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About the Author

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Front cover: top left, longleaf pine forest. (photo courtesy of the Georgia Forestry Commission); top right, buttonbush is a shrub or small tree that gets its name from its fragrant ball-like cluster of white flowers which bloom from May to August—a good source of nectar for butterflies and seeds for ducks and deer. (photo courtesy of Dot Paul, USDA, Natural Resources Conservation Service); bottom, a clear view of the main lake at High Falls State Park, Butts County, Jackson, GA. (photo courtesy of goodfree photos.com). Back cover: top left, gray squirrel, November, Lowndes County, GA. (photo courtesy of Michael Rivera/Wikimedia.org); top right, longleaf pine forest. (photo courtesy of the Georgia Forestry Commission); bottom, the gently winding nature trail at High Falls State Park, Butts County, Jackson, GA (photo courtesy of goodfreephotos.com).

Purple sunset at Reed Bingham State Park, Cook County, Adel, GA.
(photo courtesy of goodfreephotos.com)

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A small inlet of Lake Allatoona, Red Top Mountain State Park, Bartow County, Acworth, GA.
(photo courtesy of goodfreephotos.com)

FOREWORD

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

The primary objective in conducting these inventories is to gather the multiresource 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 is 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 http://fia.fs.fed.us/tools-data/default.asp. Additional information about the FIA Program can be obtained at http://fia.fs.fed.us/.

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

U.S. Department of Agriculture
Forest Service
Southern Research Station
Forest Inventory and Analysis
Research Work Unit
4700 Old Kingston Pike
Knoxville, TN 37919
Telephone: 865-862-2000
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Program Manager

ACKNOWLEDGMENTS

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HIGHLIGHTS

• There are 24.8 million acres of forest in Georgia. Over 65 percent of the State is forested, with all survey units having more forest land than nonforest land. Ninety-eight percent of this forest land is considered timberland.

• Georgia's forest resources are not only considerable, they have been relatively stable, showing little change in either forest land or timberland area in the past 10 years.

• Divesture of timberland by traditional forest industry, defined as companies that also 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). More than half (57 percent) of Georgia's forests belong to nonindustrial private landowners.

• Forest land in Georgia held 16.5 billion trees with diameter at breast height (d.b.h.) >1 inch, and those trees held 2.2 billion tons of green aboveground biomass. There were 40.7 billion cubic feet of net volume in trees with d.b.h. ≥5 inches.

• The species group with the greatest number of individuals was the loblolly and shortleaf pine group, followed by sweetgum and the "other red oaks" group. Net volume was split almost evenly between softwood and hardwood species groups.

• Softwood growth from 2004 to 2009 shows negligible, possibly positive change, while there was a slight decrease in overall mortality. Softwood removals remain essentially unchanged over this 5-year period. Hardwood growth decreased slightly, and there is a slight increase in the volume lost to mortality. Hardwood volume removed in 2009 appears to be slightly less than the volume removed in 2004. However, overall the changes observed are minor, and while potentially indicative of longer term trends, still fall largely within the expected sampling error associated with these estimates.

• We estimate that 714,600 acres of forest were disturbed annually from 2004 to 2009. The most common disturbances were forest fires and tree diseases.

• The forests of Georgia store approximately 1.7 billion tons of carbon in the above-ground and belowground portions of live and dead trees, understory seedlings and shrubs, coarse woody material, forest floor litter, and soil organic material.

INTRODUCTION

Georgia has the largest forest land area of all the Southern States. There have been gradual gains in forest land as trees naturally recolonized or were planted on land formerly in agriculture during the first half of the 20th century until reaching a level that has remained relatively stable for the past 50 years (Harper and others 2009). This stability, despite pressures from competing land uses like agriculture and urban/suburban development, attests to the importance of the forest resource in the State.

With this increase in forest area and improved management practices, there has been an increase in timber volume, fueling a diverse, multibillion-dollar forest products industry that provides tens of thousands of jobs. Georgia's forests are important to not only the State economy but the southern regional and the national economies as well. This importance is not just for the production of timber and nontimber commodities. Georgia's forests are also important for nonconsumptive uses such as recreation and for less tangible values such as their aesthetic appeal, which is often cited as a main reason that small private landowners keep their land in forest (Harper and others 2009).

Informed management of this vital resource requires complete, accurate, and up-to-date information. Resource managers need relevant, scientifically sound information in a timely manner so that they can respond to unsustainable trends and threats to the forest. Recommending land use policies, providing best practices guidelines, and implementing silvicultural treatments are just a few ways decisionmakers and managers can promote sustainable management, mitigate risks, and facilitate speedy forest recovery after disturbances. By providing this needed information, the inventory and monitoring of Georgia's forests contributes to our efforts to deliver healthy, productive forests to future generations.

AREA

There are 24.8 million acres of forest in Georgia. Over 65 percent of the State is forested, with all survey units (fig. 1) having more forest land than nonforest land (fig. 2). Ninety-eight percent of this forest land is considered timberland, that is, not reserved by legal statute and sufficiently productive to support sustainable harvesting of forest products, underlining the importance of this resource to the State's economy.

These forests are a diverse mix of hardwood and softwood tree species typical of the South. Much deserved attention is paid to the economically and ecologically valuable conifer (*Pinus* spp.) forests of the State, which make up 45 percent of the total forest area (fig. 3). However, the species-rich hardwood forests, usually typified by a notable component of oak (*Quercus* spp.) and found on over 40 percent of the landscape, also provide valuable commodities, recreational opportunities, and a wide variety of ecosystem services.

Georgia's forest resources are not only considerable, they have been relatively stable. There has been very little change in either forest land or timberland area in the past 10 years (fig. 4). One thing has changed, however, and that is who owns the forest. As reported previously in Harper and others (2009), divesture of timberland

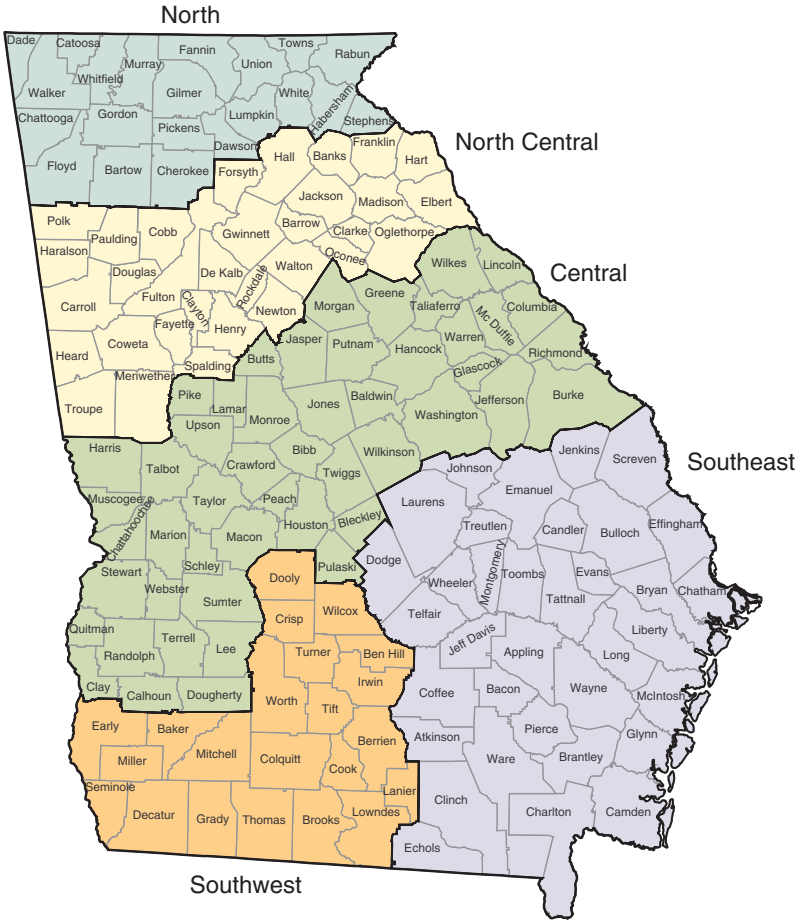

Figure 1—Counties and forest survey units, Georgia.

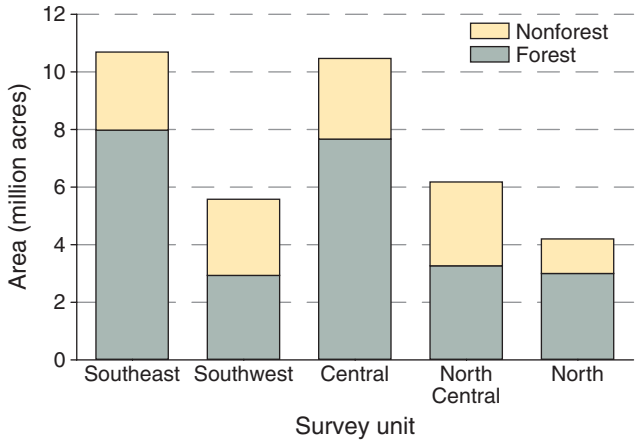

Figure 2—Forest land area by survey unit, Georgia, 2009.

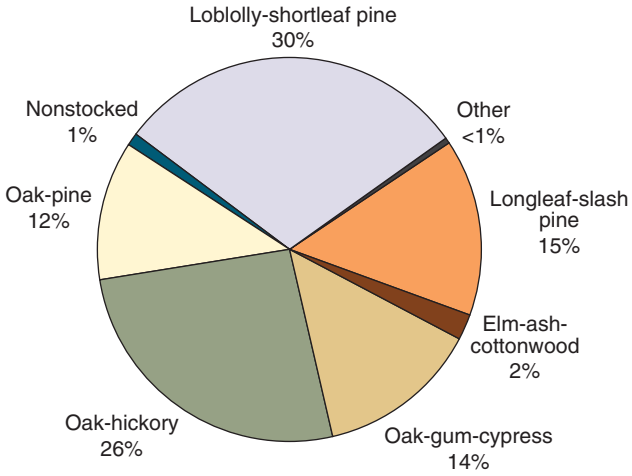

Figure 3—Percentage of forest land area by forest-type group, Georgia, 2009.

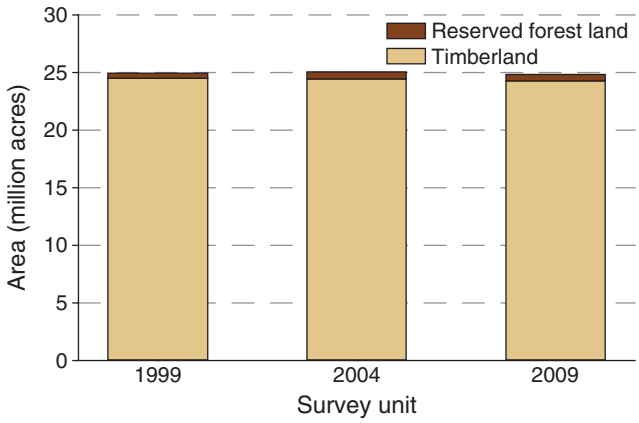

Figure 4—Reserved forest land and timberland area by survey unit, Georgia, 1999, 2004, and 2009.

by traditional forest industry, defined as companies that also 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) (fig. 5). Still, more than half (57 percent) of Georgia's forests belong to nonindustrial private landowners.

Another area change in the recent past that now appears to be stabilizing is the balance between naturally regenerated pine forests and artificially regenerated (planted) ones. In 1972, there were 9.3 million acres of natural pine forest and 2.8 million acres of pine plantations (fig. 6). Thirty-seven years later, these numbers have largely reversed, such that in 2009 there were 4.1 million acres of natural pine forest and 6.9 million

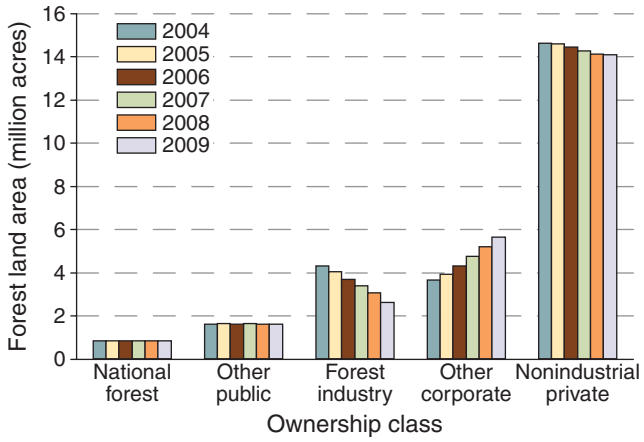

Figure 5—Forest land area by year and ownership class, Georgia, 2004–09.

