 0.02 |

[a] Plot refers to forested portion of all subplots measured. If a species was detected on more than one subplot, it is only counted once.

[b] Percent of surveyed plots out of 4,196.

Data from Oswalt and Oswalt 2012.

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## GLOSSARY

**All-live trees—**All living trees. All size classes, all tree classes, and both saw-log and nonsaw-log species are included. See: FIA tree species list in the field manual.

**Average annual mortality—**Average annual volume of trees ≥ 5.0 inches d.b.h. that died from human and natural causes during the intersurvey period, excluding those removed by harvesting, cultural operations, land clearing or changes in land use.

**Average annual removals—**Average annual volume of trees ≥ 5.0 inches d.b.h. removed from the inventory by harvesting, cultural operations (such as timber-stand improvement), land clearing, or changes in land use during the intersurvey period.

**Average net annual growth—**Average annual net change in volume of trees ≥ 5.0 inches d.b.h./d.r.c. without taking into account losses from cutting (gross growth minus mortality) during the intersurvey period.

**Biomass—**For the southern region, total aboveground biomass is estimated using allometric equations and is defined as the aboveground weight of wood and bark in live trees ≥ 1.0 inch d.b.h./d.r.c. from the ground to the tip of the tree, excluding all foliage (leaves, needles, buds, fruit, and limbs < 0.5 inch in diameter). Biomass is expressed as oven-dry weight and the units are tons.

Note: the weight of wood and bark in limbs < 0.5 inch in diameter is included in the biomass of small-diameter trees.

Additionally, biomass in the merchantable stem is estimated regionally, where the main and merchantable stems are defined as follows.

*Main stem*—The central portion of the tree extending from the ground level to the tip for timber species. Woodland species includes from ground level to the tips of all branches of qualifying stems. For timber species trees that fork, the main stem refers to the fork that would yield the most merchantable volume.

*Merchantable stem*—That portion of the main stem of a timber species tree from a 1-foot stump to a minimum 4-inch top diameter inside or outside bark depending on species. That portion of a woodland species tree from the d.r.c. measurements to the 1.5-inch diameters of all the qualifying stems.

Nationally aboveground and belowground biomass is estimated from each tree's sound volume using a Component Ratio Method that is consistently applied in all FIA regions.

*Gross aboveground biomass*—Total tree biomass excluding foliage and roots with no deductions made for rotten, missing, or broken-top cubic-foot cull.

*Net aboveground biomass*—Gross aboveground biomass minus deductions for missing cull, broken-top, and a reduction for a proportion of rotten cull for live or standing dead trees ≥ 5.0 inches d.b.h (Rotten cull will have a factor to reduce specific gravity separately from sound wood). Live and standing dead trees 1.0 to 4.9 inches only have deductions for broken-top cull. Additional deductions are made for dead trees ≥ 1.0 inch using decay class.

*Belowground biomass*—Coarse roots only.

Further, the total net aboveground biomass estimated using the Component Ratio Method is divided into the following components:

*Top*—That portion of the main stem of a timber species tree above the 4-inch top diameter. For woodland species, this component of the biomass is included with branches.

*Branches*—All the branches of a timber species tree excluding the main stem. That portion of all the branches of qualifying stems of woodland species above the 1.5-inch diameter ends.

*Bole*—See: Merchantable stem.

*Stump*—That portion of timber species below 1-foot to ground level. That portion of woodland species from all the d.r.c. measurements to ground level.

**Blind check—**A reinstallation done by a qualified inspection crew without production crew data on hand; at least two full subplots are completely remeasured along with all the plot level information. The two datasets are maintained separately. Discrepancies between the two sets of data are not reconciled. See: Quality assurance and quality control.

**Bole—**Trunk or main stem of a tree. (See: Main stem.)

**Census water—**See: Land use.

**Coarse woody debris (CWD)—**Downed, dead tree and shrub boles, large limbs, and other woody pieces with a minimum small-end diameter of ≥ 3 inches and a length of ≥ 3 feet not attached to a living or standing dead source.

**Cold check—**An inspection done either as part of the training process, or as part of the ongoing quality control program. Normally the installation crew is not present at the time of inspection. The inspector has the completed data in-hand at the time of inspection. The inspection can include the whole plot or a subset of the plot. Data errors are corrected. See: Quality assurance and quality control.

**Components of change—**Volume increment and decrement values that explain the change in inventory between two points in time. Components of change are usually expressed in terms of growing-stock or all-live merchantable volume. These components can be expressed as average annual values by dividing the component by the number of years in the measurement cycle. FIA inventories are designed to measure net change over time, as well as the individual components of change that constitute net change (e.g., growth, removals, mortality). Change estimates are computed for two sequential measurements of each inventory panel. Upon remeasurement, a new initial inventory is established for remeasurement at the next scheduled inventory. As such, computation of change components is not intended to span more than one inventory cycle. Rather, the change estimation process is repeated cycle by cycle. This simplifies field protocols and ensures that change estimation is based on short and relatively constant time intervals (e.g., 5 years). Change estimates for individual panels are combined across multiple panels in the same manner as panels are combined to obtain current inventory parameters such as total standing volume. FIA recognizes the following components of change as prescribed core variables; they usually are expressed in terms of growing-stock or all-live volume, where $t$ is the initial inventory of a measurement cycle, and $t + 1$ is the terminal inventory:

*Cut*—The volume of trees cut between time $t$ and time $t + 1$. The estimate is based on tree size at the midpoint of the measurement interval (includes cut growth). Tree size at the midpoint is modeled from tree size at time $t$. Trees felled or killed in conjunction with a harvest or silvicultural operation (whether they are utilized or not) are included, but trees on land diverted from forest to nonforest (diversions) are excluded.

*Cut growth*—The growth of cut trees between time $t$ and the midpoint of the measurement interval. Tree size at the midpoint is modeled from tree size at time $t$. This term also includes the

subsequent growth on ingrowth trees that achieve the minimum diameter threshold prior to being cut.

*Diversion*—The volume of trees on land diverted from forest to nonforest (or, for some analyses, this may also include land diverted to reserved forest land and other forest land), whether utilized or not, between time *t* and time *t* + 1. The estimate is based on tree size at the midpoint of the measurement interval (includes diversion growth). Tree size at the midpoint is modeled from tree size at time *t*.

*Diversion growth*—The growth of diversion trees from time *t* to the midpoint of the measurement interval. Tree size at the midpoint is modeled from tree size at time *t*. This term also includes the subsequent growth on ingrowth trees that achieve the minimum diameter threshold prior to diversion.

*Growth on ingrowth*—The growth on trees between the time they grow across the minimum d.b.h./d.r.c. threshold and time *t* + 1.

*Ingrowth*—The volume of trees at the time that they grow across the minimum d.b.h./d.r.c. threshold between time *t* and time *t* + 1. The estimate is based on the size of trees at the d.b.h./d.r.c. threshold which is 1.0 inch for all-live trees and 5.0 inches for growing-stock trees. This term also includes trees that subsequently die (i.e., ingrowth mortality), are cut (i.e., ingrowth, cut), or diverted to nonforest (i.e., ingrowth diversion); as well as trees that achieve the minimum threshold after an area reverts to a forest land use (i.e., reversion ingrowth).

*Mortality*—The volume of trees that die from human or natural causes between time t and time *t* + 1. The estimate is based on tree size at the midpoint of the measurement interval (includes mortality growth). Tree size at the midpoint is modeled from tree size at time *t*.

*Mortality growth*—The growth of trees that died from human or natural causes between time *t* and the midpoint of the measurement interval. Tree size at the midpoint is modeled from tree size at time *t*. This term also includes the subsequent growth on ingrowth trees that achieve the minimum diameter threshold prior to mortality.

*Reversion*—The volume of trees on land that reverts from a nonforest land use to a forest land use (or, for some analyses, land that reverts from any source to timberland) between time *t* and time *t* + 1. The estimate is based on tree size at the midpoint of the measurement interval. Tree size at the midpoint is modeled from tree size at time *t* + 1.

*Reversion growth*—The growth of reversion trees from the midpoint of the measurement interval to time *t* + 1. Tree size at the midpoint is modeled from tree size at time *t* + 1. This term also includes the subsequent growth on ingrowth trees that achieve the minimum diameter threshold after reversion.

*Survivor growth*—The growth on trees tallied at time *t* that survive until time *t* + 1.

The following components of change may be used to further quantify changes in growing-stock (but not all-live) volume:

*Cull decrement*—The net gain in growing-stock volume due to reclassification of cull trees to growing-stock trees between two surveys. Cull decrement is the volume of trees that were cull at time *t*, but growing stock at time *t* + 1. The estimate is based on tree size at the midpoint of the measurement interval. Tree size at the midpoint can be modeled from tree at time *t*, time *t* + 1, or both.

*Cull decrement growth*—The growth from the midpoint of the measurement interval to time *t* + 1 on trees that were cull at

time *t*, but growing stock at time *t* + 1. Tree size at the midpoint can be modeled from tree size at time *t*, time *t* + 1, or both.

*Cull increment*—The net reduction in growing-stock volume due to reclassification of growing stock trees to cull trees between two surveys. Cull increment is the volume of trees that were growing stock at time *t*, but cull at time *t* + 1. The estimate is based on tree size at the midpoint of the measurement interval (includes cull increment growth). Tree size at the midpoint can be modeled from tree size at time *t*, time *t* + 1, or both.

*Cull increment growth*—The growth to the midpoint of the measurement interval between time *t* and *t* + 1 of trees that were growing stock at time t, but cull trees at time *t* + 1. Tree size at the midpoint can be modeled from tree size at time *t*, time *t* + 1, or both.

**Condition class**—The combination of discrete landscape and forest attributes that identify, define, and stratify the area associated with a plot. Examples of such attributes include condition status, forest type, stand origin, stand size, owner group, reserve status and stand density.

**Cull**—Portions of a tree that are unusable for industrial wood products because of rot, form, or other defect. Cull is further categorized as the following:

*Broken-top cubic-foot cull*—The broken-top proportion of a timber species tree's merchantable portion from the break to the actual or projected 4-inch top diameter outside bark, or to where the central stem forks, where all forks are < 4.0 inches diameter. For trees 1.0 to 4.9 inches diameter this is the proportion of the main stem missing due to a broken-top.

*Form board-foot cull*—The part of the tree's saw-log portion that is sound but not usable for sawn wood products due to sweep, crook, forking, or other physical culls.

*Missing cubic-foot cull*—The proportion of a tree's merchantable portion that is missing or absent. Does not include any cull deductions above actual length for broken-top timber trees. Does include cull deductions above actual length for broken-top woodland species. Trees with d.b.h./d.r.c. < 5.0 inches have a null value in this field.

*Percent board-foot cull*—Percentage of sound and unsound board-foot volume, to the nearest 1 percent.

*Rotten cubic-foot cull*—The proportion of a tree's merchantable portion that is in a decayed state. Does not include any cull deductions above actual length for broken-top timber trees. Does include cull deductions above actual length for broken-top woodland species. Trees <5.0 inches d.b.h. have a null value in this field.

*Rotten/missing cull*—The part of the tree's merchantable portion that is decayed and/or absent due to other factors.

*Total board-foot cull*—The proportion of a timber species tree's saw-log portion that is rotten, missing, or sound but not useable for sawn wood products due to sweep, crook, forking, or other physical defects (form board-foot cull). Nonsaw-log species and softwoods < 9.0 inches d.b.h. and hardwoods < 11.0 inches d.b.h. have a null value in this field.

**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**—One sequential and complete set of panels.

**Diameter at breast height (d.b.h.)—** The diameter for tree stem, located at 4.5 feet above the ground (breast height) on the uphill side of a tree. The point of diameter measurement may vary on abnormally formed trees.

**Diameter class—**A classification of trees based on diameter outside bark, measured at breast height (d.b.h.) above the ground or at root collar (d.r.c.). Note: Diameter classes are commonly in 2-inch increments, beginning with 2-inches. Each class provides a range of values with the class name being the approximate midpoint. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h.

**Disturbance—**Natural or human-caused disruption that is ≥1.0 acre in size and results in mortality and/or damage to 25 percent of all trees in a stand or 50 percent of an individual species' count or, in the case when the disturbance does not initially affect tree growth or health (e.g. grazing, browsing, flooding, etc.), affects 25 percent of the soil surface or understory vegetation. For initial forest plot establishment the disturbance must be within the last 5 years. For remeasured plots only those disturbances that have occurred since the previous inventory are recognized.

**Diversion—**See: Components of change.

**Down woody material (DWM)—**DWM is dead material on the ground in various stages of decay. It includes coarse and fine woody material. 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.

**Dry weight—**The oven-dry weight of biomass.

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

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

**Fixed-radius plot—**A circular sampled area with a specified radius in which all trees of a given size, shrubs, or other items are tallied.

**Forest floor—**The entire thickness of organic material overlying the mineral soil, consisting of the litter and the duff (humus).

**Forest industry land—**See: Ownership.

**Forest land—**Land that is at least 10 percent stocked by forest trees of any size, or land formerly having such tree cover, and is not currently developed for a nonforest use. The minimum area for classification as forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must be at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams and other bodies of water, or natural clearings in forested areas shall be classified as forest, if <120 feet in width or 1.0 acre in size. Forest land is divided into timberland, reserved forest land, and other forest land (such as woodland).

**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.

*Elm-ash-cottonwood*—Forests in which elm, ash, or cottonwood, singly or in combination, constitute a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

*Loblolly-shortleaf pine*—Forests in which loblolly pine, shortleaf pine, or other southern yellow pines, except longleaf or slash pine, singly or in combination, constitute a plurality of the stocking. (Common associates include oak, hickory, and gum.)

*Maple-beech-birch*—Forests in which maple, beech, or yellow birch, singly or in combination, constitute a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

*Oak-gum-cypress*—Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, constitute a plurality of the stocking, except where pines account for 25 to 50 percent of stocking, in which case the stand is classified as oak-pine. (Common associates include cottonwood, willow, ash, elm, hackberry, and maple.)

*Oak-hickory*—Forests in which upland oaks or hickory, singly or in combination, constitute a plurality of the stocking, except where pines account for 25 to 50 percent, in which case the stand is classified oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

*Oak-pine*—Forests in which hardwoods (usually upland oaks) constitute a plurality of the stocking but in which pines account for 25 to 50 percent of the stocking. (Common associates include gum, hickory, and yellow-poplar.)

**Growing-stock trees—**Live large-diameter timber species (excludes nonsaw-log species) trees with one-third or more of the gross board-foot volume in the entire saw-log portion meeting grade, soundness, and size requirements or the potential to do so for medium-diameter and small-diameter trees. A growing-stock tree must have one 12-foot log or two noncontiguous 8-foot merchantable logs, now (large diameter) or prospectively (medium diameter and small diameter), to qualify as growing stock.

**Hardwoods—**Tree species belonging to the botanical divisions Magnoliophyta, Ginkgophyta, Cycadophyta, or Pteridophyta, usually angiospermic, dicotyledonous, broad-leaved and deciduous.

*Soft hardwoods*—Hardwood species with an average specific gravity of ≤0.50, such as gums, yellow-poplar, cottonwoods, red maple, basswoods, and willows.

Har*d hardwoods*—Hardwood species with an average specific gravity >0.50, such as oaks, hard maples, hickories, and beech.

**Hot check—**An inspection normally done as part of the training process. The inspector is present on the plot with the trainee and provides immediate feedback regarding data quality. Data errors are corrected. Hot checks can be done on training plots or production plots. See: Quality assurance and quality control.

**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 purpose of human activity on the land; it is usually, but not always, related to land cover.

Southern regional present land use categories are as follows:

*Accessible timberland*—Land that is within the population of interest, is accessible, is on a subplot that can be occupied at subplot center, can safely be visited, and meets the criteria for forest land (see: forest land).

*Accessible other forest land*—Land that meets the definition of accessible forest land, but is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions because of adverse site conditions. Adverse conditions include

sterile soils, dry climate, poor drainage, high elevation, steepness and soil rockiness.

*Agricultural land*—Land managed for crops, pasture, or other agricultural use. The area must be at least 1.0 acre in size and 120 feet wide (with the exception of windbreak/shelterbelt, which has no minimum width). This land use includes cropland, pasture (improved through cultural practices), idle farmland, orchard, Christmas tree plantation, maintained wildlife opening, and windbreak/shelterbelt.

*Rangeland*—Land primarily composed of grasses, forbs, or shrubs. This includes lands vegetated naturally or artificially to provide a plant cover managed like native vegetation and does not meet the definition of pasture. The area must be at least ≥1.0 acre in size and ≤120 feet wide.

*Developed*—Land used primarily by humans for purposes other than forestry or agriculture. This land use includes cultural (business, industrial/commercial, residential, and other places of intense human activity), rights-of-way (improved roads, railway, power lines, maintained canal), recreation (parks, skiing, golf courses), and mining.

