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Texas'

Forests, 2008

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Front cover: top left, loblolly pine and maples, Houston County, TX; top right, baldcypress, in Bandera County, TX; bottom right, Texas State Champion Plateau live oak, Young County, TX. Back cover: top left, Guadalupe River State Park, Comal County, TX; top right, loblolly pine and maples, Houston County, TX; bottom, live oaks, Washington County, TX.

All photographs taken by Ron Billings, Texas Forest Service, unless otherwise noted.



Mesquite in
Limestone County, TX.



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Texas State Champion Plateau live oak, Young County, TX.





Foreword

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

The primary objective in conducting these inventories is to gather the resource information needed to formulate sound forest policies, provide information for economic development, develop forest programs, and provide a scientific basis to monitor forest ecosystems. These data are used to provide an overview of forest resources including, but not limited to, forest area, forest ownership, forest type, stand structure, timber volume, growth, removals, mortality, and management activity. In addition, less intensive assessments are done that help address issues of ecosystem health; such assessments include information about invasive species, down woody material, and tree crown condition. This information is applicable at the multi-State, individual State, and survey unit level; it provides the necessary background for initiation of more intensive studies of critical situations but is not designed to reflect resource conditions at very 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).

Tabular data for the FIA reports are designed to provide a comprehensive array of forest resource statistics. The 35 core tables that complement this report are found in appendix A and can be downloaded from <http://srsfia2.fs.fed.us/states/texas.shtml>.

Additional data for those seeking specialized information for other Southern States are available at <http://srsfia2.fs.fed.us/>.

Online data query tools for specific locations, landowner survey results, timber output trends, and estimates of carbon and biomass are available at <http://www.fia.fs.fed.us/tools-data/other/default.asp>.

Additional information about any aspect of SRS FIA surveys may be obtained from:

Forest Inventory and Analysis
Research Work Unit
U.S. Department of Agriculture
Forest Service
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4700 Old Kingston Pike
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Sweetgum with frost, Sabine County, TX.

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Loblolly pine,
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Chinese tallow in
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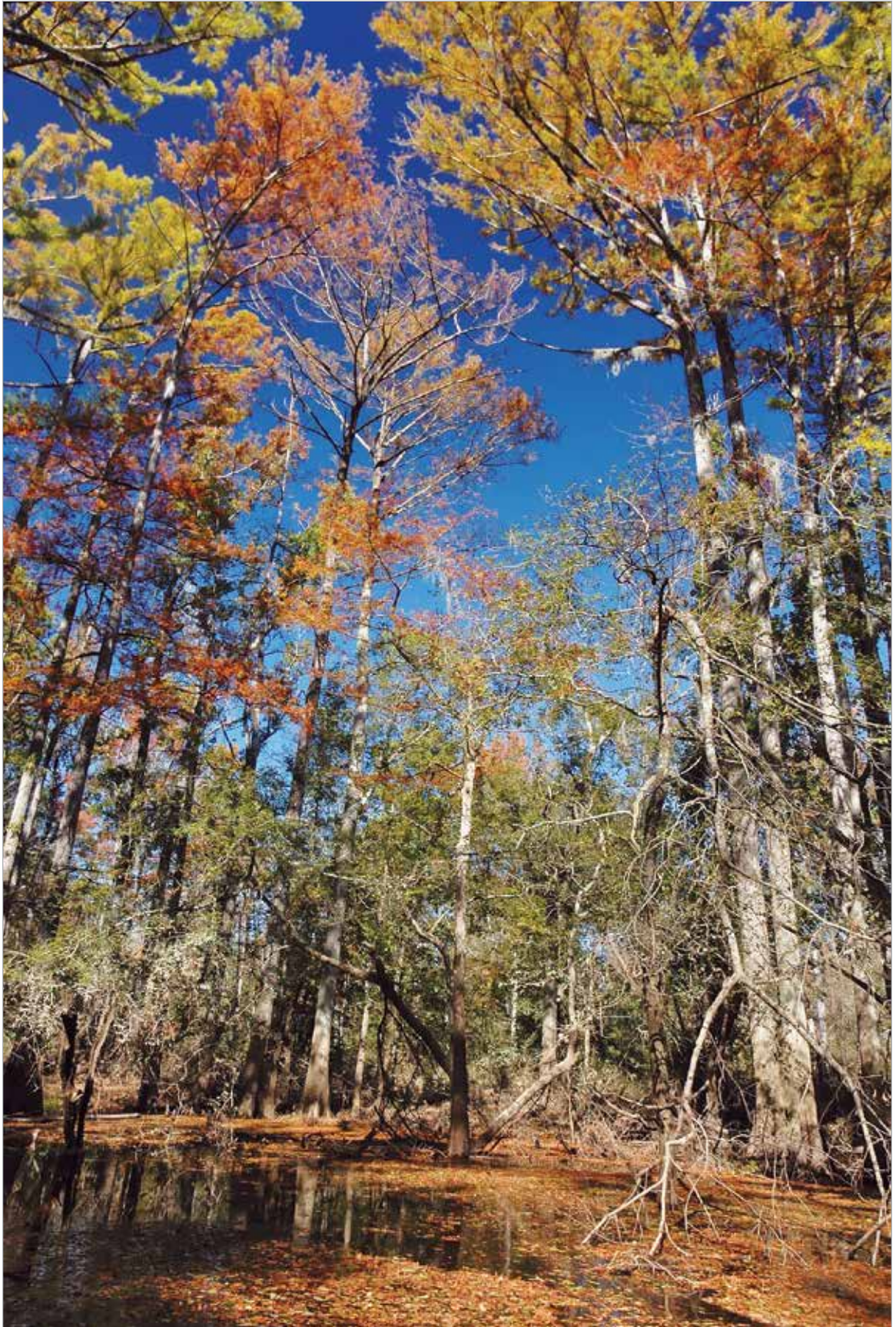
Radcliff Lake in Houston County, TX.



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Baldcypress in
Tyler County, TX.





Introduction

This resource bulletin presents the findings of the first statewide forest survey of the 254 counties in Texas. This report covers the eighth survey of 43 counties in east Texas and 50 percent of the data for the first survey of 211 counties in central and west Texas conducted during the period 2004–08. Baseline data on the extent, condition, and classification of forest land and associated timber volumes, as well as forest landowner and forest health characteristics, are evaluated at the State and region level. Forest ownership and land use patterns, along with growth, removals, and mortality, were also evaluated for east Texas.

Estimates of forest resources are reported at multiple scales. The most common scales discussed in this report are the State, region, and unit level. The State of Texas is divided into seven Forest Inventory and Analysis (FIA) units and two regions (fig. 1). The seven FIA units are labeled (1) Southeast, (2) Northeast, (3) North Central, (4) South, (5) West Central, (6) Northwest, and (7) West. The eastern region, or east Texas, is made up of units 1 and 2, while the rest of the State is considered the western region, or central and west Texas, consisting of units 3 through 7.

The first forest reports of east Texas were for the 1935 survey (Cruikshank 1938, Cruikshank and Eldredge 1939).



Figure 1—Survey units of east and central/west Texas, 2008.



Introduction

Subsequent surveys were in 1953–55 (U.S. Department of Agriculture Forest Service 1956), 1965 (Sternitzke 1967a, 1967b), 1975 (Murphy 1976), 1986 (McWilliams and Lord 1988), 1992 (Rosson 2000), and 2003 (Rudis and others 2008).

The Southern Research Station's (SRS) FIA Program and the Texas A&M Forest Service initiated an inventory of the 254 counties in Texas in 2004 and completed the field survey in 2008. The information also is contained in the Forest Inventory and Analysis database and represents the full complement (all five panels) of data for east Texas and 50 percent of the first annualized

inventory data collected in central and west Texas. The current information is based on 3,763 plots for east Texas and 10,053 plots for central and west Texas.

For comparative accounting and national reporting purposes, forest inventory and monitoring procedures have been standardized at the national level. Details about the methods are documented in appendix B and include comparisons with previous methods and warnings about interpreting data that seem to indicate trends extending over multiple surveys. Appendix C discusses reliability of the data, and appendix D lists tree species recorded.



Live oaks in Washington County, TX.



Forest Area

Texas contained 171.9 million acres of total area, of which 167.5 million acres was land and 4.4 million acres was water, according to the U.S. Census (U.S. Department of Commerce 2001) (table 1). The 2008 forest survey estimated that the land area consisted of 62.5 million acres of forest land or 36 percent of the total acres. Central and west Texas comprised the majority of the total acres with 149.5 million acres, but only 34 percent of those acres were forest land. East Texas had 22.4 million total acres, including 12.1 million acres of forest land. Total nonforest land for the State was 105.0 million acres, of which 91 percent was in central and west Texas.

Of the 62.5 million acres of forest land in Texas identified by the current forest survey, most was in central and west Texas region (fig. 2). Twenty-nine percent, or

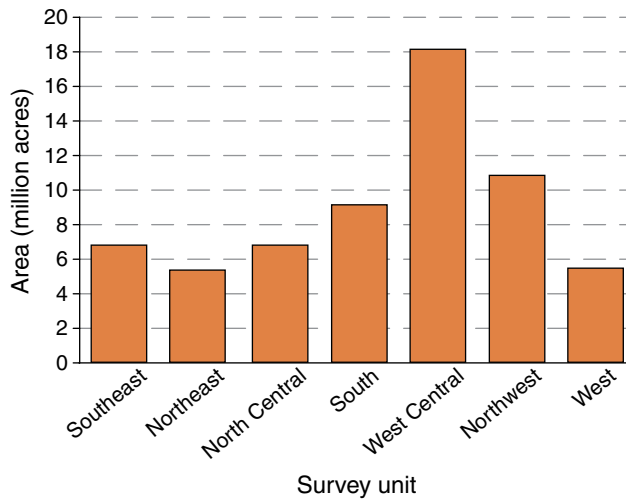


Figure 2—Area of forest land by forest survey unit, Texas, 2008.

Table 1—Area by region, survey unit, and land status, Texas, 2008

Region and survey unit	Total area	All forest	Unreserved			Reserved			Nonforest land	Census water
			Total	Timber-land	Un-productive	Total	Productive	Un-productive		
<i>thousand acres</i>										
East										
Southeast	12,500.1	6,793.7	6,667.0	6,637.9	29.1	126.7	126.7	0.0	5,061.0	645.4
Northeast	9,918.0	5,334.9	5,334.9	5,326.9	8.0	0.0	0.0	0.0	4,293.4	289.7
Total	22,418.1	12,128.6	12,001.9	11,964.8	37.1	126.7	126.7	0.0	9,354.4	935.1
Central/West										
North Central	22,777.5	6,779.8	6,728.3	1,923.3	4,805.0	51.5	41.0	10.5	15,457.9	539.8
South	26,625.6	9,136.4	9,115.3	359.7	8,755.7	21.1	21.1	0.0	15,066.9	2,422.3
West Central	31,604.1	18,138.3	18,043.7	190.5	17,853.2	94.7	0.0	94.7	13,153.9	311.8
Northwest	44,939.2	10,834.0	10,806.9	18.8	10,788.1	27.1	0.0	27.1	33,913.0	192.1
West	23,526.5	5,465.7	5,382.2	9.1	5,373.1	83.5	0.0	83.5	18,037.6	23.3
Total	149,472.9	50,354.2	50,076.4	2,501.4	47,575.1	277.9	62.1	215.8	95,629.3	3,489.3
All units	171,891.0	62,482.8	62,078.2	14,466.2	47,612.0	404.6	188.8	215.8	104,983.8	4,424.5

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.



Forest Area

18.1 million acres, of the State's forest land was in the west central unit. The northwest unit made up another 17 percent, followed closely by the south unit with 15 percent. When compared to the proportion of forest land in relation to total land area of each survey unit, forest land comprised 57 percent of the west central unit, 24 percent of the northwest unit, and 34 percent of the south unit.

The proportion of land area in forest land in Texas' 254 counties ranged from 0 to 91 percent. Throughout the State, 21 counties had >73 percent of their land area in forest land (fig. 3). The west central and

southeast units had the densest concentration of forest land, with 16 of the 21 counties having >73 percent of their land area in forest land. Sixteen counties, concentrated mainly in the northwest unit, had no forest land.

Forest land consists of three components: (1) timberland, (2) reserved forest, and (3) unproductive forest (or woodland). Timberland is forest land that is capable of producing at least 20 cubic feet of wood volume per year. Texas had an estimated 14.5 million acres of timberland. East Texas comprises 83 percent, or 12.0 million acres, of the timberland acres, while estimates for

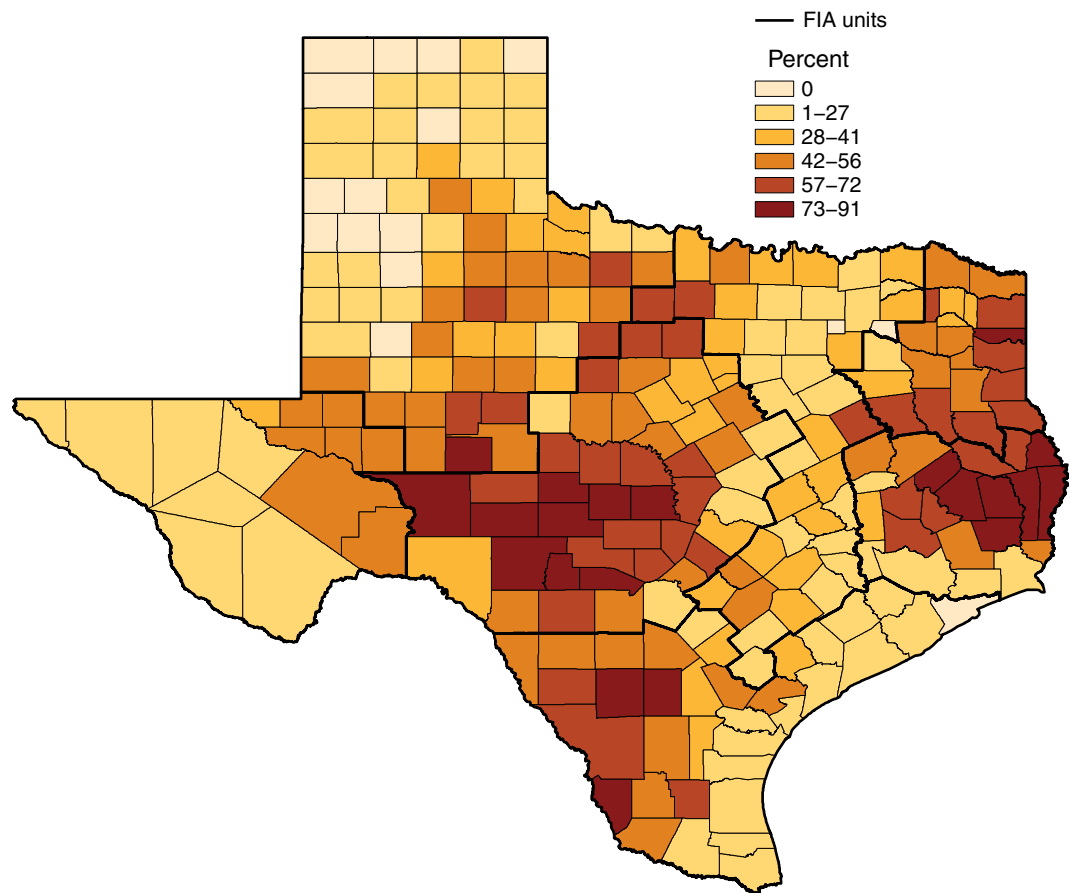


Figure 3—Percent of forest land by county, Texas, 2008.



central and west Texas were slightly more than 2.5 million acres (fig. 4). Reserved forest land included restricted-use areas such as national or State parks, monuments, wildlife refuges, recreation sites, or other similarly protected areas where timber harvesting is severely limited or prohibited. Less than 1 percent, or 404,600 acres, of the forest area was classified as reserved, while 53 percent of the reserved land was classified as unproductive. Central and west Texas made up the majority of reserved forest with 277,900 acres, while east Texas remained fairly stable since 2003, at 126,700 acres. Unproductive forest land, also referred to as woodland, does not meet the minimum productivity

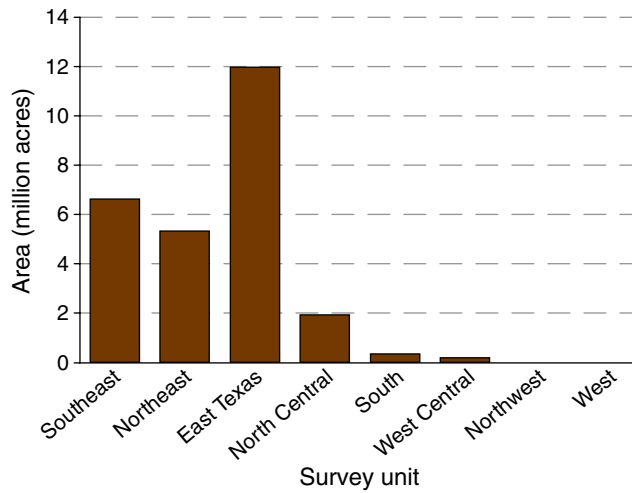


Figure 4—Area of timberland by survey unit, Texas, 2008.

Loblolly pine in Houston County, TX.





Forest Area

requirements. Unproductive forest land is generally characterized by sterile soils, poor drainage, high elevation, rockiness, lack of rainfall, or steep slopes. At the time of the 2008 inventory, the area of unproductive forest land was 47.6 million acres. The eastern region made up less than a tenth of a percent, or 37,100 acres, of the estimated unproductive land.

The proportion of land area in timberland in Texas' 254 counties ranged from 0 to 91 percent. Throughout the State, seven counties had >72 percent of their land area in timberland (fig. 5). The southeast and

northeast units had the densest concentration of timberland, with six of the seven counties having >72 percent of their land area in timberland. One hundred and sixty-two counties, concentrated mainly in the western units, had no timberland.

Timberland area in east Texas had increased slightly from 11.7 million acres in 2003 to 12.0 million acres in 2008 (fig. 6). In fact, timberland area in east Texas has remained fairly stable for >50 years. Area of timberland in the southeast unit had fluctuated slightly, while the northeast unit had shown a slight upward trend.

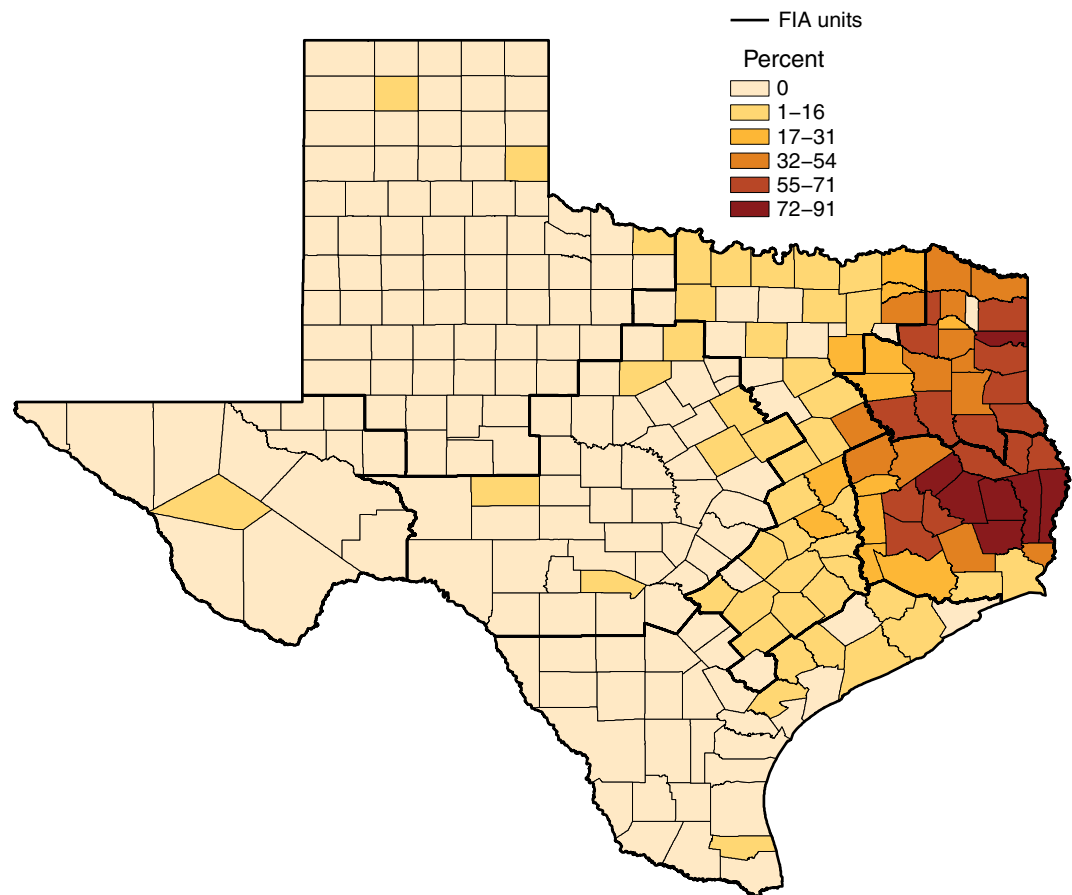


Figure 5—Percent of timberland by county, Texas, 2008.

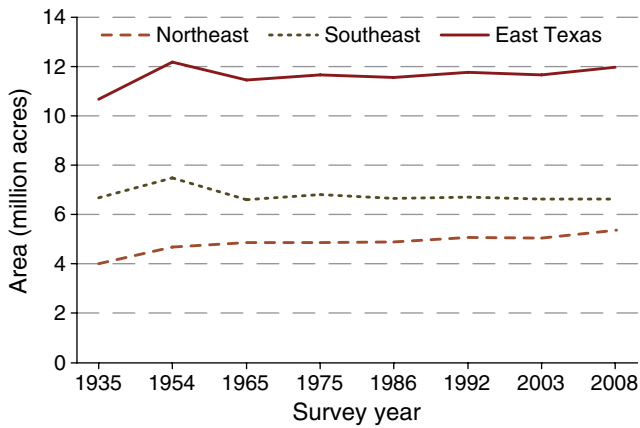


Figure 6—Timberland area by survey unit and survey year, east Texas.

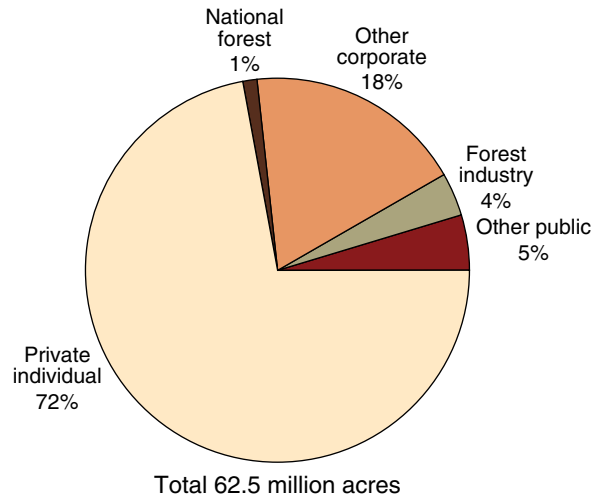


Figure 7—Percent of forest land by ownership class, Texas, 2008.

Ownership

FIA classifies forest land ownership into two general categories: (1) private lands, and (2) public lands. Private lands are subdivided into individuals, forest industry, and corporate. Public forest land includes national forest, other Federal lands (for example, U.S. Fish and Wildlife, U.S. Department of Energy, and Department of Defense), State, county, and municipal lands. Figure 7 shows the distribution of ownership of Texas' forest land as of 2008. As has typically been the case, most (72 percent) of Texas' 62.5 million acres of forest land was owned by private individuals. Corporate ownerships controlled 18 percent, while forest industry controlled another 4 percent. Public land was only 6 percent, or 3.6 million acres.