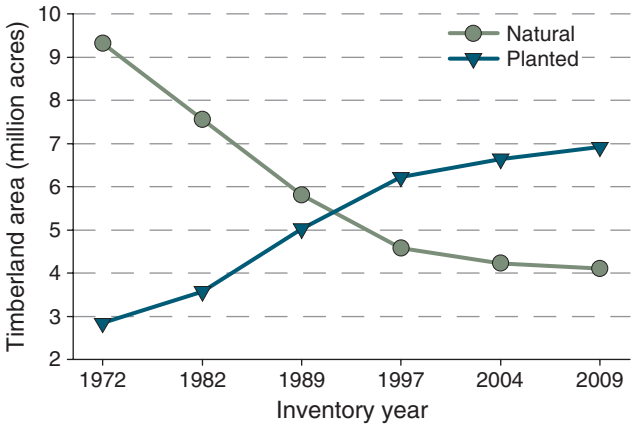

Figure 6—Natural and artificially regenerated timberland area, Georgia, 1972–2009.

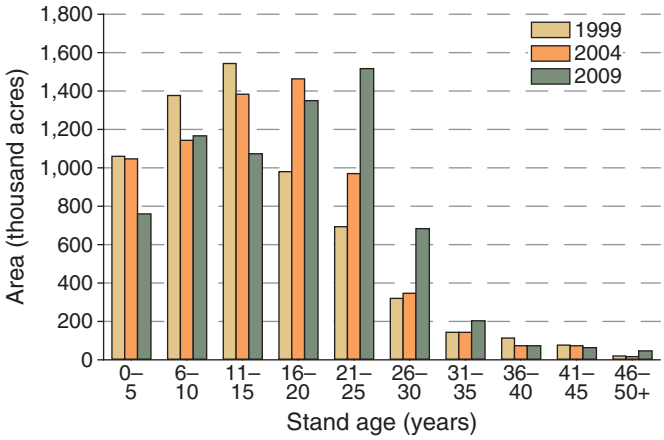

Figure 7—Timberland area distribution by stand age, Georgia, 1999, 2004, and 2009.

of planted pine. Favorable economic conditions, decades of forest management and programs that provided incentives for plantation establishment in the 1980s and 1990s have resulted in an extensive, productive forest patrimony in the State of Georgia (Harper and others 2009). The consequences of this active period of plantation establishment can be seen in the distribution of planted yellow pine (primarily the loblolly-shortleaf and longleaf-slash pine forest types) timberland acreage by stand age (fig. 7). In 1999, the most frequently encountered planted pine stands were 11–15 years old. By 2009, the most frequently encountered stand age was 21–25 years, as would be expected after the passage of 10 years. We see that relatively few stands were >30 years old, indicating that age to be a typical stand age at harvesting. Note how the distribution of stand ages is progressively shifting toward older stands, meaning there has been less new plantation establishment recently and more, older stands remaining on the landscape.

NUMBER OF TREES, VOLUME, AND BIOMASS

We estimate that the 24.8 million acres of forest land in Georgia held 16.5 billion trees with diameter at breast height (d.b.h.) >1 inch, and those trees held 2.2 billion tons of green aboveground biomass (table 1).

There were 40.7 billion cubic feet of net volume in trees with d.b.h. ≥5 inches. The species group with the greatest number of individuals was the loblolly and shortleaf pine group, followed by sweetgum and the "other red oaks" group. Net volume was split almost evenly between softwood and hardwood species groups. The majority of

Table 1—Number of live trees[a], net volume[b], and aboveground green weight[a] on forest land by species group, Georgia, 2009

Species group	Number of live trees	Net volume	Aboveground green weight
	million trees	*million cubic feet*	*thousand tons*
Softwood			
Longleaf and slash pines	1,297.2	5,074.5	263,452.6
Loblolly and shortleaf pines	3,414.8	12,645.3	610,200.2
Other yellow pines	176.8	806.1	38,207.9
Eastern white and red pines	64.3	416.5	15,444.6
Eastern hemlock	22.4	53.1	3,221.4
Cypress	267.9	886.8	46,104.1
Other eastern softwoods	64.5	68.4	4,302.3
Total softwoods	5,307.9	19,950.7	980,933.1
Hardwoods			
Select white oaks	257.3	1,774.8	103,704.7
Select red oaks	36.9	404.3	23,478.1
Other white oaks	390.1	1,667.2	100,902.2
Other red oaks	1,998.4	4,829.3	303,665.7
Hickory	377.6	981.9	58,508.4
Yellow birch	3.8	3.2	158.5
Hard maple	64.2	34.2	2,891.2
Soft maple	1,424.4	1,384.3	89,863.8
Beech	37.1	89.7	6,135.5
Sweetgum	2,013.6	2,509.6	138,983.1
Tupelo and blackgum	1,160.8	2,205.8	112,733.3
Ash	160.4	378.7	16,509.1
Cottonwood and aspen	0.2	6.4	316.5
Basswood	2.1	28.6	1,294.3
Yellow-poplar	419.9	2,449.1	109,678.4
Black walnut	4.7	23.3	1,550.0
Other eastern soft hardwoods	1,150.5	1,060.0	62,314.2
Other eastern hard hardwoods	662.7	176.0	20,729.1
Eastern noncommercial hardwoods	1,026.0	739.4	47,831.5
Total hardwoods	11,190.6	20,745.8	1,201,247.6
All species	16,498.5	40,696.5	2,182,180.7

D.b.h. = diameter at breast height.
Numbers in rows and columns may not sum to totals due to rounding.
[a] In trees with d.b.h. ≥1 inch.
[b] In trees with d.b.h. ≥5 inches.

this volume (78 percent) was found on land owned by nonindustrial private landowners (fig. 8), reflecting the pattern seen in forest area.

In figure 9, we see the trend in hardwood and softwood net volume on timberland over time. There has been a steady increase in net volume since 1972. The distribution of this volume across diameter classes has remained relatively constant over this same time period. Figure 10 shows net volume on timberland for softwoods by diameter class over time, while figure 11 presents the same information for hardwoods. The amount of net volume in the saw-log portion of sawtimber trees on timberland has also steadily increased for both softwoods and hardwoods (table 2). However, the percentage of the total net volume that is in saw logs has remained relatively constant (fig. 12).

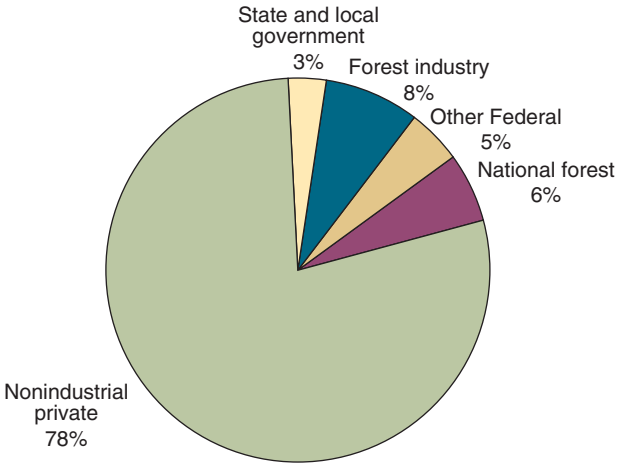

Figure 8—Percentage of net volume of live trees on forest land by ownership class, Georgia, 2009.

Figure 9—Net volume by major species group, Georgia, 1972–2009.

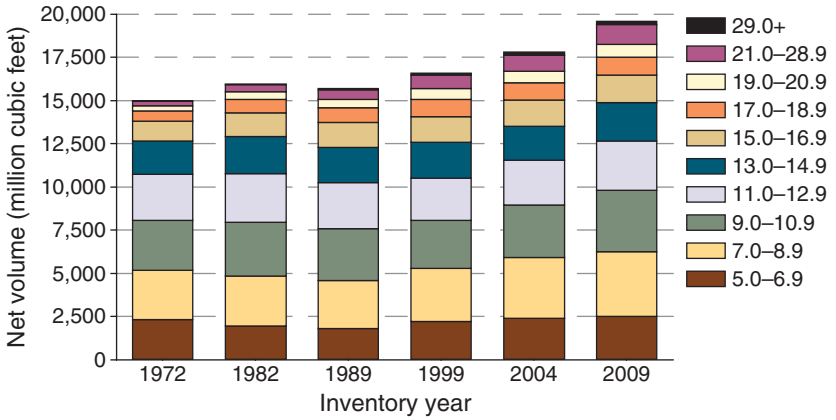

Figure 10—Net softwood volume by diameter class (inches), Georgia, 1972–2009.

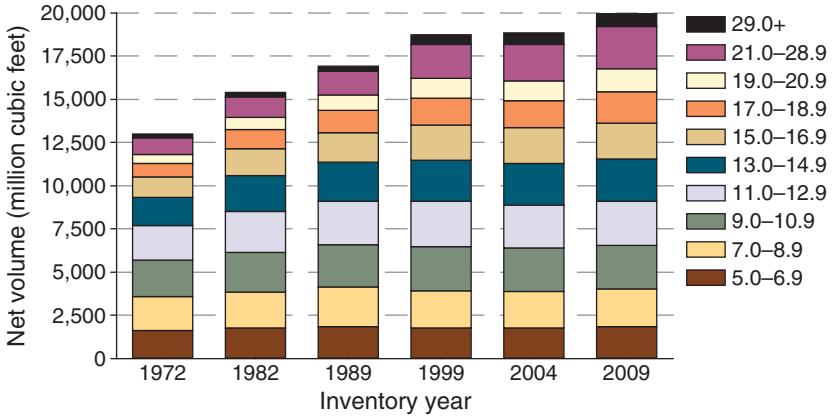

Figure 11—Net hardwood volume by diameter class (inches), Georgia, 1972–2009.

Table 2—Net volume in the saw-log portion of sawtimber trees on timberland by inventory year and species group, Georgia, 1972–2009

Inventory year	Total	Species group	
		Softwoods	Hardwoods
	million cubic feet		
1972	13,806	8,710	5,095
1982	17,003	9,960	7,043
1989	17,948	9,978	7,970
1999	19,408	10,121	9,287
2004	19,583	10,541	9,042
2009	21,296	11,664	9,632

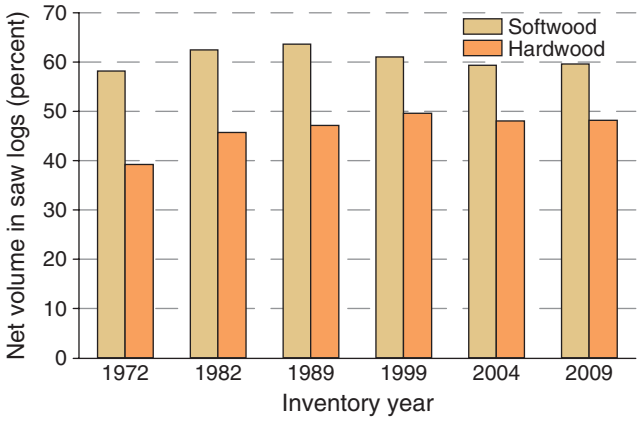

Figure 12—Percentage of total net volume on timberland in saw logs by major species group, Georgia, 1972–2009.

GROWTH, REMOVALS, AND MORTALITY

Trends in the forest resource are as important as the current status. The stability seen in forest area previously highlighted is also reflected in the relatively minor fluctuations seen in volume accumulated by net tree growth and lost to tree removals and natural tree mortality from 2004 to 2009 (fig. 13). Softwood growth shows negligible, possibly positive change, while there is an increase in overall mortality. Softwood removals remain essentially unchanged over this 5-year period. Hardwood growth decreased slightly, and there is a slight increase in the volume lost to mortality. Hardwood volume removed in 2009 appears to be slightly less than the volume removed in 2004. Overall, the changes observed are minor, and while potentially indicative of longer term trends, still fall largely within the expected sampling error associated with these estimates.

One indication that the growth, removals, and mortality estimates cited above could be indicative of larger trends can be seen by examining the number of timberland acres that had some sort of silvicultural treatment in 2004 and 2009. In figure 14, we see a decrease in the number of acres with a final clear cut or partial harvest. Acres that were thinned or received timber stand improvement treatments increased. In 2009, we would expect to begin seeing reductions in forest harvesting due to the economic downturn that began to impact the forest products industry in 2007. Weak markets for forest products, particularly sawn lumber for housing, resulted in greatly reduced harvesting rates across the South. The removals and treated acreage estimates for 2009 were calculated from plots that were remeasured from 2005 to 2009 and therefore include data from both before and after the economic downturn. Future estimates will include more plots remeasured after 2007, giving us a better assessment of the economic downturn's impact on forest management in Georgia.