*Other*—Land parcels ≥1.0 acre in size and ≥120 feet wide, which do not fall into one of the uses described above. Examples include undeveloped beaches, barren land (rock, sand), marshes, bogs, ice, and snow. This land use includes nonvegetated, wetland, beach, and nonforest-chaparral.

*Census water*—Rivers and streams that are >200 feet wide and bodies of water >4.5 acres in size.

*Noncensus water*—Rivers, streams and other bodies of water that do not meet the requirements for census water.

*Nonsampled*—Not sampled due to denied access, hazardous conditions, being outside the U.S. or other reasons.

**Large-diameter trees**—Softwoods ≥9.0 inches d.b.h. and hardwoods ≥11.0 inches d.b.h. These trees were called sawtimber-sized trees in prior surveys. See: Stand-size class.

**Litter**—Undecomposed or only partially decomposed organic material that can be readily identified (e.g., plant leaves, twigs, etc.).

**Main stem**—The central portion of the tree extending from the ground level to the tip for timber species. For woodland species the main stem extends from the ground level to the tips of all branches of qualifying stems. For timber species trees that fork, the main stem follows the fork that would yield the most merchantable volume.

**Measurement quality objective (MQO)**—A data user's estimate of the precision, bias, and completeness of data necessary to satisfy a prescribed application (e.g., Resource Planning Act, assessments by State foresters, forest planning, forest health analyses). Describes the acceptable tolerance for each data element. MQOs consist of two parts: a statement of the tolerance and a percentage of time when the collected data are required to be within tolerance. MQOs can only be assigned where standard methods of sampling or field measurements exist, or where experience has established upper or lower bounds on precision or bias. MQOs can be set for measured data elements, observed data elements, and derived data elements.

**Medium-diameter tree**—Softwood timber species 5.0 to 8.9 inches d.b.h. and hardwood timber species 5.0 to 10.9 inches d.b.h. These trees were called poletimber-sized trees in prior surveys. See: Stand-size class.

**Microplot**—A circular, fixed-radius plot with a radius of 6.8 feet (0.003 acre) that is used to sample trees <5.0 inches d.b.h./d.r.c., as well as other vegetation. Point center is 90 degrees and 12 feet offset from point center of each subplot.

**Mortality—**See: Components of change.

**National forest land—**See: Ownership.

**Noncensus water—**See: Land use.

**Nonforest land—**Land that does not support or has never supported, forests, and lands formerly forested where use for timber management 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 ≥120 feet wide, and clearings, etc., ≥1.0 acre in size, to qualify as nonforest land.

**Nonindustrial private forest land—**See: Ownership.

**Other forest land—**Forest land other than timberland and reserved forest land. It includes available and reserved forest land that is incapable of producing 20 cubic feet per acre per year of wood under natural conditions because of adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness.

**Other public land—**See: Ownership.

**Other removals—**The volume of trees removed from the inventory by cultural operations such as timber stand improvement, land clearing, and other changes in land use, resulting in the removal of the trees from timberland.

**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.

*National forest land*—Federal land that has been legally designated as national forests or purchase units, and other land under the administration of the Forest Service, including experimental areas and Bankhead-Jones Title III land.

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

*Nonindustrial private forest (NIPF) land*—Privately owned land excluding forest industry land.

*Corporate*—Owned by corporations, including incorporated farm ownerships.

*Individual*—All lands owned by individuals, including farm operators.

*Other public*—An ownership class that includes all public lands except national forests.

*Miscellaneous Federal land*—Federal land other than national forests.

*State, county, and municipal land*—Land owned by States, counties, and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

**Phase 1 (P1)—**FIA activities related to remote sensing, the primary purpose of which is to label plots and obtain stratum weights for population estimates.

**Phase 2 (P2)—**FIA activities conducted on the network of ground plots. The primary purpose is to obtain field data that enable classification and summarization of area, tree, and other attributes associated with forest land uses.

**Phase 3 (P3)—**A subset of Phase 2 plots where additional attributes related to forest health are measured.

**Plantation—**Stands that currently show evidence of being planted or artificially seeded.

**Poletimber-sized tree**—Softwood timber species 5.0 to 8.9 inches d.b.h. and hardwood timber species 5.0 to 10.9 inches d.b.h. Now referred to as medium-diameter trees.

**Private land**—See: Ownership.

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

**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.

**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, etc.) in order 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.

**Reserved forest land**—Forest land where management for the production of wood products is prohibited through statute or administrative designation. Examples include national forest wilderness areas and national parks and monuments.

**Reversion**—Land that reverts from a nonforest land use to a forest land use. See: Components of change.

**Sapling**—Live trees 1.0 to 4.9 inches d.b.h./d.r.c.

**Seedling**—Live trees < 1.0 inch d.b.h./d.r.c. that are ≥ 6.0 inches in height for softwoods and ≥ 12.0 inches in height for hardwoods and > 0.5 inch d.b.h./d.r.c. at ground level for longleaf pine.

**Small-diameter trees**—Trees 1.0 to 4.9 inches in d.b.h./d.r.c. These were called sapling-seedling sized trees in prior surveys. See: Stand-size class.

**Softwoods**—Tree species belonging to the botanical division Coniferophyta, usually evergreen having needles or scale-like leaves.

**Species group**—A collection of species used for reporting purposes.

**Stand**—Vegetation or a group of plants occupying a specific area and sufficiently uniform in species composition, age arrangement, structure, and condition as to be distinguished from the vegetation on adjoining areas.

**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.

**Standing dead tree**—A dead tree ≥5.0 inches d.b.h. that has a bole which has an unbroken actual length of at least 4.5 feet, and lean <45 degrees from vertical as measured from the base of the tree to 4.5 feet.

**Stand origin**—A classification of forest stands describing their means of origin.

*Planted*—Planted or artificially seeded.

*Natural*—No evidence of artificial regeneration.

**Stand-size class—**A classification of forest land based on the diameter-class distribution of live trees in the stand. See definitions of large-, medium-, and small-diameter trees.

*Large-diameter stands*—Stands at least 10 percent stocked with live trees, with one-half or more of total stocking in large- and medium-diameter trees, and with large-diameter tree stocking at least equal to medium-diameter tree stocking.

*Medium-diameter stands*—Stands at least 10 percent stocked with live trees, with one-half or more of total stocking in medium- and large-diameter trees, and with medium-diameter tree stocking exceeding large-diameter tree stocking.

*Small-diameter stands*—Stands at least 10 percent stocked with live trees, in which small-diameter trees account for more than one-half of total stocking.

*Nonstocked stands*—Stands <10 percent stocked with live trees.

**Stand structure—**The predominant canopy structure for the condition, only considering the vertical position of the dominant and codominant trees in the stand and not considering trees that are intermediate or overtopped. As a general rule, a different story should comprise 25 percent of the stand.

*Nonstocked*—The condition is <10 percent stocked.

*Single-storied*—Most of the dominant/codominant tree crowns form a single canopy (i.e., most of the trees are approximately the same height).

*Multistoried*—Two or more recognizable levels characterize the crown canopy. Dominant/codominant trees of many sizes (diameters and heights) for a multilevel canopy.

**State, county, and municipal land—**See: Ownership.

**Stocking—**(1) At the tree level, stocking is 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. (2) At the stand level, stocking refers to the sum of the stocking values of all trees sampled.

**Subplot—**A circular area with a fixed horizontal radius of 24.0 feet (1/24 acre), primarily used to sample trees ≥ 5.0 inches at d.b.h./d.r.c.

**Survivor tree—**A sample tree alive at both the current and previous inventories.

**Timberland—**Forest land that is producing or capable of producing 20 cubic feet per acre or more per year of wood at culmination of MAI. Timberland excludes reserved forest lands.

**Treatment—**Forestry treatments are a form of human disturbance. The term treatment further implies that a silvicultural application has been prescribed. This does not include occasional stumps of unknown origin or sparse removals for firewood, Christmas trees, or other miscellaneous purposes. The area affected by any treatment must be at least 1.0 acre in size.

*None*—No observable treatment.

*Cutting*—The removal of one or more trees from a stand. SRS FIA categories are the following:

*Clearcut harvest*—The removal of the majority of the merchantable trees in a stand; residual stand stocking is under 50 percent.

*Partial harvest*—Removal primarily consisting of highest quality trees. Residual consists of lower quality

trees because of high grading or selection harvest (e.g. uneven aged, group selection, high grading, species selection).

*Seed-tree/shelterwood harvest*—Crop trees are harvested leaving seed source trees either in a shelterwood or seed tree. Also includes the final harvest of the seed trees.

*Commercial thinning*—The removal of trees (usually of medium-diameter) from medium-diameter stands leaving sufficient stocking of growing-stock trees to feature in future stand development. Also included are thinning in large-diameter stands where medium-diameter trees have been removed to improve quality of those trees featured in a final harvest.

*Timber stand improvement (cut trees only)*—The cleaning, release, or other stand improvement involving noncommercial cutting applied to an immature stand that leaves sufficient stocking.

*Salvage cutting*—The harvesting of dead or damaged trees or of trees in danger of being killed by insects, disease, flooding, or other factors in order to save their economic value.

*Site preparation*—Clearing, slash burning, chopping, disking, bedding, or other practices clearly intended to prepare a site for either natural or artificial regeneration.

*Artificial regeneration*—Following a disturbance or treatment (usually cutting), a new stand where at least 50 percent of the live trees present resulted from planting or direct seeding.

*Natural regeneration*—Following a disturbance or treatment (usually cutting), a new stand where at least 50 percent of the live trees present (of any size) were established through the growth of existing trees and/or natural seeding or sprouting.

*Other silvicultural treatment*—The use of fertilizers, herbicides, girdling, pruning, or other activities designed to improve the commercial value of the residual stand, or chaining, which is a practice used on woodlands to encourage wildlife forage.

**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 and a minimum height of 15 feet at maturity. For FIA, any plant on the tree list in the current field manual is measured as a tree.

**Volume**—A measure of the solid content of the tree stem used to measure wood quantity.

*Gross board-foot volume*—Total board-foot volume of wood inside bark without deductions for total board-foot cull.

*Gross cubic-foot volume*—Total cubic-foot volume of wood inside bark without deductions for rotten, missing, or broken-top cull.

*Net board-foot volume*—Gross board-foot volume minus deductions for total board-foot cull.

*Net cubic-foot volume*—Gross cubic-foot volume minus deductions for rotten, missing, and broken-top cull.

## INVENTORY METHODS

The Alabama 2015 inventory was a three-phase, fixed-plot design conducted on an annual basis. Phase 1 (P1) provides the area estimates for the inventory. Phase 2 (P2) involves on-the-ground measurements of sample plots by field personnel. Phase 3 (P3) is a subset of the P2 plot system where additional measurements are made by field personnel to aid in the assessment of forest health. The three phases of the sampling method are based on a hexagonal-grid design, with successive phases being sampled with less intensity. There are 16 P2 hexagons for every P3 hexagon. P2 and P3 hexagons represent about 6,000 and 96,000 acres, respectively.

Under the annual inventory system, 20 percent (one panel) of the total number of plots in a State are measured every year over a 5-year period (one cycle) and 14 percent under a 7-year cycle. The data used in this report are from a 7-year cycle. Each panel of plots is selected on a sub-grid which is slightly offset from the previous panel, so that each panel covers essentially the same sample area (both spatially and in intensity) as the prior panel. In the eighth year, the plots that were measured in the first panel are remeasured. This marks the beginning of the next cycle of data collection. While Alabama utilizes a 7-year cycle, FIA is mandated to produce a report on the status of each State every 5 years.

*This great blue heron has found a home in one of Alabama's many waterways.*

### Phase 1

For the 2015 inventory of Alabama the P1 forest area estimate was based on classifying National Land Cover Database (NLCD) points. Stratification of forest and nonforest was performed at the unit level. Area estimation of all lands and ownerships was based on the probability of selection of P2 plot locations. As a result, the known forest land area (for specific ownerships) does not always agree with area estimates based on probability of selection. For example, the acreage of national forests, published by the National Forest System, will not agree exactly with the statistical estimate of national forest land derived by Forest Inventory and Analysis (FIA). These numbers could differ substantially for very small areas. In addition, the 2015 area estimates, especially at the county level, have higher sampling errors than those prior to the 2010 survey because of the switch from dot counts to NLCD for area estimates.

### Phase 2

Bechtold and Patterson (2005) describe P2 and P3 ground plots and explain their use. These plots are clusters of four points 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. A.1). Each point is the center of a circular subplot with a fixed 24-foot radius. Trees ≥ 5.0 inches diameter at breast height (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 d.b.h. and seedlings (<1.0 inch d.b.h.) are measured in these microplots.

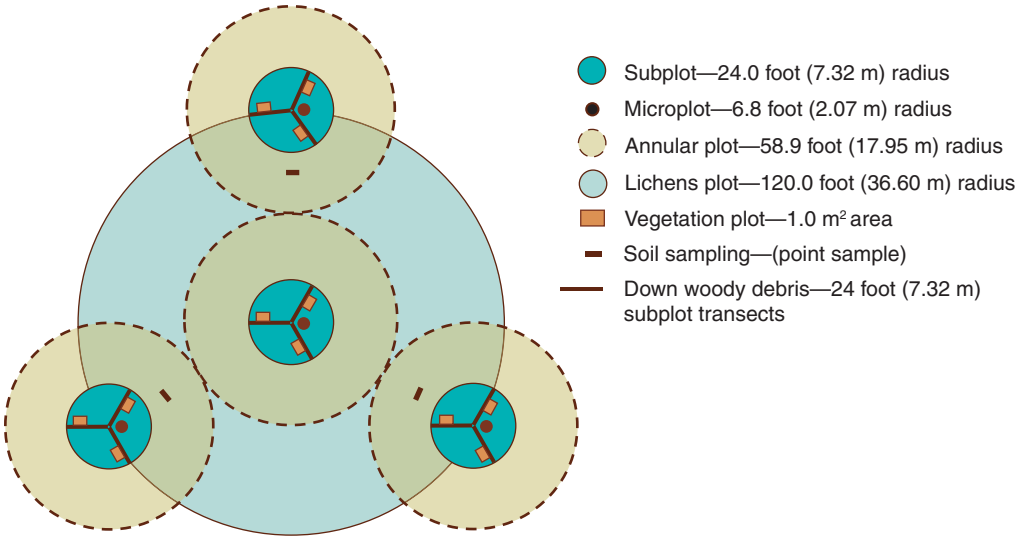


Figure A.1—Annual inventory fixed-plot design (the P2 plot).

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 one of these variables changes during plot measurement.

## Phase 3

Data on forest health variables (P3) are collected on about one-sixteenth of the P2 sample plots. P3 data are coarse descriptions, and are meant to be used as general indicators of overall forest health over large geographic areas. P3 data collection includes variables pertaining to tree crown health, down woody material (DWM), and foliar ozone injury. Tree crown health and DWM measurements are collected by using the same plot design used during P2 data collection (fig. A.1).

Biomonitoring sites for ozone data collection are located independently of the FIA grid. Sites must be 1-acre fields or similar open areas adjacent to or surrounded by forest land, and must contain a minimum number of plants of at least two identified bioindicator species (U.S. Department of Agriculture Forest Service 2007a). Plants are evaluated for ozone injury, and voucher specimens are submitted to a regional expert for verification of ozone-induced foliar injury.

Due to budgetary constraints only four-fifths of the P3 data were collected in the 2015 survey. As a result, the number of plots and the comparability of data across surveys were reduced.

Down woody material plays a vital role in southern forest ecosystems.

## Annual Inventory

Data used in this report were collected using an annual inventory method. Alabama's annual inventory began in 2000. Prior to this, all data collection was based on periodic inventories. This information was then compared to older periodic inventories to determine change. For example, average annual change estimates (growth, removals and mortality) in the 1990 report were derived by comparing tree and plot data obtained from the 1982 periodic inventory to data collected in 1990. The same process was then repeated in 2000, except the 1990 information served as the initial base year and 2000 as the final estimate. An issue with periodic inventories was that the average time between measurements in the South ranged from 6–10 years. The demand for newer data and more frequent updates necessitated the move to an annual inventory design.

Alabama switched to a 5-year annual inventory in 2000. 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 Alabama 2005 report (Hartsell and Johnson 2009) is based on this 5-year system. Alabama's 5-year annual inventory scheme changed to a 7-year annual inventory after 2005. Currently, approximately 14 percent of the State's plots were visited each year under this 7-year cycle. This same 7-year cycle length was used for both Alabama's Forests, 2010 (Hartsell and Cooper 2013) and this 2015 report. The annual inventory provides users with newer and more up-to-date information, but only from a small portion of the full cycle of data. For example, two subcycles were 2 years old or less, but two subcycles were 6 or 7 years old.

Table A.1 illustrates how the annual inventory impacts data interpretation. Currently, Alabama's forests contain 38.5 billion cubic feet of all-live volume.