Private individual landowners controlled the majority (52 percent) of east Texas' 12.0 million acres of timberland and another 21 percent was controlled by private corporations, more than a twofold increase since the 2003 survey (fig. 8). Forest industry ownership of timberland

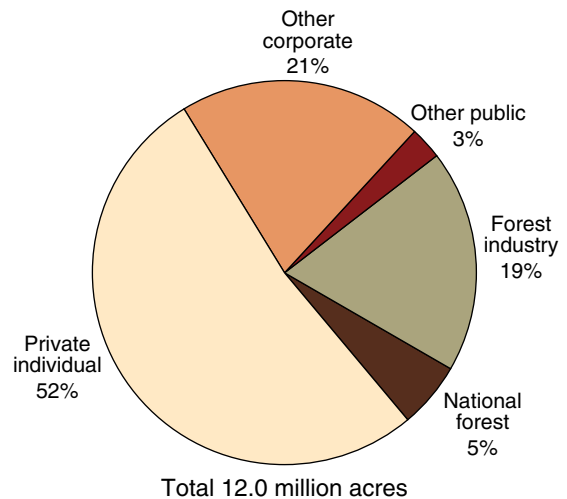


Figure 8—Percent of timberland by ownership class, east Texas, 2008.



Forest Area

continued to decline, dropping to 19 percent. Only 8 percent of east Texas' timberland was publicly owned, as national forest and other Federal lands, State lands, and local lands.

Millions of acres of east Texas' timberland have changed hands over the years, particularly acres once belonging to forest industry. The downward trend in forest acres owned by forest industry has continued since noted in the 2003 report (Rudis and others 2008). As of 2008, forest industry owned 2.2 million acres, which was 1.2 million fewer acres than were under industry management just 5 years ago (table 2). Some of these former forest industry acres are now owned by private individuals, while others are under corporate ownership.

Other corporate timberland in east Texas amounted to 2.5 million acres in 2008, up from 1.2 million acres in 2003. These timberland acres are largely held in timber investment and management organizations, real estate investment trusts, limited liability corporations, and similar entities. When forest industry owned and managed these timberland acres, there was some assurance that they would remain in the timber base and contribute to the State's wood supply. New landowners may have other management goals and priorities in mind. Future surveys will continue to track changes in forest ownership and assess the impact these changes have on the use and management of Texas' timberlands.

The care and management of the nearly 47.7 million acres of Texas forest land was in the hands of some 451,000 individuals (table 3). In east Texas, 6.4 million forest land acres was controlled by 208,000 individuals, while 243,000 individuals control 38.4 million forest land acres in central and west Texas. Predicting what these family forest landowners intend to do with their land is difficult without some knowledge of their interests and ownership objectives. The National Woodland Owner Survey (NWOS) gathers statistics on these family forest landowners and the land they own. This information provides insight as to how they might manage their forest land in the years to come.

Table 2—Area of timberland by ownership class and survey year, east Texas, 2003 and 2008

Ownership class	Survey year	
	2003	2008
	<i>acres</i>	
National forest	667.6	663.4
Other public	257.3	326.9
Forest industry	3,445.9	2,243.2
Other corporate	1,159.5	2,465.4
Nonindustrial private	6,126.6	6,266.0
Total	11,656.9	11,964.9



Table 3—Area and number of family-owned forests by region, size of forest landholdings, area, and ownership, Texas, 2008

Region and size of forest landholdings	Area	Ownership
	Acres <i>thousand</i>	Number
East		
1–9	346	94
10–19	680	55
20–49	914	31
50–99	1,125	17
100–199	813	6
200–499	1,236	4
500–999	456	1
1,000–4,999	655	<1
5,000–9,999	136	<1
10,000+	50	<1
Total	6,411	208
Central/West		
1–9	312	117
10–19	167	15
20–49	1,269	47
50–99	917	13
100–199	3,132	21
200–499	4,525	16
500–999	4,227	6
1,000–4,999	11,519	6
5,000–9,999	4,002	1
10,000+	8,355	1
Total	38,425	243

The size of a forested tract often indicates how, or if, a forested parcel will be managed. The rule of thumb is that it is not financially viable to manage for timber products on parcels <10 acres in size. This holds true for east Texas, where the land is more suitable for timber production. In east Texas, 5 percent (346,000 acres) of the family forest land was in tracts ranging from 1 to 9 acres (table 3). Family forest landholdings in tracts from 10 to <500 acres in size amounted to nearly 4.8 million acres. In central and west Texas, 73 percent (28.1 million acres) of the family forest land was in tracts >500 acres.

Based on size of landholdings alone, the majority of Texas’ family forest land offers potential for a variety of management opportunities. Many of these landowners realize the financial potential their lands hold. In east Texas, land investments was ranked as important or very important by some 116,000 family forest owners (72 percent), potentially affecting some 5.4 million acres (table 4). Some 26,000 landowners (13 percent) ranked timber production as an important objective. In central and west Texas, 172,000 landowners (71 percent) ranked land investments as an important objective. Seventy-eight percent of family forest landowners, holding nearly 28.4 million acres, ranked passing the land to their children as an important incentive.



Forest Area

Table 4—Area and number of family-owned forests by region, reason, area, and ownership for owning forest land, Texas, 2008

Region and reason ^a	Area	Ownership
	Acres	Number
	<i>thousand</i>	
East		
To enjoy beauty or scenery	3,731	135
To protect nature and biologic diversity	3,213	106
For land investment	4,003	116
Part of home or vacation home ^b	3,030	149
Part of farm or ranch	2,919	103
Privacy	2,829	121
To pass land on to children or other heirs	4,051	114
To cultivate/collect nontimber rangeland and woodland products	593	28
For production of firewood or biofuel	555	18
For production of saw logs, pulpwood, or other timber products	2,642	26
Hunting or fishing	2,385	52
For recreation other than hunting or fishing	1,692	38
No answer	61	1
Central/West		
To enjoy beauty or scenery	23,377	199
To protect nature and biologic diversity	18,436	149
For land investment	19,094	172
Part of home or vacation home ^b	21,147	180
Part of farm or ranch	29,572	170
Privacy	20,663	187
To pass land on to children or other heirs	28,359	190
To cultivate/collect nontimber rangeland and woodland products	2,689	27
For production of firewood or biofuel	1,160	9
For production of saw logs, pulpwood, or other timber products	1,342	8
Hunting or fishing	20,959	133
For recreation other than hunting or fishing	11,564	121
No answer	273	<1

^a Categories are not exclusive.

^b Includes primary and secondary residences.



Recent activity on some of these privately owned acres provides evidence of landowners taking advantage of the opportunities that owning forest land offers. Over the past 5 years in east Texas, 2.2 million acres have undergone a timber harvest, another 1.6 million acres have been site prepped for planting, and 2.1 million acres have been planted (table 5). In central and west Texas, 13.6 million acres have undergone a timber harvest including land cleared for range, another 14.7 million acres have had improvements to wildlife habitat, and 24.2 million acres have had road and trail maintenance.

Knowing what family forest landowners potentially have planned for their land over the next 5 years adds to the positive outlook for the long term. In east Texas, 57,000 owners with 2.1 million forested acres plan to at least maintain their land as forest while 10,000 owners with 853,000 acres already in their possession said they plan to buy additional forest land (table 6). In central and west Texas, 86,000 owners with 16.0 million forested acres plan to at least maintain their forest. Another 23,000 forest landowners with 5.2 million acres already in their possession said they plan to buy additional forest land.

Table 5—Area and number of family-owned forests by region and forestry activity (past 5 years), Texas, 2008

Region and activity ^a	Area	Ownership
	Acres	Number
	<i>thousand</i>	
East		
Timber harvest	2,186	27
Collection of NTFP ^b	526	37
Site preparation	1,568	19
Tree planting	2,123	39
Fire hazard reduction	1,717	33
Application of chemicals	1,506	35
Road/trail maintenance	2,310	25
Wildlife habitat improvement	1,507	18
Posting land	2,847	49
Private recreation	2,855	56
Public recreation	426	4
None of the above	767	24
Central/West		
Tree harvest	13,559	58
Collection of NTFP ^b	2,034	9
Fire hazard reduction	7,540	93
Application of chemicals	18,618	62
Road/trail maintenance	24,210	38
Wildlife habitat improvement	14,708	32
Insect/disease control	4,632	15
Control of invasive plant	18,261	144

^a Categories are not exclusive.

^b NTFP = nontimber forest products.



Forest Area

Table 6—Area and number of family-owned forests by region and landowners' future (5 year) plans for their forest land, Texas, 2008

Region and future plans ^a	Area	Ownership
	Acres	Number
	<i>thousand</i>	
East		
Leave it as is—no activity	1,351	60
Minimal activity to maintain forest land	2,107	57
Harvest firewood	877	20
Harvest saw logs or pulpwood	1,828	18
Collect nontimber forest products	285	7
Sell some or all of their forest land	668	16
Give some or all of their forest land to heirs	1,027	18
Subdivide some or all of their forest land and sell subdivisions	148	4
Buy more forest land	853	10
Convert some or all of their forest land to another use	297	9
Convert another land use to forest land	247	7
No current plans	843	46
Unknown	359	10
Other	321	8
No answer	120	2
Central/West		
Leave it as is—no activity	7,456	115
Minimal activity to maintain rangeland and woodland land	16,030	86
Harvest firewood	5,587	46
Harvest saw logs or pulpwood	—	—
Collect nontimber rangeland and woodland products	518	1
Sell some or all of their rangeland and woodland land	2,466	85
Give some or all of their rangeland and woodland land to heirs	12,244	42
Subdivide some or all of their rangeland and woodland land and sell subdivisions	255	1
Buy more rangeland and woodland land	5,176	23
Convert some or all of their rangeland and woodland land to another use	1,003	3
Convert another land use to rangeland and woodland land	655	2
Graze livestock	33,469	106
No current plans	3,589	15
Unknown	1,671	5
Other	4,631	90

— = no sample for the cell.

^a Categories are not exclusive.



Forest-Type Groups

FIA identifies the two major forest types as softwood and hardwood. Hardwood area accounted for 44.5 million acres or 71 percent of the forest land, and softwood represented 24 percent with 15.0 million acres. The major forest types are grouped to simplify the many possibilities of forest-type description. The forest-type groups for Texas are:

Softwood	Hardwood
Longleaf-slash pine	Oak-pine
Loblolly-shortleaf pine	Oak-hickory
Pinyon-juniper	Oak-gum-cypress
Other eastern softwoods	Elm-ash-cottonwood
	Other hardwoods
	Woodland hardwoods
	Exotic hardwoods

The dominant forest-type group in Texas was woodland hardwoods, covering 23.4 million acres (table 7). Second in dominance was the oak-hickory forest-type group, covering 13.6 million acres. Together, these two forest-type groups covered 59 percent of Texas forest land. Pinyon-juniper forest-type group was ranked third with 9.5 million acres, followed by loblolly-shortleaf pine forest-type group with 5.0 million acres. The area covered by the loblolly-shortleaf pine forest-type group was all in the eastern two units of the State, covering 41 percent of the area of those units.

Hardwood forest types covered the majority of forest land area in central and west Texas, accounting for 37.7 million

Table 7—Area of forest land by forest-type group and region, Texas, 2008

Forest-type group	Total	Region	
		East	Central/ West
<i>acres</i>			
Softwoods			
Longleaf-slash pine	274.9	191.4	83.5
Loblolly-shortleaf pine	4,966.5	4,966.5	0.0
Pinyon-juniper	9,502.7	0.0	9,502.7
Other eastern softwoods	262.1	53.0	209.1
Total	15,006.2	5,210.9	9,795.3
Hardwoods			
Oak-pine	1,704.5	1,509.5	195.0
Oak-hickory	13,621.8	3,045.5	10,576.3
Oak-gum-cypress	2,144.9	1,388.2	756.7
Elm-ash-cottonwood	2,728.8	614.0	2,114.8
Other hardwoods	633.2	19.2	614.0
Woodland hardwoods	23,405.6	10.5	23,395.1
Exotic hardwoods	237.6	207.6	30.0
Total	44,476.4	6,794.5	37,681.9
Nonstocked	3,000.2	123.2	2,877.0
All groups	62,482.8	12,128.6	50,354.2

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.



Forest Area

acres (fig. 9). Softwood forest types occupied 9.8 million acres of central and west Texas' forest land area. Woodland hardwoods were the most abundant forest-type group, covering 23.4 million acres, of which 95 percent was controlled by nonindustrial private forest (NIPF) landowners (table 8). Oak-hickory forest type ranked second, accounting for another 21 percent or 10.6 million acres. Ninety-seven percent of the oak-hickory forest type was controlled by NIPF owners and the remaining 3 percent was public land. Pinyon-juniper was the predominant softwood forest-type group, covering 9.5 million acres and accounting for 97 percent of the softwood forest-type group. Again, most (94 percent) of the pinyon-juniper forest-type group was controlled by NIPF landowners.

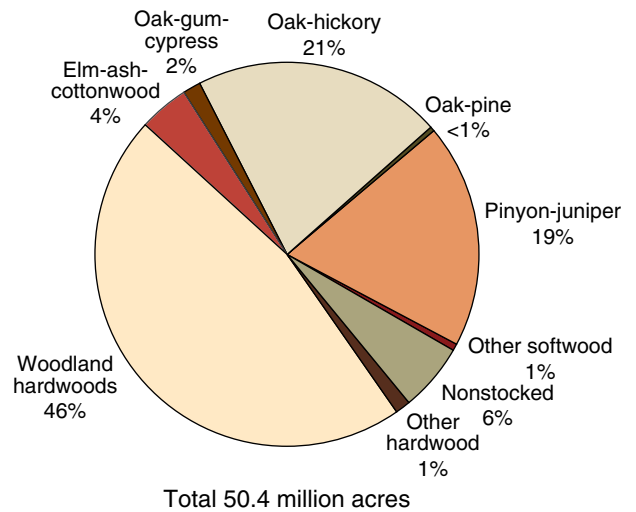


Figure 9—Forest land by major forest-type groups, central and west Texas, 2008.

Table 8—Area of forest land by forest-type group and ownership group, central and west Texas, 2008

Forest-type group	All ownerships	Ownership group			
		National forest	Other public	Forest industry	Nonindustrial private forest
<i>acres</i>					
Softwoods					
Loblolly-shortleaf pine	83.5	0.0	17.9	0.0	65.5
Other eastern softwoods	209.1	0.0	13.1	0.0	196.1
Pinyon-juniper	9,502.7	0.0	560.9	9.6	8,932.1
Total	9,795.3	0.0	592.0	9.6	9,193.7
Hardwoods					
Oak-pine	195.0	0.0	29.1	0.0	165.9
Oak-hickory	10,576.3	26.2	309.0	0.0	10,241.2
Oak-gum-cypress	756.7	8.9	43.0	0.0	704.8
Elm-ash-cottonwood	2,114.8	10.5	150.7	0.0	1,953.5
Other hardwoods	614.0	7.7	4.5	0.0	601.7
Woodland hardwoods	23,395.1	0.0	1,239.9	20.0	22,135.1
Exotic hardwoods	30.0	0.0	0.0	0.0	30.0
Total	37,681.9	53.3	1,776.1	20.0	35,832.4
Nonstocked	2,877.0	0.0	108.2	0.0	2,768.7
All groups	50,354.2	53.3	2,476.4	29.6	47,794.8

Numbers in 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 for the cell.



Hardwood forest types made up the majority of timberland area in east Texas, accounting for 6.7 million acres (fig. 10). Oak-hickory was the predominant hardwood forest-type group with 3.0 million acres, followed by oak-pine covering 1.5 million acres and oak-gum-cypress covering 1.4 million acres. Eighty-four percent of all east Texas’ hardwood forest-types were controlled by NIPF landowners. Softwood forest types occupied 5.2 million acres of east Texas’ timberland area. Loblolly-shortleaf pine was the most abundant forest-type group with 4.9 million acres and composed the majority (95 percent) of all softwood forest types. NIPF landowners controlled 59 percent of the loblolly-shortleaf forest-type group, while forest industry ranked second with control of 28 percent (table 9). East Texas’ softwood timberland area was split nearly equally between natural pine stands (2.6 million acres) and planted pine stands (2.5 million acres).

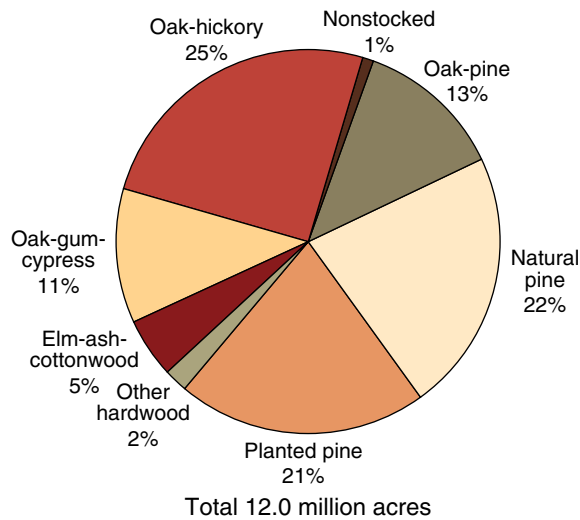


Figure 10—Timberland by major forest-type groups, east Texas, 2008.

Table 9—Area of timberland by forest-type group and ownership group, east Texas, 2008

Forest-type group	All ownerships	Ownership group			
		National forest	Other public	Forest industry	Nonindustrial private forest
<i>thousand acres</i>					
Softwoods					
Longleaf-slash pine	191.4	11.5	0.0	112.9	67.0
Loblolly-shortleaf pine	4,919.1	546.7	58.0	1,390.6	2,923.7
Other eastern softwoods	53.0	0.0	6.2	0.0	46.8
Total	5,163.5	558.2	64.2	1,503.5	3,037.5
Hardwoods					
Oak-pine	1,487.5	45.9	39.1	206.0	1,196.5
Oak-hickory	3,011.7	35.0	76.6	203.4	2,696.7
Oak-gum-cypress	1,355.4	18.2	83.3	280.3	973.6
Elm-ash-cottonwood	600.3	6.0	32.0	8.7	553.6
Other hardwoods	19.2	0.0	0.0	0.0	19.2
Woodland hardwoods	10.5	0.0	0.0	0.0	10.5
Exotic hardwoods	207.6	0.0	23.7	21.0	162.8
Total	6,692.2	105.1	254.8	719.3	5,613.0
Nonstocked	109.2	0.0	7.9	20.4	80.9
All groups	11,964.8	663.4	326.9	2,243.2	8,731.4

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 for the cell.



Oak in Trinity County, TX.



Inventory Volume

In 2008 inventory of all-live tree volume for Texas was 32.6 billion cubic feet. Sixty-seven percent of the inventory was in hardwoods and 33 percent in softwoods (table 10). Sixty-four percent of the hardwood volume was in the central and west Texas units, while 91 percent of the softwood volume was in the east Texas units. Thirty-two percent, or 10.4 billion cubic feet, of the volume was in the southeast. The northeast unit ranked second with 7.2 billion cubic feet, followed by the west central with 6.2 billion cubic feet.

Of the 17.6 billion cubic feet of volume in east Texas, 17.3 billion cubic feet (98 percent) was on timberland. Timberland volume was up 3 percent from the reported 16.8 billion cubic feet in 2003 and 22 percent since 1992 (fig. 11). Softwood

volume was up 70 percent since 1975, while hardwood increased 4.9 billion cubic feet from the 2.9 billion cubic feet reported in 1975. Total volume on timberland has more than doubled since 1975.

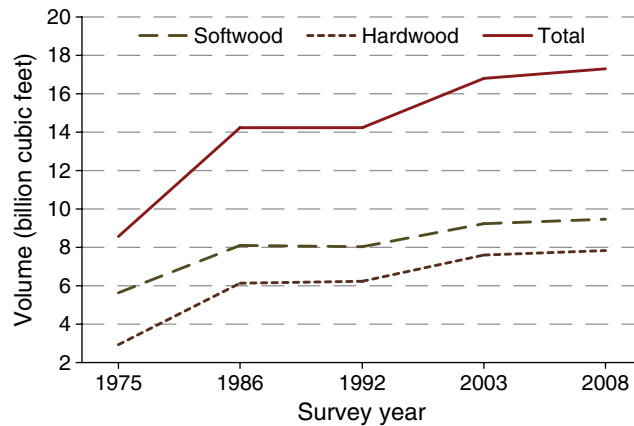


Figure 11—Volume of live trees on timberland by survey year, east Texas.

Table 10—Live-tree volume by region, survey unit, and species group on forest land, Texas, 2008

Region and survey unit	Species group		
	Total	Softwood	Hardwood
<i>million cubic feet</i>			
East			
Southeast	10,429.8	6,426.9	4,003.0
Northeast	7,194.4	3,228.4	3,966.0
Total	17,624.2	9,655.2	7,969.0
Central/West			
North Central	4,233.7	405.7	3,828.0
South	2,617.1	31.4	2,585.7
West Central	6,170.9	123.2	6,047.7
Northwest	1,651.8	322.4	1,329.4
West	289.2	126.3	163.0
Total	14,962.7	1,008.9	13,953.7
All units	32,586.9	10,664.2	21,922.7

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



Inventory Volume

Softwood Inventory

There were 10.7 billion cubic feet of softwood volume in the 2008 inventory (table 11). The majority of the volume was in the southeast unit; the next largest volume was in the northeast unit. Together, these two units made up 91 percent of Texas' softwood volume. Using 2-inch diameter at breast height (d.b.h.) classes to describe the size distribution of the softwood volume shows that 38 percent of the live-tree volume was in trees 7.0 through 12.9 inches in d.b.h (fig. 12). Another 16 percent of the volume was in trees >21.0 inches d.b.h. Most of the larger trees were in the eastern region and in particular the southeast unit.

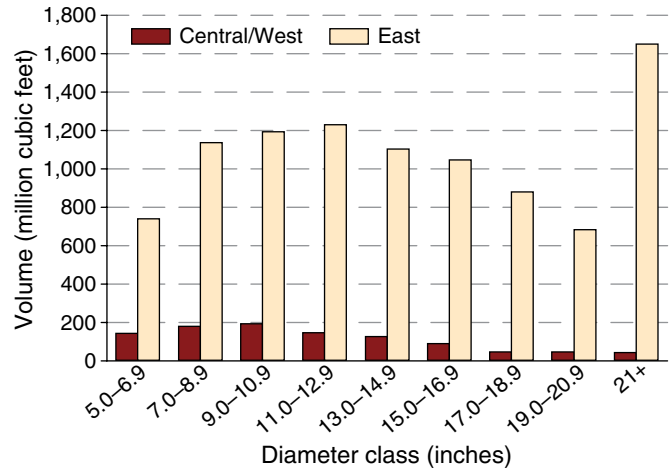


Figure 12—Softwood volume on forest land by 2-inch diameter class and survey unit, Texas, 2008.

Table 11—Softwood live-tree volume by region, survey unit, and diameter class on forest land, Texas, 2008

Region and survey unit	Total volume	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+
<i>million cubic feet</i>										
East										
Southeast	6,426.9	485.2	760.0	808.4	790.2	698.8	677.0	570.3	463.4	1,173.8
Northeast	3,228.4	252.8	376.9	384.6	438.7	404.4	369.8	307.3	220.2	473.6
Total	9,655.2	738.0	1,136.9	1,193.0	1,228.9	1,103.2	1,046.8	877.5	683.5	1,647.4
Central/West										
North Central	405.7	52.1	73.8	99.4	56.4	44.5	35.7	11.2	29.4	3.3
South	31.4	0.0	0.0	0.0	2.8	13.7	7.9	7.0	0.0	0.0
West Central	123.2	26.1	23.6	24.7	16.3	13.4	10.1	5.0	0.0	4.0
Northwest	322.4	40.9	54.5	50.9	54.4	45.3	27.9	18.8	10.4	19.4
West	126.3	24.8	26.1	16.0	15.3	10.2	7.2	5.0	4.3	17.3
Total	1,008.9	144.0	178.0	191.0	145.1	127.0	88.8	47.0	44.1	44.0
All units	10,664.2	881.9	1,314.8	1,384.0	1,374.0	1,230.2	1,135.6	924.5	727.7	1,691.4

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.



In 2008, the loblolly-shortleaf pine group accounted for 85 percent of the softwood inventory volume with over 9.1 billion cubic feet (fig. 13). Western woodland softwoods group accounted for another 5 percent of softwood volume with 558 million cubic feet, followed by other eastern softwoods accounting for another 4 percent, or 433 million cubic feet. Longleaf-slash pine group accounted for only 3 percent, or 313 million cubic feet, of the softwood volume.