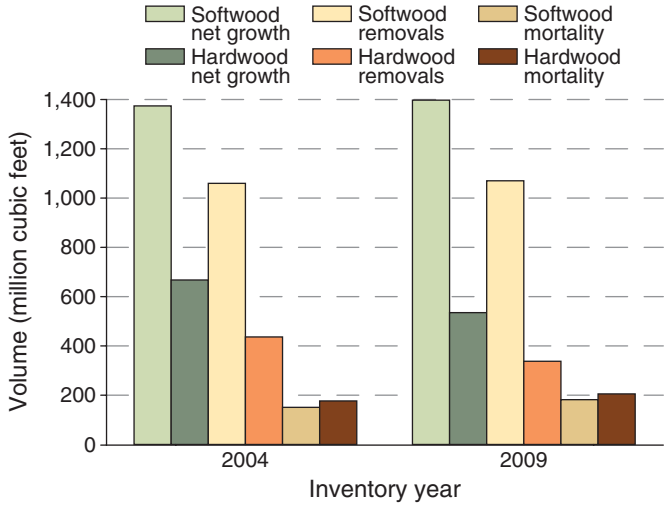

Figure 13—Average annual volume of net growth, removals, and mortality by major species group, Georgia, 2004 and 2009.

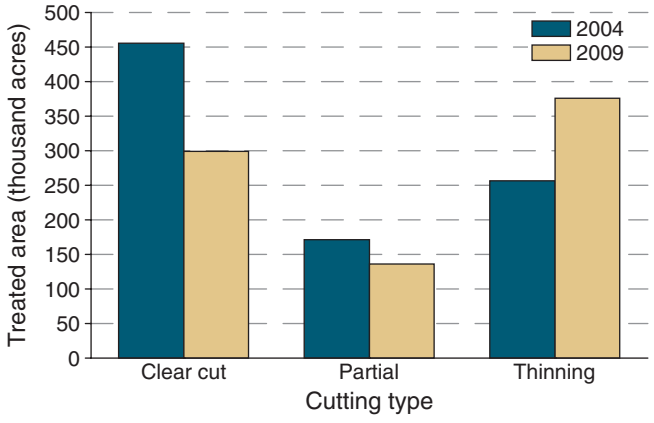

Figure 14—Average annual timberland acreage affected by cutting activity, Georgia, 2004 and 2009.

Volume, Growth, and Removals of the Planted Pine Resource

There was slightly less net volume on timberland (39.6 billion cubic feet) than on all forest land (40.7 billion cubic feet) in the State (table 3). Twenty-three percent of the total net volume on timberland in Georgia in 2009 was in stands that had been artificially regenerated, and over 14 percent was in planted loblolly and shortleaf pine.

When looking at table 3, it is important to remember that in FIA we define an area as planted or naturally regenerated, not whether the tree itself was planted. Therefore, it is possible to categorize volume in hardwood species groups as planted even though that volume comes from trees that were not themselves planted. Rather, this volume is almost entirely from hardwood trees that naturally regenerated and were harvested from within pine plantations.

Table 3—Net volume of live trees on timberland by species group and stand origin, Georgia, 2004–09

Species group	Total	Stand origin	
		Planted	Natural
	million cubic feet		
Softwood			
Longleaf and slash pines	4,946.5	2,635.7	2,310.8
Loblolly and shortleaf pines	12,542.3	5,755.0	6,787.4
Other yellow pines	791.6	39.2	752.4
Eastern white and red pines	355.7	0.0	355.7
Eastern hemlock	36.0	0.0	36.0
Cypress	830.2	7.8	822.3
Other eastern softwoods	65.7	3.0	62.7
Total softwoods	19,568.0	8,440.8	11,127.2
Hardwood			
Select white oaks	1,731.8	35.0	1,696.8
Select red oaks	369.3	0.4	368.8
Other white oaks	1,556.1	32.0	1,524.1
Other red oaks	4,746.5	168.7	4,577.7
Hickory	959.8	47.3	912.5
Yellow birch	3.2	0.0	3.2
Hard maple	32.5	0.9	31.7
Soft maple	1,329.1	20.7	1,308.5
Beech	87.2	3.4	83.9
Sweetgum	2,490.4	77.5	2,412.9
Tupelo and blackgum	2,160.3	16.4	2,143.9
Ash	377.5	2.3	375.2
Cottonwood and aspen	6.4	0.0	6.4
Basswood	20.5	0.0	20.5
Yellow-poplar	2,349.6	28.0	2,321.6
Black walnut	23.3	0.1	23.3
Other eastern soft hardwoods	930.5	35.8	894.7
Other eastern hard hardwoods	143.6	2.4	141.2
Eastern noncommercial hardwoods	690.3	8.8	681.5
Total hardwoods	20,007.8	479.5	19,528.2
All species	39,575.8	8,920.3	30,655.5

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.

To further highlight the importance of the planted softwood resource, 49 percent of net annual growth comes from softwoods. Thirty-five percent of the total net annual growth is from planted loblolly and shortleaf pine (table 4).

Using the estimates of annual net growth and annual removals (table 5), we can make a quick, if simplistic, assessment of sustainability of forest resource use. The ratio of volume growth to volume removals on all timberland was 1.37, meaning Georgia's forests were growing 1.37 times more volume each year than was being harvested or cleared. More important and most affected by management decisions, however, was the growth–to-removals ratio for planted volume from the loblolly and shortleaf pine species group. These pine plantations were growing 1.61 times more volume each year than was being harvested.

Table 4—Average annual net growth of live trees on timberland by species group and stand origin, Georgia, 2004–09

Species group	Total	Stand origin	
		Planted	Natural
	million cubic feet		
Softwood			
Longleaf and slash pines	349.5	266.1	83.4
Loblolly and shortleaf pines	1,016.8	681.3	335.5
Other yellow pines	2.6	4.6	-2.1
Eastern white and red pines	10.8	0.0	10.8
Eastern hemlock	1.6	0.0	1.6
Cypress	10.6	0.1	10.4
Other eastern softwoods	1.9	0.1	1.7
Total softwoods	1,393.7	952.3	441.4
Hardwood			
Select white oaks	45.6	1.0	44.6
Select red oaks	7.5	0.1	7.4
Other white oaks	34.7	1.2	33.4
Other red oaks	141.3	13.2	128.1
Hickory	20.4	1.4	19.0
Yellow birch	0.2	0.0	0.2
Hard maple	1.3	0.1	1.3
Soft maple	35.8	1.4	34.4
Beech	-0.2	0.0	-0.2
Sweetgum	81.9	6.3	75.6
Tupelo and blackgum	34.5	0.2	34.3
Ash	2.2	0.1	2.0
Cottonwood and aspen	-0.2	0.0	-0.2
Basswood	0.7	0.0	0.7
Yellow-poplar	83.2	3.2	80.0
Black walnut	0.4	0.0	0.4
Other eastern soft hardwoods	31.3	3.1	28.2
Other eastern hard hardwoods	1.2	0.0	1.2
Eastern noncommercial hardwoods	18.5	0.9	17.6
Total hardwoods	540.1	32.1	507.9
All species	1,933.8	984.4	949.4

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 5—Average annual removals of live trees on timberland by species group and stand origin, Georgia, 2004–09

Species group	Total	Stand origin	
		Planted	Natural
	million cubic feet		
Softwood			
Longleaf and slash pines	346.1	230.0	116.0
Loblolly and shortleaf pines	696.8	421.9	274.9
Other yellow pines	17.5	4.6	12.9
Eastern white and red pines	1.9	0.0	1.9
Eastern hemlock	0.0	0.0	0.0
Cypress	5.6	0.1	5.5
Other eastern softwoods	1.0	0.0	1.0
Total softwoods	1,069.0	656.7	412.3
Hardwood			
Select white oaks	19.1	0.2	18.9
Select red oaks	3.2	0.0	3.2
Other white oaks	15.0	0.5	14.5
Other red oaks	92.3	5.4	86.9
Hickory	14.6	0.0	14.6
Yellow birch	0.0	0.0	0.0
Hard maple	0.6	0.0	0.6
Soft maple	18.6	0.5	18.0
Beech	0.2	0.0	0.2
Sweetgum	69.3	4.4	65.0
Tupelo and blackgum	37.8	0.5	37.3
Ash	3.8	0.1	3.7
Cottonwood and aspen	0.1	0.0	0.1
Basswood	0.9	0.0	0.9
Yellow-poplar	40.9	0.3	40.6
Black walnut	0.3	0.1	0.2
Other eastern soft hardwoods	10.7	1.1	9.5
Other eastern hard hardwoods	2.5	0.2	2.4
Eastern noncommercial hardwoods	8.8	0.1	8.8
Total hardwoods	338.8	13.4	325.4
All species	1,407.8	670.1	737.7

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.

DISTURBANCE AND FOREST HEALTH INDICATORS

We estimate that 714,600 acres of forest were disturbed annually from 2004 to 2009 (table 6). This is slightly <3 percent of the total 24.8 million acres of forest land. The most commonly occurring disturbances were forest fires and tree diseases. Over the course of the 5-year inventory cycle, we would expect approximately 3.6 million acres of forest land to experience some type of disturbance.

The forests of Georgia store approximately 1.7 billion tons of carbon in the aboveground and belowground portions of live and dead trees, understory seedlings and shrubs, coarse woody material, forest floor litter, and soil organic material (table 7). Over 52 percent of stored

Table 6—Area of forest land disturbed annually by forest-type group and disturbance class, Georgia, 2004–09

Forest-type group[a]	Disturbance class							
	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	1.4	46.5	4.8	128.3	2.6	1.1	14.9	0.0
Loblolly-shortleaf pine	24.4	45.9	7.5	140.8	4.6	1.9	14.4	0.0
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	25.8	92.4	12.3	269.1	7.2	2.9	29.2	0.0
Hardwood types								
Oak-pine	7.2	5.1	1.7	54.1	2.9	0.4	6.2	1.8
Oak-hickory	1.0	7.0	5.3	55.7	5.5	0.5	24.9	1.4
Oak-gum-cypress	10.0	1.1	9.8	32.0	3.6	14.5	3.2	1.2
Elm-ash-cottonwood	0.0	0.0	3.1	0.0	0.8	8.4	2.9	0.5
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tropical 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	0.0	0.0
Total hardwoods	18.2	13.2	20.0	141.8	12.7	23.8	37.1	4.9
Nonstocked	0.0	0.3	0.0	2.0	0.0	0.0	1.3	0.4
All groups	44.0	105.9	32.3	412.9	19.9	26.7	67.6	5.3

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 7—Carbon in the aboveground and belowground portions of live and dead trees (d.b.h. ≥1 inch); seedlings and shrubs (d.b.h. <1 inch); coarse roots, down woody material, and stumps; forest floor litter; and soil organic material by forest-type group, Georgia, 2009

Forest-type group[a]	Carbon pool								
	Above-ground live trees[b]	Below-ground live trees[b]	Above-ground and belowground standing dead trees[b]	Above-ground live seedlings and shrubs[c]	Below-ground live seedlings and shrubs[c]	Coarse roots, down woody material, and stumps	Forest floor litter	Soil organic material	Total
	thousand short tons								
Softwood types									
White-red-jack pine	1,859.6	402.2	118.1	49.7	5.5	213.8	273.9	1,070.2	3,992.9
Longleaf-slash pine	63,569.8	14,503.2	1,296.7	5,445.5	605.1	9,703.4	15,636.8	181,597.8	292,358.3
Loblolly-shortleaf pine	143,929.5	32,541.6	5,876.0	10,516.4	1,168.5	22,084.3	31,045.8	241,352.2	488,514.2
Other eastern softwoods	86.3	19.7	15.0	12.0	1.3	15.9	49.4	129.2	328.9
Total softwoods	209,445.2	47,466.8	7,305.8	16,023.6	1,780.4	32,017.4	47,005.9	424,149.4	785,194.4
Hardwood types									
Oak-pine	56,184.2	11,807.7	2,632.6	3,939.0	437.7	6,221.7	11,679.1	79,711.9	172,613.8
Oak-hickory	150,833.0	29,745.6	9,022.0	8,315.8	924.0	14,983.5	17,153.8	130,719.6	361,697.3
Oak-gum-cypress	88,656.9	17,744.3	5,410.9	2,179.3	242.1	9,126.8	9,027.6	238,624.5	371,012.5
Elm-ash-cottonwood	8,643.1	1,695.4	888.8	359.1	39.9	1,099.2	1,210.7	22,822.9	36,759.1
Other hardwoods	349.9	69.0	32.0	25.6	2.8	41.3	44.9	1,400.0	1,965.5
Tropical hardwoods	200.0	38.7	8.8	2.5	0.3	30.6	18.8	339.9	639.6
Exotic hardwoods	302.3	60.5	15.1	30.0	3.3	75.5	67.1	3,221.6	3,775.5
Total hardwoods	305,169.5	61,161.0	18,010.2	14,851.1	1,650.1	31,578.7	39,202.1	476,840.5	948,463.3
Nonstocked	204.2	41.8	40.8	424.5	47.2	40.9	315.8	11,123.8	12,239.1
All groups	514,819.0	108,669.6	25,356.8	31,299.3	3,477.7	63,637.0	86,523.8	912,113.6	1,745,896.8

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

[a] Based on past conditions.