**Table A.1—Volume of all-live species by measurement year on Alabama's forests**

| Measurement year | All-live volume | |
|---|---|---|
| | *million cubic feet* | *percent of total* |
| 2006 | 88.8 | 0.23 |
| 2007 | 138.8 | 0.36 |
| 2008 | 123.9 | 0.32 |
| 2009 | 4,745.4 | 12.33 |
| 2010 | 5,071.7 | 13.17 |
| 2011 | 5,840.0 | 15.17 |
| 2012 | 5,261.5 | 13.67 |
| 2013 | 5,351.3 | 13.90 |
| 2014 | 5,895.6 | 15.31 |
| 2015 | 5,981.5 | 15.54 |
| Total | 38,498.5 | 100.00 |

Table A.1 illustrates the distribution of the expected sampling intensity of around 14 percent, as the actual yearly rates ranged from 12.3 percent to 15.5 percent. Table A.1 reveals that of the 38.5 billion cubic feet of all-live volume currently in Alabama, 4.7 billion is from plots measured in 2009, 5.0 billion from 2010 and so on. It is important for users of FIA data to understand that all estimates of current values in this report were derived by summing a series of sequential annual measurements.

The annual inventory has an even greater impact on analysis of change estimates such as average annual growth, removals, and mortality. Computation of these requires an initial and terminal inventory for each plot. Table A.2 indicates that, on average, 1.27 billion cubic feet of all-live volume was removed from Alabama's forests each year. Rows represent the year that the latest data was collected, or the terminal year. Hence, 203 million of the 1.27 billion cubic feet estimate was from plots that were visited in 2015, while 134.5 million were from 2014. Each column is the year that the plots were visited in the past, or the initial year. This means that of the 203 million cubic feet of removals assigned to 2015, 189.7 million

**Table A.2—Average annual removals of all-live species by initial and terminal inventory year, Alabama, 2015**

| Terminal inventory | Total | Initial inventory | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| | | *million cubic feet* | | | | | | | | | | |
| 2007 | 10.5 | 3.9 | 0.1 | 3.0 | 3.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2008 | 7.8 | 1.0 | 0.9 | 0.0 | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2009 | 178.2 | 0.7 | 1.1 | 172.1 | 1.0 | 3.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2010 | 187.0 | 3.5 | 2.5 | 5.2 | 174.9 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2011 | 198.8 | 4.1 | 8.1 | 0.1 | 71.9 | 114.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2012 | 169.0 | 36.0 | 0.6 | 5.4 | 0.9 | 126.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2013 | 183.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 179.1 | 1.4 | 2.5 | 0.0 | 0.0 | 0.0 |
| 2014 | 134.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.8 | 123.3 | 1.3 | 4.1 | 0.0 | 0.0 |
| 2015 | 203.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.3 | 0.5 | 189.7 | 1.3 | 5.3 | 1.9 |
| Total | 1,271.8 | 49.3 | 13.3 | 185.8 | 258.0 | 244.8 | 189.3 | 125.2 | 193.5 | 5.4 | 5.3 | 1.9 |

were from plots that were initially visited in 2008. It is important for users to understand that the majority of removal estimates were from plots measured 7 years ago (93 percent) but also from the years 2006–2011. This is primarily due to logistical issues during the implementation of the field work.

Table A.3 is based on data found in table A.2, except that the estimates are percentages of total removals for the State. The estimate for terminal year 2015 and initial year 2008 indicate that 14.9 percent of the latest estimate of all-live removals can be attributed to plots measured initially in 2008 and again in 2015. Plots measured in 2004 and remeasured in 2010 accounted for 13.8 percent of the current total removals estimate. Column totals reveal the removals volume for each initial inventory. Plots initially measured in 2005 accounted for over 19 percent of the current removals estimate. Table A.3 shows that almost 74 percent of the current estimate for all-live removals was based on plots whose initial measurement occurred before 2007. Users need to be aware that the remeasurement period for the 7-year annual inventory is much longer than 7 years.

**Table A.3—Average annual removals of all-live species expressed as a percentage of total removals by initial and terminal inventory year, Alabama 2015**

| Terminal inventory | Total | Initial inventory | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
| | | *percent of total removals* | | | | | | | | | | |
| 2007 | 0.82 | 0.31 | 0.01 | 0.24 | 0.27 | | | | | | | |
| 2008 | 0.61 | 0.08 | 0.07 | 0.00 | 0.46 | | | | | | | |
| 2009 | 14.01 | 0.06 | 0.09 | 13.53 | 0.08 | 0.26 | | | | | | |
| 2010 | 14.70 | 0.28 | 0.20 | 0.41 | 13.76 | 0.07 | | | | | | |
| 2011 | 15.63 | 0.32 | 0.64 | 0.00 | 5.66 | 9.01 | | | | | | |
| 2012 | 13.29 | 2.83 | 0.05 | 0.43 | 0.07 | 9.91 | | | | | | |
| 2013 | 14.39 | | | | | | 14.08 | 0.11 | 0.20 | | | |
| 2014 | 10.58 | | | | | | 0.46 | 9.69 | 0.10 | 0.32 | | |
| 2015 | 15.96 | | | | | | 0.34 | 0.04 | 14.92 | 0.10 | 0.42 | 0.15 |
| Total | 100.00 | 3.88 | 1.04 | 14.61 | 20.29 | 19.25 | 14.88 | 9.85 | 15.21 | 0.43 | 0.42 | 0.15 |

Forestry and agriculture are often managed together on the same site.

## 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 and others 1984). The choices of values for factors (1) and (2) are mostly arbitrary but the important function of the maps is to show relative densities of resource attributes across the State of Alabama.

Regarding factor 3, 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 in a given county for it to be represented on the map. For example, in order 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, so that means there was no location accuracy inside any particular 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.

## 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 use of nationally standardized field manuals, use of 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 (U.S. Department of Agriculture Forest Service 2007a, 2007b). 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

The South's forests provide cover for a variety of fruits and berries that can be used as food by both man and animals.

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. Tables B.1 and B.2 show the results of various blind checks for Alabama.

**Table B.1—Results of plot-, condition-, and subplot-level blind checks for Alabama, 2009–15**

| Variables | Number of observations | Number within tolerance | Percent within tolerance |
|---|---|---|---|
| Plot variables | | | |
| Distance to road | 39 | 36 | 92.3 |
| Latitude-longitude | 63 | 63 | 100.0 |
| Plot accessibility | 20 | 16 | 80.0 |
| Plot in correct county | 20 | 20 | 100.0 |
| Plot nonsampled reason | 22 | 20 | 90.9 |
| Plot status | 20 | 20 | 100.0 |
| Water on plot | 24 | 24 | 100.0 |
| Condition variables | | | |
| Artificial regeneration species | 15 | 15 | 100.0 |
| Chaining | 61 | 59 | 96.7 |
| Condition status | 96 | 96 | 100.0 |
| Disturbance 1 | 54 | 50 | 92.6 |
| Disturbance year 1 | 13 | 11 | 84.6 |
| Field forest type | 53 | 48 | 90.6 |
| Field forest type group | 53 | 50 | 94.3 |
| Fire | 28 | 28 | 100.0 |
| Grazing | 28 | 28 | 100.0 |
| Harvest type 1 | 26 | 25 | 96.2 |
| Harvest type 2 | 11 | 11 | 100.0 |
| Live and missing canopy | 47 | 36 | 76.6 |
| Live canopy | 47 | 32 | 68.1 |
| Operability | 54 | 51 | 94.4 |
| Owner class | 54 | 54 | 100.0 |
| Owner group | 54 | 54 | 100.0 |
| Percent forest | 52 | 44 | 84.6 |
| Physiographic class | 54 | 51 | 94.4 |
| Present land use | 54 | 54 | 100.0 |
| Private owner industrial status | 28 | 28 | 100.0 |
| Regeneration status | 54 | 52 | 96.3 |
| Reserved status | 54 | 54 | 100.0 |
| Site class | 28 | 25 | 89.3 |
| Stand age | 53 | 46 | 86.8 |
| Stand size class | 54 | 51 | 94.4 |
| Stand structure | 54 | 45 | 83.3 |
| Total acres | 52 | 52 | 100.0 |
| Treatment 1 | 54 | 54 | 100.0 |
| Treatment year 1 | 18 | 14 | 77.8 |
| Tree density | 54 | 54 | 100.0 |

*(Continued)*

**Table B.1 (continued)—Results of plot-, condition-, and subplot-level blind checks for Alabama, 2009–15**

| Variables | Number of observations | Number within tolerance | Percent within tolerance |
|---|---|---|---|
| Subplot variables | | | |
| Microplot center condition | 261 | 261 | 100.0 |
| Snow/water depth | 85 | 84 | 98.8 |
| Subplot aspect | 85 | 74 | 87.1 |
| Subplot center condition | 264 | 262 | 99.2 |
| Subplot slope | 85 | 85 | 100.0 |

**Table B.2—Results of tree-level blind checks for Alabama, 2009–15**

| Variable | Number of observations | Number within tolerance | Percent within tolerance |
|---|---|---|---|
| Azimuth | 662 | 619 | 93.5 |
| Board foot cull | 118 | 104 | 88.1 |
| Compacted crown ratio | 552 | 484 | 87.7 |
| Condition number | 808 | 796 | 98.5 |
| Crown class | 552 | 488 | 88.4 |
| Dead tree actual length | 11 | 9 | 81.8 |
| Decay class | 106 | 105 | 99.1 |
| Decayed dead d.b.h. | 8 | 7 | 87.5 |
| Dieback incidence | 252 | 252 | 100.0 |
| Dieback severity | 205 | 205 | 100.0 |
| Genus | 808 | 801 | 99.1 |
| Horizontal distance | 641 | 633 | 98.8 |
| Live d.b.h. | 551 | 445 | 80.8 |
| Live rotten/missing cull | 14 | 13 | 92.9 |
| Present tree status | 808 | 788 | 97.5 |
| Species | 808 | 784 | 97.0 |
| Standing dead | 106 | 106 | 100.0 |
| Total length | 552 | 493 | 89.3 |
| Tree class | 413 | 391 | 94.7 |
| Tree grade | 118 | 99 | 83.9 |
| Utilization class | 127 | 127 | 100.0 |

## 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 (table B.3)

The size of the sampling error generally increases as the size of the area examined decreases. Also, as area or volume totals are stratified by forest type, species,

**Table B.3—Sampling errors, at one standard deviation, for estimates of area, volume, average annual growth, average annual removals, and average annual mortality, Alabama, 2015**

| Item | Sample estimate and 68.27-percent confidence interval | Sampling error |
|---|---|---|
| | | *percent* |
| Forest land (*thousand acres*) | | |
| State | 23,126.6 ± 111.0 | 0.48 |
| Southwest-South | 2,831.4 ± 47.0 | 1.66 |
| Southwest-North | 3,732.1 ± 35.5 | 0.95 |
| Southeast | 6,436.6 ± 61.1 | 0.95 |
| West Central | 3,511.4 ± 47.4 | 1.35 |
| North Central | 4,402.5 ± 58.1 | 1.32 |
| North | 2,212.6 ± 45.4 | 2.05 |
| All-live volume on forest land[a] | | |
| Standing inventory | | |
| All species | 38,498.5 ± 442.7 | 1.15 |
| Softwoods | 18,193.7 ± 334.8 | 1.84 |
| Hardwoods | 20,304.8 ± 383.8 | 1.89 |
| Net annual growth[a] | | |
| All species | 2,032.5 ± 31.9 | 1.57 |
| Softwoods | 1,399.2 ± 29.4 | 2.1 |
| Hardwoods | 633.2 ± 17.7 | 2.8 |
| Net annual removals[a] | | |
| All species | 1,271.8 ± 45.4 | 3.57 |
| Softwoods | 920.6 ± 36.4 | 3.95 |
| Hardwoods | 351.2 ± 22.1 | 6.28 |
| Net annual mortality[a] | | |
| All species | 403.4 ± 11.9 | 2.95 |
| Softwoods | 164.6 ± 8.5 | 5.19 |
| Hardwoods | 238.8 ± 8.2 | 3.43 |

[a] Million cubic feet.

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 by using the following formula. Sampling errors obtained by this method are only approximations of reliability because this process assumes constant variance across all subdivisions of totals.

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

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

Southern hardwood bottomlands are some of the most diverse forests in the region.

For example, the estimate of the sampling error for softwood live-tree volume on forest industry forest land is computed as:

$$SE_s = 1.15\left[\frac{\sqrt{18{,}193.76}}{\sqrt{1{,}344.10}}\right] = 4.23$$

Thus, the sampling error is 4.23 percent, and the resulting 68.27-percent confidence interval for softwood live-tree volume on forest industry timberland is 1,344.1 ± 56.9 million cubic feet.

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.

*Landowners can build wood duck boxes to help this species florish.*

**Table C.1—Area of forest land by ownership class and land status, Alabama, 2015**

| Ownership class | All forest land | Unreserved | | | Reserved | | |
|---|---|---|---|---|---|---|---|
| | | Total | Timberland | Unproductive | Total | Productive | Unproductive |
| | | | | *thousand acres* | | | |
| U.S. Forest Service | | | | | | | |
| National forest | 656.1 | 619.9 | 619.9 | 0.0 | 36.3 | 36.3 | 0.0 |
| Total | 656.1 | 619.9 | 619.9 | 0.0 | 36.3 | 36.3 | 0.0 |
| Other Federal | | | | | | | |
| National Park Service | 18.1 | 0.0 | 0.0 | 0.0 | 18.1 | 18.1 | 0.0 |
| U.S. Fish and Wildlife Service | 37.6 | 0.0 | 0.0 | 0.0 | 37.6 | 37.6 | 0.0 |
| Dept. of Defense/Dept. of Energy | 146.0 | 146.0 | 146.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Federal | 84.1 | 78.0 | 78.0 | 0.0 | 6.0 | 6.0 | 0.0 |
| Total | 285.7 | 224.1 | 224.1 | 0.0 | 61.6 | 61.6 | 0.0 |
| State and local government | | | | | | | |
| State | 398.8 | 398.8 | 398.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| Local | 156.7 | 156.7 | 156.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other non-Federal public | 11.5 | 11.5 | 11.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 567.0 | 567.0 | 567.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forest industry | | | | | | | |
| Corporate | 1,398.6 | 1,398.6 | 1,398.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 42.9 | 42.9 | 42.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 1,441.6 | 1,441.6 | 1,441.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nonindustrial private | | | | | | | |
| Corporate | 6,575.4 | 6,575.4 | 6,575.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Conservation/natural resources organization | 17.8 | 17.8 | 17.8 | 0.0 | 0.0 | 0.0 | 0.0 |
| Unincorporated local partnership/association/club | 139.0 | 139.0 | 139.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 13,443.9 | 13,443.9 | 13,443.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 20,176.2 | 20,176.2 | 20,176.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| All classes | 23,126.6 | 23,028.7 | 23,028.7 | 0.0 | 97.9 | 97.9 | 0.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.2—Area of forest land by forest-type group and site productivity class, Alabama, 2015**

| Forest-type group | All classes | Site productivity class (cubic feet/acre/year) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 0–19 | 20–49 | 50–84 | 85–119 | 120–164 | 165–224 | 225+ |
| | | *thousand acres* | | | | | | |
| Softwood types | | | | | | | | |
| White-red-jack pine | 10.0 | 0.0 | 0.0 | 10.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1,032.7 | 0.0 | 113.0 | 552.7 | 314.8 | 46.2 | 6.0 | 0.0 |
| Loblolly-shortleaf pine | 8,985.1 | 0.0 | 157.8 | 2,734.7 | 2,768.4 | 2,120.3 | 1,179.6 | 24.3 |
| Other eastern softwoods | 85.1 | 0.0 | 13.4 | 57.9 | 9.5 | 4.2 | 0.0 | 0.0 |
| Total softwoods | 10,113.0 | 0.0 | 284.2 | 3,355.3 | 3,092.7 | 2,170.8 | 1,185.6 | 24.3 |
| Hardwood types | | | | | | | | |
| Oak-pine | 2,926.0 | 0.0 | 138.3 | 1,235.3 | 968.8 | 376.8 | 205.3 | 1.5 |
| Oak-hickory | 7,077.7 | 0.0 | 686.7 | 3,802.1 | 1,659.4 | 660.1 | 233.1 | 36.3 |
| Oak-gum-cypress | 2,178.3 | 0.0 | 147.1 | 852.6 | 675.3 | 371.7 | 112.3 | 19.3 |
| Elm-ash-cottonwood | 601.0 | 0.0 | 17.5 | 267.3 | 206.5 | 72.8 | 25.1 | 11.8 |
| Maple-beech-birch | 5.0 | 0.0 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 9.0 | 0.0 | 0.0 | 7.5 | 0.0 | 1.5 | 0.0 | 0.0 |
| Exotic hardwoods | 37.7 | 0.0 | 1.5 | 22.6 | 6.0 | 6.1 | 1.5 | 0.0 |
| Total hardwoods | 12,834.7 | 0.0 | 991.1 | 6,187.5 | 3,521.0 | 1,488.9 | 577.3 | 69.0 |
| Nonstocked | 179.0 | 0.0 | 10.4 | 104.4 | 33.5 | 24.6 | 6.1 | 0.0 |
| All groups | 23,126.6 | 0.0 | 1,285.7 | 9,647.3 | 6,647.2 | 3,684.2 | 1,768.9 | 93.3 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.3—Area of forest land by forest-type group and ownership group, Alabama, 2015**