Almost 60 percent, or 6.4 billion cubic feet, of the softwood volume was controlled by NIPF landowners (fig. 14). National forests controlled 18 percent, or 2.0 billion cubic feet, of the softwood volume. Another 1.9 billion cubic feet of the softwood volume was controlled by forest industry. Of the 9.1 billion cubic feet of loblolly and shortleaf pine 57 percent, or 5.2 billion cubic feet, was controlled by NIPF landowners. Almost all (98 percent) of the softwood volume controlled by the national forest was loblolly-shortleaf pine group. Fifty-seven percent of the longleaf and slash pine was controlled by forest industry.

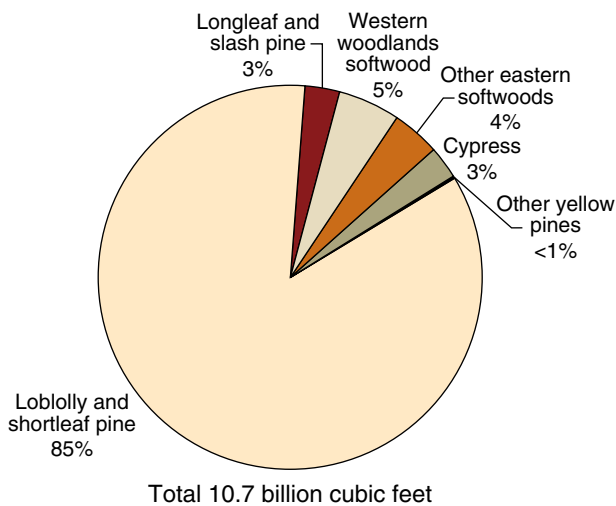


Figure 13—Softwood volume on forest land by species group, Texas, 2008.

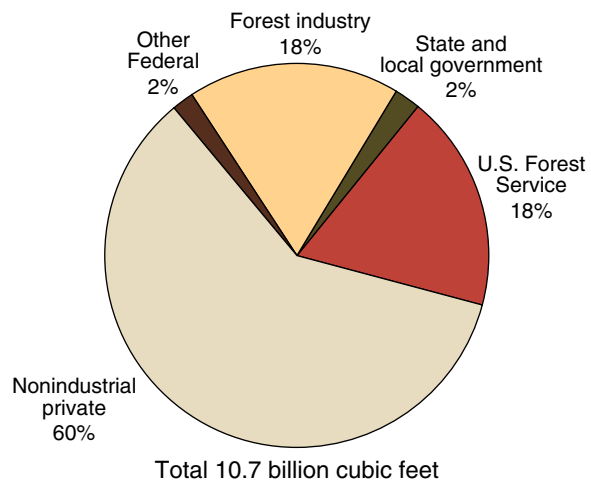


Figure 14—Volume of softwood on forest land by ownership, Texas, 2008.



Inventory Volume

Texas forest land had 2.5 billion cubic feet of live-tree softwood volume, almost 24 percent of which was in plantations (table 12). Almost all of this volume from plantations was in east Texas. The majority (68 percent) of the softwood volume from planted stands was in the southeast unit. East Texas had 9.7 billion cubic feet of live-tree softwood volume with 26 percent in planted stands.

In east Texas, softwood volume on timberland increased from 9.2 billion cubic in 2003 to 9.5 billion cubic feet in 2008.

Diameter distribution is another way to assess change of volume and perhaps offer insight for future volumes. During the last three survey periods (1992, 2003, and 2008), softwood volumes in the 6- to 12-inch diameter classes have shown steady increases (fig. 15). The volumes in the 14- to 20-inch diameter classes have tracked closely, indicating that incremental growth is replacing loss in those diameter classes. The combined volumes in the large diameters of >21 inches have steadily increased since 1992.

Table 12—Live-tree softwood volume by region, survey unit, and stand origin on forest land, Texas, 2008

Region and survey unit	Stand origin			Planted percent
	Total	Natural	Planted	
	----- million cubic feet -----			
East				
Southeast	6,426.9	4,702.4	1,724.4	27
Northeast	3,228.4	2,423.4	804.9	25
Total	9,655.2	7,125.9	2,529.4	26
Central/West				
North Central	405.7	403.1	2.6	1
South	31.4	31.4	0.0	0
West Central	123.2	123.2	0.0	0
Northwest	322.4	322.4	0.0	0
West	126.3	126.3	0.0	0
Total	1,008.9	1,006.3	2.6	0
All units	10,664.2	8,132.2	2,531.9	24

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

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

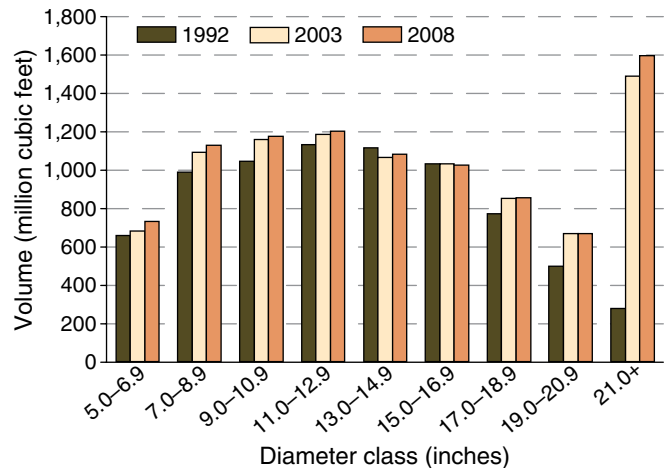


Figure 15—Softwood volume on timberland by 2-inch diameter class and survey year, east Texas.



Hardwood Inventory

There were 21.9 billion cubic feet of hardwood volume in the 2008 inventory (table 13). The majority of the hardwood volume was in the west central unit, accounting for 28 percent of the State's hardwood volume. The southeast and northeast units combined made up another 36 percent of Texas' hardwood volume. Using 2-inch d.b.h. classes to describe the size distribution of the hardwood volume shows that 40 percent of the live-tree volume was in trees 7.0 through 12.9 inches in d.b.h. (fig. 16). Another 14 percent of the volume was from trees >21.0 inches d.b.h.

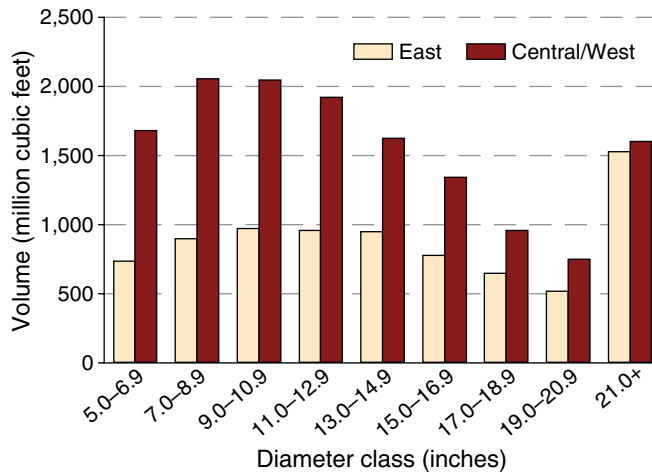


Figure 16—Volume of hardwood on forest land by 2-inch diameter class and survey unit, Texas, 2008.

Table 13—Hardwood live-tree volume by region, survey unit, and diameter class on forest land, Texas, 2008

Region and survey unit	Total volume	Diameter class (<i>inches at breast height</i>)								
		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+
<i>million cubic feet</i>										
East										
Southeast	4,003.0	368.9	445.9	487.7	466.2	469.3	399.2	325.0	266.0	774.8
Northeast	3,966.0	366.2	449.7	482.5	490.8	479.1	375.1	319.4	251.5	751.7
Total	7,969.0	735.1	895.6	970.2	957.0	948.4	774.3	644.5	517.5	1,526.4
Central/West										
North Central	3,828.0	392.9	528.9	569.0	548.6	422.0	375.0	264.0	248.7	478.9
South	2,585.7	260.5	335.3	335.3	318.9	286.8	273.9	205.7	151.3	417.9
West Central	6,047.7	822.2	954.5	901.3	840.2	754.2	578.0	390.2	276.9	530.3
Northwest	1,329.4	168.9	203.5	212.7	183.8	145.8	102.4	87.1	61.9	163.2
West	163.0	29.8	32.6	26.0	26.6	11.4	10.0	6.7	10.2	9.7
Total	13,953.7	1,674.3	2,054.9	2,044.3	1,918.1	1,620.2	1,339.2	953.6	749.0	1,600.1
All units	21,922.7	2,409.4	2,950.5	3,014.4	2,875.1	2,568.6	2,113.5	1,598.1	1,266.5	3,126.5

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



Inventory Volume

In 2008, the oak group accounted for 38 percent of the hardwood inventory volume with nearly 8.4 billion cubic feet (fig. 17). Western woodland hardwoods group accounted for another 32 percent of hardwood volume with 7.1 billion cubic feet, followed by other eastern soft hardwoods accounting for 10 percent, or 2.3 billion cubic feet.

Almost 88 percent, or 19.2 billion cubic feet, of the hardwood volume was controlled by NIPF landowners (fig.18). Forest industry controlled 5 percent, or 1.1 billion cubic feet of the hardwood volume. Public ownerships controlled the remaining 7 percent of the hardwood volume.

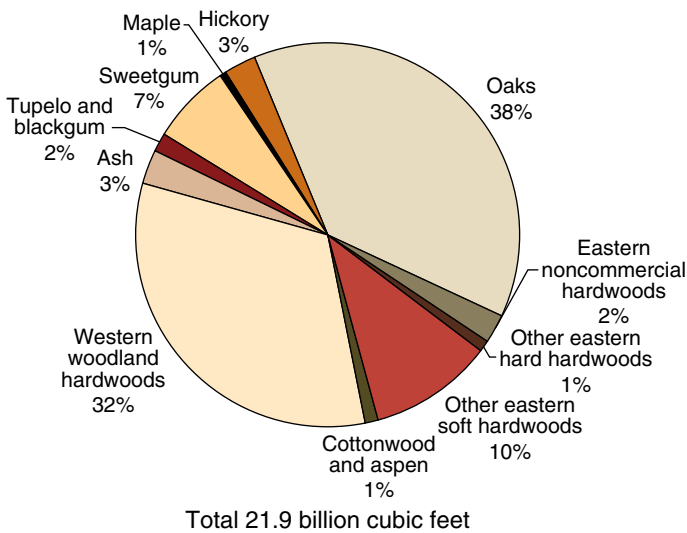


Figure 17—Volume of hardwood on forest land by species group, Texas, 2008.

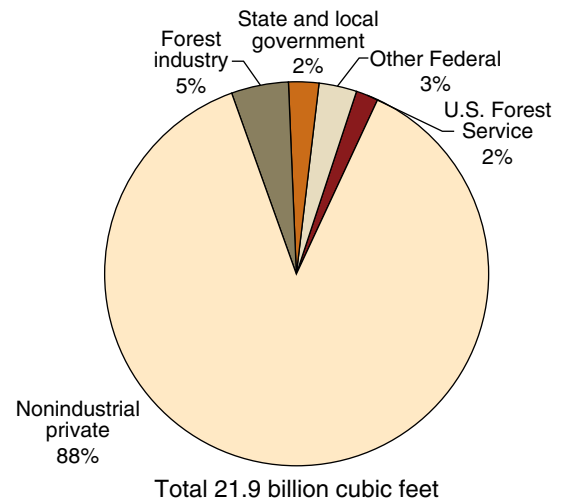


Figure 18—Volume of hardwood on forest land by ownership, Texas, 2008.

In east Texas, hardwood volume on timberland increased from 7.6 billion cubic feet in 2003 to 7.8 billion cubic feet in 2008. During the last three survey periods (1992, 2003, and 2008), hardwood volumes have shown steady increases in almost all diameter classes (fig.19). The volume in the 20-inch diameter class was the only class to show a slight decrease between 2003 and 2008.

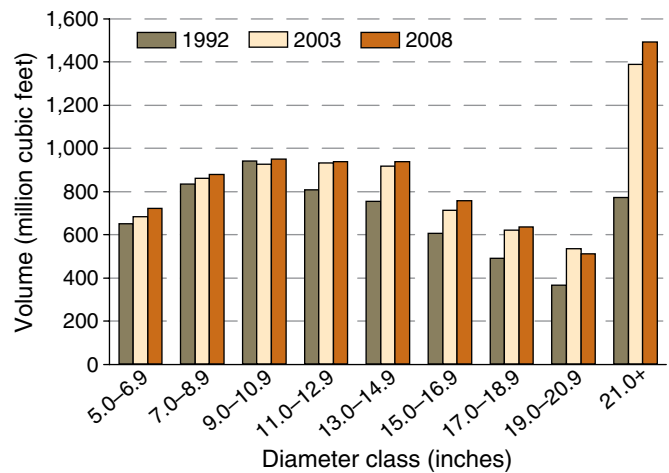


Figure 19—Hardwood volume on timberland by 2-inch diameter class and survey year, east Texas.



Components of Change

Net growth, removals, and mortality (GRM) are the components of change reported by FIA. Current estimates of GRM are based on the remeasurement of previously forested plots (2003) that remained in a forested condition in the 2008 inventory cycle. Forest plots have not been remeasured in central and west Texas, so the GRMs in this section will represent change in forested plots only for east Texas.

Estimates of each component are expressed as the average annual value between 2004 and 2008. Average annual net growth is the total (or gross) growth minus mortality. Net growth and removals reflect the forest dynamics (natural and human induced) and were only slightly influenced by forest area change. When net growth exceeds removals, then net change is positive and inventory volume is increasing. The opposite is true when removals exceed net growth. These components of change help evaluate how much and why the forest inventory volume is changing.

Figure 20 shows the total average annual components of change of live-tree volume for the last two FIA surveys in east Texas. While gross growth increased for the 2008 survey, both mortality and removals have decreased since the 2003 inventory. Net change remained positive in both inventory cycles, showing an increase of 22 percent between 2003 and 2008.

When assessing the impact of average annual net growth and removals, it is helpful to include total volume. Figure 21 presents average annual net growth and

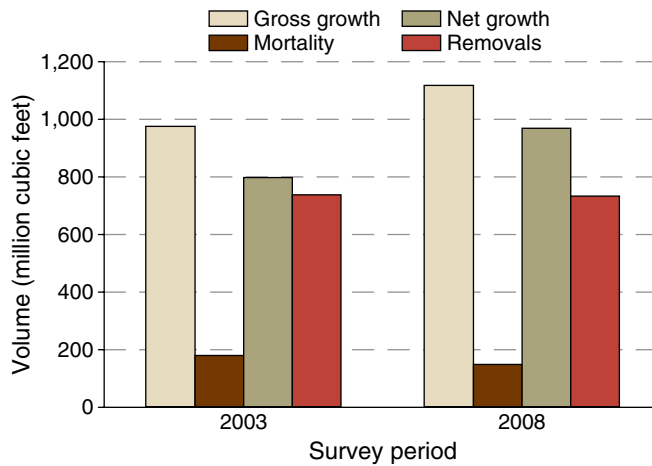


Figure 20—Average annual components of change for live trees by survey period, east Texas.

removals on the same scale with total live-tree volume for the survey period. The net change (net growth minus removals) of 235 million cubic feet is the result of net growth increasing while removals decreased. Comparing net change to total volume, the total inventory increased about 17 percent annually. This average annual net increase is reflected in the increase of total inventory volume since the 2003 survey.

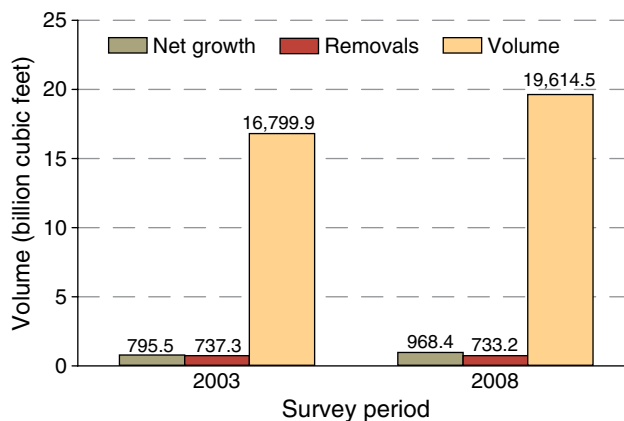
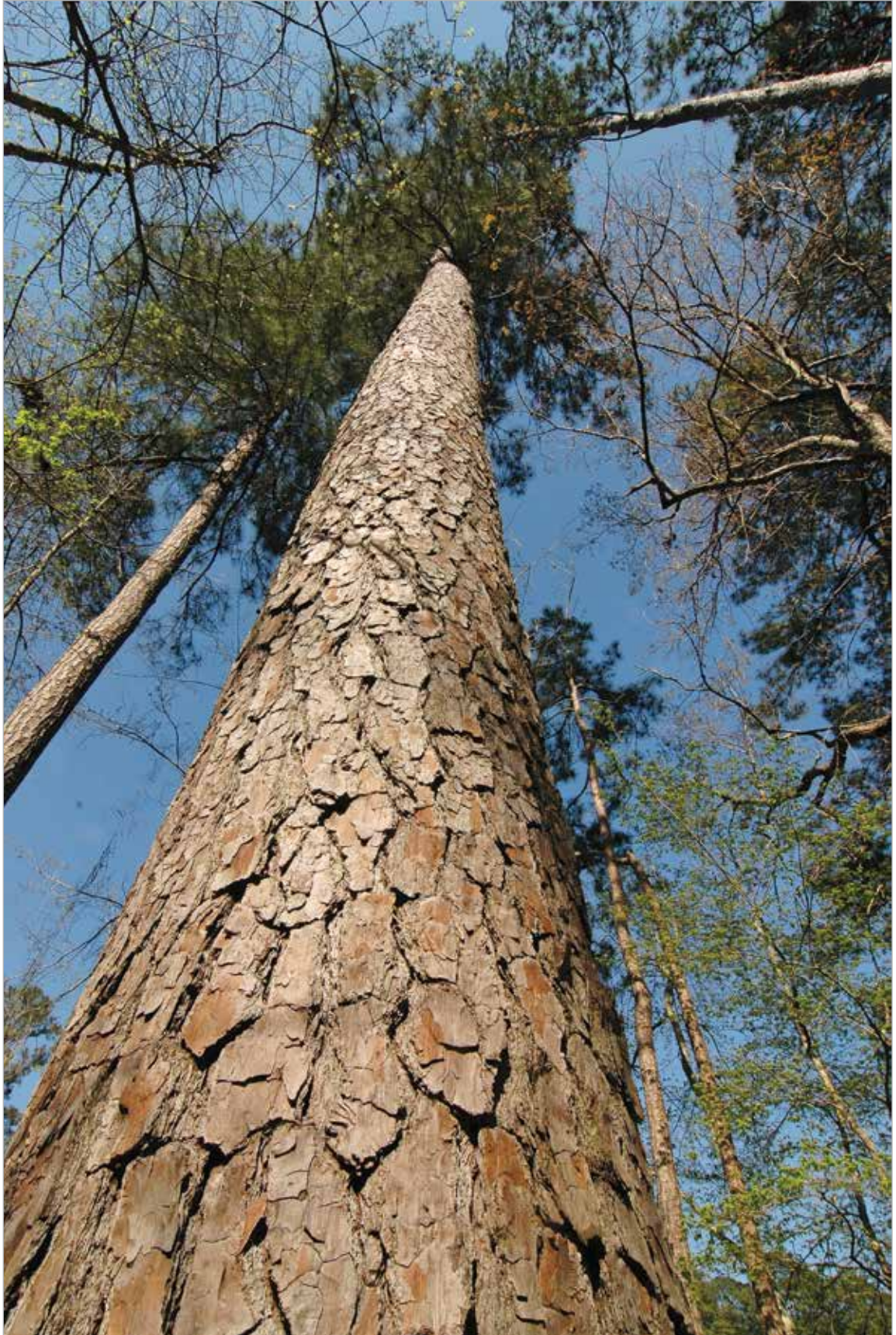


Figure 21—Average annual net growth and removals for live trees compared to volume by survey period, east Texas.



Loblolly pine in
Davy Crockett
National Forest, TX.





Softwood Net Growth, Removals, and Mortality

Softwood net growth averaged 650.2 million cubic feet per year from 2004 to 2008 in east Texas (fig. 22). This was a 19-percent increase from 546.4 million cubic feet reported in 2003. The average annual growth of the softwood inventory represented 67 percent of the total average annual growth (softwood and hardwood), and was about 6.7 percent of the softwood inventory.

At 547.3 million cubic feet per year, average annual softwood removals represented 75 percent of all removals and only 5.6 percent of the softwood inventory. Although increasing by 6 percent (from 515.9 to 547.3 million cubic feet), softwood removals were still less than net growth. The softwood net growth to removals relationship was still increasing the total softwood inventory volume, at a higher rate than shown in the 2003 survey. Softwood net growth exceeded removals by 6 percent for the

2003 survey, while it outpaced removals by 19 percent in 2008.

Softwood mortality also increased slightly. Average annual mortality was 73.6 million cubic feet in 2008, an increase of 2 percent since 2003. Softwood mortality made up 50 percent of total mortality (softwood and hardwood).

When assessing the impact of average annual net growth and removals, it is helpful to include total volume. Figure 23 presents average annual net growth and removals on the same scale with total live-tree volume for the survey period. The net change (net growth minus removals) of 103 million cubic feet was the result of net growth increasing at a faster rate than removals. Comparing net change to total volume, the total softwood inventory increased about 5 percent annually from 2004 to 2008. This average annual net increase was reflected in the increase of total inventory volume since the 2003 survey.

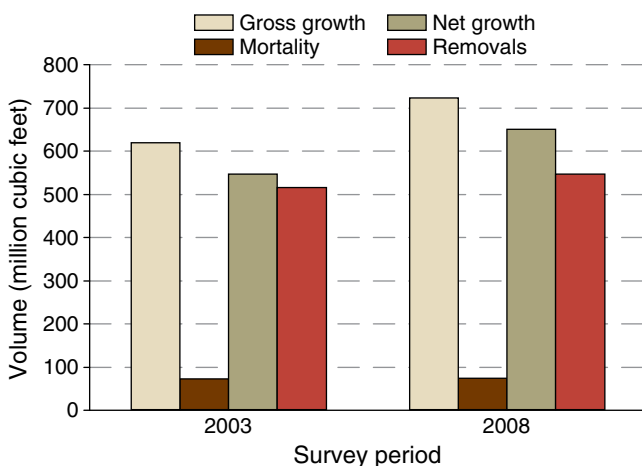


Figure 22—Average annual components of change for softwood live trees by survey period, east Texas.

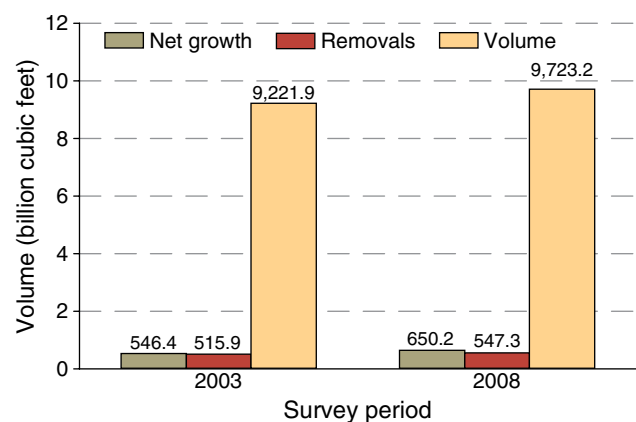


Figure 23—Average annual net growth and removals for softwood live trees compared to volume by survey period, east Texas.



Hardwood Net Growth, Removals, and Mortality

Hardwood net growth averaged 318.2 million cubic feet per year from 2004 to 2008 in east Texas (fig. 24). This was a 28-percent increase from 249.1 million cubic feet reported in 2003. The average annual growth of the hardwood inventory represented 33 percent of the total average annual growth (softwood and hardwood), and was about 3.2 percent of the hardwood inventory.