[b] ≥1.0 inch in diameter at breast height (d.b.h.).

[c] <1.0 inch in d.b.h.

carbon was found in the forest soil, while over 30 percent was found in the trees themselves (fig. 15). These forest carbon estimates come from applying the suite of models used in the component ratio method (CRM) described in Woodall and others (2011). Aboveground tree carbon estimated using the CRM differs from a carbon estimate derived by taking the aboveground biomass dry weight estimate and multiplying it by 0.5, a commonly accepted biomass-to-carbon conversion factor. This is because the aboveground biomass dry weight estimates come from a regionally specific set of allometric equations that differs from the nationally consistent set of CRM allometric equations. In addition, the coarse woody material, forest floor, and soil organic carbon CRM estimates are derived from models using forest type and stand density measures. They are not estimated directly from the data collected as part of the additional forest health data collection program, phase 3.

The quantity of standing dead trees, also known as snags, in the forest is estimated directly from the FIA data. Snags are important forest carbon pools and wildlife habitat structures. Their density on the landscape and size distribution can be affected by management decisions and silvicultural treatments. By inventorying and monitoring snags, resource managers can set goals and implement management practices to achieve them. Table 8 presents the distribution of snags by forest-type group and diameter class. Table 9 presents the average number of snags per acre by forest-type group and stand origin.

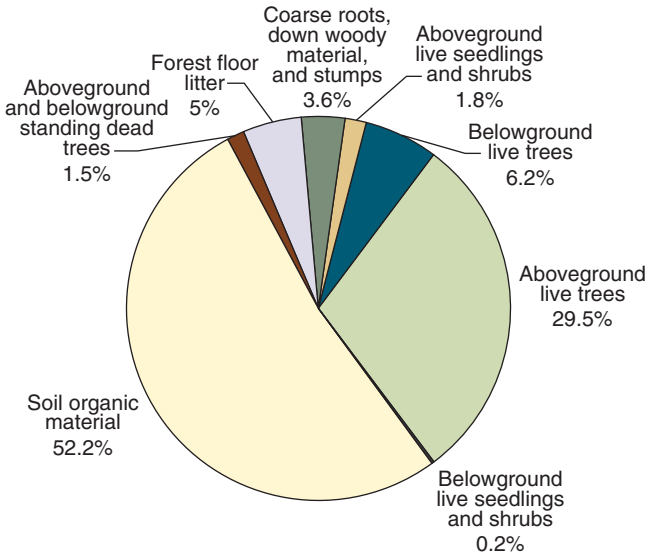

Figure 15—Percentage of forest carbon in the aboveground and belowground portions of live and dead trees [diameter at breast height (d.b.h.) ≥1 inch], seedlings and shrubs (d.b.h. <1 inch), coarse woody material, forest floor litter, and soil organic material by forest-type group, Georgia, 2009.

Table 8—Number of standing dead trees on forest land by forest-type group and diameter class, Georgia, 2009

Forest-type group	All classes	Diameter class (*inches at breast height*) 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	21.0–22.9	23.0–24.9	25.0–26.9	27.0–28.9	29.0+
	million trees													
Softwood types														
White-red-jack pine	1.2	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Longleaf-slash pine	18.4	10.1	4.7	1.8	1.0	0.5	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	37.6	17.2	9.7	5.0	2.8	1.3	0.7	0.2	0.3	0.1	0.0	0.0	0.0	0.1
Total softwoods	57.2	27.9	14.7	7.0	3.8	1.9	0.9	0.0	0.0	0.2	0.0	0.0	0.0	0.1
Hardwood types														
Oak-pine	18.1	7.5	3.9	2.5	1.8	0.8	0.8	0.2	0.2	0.1	0.0	0.0	0.0	0.1
Oak-hickory	41.7	15.3	10.3	6.4	3.8	2.9	1.4	0.9	0.4	0.2	0.0	0.1	0.1	0.1
Oak-gum-cypress	30.8	12.2	7.0	4.3	2.4	2.1	0.7	0.5	0.4	0.5	0.2	0.1	0.1	0.2
Elm-ash-cottonwood	3.0	1.1	0.7	0.4	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Other hardwoods	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tropical hardwoods	0.3	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	94.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Nonstocked	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All groups	151.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

D.b.h. = diameter at breast height.
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 9—Mean per-acre number of standing dead trees by forest-type group and stand origin, Georgia, 2009

Forest-type group[a]	Total	Stand origin: Natural	Planted
	number of trees per acre		
Softwood types			
White-red-jack pine	26.1	26.1	—
Longleaf-slash pine	5.0	6.2	4.5
Loblolly-shortleaf pine	5.1	7.4	3.4
Other eastern softwoods	—	—	—
Hardwood types			
Oak-pine	6.2	7.0	2.5
Oak-hickory	6.4	6.6	2.1
Oak-gum-cypress	9.1	9.1	—
Elm-ash-cottonwood	5.6	5.8	—
Other hardwoods	9.9	9.9	—
Tropical hardwoods	64.2	64.2	—
Exotic hardwoods	1.6	1.6	—
Nonstocked	1.5	1.3	2.5
All groups	6.1	7.3	3.6

D.b.h. = diameter at breast height.
— = no sample for the cell.
[a] Based on past conditions.

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GLOSSARY

All-live tree—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 Georgia 2009 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.

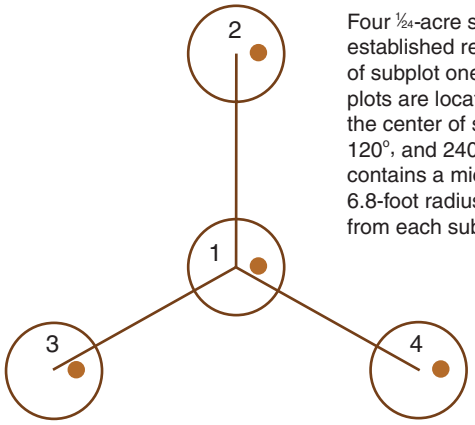
Under the annual inventory system, 20 percent (1 panel) of the total number of plots in a State are measured every year over a 5-year period (1 cycle). Each panel of plots is selected on a subgrid that is slightly offset from the previous panel so that each panel covers essentially the same sample area (both spatially and in intensity) as the prior panel. In the sixth year, the plots that were measured in the first panel are remeasured. This marks the beginning of the next cycle of data collection. After field measurements are completed, a cycle of data is available for the 5-year report.

Phase 1

For the 2009 inventory of Georgia, the P1 forest area estimate was based on classifying National Land Cover Database 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. These numbers could differ substantially for very small areas.

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



Four 1/24-acre subplots are established relative to the center of subplot one. The 24-foot radius plots are located 120 feet from the center of subplot one at 360°, 120°, and 240°. Each subplot contains a microplot with a 6.8-foot radius, 12 feet (at 90°) from each subplot center.

Figure A.1—Layout of annual fixed-radius plot design.

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 (U.S. Department of Agriculture Forest Service 2004a).

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 $1/16^{th}$ 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, and foliar ozone injury (U.S. Department of Agriculture Forest Service 2004b).

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 that are not properly calibrated; (2) compensating error, caused by instruments of moderate precision; and (3) accidental error, caused by human error in measuring and compiling. All of these are held to a minimum by the Forest Inventory and Analysis (FIA) quality assurance (QA) program. The goal of the QA program is to provide a framework of quality control procedures to assure the production of complete, accurate, and unbiased forest assessments for given standards. These methods include the use of nationally standardized field manuals, the use of portable data recorders, thorough entry-level training, periodic review training, supervision, the use of check plots, editing checks, and an emphasis on careful work. Additionally, data quality is assessed and documented using performance measurements and postsurvey 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 2004a, U.S. Department of Agriculture Forest Service 2004b). In some instances, the MQOs are a "best guess" of what experienced field crews should be able to consistently achieve. Tolerances are somewhat arbitrary and are based on the crews' ability to make repeatable measurements or observations within the assigned MQO.

Evaluation of field crew performance is accomplished by calculating the differences between data collected by the field crew and data collected by the QA crew on blind-check plots. Results of these calculations are compared to the established MQOs. In the analysis of blind-check data, an observation is within tolerance when the difference between the field crew observation and the QA crew observation does not exceed the assigned tolerance for that variable. For many categorical variables, the tolerance is "no error" allowed, so only observations that are identical are within the tolerance level. Tables B.1, B.2, and B.3 show the results of various blind checks for Georgia.

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.4).

Table B.1—Results of plot- and condition-level blind checks for Georgia, 2009

Variable	Number of observations	Number within tolerance	Percentage within tolerance
	- - - - *number* - - - -		- *percent* -
Plot variables			
Plot status	55	55	100.0
Plot nonsampled reason	0	—	—
Sample kind	38	38	100.0
Distance to road	42	29	69.0
Water on plot	11	10	90.9
Latitude degree	42	36	85.7
Longitude degree	42	37	88.1
Plot in correct county	43	43	100.0
Corrected county	0	—	—
Number of accessible forest land conditions	32	26	81.3
Number of subplot centers reverted	0	—	—
Distance to urban	32	11	34.4
Distance to agriculture	32	19	59.4
Plot accessibility	12	10	83.3
Condition variables			
Condition status	123	122	99.2
Condition nonsampled reason	1	1	100.0
Reserved status	90	90	100.0
Owner group	90	86	95.6
Forest type	88	60	68.2
Forest-type group	88	66	75.0
Stand-size class	90	72	80.0
Regeneration status	90	88	97.8
Tree density	90	89	98.9
Artificial regeneration species	30	30	100.0
Owner class	90	83	92.2
Private owner industrial status	81	76	93.8
Stand age	88	39	44.3
Disturbance 1	90	77	85.6
Disturbance year 1	14	14	100.0
Disturbance 2	14	11	78.6
Disturbance year 2	0	—	—
Disturbance 3	0	—	—
Disturbance year 3	0	—	—
Treatment 1	90	84	93.3
Treatment year 1	19	14	73.7
Treatment 2	19	16	84.2
Treatment year 2	9	9	100.0
Treatment 3	9	9	100.0
Treatment year 3	5	5	100.0
Physiographic class	90	83	92.2
Present land use	90	89	98.9

continued

Table B.1—Results of plot- and condition-level blind checks for Georgia, 2009 (continued)

Variable	Number of observations	Number within tolerance	Percent within tolerance
	- - - - number - - - -		*- percent -*
Condition variables (continued)			
Total acres	74	70	94.6
Percent forest	75	66	88.0
Stand structure	90	83	92.2
Operability	90	79	87.8
Site class	90	70	77.8
Fire	90	84	93.3
Grazing	90	89	98.9
Subplot variables			
Subplot nonsampled reason	1	0	0.0
Subplot center condition	200	178	89.0
Microplot center condition	177	177	100.0
Subplot slope	129	117	90.7
Subplot aspect	129	80	62.0
Snow/water depth	129	128	99.2
Boundary variables			
Boundary change	12	11	91.7
Existence of change	4	4	100.0
Contrasting condition	21	14	66.7
Left azimuth	9	1	11.1
Right azimuth	8	2	25.0
Existance of corner	9	6	66.7
Corner azimuth	0	—	—
Corner distance	0	—	—
Boundary status	18	—	—

— = no sample for the cell.

Table B.2—Results of tree and seedling blind checks for Georgia, 2009

Variable	Number of observations	Number within tolerance	Percentage within tolerance
	- - - - number - - - -		*- percent -*
Tree variables			
Condition number	1,053	938	89.1
Azimuth	817	768	94.0
Horizontal distance	815	794	97.4
Present tree status	1,053	1,045	99.2
Reconcile	225	214	95.1
Standing dead	95	94	98.9
Species	1,053	1,028	97.6
Genus	1,053	1,051	99.8
Live d.b.h.	700	518	74.0
Sound dead d.b.h.	11	8	72.7
Decayed dead d.b.h.	8	8	100.0
Live rotten/missing cull	14	11	78.6
Dead rotten/missing cull	39	32	82.1
Number of d.r.c. stems	1	1	100.0
D.r.c.	1	1	100.0
Total length	718	612	85.2
Live tree actual length	4	3	75.0
Dead tree actual length	7	6	85.7
Crown class	775	657	84.8
Compacted crown ratio	775	609	78.6
Cause of death	180	137	76.1
Mortality year	180	159	88.3
Decay class	95	91	95.8
Tree class	694	644	92.8
Tree grade	126	94	74.6
Board-foot cull	126	90	71.4
Dieback incidence	497	486	97.8
Dieback severity	0	—	—
Utilization class	157	155	98.7
Seedling variables			
Species	276	239	86.6
Genus	276	272	98.6
Count	276	187	67.8

D.b.h. = diameter at breast height; d.r.c. = diameter at root collar.