| Forest-type group | All ownerships | Ownership group | | | | |
|---|---|---|---|---|---|---|
| | | U.S. Forest Service | Other Federal | State and local government | Forest industry | Nonindustrial private |
| | *thousand acres* | | | | | |
| Softwood types | | | | | | |
| White-red-jack pine | 10.0 | 2.6 | 0.0 | 0.0 | 0.0 | 7.4 |
| Longleaf-slash pine | 1,032.7 | 137.9 | 15.8 | 52.0 | 80.6 | 746.5 |
| Loblolly-shortleaf pine | 8,985.1 | 146.5 | 47.7 | 150.4 | 848.4 | 7,792.2 |
| Other eastern softwoods | 85.1 | 0.0 | 0.0 | 0.0 | 0.0 | 85.1 |
| Total softwoods | 10,113.0 | 287.0 | 63.5 | 202.4 | 928.9 | 8,631.2 |
| Hardwood types | | | | | | |
| Oak-pine | 2,926.0 | 138.4 | 27.3 | 58.0 | 120.5 | 2,581.8 |
| Oak-hickory | 7,077.7 | 204.6 | 85.5 | 204.8 | 245.1 | 6,337.6 |
| Oak-gum-cypress | 2,178.3 | 21.0 | 68.1 | 94.3 | 112.8 | 1,882.1 |
| Elm-ash-cottonwood | 601.0 | 0.0 | 35.4 | 6.1 | 17.9 | 541.7 |
| Maple-beech-birch | 5.0 | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 9.0 |
| Exotic hardwoods | 37.7 | 0.0 | 6.1 | 0.0 | 3.0 | 28.6 |
| Total hardwoods | 12,834.7 | 369.1 | 222.2 | 363.2 | 499.3 | 11,380.9 |
| Nonstocked | 179.0 | 0.0 | 0.0 | 1.5 | 13.4 | 164.1 |
| All groups | 23,126.6 | 656.1 | 285.7 | 567.0 | 1,441.6 | 20,176.2 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.4—Area of forest land by forest-type group and stand-size class, Alabama, 2015**

| Forest-type group | All classes | Stand-size class | | | |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | Nonstocked |
| | *thousand acres* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 10.0 | 10.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1,032.7 | 536.9 | 286.1 | 209.7 | 0.0 |
| Loblolly-shortleaf pine | 8,985.1 | 3,996.3 | 3,275.1 | 1,713.7 | 0.0 |
| Other eastern softwoods | 85.1 | 20.4 | 16.5 | 48.1 | 0.0 |
| Total softwoods | 10,113.0 | 4,563.7 | 3,577.8 | 1,971.5 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 2,926.0 | 1,397.1 | 660.0 | 868.9 | 0.0 |
| Oak-hickory | 7,077.7 | 3,583.1 | 1,577.1 | 1,917.5 | 0.0 |
| Oak-gum-cypress | 2,178.3 | 1,353.6 | 451.9 | 372.8 | 0.0 |
| Elm-ash-cottonwood | 601.0 | 312.3 | 131.6 | 157.1 | 0.0 |
| Maple-beech-birch | 5.0 | 5.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 9.0 | 0.0 | 0.0 | 9.0 | 0.0 |
| Exotic hardwoods | 37.7 | 0.0 | 15.8 | 21.9 | 0.0 |
| Total hardwoods | 12,834.7 | 6,651.2 | 2,836.4 | 3,347.1 | 0.0 |
| Nonstocked | 179.0 | 0.0 | 0.0 | 0.0 | 179.0 |
| All groups | 23,126.6 | 11,214.8 | 6,414.2 | 5,318.6 | 179.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.5—Area of forest land by forest-type group and stand-age class, Alabama, 2015**

| Forest-type group | All classes | Stand-age class (years) 1–20 | 21–40 | 41–60 | 61–80 | 81–100 | 101–120 | 121–140 | 141–160 | 161–180 | 181–200 | 201+ | Nonstocked |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | *thousand acres* | | | | | | | |
| Softwood types | | | | | | | | | | | | | |
| White-red-jack pine | 10.0 | 0.0 | 6.0 | 2.6 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1,032.7 | 333.1 | 244.4 | 215.2 | 189.3 | 46.3 | 4.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Loblolly-shortleaf pine | 8,985.1 | 4,851.4 | 3,010.2 | 738.2 | 336.3 | 45.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.0 |
| Other eastern softwoods | 85.1 | 31.6 | 33.0 | 7.5 | 9.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 3.6 |
| Total softwoods | 10,113.0 | 5,216.1 | 3,293.6 | 963.6 | 536.4 | 92.2 | 4.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 6.6 |
| Hardwood types | | | | | | | | | | | | | |
| Oak-pine | 2,926.0 | 1,113.1 | 590.8 | 727.7 | 434.3 | 54.6 | 5.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Oak-hickory | 7,077.7 | 2,069.4 | 1,296.7 | 1,718.8 | 1,493.0 | 386.3 | 78.9 | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 28.5 |
| Oak-gum-cypress | 2,178.3 | 365.2 | 444.4 | 591.7 | 667.2 | 83.3 | 14.9 | 5.9 | 0.0 | 0.0 | 0.0 | 0.0 | 5.7 |
| Elm-ash-cottonwood | 601.0 | 177.3 | 187.2 | 123.1 | 103.4 | 4.4 | 5.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Maple-beech-birch | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 9.0 | 6.0 | 1.5 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Exotic hardwoods | 37.7 | 33.2 | 0.0 | 4.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total hardwoods | 12,834.7 | 3,764.1 | 2,520.6 | 3,167.3 | 2,697.9 | 533.6 | 105.0 | 12.0 | 0.0 | 0.0 | 0.0 | 0.0 | 34.2 |
| Nonstocked | 179.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 179.0 |
| All groups | 23,126.6 | 8,980.2 | 5,814.2 | 4,130.9 | 3,234.2 | 625.8 | 109.6 | 12.0 | 0.0 | 0.0 | 0.0 | 0.0 | 219.8 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.6—Area of forest land by forest-type group and stand origin, Alabama, 2015**

| Forest-type group | Total | Stand origin | |
|---|---|---|---|
| | | Natural stands | Planted stands |
| | *thousand acres* | | |
| Softwood types | | | |
| White-red-jack pine | 10.0 | 10.0 | 0.0 |
| Longleaf-slash pine | 1,032.7 | 630.7 | 402.1 |
| Loblolly-shortleaf pine | 8,985.1 | 2,866.3 | 6,118.8 |
| Other eastern softwoods | 85.1 | 68.0 | 17.0 |
| Total softwoods | 10,113.0 | 3,575.0 | 6,537.9 |
| Hardwood types | | | |
| Oak-pine | 2,926.0 | 2,336.6 | 589.4 |
| Oak-hickory | 7,077.7 | 6,815.7 | 262.0 |
| Oak-gum-cypress | 2,178.3 | 2,122.8 | 55.5 |
| Elm-ash-cottonwood | 601.0 | 572.6 | 28.4 |
| Maple-beech-birch | 5.0 | 5.0 | 0.0 |
| Other hardwoods | 9.0 | 9.0 | 0.0 |
| Exotic hardwoods | 37.7 | 37.7 | 0.0 |
| Total hardwoods | 12,834.7 | 11,899.4 | 935.2 |
| Nonstocked | 179.0 | 152.9 | 26.0 |
| All groups | 23,126.6 | 15,627.4 | 7,499.2 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.7—Area of forest land disturbed annually by forest-type group and disturbance class, Alabama, 2015**

| Forest-type group[b] | Disturbance class[a] | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Insects | Disease | Weather | Fire | Domestic animals | Wild animals | Human | Other natural |
| | *thousand acres* | | | | | | | |
| Softwood types | | | | | | | | |
| White-red-jack pine | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1.0 | 3.4 | 2.7 | 66.7 | 0.5 | 0.0 | 0.0 | 1.5 |
| Loblolly-shortleaf pine | 13.6 | 16.2 | 18.7 | 184.6 | 0.0 | 2.9 | 1.0 | 2.1 |
| Other eastern softwoods | 0.0 | 0.0 | 0.3 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total softwoods | 14.6 | 19.7 | 21.8 | 251.6 | 0.5 | 2.9 | 1.0 | 3.6 |
| Hardwood types | | | | | | | | |
| Oak-pine | 1.8 | 3.3 | 8.3 | 48.9 | 2.4 | 4.2 | 3.0 | 0.4 |
| Oak-hickory | 0.8 | 2.0 | 25.4 | 47.9 | 7.2 | 1.1 | 2.8 | 0.6 |
| Oak-gum-cypress | 0.2 | 1.1 | 26.5 | 5.5 | 1.9 | 15.7 | 1.4 | 0.9 |
| Elm-ash-cottonwood | 0.0 | 0.0 | 3.1 | 1.5 | 3.3 | 6.9 | 0.5 | 0.9 |
| Maple-beech-birch | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Exotic hardwoods | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.9 |
| Total hardwoods | 2.7 | 6.4 | 63.4 | 103.8 | 14.7 | 28.0 | 8.1 | 3.7 |
| Nonstocked | 0.0 | 0.0 | 0.3 | 5.5 | 1.8 | 0.0 | 0.0 | 0.7 |
| All groups | 17.3 | 26.0 | 85.4 | 360.9 | 17.1 | 30.9 | 9.1 | 8.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Based on current conditions.
[b] Based on past conditions.

**Table C.8—Area of timberland by forest-type group and stand-size class, Alabama, 2015**

| Forest-type group | All classes | Stand-size class | | | |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | Nonstocked |
| | *thousand acres* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 10.0 | 10.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1,032.7 | 536.9 | 286.1 | 209.7 | 0.0 |
| Loblolly-shortleaf pine | 8,955.7 | 3,970.0 | 3,272.0 | 1,713.7 | 0.0 |
| Other eastern softwoods | 85.1 | 20.4 | 16.5 | 48.1 | 0.0 |
| Total softwoods | 10,083.6 | 4,537.4 | 3,574.7 | 1,971.5 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 2,921.6 | 1,394.0 | 658.7 | 868.9 | 0.0 |
| Oak-hickory | 7,047.0 | 3,563.0 | 1,566.5 | 1,917.5 | 0.0 |
| Oak-gum-cypress | 2,166.3 | 1,347.6 | 445.9 | 372.8 | 0.0 |
| Elm-ash-cottonwood | 584.6 | 303.4 | 129.0 | 152.2 | 0.0 |
| Other hardwoods | 9.0 | 0.0 | 0.0 | 9.0 | 0.0 |
| Exotic hardwoods | 37.7 | 0.0 | 15.8 | 21.9 | 0.0 |
| Total hardwoods | 12,766.2 | 6,608.0 | 2,816.0 | 3,342.2 | 0.0 |
| Nonstocked | 179.0 | 0.0 | 0.0 | 0.0 | 179.0 |
| All groups | 23,028.7 | 11,145.4 | 6,390.7 | 5,313.7 | 179.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.9—Number of live trees on forest land by species group and diameter class, Alabama, 2015**

| Species 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 | 25.0–28.9 | 29.0–32.9 | 33.0–36.9 | 37.0+ |
| | *million trees* | | | | | | | | | | | | | | | |
| Softwood | | | | | | | | | | | | | | | | |
| Longleaf and slash pines | 304.3 | 94.8 | 81.3 | 46.3 | 32.6 | 18.3 | 11.8 | 9.2 | 5.8 | 2.6 | 1.2 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Loblolly and shortleaf pines | 3,825.7 | 1,373.6 | 879.4 | 655.9 | 448.2 | 232.3 | 117.1 | 58.8 | 30.8 | 15.2 | 7.6 | 5.3 | 1.1 | 0.4 | 0.0 | 0.0 |
| Other yellow pines | 297.6 | 150.1 | 76.8 | 35.9 | 15.7 | 8.1 | 5.3 | 2.8 | 1.7 | 0.6 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 |
| Eastern hemlock | 5.8 | 2.1 | 1.2 | 0.9 | 0.4 | 0.4 | 0.5 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cypress | 21.2 | 5.4 | 2.7 | 2.9 | 2.0 | 2.3 | 1.5 | 1.2 | 0.7 | 0.8 | 0.5 | 0.6 | 0.3 | 0.1 | 0.0 | 0.0 |
| Other eastern softwoods | 200.3 | 128.8 | 36.9 | 15.5 | 10.0 | 4.2 | 2.5 | 1.3 | 0.6 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total softwoods | 4,654.8 | 1,754.8 | 1,078.3 | 757.5 | 508.9 | 265.5 | 138.7 | 73.4 | 39.7 | 19.6 | 9.6 | 6.7 | 1.5 | 0.5 | 0.0 | 0.0 |
| Hardwood | | | | | | | | | | | | | | | | |
| Select white oaks | 381.1 | 209.9 | 69.3 | 34.5 | 21.0 | 13.7 | 10.6 | 8.2 | 5.2 | 3.8 | 1.8 | 2.1 | 0.6 | 0.3 | 0.1 | 0.0 |
| Select red oaks | 89.6 | 48.9 | 14.9 | 7.1 | 4.3 | 3.6 | 2.8 | 2.4 | 1.6 | 1.0 | 0.7 | 1.4 | 0.6 | 0.2 | 0.0 | 0.1 |
| Other white oaks | 316.3 | 162.7 | 61.2 | 28.4 | 19.5 | 14.1 | 10.4 | 7.0 | 5.0 | 3.4 | 1.7 | 2.1 | 0.6 | 0.2 | 0.0 | 0.0 |
| Other red oaks | 2,134.1 | 1,544.3 | 294.3 | 110.8 | 62.7 | 40.5 | 26.6 | 18.8 | 12.8 | 8.2 | 5.6 | 5.7 | 2.5 | 0.7 | 0.3 | 0.3 |
| Hickory | 626.7 | 440.9 | 73.7 | 37.0 | 25.9 | 18.0 | 11.9 | 8.7 | 5.3 | 2.8 | 1.3 | 1.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Hard maple | 136.8 | 99.2 | 24.9 | 6.2 | 2.8 | 1.9 | 0.7 | 0.5 | 0.3 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Soft maple | 1,074.5 | 853.8 | 133.0 | 43.9 | 21.1 | 11.0 | 5.2 | 3.3 | 1.4 | 0.8 | 0.6 | 0.3 | 0.1 | 0.0 | 0.0 | 0.0 |
| Beech | 101.9 | 69.9 | 16.2 | 5.9 | 3.1 | 1.8 | 1.1 | 1.0 | 1.0 | 0.6 | 0.3 | 0.6 | 0.3 | 0.0 | 0.0 | 0.0 |
| Sweetgum | 2,304.4 | 1,574.6 | 436.5 | 143.4 | 67.6 | 34.7 | 21.2 | 11.1 | 7.0 | 3.8 | 2.1 | 1.9 | 0.5 | 0.1 | 0.0 | 0.0 |
| Tupelo and blackgum | 640.5 | 421.0 | 100.3 | 44.0 | 27.8 | 17.2 | 12.2 | 8.2 | 4.6 | 2.7 | 1.3 | 0.9 | 0.2 | 0.1 | 0.0 | 0.0 |
| Ash | 237.5 | 170.6 | 32.9 | 12.7 | 7.6 | 4.7 | 3.6 | 2.2 | 1.3 | 0.8 | 0.6 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cottonwood and aspen | 6.1 | 1.8 | 2.7 | 0.7 | 0.2 | 0.3 | 0.1 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Basswood | 14.4 | 6.3 | 3.6 | 1.8 | 0.7 | 0.8 | 0.4 | 0.3 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Yellow-poplar | 545.5 | 332.2 | 93.3 | 43.3 | 25.8 | 16.7 | 11.1 | 8.1 | 5.3 | 3.9 | 2.3 | 2.2 | 0.9 | 0.2 | 0.2 | 0.0 |
| Black walnut | 4.3 | 0.9 | 0.4 | 0.8 | 0.7 | 0.6 | 0.2 | 0.2 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other eastern soft hardwoods | 1,194.4 | 853.6 | 200.4 | 69.8 | 32.9 | 15.9 | 8.6 | 5.2 | 3.2 | 1.7 | 1.2 | 1.2 | 0.3 | 0.3 | 0.1 | 0.0 |
| Other eastern hardwoods | 871.6 | 724.5 | 106.0 | 28.2 | 8.3 | 2.7 | 1.2 | 0.4 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Eastern noncommercial hardwoods | 1,611.5 | 1,192.0 | 271.1 | 83.9 | 34.4 | 15.8 | 8.0 | 3.2 | 1.8 | 0.6 | 0.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 |
| Total hardwoods | 12,291.3 | 8,707.2 | 1,934.8 | 702.5 | 366.4 | 214.2 | 135.9 | 88.9 | 56.4 | 34.6 | 20.0 | 20.0 | 6.9 | 2.3 | 0.7 | 0.4 |
| All species | 16,946.1 | 10,462.0 | 3,013.1 | 1,460.0 | 875.3 | 479.7 | 274.7 | 162.2 | 96.1 | 54.3 | 29.6 | 26.7 | 8.5 | 2.8 | 0.7 | 0.4 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.10—Net[a] volume of live trees on forest land by ownership class and land status, Alabama, 2015**