At 185.9 million cubic feet per year, average annual hardwood removals represented 25 percent of all removals and only 1.9 percent of the hardwood inventory. Average annual hardwood removals decreased 16 percent, from 221.4 million cubic feet in 2003 to 185.9 million cubic feet in 2008.

With hardwood net growth increasing and removals going down, the hardwood net growth to removals relationship was still

increasing the total hardwood inventory volume. Hardwood net growth exceeded removals by 13 percent in 2003, while it outpaced removals by 71 percent in 2008.

Hardwood mortality also decreased considerably. Average annual mortality was 73.7 million cubic feet in 2008, a decrease of 31 percent since 2003. Hardwood mortality made up 50 percent of total mortality (softwood and hardwood).

Figure 25 presents average annual net growth and removals on the same scale with total live-tree volume for the survey period. The net change (net growth minus removals) of 132 million cubic feet was the result of net growth increasing and removals decreasing. Comparing net change to total volume, the total hardwood inventory increased about 30 percent annually from 2004 to 2008. This average annual net increase was reflected in the increase of total inventory volume since the 2003 survey.

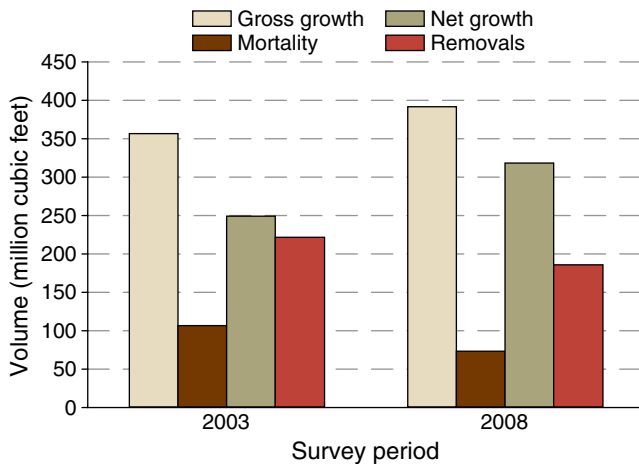


Figure 24—Average annual components of change for hardwood live trees by survey period, east Texas.

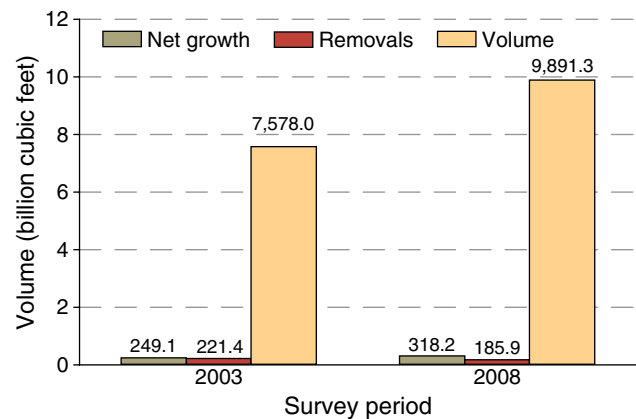


Figure 25—Average annual net growth and removals for hardwood live trees compared to volume by survey period, east Texas.



Forest Disturbance

Forest land disturbance is part of forest dynamics and can be separated into two categories: (1) planned forest management treatments, and (2) forest disturbances, both of which are expressed as average annual area estimates. Forest treatments are part of the forest operations management tools or silvicultural methods, such as various harvesting systems, site preparation, tree planting, prescribed burning, or natural regeneration. Forest disturbances include insect and disease outbreaks, wildfires, weather events, animal, grazing, and human activities such as land clearing.

Forest Management Treatments

Some form of harvesting or timber stand improvement occurred on 644,400 acres annually from 2004 to 2008 (fig. 26). This represented 1 percent of the total forest land area each year. Final harvests averaged 173,700 acres each year during this survey

or 0.3 percent of all forest land area. About 153,800 acres experienced a partial harvest and 219,400 acres were thinned.

Tree planting occurred on 130,300 acres each year, compared to 95,300 acres that were regenerated naturally. Site preparation occurred on 117,500 acres and 295,200 acres underwent some other form of silvicultural practice.

Natural Disturbances

Most disturbances are natural occurrences and have greatly contributed to forest dynamics throughout history. Quite often, disturbances affect small areas and contribute to species richness. However, some large-scale disturbances—such as intense fires, insect and disease epidemics, and major weather events—can be catastrophic.

The largest area of damage, 27 percent, resulted from fire events (fig. 27). Fire, which greatly influences plant ecology

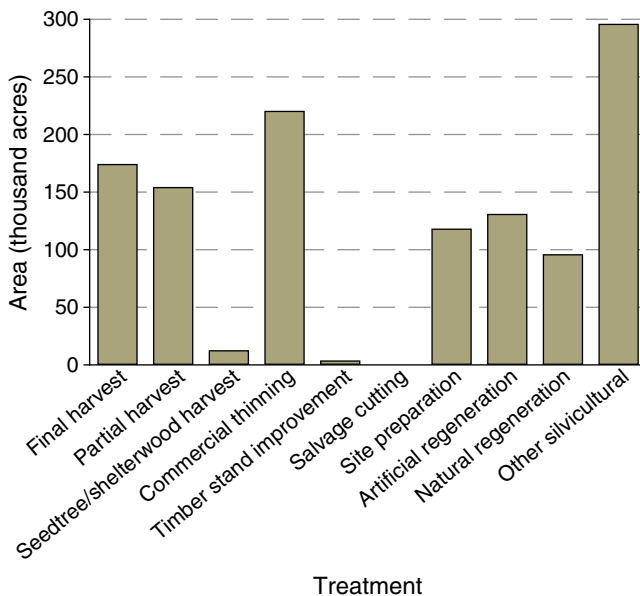


Figure 26—Average area treated annually by treatment type, Texas, 2008.

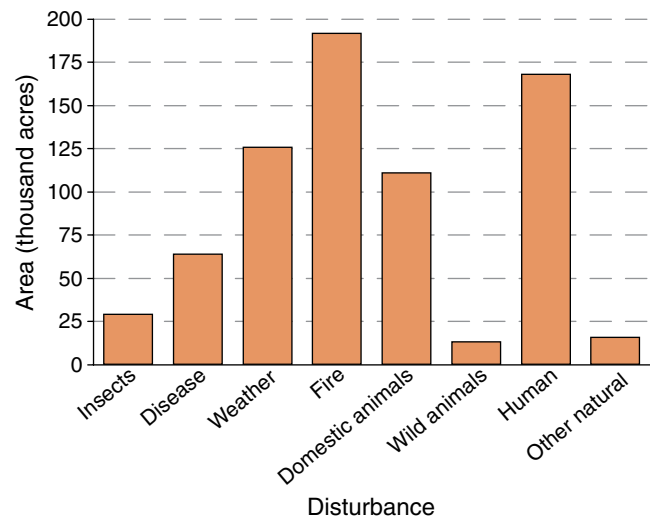


Figure 27—Average area disturbed annually by disturbance type, Texas, 2008.



Forest Disturbance

over time, caused about 191,500 acres of damage annually. Fire damage includes both wildfire and prescribed burning. Disturbances from human activities account for another 168,100 acres or 23 percent. Domestic animals caused damage on 111,000 acres annually or 15 percent of the total disturbance. The average

annual damage from weather was another 17 percent, amounting to 125,600 acres of damage annually.

Damage from other disturbance agents totaled about 121,800 acres annually: diseases (63,900 acres), insects (29,200 acres), wild animals (12,900 acres), and other natural events (15,800 acres).



Live oaks killed by oak wilt, Central Texas.



Timber Products and Utilization

Average annual timber removals from timberland include the merchantable and nonmerchantable volume of trees harvested for products and whole trees or portions of trees cut and left behind as logging residue. Average annual removals volume also includes trees removed due to land clearing for agriculture or urban development and timberland set aside by statute prohibiting tree harvesting. The latter removals are considered land use change removals. Total removals include harvested products, logging residues, and land use removals and are reported by broad species group at the regional, State, FIA survey unit, or county level for ownership, forest type, diameter class, stand origin, and other variables.

Most FIA removal tables report only the merchantable portion or volume from a 1-foot stump to the 4-inch top in cubic feet for trees ≥ 5 inches d.b.h. For the sawtimber portion of sawtimber-size trees, removal volume is reported in board feet (International $\frac{1}{4}$ -inch log rule) as well. Removal estimates are generated for the sawtimber portion of growing-stock trees, all other growing-stock trees ≥ 5 inches d.b.h., and all live trees ≥ 5 inches d.b.h., which include rough and rotten cull trees. It is best to think of these categories for removals as subsets; sawtimber removals are a subset of growing-stock removals, growing-stock removals are a subset of all live tree removals, and all of these are a subset of total aboveground tree removals, which include the volume of the stumps, tops, and limbs to 1 inch in diameter. Volume of removal trees < 5 inches d.b.h. have been considered noncommercial and have not been reported on a routine basis.

Reporting removals in this fashion served FIA and its users well for many decades when dealing with the traditional timber products such as saw logs, veneer logs, poles, and other solid-wood forest products. However, the traditional fiber products industries (pulpwood, composite panel, and mulch) along with the emerging bioenergy industry have increased the utilization of rough and cull trees, tops and limbs, a portion of trees < 5 inches d.b.h., and in some cases, understory vegetation. These industries' use of nontraditional timber products and other forest vegetation is expected to increase dramatically.

The majority of timber bought and sold commercially has been scaled by weight at the destination mills for many years. The forestry community has become familiar with weight as a unit of measure for timber products and has requested FIA to include weight as a reporting unit for removals. The cubic foot volumes have been converted to green tons throughout this section by using 69.0 pounds of wood and bark per cubic foot of solid wood for softwoods and 77.4 pounds of wood and bark per cubic foot of solid wood for hardwoods. It is important to keep in mind that this is fresh green weight of wood and bark per cubic foot immediately after harvest.

This section focuses on total average annual removals for all-live tree volume for trees ≥ 5 inches d.b.h. expressed in cubic feet and green tons. It also includes an estimate of removals for stumps, tops, and limbs, expressed as average annual harvest removals from nonmerchantable sources. In addition, an estimate of removals for trees ≥ 5 inches is discussed under the section for logging residue and is not included in total annual removals.



Timber Products

The diverse forest products industry in Texas is made up of a variety of mills, ranging from small- to large-sized softwood and hardwood sawmills, oriented strand board mills, and plywood mills to very large pulpmills. This section presents estimates from industry surveys conducted in 2003, 2005, and 2007 to determine the output for timber products and plant byproducts (Xu 2004, 2006, 2008). Data used for this section were compiled from the timber product output (TPO) database and can be found at <http://srsfia2.fs.fed.us>.

Estimates of TPO and plant residues were obtained from canvasses (questionnaires) sent to all primary wood-using mills in the State. The canvasses are used to determine the types and amount of roundwood or timber (such as saw logs, pulpwood, plywood and veneer, and poles) received by each mill, the county of origin, the species used, and how the mills disposed of the bark and wood residues produced. The canvasses were conducted every year by personnel from the Texas A&M Forest Service. These data are used to augment the FIA annual inventory of all-live timber removals by giving some idea of the proportions that are used for timber products. Individual TPO studies, or industry surveys, are necessary to track trends and capture changes in product output.

In 2003, volume harvested and delivered for products (including residential fuelwood) from all sources totaled 674.4 million cubic feet (23.8 million green tons) (table 14). Output volumes slightly increased in 2005 to 707.0 million cubic feet (25.0 million green tons) and declined in 2007 to 634.3 million cubic feet (22.4 million green tons). Volume harvested for softwood products in 2003 totaled 542.7 million cubic feet (18.7 million green tons) and accounted for 80 percent of the total product volume, while the volume increased in 2005 to 564.8 million cubic feet (19.5 million green tons). In 2007, there was a decline from the 2005 output softwood volume totals to 501.7 million cubic feet (17.3 million green tons). Hardwood output volume followed the same trend, showing an increase in output from 131.7 million cubic feet (5.1 million green tons) in 2003 to 142.2 million cubic feet (5.5 million green tons) in 2005, with a decline to 132.5 million cubic feet (5.1 million green tons) in 2007.

Saw-log production increased from 247.1 million cubic feet in 2003 to 279.7 million cubic feet in 2005, then decreased 17 percent to 231.6 million cubic feet in 2007. At 199.4 million cubic feet (6.9 million green tons), softwoods accounted for 86 percent of saw-log output volume while hardwood output volume totaled 32.2 million cubic feet (1.2 million green tons) in 2007.



Table 14—Output of industrial roundwood products by product, species group, and year, Texas

Product and species group	Year					
	2003	2005	2007	2003	2005	2007
	----- thousand cubic feet -----			----- green tons -----		
Saw logs						
Softwood	198,832.0	237,699.0	199,402.0	6,859,789.0	8,200,717.0	6,879,454.0
Hardwood	48,263.0	41,987.0	32,166.0	1,866,909.0	1,624,140.0	1,244,245.0
Total	247,095.0	279,686.0	231,568.0	8,726,698.0	9,824,858.0	8,123,699.0
Veneer logs						
Softwood	178,935.0	194,772.0	163,637.0	6,173,334.0	6,719,718.0	5,645,547.0
Hardwood	20.0	493.0	570.0	774.0	19,070.0	22,049.0
Total	178,955.0	195,265.0	164,207.0	6,174,108.0	6,738,788.0	5,667,595.0
Pulpwood						
Softwood	161,940.0	129,468.0	135,401.0	5,586,999.0	4,466,702.0	4,671,393.0
Hardwood	77,836.0	94,695.0	94,867.0	3,010,851.0	3,662,990.0	3,669,644.0
Total	239,776.0	224,163.0	230,268.0	8,597,850.0	8,129,692.0	8,341,036.0
Other industrial^a						
Softwood	2,441.0	2,329.0	2,761.0	84,216.0	80,351.0	95,256.0
Hardwood	0.0	0.0	17.0	0.0	0.0	658.0
Total	2,441.0	2,329.0	2,778.0	84,216.0	80,351.0	95,913.0
Total (industrial)						
Softwood	542,148.0	564,268.0	501,201.0	18,704,338.0	19,467,488.0	17,291,649.0
Hardwood	126,119.0	137,175.0	127,620.0	4,878,533.0	5,306,201.0	4,936,595.0
Total	668,267.0	701,443.0	628,821.0	23,582,872.0	24,773,689.0	22,228,244.0
Residential fuelwood						
Softwood	556.0	550.0	547.0	19,182.0	18,975.0	18,872.0
Hardwood	5,581.0	5,033.0	4,918.0	215,884.0	194,686.0	190,238.0
Total	6,137.0	5,583.0	5,465.0	235,066.0	213,662.0	209,110.0
Total						
Softwood	542,704.0	564,818.0	501,748.0	18,723,521.0	19,486,463.0	17,310,521.0
Hardwood	131,700.0	142,208.0	132,538.0	5,094,417.0	5,500,888.0	5,126,833.0
Total	674,404.0	707,026.0	634,286.0	23,817,938.0	24,987,351.0	22,437,354.0

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

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

^a Includes poles, posts, and composite panels.



Pulpwood production totaled 239.8 million cubic feet (8.6 million green tons) in 2003, decreased 7 percent to 224.2 million cubic feet (8.1 million green tons) in 2005, and increased 3 percent to 230.3 million cubic feet (8.3 million green tons) in 2007. In the 2007 survey, pulpwood accounted for 36 percent of the 634.3 million cubic feet total product output. In 2003, softwood pulpwood production totaled 161.9 million cubic feet (5.6 million green tons) with a decrease of 20 percent in 2005 to 129.5 million cubic feet (4.5 million green tons). However, softwood pulpwood production increased 5 percent in 2007 to 135.4 million cubic feet (4.7 million green tons) or 59 percent of the total pulpwood volume produced. Hardwood pulpwood production in 2003 totaled 77.8 million cubic feet (3.0 million green tons) with an increase in 2005 to 94.7 million cubic feet (3.7 million green tons). Hardwood pulpwood production was fairly stable from 2005 to 2007, totaling 94.9 million cubic feet (3.7 million green tons).

Volume harvested for veneer products in 2003 totaled 179.0 million cubic feet (6.2 million green tons) with an increase of 9 percent in 2005 to 195.3 million cubic feet (6.7 million green tons). In 2007, volume harvested for veneer dropped 16 percent from 2005 totals to 164.2 million cubic feet (5.7 million green tons) and accounted for 26 percent of total products for the State.

Volume harvested for other industrial products such as poles, posts, composite panels, and mulch in 2003 totaled 2.4 million cubic feet (84,200 green tons), or <1 percent of the State's total product output. In 2005 other industrial products volume declined 5 percent to 2.3 million cubic feet (80,400 green tons) and increased 19 percent in 2007 to 2.8 million cubic feet (96,000 green tons). Softwood accounted for the majority of volume harvested for other industrial products in all three survey years and represented 99 percent of the volume in 2007.

Volume used for residential fuelwood totaled 6.1 million cubic feet (235,100 green tons) and accounted for <1 percent of total product output in 2003. During 2005 residential fuelwood production declined slightly to 5.6 million cubic feet (213,700 green tons), then decreased again to 5.5 million cubic feet (209.1 million green tons) in 2007. At 4.9 million cubic feet (190,200 green tons), hardwoods accounted for 90 percent of the 2007 residential fuelwood production.

Mill Residue

Mill or plant residues are defined as wood material generated in the production of timber products from roundwood at primary manufacturing plants. This material falls into three main categories:

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

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

In 2003 nearly 164.4 million cubic feet, or 56 percent, of mill residue produced was used for industrial fuel either at pulp mills for boiler fuel or at sawmills for dry kiln operations (table 15). This total decreased 48 percent to 84.8 million cubic feet from 2003 to 2005 and decreased another 17 percent to 70.1 million cubic feet in 2007. Bark and fine residue, at 52.4 and 14.1 million cubic feet, respectively, accounted for 80 percent of mill residue utilized for industrial fuel in 2007, as compared to 78 percent in 2005 and 81 percent in 2003. In



Table 15—Disposal of residue at primary wood-using plants by product, species group, type of residue, and year Texas

Product and species group	All types			Type of residue								
				Bark			Coarse			Fine		
	2003	2005	2007	2003	2005	2007	2003	2005	2007	2003	2005	2007
	<i>thousand cubic feet</i>											
Fiber byproducts												
Softwood	88,949	85,359	76,864	0	0	0	77,271	76,400	70,946	11,678	8,959	5,918
Hardwood	12,667	5,963	4,908	0	0	0	11,572	5,659	4,908	1,095	304	0
Total	101,616	91,322	81,772	0	0	0	88,843	82,059	75,854	12,773	9,263	5,918
Fuel byproduct												
Softwood	94,986	64,174	51,217	68,125	41,758	37,063	12,288	11,660	3,112	14,573	10,756	11,042
Hardwood	69,424	20,626	18,945	54,322	15,584	15,344	2,260	1,103	518	12,842	3,939	3,083
Total	164,410	84,800	70,162	122,447	57,342	52,407	14,548	12,763	3,630	27,415	14,695	14,125
Miscellaneous byproduct												
Softwood	14,491	9,582	13,870	9,344	5,727	5,369	1,957	1,324	5,559	3,190	2,531	2,942
Hardwood	11,144	3,441	2,588	8,456	2,426	1,833	819	399	205	1,869	616	550
Total	25,635	13,023	16,458	17,800	8,153	7,202	2,776	1,723	5,764	5,059	3,147	3,492
Not used byproduct												
Softwood	66	16	31	19	12	4	44	2	24	3	2	3
Hardwood	116	41	202	34	10	20	42	20	1	40	11	181
Total	182	57	233	53	22	24	86	22	25	43	13	184
All products												
Softwood	198,492	159,131	141,982	77,488	47,497	42,436	91,560	89,386	79,641	29,444	22,248	19,905
Hardwood	93,351	30,071	26,643	62,812	18,020	17,197	14,693	7,181	5,632	15,846	4,870	3,814
Total	291,843	189,202	168,625	140,300	65,517	59,633	106,253	96,567	85,273	45,290	27,118	23,719

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



Timber Products and Utilization

2007, 88 percent of bark residue produced was used for fuel, with the remainder of the utilized bark going for miscellaneous products. During 2003, 84 percent (88.8 million cubic feet) of the total coarse residue produced was utilized for fiber products, increasing to 85 percent (82.1 million cubic feet) in 2005. In 2007, use of coarse residue for fiber products also increased, to 89 percent (75.9 million cubic feet). Bark and wood residues not utilized accounted for less than one-tenth of 1 percent for all residues produced in 2003, 2005, and 2007.

Land Use Removals

Land use removals (land clearing or set-aside forest land), or removal volume attributed to land use change, accounted for 8 percent of total removals with 64.8 million cubic feet (2.4 million green tons)

in 2003; this percentage remained stable with the removal of 72.0 million cubic feet (2.7 million green tons) in 2005 (tables 16a and 16b). In 2007, the percentage of land use change removals increased to 9 percent, totaling 74.1 million cubic feet (2.7 million green tons). The merchantable portion of live trees accounted for 68 percent (44.1 million cubic feet) of land use change removals for 2003. During 2005 the merchantable portion of live trees was unchanged at 68 percent (48.9 million cubic feet), only to decrease in 2007 to 65 percent (48.3 million cubic feet). The softwood species group accounted for 26.0 million cubic feet, or 40 percent, of the land use change removals in 2003. The share of total land use change removals in the softwood species group dropped to 31 percent (22.5 million cubic feet) with an increase to 51 percent (38.0 million cubic feet) in 2007.

Table 16a—Volume of timber removals by year, species group, removals class, and source, Texas

Year and species group	Roundwood products			Logging residues			Other removals			All removals		
	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources
<i>thousand cubic feet</i>												
2003												
Softwood	454,953	87,751	542,704	20,928	55,713	76,641	17,987	8,022	26,009	493,868	151,486	645,354
Hardwood	123,008	8,692	131,700	15,723	36,468	52,191	26,118	12,644	38,762	164,849	57,804	222,653
Total	577,961	96,443	674,404	36,651	92,181	128,832	44,105	20,666	64,771	658,717	209,290	868,007
2005												
Softwood	526,036	38,782	564,818	18,405	62,195	80,600	15,564	6,942	22,506	560,005	107,919	667,924
Hardwood	132,477	9,731	142,208	9,362	27,242	36,604	33,322	16,131	49,453	175,161	53,104	228,265
Total	658,513	48,513	707,026	27,767	89,437	117,204	48,886	23,073	71,959	735,166	161,023	896,189
2007												
Softwood	475,810	25,938	501,748	33,349	68,929	102,278	29,790	8,217	38,007	538,949	103,084	642,033
Hardwood	111,474	21,064	132,538	21,841	38,989	60,830	18,526	17,571	36,097	151,841	77,624	229,465
Total	587,284	47,002	634,286	55,190	107,918	163,108	48,316	25,788	74,104	690,790	180,708	871,498

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



Table 16b—Volume of timber removals by year, species group, removals class, and source, Texas

Year and species group	Roundwood products			Logging residues			Other removals			All removals		
	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources	Growing stock	Non-growing stock	All sources
<i>green tons</i>												
2003												
Softwood	15,696,073	3,027,447	18,723,520	722,034	1,922,114	2,644,148	620,557	276,764	897,321	17,038,664	5,226,325	22,264,989
Hardwood	4,758,202	336,215	5,094,417	608,185	1,410,666	2,018,851	1,010,314	489,077	1,499,391	6,376,701	2,235,958	8,612,659
Total	20,454,275	3,363,662	23,817,937	1,330,219	3,332,780	4,662,999	1,630,871	765,841	2,396,712	23,415,365	7,462,283	30,877,648
2005												
Softwood	18,148,458	1,338,005	19,486,463	634,980	2,145,754	2,780,734	536,978	239,489	776,467	19,320,416	3,723,248	23,043,664
Hardwood	5,124,461	376,426	5,500,887	362,141	1,053,775	1,415,916	1,288,970	623,970	1,912,940	6,775,572	2,054,171	8,829,743
Total	23,272,919	1,714,431	24,987,350	997,121	3,199,529	4,196,650	1,825,948	863,459	2,689,407	26,095,988	5,777,419	31,873,407
2007												
Softwood	16,415,661	894,860	17,310,521	1,150,555	2,378,080	3,528,635	1,027,768	283,490	1,311,258	18,593,984	3,556,430	22,150,414
Hardwood	4,312,035	814,797	5,126,832	844,853	1,508,172	2,353,025	716,622	679,681	1,396,303	5,873,510	3,002,650	8,876,160
Total	20,727,696	1,709,657	22,437,353	1,995,408	3,886,252	5,881,660	1,744,390	963,171	2,707,561	24,467,494	6,559,080	31,026,574

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

Logging Residue

The merchantable portions of trees cut and left onsite are underutilized removals by FIA merchantability standards, while the nonmerchantable portions of trees (part of the 1-foot stump or volume in tops <4 inches in diameter) used for products are considered overutilized removals by FIA merchantability standards (Mathison and others 2009). Logging residue has been considered a possible source for bioenergy and other timber products during recent years. It is important to keep in mind that logging residue traditionally has not had a marketable value. Retrieval of logging residue is a matter of economics and markets. If markets are available and a willingness to pay a reasonable price exists, then more total tree volume (including what has been left as logging residue) is utilized for products.