— = no sample for the cell.

Table B.3—Results of various blind checks for Georgia, 2009

Variable	Observations found by both	Observations found by cruiser	Observations found by QA
		number	
Missing/extra tree/seedling			
Trees	985	6	35
Seedlings	276	54	54

QA = quality assurance.

Table B.4—Statistical reliability for Georgia, 2009

Item	Sample estimate and 68.27 percent confidence interval	Sampling error
		percent
Forest land (*1,000 acres*)		
State	24,804.2 ± 146.3	0.59
Southeast	7,978.7 ± 81.4	1.02
Southwest	2,918.8 ± 54.0	1.85
Central	7,662.5 ± 75.9	0.99
North Central	3,263.5 ± 65.6	2.01
North	2,980.7 ± 43.5	1.46
All-live volume (*million cubic feet*)		
State	40,696.5 ± 488.4	1.20
Softwoods	19,950.7 ± 357.1	1.79
Hardwoods	20,745.8 ± 402.5	1.94
Growth, removals and mortality (*million cubic feet*)		
Net annual growth	1,935.4 ± 32.1	1.66
Softwoods	1,408.4 ± 29.9	2.12
Hardwoods	544.9 ± 17.1	3.13
Annual removals	1,408.8 ± 58.2	4.13
Softwoods	1,070.7 ± 47.2	4.41
Hardwoods	338.1 ± 28.3	8.37
Annual mortality	43.9 ± 1.3	3.03
Softwoods	20.6 ± 0.9	4.61
Hardwoods	22.9 ± 0.9	3.95

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

For example, the estimate of sampling error for softwood live-tree volume on timberland in the Central survey unit is computed as:

$$SE_s = 2.19\% \left[\frac{\sqrt{11{,}832.80}}{\sqrt{6{,}019.84}} \right] = 3.05\%$$

Thus, the estimated sampling error is 3.05 percent, and the resulting 68.27-percent confidence interval for softwood live-tree volume in the Central survey unit is 6,109.84 ± 186.21 million cubic feet.

Table C.1—Area by survey unit and land status, Georgia, 2009

Survey unit	Total area	All forest land	Land status						Nonforest land	Census water
			Unreserved			Reserved				
			Total	Timberland	Unproductive	Total	Productive	Unproductive		
	thousand acres									
Southeast	11,183.3	7,978.7	7,664.9	7,659.3	5.6	313.8	312.9	0.9	2,710.6	494.1
Southwest	5,646.4	2,918.8	2,918.8	2,917.1	1.7	0.0	0.0	0.0	2,645.2	82.4
Central	10,634.8	7,662.5	7,616.8	7,616.8	0.0	45.8	45.8	0.0	2,799.8	172.5
North Central	6,308.6	3,263.5	3,263.5	3,263.5	0.0	0.0	0.0	0.0	2,910.7	134.4
North	4,258.5	2,980.7	2,800.5	2,800.5	0.0	180.2	180.2	0.0	1,211.3	66.6
All units	38,031.7	24,804.2	24,264.4	24,257.1	7.3	539.7	538.8	0.9	12,277.5	950.0

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 ownership class and land status, Georgia, 2009

Ownership class	All forest land	Unreserved			Reserved		
		Total	Timberland	Un-productive	Total	Productive	Un-productive
	thousand acres						
U.S. Forest Service							
National forest	841.1	670.1	670.1	0.0	170.9	170.9	0.0
Total	841.1	670.1	670.1	0.0	170.9	170.9	0.0
Other Federal							
National Park Service	28.3	0.0	0.0	0.0	28.3	28.3	0.0
U.S. Fish and Wildlife Service	340.5	0.0	0.0	0.0	340.5	339.6	0.9
Dept. of Defense/Dept. of Energy	563.8	563.8	563.8	0.0	0.0	0.0	0.0
Other Federal	6.6	6.6	6.6	0.0	0.0	0.0	0.0
Total	939.2	570.4	570.4	0.0	368.8	367.9	0.9
State and local government							
State	394.5	394.5	394.5	0.0	0.0	0.0	0.0
Local	269.0	269.0	269.0	0.0	0.0	0.0	0.0
Total	663.6	663.6	663.6	0.0	0.0	0.0	0.0
Forest industry							
Corporate	2,614.2	2,614.2	2,614.2	0.0	0.0	0.0	0.0
Total	2,614.2	2,614.2	2,614.2	0.0	0.0	0.0	0.0
Nonindustrial private							
Corporate	5,656.4	5,656.4	5,650.8	5.6	0.0	0.0	0.0
Conservation/natural resources organization	29.6	29.6	29.6	0.0	0.0	0.0	0.0
Unincorporated local partnership/ association/club	139.7	139.7	139.7	0.0	0.0	0.0	0.0
Individual	13,920.4	13,920.4	13,918.7	1.7	0.0	0.0	0.0
Total	19,746.1	19,746.1	19,738.8	7.3	0.0	0.0	0.0
All classes	24,804.2	24,264.4	24,257.1	7.3	539.7	538.8	0.9

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, Georgia, 2009

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	45.8	28.9	0.0	0.0	0.0	16.9
Longleaf-slash pine	3,699.2	0.0	235.1	84.7	658.0	2,721.4
Loblolly-shortleaf pine	7,418.2	129.1	205.1	189.8	1,071.3	5,822.9
Other eastern softwoods	8.9	0.0	0.0	0.0	0.0	8.9
Total softwoods	11,172.2	158.0	440.2	274.5	1,729.2	8,570.2
Hardwood types						
Oak-pine	2,909.8	142.1	91.9	55.0	212.3	2,408.5
Oak-hickory	6,475.5	516.5	115.2	210.3	212.3	5,421.1
Oak-gum-cypress	3,385.4	4.9	284.6	85.3	366.9	2,643.7
Elm-ash-cottonwood	534.8	8.8	2.9	21.9	45.4	455.8
Other hardwoods	18.2	10.8	0.0	0.0	1.5	5.9
Tropical hardwoods	4.4	0.0	0.0	4.4	0.0	0.0
Exotic hardwoods	41.8	0.0	0.0	5.9	0.0	35.9
Total hardwoods	13,369.8	683.0	494.6	382.7	838.4	10,971.0
Nonstocked	262.2	0.0	4.4	6.3	46.6	204.9
All groups	24,804.2	841.1	939.2	663.6	2,614.2	19,746.1

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, Georgia, 2009

Forest-type group	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
	thousand acres				
Softwood types					
White-red-jack pine	45.8	34.9	10.9	0.0	0.0
Longleaf-slash pine	3,699.2	1,507.8	1,280.3	911.1	0.0
Loblolly-shortleaf pine	7,418.2	3,121.3	3,075.4	1,221.6	0.0
Other eastern softwoods	8.9	0.0	6.0	2.9	0.0
Total softwoods	11,172.2	4,664.0	4,372.6	2,135.7	0.0
Hardwood types					
Oak-pine	2,909.8	1,372.1	649.3	888.4	0.0
Oak-hickory	6,475.5	3,451.3	1,202.2	1,822.0	0.0
Oak-gum-cypress	3,385.4	1,703.2	837.5	844.6	0.0
Elm-ash-cottonwood	534.8	217.3	122.8	194.7	0.0
Other hardwoods	18.2	7.5	0.0	10.7	0.0
Tropical hardwoods	4.4	4.4	0.0	0.0	0.0
Exotic hardwoods	41.8	1.5	9.8	30.5	0.0
Total hardwoods	13,369.8	6,757.3	2,821.6	3,790.9	0.0
Nonstocked	262.2	0.0	0.0	0.0	262.2
All groups	24,804.2	11,421.2	7,194.1	5,926.6	262.2

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.5—Area of forest land by forest-type group and stand origin, Georgia, 2009

Forest-type group	Total	Stand origin	
		Natural stands	Artificial regeneration
	thousand acres		
Softwood types			
White-red-jack pine	45.8	45.8	0.0
Longleaf-slash pine	3,699.2	1,129.5	2,569.7
Loblolly-shortleaf pine	7,418.2	3,058.3	4,360.0
Other eastern softwoods	8.9	8.9	0.0
Total softwoods	11,172.2	4,242.5	6,929.7
Hardwood types			
Oak-pine	2,909.8	2,390.8	519.0
Oak-hickory	6,475.5	6,208.6	267.0
Oak-gum-cypress	3,385.4	3,370.4	15.0
Elm-ash-cottonwood	534.8	515.5	19.3
Other hardwoods	18.2	18.2	0.0
Tropical hardwoods	4.4	4.4	0.0
Exotic hardwoods	41.8	41.8	0.0
Total hardwoods	13,369.8	12,549.5	820.3
Nonstocked	262.2	213.5	48.7
All groups	24,804.2	17,005.6	7,798.6

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.

Table C.6—Area of forest land disturbed annually by forest-type group and disturbance class, Georgia, 2004–09

Forest-type group	Disturbance class							
	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	1.4	46.5	4.8	128.3	2.6	1.1	14.9	0.0
Loblolly-shortleaf pine	24.4	45.9	7.5	140.8	4.6	1.9	14.4	0.0
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	25.8	92.4	12.3	269.1	7.2	2.9	29.2	0.0
Hardwood types								
Oak-pine	7.2	5.1	1.7	54.1	2.9	0.4	6.2	1.8
Oak-hickory	1.0	7.0	5.3	55.7	5.5	0.5	24.9	1.4
Oak-gum-cypress	10.0	1.1	9.8	32.0	3.6	14.5	3.2	1.2
Elm-ash-cottonwood	0.0	0.0	3.1	0.0	0.8	8.4	2.9	0.5
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tropical 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	0.0	0.0
Total hardwoods	18.2	13.2	20.0	141.8	12.7	23.8	37.1	4.9
Nonstocked	0.0	0.3	0.0	2.0	0.0	0.0	1.3	0.4
All groups	44.0	105.9	32.3	412.9	19.9	26.7	67.6	5.3

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.7—Area of forest land treated annually by forest-type group and treatment class, Georgia, 2004–09

Forest-type group[a]	Total treated	Treatment class: Cutting: Final harvest	Partial harvest	Seed-tree/ shelterwood harvest	Commercial thinning	Timber stand improvement	Salvage cutting
	thousand acres						
Softwood types							
White-red-jack pine	0.4	0.0	0.4	0.0	0.0	0.0	0.0
Longleaf-slash pine	199.0	94.6	7.3	1.0	94.0	2.0	0.0
Loblolly-shortleaf pine	419.7	115.9	46.6	9.7	242.5	3.6	1.4
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	619.1	210.6	54.3	10.7	336.5	5.5	1.4
Hardwood types							
Oak-pine	60.4	18.9	23.4	2.5	15.5	0.0	0.0
Oak-hickory	82.1	34.6	29.2	0.4	12.7	5.2	0.0
Oak-gum-cypress	44.2	28.8	14.2	0.0	1.2	0.0	0.0
Elm-ash-cottonwood	6.8	5.8	1.0	0.0	0.0	0.0	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tropical hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.8	0.4	0.0	0.0	0.4	0.0	0.0
Total hardwoods	194.3	88.5	67.8	2.9	29.9	5.2	0.0
Nonstocked	2.2	0.4	1.6	0.0	0.2	0.0	0.0
All groups	815.6	299.5	123.7	13.6	366.6	10.7	1.4

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.8—Number of live trees on forest land by species group and diameter class, Georgia, 2009