| Ownership class | All forest land | Unreserved | | | Reserved | | |
|---|---|---|---|---|---|---|---|
| | | Total | Timberland | Unproductive | Total | Productive | Unproductive |
| | *million cubic feet* | | | | | | |
| U.S. Forest Service | | | | | | | |
| National forest | 1,601.9 | 1,500.0 | 1,500.0 | 0.0 | 101.9 | 101.9 | 0.0 |
| Total | 1,601.9 | 1,500.0 | 1,500.0 | 0.0 | 101.9 | 101.9 | 0.0 |
| Other Federal | | | | | | | |
| National Park Service | 51.0 | 0.0 | 0.0 | 0.0 | 51.0 | 51.0 | 0.0 |
| U.S. Fish and Wildlife Service | 91.1 | 0.0 | 0.0 | 0.0 | 91.1 | 91.1 | 0.0 |
| Dept. of Defense/Dept. of Energy | 286.4 | 286.4 | 286.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Federal | 212.1 | 204.3 | 204.3 | 0.0 | 7.8 | 7.8 | 0.0 |
| Total | 640.6 | 490.7 | 490.7 | 0.0 | 149.9 | 149.9 | 0.0 |
| State and local government | | | | | | | |
| State | 927.5 | 927.5 | 927.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Local | 327.5 | 327.5 | 327.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other non-Federal public | 41.4 | 41.4 | 41.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 1,296.4 | 1,296.4 | 1,296.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forest industry | | | | | | | |
| Corporate | 1,881.5 | 1,881.5 | 1,881.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 108.4 | 108.4 | 108.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 1,989.9 | 1,989.9 | 1,989.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nonindustrial private | | | | | | | |
| Corporate | 10,444.4 | 10,444.4 | 10,444.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Conservation/natural resources organization | 74.5 | 74.5 | 74.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Unincorporated local partnership/association/club | 252.3 | 252.3 | 252.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 22,198.5 | 22,198.5 | 22,198.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 32,969.7 | 32,969.7 | 32,969.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| All classes | 38,498.5 | 38,246.6 | 38,246.6 | 0.0 | 251.9 | 251.9 | 0.0 |

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

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

[a] Excludes rotten, missing, and form cull defects volume.

**Table C.11—Net[a] volume of live trees on forest land by forest-type group and stand-size class, Alabama, 2015**

| Forest-type group | All classes | Stand-size class | | | Nonstocked |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | |
| | *million cubic feet* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 25.4 | 25.4 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 1,610.3 | 1,257.7 | 324.1 | 28.5 | 0.0 |
| Loblolly-shortleaf pine | 14,826.5 | 10,132.1 | 4,388.0 | 306.5 | 0.0 |
| Other eastern softwoods | 53.4 | 30.9 | 10.4 | 12.1 | 0.0 |
| Total softwoods | 16,515.6 | 11,446.1 | 4,722.4 | 347.1 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 4,457.3 | 3,410.9 | 832.2 | 214.2 | 0.0 |
| Oak-hickory | 11,361.7 | 8,893.5 | 2,026.7 | 441.6 | 0.0 |
| Oak-gum-cypress | 5,108.5 | 4,333.9 | 683.9 | 90.7 | 0.0 |
| Elm-ash-cottonwood | 1,010.8 | 846.0 | 132.8 | 32.0 | 0.0 |
| Maple-beech-birch | 23.5 | 23.5 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 2.7 | 0.0 | 0.0 | 2.7 | 0.0 |
| Exotic hardwoods | 9.3 | 0.0 | 8.3 | 1.1 | 0.0 |
| Total hardwoods | 21,973.9 | 17,507.8 | 3,683.9 | 782.2 | 0.0 |
| Nonstocked | 9.0 | 0.0 | 0.0 | 0.0 | 9.0 |
| All groups | 38,498.5 | 28,953.9 | 8,406.3 | 1,129.3 | 9.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Excludes rotten, missing, and form cull defects volume.

**Table C.12—Net[a] volume of live trees on forest land by species group and ownership group, Alabama, 2015**

| Species group | All ownerships | Ownership group | | | | |
|---|---|---|---|---|---|---|
| | | U.S. Forest Service | Other Federal | State and local government | Forest industry | Nonindustrial private |
| | *million cubic feet* | | | | | |
| Softwood | | | | | | |
| Longleaf and slash pines | 1,701.1 | 288.4 | 7.9 | 89.2 | 74.3 | 1,241.5 |
| Loblolly and shortleaf pines | 15,186.1 | 432.9 | 157.4 | 258.7 | 1,257.4 | 13,079.7 |
| Other yellow pines | 697.0 | 67.0 | 8.8 | 47.9 | 8.7 | 564.7 |
| Eastern hemlock | 35.2 | 19.3 | 0.3 | 0.0 | 0.0 | 15.7 |
| Cypress | 342.6 | 0.0 | 8.2 | 71.7 | 3.0 | 259.7 |
| Other eastern softwoods | 231.7 | 9.6 | 7.2 | 3.7 | 0.8 | 210.4 |
| Total softwoods | 18,193.7 | 817.2 | 189.7 | 471.2 | 1,344.1 | 15,371.6 |
| Hardwood | | | | | | |
| Select white oaks | 1,694.9 | 152.9 | 25.2 | 66.3 | 47.4 | 1,403.1 |
| Select red oaks | 697.0 | 18.3 | 45.4 | 10.5 | 17.0 | 605.7 |
| Other white oaks | 1,442.6 | 137.0 | 9.8 | 95.6 | 22.1 | 1,178.1 |
| Other red oaks | 4,487.9 | 123.7 | 127.8 | 144.9 | 125.5 | 3,966.2 |
| Hickory | 1,526.1 | 61.3 | 30.5 | 46.7 | 32.8 | 1,354.9 |
| Hard maple | 116.4 | 3.0 | 2.0 | 3.2 | 4.9 | 103.3 |
| Soft maple | 672.8 | 32.1 | 7.9 | 33.6 | 24.7 | 574.6 |
| Beech | 264.7 | 7.5 | 1.6 | 5.6 | 8.3 | 241.7 |
| Sweetgum | 2,984.1 | 73.3 | 99.8 | 92.4 | 140.9 | 2,577.7 |
| Tupelo and blackgum | 1,457.7 | 30.3 | 2.9 | 184.3 | 71.8 | 1,168.3 |
| Ash | 443.5 | 3.1 | 12.9 | 31.6 | 6.9 | 388.9 |
| Cottonwood and aspen | 23.7 | 0.0 | 0.0 | 0.3 | 0.6 | 22.7 |
| Basswood | 71.4 | 2.3 | 0.5 | 7.0 | 2.2 | 59.3 |
| Yellow-poplar | 2,064.0 | 78.1 | 11.5 | 43.2 | 68.4 | 1,862.9 |
| Black walnut | 38.3 | 0.0 | 1.2 | 0.1 | 1.2 | 35.7 |
| Other eastern soft hardwoods | 1,252.4 | 8.9 | 54.5 | 39.3 | 42.8 | 1,106.9 |
| Other eastern hardwoods | 172.0 | 3.8 | 7.9 | 4.8 | 4.7 | 150.7 |
| Eastern noncommercial hardwoods | 895.2 | 49.0 | 9.3 | 16.1 | 23.5 | 797.3 |
| Total hardwoods | 20,304.8 | 784.7 | 450.9 | 825.3 | 645.8 | 17,598.1 |
| All species | 38,498.5 | 1,601.9 | 640.6 | 1,296.4 | 1,989.9 | 32,969.7 |

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

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

[a] Excludes rotten, missing, and form cull defects volume.

**Table C.13—Net[a] volume of live trees on forest land by species group and diameter class, Alabama, 2015**

| Species 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* | | | | | | | | | | | | |
| Softwood | | | | | | | | | | | | | | |
| Longleaf and slash pines | 1,701.1 | 125.7 | 224.1 | 243.9 | 254.9 | 303.0 | 258.0 | 150.5 | 91.0 | 45.8 | 4.2 | 0.0 | 0.0 | 0.0 |
| Loblolly and shortleaf pines | 15,186.1 | 1,640.9 | 2,824.4 | 2,860.8 | 2,399.9 | 1,808.5 | 1,350.1 | 896.4 | 590.7 | 564.1 | 164.6 | 85.8 | 0.0 | 0.0 |
| Other yellow pines | 697.0 | 113.8 | 112.0 | 107.5 | 106.7 | 83.7 | 73.1 | 35.5 | 22.5 | 26.2 | 16.0 | 0.0 | 0.0 | 0.0 |
| Eastern hemlock | 35.2 | 2.5 | 2.1 | 3.8 | 7.9 | 2.6 | 3.2 | 4.0 | 2.4 | 0.0 | 0.0 | 6.6 | 0.0 | 0.0 |
| Cypress | 342.6 | 10.4 | 15.8 | 32.0 | 29.2 | 32.3 | 28.5 | 41.4 | 32.1 | 57.1 | 44.6 | 8.5 | 0.0 | 10.6 |
| Other eastern softwoods | 231.7 | 36.6 | 52.6 | 39.8 | 38.6 | 26.6 | 18.3 | 17.0 | 0.0 | 2.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total softwoods | 18,193.7 | 1,929.9 | 3,231.0 | 3,287.8 | 2,837.3 | 2,256.7 | 1,731.2 | 1,144.9 | 738.8 | 695.3 | 229.3 | 100.9 | 0.0 | 10.6 |
| Hardwood | | | | | | | | | | | | | | |
| Select white oaks | 1,694.9 | 95.5 | 136.3 | 163.5 | 208.1 | 233.7 | 207.4 | 203.9 | 122.9 | 189.2 | 84.9 | 39.6 | 9.8 | 0.0 |
| Select red oaks | 697.0 | 23.4 | 30.0 | 45.6 | 55.9 | 70.5 | 64.3 | 54.2 | 50.4 | 128.0 | 81.0 | 40.3 | 0.0 | 53.3 |
| Other white oaks | 1,442.6 | 76.7 | 119.6 | 161.5 | 185.0 | 185.4 | 174.2 | 159.3 | 101.2 | 167.6 | 67.7 | 35.7 | 8.7 | 0.0 |
| Other red oaks | 4,487.9 | 315.7 | 400.1 | 472.6 | 495.9 | 512.4 | 480.3 | 399.5 | 350.9 | 473.4 | 313.1 | 126.3 | 71.5 | 76.4 |
| Hickory | 1,526.1 | 88.2 | 159.7 | 210.8 | 231.5 | 246.8 | 214.7 | 151.2 | 89.6 | 97.0 | 17.9 | 6.0 | 6.9 | 5.8 |
| Hard maple | 116.4 | 17.4 | 17.4 | 20.8 | 13.3 | 15.2 | 11.1 | 4.3 | 2.6 | 8.5 | 0.0 | 5.8 | 0.0 | 0.0 |
| Soft maple | 672.8 | 125.3 | 124.3 | 117.1 | 82.9 | 74.7 | 45.2 | 33.5 | 33.8 | 22.1 | 11.6 | 2.2 | 0.0 | 0.0 |
| Beech | 264.7 | 16.4 | 18.8 | 21.7 | 19.7 | 29.0 | 36.3 | 27.5 | 17.3 | 46.1 | 32.1 | 0.0 | 0.0 | 0.0 |
| Sweetgum | 2,984.1 | 350.0 | 439.1 | 434.2 | 443.5 | 353.9 | 307.8 | 217.3 | 145.4 | 204.7 | 66.0 | 22.3 | 0.0 | 0.0 |
| Tupelo and blackgum | 1,457.7 | 123.5 | 180.7 | 206.4 | 235.7 | 225.2 | 169.4 | 136.8 | 79.8 | 70.9 | 18.3 | 10.9 | 0.0 | 0.0 |
| Ash | 443.5 | 37.6 | 51.1 | 56.1 | 72.3 | 62.2 | 49.3 | 40.3 | 39.5 | 25.5 | 4.0 | 5.5 | 0.0 | 0.0 |
| Cottonwood and aspen | 23.7 | 2.1 | 1.3 | 4.6 | 1.8 | 2.6 | 1.5 | 6.2 | 0.0 | 3.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Basswood | 71.4 | 6.1 | 5.0 | 10.4 | 7.7 | 8.9 | 8.5 | 11.6 | 7.7 | 0.0 | 5.5 | 0.0 | 0.0 | 0.0 |
| Yellow-poplar | 2,064.0 | 132.4 | 179.3 | 220.7 | 235.4 | 251.3 | 229.0 | 222.0 | 166.9 | 224.1 | 125.8 | 32.5 | 44.6 | 0.0 |
| Black walnut | 38.3 | 2.2 | 3.7 | 6.5 | 3.6 | 4.4 | 7.0 | 1.7 | 4.2 | 0.0 | 4.9 | 0.0 | 0.0 | 0.0 |
| Other eastern soft hardwoods | 1,252.4 | 181.8 | 193.0 | 165.9 | 142.8 | 130.3 | 105.7 | 79.6 | 65.8 | 96.2 | 31.2 | 48.5 | 11.5 | 0.0 |
| Other eastern hardwoods | 172.0 | 60.4 | 41.9 | 25.7 | 20.2 | 9.9 | 5.1 | 5.7 | 1.8 | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Eastern noncommercial hardwoods | 895.2 | 208.5 | 191.9 | 161.3 | 130.4 | 73.5 | 55.1 | 27.3 | 13.7 | 15.2 | 18.2 | 0.0 | 0.0 | 0.0 |
| Total hardwoods | 20,304.8 | 1,863.2 | 2,293.4 | 2,505.5 | 2,585.8 | 2,490.0 | 2,171.9 | 1,781.7 | 1,293.4 | 1,773.5 | 882.1 | 375.7 | 153.2 | 135.4 |
| All species | 38,498.5 | 3,793.1 | 5,524.4 | 5,793.3 | 5,423.1 | 4,746.6 | 3,903.1 | 2,926.6 | 2,032.1 | 2,468.8 | 1,111.5 | 476.6 | 153.2 | 146.0 |

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

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

[a] Excludes rotten, missing, and form cull defects volume.

**Table C.14—Net[a] volume of live trees on forest land by forest-type group and stand origin, Alabama, 2015**

| Forest-type group | Total | Stand origin | |
|---|---|---|---|
| | | Natural stands | Planted stands |
| | *million cubic feet* | | |
| Softwood types | | | |
| White-red-jack pine | 25.4 | 25.4 | 0.0 |
| Longleaf-slash pine | 1,610.3 | 1,219.2 | 391.1 |
| Loblolly-shortleaf pine | 14,826.5 | 5,844.1 | 8,982.4 |
| Other eastern softwoods | 53.4 | 48.0 | 5.4 |
| Total softwoods | 16,515.6 | 7,136.7 | 9,379.0 |
| Hardwood types | | | |
| Oak-pine | 4,457.3 | 4,142.5 | 314.8 |
| Oak-hickory | 11,361.7 | 11,300.6 | 61.1 |
| Oak-gum-cypress | 5,108.5 | 5,060.7 | 47.9 |
| Elm-ash-cottonwood | 1,010.8 | 994.0 | 16.8 |
| Maple-beech-birch | 23.5 | 23.5 | 0.0 |
| Other hardwoods | 2.7 | 2.7 | 0.0 |
| Exotic hardwoods | 9.3 | 9.3 | 0.0 |
| Total hardwoods | 21,973.9 | 21,533.3 | 440.6 |
| Nonstocked | 9.0 | 8.7 | 0.3 |
| All groups | 38,498.5 | 28,678.7 | 9,819.8 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Excludes rotten, missing, and form cull defects volume.