Most loggers are set up to merchandise the main bole of the tree or the merchantable portion of the tree (from a 1-foot stump to a 4-inch diameter top). The current conventional logging system in Texas is a feller buncher, working with one or two rubber tired grapple skidders, a delimiting gate or pull-through delimeter at the deck, a knuckleboom loader, and the appropriate number of tractor trailers to haul the volume harvested. Improved mechanization and equipment capabilities have dramatically increased



Timber Products and Utilization

productivity and utilization across the South. These systems are typically capable of producing, on average, about 10 loads per day of tree-length wood.

Woody material typically left on a logging site includes:

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

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

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

The reader should remember that total removal volume is made up of volume from the merchantable and nonmerchantable portions of removal trees. Overutilization factors from the utilization studies were used to determine how much of the nonmerchantable portion of removals was used for timber products. The nonmerchantable volume is calculated for the land use change removal estimate and added to the merchantable volume for a total land use change removal volume. After the nonmerchantable portion of timber products and land use change values are calculated and subtracted from total nonmerchantable removals volume, the remainder is the volume of nonmerchantable logging residues.

With this in mind, the logging residue volume in Texas for 2003 totaled 128.8 million cubic feet (4.7 million green tons), decreasing to 117.2 million cubic feet (4.2 million green tons) in 2005 and increasing to 163.1 million cubic feet (5.9 million green tons) in 2007 (table 16a and 16b). This volume accounted for < 20 percent of total timber removals in each of the 3 years. During 2003, logging residue from the merchantable portion of all-live removals totaled 36.7 million cubic feet (1.3 million green tons), or 28 percent of total logging residue, declining to 27.8 million cubic feet (997,100 green tons) in 2005. There was an increase for the 2007 survey in logging residue from the merchantable portion of all-live removals, resulting in 55.2 million cubic feet (2.0 million green tons), or 34 percent of total logging residue.



It is interesting to note that while total logging residue accounted for about 13 to 18 percent of total removals in 2003, 2005, and 2007, the merchantable portion of logging residue for both softwood and hardwood combined accounted for about 3 to 6 percent of total live removals for those survey periods. For softwoods, the merchantable portion of logging residue accounted for 3 to 5 percent of the total softwood all-live tree removals for the 2003, 2005, and 2007 surveys. The merchantable portion of hardwood logging residue accounted for 7 percent (15.7 million cubic feet) of all-live hardwood

removals (222.7 million cubic feet) in 2003. In 2005, the merchantable portion of hardwood logging residue declined to 4 percent (9.4 million cubic feet) of all-live removals and increased in 2007 to 10 percent (21.8 million cubic feet). Nonmerchantable sources (such as the residual stump, forks, tops, and limbs) accounted for 92.2 million cubic feet, or 72 percent of total logging residue in 2003. This percentage increased in 2005, showing 76 percent (89.4 million cubic feet) of logging residue came from nonmerchantable sources, and decreased to 66 percent (107.9 million cubic feet) in 2007.



Logging residue from harvest activity. (photo by Christopher M. Oswald, U.S. Forest Service)



The Forest Sector in the Texas Economy

Manufacturing Sector and Wood Products Industries

The Texas manufacturing sector contributes significantly to both the State and the Nation's economy. In 2008, the Texas manufacturing sector provided 9 percent of the Nation's manufacturing gross domestic product (GDP). This GDP contribution placed the Texas manufacturing sector second in significance across all States (U.S. Bureau of Economic Analysis 2011). Similarly, manufacturing constituted 13 percent of the State's economy during 2008 (U.S. Bureau of Economic Analysis 2011). Within the manufacturing sector, Texas wood products industries contributed close to 8 percent of all jobs and 3 percent of the value added (U.S. Census Bureau 2011). This figure, however, represents a 5-percent decline from 2004 employment levels (U.S. Census Bureau 2011).

Economic Contribution of the Forest Products Industry

The following analyses were developed by using IMPLAN (IMpact analysis for PLANning) version 3.0 economic modeling tools (Minnesota IMPLAN Group, Inc. 2009). IMPLAN models report on the direct, indirect, induced, and total effects of the forest products industry. For a sector analysis, IMPLAN direct effects represent total sales by the forest products industry. Indirect effects capture total sales resulting from the forest industry's purchase of goods and services from other local industries, and the induced effects denote the impacts from changes in household expenditures resulting from the change in production. Total effects consist of direct, indirect, and induced effects. For each of these

contribution effects, IMPLAN generates estimates for employment (full-time and part-time jobs), labor income, output, and total value added. Output represents the sector's total value of production, and the total value added is the difference between the total output and the costs of intermediate inputs. In other words, total value added is the industry's gross contribution to the overall economy of an area (Minnesota IMPLAN Group, Inc. 2011a).

We assessed the forest products sector's economic contribution by using IMPLAN's estimated total output for each industry as the model's initial effects. Forest industries were grouped into five categories: (1) timber-logging, (2) sawmill-panel, (3) pulp, (4) durable goods, and (5) nondurable goods. Within the manufacturing industries, the primary sector includes sawmill-panel and pulp industries, and the secondary sector comprises industries in the durable and nondurable goods categories. A complete list of the industries included under each category is provided in appendix E. Following, we provide direct and total effect figures for the State models developed using IMPLAN datasets for 2004, 2006 and 2008. Additionally, we provide a summary for 2008 by FIA survey unit. All estimated dollar values are shown in 2008 dollars.

During 2008, Texas' forest products sector provided direct employment totaling 77,310 full-time and part-time jobs, with an associated \$4.05 billion in labor income. The State's forest sector activity resulted in total employment (direct, indirect, and induced) of 166,553 jobs and labor income close to \$9 billion. Further, the sector contributed \$6.05 billion in direct value added and generated an overall \$13.64 billion in total value added to the State's economy.



Primary and Secondary Forest Industry

As shown in table 17, a significant portion of the forest sector's economic contribution originated from industries in the secondary sector. During 2008 the secondary sector contributed close to 65 percent of the forest products sector's direct total value added. Within the secondary sector, industries in the durable goods category supplied 43,853 direct jobs, close to 57 percent of the total direct employment generated by the forest sector. Furthermore, this category accounted for \$2.11 billion (35 percent) of the direct value added by the forest sector.

Considering total effects, durable goods industries supplied 76,272 jobs, or 46 percent of the total effect on employment, and \$4.87 billion (36 percent) of the total effect on total value added by the forest sector. Nondurable goods industries ranked second in significance with 30 percent and 32 percent of the value added for direct and total effect, respectively (\$1.84 billion of direct total value added and \$4.32 billion of total value added). In comparison, industries in the primary sector supplied 11,825 jobs and \$1.51 billion in direct value added, corresponding to 15 percent and 25 percent of the forest sector direct employment and value added, respectively.

Table 17—Forest products sector direct and total economic contribution by year, Texas

Impact type and category	Employment				Total value added			
	2004	2006	2008	Change	2004	2006	2008	Change
	---- number of jobs ----			- percent -	----- millions of dollars -----			- percent -
Direct effect								
Timber logging	4,599	4,809	5,625	22.3	\$548.83	\$434.90	\$586.04	6.8
Sawmill panel	9,120	9,625	8,463	-7.2	781.92	1,049.01	705.04	-9.8
Pulp	3,833	3,282	3,362	-12.3	794.24	879.02	804.17	1.3
Total—primary sector	12,953	12,907	11,825	-8.7	1,576.16	1,928.03	1,509.21	-4.2
Durable goods	38,181	43,922	43,853	14.9	2,129.39	2,723.35	2,113.50	-0.7
Nondurable goods	18,020	17,074	16,007	-11.2	1,816.82	2,033.62	1,840.91	1.3
Total—secondary sector	56,201	60,996	59,861	6.5	3,946.21	4,756.97	3,954.41	0.2
Total direct effect	73,753	78,713	77,310	4.8	6,071.21	7,119.90	6,049.67	-0.4
Total effect								
Timber logging	16,452	16,016	17,186	4.5	1,074.82	939.74	1,171.99	9.0
Sawmill panel	16,301	17,462	15,397	-5.5	1,388.67	1,744.69	1,327.34	-4.4
Pulp	14,732	12,166	14,592	-1.0	1,808.75	1,744.52	1,948.06	7.7
Total—primary sector	31,034	29,627	29,988	-3.4	3,197.42	3,489.22	3,275.40	2.4
Durable goods	59,173	70,839	76,272	28.9	3,848.85	5,009.40	4,869.24	26.5
Nondurable goods	45,680	42,064	43,106	-5.6	4,148.14	4,216.26	4,320.32	4.2
Total—secondary sector	104,853	112,902	119,378	13.9	7,997.00	9,225.66	9,189.57	14.9
Total—total effect	152,339	158,545	166,553	9.3	12,269.24	13,654.62	13,636.95	11.1

Note: Percent change corresponds to change between 2004 and 2008.

Source: Impact analysis for PLANning (IMPLAN) V3.0.



The Forest Sector in the Texas Economy

Trend Analysis

Comparison of the economic contribution from 2004 to 2008 (table 17) reveals a mixed trend. Overall, the primary sector displays a negative trend across all categories. In the case of employment, industries in the primary sector supplied 8.7 percent fewer jobs in 2008 than in 2004, a reduction of approximately 1,128 direct jobs. Likewise, the primary sector's direct total value added fell by nearly \$67 million. On the other hand, the secondary sector showed a positive change, with a direct effect on employment 6.5 percent higher (3,660 additional full-time and part-time jobs) in 2008 compared to 2004 figures. As seen in figure 28, the percentage increase in employment in the secondary sector originated from durable goods industries. Additionally, as displayed in figure 28, timber-logging had the highest percentage increase, for both employment and total value added.

Most forest products industries displayed an increase in the direct economic contribution from 2004 to 2006 and a decline from 2006 to 2008. Figure 29 shows direct employment across the industry groups. Timber-logging activity exhibited continuous growth. The contribution from sawmill-panel and durable goods industries increased from 2004 to 2006 and decreased from 2006 to 2008, although durable goods remained above the 2004 figures. In contrast, direct employment from both pulp and nondurable goods industries decreased from 2004 to 2006. While direct employment in nondurable goods industries decreased from 2006 to 2008 as well, employment in pulp industries showed a slight increase from 2006 to 2008 but remained below 2004 levels.

The direct total value added revealed a different trend (fig. 30), with primary and secondary sectors' economic contribution

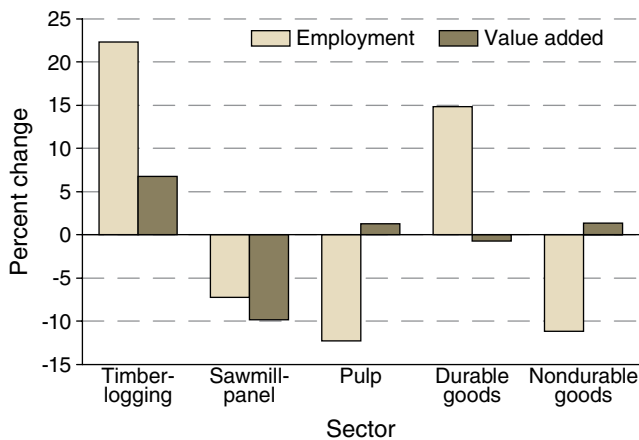


Figure 28—Percent change in direct employment and value added between 2004 and 2008, Texas.

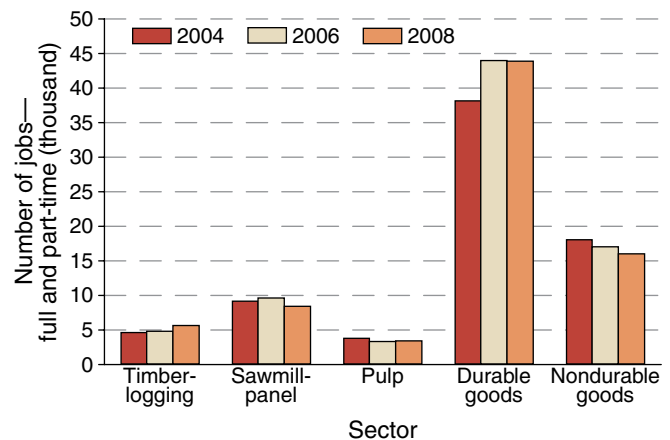


Figure 29—Forest products sector direct employment by group category, Texas, 2004, 2006, and 2008.

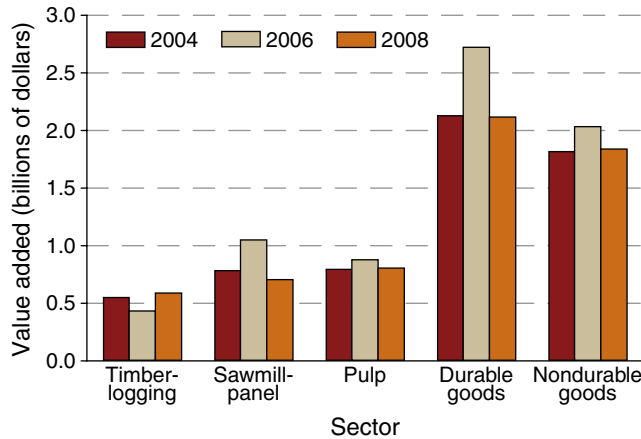


Figure 30—Forest products sector direct total value added by group category, Texas, 2004, 2006, and 2008.

increasing from 2004 to 2006 and dropping from 2006 to 2008. This fall in economic activity reflects the general economic downturn developing towards the end of this period. For the sawmill-panel and durable goods industry groups the 2008 direct value added fell below 2004 figures. Direct total value added from durable goods industries decreased by approximately \$610 million between 2006 and 2008.

Similar trends occurred across the primary and secondary sectors' total effect (direct, indirect, and induced effect combined). However, we caution against comparison of total effects across years due to differences in the methodology used to estimate regional purchase coefficients (RPCs). Specifically, for data prior to 2007 IMPLAN calculates multipliers by using RPCs obtained from econometric models based on 51 regions and 120 industries. Starting with the 2007 datasets, however, IMPLAN version 3.0 estimates the RPCs

via trade flow analysis. The trade flow analysis uses all the IMPLAN sectors along with the observed usage at the county level (Minnesota IMPLAN Group, Inc. 2011b).

Economic Effect by Forest Inventory and Analysis Survey Unit

The forest industry in Texas is distributed across the State in a distinct pattern. Specifically, secondary industries located primarily in the central area of the State (north central and west central units), while primary industries and timber-logging activity concentrate in the southeast and northeast units (Li and Carraway 2009). Using the FIA survey units as area inputs in the IMPLAN model illustrates the varied economic effect of the forest industry across the State (appendix E contains a list of the counties included in each survey unit).



The Forest Sector in the Texas Economy

Table 18 displays the forest sector's contribution to the State's economy in 2008 by FIA survey unit. The secondary forest industries located in the north central and west central units accounted for 67 percent of the direct employment, or 40,096 jobs, supplied by the secondary sector in the State. Further, the value added from these two units corresponded to 69 percent of the total value added by the secondary sector. On the other hand, the southeast

and northeast units together accounted for 86 percent of the direct employment and 78 percent of the total direct value added by the timber-logging category. Likewise, the primary industries in the southeast and northeast units provided 78 percent of the employment and 69 percent of the direct value added by the State's primary sector.

The forest products sector's activity in the north central unit far exceeded that of other units in the State both in direct

Table 18—Forest products sector contribution to employment and value added by FIA survey unit, Texas, 2008

Survey unit and impact type	Employment				Value added			
	Timber logging	Primary sector	Secondary sector	Total	Timber logging	Primary sector	Secondary sector	Total
	----- number of jobs -----				----- millions of dollars -----			
North Central								
Direct	255	1,604	28,460	30,318	\$46.36	\$335.45	\$2,049.09	\$2,430.90
Total	1,036	5,511	56,919	63,466	86.48	724.85	4,629.40	5,440.73
Northeast								
Direct	1,985	2,400	5,209	9,594	184.83	149.34	268.41	602.58
Total	3,207	3,595	7,833	14,635	256.71	238.38	454.57	949.66
Northwest								
Direct	134	340	2,054	2,528	19.47	33.07	132.78	185.32
Total	602	747	3,338	4,688	37.13	66.91	225.40	329.44
South								
Direct	181	218	3,206	3,604	30.45	17.95	163.24	211.63
Total	1,532	350	4,679	6,561	65.52	27.50	262.15	355.17
Southeast								
Direct	2,877	6,846	7,543	17,265	273.38	885.34	577.44	1,736.16
Total	5,441	14,541	12,940	32,923	446.41	1,726.01	1,083.84	3,256.27
West								
Direct	6	0	1,754	1,760	1.04	0.00	99.43	100.47
Total	24	0	3,093	3,117	1.66	0.00	195.11	196.77
West Central								
Direct	187	417	11,636	12,241	30.51	88.07	664.02	782.60
Total	732	1,049	20,426	22,207	54.35	137.46	1,375.67	1,567.49
All units								
Direct	5,625	11,825	59,861	77,310	586.04	1,509.21	3,954.41	6,049.66
Total	12,576	25,793	109,229	147,597	948.25	2,921.12	8,226.14	12,095.52

FIA = Forest Inventory and Analysis.

Source: Impact analysis for PLANning (IMPLAN) V3.0.



employment and total value added. As displayed in figure 31, the unit's lead in employment contribution can be attributed to secondary sector activity. Industry in the north central unit supplied an estimated 30,318 jobs (table 18), 39 percent of the forest products sector's direct employment. Similarly, forest industry in this unit contributed \$2.43 billion of direct total value added, 40 percent of the direct total value added by the forest sector to the State's economy. As shown in figure 31, direct employment from timber-logging activity, as well as employment by the primary sector, was concentrated within the south-east and northeast units.

The southeast unit follows the north central unit in terms of overall economic significance for employment and total value added. During 2008 the southeast unit supplied 17,265 direct jobs (22 percent of the forest sector direct employment) and \$1.74 billion in direct total value added (almost

29 percent of the forest sector's total direct value added). Third in overall economic contribution, the west central unit provided an estimated 12,241 jobs, or 16 percent of the forest sector's total direct employment. Further, the forest industry in the west central unit generated an estimated \$783 million in direct total value added, approximately 13 percent of direct value added by the forest sector.

As a side note when comparing results from tables 17 and 18, table 18 shows only the economic contribution within each survey unit. These unit-level analyses do not consider across-units effects (the effect that forest activity on one unit might have on neighboring units). Therefore, the total effects from all units in table 18 do not match the State totals in table 17. The State analysis (table 17) shows the total contribution to the State, which considers effects within and across counties.

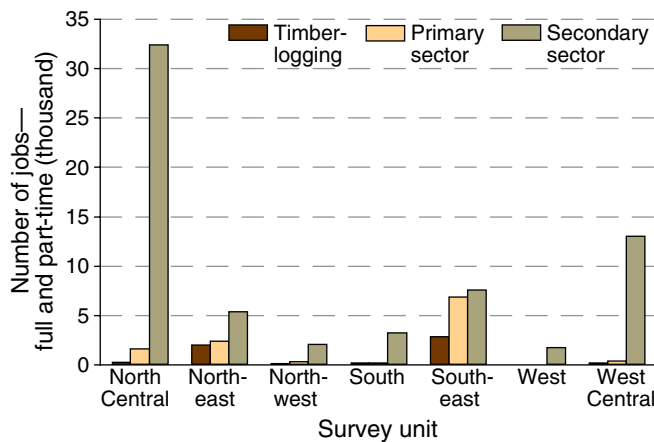


Figure 31—Forest products sector direct employment by group category and survey unit, Texas, 2008.



The Forest Sector in the Texas Economy

Concluding Remarks

The forest sector makes a significant contribution to the Texas manufacturing sector and therefore to the State's economy. During 2008 the forest sector provided 77,310 jobs and \$6.05 billion in direct total value added to the economy of the State. Overall, the forest sector activity generated a total (direct, indirect, and induced) employment of more than 160,000 jobs and labor income close to \$9 billion.

The secondary sector accounted for a large portion of the forest sector's total value added and employment, supplying 65 percent of the direct value added and 77 percent of the direct employment. Within the secondary sector, industries in the durable goods category provided 73 percent of the direct employment and 53 percent of the direct total value added.

The primary sector supplied 15 percent of the forest products sector's direct employment and 25 percent of the forest sector's direct total value added. Within the primary sector, the sawmill-panel category provided 72 percent of the direct employment. Industries in the pulp category, on

the other hand, accounted for 53 percent of the direct total value added by the primary sector.

During 2008, the economic activity of the forest products sector showed signs of the general slowdown within the U.S. economy. Between 2006 and 2008 direct employment fell by nearly 2 percent, and the total value added dropped by 15 percent. The primary sector experienced an 8-percent decline in employment, compared to a 2-percent employment drop observed in the secondary sector. Conversely, from 2006 to 2008, direct employment in the timber-logging category increased by approximately 17 percent.

Across the State, the north central unit led in employment and value added, followed by the southeast unit. Forest products industries in the north central unit contributed \$2.43 billion of direct total value added (40 percent of the forest sector total) and 30,318 jobs (39 percent of the forest products sector's direct employment). Forest industry in the southeast unit supplied 17,265 jobs and \$1.74 billion of direct total value added, or 29 percent of the direct value added by the forest sector.

Live oaks,
Washington
County, TX.





Forest Health

Invasive Plants Found in East Texas Forests

Foresters and ecologists have noted the spread of nonnative invasive species onto United States forest land for decades. Despite soaring costs and inestimable environmental impacts, nonnative invasive species continue to spread across managed and natural forests. This update describes current results from data collected in Texas between 2003 and 2008 and provides graphic illustrations of where invasive plants are being observed in forests across the State.

The estimates and coverage maps of nonnative invasive plants found in Texas' forests will be updated on a periodic basis. For more information regarding past inventory reports for the State, inventory program information, field sampling methodology, and estimation procedures, please refer to the citations at the end of this report.

Invasive plants from the FIA watch list were found on 1,107 forested plots across east Texas (49 percent of forested plots sampled; table 19). Seventeen percent

of plots contained two or more invasive plants from the list. Invasive plants were detected throughout east Texas, with 44 percent of forested plots in the southeast containing invasives and 55 percent in the northeast containing invasives (fig. 32). Japanese honeysuckle (*Lonicera japonica*) was the most frequently detected plant on east Texas forest land, and was particularly common in the northeast FIA unit (table 20). Chinese tallowtree (*Triadica sebifera*) was the second most frequently detected invasive plant, and was most common in the southeast unit, along the coast (table 20).

Table 19—Number of invasive species detections on forest land, number and percent of plots on which they occur by survey unit, Texas, 2008

Count of unique species	South-east	North-east	Plots	Surveyed plots
	----- number -----			
1	377	364	741	33
2	113	148	261	12
3	53	35	88	4
4	14	2	16	1
5	1	—	1	0
Total	558	549	1,107	49

— = no sample for the cell.
 Total number of surveyed plots; Southeast = 1,263; Northeast = 995; total = 2,258.