Species group	All classes	Diameter class (*inches at breast height*)														
		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	1,297.2	343.0	353.1	288.7	160.8	78.2	36.3	20.0	9.4	3.8	2.3	1.3	0.2	0.1	0.0	0.0
Loblolly and shortleaf pines	3,414.8	1,219.3	769.7	657.2	394.1	189.9	91.6	44.8	22.8	11.5	6.5	6.0	1.2	0.2	0.1	0.0
Other yellow pines	176.8	78.7	36.6	20.2	15.1	11.6	6.5	4.6	2.0	0.8	0.3	0.5	0.0	0.0	0.0	0.0
Eastern white and red pines	64.3	34.7	11.7	6.6	3.3	2.3	1.1	1.1	0.8	0.7	0.4	0.8	0.5	0.1	0.1	0.0
Eastern hemlock	22.4	12.8	3.6	3.2	1.3	0.5	0.4	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Cypress	267.9	132.8	66.1	26.8	13.1	9.9	7.4	5.7	2.7	1.7	0.6	0.5	0.2	0.1	0.1	0.1
Other eastern softwoods	64.5	36.8	16.5	6.2	2.4	1.3	0.6	0.5	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	5,307.9	1,858.1	1,257.2	1,009.0	590.1	293.6	143.9	76.9	37.9	18.9	10.1	9.2	2.1	0.6	0.3	0.1
Hardwood																
Select white oaks	257.3	118.5	49.1	24.3	18.2	12.4	11.4	7.5	6.4	4.3	1.9	2.4	0.4	0.2	0.0	0.1
Select red oaks	36.9	17.5	4.5	3.6	2.3	2.2	1.6	1.2	1.1	1.1	0.8	0.4	0.4	0.0	0.0	0.1
Other white oaks	390.1	211.8	68.0	33.0	23.4	16.7	13.0	9.5	4.8	3.8	1.8	2.3	0.9	0.8	0.1	0.2
Other red oaks	1,998.4	1,385.5	296.5	111.8	63.8	46.0	30.6	22.4	14.3	10.6	6.3	6.5	2.3	1.2	0.4	0.3
Hickory	377.6	249.9	49.8	29.8	17.7	11.3	7.9	4.9	2.6	1.7	0.9	0.6	0.1	0.2	0.0	0.1
Yellow birch	3.8	3.2	0.0	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hard maple	64.2	50.0	9.2	2.6	1.4	0.5	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1,424.4	1,054.2	211.3	75.3	37.0	19.8	11.4	6.8	4.0	2.2	1.1	1.0	0.3	0.1	0.0	0.0
Beech	37.1	23.2	8.4	2.2	1.0	0.5	0.5	0.4	0.2	0.2	0.2	0.2	0.1	0.0	0.0	0.0
Sweetgum	2,013.6	1,434.5	337.8	114.6	54.7	30.0	17.8	11.3	5.9	2.9	2.2	1.6	0.2	0.1	0.1	0.0
Tupelo and blackgum	1,160.8	719.7	205.7	101.5	55.1	34.6	19.2	11.9	6.7	2.8	2.0	1.3	0.1	0.1	0.1	0.0
Ash	160.4	102.0	33.5	10.3	4.7	3.0	1.8	1.8	1.2	1.0	0.4	0.6	0.1	0.1	0.0	0.0
Cottonwood and aspen	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	2.1	0.4	0.0	0.4	0.4	0.4	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Yellow-poplar	419.9	232.4	74.4	34.5	22.1	15.3	13.0	7.8	6.4	5.3	3.6	3.5	1.2	0.4	0.1	0.0
Black walnut	4.7	2.2	0.4	0.6	0.6	0.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	1,150.5	838.1	174.2	70.2	33.5	16.0	8.7	4.2	2.7	1.3	0.6	0.7	0.2	0.1	0.1	0.0
Other eastern hard hardwoods	662.7	518.5	105.5	26.4	7.3	3.0	0.9	0.7	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	1,026.0	735.7	163.0	69.6	30.9	14.0	6.3	3.7	1.3	0.7	0.4	0.4	0.1	0.0	0.0	0.0
Total hardwoods	11,190.6	7,697.3	1,791.2	711.3	374.2	226.0	144.8	94.6	57.9	38.0	22.2	21.7	6.4	3.2	0.9	0.8
All species	16,498.5	9,555.4	3,048.5	1,720.3	964.3	519.7	288.7	171.4	95.8	56.9	32.3	30.8	8.4	3.8	1.2	0.8

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.9—Net[a] volume of live trees on forest land by ownership class and land status, Georgia, 2009

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timberland	Un-productive	Total	Productive	Un-productive
		million cubic feet					
U.S. Forest Service							
National forest	2,378.0	1,792.1	1,792.1	0.0	585.8	585.8	0.0
Total	2,378.0	1,792.1	1,792.1	0.0	585.8	585.8	0.0
Other Federal							
National Park Service	57.7	0.0	0.0	0.0	57.7	57.7	0.0
U.S. Fish and Wildlife Service	476.4	0.0	0.0	0.0	476.4	476.4	0.0
Dept. of Defense/Dept. of Energy	1,340.6	1,340.6	1,340.6	0.0	0.0	0.0	0.0
Other Federal	1.0	1.0	1.0	0.0	0.0	0.0	0.0
Total	1,875.7	1,341.6	1,341.6	0.0	534.2	534.2	0.0
State and local government							
State	857.3	857.3	857.3	0.0	0.0	0.0	0.0
Local	441.4	441.4	441.4	0.0	0.0	0.0	0.0
Total	1,298.7	1,298.7	1,298.7	0.0	0.0	0.0	0.0
Forest industry							
Corporate	3,256.3	3,256.3	3,256.3	0.0	0.0	0.0	0.0
Total	3,256.3	3,256.3	3,256.3	0.0	0.0	0.0	0.0
Nonindustrial private							
Corporate	8,517.5	8,517.5	8,516.9	0.7	0.0	0.0	0.0
Conservation/natural resources organization	71.4	71.4	71.4	0.0	0.0	0.0	0.0
Unincorporated local partnership/ association/club	235.2	235.2	235.2	0.0	0.0	0.0	0.0
Individual	23,063.6	23,063.6	23,063.6	0.0	0.0	0.0	0.0
Total	31,887.8	31,887.8	31,887.1	0.7	0.0	0.0	0.0
All classes	40,696.5	39,576.5	39,575.8	0.7	1,120.0	1,120.0	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.10—Net[a] volume of live trees on forest land by forest-type group and stand-size class, Georgia, 2009

Forest-type group	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
	million cubic feet				
Softwood types					
White-red-jack pine	198.5	177.4	21.1	0.0	0.0
Longleaf-slash pine	4,932.6	3,295.6	1,552.2	84.8	0.0
Loblolly-shortleaf pine	12,400.0	7,978.0	4,209.0	212.9	0.0
Other eastern softwoods	6.3	0.0	6.3	0.0	0.0
Total softwoods	17,537.5	11,451.0	5,788.7	297.8	0.0
Hardwood types					
Oak-pine	4,356.6	3,418.7	711.3	226.6	0.0
Oak-hickory	11,005.3	9,086.0	1,503.9	415.3	0.0
Oak-gum-cypress	7,027.5	5,456.3	1,349.2	221.9	0.0
Elm-ash-cottonwood	694.8	542.5	123.1	29.2	0.0
Other hardwoods	27.7	27.0	0.0	0.7	0.0
Tropical hardwoods	14.2	14.2	0.0	0.0	0.0
Exotic hardwoods	17.1	2.4	10.7	4.0	0.0
Total hardwoods	23,143.1	18,547.2	3,698.2	897.8	0.0
Nonstocked	15.9	0.0	0.0	0.0	15.9
All groups	40,696.5	29,998.1	9,486.9	1,195.5	15.9

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 species group and ownership group, Georgia, 2009

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	5,074.5	0.0	486.6	117.0	722.5	3,748.4
Loblolly and shortleaf pines	12,645.3	331.9	500.7	415.7	1,317.2	10,079.9
Other yellow pines	806.1	105.6	12.2	19.8	22.9	645.6
Eastern white and red pines	416.5	291.4	0.0	1.3	0.0	123.8
Eastern hemlock	53.1	40.7	0.0	0.0	0.0	12.4
Cypress	886.8	0.0	72.0	53.1	140.6	621.1
Other eastern softwoods	68.4	0.0	3.4	3.8	1.0	60.2
Total softwoods	19,950.7	769.6	1,074.8	610.6	2,204.2	15,291.5
Hardwood						
Select white oaks	1,774.8	153.7	33.0	51.1	49.5	1,487.5
Select red oaks	404.3	102.5	1.4	31.8	15.4	253.2
Other white oaks	1,667.2	365.8	48.7	106.7	26.3	1,119.7
Other red oaks	4,829.3	270.7	173.2	146.3	285.8	3,953.3
Hickory	981.9	81.4	19.3	37.3	32.5	811.3
Yellow birch	3.2	0.9	0.0	0.0	0.0	2.3
Hard maple	34.2	4.1	3.0	0.4	0.5	26.1
Soft maple	1,384.3	114.1	49.9	17.3	97.1	1,106.0
Beech	89.7	3.1	0.7	4.8	1.8	79.4
Sweetgum	2,509.6	34.6	104.3	67.2	124.8	2,178.6
Tupelo and blackgum	2,205.8	45.2	117.2	58.5	189.9	1,795.1
Ash	378.7	21.0	14.3	24.1	29.2	290.1
Cottonwood and aspen	6.4	0.0	0.7	0.0	0.0	5.7
Basswood	28.6	15.6	0.0	0.0	0.2	12.8
Yellow-poplar	2,449.1	227.2	34.9	48.0	57.0	2,082.0
Black walnut	23.3	0.7	0.5	0.0	1.0	21.1
Other eastern soft hardwoods	1,060.0	47.7	133.8	56.2	84.3	738.0
Other eastern hard hardwoods	176.0	52.5	5.1	5.6	5.9	107.0
Eastern noncommercial hardwoods	739.4	67.5	61.0	32.9	50.8	527.2
Total hardwoods	20,745.8	1,608.4	801.0	688.1	1,052.0	16,596.3
All species	40,696.5	2,378.0	1,875.7	1,298.7	3,256.3	31,887.8

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.12—Net[a] volume of live trees on forest land by species group and diameter class, Georgia, 2009

Species group	All classes	Diameter class (*inches at breast height*) 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	5,074.5	714.2	1,059.5	983.8	749.9	619.5	400.8	219.6	166.0	118.5	21.9	20.6	0.0	0.0
Loblolly and shortleaf pines	12,645.3	1,629.6	2,492.2	2,305.1	1,840.1	1,348.8	995.3	683.0	499.3	609.9	177.6	37.7	26.7	0.0
Other yellow pines	806.1	66.6	111.1	158.0	138.2	140.2	82.3	40.0	21.2	48.5	0.0	0.0	0.0	0.0
Eastern white and red pines	416.5	18.7	20.6	25.7	19.6	26.6	30.4	38.7	33.2	83.8	67.2	32.2	19.8	0.0
Eastern hemlock	53.1	8.2	6.6	5.5	7.0	6.3	2.5	5.7	0.0	5.2	0.0	6.0	0.0	0.0
Cypress	886.8	77.7	86.1	113.7	129.1	140.9	98.9	78.2	40.9	41.7	30.5	15.0	10.7	23.5
Other eastern softwoods	68.4	14.0	12.8	12.5	8.2	9.3	4.1	6.0	1.4	0.0	0.0	0.0	0.0	0.0
Total softwoods	19,950.7	2,529.1	3,788.8	3,604.3	2,892.2	2,291.5	1,614.3	1,071.2	762.1	907.6	297.3	111.6	57.2	23.5
Hardwood														
Select white oaks	1,774.8	70.6	122.4	159.0	229.2	226.9	265.7	229.2	137.0	222.6	55.6	38.8	0.0	17.8
Select red oaks	404.3	11.2	16.9	27.7	34.3	37.2	43.2	56.0	53.2	38.1	46.2	7.4	9.0	23.9
Other white oaks	1,667.2	88.6	141.9	185.3	223.2	237.0	156.0	157.9	94.9	156.4	88.0	84.6	16.6	36.9
Other red oaks	4,829.3	313.8	394.4	523.4	546.6	571.5	514.9	486.8	370.8	527.2	264.6	171.7	72.5	71.3
Hickory	981.9	74.0	107.9	130.6	154.9	138.5	105.1	88.3	59.7	59.5	14.4	25.9	6.8	16.2
Yellow birch	3.2	1.2	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hard maple	34.2	6.3	8.6	5.2	4.5	3.3	2.9	3.4	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1,384.3	214.4	222.6	205.7	183.1	163.0	126.6	93.4	59.7	74.1	28.7	13.1	0.0	0.0
Beech	89.7	6.3	6.2	5.7	9.3	7.2	8.7	10.6	11.3	11.9	6.3	6.3	0.0	0.0
Sweetgum	2,509.6	283.8	349.3	378.6	367.3	346.5	246.8	163.2	164.5	154.2	34.4	10.4	10.5	0.0
Tupelo and blackgum	2,205.8	259.8	332.3	385.6	345.2	304.6	226.8	119.5	109.7	87.6	8.8	17.3	8.6	0.0
Ash	378.7	31.3	32.2	36.8	33.6	53.0	47.1	49.1	24.9	51.7	9.4	9.7	0.0	0.0
Cottonwood and aspen	6.4	0.3	0.0	0.6	0.0	0.9	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0
Basswood	28.6	1.7	2.5	5.3	6.1	0.0	1.6	4.1	0.0	2.5	4.8	0.0	0.0	0.0
Yellow-poplar	2,449.1	107.6	156.2	200.0	278.2	242.7	269.4	305.8	261.1	341.5	170.4	75.5	26.0	14.9
Black walnut	23.3	1.6	3.8	2.6	2.6	3.4	5.9	1.4	2.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	1,060.0	187.5	189.1	163.6	141.4	100.2	86.6	56.2	29.9	50.7	22.2	11.2	21.4	0.0
Other eastern hard hardwoods	176.0	56.4	35.6	29.9	14.3	17.3	5.5	4.9	5.8	6.3	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	739.4	171.3	168.4	135.0	90.5	76.3	36.7	17.2	18.2	22.6	3.1	0.0	0.0	0.0
Total hardwoods	20,745.8	1,887.7	2,291.9	2,580.9	2,664.1	2,529.6	2,149.6	1,846.9	1,402.5	1,807.0	761.6	471.8	171.3	180.9
All species	40,696.5	4,416.7	6,080.7	6,185.2	5,556.3	4,821.1	3,763.9	2,918.2	2,164.6	2,714.6	1,058.8	583.3	228.6	204.4