**Table C.15—Aboveground dry weight of live trees on forest land by ownership class and land status, Alabama, 2015**

| Ownership class | All forest land | Unreserved | | | Reserved | | |
|---|---|---|---|---|---|---|---|
| | | Total | Timberland | Unproductive | Total | Productive | Unproductive |
| | *thousand tons* | | | | | | |
| U.S. Forest Service | | | | | | | |
| National forest | 41,399.6 | 38,818.4 | 38,818.4 | 0.0 | 2,581.1 | 2,581.1 | 0.0 |
| Total | 41,399.6 | 38,818.4 | 38,818.4 | 0.0 | 2,581.1 | 2,581.1 | 0.0 |
| Other Federal | | | | | | | |
| National Park Service | 1,269.2 | 0.0 | 0.0 | 0.0 | 1,269.2 | 1,269.2 | 0.0 |
| U.S. Fish and Wildlife Service | 2,346.3 | 0.0 | 0.0 | 0.0 | 2,346.3 | 2,346.3 | 0.0 |
| Dept. of Defense/Dept. of Energy | 7,699.2 | 7,699.2 | 7,699.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Federal | 5,541.6 | 5,370.0 | 5,370.0 | 0.0 | 171.6 | 171.6 | 0.0 |
| Total | 16,856.4 | 13,069.3 | 13,069.3 | 0.0 | 3,787.1 | 3,787.1 | 0.0 |
| State and local government | | | | | | | |
| State | 24,354.5 | 24,354.5 | 24,354.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Local | 8,507.4 | 8,507.4 | 8,507.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other non-Federal public | 1,035.1 | 1,035.1 | 1,035.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 33,897.0 | 33,897.0 | 33,897.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forest industry | | | | | | | |
| Corporate | 50,073.3 | 50,073.3 | 50,073.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 2,764.9 | 2,764.9 | 2,764.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 52,838.2 | 52,838.2 | 52,838.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nonindustrial private | | | | | | | |
| Corporate | 280,976.6 | 280,976.6 | 280,976.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Conservation/natural resources organization | 1,852.1 | 1,852.1 | 1,852.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Unincorporated local partnership/association/club | 6,665.0 | 6,665.0 | 6,665.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 601,773.7 | 601,773.7 | 601,773.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 891,267.4 | 891,267.4 | 891,267.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| All classes | 1,036,258.5 | 1,029,890.3 | 1,029,890.3 | 0.0 | 6,368.3 | 6,368.3 | 0.0 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.

**Table C.16—Total carbon[a] of live trees on forest land by ownership class and land status, Alabama, 2015**

| Ownership class | All forest land | Unreserved | | | Reserved | | |
|---|---|---|---|---|---|---|---|
| | | Total | Timberland | Unproductive | Total | Productive | Unproductive |
| | *thousand tons* | | | | | | |
| U.S. Forest Service | | | | | | | |
| National forest | 20,699.8 | 19,409.2 | 19,409.2 | 0.0 | 1,290.6 | 1,290.6 | 0.0 |
| Total | 20,699.8 | 19,409.2 | 19,409.2 | 0.0 | 1,290.6 | 1,290.6 | 0.0 |
| Other Federal | | | | | | | |
| National Park Service | 634.6 | 0.0 | 0.0 | 0.0 | 634.6 | 634.6 | 0.0 |
| U.S. Fish and Wildlife Service | 1,173.2 | 0.0 | 0.0 | 0.0 | 1,173.2 | 1,173.2 | 0.0 |
| Dept. of Defense/Dept. of Energy | 3,849.6 | 3,849.6 | 3,849.6 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other Federal | 2,770.8 | 2,685.0 | 2,685.0 | 0.0 | 85.8 | 85.8 | 0.0 |
| Total | 8,428.2 | 6,534.6 | 6,534.6 | 0.0 | 1,893.6 | 1,893.6 | 0.0 |
| State and local government | | | | | | | |
| State | 12,177.3 | 12,177.3 | 12,177.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Local | 4,253.7 | 4,253.7 | 4,253.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other non-Federal public | 517.5 | 517.5 | 517.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 16,948.5 | 16,948.5 | 16,948.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Forest industry | | | | | | | |
| Corporate | 25,036.7 | 25,036.7 | 25,036.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 1,382.4 | 1,382.4 | 1,382.4 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 26,419.1 | 26,419.1 | 26,419.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Nonindustrial private | | | | | | | |
| Corporate | 140,488.3 | 140,488.3 | 140,488.3 | 0.0 | 0.0 | 0.0 | 0.0 |
| Conservation/natural resources organization | 926.0 | 926.0 | 926.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Unincorporated local partnership/association/club | 3,332.5 | 3,332.5 | 3,332.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| Individual | 300,886.9 | 300,886.9 | 300,886.9 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total | 445,633.7 | 445,633.7 | 445,633.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| All classes | 518,129.3 | 514,945.1 | 514,945.1 | 0.0 | 3,184.1 | 3,184.1 | 0.0 |

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

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

[a] Estimates of carbon calculated by multiplying aboveground dry tree biomass by 0.5.

**Table C.17—Average annual net growth of live trees on forest land by forest-type group and stand-size class, Alabama, 2015 (2001–11 to 2006–15)**

| Forest-type group[a] | All classes | Stand-size class[a] | | | |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | Nonstocked |
| | *million cubic feet per year* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 0.2 | 0.2 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 71.5 | 31.7 | 23.8 | 15.9 | 0.0 |
| Loblolly-shortleaf pine | 1,169.7 | 340.8 | 560.7 | 268.2 | 0.0 |
| Other eastern softwoods | 3.5 | 0.1 | 0.8 | 2.6 | 0.0 |
| Total softwoods | 1,244.9 | 372.9 | 585.3 | 286.7 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 226.7 | 78.9 | 59.8 | 87.9 | 0.0 |
| Oak-hickory | 392.6 | 187.9 | 106.2 | 98.4 | 0.0 |
| Oak-gum-cypress | 118.6 | 79.5 | 27.4 | 11.7 | 0.0 |
| Elm-ash-cottonwood | 40.4 | 25.1 | 10.3 | 5.0 | 0.0 |
| Maple-beech-birch | 0.8 | 0.8 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 1.3 | 0.0 | 0.2 | 1.2 | 0.0 |
| Exotic hardwoods | 1.7 | 0.0 | 0.1 | 1.7 | 0.0 |
| Total hardwoods | 782.2 | 372.2 | 203.9 | 206.0 | 0.0 |
| Nonstocked | 5.4 | 0.0 | 0.0 | 0.0 | 5.4 |
| All groups | 2,032.5 | 745.1 | 789.2 | 492.7 | 5.4 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Based on past conditions.

**Table C.18—Average annual removals of live trees on forest land by forest-type group and stand-size class, Alabama, 2015 (2001–11 to 2006–15)**

| Forest-type group[a] | All classes | Stand-size class[a] | | | |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | Nonstocked |
| | *million cubic feet per year* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 74.2 | 57.4 | 15.7 | 1.0 | 0.0 |
| Loblolly-shortleaf pine | 800.3 | 441.9 | 343.2 | 15.2 | 0.0 |
| Other eastern softwoods | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 |
| Total softwoods | 874.7 | 499.4 | 358.9 | 16.3 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 114.0 | 84.2 | 23.3 | 6.5 | 0.0 |
| Oak-hickory | 176.2 | 121.0 | 45.5 | 9.7 | 0.0 |
| Oak-gum-cypress | 87.2 | 77.2 | 7.9 | 2.1 | 0.0 |
| Elm-ash-cottonwood | 18.0 | 14.7 | 3.3 | 0.0 | 0.0 |
| Maple-beech-birch | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| Exotic hardwoods | 1.1 | 0.0 | 1.1 | 0.0 | 0.0 |
| Total hardwoods | 396.6 | 297.1 | 81.2 | 18.4 | 0.0 |
| Nonstocked | 0.5 | 0.0 | 0.0 | 0.0 | 0.5 |
| All groups | 1,271.8 | 796.5 | 440.1 | 34.7 | 0.5 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Based on past conditions.

**Table C.19—Average annual mortality of live trees on forest land by forest-type group and stand-size class, Alabama, 2015 (2001–11 to 2006–15)**

| Forest-type group[a] | All classes | Stand-size class[a] | | | |
|---|---|---|---|---|---|
| | | Large diameter | Medium diameter | Small diameter | Nonstocked |
| | *million cubic feet per year* | | | | |
| Softwood types | | | | | |
| White-red-jack pine | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Longleaf-slash pine | 16.3 | 12.1 | 3.8 | 0.4 | 0.0 |
| Loblolly-shortleaf pine | 116.6 | 77.3 | 33.9 | 5.4 | 0.0 |
| Other eastern softwoods | 0.7 | 0.2 | 0.2 | 0.4 | 0.0 |
| Total softwoods | 133.7 | 89.6 | 37.9 | 6.2 | 0.0 |
| Hardwood types | | | | | |
| Oak-pine | 59.0 | 45.2 | 10.0 | 3.7 | 0.0 |
| Oak-hickory | 122.9 | 97.0 | 20.2 | 5.7 | 0.0 |
| Oak-gum-cypress | 70.7 | 61.5 | 7.8 | 1.3 | 0.0 |
| Elm-ash-cottonwood | 16.6 | 13.1 | 3.0 | 0.6 | 0.0 |
| Maple-beech-birch | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other hardwoods | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Exotic hardwoods | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Total hardwoods | 269.4 | 216.9 | 41.0 | 11.4 | 0.0 |
| Nonstocked | 0.3 | 0.0 | 0.0 | 0.0 | 0.3 |
| All groups | 403.4 | 306.6 | 78.9 | 17.6 | 0.3 |

Numbers in rows and columns may not sum to totals due to rounding.
0.0 = no sample for the cell or a value of > 0.0 but < 0.05.
[a] Based on past conditions.

**Table C.20—Average annual net growth of live trees on forest land by species group and ownership group, Alabama, 2015 (2001–11 to 2006–15)**

| Species group | All ownerships | Ownership group[a] | | | | |
|---|---|---|---|---|---|---|
| | | U.S. Forest Service | Other Federal | State and local government | Forest industry | Nonindustrial private |
| | *million cubic feet per year* | | | | | |
| Softwood | | | | | | |
| Longleaf and slash pines | 74.5 | 4.4 | 0.4 | 4.1 | 5.2 | 60.4 |
| Loblolly and shortleaf pines | 1,281.2 | 10.4 | 5.4 | 12.9 | 132.6 | 1,119.9 |
| Other yellow pines | 27.2 | 0.6 | -0.1 | 1.8 | 0.8 | 24.1 |
| Eastern hemlock | 1.4 | 0.7 | 0.0 | 0.0 | 0.0 | 0.7 |
| Cypress | 7.3 | 0.0 | 0.3 | 1.5 | 0.0 | 5.4 |
| Other eastern softwoods | 7.7 | 0.2 | 0.3 | 0.1 | 0.1 | 7.0 |
| Total softwoods | 1,399.2 | 16.3 | 6.3 | 20.5 | 138.6 | 1,217.5 |
| Hardwood | | | | | | |
| Select white oaks | 51.8 | 1.9 | 0.5 | 1.6 | 1.6 | 46.2 |
| Select red oaks | 16.5 | 0.3 | 0.1 | 0.4 | 0.8 | 14.9 |
| Other white oaks | 37.2 | 2.7 | 0.5 | 1.8 | 0.6 | 31.6 |
| Other red oaks | 158.1 | 0.5 | 4.2 | 5.7 | 4.0 | 143.6 |
| Hickory | 26.3 | -0.6 | 0.3 | 0.6 | -0.1 | 26.1 |
| Hard maple | 3.9 | 0.1 | 0.0 | -0.2 | 0.1 | 3.9 |
| Soft maple | 19.9 | 0.9 | 0.4 | -0.1 | 0.0 | 18.7 |
| Beech | 7.7 | 0.1 | 0.1 | 0.2 | 0.3 | 7.1 |
| Sweetgum | 115.9 | 1.6 | 2.0 | 3.2 | 6.8 | 102.2 |
| Tupelo and blackgum | 33.2 | 0.7 | -0.1 | 1.8 | 1.2 | 29.6 |
| Ash | 10.2 | 0.1 | 0.6 | -0.6 | 0.1 | 10.1 |
| Cottonwood and aspen | 0.6 | 0.0 | 0.0 | 0.1 | 0.1 | 0.5 |
| Basswood | 0.8 | 0.0 | 0.0 | 0.3 | 0.1 | 0.4 |
| Yellow-poplar | 76.8 | 2.1 | 0.6 | 0.9 | 3.3 | 69.9 |
| Black walnut | 1.4 | 0.0 | 0.0 | 0.0 | 0.0 | 1.4 |
| Other eastern soft hardwoods | 43.7 | 0.2 | 1.1 | 1.8 | 1.8 | 38.9 |
| Other eastern hardwoods | 2.2 | 0.0 | 0.4 | -0.1 | 0.2 | 1.7 |
| Eastern noncommercial hardwoods | 26.9 | 1.2 | 0.4 | 0.4 | 0.5 | 24.4 |
| Total hardwoods | 633.2 | 11.9 | 11.0 | 17.6 | 21.4 | 571.3 |
| All species | 2,032.5 | 28.2 | 17.4 | 38.1 | 160.0 | 1,788.7 |

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

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

[a] Based on current conditions.

**Table C.21—Average annual removals of live trees on forest land by species group and ownership group, Alabama, 2015 (2001–11 to 2006–15)**

| Species group | All ownerships | Ownership group[a] | | | | |
|---|---|---|---|---|---|---|
| | | U.S. Forest Service | Other Federal | State and local government | Forest industry | Nonindustrial private |
| | *million cubic feet per year* | | | | | |
| Softwood | | | | | | |
| Longleaf and slash pines | 79.3 | 0.0 | 0.0 | 5.6 | 5.6 | 68.1 |
| Loblolly and shortleaf pines | 809.9 | 3.5 | 5.2 | 8.3 | 92.2 | 700.8 |
| Other yellow pines | 24.5 | 0.0 | 0.0 | 0.6 | 0.6 | 23.3 |
| Eastern hemlock | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cypress | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.0 |
| Other eastern softwoods | 2.8 | 0.0 | 0.0 | 0.0 | 0.2 | 2.6 |
| Total softwoods | 920.6 | 3.6 | 5.2 | 14.5 | 98.5 | 798.8 |
| Hardwood | | | | | | |
| Select white oaks | 22.9 | 0.0 | 0.0 | 0.5 | 1.0 | 21.4 |
| Select red oaks | 12.3 | 0.0 | 0.0 | 0.3 | 1.4 | 10.6 |
| Other white oaks | 17.7 | 0.4 | 0.0 | 0.4 | 1.5 | 15.5 |
| Other red oaks | 98.0 | 0.2 | 0.5 | 4.2 | 7.6 | 85.4 |
| Hickory | 16.7 | 0.0 | 0.0 | 0.7 | 0.7 | 15.3 |
| Hard maple | 2.2 | 0.0 | 0.0 | 0.0 | 0.3 | 1.9 |
| Soft maple | 11.0 | 0.2 | 0.0 | 0.0 | 1.3 | 9.4 |
| Beech | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 1.1 |
| Sweetgum | 72.6 | 0.0 | 0.2 | 0.9 | 4.6 | 67.0 |
| Tupelo and blackgum | 16.8 | 0.0 | 0.0 | 0.2 | 1.1 | 15.6 |
| Ash | 8.1 | 0.0 | 0.0 | 0.1 | 0.6 | 7.4 |
| Cottonwood and aspen | 3.1 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 |
| Basswood | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| Yellow-poplar | 34.6 | 0.0 | 0.0 | 1.6 | 3.0 | 29.9 |
| Black walnut | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other eastern soft hardwoods | 17.6 | 0.0 | 0.3 | 0.1 | 0.7 | 16.4 |
| Other eastern hardwoods | 3.1 | 0.1 | 0.0 | 0.3 | 0.3 | 2.3 |
| Eastern noncommercial hardwoods | 13.1 | 0.0 | 0.0 | 0.1 | 1.7 | 11.3 |
| Total hardwoods | 351.2 | 1.0 | 1.0 | 9.4 | 25.8 | 314.0 |
| All species | 1,271.8 | 4.6 | 6.2 | 23.9 | 124.4 | 1,112.8 |

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

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

[a] Based on current conditions.