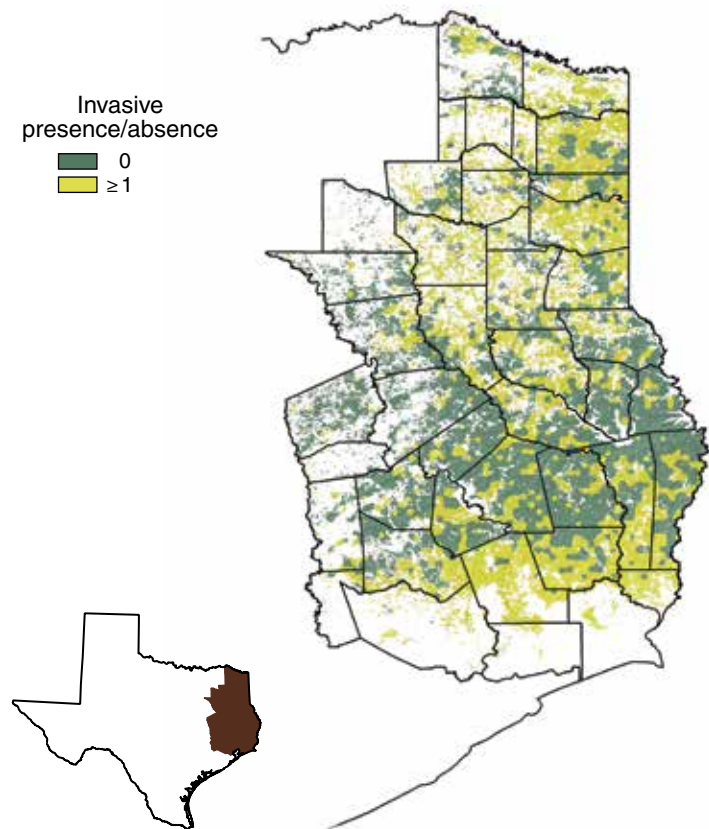


Figure 32—Presence/absence of invasive species on forest land, east Texas, 2008.



Forest Health

Table 20—Invasive species detected on forest land with frequency of plot detections and mean percent subplot cover by common name, scientific name, and survey unit, Texas, 2008

Common name	Scientific name	Survey unit			Survey unit		
		South-east	North-east	Total	South-east	North-east	Total
		--- number of plots ^a ---			--- mean percent ^b ---		
Silktree, Mimosa	<i>Albizia julibrissin</i>	12	27	39	8	2	4
Chinaberry	<i>Melia azedarach</i>	33	20	53	15	2	10
Tallowtree, Popcorn tree	<i>Triadica sebifera</i>	358	34	392	21	5	20
Chinese/European privet	<i>Ligustrum sinense/L. vulgare</i>	75	177	252	15	9	11
Japanese/glossy privet	<i>Ligustrum japonicum/L. lucidum</i>	20	3	23	23	5	20
Bush honeysuckles	<i>Lonicera</i> spp.	9	0	9	11	—	11
Sacred bamboo, Nancina	<i>Nandina domestica</i>	4	4	8	2	4	3
Nonnative roses	<i>Rosa</i> spp.	4	18	22	16	2	4
Nonnative climbing yams- air yam/Chinese yam	<i>Dioscorea bulbifera</i>	3	0	3	0	—	0
English ivy	<i>Hedera helix</i>	1	0	1	5	—	5
Japanese honeysuckle	<i>Lonicera japonica</i>	182	466	648	13	11	12
Kudzu	<i>Pueraria Montana</i> var. <i>lobata</i>	—	1	1	—	0	0
Chinese/Japanese wisteria	<i>Wisteria sinensis/W. floribunda</i>	—	2	2	—	30	30
Giant reed	<i>Arundo donax</i>	—	1	1	—	0	0
Tall fescue	<i>Lolium arundinaceum</i>	1	1	2	30	50	40
Nonnative bamboos	<i>Phyllostachys</i> spp., <i>Bambus</i> spp.	1	1	2	14	30	22
Japanese climbing fern	<i>Lygodium japonicum</i>	117	2	119	10	3	9
Shrubby lespedeza	<i>Lespedeza frutescens</i>	2	8	10	3	3	3
Sericea lespedeza	<i>Lespedeza cuneata</i>	1	8	9	5	4	4

— = no sample for the cell.

Total number of surveyed plots: Southeast = 1,263; Northeast = 995; total = 2,258.

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

^b Percent cover in this column is the average cover on an individual subplot, not the whole plot.



Invasive trees were more common in southeastern Texas (fig. 33). Chinese tallowtree was the most commonly detected tree species in both FIA units in east Texas, though it was far more common in the southeast, and covered a larger percentage of the subplots where it was found in that unit (table 20). Chinaberry (*Melia azedarach*) and mimosa (*Albizia julibrissin*) were also detected on Texas forest land, although both occurred on fewer than 5 percent of sampled plots (table 20).

Invasive shrubs were more commonly detected in northeastern Texas (fig. 34), though when found in the Southeast, they tended to cover a larger proportion of the subplot (table 20). Chinese and European privets (*Ligustrum sinense/L. vulgare*) were the most common invasive shrubs, occurring on 11 percent of forested plots in eastern Texas, and 18 percent of plots in northeast Texas alone (table 20). No other invasive shrub occurred on >1 percent of sampled plots.

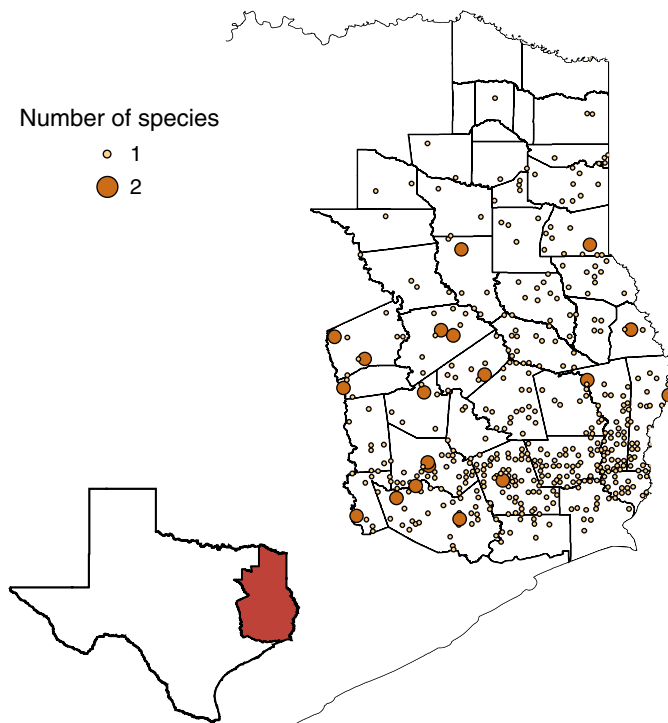


Figure 33—Number of invasive tree species on plots, east Texas, 2008.

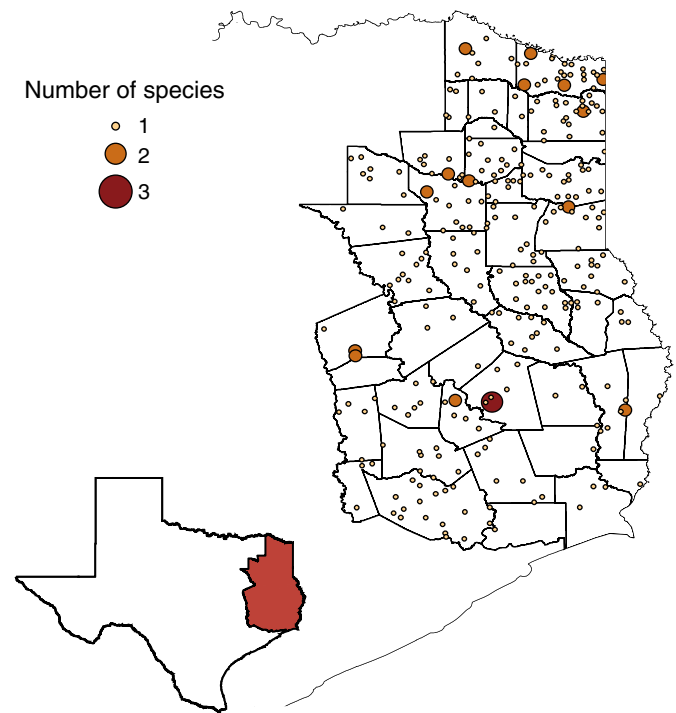


Figure 34—Number of invasive shrub species on plots, east Texas, 2008.



Japanese honeysuckle was the only invasive vine occurring on more than three sampled plots (table 20). Though it was detected across east Texas, it was more common in the northeast (fig. 35), where it occurred on 21 percent of sampled plots (table 20). Japanese honeysuckle covered, on average, 12 percent of the area of subplots on which it was detected.

Nonnative herbs and grasses were found on only a handful of sampled plots in east

Texas (fig. 36). Shrubby and Chinese lespedezas (*Lespedeza bicolor/cuneata*) were most common, although covering only a small aerial proportion of the subplots on which they were found (table 20).

Japanese climbing fern (*Lygodium japonicum*) occurred throughout southeast Texas on about 9 percent of plots surveyed in that region, and 5 percent of plots statewide (fig. 37). On subplots where it was found, it covered approximately 10 percent of the aerial proportion (table 20).

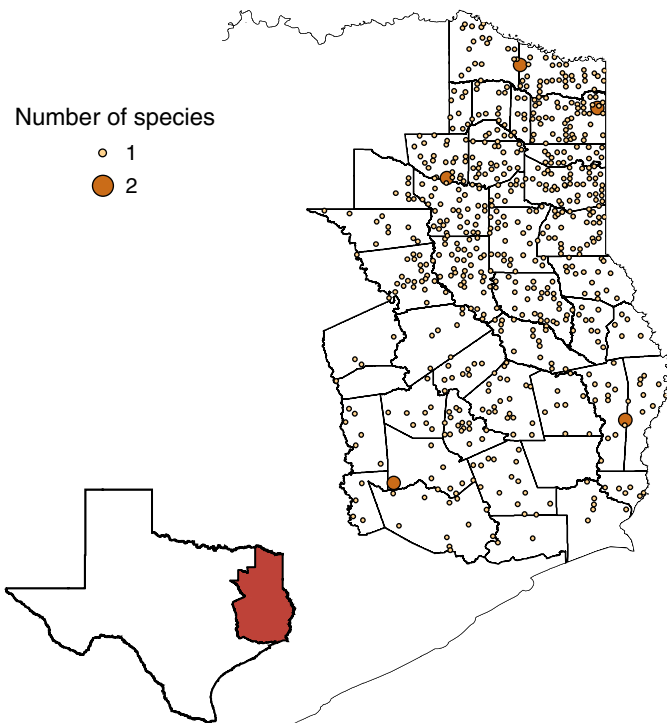


Figure 35—Number of invasive vine species on plots, east Texas, 2008.

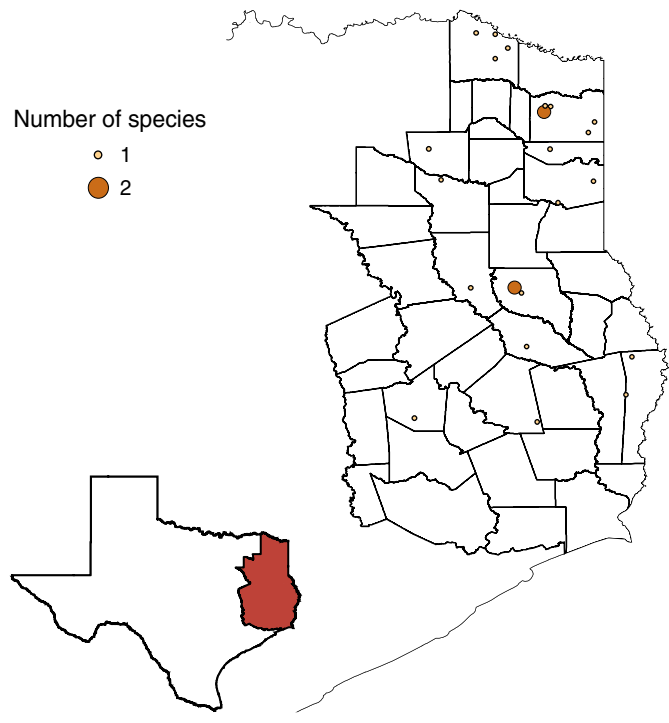


Figure 36—Number of invasive grass and herb species on plots, east Texas, 2008.

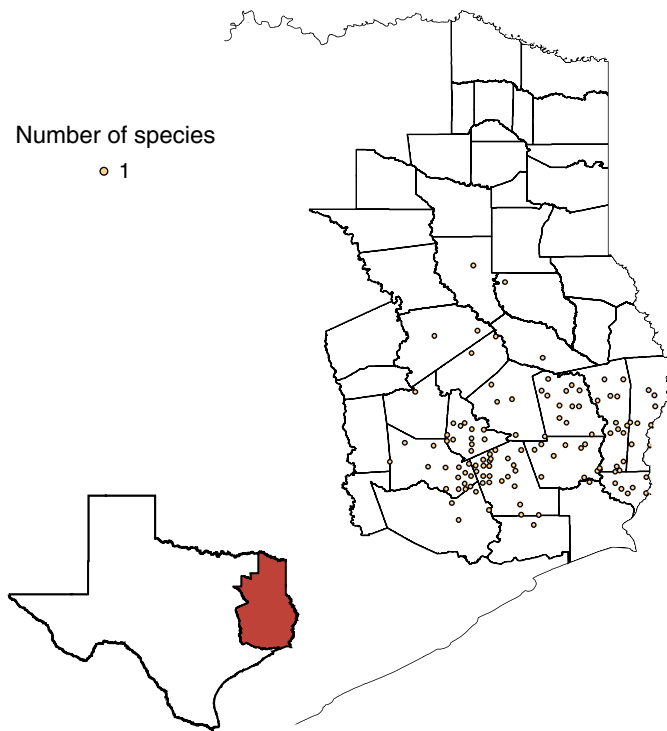


Figure 37—Number of invasive fern species on plots, east Texas, 2008.

Invasive plants are common on nearly one-half of east Texas’ forested plots. The prevalence of invasive plants in east Texas underscores the importance of public education regarding the economic and ecological costs of invasive plants, and the need for management and control efforts. Chinese tallowtree and Japanese honeysuckle are particularly problematic in east Texas. Both species are capable of altering local environments through competition with native plants. Chinese tallowtree, in particular, is a threat to native wet prairies, replacing entire ecosystems with monoculture stands of the tree. The FIA Nonnative Invasive Plant program provides a method for

tracking the spread of common invasive plants across the landscape, and allows for a landscape-level approach to invasive species problem-solving.

Down Woody Material

Down woody material (DWM) plot data estimate biomass components of the forest floor that include coarse woody debris, fine woody debris, duff, litter, shrubs/herbs, slash piles, and fuel bed depths (Woodall and Monleon 2008). DWM data are used for evaluating fire risk and fuel loading, as well as for estimating and monitoring carbon pools. DWM data can also be used to assess wildlife dynamics and evaluate soil erosion potential.

For the 2008 survey, forest fuel loads average slightly >11 tons per acre on forest land in Texas (table 21). Litter and duff compose the largest portions of DWM, with averages of 3.6 tons of litter per acre and 3.3 tons of duff per acre, followed by averages of 2.7 tons per acre of slash, 1.1 tons per acre of fine woody debris, and 0.6 tons per acre of coarse woody debris. Fine woody debris (FWD) represents wood pieces with a diameter of <3 inches, and is of importance in predicting fire hazards. FWD is broken out in fuel categories of 1-hour fuels, 10-hour fuels, and 100-hour fuels. Coarse woody debris (CWD) represents wood pieces with a diameter >3 inches and makes up the 1,000-hour fuel category.



Table 21—Mean fuel loading on forest land by forest-type group and fuel class, Texas, 2008

Forest-type group	Down and deadwood				Forest floor fuels		
	1-hour	10-hour	100-hour	1,000-hour	Slash	Duff	Litter
	<i>tons per acre</i>						
Longleaf-slash pine	0.1	0.5	1.7	2.1	0.0	12.8	13.3
Loblolly-shortleaf pine	0.2	0.7	1.6	1.3	4.3	13.4	12.1
Other eastern softwoods	0.0	0.0	0.0	3.5	0.0	0.0	0.0
Pinyon-juniper	0.0	0.2	0.6	0.1	0.6	2.5	1.8
Oak-pine	0.3	1.3	5.2	2.1	5.6	7.6	11.6
Oak-hickory	0.1	0.2	0.9	0.8	9.9	5.6	7.0
Oak-gum-cypress	0.1	0.4	1.7	1.1	0.0	6.9	5.2
Elm-ash-cottonwood	0.1	0.5	1.8	2.0	0.7	1.3	3.4
Other hardwoods	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Exotic hardwoods	0.7	3.1	3.9	0.0	0.0	2.4	2.8
Nonstocked	0.0	0.0	0.0	0.0	0.0	1.2	3.2
All groups	0.1	0.2	0.8	0.6	2.7	3.3	3.6

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

Total carbon stocks of DWM were 347.5 million tons in Texas during the 2008 survey (table 22). Litter and duff accounted for the majority, 61 percent, of that volume with 112.5 and 101.0 million tons, respectively. Slash made up another 24 percent or 83.4 million tons, followed by 33.2 million tons of FWD and 17.4 million tons of CWD.

The majority of Texas' CWD is small in diameter, and in intermediate stages of decay (tables 23 and 24). Volume of CWD

averaged 53.8 cubic feet per acre, with an average of 26.8 pieces per acre. The 3.0- to 7.9-inch large-end diameter class averaged 16.5 cubic feet per acre and 21.5 pieces per acre, followed by the 8.0- to 12.9-inch large-end diameter class, averaging 16.3 cubic feet per acre and 4.4 pieces per acre. Decay class 2 averaged 17.7 cubic feet per acre and 5.7 pieces per acre, while decay class 3 averaged 15.5 cubic feet per acre and 11.8 pieces per acre.



Table 22—Carbon stocks of dead, down woody materials on forest land by forest-type group, Texas, 2008

Forest-type group	Forest floor		Fine woody debris			CWD	Slash
	Duff	Litter	Small	Medium	Large		
	<i>million tons</i>						
Elm-ash-cottonwood	2.6	6.7	0.1	0.9	3.6	3.9	1.4
Exotic hardwood	0.1	0.2	0.0	0.2	0.2	0.0	0.0
Loblolly-shortleaf pine	34.6	31.1	0.4	1.8	4.2	3.5	11.0
Longleaf-slash pine	1.9	2.0	0.0	0.1	0.3	0.3	0.0
Nonstocked	1.1	3.1	0.0	0.0	0.0	0.0	0.0
Oak-gum-cypress	6.2	4.7	0.1	0.4	1.5	1.0	0.0
Oak-hickory	34.7	43.4	0.4	1.5	5.8	4.7	61.7
Oak-pine	8.9	13.6	0.3	1.5	6.0	2.4	6.6
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Pinyon-juniper	10.8	7.8	0.2	0.8	2.8	0.5	2.8
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.7	0.0
All groups	101.0	112.5	1.7	7.1	24.4	17.4	83.4

CWD = coarse woody debris.

Numbers in 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 23—Mean volume of coarse woody debris on forest land by forest-type group, large-end diameter, and decay class, Texas, 2008

Forest-type group	Large-end diameter				Decay class					Total volume
	3.0–7.9	8.0–12.9	13.0–17.9	18.0+	1.0	2.0	3.0	4.0	5.0	
	<i>cubic feet per acre</i>									
Longleaf-slash pine	25.5	19.8	108.6	0.0	108.6	0.0	28.6	0.0	16.7	154.0
Loblolly-shortleaf pine	51.1	43.6	22.8	19.8	16.4	37.7	36.2	31.3	15.8	137.3
Other eastern softwoods	41.0	305.3	0.0	0.0	0.0	346.3	0.0	0.0	0.0	346.3
Pinyon-juniper	5.4	6.4	0.0	0.0	0.0	4.3	6.1	1.4	0.0	11.8
Oak-pine	48.5	62.2	93.1	16.5	40.7	38.6	37.3	73.5	30.3	220.3
Oak-hickory	18.8	32.7	15.3	8.5	7.9	17.9	26.6	20.7	2.1	75.2
Oak-gum-cypress	19.9	49.8	26.3	17.2	0.0	16.0	74.1	23.1	0.0	113.2
Elm-ash-cottonwood	50.1	7.7	13.5	91.4	1.6	112.0	19.4	29.1	0.7	162.8
Other hardwoods	52.3	0.0	0.0	0.0	0.0	12.0	40.3	0.0	0.0	52.3
Woodland hardwoods	3.1	1.1	0.0	0.0	0.1	1.7	1.9	0.4	0.0	4.2
Exotic hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonstocked	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All groups	16.5	16.3	10.7	10.4	5.2	17.7	15.5	12.5	3.0	53.8

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



Forest Health

Table 24—Mean count of coarse woody debris on forest land by forest-type group, large-end diameter, and decay class, Texas, 2008

Forest-type group	Large-end diameter				Decay class					Total pieces
	3.0–7.9	8.0–12.9	13.0–17.9	18.0+	1.0	2.0	3.0	4.0	5.0	
	<i>pieces per acre</i>									
Longleaf-slash pine	9.8	2.2	2.4	0.0	2.4	0.0	6.0	0.0	6.1	14.5
Loblolly-shortleaf pine	51.4	8.9	1.9	1.5	12.3	19.5	14.9	9.9	7.0	63.7
Other eastern softwoods	25.9	42.9	0.0	0.0	0.0	68.8	0.0	0.0	0.0	68.8
Pinyon-juniper	12.3	4.2	0.0	0.0	0.0	3.0	12.4	1.2	0.0	16.6
Oak-pine	41.1	12.7	6.0	0.5	15.3	14.7	7.8	19.1	3.3	60.2
Oak-hickory	26.8	9.4	0.9	0.3	2.2	6.3	18.4	9.2	1.2	37.3
Oak-gum-cypress	21.5	8.6	1.6	0.5	0.0	9.3	21.7	1.3	0.0	32.2
Elm-ash-cottonwood	68.0	2.9	0.4	0.7	1.7	8.8	27.7	33.5	0.3	72.0
Other hardwoods	78.0	0.0	0.0	0.0	0.0	9.8	68.2	0.0	0.0	78.0
Woodland hardwoods	6.3	0.5	0.0	0.0	0.2	1.9	4.0	0.6	0.0	6.8
Exotic hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nonstocked	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All groups	21.5	4.4	0.7	0.3	2.3	5.7	11.8	6.0	1.0	26.8

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



Loblolly pine Davy Crockett National Forest, Houston County, TX.



Table 25—Mean cover and height of shrub, herb, litter, and fuel bed on forest land by forest-type group, Texas, 2008

Forest-type group	Cover					Height				
	Live shrub	Dead shrub	Live herb	Dead herb	Litter	Live shrub	Dead shrub	Live herb	Dead herb	Fuel bed
	----- percent -----					----- feet -----				
Longleaf-slash pine	22.5	1.0	33.2	2.5	83.2	9.2	2.4	1.9	0.5	1.6
Loblolly-shortleaf pine	29.5	2.3	22.1	5.6	86.2	6.6	1.4	1.6	0.7	1.8
Other eastern softwoods	57.2	5.5	21.0	5.5	68.2	10.1	5.1	2.7	0.6	4.9
Pinyon-juniper	10.3	1.1	31.9	12.0	34.1	1.2	0.3	0.6	0.4	0.5
Oak-pine	26.4	2.6	23.8	6.7	83.2	5.3	1.2	1.6	0.7	1.6
Oak-hickory	21.4	2.0	40.7	6.2	61.8	3.7	1.2	1.3	0.6	0.8
Oak-gum-cypress	24.0	2.1	22.1	5.4	66.4	4.4	1.4	1.3	0.5	0.6
Elm-ash-cottonwood	21.6	1.9	49.1	10.3	57.6	2.2	0.5	2.1	1.1	1.2
Other hardwoods	12.8	0.8	36.5	7.8	68.8	1.6	0.5	0.7	0.6	0.6
Woodland hardwoods	13.6	2.0	42.0	15.7	32.3	1.7	0.7	1.1	0.8	0.4
Exotic hardwoods	35.7	8.4	54.7	19.7	33.4	5.4	2.6	2.7	4.1	1.5
Nonstocked	9.8	1.9	57.6	9.1	27.6	1.0	0.3	1.4	0.9	0.9
All groups	17.3	1.9	38.2	11.1	48.1	2.7	0.8	1.2	0.7	0.7

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

DWM also accounts for the cover and height of shrubs and herbs, live and dead, along with litter cover (table 25). Average cover of live shrubs was 17.3 percent, while dead shrub coverage was 1.9 percent. Live herb coverage was 38.2 percent and dead herb, 11.1 percent. Average height of live shrubs and herbs was 2.7 feet and 1.2 feet, respectively. Average height of dead shrubs and herbs along with the fuel bed was <1 foot.