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

Table C.13—Net[a] volume of live trees on forest land by forest-type group and stand origin, Georgia, 2009

Forest-type group	Total	Stand origin	
		Natural stands	Artificial regeneration
	million cubic feet		
Softwood types			
White-red-jack pine	198.5	198.5	0.0
Longleaf-slash pine	4,932.6	2,200.3	2,732.3
Loblolly-shortleaf pine	12,400.0	6,522.3	5,877.7
Other eastern softwoods	6.3	6.3	0.0
Total softwoods	17,537.5	8,927.4	8,610.0
Hardwood types			
Oak-pine	4,356.6	4,122.1	234.5
Oak-hickory	11,005.3	10,928.1	77.2
Oak-gum-cypress	7,027.5	7,024.8	2.6
Elm-ash-cottonwood	694.8	662.9	31.9
Other hardwoods	27.7	27.7	0.0
Tropical hardwoods	14.2	14.2	0.0
Exotic hardwoods	17.1	17.1	0.0
Total hardwoods	23,143.1	22,796.9	346.2
Nonstocked	15.9	10.6	5.3
All groups	40,696.5	31,735.0	8,961.5

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.

Table C.14—Aboveground dry weight[a] of live trees on forest land by ownership class and land status, Georgia, 2009

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timberland	Unproductive	Total	Productive	Unproductive
		thousand tons					
U.S. Forest Service							
National forest	61,480.7	46,543.6	46,543.6	0.0	14,937.2	14,937.2	0.0
Total	61,480.7	46,543.6	46,543.6	0.0	14,937.2	14,937.2	0.0
Other Federal							
National Park Service	1,655.0	0.0	0.0	0.0	1,655.0	1,655.0	0.0
U.S. Fish and Wildlife Service	13,052.8	0.0	0.0	0.0	13,052.8	13,052.8	0.0
Dept. of Defense/Dept. of Energy	32,479.9	32,479.9	32,479.9	0.0	0.0	0.0	0.0
Other Federal	47.7	47.7	47.7	0.0	0.0	0.0	0.0
Total	47,235.4	32,527.6	32,527.6	0.0	14,707.8	14,707.8	0.0
State and local government							
State	22,247.4	22,247.4	22,247.4	0.0	0.0	0.0	0.0
Local	12,303.4	12,303.4	12,303.4	0.0	0.0	0.0	0.0
Total	34,550.8	34,550.8	34,550.8	0.0	0.0	0.0	0.0
Forest industry							
Corporate	91,476.7	91,476.7	91,476.7	0.0	0.0	0.0	0.0
Total	91,476.7	91,476.7	91,476.7	0.0	0.0	0.0	0.0
Nonindustrial private							
Corporate	227,948.0	227,948.0	227,908.1	39.9	0.0	0.0	0.0
Conservation/natural resources organization	1,870.3	1,870.3	1,870.3	0.0	0.0	0.0	0.0
Unincorporated local partnership/ association/club	6,219.2	6,219.2	6,219.2	0.0	0.0	0.0	0.0
Individual	620,309.3	620,309.3	620,308.8	0.5	0.0	0.0	0.0
Total	856,346.7	856,346.7	856,306.4	40.3	0.0	0.0	0.0
All classes	1,091,090.4	1,061,445.4	1,061,405.1	40.3	29,645.0	29,645.0	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] Calculations based on TREE_REGIONAL_BIOMASS.REGIONAL_DRYBIOT table in Forest Inventory and Analysis users guide.

Table C.15—Total carbon[a] of live trees on forest land by ownership class and land status, Georgia, 2009

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timberland	Un-productive	Total	Productive	Un-productive
	thousand tons						
U.S. Forest Service							
National forest	30,740.4	23,271.8	23,271.8	0.0	7,468.6	7,468.6	0.0
Total	30,740.4	23,271.8	23,271.8	0.0	7,468.6	7,468.6	0.0
Other Federal							
National Park Service	827.5	0.0	0.0	0.0	827.5	827.5	0.0
U.S. Fish and Wildlife Service	6,526.4	0.0	0.0	0.0	6,526.4	6,526.4	0.0
Dept. of Defense/Dept. of Energy	16,239.9	16,239.9	16,239.9	0.0	0.0	0.0	0.0
Other Federal	23.9	23.9	23.9	0.0	0.0	0.0	0.0
Total	23,617.7	16,263.8	16,263.8	0.0	7,353.9	7,353.9	0.0
State and local government							
State	11,123.7	11,123.7	11,123.7	0.0	0.0	0.0	0.0
Local	6,151.7	6,151.7	6,151.7	0.0	0.0	0.0	0.0
Total	17,275.4	17,275.4	17,275.4	0.0	0.0	0.0	0.0
Forest industry							
Corporate	45,738.4	45,738.4	45,738.4	0.0	0.0	0.0	0.0
Total	45,738.4	45,738.4	45,738.4	0.0	0.0	0.0	0.0
Nonindustrial private							
Corporate	113,974.0	113,974.0	113,954.1	19.9	0.0	0.0	0.0
Conservation/natural resources organization	935.1	935.1	935.1	0.0	0.0	0.0	0.0
Unincorporated local partnership/ association/club	3,109.6	3,109.6	3,109.6	0.0	0.0	0.0	0.0
Individual	310,154.6	310,154.6	310,154.4	0.2	0.0	0.0	0.0
Total	428,173.4	428,173.4	428,153.2	20.2	0.0	0.0	0.0
All classes	545,545.2	530,722.7	530,702.5	20.2	14,822.5	14,822.5	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. Calculations based on TREE_REGIONAL_BIOMASS.REGIONAL_DRYBIOT table in Forest Inventory and Analysis users guide.

Table C.16—Average annual net growth of live trees by ownership class and land status, Georgia, 2004–09

Ownership class	Land status	
	Timberland	Forest land
	million cubic feet	
U.S. Forest Service		
National forest	26.8	33.8
Total	26.8	33.8
Other Federal		
National Park Service	0.0	0.2
U.S. Fish and Wildlife Service	0.4	2.2
Dept. of Defense/ Dept. of Energy	27.5	27.5
Other Federal	0.0	0.0
Total	28.0	29.9
State and local government		
State	24.4	24.4
Local	23.4	23.4
Total	47.9	47.9
Forest industry		
Corporate	261.0	260.8
Total	261.0	260.8
Nonindustrial private		
Corporate	465.3	458.7
Conservation/natural resources organization	0.4	0.4
Unincorporated partnership/ association/club	12.0	12.0
Individual	1,092.6	1,092.3
Total	1,570.3	1,563.3
All classes	1,933.8	1,935.7

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.

Table C.17—Average annual net growth of live trees on forest land by forest-type group and stand-size class, Georgia, 2004–09

Forest-type group[a]	All size classes	Stand-size class: Large diameter	Stand-size class: Medium diameter	Stand-size class: Small diameter	Non-stocked
	million cubic feet				
Softwood types					
White-red-jack pine	3.1	1.9	1.2	0.0	0.0
Longleaf-slash pine	320.8	78.9	164.1	77.7	0.0
Loblolly-shortleaf pine	945.2	228.8	505.9	210.5	0.0
Other eastern softwoods	0.5	0.2	0.3	0.0	0.0
Total softwoods	1,269.7	309.9	671.5	288.3	0.0
Hardwood types					
Oak-pine	190.7	73.5	48.2	69.0	0.0
Oak-hickory	312.6	162.3	77.4	72.9	0.0
Oak-gum-cypress	136.6	73.8	39.2	23.6	0.0
Elm-ash-cottonwood	17.9	7.9	5.2	4.8	0.0
Other hardwoods	2.0	1.2	0.2	0.6	0.0
Tropical hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	1.6	0.5	0.5	0.6	0.0
Total hardwoods	661.6	319.4	170.8	171.5	0.0
Nonstocked	4.4	0.0	0.0	0.0	4.4
All groups	1,935.7	629.3	842.2	459.8	4.4

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 net growth of live trees on forest land by species group and ownership group, Georgia, 2004–09

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	352.5	0.0	11.2	7.2	71.2	262.9
Loblolly and shortleaf pines	1,017.8	9.1	9.4	22.7	154.0	822.6
Other yellow pines	2.9	-0.2	0.1	1.0	2.8	-0.7
Eastern white and red pines	12.0	7.0	0.0	0.0	0.0	5.0
Eastern hemlock	2.3	1.8	0.0	0.0	0.0	0.6
Cypress	10.5	0.0	1.1	1.6	-0.5	8.4
Other eastern softwoods	1.9	0.0	0.1	0.2	0.1	1.6
Total softwoods	1,399.9	17.6	21.8	32.7	227.5	1,100.3
Hardwood						
Select white oaks	45.9	-0.1	0.8	1.7	1.4	42.0
Select red oaks	8.1	0.5	0.0	1.0	0.4	6.2
Other white oaks	35.3	3.8	0.8	2.9	0.3	27.5
Other red oaks	141.4	2.6	4.6	2.2	10.6	121.4
Hickory	20.7	0.9	0.4	0.7	1.8	16.9
Yellow birch	0.2	0.0	0.0	0.0	0.0	0.1
Hard maple	1.3	0.0	0.1	0.1	0.1	1.1
Soft maple	35.4	2.7	0.2	0.7	3.2	28.6
Beech	-0.2	-1.3	0.1	0.0	0.2	0.9
Sweetgum	82.0	0.8	2.2	2.9	4.5	71.6
Tupelo and blackgum	30.7	0.4	0.5	0.3	2.7	26.8
Ash	2.2	-0.5	0.1	-0.3	0.5	2.3
Cottonwood and aspen	-0.2	0.0	0.0	-0.2	0.0	0.0
Basswood	1.3	0.9	0.0	0.0	0.0	0.5
Yellow-poplar	84.1	3.9	1.0	2.1	3.0	74.1
Black walnut	0.3	0.1	-0.1	0.0	0.0	0.4
Other eastern soft hardwoods	27.7	0.3	-2.5	0.2	2.3	27.4
Other eastern hard hardwoods	1.0	-0.2	-0.3	-0.2	0.0	1.5
Eastern noncommercial hardwoods	18.7	1.2	0.3	1.0	2.3	13.9
Total hardwoods	535.8	16.2	8.1	15.1	33.3	463.0
All species	1,935.7	33.8	29.9	47.9	260.8	1,563.3

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.19—Average annual mortality of live trees by ownership class and land status, Georgia, 2004–09

Ownership class	Land status	
	Timberland	Forest land
	million cubic feet	
U.S. Forest Service		
National forest	19.9	24.9
Total	19.9	24.9
Other Federal		
National Park Service	0.0	1.5
U.S. Fish and Wildlife Service	0.6	17.2
Dept. of Defense/ Dept. of Energy	10.2	10.2
Total	10.7	28.9
State and local government		
State	8.6	8.6
Local	4.8	4.8
Total	13.4	13.4
Forest industry		
Corporate	24.4	24.4
Total	24.4	24.4
Nonindustrial private		
Corporate	80.2	83.2
Conservation/natural resources organization	1.9	1.9
Unincorporated partnership/ association/club	1.2	1.2
Individual	210.5	210.5
Total	293.8	296.8
All classes	362.3	388.5

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.