**Table C.22—Average annual mortality of live trees on forest land by species group and ownership group, Alabama, 2015 (2001–11 to 2006–15)**

| Species group | All ownerships | Ownership group[a] | | | | |
|---|---|---|---|---|---|---|
| | | U.S. Forest Service | Other Federal | State and local government | Forest industry | Nonindustrial private |
| | *million cubic feet per year* | | | | | |
| Softwood | | | | | | |
| Longleaf and slash pines | 16.3 | 2.2 | 0.0 | 1.2 | 0.1 | 12.8 |
| Loblolly and shortleaf pines | 128.5 | 8.7 | 2.3 | 2.3 | 8.8 | 106.4 |
| Other yellow pines | 15.5 | 1.6 | 0.3 | 0.5 | 0.0 | 13.2 |
| Eastern hemlock | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Cypress | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.5 |
| Other eastern softwoods | 3.8 | 0.0 | 0.0 | 0.0 | 0.0 | 3.8 |
| Total softwoods | 164.6 | 12.5 | 2.5 | 3.9 | 8.9 | 136.6 |
| Hardwood | | | | | | |
| Select white oaks | 9.9 | 2.2 | 0.0 | 0.1 | 0.5 | 7.1 |
| Select red oaks | 10.4 | 0.1 | 1.8 | 0.2 | 0.1 | 8.1 |
| Other white oaks | 10.2 | 0.7 | 0.0 | 0.5 | 0.5 | 8.5 |
| Other red oaks | 63.8 | 3.4 | 0.2 | 1.3 | 3.4 | 55.6 |
| Hickory | 17.8 | 1.6 | 0.7 | 0.6 | 1.3 | 13.7 |
| Hard maple | 0.6 | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 |
| Soft maple | 14.5 | 0.5 | 0.1 | 1.6 | 1.5 | 10.7 |
| Beech | 1.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 |
| Sweetgum | 27.7 | 0.4 | 0.7 | 1.4 | 1.1 | 24.1 |
| Tupelo and blackgum | 9.1 | 0.2 | 0.2 | 1.0 | 0.2 | 7.4 |
| Ash | 8.4 | 0.0 | 0.0 | 1.3 | 0.3 | 6.8 |
| Cottonwood and aspen | 1.7 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 |
| Basswood | 1.3 | 0.1 | 0.0 | 0.0 | 0.0 | 1.2 |
| Yellow-poplar | 20.1 | 0.2 | 0.0 | 0.3 | 0.9 | 18.7 |
| Black walnut | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| Other eastern soft hardwoods | 22.3 | 0.2 | 2.5 | 0.8 | 0.6 | 18.2 |
| Other eastern hardwoods | 6.1 | 0.2 | 0.1 | 0.5 | 0.1 | 5.2 |
| Eastern noncommercial hardwoods | 13.6 | 0.3 | 0.3 | 0.3 | 0.5 | 12.2 |
| Total hardwoods | 238.8 | 10.2 | 6.6 | 10.2 | 10.9 | 200.9 |
| All species | 403.4 | 22.8 | 9.1 | 14.1 | 19.9 | 337.6 |

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

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

[a] Based on current conditions.

**Table C.23—Area of sampled forest land by county name and major ownership group, Alabama, 2015**

| County | Total | Major ownership group | |
|---|---|---|---|
| | | Public | Private |
| | *acres* | | |
| Autauga | 308,577 | 10,866 | 297,711 |
| Baldwin | 730,558 | 79,257 | 651,301 |
| Barbour | 432,585 | 29,048 | 403,536 |
| Bibb | 329,161 | 68,915 | 260,246 |
| Blount | 235,702 | — | 235,702 |
| Bullock | 323,744 | — | 323,744 |
| Butler | 412,222 | 4,337 | 407,885 |
| Calhoun | 194,730 | 32,962 | 161,768 |
| Chambers | 309,036 | 1,463 | 307,573 |
| Cherokee | 257,457 | 17,112 | 240,345 |
| Chilton | 318,088 | 26,199 | 291,889 |
| Choctaw | 535,276 | 5,919 | 529,356 |
| Clarke | 745,649 | 11,838 | 733,811 |
| Clay | 301,927 | 67,767 | 234,161 |
| Cleburne | 259,061 | 79,099 | 179,962 |
| Coffee | 239,373 | — | 239,373 |
| Colbert | 225,914 | 48,050 | 177,864 |
| Conecuh | 450,895 | — | 450,895 |
| Coosa | 380,082 | — | 380,082 |
| Covington | 496,027 | 58,036 | 437,991 |
| Crenshaw | 315,208 | 5,850 | 309,358 |
| Cullman | 240,811 | 6,058 | 234,753 |
| Dale | 260,066 | 43,359 | 216,707 |
| Dallas | 434,294 | 5,293 | 429,002 |
| DeKalb | 184,324 | 6,006 | 178,318 |
| Elmore | 251,102 | 6,050 | 245,053 |
| Escambia | 474,759 | 39,539 | 435,220 |
| Etowah | 185,903 | 4,535 | 181,368 |
| Fayette | 341,842 | 14,334 | 327,508 |
| Franklin | 300,974 | 22,659 | 278,315 |
| Geneva | 217,414 | 5,850 | 211,564 |
| Greene | 331,088 | 15,334 | 315,754 |
| Hale | 284,278 | 31,228 | 253,050 |
| Henry | 266,260 | — | 266,260 |
| Houston | 185,259 | 4,537 | 180,722 |
| Jackson | 437,413 | 54,056 | 383,357 |
| Jefferson | 398,161 | 30,319 | 367,842 |
| Lamar | 335,672 | 5,410 | 330,262 |
| Lauderdale | 178,446 | 20,161 | 158,285 |
| Lawrence | 229,877 | 82,353 | 147,524 |
| Lee | 252,998 | 10,999 | 241,999 |
| Limestone | 113,092 | 18,019 | 95,074 |
| Lowndes | 313,421 | 16,487 | 296,934 |
| Macon | 330,506 | 31,004 | 299,502 |
| Madison | 206,756 | 59,188 | 147,569 |
| Marengo | 469,110 | — | 469,110 |
| Marion | 367,370 | 6,195 | 361,175 |
| Marshall | 146,434 | 9,553 | 136,881 |
| Mobile | 502,531 | 72,651 | 429,880 |
| Monroe | 571,857 | 5,988 | 565,869 |
| Montgomery | 254,978 | 12,100 | 242,879 |
| Morgan | 189,339 | 10,683 | 178,656 |
| Perry | 349,859 | 44,320 | 305,539 |
| Pickens | 479,211 | 6,195 | 473,016 |
| Pike | 313,046 | — | 313,046 |
| Randolph | 282,019 | 6,058 | 275,962 |
| Russell | 305,245 | 17,990 | 287,255 |
| St. Clair | 305,946 | 6,058 | 299,888 |
| Shelby | 348,741 | 17,637 | 331,104 |
| Sumter | 448,220 | 11,838 | 436,381 |
| Talladega | 304,112 | 45,855 | 258,257 |
| Tallapoosa | 393,198 | 12,100 | 381,098 |
| Tuscaloosa | 692,929 | 23,878 | 669,051 |
| Walker | 391,689 | 15,144 | 376,544 |
| Washington | 627,484 | — | 627,484 |
| Wilcox | 511,081 | 10,358 | 500,723 |
| Winston | 316,191 | 94,769 | 221,422 |
| Total | 23,126,580 | 1,508,868 | 21,617,712 |

— = no sample for the cell or a value of <1.

(*Continued*)

**Table C.24—Sampling errors for area of sampled forest land by county name and major ownership group, Alabama, 2015**

| County | Total | Major ownership group | |
|---|---|---|---|
| | | Public | Private |
| | *percent* | | |
| Autauga | 13.35 | 71.46 | 13.61 |
| Baldwin | 7.64 | 25.77 | 8.26 |
| Barbour | 11.35 | 44.37 | 11.78 |
| Bibb | 12.67 | 26.65 | 14.42 |
| Blount | 15.07 | — | 15.07 |
| Bullock | 13.14 | — | 13.14 |
| Butler | 11.5 | 101.23 | 11.57 |
| Calhoun | 16.75 | 40.82 | 18.46 |
| Chambers | 13.38 | 101.23 | 13.44 |
| Cherokee | 14.53 | 57.59 | 15.06 |
| Chilton | 13.02 | 43.98 | 13.63 |
| Choctaw | 9.71 | 100.83 | 9.77 |
| Clarke | 7.99 | 71.22 | 8.07 |
| Clay | 13.25 | 26.34 | 15.29 |
| Cleburne | 14.31 | 24.67 | 17.55 |
| Coffee | 15.04 | — | 15.04 |
| Colbert | 15.24 | 34.99 | 17.28 |
| Conecuh | 10.64 | — | 10.64 |
| Coosa | 11.93 | — | 11.93 |
| Covington | 9.82 | 27.94 | 10.53 |
| Crenshaw | 13.19 | 101.23 | 13.31 |
| Cullman | 14.61 | 99.83 | 14.79 |
| Dale | 14.52 | 35.96 | 15.97 |
| Dallas | 11.1 | 99.28 | 11.17 |
| DeKalb | 16.4 | 99.89 | 16.66 |
| Elmore | 14.83 | 99.43 | 15.01 |
| Escambia | 10.23 | 35.34 | 10.68 |
| Etowah | 16.79 | 98.62 | 17.04 |
| Fayette | 12.42 | 62.06 | 12.68 |
| Franklin | 12.82 | 46.41 | 13.41 |
| Geneva | 15.74 | 101.23 | 15.96 |
| Greene | 12.64 | 59.15 | 12.93 |
| Hale | 13.66 | 40.27 | 14.52 |
| Henry | 14.39 | — | 14.39 |
| Houston | 16.98 | 99.43 | 17.23 |
| Jackson | 10.37 | 32.94 | 11.2 |
| Jefferson | 11.28 | 44.46 | 11.74 |
| Lamar | 12.49 | 98.9 | 12.58 |
| Lauderdale | 16.48 | 52.43 | 17.32 |
| Lawrence | 14.94 | 23.81 | 18.99 |
| Lee | 14.59 | 70.94 | 14.93 |
| Limestone | 21.26 | 57.52 | 23.01 |
| Lowndes | 13.27 | 58.18 | 13.67 |
| Macon | 12.89 | 41.05 | 13.6 |
| Madison | 15.64 | 30.61 | 18.6 |
| Marengo | 10.32 | — | 10.32 |
| Marion | 11.96 | 98.9 | 12.07 |
| Marshall | 18.76 | 72.85 | 19.5 |
| Mobile | 9.71 | 27.59 | 10.55 |
| Monroe | 9.4 | 99.56 | 9.44 |
| Montgomery | 14.71 | 70.26 | 15.07 |
| Morgan | 16.25 | 71.09 | 16.77 |
| Perry | 12.29 | 32.54 | 13.21 |
| Pickens | 10.42 | 98.9 | 10.5 |
| Pike | 13.17 | — | 13.17 |
| Randolph | 13.93 | 99.83 | 14.09 |
| Russell | 13.4 | 57.7 | 13.81 |
| St. Clair | 13.2 | 99.83 | 13.33 |
| Shelby | 12.28 | 57.81 | 12.61 |
| Sumter | 10.67 | 71.22 | 10.82 |
| Talladega | 13.06 | 32.77 | 14.21 |
| Tallapoosa | 11.76 | 70.26 | 11.96 |
| Tuscaloosa | 8.22 | 49.5 | 8.39 |
| Walker | 11.43 | 59.8 | 11.7 |
| Washington | 8.37 | — | 8.37 |
| Wilcox | 10.05 | 71.95 | 10.15 |
| Winston | 12.75 | 21.48 | 15.6 |
| Total | 0.48 | 4.52 | 0.58 |

— = no sample for the cell or a value of <1.

(*Continued*)

**Table C.25—Volume of all-live trees on forest land by county name and major species group, Alabama, 2015**

| County | Total | Major species group | |
|---|---|---|---|
| | | Softwoods | Hardwoods |
| | *million cubic feet* | | |
| Autauga | 428.6 | 223.2 | 205.4 |
| Baldwin | 1,168.2 | 649.5 | 518.6 |
| Barbour | 660.1 | 371.0 | 289.1 |
| Bibb | 662.3 | 300.6 | 361.7 |
| Blount | 378.6 | 166.4 | 212.3 |
| Bullock | 488.5 | 239.5 | 249.0 |
| Butler | 679.3 | 436.8 | 242.6 |
| Calhoun | 345.5 | 137.1 | 208.4 |
| Chambers | 496.9 | 286.9 | 209.9 |
| Cherokee | 404.2 | 185.5 | 218.7 |
| Chilton | 481.4 | 215.3 | 266.1 |
| Choctaw | 911.7 | 558.5 | 353.2 |
| Clarke | 1,133.0 | 658.5 | 474.5 |
| Clay | 591.7 | 291.4 | 300.2 |
| Cleburne | 513.8 | 262.7 | 251.1 |
| Coffee | 332.4 | 179.0 | 153.3 |
| Colbert | 428.6 | 112.2 | 316.5 |
| Conecuh | 627.1 | 375.0 | 252.1 |
| Coosa | 554.6 | 341.9 | 212.6 |
| Covington | 765.6 | 504.4 | 261.2 |
| Crenshaw | 571.8 | 279.5 | 292.3 |
| Cullman | 397.6 | 133.0 | 264.5 |
| Dale | 491.9 | 185.7 | 306.2 |
| Dallas | 560.6 | 198.1 | 362.6 |
| DeKalb | 379.9 | 114.3 | 265.7 |
| Elmore | 441.6 | 226.1 | 215.5 |
| Escambia | 509.3 | 350.8 | 158.4 |
| Etowah | 372.6 | 124.9 | 247.7 |
| Fayette | 517.4 | 248.4 | 268.9 |
| Franklin | 525.1 | 214.5 | 310.6 |
| Geneva | 405.1 | 203.0 | 202.1 |
| Greene | 568.4 | 240.4 | 328.1 |
| Hale | 477.5 | 212.6 | 264.9 |
| Henry | 357.4 | 178.3 | 179.1 |
| Houston | 310.7 | 118.7 | 192.1 |
| Jackson | 980.3 | 75.2 | 905.1 |
| Jefferson | 733.2 | 378.0 | 355.2 |
| Lamar | 568.7 | 238.5 | 330.2 |
| Lauderdale | 339.9 | 66.1 | 273.8 |
| Lawrence | 451.5 | 168.8 | 282.7 |
| Lee | 506.8 | 287.5 | 219.3 |
| Limestone | 243.2 | 14.8 | 228.3 |
| Lowndes | 488.7 | 259.5 | 229.2 |
| Macon | 529.6 | 226.4 | 303.2 |
| Madison | 560.5 | 112.1 | 448.4 |
| Marengo | 805.4 | 367.4 | 438.0 |
| Marion | 551.2 | 318.2 | 232.9 |
| Marshall | 299.4 | 63.1 | 236.3 |
| Mobile | 706.8 | 369.8 | 336.9 |
| Monroe | 897.3 | 523.6 | 373.7 |
| Montgomery | 443.5 | 112.2 | 331.3 |
| Morgan | 452.7 | 85.0 | 367.7 |
| Perry | 528.2 | 293.9 | 234.3 |
| Pickens | 742.0 | 340.2 | 401.8 |
| Pike | 527.4 | 275.4 | 252.0 |
| Randolph | 500.0 | 270.6 | 229.4 |
| Russell | 402.6 | 169.1 | 233.4 |
| St. Clair | 579.0 | 240.4 | 338.5 |
| Shelby | 576.3 | 284.9 | 291.3 |
| Sumter | 699.7 | 325.2 | 374.6 |
| Talladega | 551.6 | 332.9 | 218.7 |
| Tallapoosa | 679.6 | 372.7 | 306.9 |
| Tuscaloosa | 1,218.4 | 564.5 | 653.8 |
| Walker | 642.2 | 301.8 | 340.4 |
| Washington | 1,040.8 | 594.9 | 446.0 |
| Wilcox | 764.1 | 398.9 | 365.2 |
| Winston | 549.0 | 238.4 | 310.6 |
| Total | 38,498.5 | 18,193.7 | 20,304.8 |

(*Continued*)