Crowns

FIA includes visual assessments of individual tree crown condition on the Phase 3 subset of its inventory plots to aid the monitoring of changes and trends in forest health. Tree crown condition can be used to track forest health because a tree undergoing stress reacts by slowing growth and shedding parts of its crown (Millers and others 1992). The shedding of foliage and fine twigs not only changes the tree’s appearance but also alters its rate

of photosynthesis and carbohydrate production. Thus, poor crown conditions can be a signal of declining growth rates and degraded forest health.

FIA reports on three tree crown condition variables, crown density, crown dieback, and foliage transparency, and one sapling crown condition variable, sapling crown vigor. Each of the three tree crown variables is visually assessed by a two-person field crew and recorded in increments of 5 percent from 0 to 99 for all-live trees. Sapling crown vigor is recorded in 1 of 3 categories for all-live saplings. All crown assessments are made during the summer, leaf-on season.

All four crown condition indicators were summarized by FIA species group for east and west Texas separately. General differences in average crown condition between the two regions were observed, but no formal comparisons were made. Changes in crown condition between 2003 and 2008 were calculated for east Texas.



Eastern region summary—Crown dieback is a symptom of recent stress demonstrated by the death of fine twigs and branches in the upper and outer portions of the crown. Crown dieback may result from a disruption in water and nutrient transport from the roots to the crown, direct injury to the crown, or even normal physiological processes such as heavy seed production. Overall, 90.5 percent of all trees exhibited <5 percent crown dieback. Average dieback

was 0.0 percent for softwoods and 2.2 percent for hardwoods, and ranged from 0.0 percent for several species groups to as high as 7.5 percent for basswood (table 26).

Crown density is a measure of the amount of foliage present on the tree and is recorded as the percentage of light blocked through the projected crown outline by live and dead branches, foliage, and reproductive structures. Within individual species,

Table 26—Mean crown conditions and other statistics^a for all-live trees ≥5.0 inches d.b.h. by species group, east Texas, 2008

Species group	Plots	Trees	Crown density		Crown dieback		Foliage transparency	
			Mean	SE	Mean	SE	Mean	SE
---			----- percent -----					
Softwoods								
Longleaf and slash pines	5	52	41.2	4.3	0.0	0.0	14.0	1.9
Loblolly and shortleaf pines	97	1,200	43.1	1.1	0.1	0.0	19.9	0.8
Cypress	3	55	41.5	0.8	0.0	0.0	28.5	1.1
Other eastern softwoods	13	33	48.3	3.6	0.0	0.0	17.3	1.5
Total	107	1,340	43.1	1.0	0.0	0.0	20.0	0.8
Hardwoods								
Select white oaks	17	34	48.7	2.6	0.0	0.0	20.3	1.1
Select red oaks	14	25	49.6	1.7	0.2	0.2	19.8	1.0
Other white oaks	42	213	41.7	1.3	3.0	0.8	23.8	1.0
Other red oaks	74	293	45.5	0.9	2.0	0.7	22.0	0.8
Hickory	21	44	50.1	1.4	1.1	0.4	18.4	1.2
Hard maple	3	3	45.0	—	0.0	—	23.3	—
Soft maple	18	48	42.0	2.4	0.9	0.7	24.0	2.4
Beech	6	9	58.3	—	0.0	—	20.0	—
Sweetgum	67	239	46.0	1.1	3.4	1.0	21.0	0.5
Tupelo and blackgum	26	63	47.7	2.5	0.3	0.2	20.5	1.6
Ash	12	37	49.2	2.0	1.2	0.5	22.0	1.3
Cottonwood and aspen	1	10	60.5	—	0.0	—	23.5	—
Basswood	1	2	45.0	—	7.5	—	20.0	—
Other eastern soft hardwoods	61	171	44.7	1.4	2.1	0.7	23.6	1.0
Other eastern hard hardwoods	25	45	46.7	1.9	1.4	0.6	21.9	2.2
Eastern noncommercial hardwoods	30	72	43.8	2.1	3.3	1.2	20.8	1.5
Western woodland hardwoods	1	1	75.0	—	0.0	—	40.0	—
Total	122	1,309	45.4	0.6	2.2	0.4	22.0	0.6
Species total	136	2,649	44.3	0.6	1.1	0.2	21.0	0.5

D.b.h. = diameter at breast height; SE = standard error.

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

— = SE is not presented for species groups with number of trees <20.

^a The mean and SE calculations consider the clustering of trees on plots.



higher crown densities typically represent healthier trees. Most crown densities ranged from 30.0 to 55.0 percent (fig. 38). Average crown density was 43.1 percent for softwoods and 45.4 percent for hardwoods, and ranged from 41.2 percent for longleaf and slash pines (*Pinus palustris/P. elliottii*) to 75.0 percent for the western woodland hardwoods (table 26).

Foliage transparency is an indicator of the amount of foliage present on the tree and

is measured as the percentage of sky-light visible through the live, normally foliated portion of the crown. As with crown density, average foliage transparency tends to be species-specific; however, there typically is less variation among the foliage transparency averages than there is among the crown density averages. In general, lower foliage transparency ratings indicate healthier trees. Eighty-six percent of all trees had foliage transparency values of <25 percent (fig. 39). Average foliage

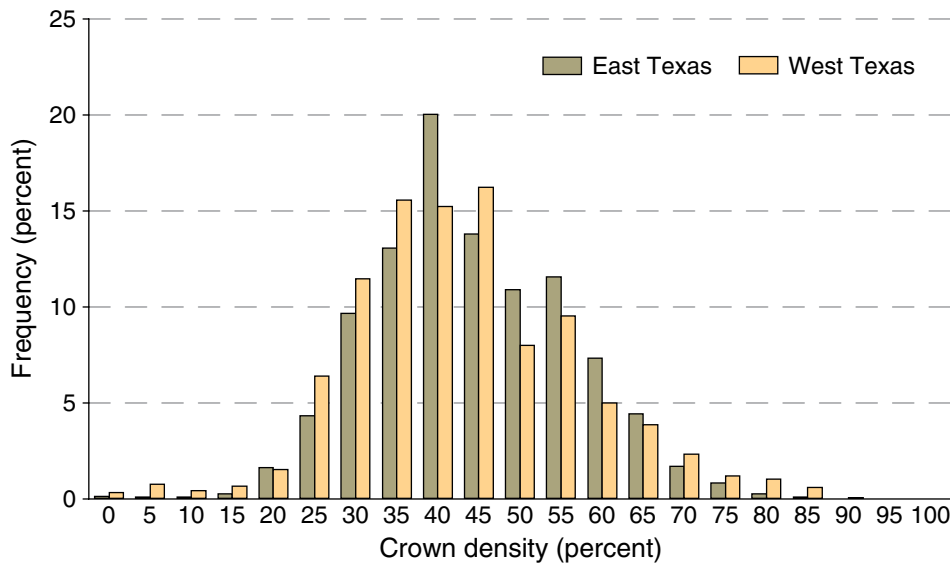


Figure 38—Crown density frequency distribution by region, Texas, 2008.

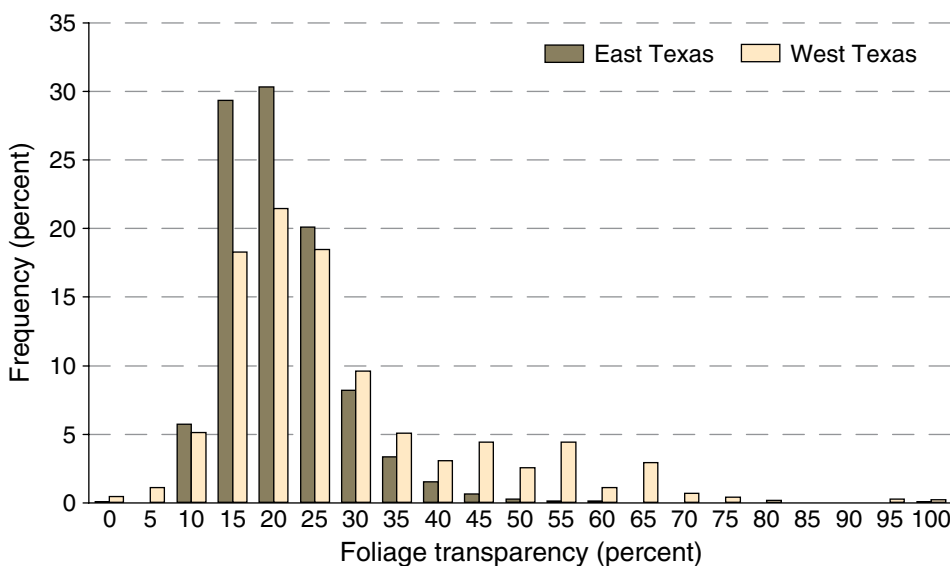


Figure 39—Foliage transparency distribution by region, Texas, 2008.



Forest Health

transparency was 21.0 percent for all trees combined and ranged from a low of 14.0 percent for longleaf and slash pines to a high of 40.0 percent for the western woodland hardwoods (table 26).

Saplings are categorized based upon the amount and condition of foliage present into three broad vigor classes of good, fair,

and poor because their crowns are not developed enough to assess the three crown condition indicators applied to larger trees. Overall, 83.8 percent of the sapling crowns were categorized as good (table 27). The other white oaks group had the lowest percentage of saplings in the good category and the ash group had the highest percentage of saplings in the poor category (table 27).

Table 27—Distribution of sapling crown vigor class for all-live saplings 1.0 to <5.0 inches d.b.h. by species group, east Texas, 2008

Species group	Plots	Trees	Good		Fair		Poor	
			Percent	SE ^a	Percent	SE ^a	Percent	SE ^a
-- number --								
Softwoods								
Longleaf and slash pines	2	9	100.0	—	0.0	—	0.0	—
Loblolly and shortleaf pines	49	164	74.4	7.1	25.0	7.3	0.6	0.6
Cypress	2	7	100.0	—	0.0	—	0.0	—
Other eastern softwoods	12	25	96.0	4.1	4.0	4.1	0.0	0.0
Total	61	205	79.0	6.2	20.5	6.3	0.5	0.5
Hardwoods								
Select white oaks	6	8	75.0	—	25.0	—	0.0	—
Select red oaks	8	12	100.0	—	0.0	—	0.0	—
Other white oaks	12	20	65.0	15.6	35.0	15.6	0.0	0.0
Other red oaks	44	105	91.4	2.8	8.6	2.8	0.0	0.0
Hickory	15	23	78.3	8.4	21.7	8.4	0.0	0.0
Hard maple	3	3	100.0	—	0.0	—	0.0	—
Soft maple	18	40	77.5	8.9	20.0	8.9	2.5	2.5
Beech	1	1	100.0	—	0.0	—	0.0	—
Sweetgum	51	147	93.9	2.5	4.1	1.7	2.0	1.5
Tupelo and blackgum	15	27	88.9	7.7	11.1	7.7	0.0	0.0
Ash	9	22	72.7	—	22.7	—	4.5	—
Cottonwood and aspen	1	4	100.0	—	0.0	—	0.0	—
Other eastern soft hardwoods	54	118	83.1	3.8	15.3	3.4	1.7	1.2
Other eastern hard hardwoods	22	40	85.0	7.8	15.0	7.8	0.0	0.0
Eastern noncommercial hardwoods	35	96	77.1	8.6	21.9	8.7	1.0	1.0
Total	119	666	85.3	2.1	13.5	2.1	1.2	0.5
Species total	127	871	83.8	2.4	15.2	2.4	1.0	0.4

D.b.h. = diameter at breast height; SE = standard error.

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

— = SE is not presented for species groups with number of trees <20.

^a SE calculations consider the clustering of trees on plots.



Trees and saplings measured in 2008 were compared with their first measurement in 2003 to determine whether crown conditions improved, declined, or remained stable during the remeasurement period. Among the trees that survived from 2003 to 2008, foliage transparency and crown dieback remained relatively stable for all trees, as did softwood crown density; however, average crown density for surviving hardwoods decreased significantly from 54.5 percent to 45.2 percent (table 28). This decrease was due primarily to large declines within the sweetgum, select red

oaks, and other white oaks species groups, but biologically the cause is unknown. Among the saplings that survived, 67.4 percent demonstrated no change in vigor class. An improvement in vigor class was observed for 22.2 percent of the surviving saplings and a decline in vigor class for the remaining 10.4 percent.

As an indicator of degraded health, poor crown conditions are potential signals of impending mortality. On average, trees that died between 2003 and 2008 had poorer crown conditions, and in particular higher

Table 28—Mean crown conditions and other statistics^a for all-live trees ≥5.0 inches d.b.h., east Texas, paired measurements, 2003–08

Crown condition indicator and species group	Paired trees only ^b						t-test p-value ^c
			2003		2008		
	Plots	Trees	Mean	SE	Mean	SE	
	-- number --		----- percent -----				
Crown density							
Softwoods	17	320	42.7	2.4	42.8	2.0	0.9510
Hardwoods	20	214	54.5	2.5	45.2	1.1	0.0001
Total	23	534	47.4	2.4	43.7	1.3	0.0804
Crown dieback							
Softwoods	17	320	0.6	0.2	0.0	0.0	0.0138
Hardwoods	20	214	1.4	0.4	0.9	0.3	0.4202
Total	23	534	0.9	0.2	0.4	0.2	0.0627
Foliage transparency							
Softwoods	17	320	20.9	1.4	19.6	1.0	0.5328
Hardwoods	20	214	23.7	1.8	22.1	0.9	0.3527
Total	23	534	22.0	1.3	20.6	0.7	0.3528

D.b.h. = diameter at breast height; SE = standard error.

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

^a The mean and SE calculations consider the clustering of trees on plots.

^b Includes only the trees measured in both inventory cycles.

^c The probability of obtaining a larger t-value under the null hypothesis that the difference between the two means equal 0.



crown dieback (fig. 40), than the trees that survived. Likewise, saplings with poor crown vigor suffered a larger percentage of mortality than saplings with good or fair crown vigor (fig. 41).

Western region summary—Crown dieback is a symptom of recent stress demonstrated by the death of fine twigs and branches in the upper and outer portions of the crown. Crown dieback may result from a disruption in water and nutrient transport from the roots to the crown, direct injury to the crown, or even normal physiological processes such as heavy seed production. Overall, 81.3 percent of the trees assessed had <5 percent crown dieback. Average dieback was 6.5 percent for softwoods and

6.6 percent for hardwoods, and ranged from a low of 0.0 percent for tupelo and blackgum to a high of 10.0 percent for black walnut (*Juglans nigra*) (table 29).

Crown density is a measure of the amount of foliage present on the tree and is recorded as the percentage of light blocked through the projected crown outline by live and dead branches, foliage, and reproductive structures. Within individual species, higher crown densities typically represent healthier trees. Most crown densities (76.0 percent) ranged between 30.0 and 55.0 percent (fig. 38). Average crown density was 55.0 percent for softwoods and 42.0 percent for hardwoods, and ranged as high as 57.6 percent for the western woodland softwoods (table 29).

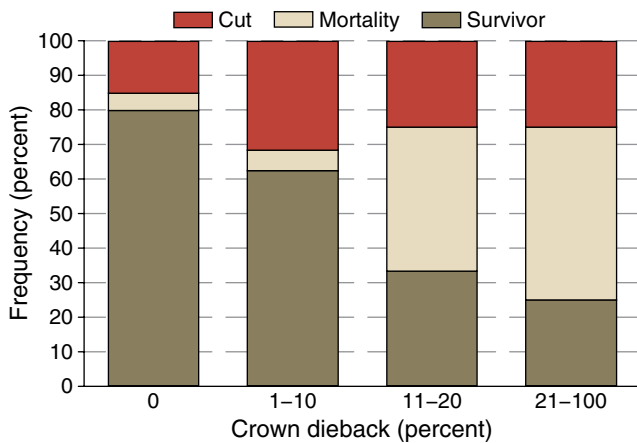


Figure 40—Crown dieback distribution by tree survivorship for re-measured trees, east Texas, 2008.

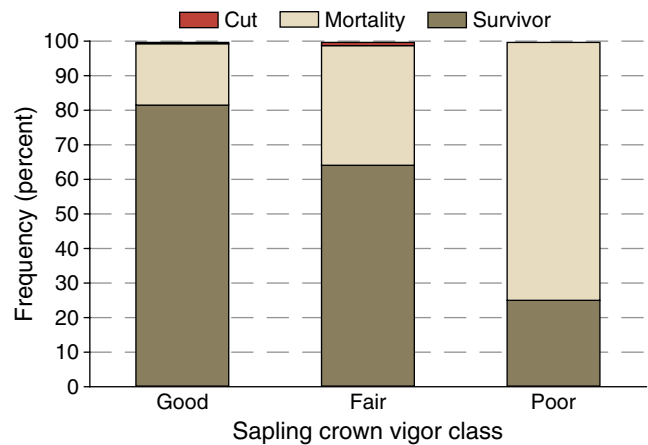


Figure 41—Sapling crown vigor class distribution by tree survivorship for re-measured trees, east Texas, 2008.



Table 29—Mean crown conditions and other statistics^a for all-live trees ≥5.0 inches d.b.h. by species group, central/west Texas, 2008

Species group	Plots	Trees	Crown density		Crown dieback		Foliage transparency	
			Mean	SE	Mean	SE	Mean	SE
			----- percent -----					
			--- number ---					
Softwoods								
Other eastern softwoods	6	26	43.8	5.5	0.2	0.2	30.2	6.3
Western woodland softwoods	20	110	57.6	3.5	8.0	3.2	29.1	3.5
Total	26	136	55.0	3.6	6.5	2.7	29.3	3.1
Hardwoods								
Select red oaks	7	59	37.5	3.3	2.4	1.0	31.6	6.4
Other white oaks	44	302	43.6	2.2	4.7	1.4	23.5	2.6
Other red oaks	5	27	42.2	2.8	0.7	0.3	25.2	1.1
Hickory	9	22	37.3	2.9	0.7	0.6	22.5	1.8
Tupelo and blackgum	1	2	52.5	—	0.0	—	17.5	—
Ash	6	20	47.3	3.8	7.3	5.5	22.8	2.9
Black walnut	1	1	30.0	—	10.0	—	20.0	—
Other eastern soft hardwoods	41	148	47.6	2.0	2.4	0.8	24.9	1.9
Other eastern hard hardwoods	6	19	41.6	—	1.3	—	27.1	—
Eastern noncommercial hardwoods	12	57	41.8	4.5	2.7	0.8	25.4	1.5
Western woodland hardwoods	151	1,073	41.0	1.0	8.6	1.7	29.5	1.5
Total	192	1,730	42.0	0.9	6.6	1.1	27.7	1.1
Species total	203	1,866	42.9	0.9	6.6	1.0	27.8	1.1

D.b.h. = diameter at breast height; SE = standard error.

— = no sample for the cell; SE is not presented for species groups with number of trees <20.

^a The mean and SE calculations consider the clustering of trees on plots.

Foliage transparency is an indicator of the amount of foliage present on the tree and is measured as the percentage of sky-light visible through the live, normally foliated portion of the crown. As with crown density, average foliage transparency tends to be species-specific; however, there typically is less variation among the foliage transparency averages than there is among the crown density averages. In

general, lower foliage transparency ratings indicate healthier trees. Trees with foliage transparency of <30 percent represented 74.5 percent of the sample (fig. 39). Average foliage transparency was 27.8 percent for all trees combined and ranged from a low of 17.5 percent for tupelo and blackgum (*Nyssa aquatic/N. sylvatica*) to a high of 31.6 percent for the select red oaks (*Quercus* spp.) (table 29).



Forest Health

Saplings are categorized based upon the amount and condition of foliage present into three broad vigor classes of good, fair, and poor because their crowns are not developed enough to assess the three crown condition indicators applied to larger trees. Overall, 75.9 percent of the sapling crowns assessed were categorized as good (table 30). The hickory (*Carya* spp.) and other eastern softwoods groups had the highest percentage of saplings in the good category and the ash (*Fraxinus* spp.), group had the highest percentage of saplings in the poor category (table 30).

Comparison of eastern and western regions—Crown conditions in central and west Texas differed from those in east Texas. Specifically, average crown dieback

and average foliage transparency were higher in the western region than in the eastern region (tables 26 and 29). Average crown density was about the same for hardwoods in both regions; however, average crown density for softwoods was higher in the west than in the east (tables 26 and 29). The differences in average crown conditions may be attributable to the different moisture regimes and growth habits (crown form) of the most abundant species in each region. For example, the western softwoods are composed primarily of ash, Pinchot and redberry junipers (*Juniperus pinchotti/J. erythrocarpa*) which have very different crown forms from the southern pines found in the east. This contrast likely contributed to the difference in average softwood crown density between the two regions.

Table 30—Distribution of sapling crown vigor class for all-live saplings 1.0 to <5.0 inches d.b.h. by species group, central/west Texas, 2008

Species group	Plots --- number ---	Trees	Good		Fair		Poor	
			Percent	SE ^a	Percent	SE ^a	Percent	SE ^a
Softwoods								
Other eastern softwoods	3	8	100.0	—	0.0	—	0.0	—
Western woodland softwoods	14	31	80.6	7.9	12.9	5.4	6.5	6.4
Total	17	39	84.6	6.5	10.3	4.5	5.1	5.1
Hardwoods								
Select red oaks	2	13	76.9	—	23.1	—	0.0	—
Other white oaks	11	26	84.6	7.6	15.4	7.6	0.0	0.0
Hickory	3	4	100.0	—	0.0	—	0.0	—
Ash	2	12	83.3	—	8.3	—	8.3	—
Other eastern soft hardwoods	27	85	70.6	10.9	28.2	10.0	1.2	1.1
Other eastern hard hardwoods	4	5	60.0	—	40.0	—	0.0	—
Eastern noncommercial hardwoods	17	57	86.0	4.8	14.0	4.8	0.0	0.0
Western woodland hardwoods	103	266	72.9	4.2	22.2	3.6	4.9	1.9
Total	140	468	75.2	3.4	21.6	3.1	3.2	1.2
Species total	151	507	75.9	3.2	20.7	2.9	3.4	1.1

D.b.h. = diameter at breast height; SE = standard error.

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

— = SE is not presented for species groups with number of trees <20.

^a SE calculations consider the clustering of trees on plots.



Saltcedar on Rio Grande, Presidio County, TX.

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Glossary

Afforestation—Area of land previously classified as nonforest that is converted to forest by tree planting or by natural reversion to forest.

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.

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.

Basal area—The cross sectional area of a tree at breast height or of all the trees in a stand, usually expressed in square feet or square feet per acre.

Biomass—The aboveground fresh weight of solid wood and bark in live trees ≥ 1.0 -inch d.b.h. from the ground to the tip of the tree. All foliage is excluded. The weight of wood and bark in lateral limbs, secondary limbs, and twigs < 0.5 inch in diameter at the point of occurrence is included for sapling-size trees but is excluded for poletimber and sawtimber size trees.

Bole—That portion of a tree between a 1-foot stump and a 4-inch top d.o.b. in trees ≥ 5.0 inches d.b.h.

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

Commercial species—Tree species currently or potentially suitable for industrial wood products

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 tree d.b.h. Forest inventory and analysis commonly uses 2-inch diameter classes, with the even inch as the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h.

D.o.b. (diameter outside bark)—Stem diameter including bark.

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. Forested strips must be at least 120 feet wide to qualify as forest land.

Forest management type—A classification of timberland based on forest type and stand origin.

Pine plantation—Stand that (a) has been artificially regenerated by planting or direct seeding, (b) is classed as a member of the pine or other softwood forest type, and (c) has at least 10-percent stocking.