Table C.20—Average annual mortality of live trees on forest land by forest-type group and stand-size class, Georgia, 2004–09

Forest-type group[a]	All size classes	Stand-size class: Large diameter	Medium diameter	Small diameter	Non-stocked
	million cubic feet				
Softwood types					
White-red-jack pine	0.4	0.4	0.0	0.0	0.0
Longleaf-slash pine	33.9	19.3	13.2	1.4	0.0
Loblolly-shortleaf pine	108.1	75.1	30.0	3.1	0.0
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0
Total softwoods	142.4	94.8	43.2	4.4	0.0
Hardwood types					
Oak-pine	47.6	36.0	9.6	2.1	0.0
Oak-hickory	82.2	65.6	12.6	4.0	0.0
Oak-gum-cypress	103.7	77.3	20.3	6.2	0.0
Elm-ash-cottonwood	11.4	8.3	2.5	0.6	0.0
Other hardwoods	0.4	0.4	0.0	0.0	0.0
Tropical hardwoods	0.5	0.5	0.0	0.0	0.0
Exotic hardwoods	0.1	0.0	0.0	0.1	0.0
Total hardwoods	245.9	188.0	44.9	13.0	0.0
Nonstocked	0.1	0.0	0.0	0.0	0.1
All groups	388.5	282.8	88.1	17.4	0.1

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.21—Average annual mortality of live trees on forest land by species group and ownership group, Georgia, 2004–09

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	38.9	0.0	2.9	0.9	3.8	31.2
Loblolly and shortleaf pines	108.1	6.9	5.3	2.7	7.1	86.0
Other yellow pines	28.2	3.8	0.3	0.1	0.1	23.9
Eastern white and red pines	2.0	1.4	0.0	0.0	0.0	0.6
Eastern hemlock	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	3.7	0.0	0.7	0.1	1.1	1.8
Other eastern softwoods	0.9	0.0	0.0	0.0	0.0	0.8
Total softwoods	181.7	12.1	9.3	3.9	12.1	144.4
Hardwood						
Select white oaks	7.8	2.2	0.0	0.0	0.9	4.7
Select red oaks	4.2	0.5	0.1	0.3	0.1	3.2
Other white oaks	6.3	1.7	0.2	0.6	0.0	3.8
Other red oaks	59.9	2.4	2.2	2.8	2.9	49.5
Hickory	5.2	0.5	0.0	0.1	0.1	4.6
Yellow birch	0.1	0.0	0.0	0.0	0.0	0.1
Hard maple	0.3	0.1	0.0	0.0	0.0	0.2
Soft maple	21.7	0.3	1.7	0.5	1.4	17.9
Beech	2.1	1.3	0.0	0.0	0.0	0.8
Sweetgum	20.8	0.0	0.8	0.1	1.6	18.4
Tupelo and blackgum	19.0	0.1	1.7	1.4	1.8	14.0
Ash	7.5	0.6	0.0	0.6	0.1	6.2
Cottonwood and aspen	0.3	0.0	0.0	0.2	0.0	0.0
Basswood	0.0	0.0	0.0	0.0	0.0	0.0
Yellow-poplar	12.2	1.5	0.1	0.1	1.1	9.3
Black walnut	0.5	0.0	0.1	0.0	0.0	0.4
Other eastern soft hardwoods	24.4	0.2	10.5	1.9	2.0	9.9
Other eastern hard hardwoods	4.3	1.0	0.4	0.4	0.1	2.4
Eastern noncommercial hardwoods	10.2	0.4	1.8	0.6	0.3	7.2
Total hardwoods	206.8	12.8	19.6	9.5	12.3	152.4
All species	388.5	24.9	28.9	13.4	24.4	296.8

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.22—Average annual net removals of live trees by ownership class and land status, Georgia, 2004–09

Ownership class	Land status	
	Timberland	Forest land
	million cubic feet	
U.S. Forest Service		
National forest	1.8	1.8
Total	1.8	1.8
Other Federal		
National Park Service	0.0	0.0
U.S. Fish and Wildlife Service	2.7	3.7
Dept. of Defense/Dept. of Energy	22.7	22.7
Other Federal	0.9	0.9
Total	26.3	27.3
State and local government		
State	15.7	15.7
Local	7.9	7.9
Total	23.7	23.7
Forest industry		
Corporate	210.2	210.2
Total	210.2	210.2
Nonindustrial private		
Corporate	395.0	394.9
Conservation/natural resources organization	0.7	0.7
Unincorporated partnership/ association/club	15.4	15.4
Individual	734.6	734.7
Total	1,145.8	1,145.8
All classes	1,407.8	1,408.8

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.23—Average annual removals of live trees on forest land by forest-type group and stand-size class, Georgia, 2004–09

Forest-type group[a]	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
	million cubic feet				
Softwood types					
White-red-jack pine	2.0	2.0	0.0	0.0	0.0
Longleaf-slash pine	350.2	187.0	161.8	1.3	0.0
Loblolly-shortleaf pine	687.6	382.5	295.1	9.9	0.0
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0
Total softwoods	1,039.7	571.5	457.0	11.3	0.0
Hardwood types					
Oak-pine	94.0	74.9	13.6	5.5	0.0
Oak-hickory	159.3	114.2	27.2	17.8	0.0
Oak-gum-cypress	105.7	90.7	14.4	0.5	0.0
Elm-ash-cottonwood	9.5	7.7	1.3	0.5	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0
Tropical hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.1	0.0	0.0	0.0	0.0
Total hardwoods	368.6	287.6	56.6	24.4	0.0
Nonstocked	0.5	0.0	0.0	0.0	0.5
All groups	1,408.8	859.1	513.6	35.7	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.24—Average annual removals of live trees on forest land by species group and ownership group, Georgia, 2004–09

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	345.1	0.0	8.2	3.0	79.1	254.8
Loblolly and shortleaf pines	699.9	1.8	14.1	15.2	99.1	569.6
Other yellow pines	17.5	0.0	0.2	0.5	0.6	16.3
Eastern white and red pines	1.9	0.0	0.0	0.0	0.0	1.9
Eastern hemlock	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	5.1	0.0	0.1	0.0	1.2	3.8
Other eastern softwoods	1.0	0.0	0.0	0.0	0.2	0.9
Total softwoods	1,070.7	1.8	22.6	18.7	180.2	847.4
Hardwood						
Select white oaks	19.1	0.0	0.0	0.5	0.8	17.9
Select red oaks	3.2	0.0	0.1	0.0	0.0	3.1
Other white oaks	15.0	0.0	0.0	0.1	1.7	13.1
Other red oaks	92.4	0.0	1.6	0.6	6.2	84.0
Hickory	14.7	0.0	0.7	0.3	0.1	13.5
Yellow birch	0.0	0.0	0.0	0.0	0.0	0.0
Hard maple	0.6	0.0	0.0	0.0	0.0	0.6
Soft maple	18.6	0.0	0.0	0.2	1.7	16.6
Beech	0.2	0.0	0.0	0.0	0.0	0.2
Sweetgum	69.7	0.0	1.3	2.3	4.3	61.8
Tupelo and blackgum	37.8	0.0	0.1	0.0	12.5	25.2
Ash	3.8	0.0	0.0	0.0	0.5	3.3
Cottonwood and aspen	0.1	0.0	0.0	0.0	0.0	0.1
Basswood	0.9	0.0	0.0	0.0	0.0	0.9
Yellow-poplar	40.9	0.0	0.4	0.8	0.8	38.8
Black walnut	0.3	0.0	0.0	0.0	0.0	0.3
Other eastern soft hardwoods	9.7	0.0	0.2	0.0	1.0	8.5
Other eastern hard hardwoods	2.5	0.0	0.0	0.0	0.1	2.4
Eastern noncommercial hardwoods	8.6	0.0	0.1	0.2	0.3	8.0
Total hardwoods	338.1	0.0	4.7	5.0	30.0	298.4
All species	1,408.8	1.8	27.3	23.7	210.2	1,145.8

Numbers in rows and columns may not sum to totals due to rounding.
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Brandeis, Thomas J. 2015. Georgia's forests, 2009. Resour. Bull. SRS–207. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 59 p.

The principle findings of the 2009 forest survey in the State of Georgia and changes that have occurred since previous surveys are presented. There are 24.8 million acres of forest in Georgia. Over 65 percent of the State is forested, with all survey units having more forest land than nonforest land. Georgia's forest resources are not only considerable, they have been relatively stable, showing little change in either forest land or timberland area in the past 10 years. Forest land in Georgia held 16.5 billion trees with diameter at breast height (d.b.h.) >1 inch, and those trees held 2.2 billion tons of green aboveground biomass. There were 40.7 billion cubic feet of net volume in trees with d.b.h. ≥5 inches. We estimate that 714,600 acres of forest were disturbed annually from 2004 to 2009; the most commonly occurring disturbances were forest fires and tree diseases. The forests of Georgia store approximately 1.7 billion tons of carbon in the aboveground and belowground portions of live and dead trees, understory seedlings and shrubs, coarse woody material, forest floor litter, and soil organic material.

Keywords: Components of change, forest inventory, FIA, forest survey, forest trends, Georgia.

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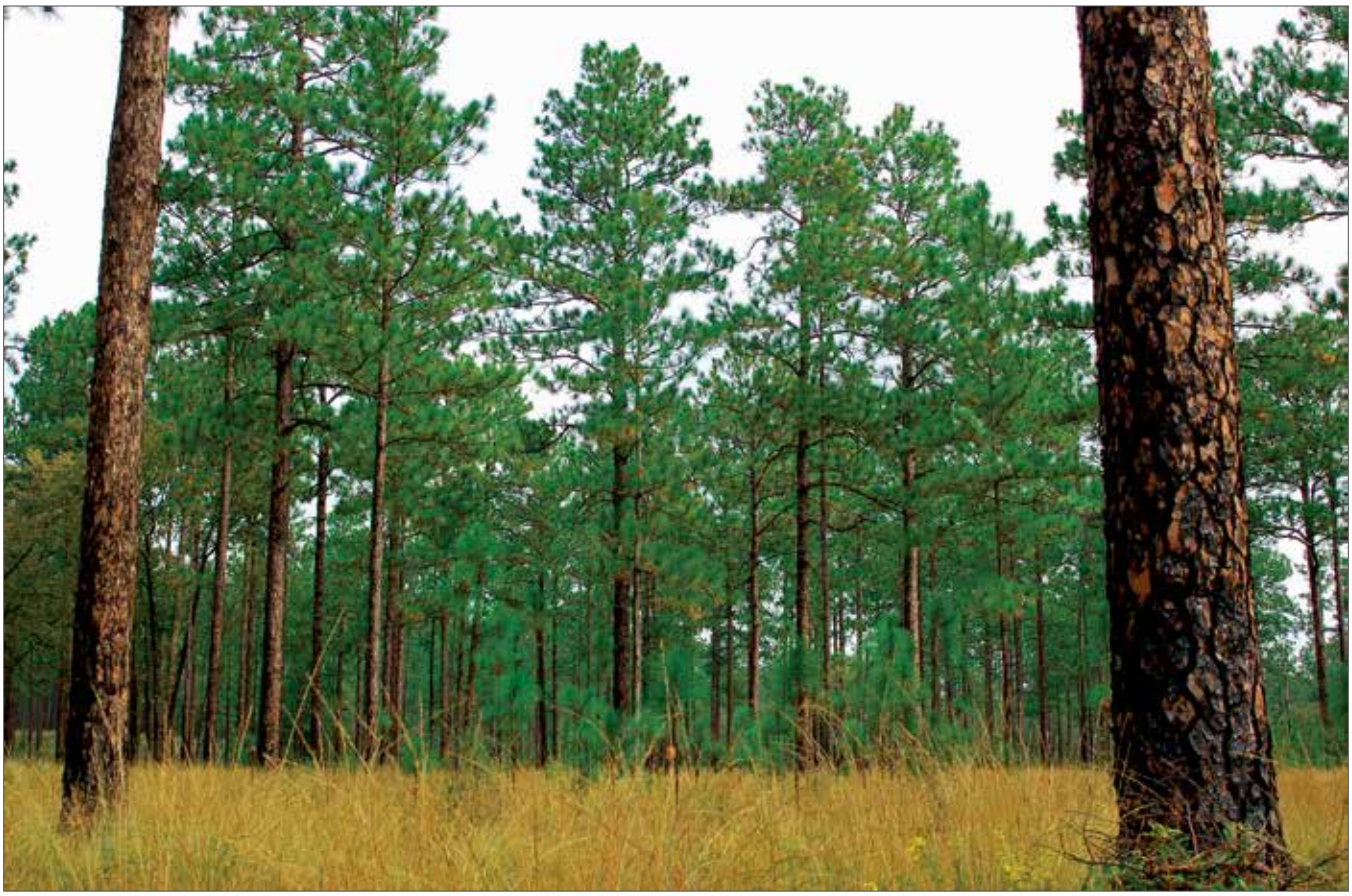

Longleaf pine forest. (photo courtesy of the Georgia Forestry Commission)

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