**Table C.26—Sampling errors for volume of all-live trees on forest land by county name and major species group, Alabama, 2015**

| County | Total | Major species group | |
|---|---|---|---|
| | | Softwoods | Hardwoods |
| | *percent* | | |
| Autauga | 16.8 | 19.3 | 23.0 |
| Baldwin | 11.0 | 12.0 | 17.5 |
| Barbour | 14.7 | 17.3 | 18.8 |
| Bibb | 16.7 | 18.6 | 20.6 |
| Blount | 18.4 | 23.9 | 23.6 |
| Bullock | 16.4 | 19.4 | 21.4 |
| Butler | 14.1 | 16.9 | 21.8 |
| Calhoun | 20.3 | 27.0 | 22.8 |
| Chambers | 16.7 | 20.2 | 24.9 |
| Cherokee | 17.4 | 21.5 | 20.7 |
| Chilton | 16.4 | 20.3 | 21.2 |
| Choctaw | 13.3 | 15.8 | 18.6 |
| Clarke | 10.0 | 12.1 | 14.2 |
| Clay | 15.8 | 21.6 | 17.6 |
| Cleburne | 17.5 | 22.7 | 19.0 |
| Coffee | 17.9 | 23.1 | 21.7 |
| Colbert | 18.5 | 30.2 | 20.3 |
| Conecuh | 14.6 | 17.8 | 19.4 |
| Coosa | 14.4 | 17.4 | 19.5 |
| Covington | 11.8 | 12.9 | 18.2 |
| Crenshaw | 16.1 | 19.6 | 21.8 |
| Cullman | 17.4 | 24.4 | 20.6 |
| Dale | 18.9 | 23.1 | 22.6 |
| Dallas | 14.0 | 19.0 | 17.0 |
| DeKalb | 18.9 | 26.4 | 22.4 |
| Elmore | 18.0 | 22.1 | 21.5 |
| Escambia | 14.9 | 16.8 | 22.6 |
| Etowah | 19.3 | 29.4 | 22.0 |
| Fayette | 17.2 | 22.5 | 22.5 |
| Franklin | 15.5 | 22.1 | 17.4 |
| Geneva | 21.4 | 29.1 | 25.1 |
| Greene | 16.4 | 21.2 | 20.5 |
| Hale | 17.1 | 20.6 | 21.5 |
| Henry | 18.3 | 22.1 | 25.0 |
| Houston | 20.1 | 26.7 | 24.5 |
| Jackson | 12.3 | 22.9 | 12.8 |
| Jefferson | 14.3 | 17.4 | 16.7 |
| Lamar | 17.5 | 21.2 | 21.9 |
| Lauderdale | 19.2 | 32.7 | 21.6 |
| Lawrence | 17.8 | 23.2 | 20.7 |
| Lee | 17.1 | 20.3 | 22.4 |
| Limestone | 26.4 | 72.6 | 26.6 |
| Lowndes | 15.3 | 18.7 | 20.8 |
| Macon | 16.1 | 20.5 | 19.5 |
| Madison | 17.9 | 33.0 | 19.3 |
| Marengo | 14.0 | 16.6 | 18.1 |
| Marion | 14.3 | 18.4 | 19.6 |
| Marshall | 23.4 | 35.7 | 26.5 |
| Mobile | 14.8 | 15.4 | 22.0 |
| Monroe | 12.8 | 15.3 | 17.1 |
| Montgomery | 17.9 | 32.0 | 18.8 |
| Morgan | 19.1 | 25.0 | 20.9 |
| Perry | 16.4 | 18.2 | 24.4 |
| Pickens | 14.0 | 17.5 | 17.9 |
| Pike | 16.5 | 22.2 | 19.7 |
| Randolph | 17.2 | 22.0 | 20.7 |
| Russell | 17.8 | 19.6 | 23.8 |
| St. Clair | 16.2 | 21.1 | 18.5 |
| Shelby | 15.0 | 16.9 | 19.1 |
| Sumter | 14.0 | 17.6 | 18.5 |
| Talladega | 15.8 | 19.9 | 20.6 |
| Tallapoosa | 13.9 | 16.7 | 19.6 |
| Tuscaloosa | 10.3 | 13.6 | 13.3 |
| Walker | 14.0 | 18.3 | 18.2 |
| Washington | 10.6 | 11.9 | 14.8 |
| Wilcox | 12.0 | 14.1 | 17.0 |
| Winston | 15.5 | 20.5 | 18.3 |
| Total | 1.2 | 1.8 | 1.9 |

(*Continued*)

**Table C.27—Tree species tallied (≥ 1.0 inches at d.b.h) in the FIA sample by FIA species code, common name, genus, and species, Alabama, 2015**

| FIA species code | Common name | Genus | Species | Trees measured |
|---|---|---|---|---|
| | | | | *number* |
| 43 | Atlantic white-cedar | *Chamaecyparis* | *thyoides* | 22 |
| 67 | Southern redcedar | *Juniperus* | *virginiana* | 2 |
| 68 | Eastern redcedar | *Juniperus* | *virginiana* | 1,286 |
| 107 | Sand pine | *Pinus* | *clausa* | 6 |
| 110 | Shortleaf pine | *P.* | *echinata* | 1,523 |
| 111 | Slash pine | *P.* | *elliottii* | 1,664 |
| 115 | Spruce pine | *P.* | *glabra* | 279 |
| 121 | Longleaf pine | *P.* | *palustris* | 2,364 |
| 131 | Loblolly pine | *P.* | *taeda* | 46,738 |
| 132 | Virginia pine | *P.* | *virginiana* | 2,171 |
| 221 | Baldcypress | *Taxodium* | *distichum* | 356 |
| 222 | Pondcypress | *T.* | *ascendens* | 22 |
| 261 | Eastern hemlock | *Tsuga* | *canadensis* | 82 |
| 311 | Florida maple | *Acer* | *barbatum* | 585 |
| 313 | Boxelder | *A.* | *negundo* | 272 |
| 316 | Red maple | *A.* | *rubrum* | 4,602 |
| 317 | Silver maple | *A.* | *saccharinum* | 15 |
| 318 | Sugar maple | *A.* | *saccharum* | 32 |
| 323 | Chalk maple | *A.* | *leucoderme* | 12 |
| 332 | Yellow buckeye | *Aesculus* | *flava* | 25 |
| 341 | Ailanthus | *Ailanthus* | *altissima* | 23 |
| 345 | Mimosa, silktree | *Albizia* | *julibrissin* | 122 |
| 356 | Serviceberry spp. | *Amelanchier* | spp. | 69 |
| 367 | Pawpaw | *Asimina* | *triloba* | 12 |
| 372 | Sweet birch | *Betula* | *lenta* | 1 |
| 373 | River birch | *B.* | *nigra* | 200 |
| 381 | Chittamwood, gum bumelia | *Sideroxylon* | *lanuginosum* | 2 |
| 391 | American hornbeam, musclewood | *Carpinus* | *caroliniana* | 1,324 |
| 401 | Water hickory | *Carya* | *aquatica* | 87 |
| 402 | Bitternut hickory | *C.* | *cordiformis* | 71 |
| 403 | Pignut hickory | *C.* | *glabra* | 1,732 |
| 404 | Pecan | *C.* | *illinoinensis* | 90 |
| 405 | Shellbark hickory | *C.* | *laciniosa* | 15 |
| 406 | Nutmeg hickory | *C.* | *myristiciformis* | 1 |
| 407 | Shagbark hickory | *C.* | *ovata* | 431 |
| 408 | Black hickory | *C.* | *texana* | 5 |
| 409 | Mockernut hickory | *C.* | *alba* | 1,772 |
| 410 | Sand hickory | *C.* | *pallida* | 10 |
| 412 | Red hickory | *C.* | *ovalis* | 20 |
| 413 | Southern shagbark hickory | *C.* | *carolinae-septentrionalis* | 4 |
| 422 | Allegheny chinkapin | *Castanea* | *pumila* | 4 |
| 451 | Southern catalpa | *Catalpa* | *bignonioides* | 15 |

(*Continued*)

**Table C.27 (continued)—Tree species tallied (≥ 1.0 inches at d.b.h) in the FIA sample by FIA species code, common name, genus, and species, Alabama, 2015**

| FIA species code | Common name | Genus | Species | Trees measured |
|---|---|---|---|---|
| | | | | *number* |
| 461 | Sugarberry | *Celtis* | *laevigata* | 672 |
| 462 | Hackberry | *C.* | *occidentalis* | 72 |
| 471 | Eastern redbud | *Cercis* | *canadensis* | 256 |
| 491 | Flowering dogwood | *Cornus* | *florida* | 1,372 |
| 500 | Hawthorn spp. | *Crataegus* | spp. | 75 |
| 521 | Common persimmon | *Diospyros* | *virginiana* | 562 |
| 531 | American beech | *Fagus* | *grandifolia* | 629 |
| 541 | White ash | *Fraxinus* | *americana* | 323 |
| 544 | Green ash | *F.* | *pennsylvanica* | 1,058 |
| 545 | Pumpkin ash | *F.* | *profunda* | 5 |
| 548 | Carolina ash | *F.* | *caroliniana* | 1 |
| 552 | Honeylocust | *Gleditsia* | *triacanthos* | 30 |
| 581 | Carolina silverbell | *Halesia* | *carolina* | 28 |
| 582 | Two-wing silverbell | *H.* | *diptera* | 2 |
| 591 | American holly | *Ilex* | *opaca* | 802 |
| 601 | Butternut | *Juglans* | *cinerea* | 9 |
| 602 | Black walnut | *J.* | *nigra* | 84 |
| 611 | Sweetgum | *Liquidambar* | *styraciflua* | 12,526 |
| 621 | Yellow-poplar | *Liriodendron* | *tulipifera* | 4,257 |
| 641 | Osage-orange | *Maclura* | *pomifera* | 131 |
| 651 | Cucumbertree | *Magnolia* | *acuminata* | 54 |
| 652 | Southern magnolia | *M.* | *grandiflora* | 347 |
| 653 | Sweetbay | *M.* | *virginiana* | 2,254 |
| 654 | Bigleaf magnolia | *M.* | *macrophylla* | 205 |
| 658 | Umbrella magnolia | *M.* | *tripetala* | 21 |
| 662 | Southern crab apple | *Malus* | *angustifolia* | 11 |
| 681 | White mulberry | *Morus* | *alba* | 1 |
| 682 | Red mulberry | *M.* | *rubra* | 168 |
| 691 | Water tupelo | *Nyssa* | *aquatica* | 505 |
| 693 | Blackgum | *N.* | *sylvatica* | 2,721 |
| 694 | Swamp tupelo | *N.* | *biflora* | 1,227 |
| 701 | Eastern hophornbeam | *Ostrya* | *virginiana* | 793 |
| 711 | Sourwood | *Oxydendrum* | *arboreum* | 1,524 |
| 712 | Paulownia, empress-tree | *Paulownia* | *tomentosa* | 20 |
| 721 | Redbay | *Persea* | *borbonia* | 123 |
| 722 | Water-elm, planertree | *Planera* | *aquatica* | 24 |
| 731 | American sycamore | *Platanus* | *occidentalis* | 201 |
| 742 | Eastern cottonwood | *Populus* | *deltoides* | 53 |
| 762 | Black cherry | *Prunus* | *serotina* | 1,769 |
| 766 | American plum | *P.* | *americana* | 69 |

(*Continued*)

**Table C.27 (continued)—Tree species tallied (≥ 1.0 inches at d.b.h) in the FIA sample by FIA species code, common name, genus, and species, Alabama, 2015**

| FIA species code | Common name | Genus | Species | Trees measured |
|---|---|---|---|---|
| | | | | *number* |
| 802 | White oak | *Quercus* | *alba* | 3,073 |
| 804 | Swamp white oak | *Q.* | *bicolor* | 2 |
| 806 | Scarlet oak | *Q.* | *coccinea* | 426 |
| 808 | Durand oak | *Q.* | *sinuata* | 24 |
| 812 | Southern red oak | *Q.* | *falcata* | 1,902 |
| 813 | Cherrybark oak | *Q.* | *pagoda* | 348 |
| 819 | Turkey oak | *Q.* | *laevis* | 99 |
| 820 | Laurel oak | *Q.* | *laurifolia* | 2,033 |
| 822 | Overcup oak | *Q.* | *lyrata* | 146 |
| 824 | Blackjack oak | *Q.* | *marilandica* | 242 |
| 825 | Swamp chestnut oak | *Q.* | *michauxii* | 156 |
| 826 | Chinkapin oak | *Q.* | *muehlenbergii* | 197 |
| 827 | Water oak | *Q.* | *nigra* | 6,664 |
| 828 | Texas red oak | *Q.* | *texana* | 51 |
| 831 | Willow oak | *Q.* | *phellos* | 416 |
| 832 | Chestnut oak | *Q.* | *prinus* | 1,500 |
| 833 | Northern red oak | *Q.* | *rubra* | 474 |
| 834 | Shumard oak | *Q.* | *shumardii* | 33 |
| 835 | Post oak | *Q.* | *stellata* | 1,291 |
| 836 | Delta post oak | *Q.* | *similis* | 2 |
| 837 | Black oak | *Q.* | *velutina* | 523 |
| 838 | Live oak | *Q.* | *virginiana* | 113 |
| 840 | Dwarf post oak | *Q.* | *margarettiae* | 13 |
| 841 | Dwarf live oak | *Q.* | *minima* | 5 |
| 842 | Bluejack oak | *Q.* | *incana* | 12 |
| 858 | Camphortree | *Cinnamomum* | *camphora* | 9 |
| 901 | Black locust | *Robinia* | *pseudoacacia* | 49 |
| 922 | Black willow | *Salix* | *nigra* | 235 |
| 931 | Sassafras | *Sassafras* | *albidum* | 285 |
| 951 | American basswood | *Tilia* | *americana* | 89 |
| 952 | White basswood | *T.* | *americana* | 11 |
| 953 | Carolina basswood | *T.* | *americana* | 48 |
| 971 | Winged elm | *Ulmus* | *alata* | 1,377 |
| 972 | American elm | *U.* | *americana* | 372 |
| 975 | Slippery elm | *U.* | *rubra* | 127 |
| 976 | September elm | *U.* | *serotina* | 13 |
| 993 | Chinaberry | *Melia* | *azedarach* | 131 |
| 994 | Chinese tallowtree | *Triadica* | *sebifera* | 138 |
| 996 | Smoketree | *Cotinus* | *obovatus* | 5 |
| 999 | Other or unknown live tree | Tree | unknown | 24 |

**Hartsell, Andrew J.** 2018. Alabama's forests, 2015. Resour. Bull. SRS–220. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 73 p.

The principal findings of the tenth forest survey of Alabama (2015) and changes that have occurred since the previous surveys are presented. Topics examined include forest area, ownership, forest-type groups, stand structure, basal area, timber volume, growth removals, and mortality. Alabama's contribution to the Nation's forest resources and regional comparisons are detailed.

**Keywords:** FIA, forest health, forest inventory, forest survey, forest trends, plantations.



**July 2018**

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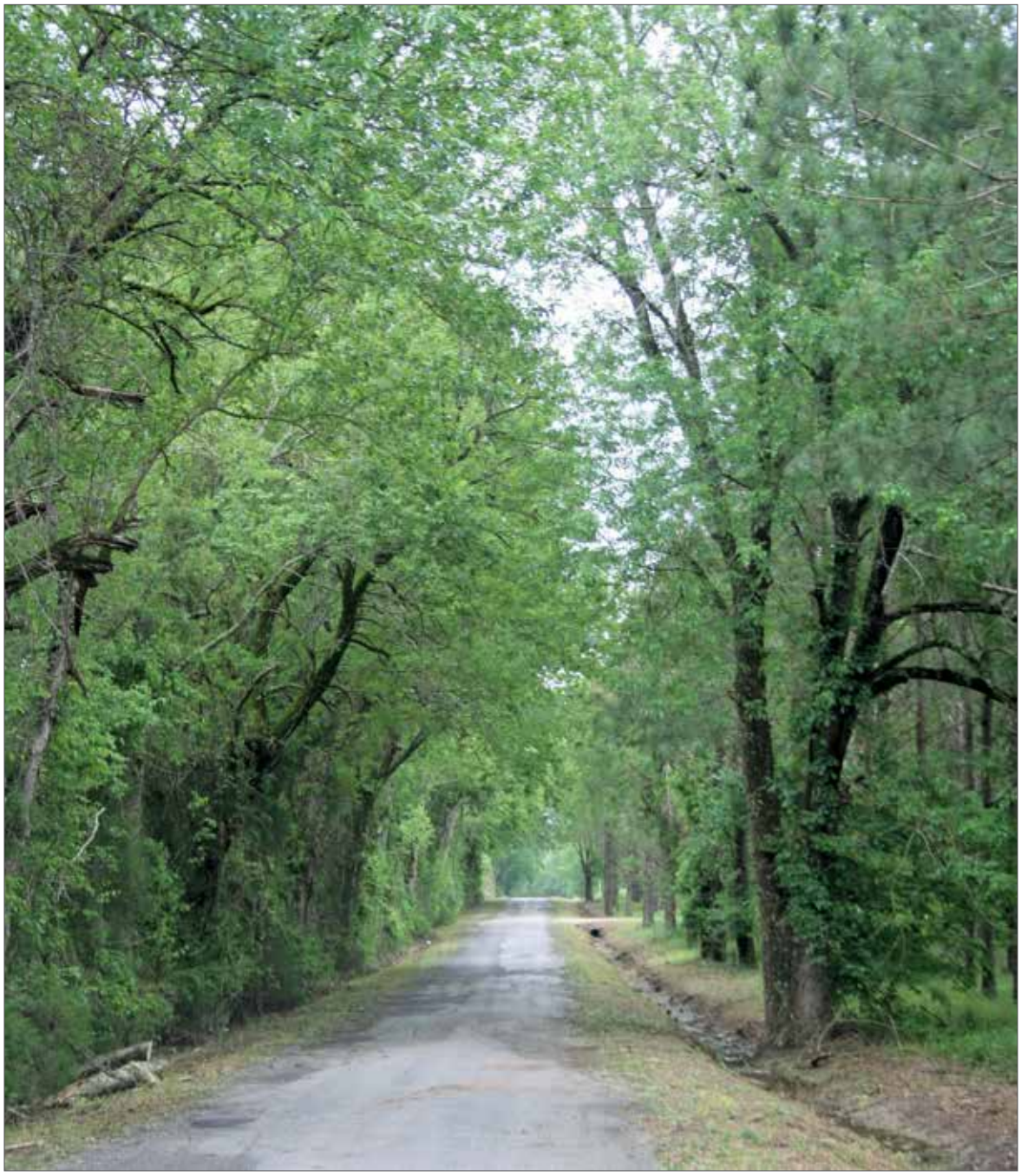

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