Natural pine—Stand that (a) has not been artificially regenerated, (b) is classed as a member of the pine or other softwood forest type, and (c) has at least 10-percent stocking.

Oak-pine—Stand that has at least 10-percent stocking and is classed as a member of the oak-pine forest type.



Glossary

Upland hardwood—Stand that has at least 10-percent stocking and classed as a member of the oak-hickory or maple-beech-birch forest type.

Lowland hardwood—Stand that has at least 10-percent stocking and is classed as a member of the oak-gum-cypress, elm-ash-cottonwood, palm, or other tropical forest type.

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

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

White-red-jack pine—Forests in which eastern white pine, red pine, or jack pine, singly or in combination, constitute a plurality of the stocking. (Common associates include hemlock, birch, and maple.)

Spruce-fir—Forests in which spruce or true firs, singly or in combination, constitute a plurality of the stocking. (Common associates include maple, birch, and hemlock.)

Longleaf-slash pine—Forests in which longleaf or slash pine, singly or in combination, constitute a plurality of the stocking. (Common associates include oak, hickory, and gum.)

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.)

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.)

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 of stocking, in which case the stand is classified as oak-pine. (Common associates include yellow-poplar, elm, maple, and black walnut.)

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.)

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.)

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.)

Nonstocked stands—Stands 10 percent stocked with live trees.

Forested tract size—The area of forest within the contiguous tract containing each forest inventory and analysis sample plot.

Fresh weight—Mass of tree component at time of cutting.

Gross growth—Annual increase in volume of trees ≥ 5.0 inches d.b.h. in the absence of cutting and mortality. (Gross growth includes survivor growth, ingrowth, growth on ingrowth, growth on removals before removal, and growth on mortality before death.)



Growing-stock trees—Living trees of commercial species classified as sawtimber, poletimber, saplings, and seedlings. Trees must contain at least one 12-foot or two 8-foot logs in the saw-log portion, currently or potentially (if too small to qualify), to be classed as growing stock. The log(s) must meet dimension and merchantability standards to qualify. Trees must also have, currently or potentially, one-third of their gross board-foot volume in sound wood.

Growing-stock volume—The cubic-foot volume of sound wood in growing-stock trees ≥ 5.0 inches d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem.

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.

Hard 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.

Industrial wood—All roundwood products except fuelwood.

Land area—The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river floodplains (omitting tidal flats below mean high tide), streams, sloughs, estuaries, and canals 200-foot wide, and lakes, reservoirs, and ponds 4.5 acres in area.

Live trees—All living trees. All size classes, all tree classes, and both commercial and noncommercial species are included.

Log grade—A classification of logs based on external characteristics indicating quality or value.

Logging residues—The unused merchantable portion of growing-stock trees cut or destroyed during logging operations.

Net annual change—Net annual increase or decrease in volume of live trees ≥ 5.0 inches d.b.h. Net annual change is equal to net annual growth minus average annual removals.

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

Nonforest land—Land that has never supported forests and land formerly forested where timber production is precluded by development for other uses.

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

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 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.



Glossary

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.

Plant residues—Wood material generated in the production of timber products at primary manufacturing plants.

Coarse residues—Material, such as slabs, edgings, trim, veneer cores and ends, suitable for chipping.

Fine residues—Material, such as sawdust, shavings, and veneer chippings, not suitable for chipping.

Plant byproducts—Residues (coarse or fine) used in the manufacture of industrial products or for consumer use or as fuel.

Unused plant residues—Residues (coarse or fine) not used for any product, including fuel.



Camping at Ratcliff Lake, Houston County.



Poletimber-size tree—Softwoods 5.0 to 8.9 inches d.b.h. and hardwood 5.0 to 10.9 inches d.b.h.

Primary wood-using plants—Industries receiving roundwood or chips from roundwood for the manufacture of products, such as veneer, pulp, and lumber.

Productive-reserved forest land—Forest land sufficiently productive to qualify as timberland but withdrawn by statute or administrative regulation from production of timber that is utilized.

Reforestation—Area of land previously classified as forest that is regenerated by tree planting or natural regeneration.

Rotten trees—Live trees of commercial species not containing at least one 12 foot saw log, or two noncontiguous saw logs, each ≥ 8 feet in length, now or prospectively, primarily because of rot or missing sections, and with less than one third of the gross board foot tree volume in sound material.

Rough trees—Live trees of commercial species not containing at least one 12 foot saw log, or two noncontiguous saw logs, each ≥ 8 feet in length, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one third of the gross board foot tree volume in sound material; and live trees of noncommercial species.

Roundwood (roundwood logs)—Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Roundwood chipped—Any timber cut primarily for pulpwood, delivered to nonpulp-mills, chipped, and then sold to pulpmills as residues, including chipped tops, jump sections, whole trees, and pulpwood sticks.

Roundwood products—Any primary product such as lumber, poles, pilings, pulp, or fuelwood that is produced from roundwood.

Salvable dead trees—Standing or downed dead trees that were formerly growing stock and are considered merchantable. Trees must be ≥ 5.0 inches d.b.h. to qualify.

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

Saw log—A log meeting minimum standards of diameter, length, and defect, including logs ≥ 8 -feet long, sound and straight, with a minimum diameter inside bark for softwoods of 6 inches (8 inches for hardwoods).

Saw-log portion—The part of the bole of sawtimber trees between a 1 foot stump and the saw log top.

Saw-log top—The point on the bole of sawtimber trees above which a conventional saw log cannot be produced. The minimum saw log top is 7.0 inches d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber-size trees—Softwoods ≥ 9.0 inches d.b.h. and hardwoods ≥ 11.0 inches d.b.h.

Sawtimber volume—Growing stock volume in the saw-log portion of sawtimber size trees in board feet (International $\frac{1}{4}$ -inch rule).

Seedlings—Trees 1.0-inch d.b.h. and 1-foot tall for hardwoods, 6 inches tall for softwood, and 0.5 inch in diameter at ground level for longleaf pine.

Select red oaks—The group consisting of cherrybark, Shumard, and northern red oaks. Other red oak species are included in the “other red oaks” group.

Select white oaks—The group consisting of white, swamp chestnut, swamp white, chinkapin, Durand, and bur oaks. Other white oak species are included in the “other white oaks” group.

Site class—A classification of forest land in terms of potential capacity to grow crops of industrial wood based on fully stocked natural stands.



Glossary

Softwoods—Coniferous trees, usually evergreen, having leaves that are needles or scalelike.

Yellow pines—Loblolly, longleaf, slash, pond, shortleaf, pitch, Virginia, sand, spruce, and Table Mountain pines.

Other softwoods—Cypress, eastern red-cedar, white-cedar, eastern white pine, eastern hemlock, spruce, and fir.

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

Stand 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.

Stocking—The degree of occupancy of land by trees, measured by basal area or the number of trees in a stand and spacing in the stand, compared with a minimum standard, depending on tree size, required to fully utilize the growth potential of the land.

Density of trees and basal area per acre required for full stocking:

D.b.h. class	Trees per acre for full stocking	Basal area
inches		square feet per acre
Seedlings (<1 inch)	600	—
2	560	—
4	460	—
6	340	67
8	240	84
10	155	85
12	115	90
14	90	96
16	72	101
18	60	106
20	51	111

— = not applicable.

Timber products—Roundwood products and byproducts.

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

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.



Tree grade—A classification of the saw-log portion of large-diameter trees based on: (1) the grade of the butt log, or (2) the ability to produce at least one 12-foot or two 8-foot logs in the upper section of the saw-log portion. Tree grade is an indicator of quality; grade 1 is the best quality.

Upper stem portion—The part of the main stem or fork of sawtimber trees above the saw-log top to a minimum top diameter of 4.0 inches d.o.b. or to the point where the main stem or fork breaks into limbs.

Volume of live trees—The cubic-foot volume of sound wood in live trees ≥ 5.0 inches d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem.

Volume of saw-log portion of sawtimber trees—The cubic-foot volume of sound wood in the saw-log portion of sawtimber trees. Volume is the net result after deductions for rot, sweep, and other defects that affect use for lumber.

Metric Equivalents

1 acre = 4046.87 m² or 0.404686 ha

1 cubic foot = 0.028317 m³

1 inch = 2.54 cm or 0.0254 m

Breast height (4.5 feet) = 1.4 m above the ground

1 square foot = 929.03 cm² or 0.0929 m²

1 square foot of basal area per acre = 0.229568 m² per ha

1 cubic foot per acre = 0.0699722 m³ per ha

1 pound = 0.454 kg

1 ton = 0.907 metric ton



Appendix A—Core Tables

Table A.1—Percentage of area by land status, Texas, 2008

Land status	Area <i>percent</i>
Accessible forest land	
Unreserved forest land	
Timberland	8.0
Unproductive	21.6
Total	29.6
Reserved forest land	
Productive	0.1
Unproductive	0.1
Total	0.2
Total forest land	29.8
Nonforest and other area	
Nonforest land	54.5
Water	
Noncensus water	0.3
Census water	2.4
Total	57.2
Nonsampled area	
Access denied	12.8
Hazardous conditions	0.2
All area	100.0
Total area (<i>thousands of acres</i>)	171,891.0

Numbers in 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 A.1.1—Area by survey unit and land status, Texas, 2008

Survey unit	Total area	All forest	Land status						Nonforest land	Census water
			Unreserved			Reserved				
			Total	Timber-land	Un-productive	Total	Productive	Un-productive		
<i>thousand acres</i>										
Southeast	12,500.1	6,793.7	6,667.0	6,637.9	29.1	126.7	126.7	0.0	5,061.0	645.4
Northeast	9,918.0	5,334.9	5,334.9	5,326.9	8.0	0.0	0.0	0.0	4,293.4	289.7
North Central	22,777.5	6,779.8	6,728.3	1,923.3	4,805.0	51.5	41.0	10.5	15,457.9	539.8
South	26,625.6	9,136.4	9,115.3	359.7	8,755.7	21.1	21.1	0.0	15,066.9	2,422.3
West Central	31,604.1	18,138.3	18,043.7	190.5	17,853.2	94.7	0.0	94.7	13,153.9	311.8
Northwest	44,939.2	10,834.0	10,806.9	18.8	10,788.1	27.1	0.0	27.1	33,913.0	192.1
West	23,526.5	5,465.7	5,382.2	9.1	5,373.1	83.5	0.0	83.5	18,037.6	23.3
All units	171,891.0	62,482.8	62,078.2	14,466.2	47,612.0	404.6	188.8	215.8	104,983.8	4,424.5

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.



Appendix A—Core Tables

Table A.2—Area of forest land by ownership class and land status, Texas, 2008

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timber-land	Un-productive <i>acres</i>	Total	Productive	Un-productive
U.S. Forest Service							
National forest	698.2	668.2	659.2	8.9	30.0	30.0	0.0
National grassland	44.4	33.9	10.5	23.4	10.5	10.5	0.0
Other Forest Service	4.1	4.1	4.1	0.0	0.0	0.0	0.0
Total	746.7	706.2	673.9	32.3	40.6	40.6	0.0
Other Federal							
National Park Service	174.0	0.0	0.0	0.0	174.0	91.8	82.2
Bureau of Land Management	13.6	13.6	0.0	13.6	0.0	0.0	0.0
U.S. Fish and Wildlife Service	157.4	109.7	12.0	97.7	47.8	38.5	9.2
Dept. of Defense/Dept. of Energy	455.7	429.8	139.2	290.7	25.9	4.9	21.0
Other Federal	77.0	77.0	38.1	38.9	0.0	0.0	0.0
Total	877.7	630.1	189.2	440.8	247.6	135.2	112.5
State and local government							
State	1,430.9	1,365.8	151.4	1,214.4	65.1	9.7	55.5
Local	574.5	540.1	92.7	447.4	34.4	3.4	31.1
Other non-Federal public	16.8	0.0	0.0	0.0	16.8	0.0	16.8
Total	2,022.3	1,905.9	244.1	1,661.8	116.4	13.0	103.3
Forest industry							
Corporate	2,215.8	2,215.8	2,213.8	1.9	0.0	0.0	0.0
Unincorporated local partnership/association/club	6.0	6.0	6.0	0.0	0.0	0.0	0.0
Native American	17.2	17.2	17.2	0.0	0.0	0.0	0.0
Individual	35.8	35.8	6.2	29.6	0.0	0.0	0.0
Total	2,274.7	2,274.7	2,243.2	31.6	0.0	0.0	0.0
Nonindustrial private							
Corporate	6,940.8	6,940.8	2,283.2	4,657.6	0.0	0.0	0.0
Conservation/natural resources organization	223.3	223.3	37.8	185.5	0.0	0.0	0.0
Unincorporated local partnership/association/club	4,231.8	4,231.8	392.9	3,838.9	0.0	0.0	0.0
Native American	110.5	110.5	22.3	88.3	0.0	0.0	0.0
Individual	45,054.9	45,054.9	8,379.6	36,675.3	0.0	0.0	0.0
Total	56,561.3	56,561.3	11,115.8	45,445.5	0.0	0.0	0.0
All classes	62,482.8	62,078.2	14,466.2	47,612.0	404.6	188.8	215.8

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 A.3—Area of forest land by forest-type group and site productivity class, Texas, 2008

Forest-type group	All classes	Site productivity class (<i>cubic feet/acre/year</i>)						
		0–19	20–49	50–84	85–119	120–164	165–224	225+
<i>acres</i>								
Softwood								
Longleaf-slash pine	191.4	0.0	0.0	61.0	69.6	56.3	4.5	0.0
Loblolly-shortleaf pine	5,050.0	0.0	75.9	938.8	2,177.2	1,468.0	390.1	0.0
Other eastern softwoods	262.1	144.5	64.7	39.6	9.2	4.1	0.0	0.0
Pinyon-juniper	9,502.7	9,487.8	14.9	0.0	0.0	0.0	0.0	0.0
Total softwoods	15,006.2	9,632.2	155.4	1,039.5	2,256.0	1,528.4	394.7	0.0
Hardwood								
Oak-pine	1,704.5	112.4	125.0	497.2	707.4	245.3	17.2	0.0
Oak-hickory	13,621.7	9,253.2	1,307.6	1,307.6	1,230.0	444.6	76.7	2.2
Oak-gum-cypress	2,144.9	551.2	149.3	472.4	571.2	337.6	55.5	7.7
Elm-ash-cottonwood	2,728.8	1,470.7	555.8	309.5	321.4	60.5	6.0	4.8
Other hardwoods	633.2	601.4	12.6	5.9	5.7	7.5	0.0	0.0
Woodland hardwoods	23,405.6	23,352.3	53.2	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	237.6	12.0	34.3	92.2	40.3	51.3	7.5	0.0
Total hardwoods	44,476.4	35,353.2	2,237.9	2,684.9	2,876.0	1,146.8	162.9	14.7
Nonstocked	3,000.2	2,842.4	56.5	26.3	49.5	25.5	0.0	0.0
All groups	62,482.8	47,827.8	2,449.9	3,750.6	5,181.5	2,700.7	557.6	14.7

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.



Appendix A—Core Tables

Table A.3.1—Area of timberland by forest-type group and site productivity class, Texas, 2008

Forest-type group	All classes	Site productivity class (<i>cubic feet/acre/year</i>)						
		0–19	20–49	50–84	85–119	120–164	165–224	225+
<i>acres</i>								
Softwood types								
Longleaf-slash pine	191.4	0.0	0.0	61.0	69.6	56.3	4.5	0.0
Loblolly-shortleaf pine	4,992.9	0.0	66.2	938.8	2,151.7	1,455.9	380.2	0.0
Other eastern softwoods	117.6	0.0	64.7	39.6	9.2	4.1	0.0	0.0
Pinyon-juniper	14.9	0.0	14.9	0.0	0.0	0.0	0.0	0.0
Total softwoods	5,316.8	0.0	145.8	1,039.5	2,230.4	1,516.4	384.7	0.0
Hardwood types								
Oak-pine	1,570.0	0.0	125.0	485.7	696.9	245.3	17.2	0.0
Oak-hickory	4,319.2	0.0	1,297.0	1,286.7	1,224.0	432.5	76.7	2.2
Oak-gum-cypress	1,542.6	0.0	149.3	439.3	563.9	326.8	55.5	7.7
Elm-ash-cottonwood	1,249.0	0.0	555.8	309.5	321.4	51.4	6.0	4.8
Other hardwoods	31.8	0.0	12.6	5.9	5.7	7.5	0.0	0.0
Woodland hardwoods	53.2	0.0	53.2	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	225.7	0.0	34.3	92.2	40.3	51.3	7.5	0.0
Total hardwoods	8,991.5	0.0	2,227.4	2,619.4	2,852.2	1,114.9	162.9	14.7
Nonstocked	157.8	0.0	56.5	26.3	49.5	25.5	0.0	0.0
All groups	14,466.2	0.0	2,429.7	3,685.2	5,132.2	2,656.8	547.7	14.7

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 A.4—Area of forest land by forest-type group and ownership group, Texas, 2008

Forest-type group	All ownerships	Ownership group				
		U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
<i>acres</i>						
Softwood						
Longleaf-slash pine	191.4	11.5	0.0	0.0	112.9	67.0
Loblolly-shortleaf pine	5,050.0	572.2	42.2	55.7	1,390.6	2,989.2
Other eastern softwoods	262.1	0.0	10.5	8.7	0.0	242.9
Pinyon-juniper	9,502.7	0.0	130.0	430.9	9.6	8,932.1
Total softwoods	15,006.2	583.8	182.8	495.3	1,513.1	12,231.2
Hardwood						
Oak-pine	1,704.5	50.4	65.2	20.5	206.0	1,362.4
Oak-hickory	13,621.7	61.2	231.8	171.7	203.4	12,953.7
Oak-gum-cypress	2,144.9	27.2	122.2	34.0	280.3	1,681.2
Elm-ash-cottonwood	2,728.8	16.5	77.2	114.7	8.7	2,511.7
Other hardwoods	633.2	7.7	4.5	0.0	0.0	621.0
Woodland hardwoods	23,405.6	0.0	114.6	1,125.3	20.0	22,145.6
Exotic hardwoods	237.6	0.0	10.1	13.6	21.0	192.9
Total hardwoods	44,476.4	163.0	625.7	1,480.0	739.3	41,468.4
Nonstocked	3,000.2	0.0	69.1	47.0	22.3	2,861.8
All groups	62,482.8	746.7	877.7	2,022.3	2,274.7	56,561.3

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.



Appendix A—Core Tables

Table A.4.1—Area of timberland by forest-type group and ownership group, Texas, 2008

Forest-type group	All ownerships	Ownership group				
		U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
<i>acres</i>						
Softwood						
Longleaf-slash pine	191.4	11.5	0.0	0.0	112.9	67.0
Loblolly-shortleaf pine	4,992.9	546.7	20.3	46.0	1,390.6	2,989.2
Other eastern softwoods	117.6	0.0	10.5	6.2	0.0	101.0
Pinyon-juniper	14.9	0.0	0.0	0.0	0.0	14.9
Total softwoods	5,316.8	558.2	30.9	52.2	1,503.5	3,172.1
Hardwood						
Oak-pine	1,570.0	45.9	18.6	20.5	206.0	1,279.1
Oak-hickory	4,319.2	35.0	48.1	71.1	203.4	3,961.6
Oak-gum-cypress	1,542.6	18.2	57.5	28.4	280.3	1,158.1
Elm-ash-cottonwood	1,249.0	16.5	24.0	50.5	8.7	1,149.3
Other hardwoods	31.8	0.0	0.0	0.0	0.0	31.8
Woodland hardwoods	53.2	0.0	0.0	0.0	0.0	53.2
Exotic hardwoods	225.7	0.0	10.1	13.6	21.0	180.9
Total hardwoods	8,991.5	115.7	158.4	184.1	719.3	7,814.1
Nonstocked	157.8	0.0	0.0	7.9	20.4	129.6
All groups	14,466.2	673.9	189.2	244.1	2,243.2	11,115.8

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 A.5—Area of forest land by forest-type group and stand-size class, Texas, 2008

Forest-type group	All classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
<i>acres</i>					
Softwood					
Longleaf-slash pine	191.4	132.9	40.5	18.0	0.0
Loblolly-shortleaf pine	5,050.0	2,707.6	1,355.6	986.8	0.0
Other eastern softwoods	262.1	128.6	91.8	41.7	0.0
Pinyon-juniper	9,502.7	4,449.6	2,338.8	2,714.2	0.0
Total softwoods	15,006.2	7,418.8	3,826.7	3,760.7	0.0
Hardwood					
Oak-pine	1,704.5	816.6	305.1	582.9	0.0
Oak-hickory	13,621.7	3,978.1	4,712.3	4,931.3	0.0
Oak-gum-cypress	2,144.9	1,263.1	308.3	573.6	0.0
Elm-ash-cottonwood	2,728.8	1,094.0	684.7	950.1	0.0
Other hardwoods	633.2	56.5	262.8	313.9	0.0
Woodland hardwoods	23,405.6	6,880.1	3,557.1	12,968.4	0.0
Exotic hardwoods	237.6	6.5	62.0	169.2	0.0
Total hardwoods	44,476.4	14,094.8	9,892.2	20,489.4	0.0
Nonstocked	3,000.2	0.0	0.0	0.0	3,000.2
All groups	62,482.8	21,513.6	13,718.9	24,250.1	3,000.2

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.



Appendix A—Core Tables

Table A.6—Area of forest land by forest-type group and stand-age class, Texas, 2008

Forest-type group	All classes	Stand-age class (years)											Non-stocked	
		1–20	21–40	41–60	61–80	81–100	101–120	121–140	141–160	161–180	181–200	201+		
<i>acres</i>														
Softwood														
Longleaf-slash pine	191.4	57.4	108.0	17.0	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	5,050.0	2,096.5	1,596.5	853.9	417.9	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.6
Other eastern softwoods	262.1	48.1	56.3	107.7	39.4	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pinyon-juniper	9,502.7	1,201.8	3,326.6	3,084.2	1,240.4	547.0	35.5	16.8	16.8	0.0	0.0	16.8	16.8	0.0
Total softwoods	15,006.2	3,403.8	5,087.4	4,062.9	1,706.7	624.1	35.5	16.8	16.8	0.0	0.0	16.8	35.4	0.0
Hardwood														
Oak-pine	1,704.5	575.1	423.4	548.0	119.0	36.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Oak-hickory	13,621.7	2,024.2	3,357.2	4,590.2	2,328.6	965.8	113.8	32.0	128.8	0.0	8.6	0.0	0.0	72.5
Oak-gum-cypress	2,144.9	367.9	520.3	709.0	420.8	91.1	0.0	0.0	13.3	16.8	0.0	0.0	0.0	5.7
Elm-ash-cottonwood	2,728.8	499.5	948.7	752.5	417.1	71.4	6.0	3.7	11.2	0.0	18.6	0.0	0.0	0.0
Other hardwoods	633.2	66.8	206.2	177.9	91.1	57.5	16.8	0.0	16.8	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	23,405.6	7,607.9	9,526.6	4,462.5	1,522.7	184.8	16.8	34.4	0.0	0.0	0.0	0.0	0.0	50.0
Exotic hardwoods	237.6	185.2	22.3	28.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
Total hardwoods	44,476.4	11,326.6	15,004.7	11,268.8	4,899.4	1,406.6	153.4	70.0	170.1	16.8	27.2	0.0	132.7	0.0
Nonstocked	3,000.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3,000.2
All groups	62,482.8	14,730.4	20,092.1	15,331.6	6,606.1	2,030.8	188.9	86.9	186.9	16.8	27.2	16.8	3,168.3	0.0

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



Table A.6.1—Area of timberland by forest-type group and stand-age class, Texas, 2008

Forest-type group	All classes	Stand-age class (years)											Non-stocked		
		1–10	11–20	21–30	31–40	41–50	51–60	61–70	71–80	81–90	91–100	101+			
<i>acres</i>															
Softwood															
Longleaf-slash pine	191.4	18.0	39.4	87.9	20.1	11.5	5.5	9.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	4,992.9	1,000.3	1,090.2	989.8	600.7	514.1	321.8	311.8	93.0	40.5	12.1	0.0	0.0	18.6	0.0
Other eastern softwoods	117.6	14.7	20.6	5.6	20.2	8.5	13.5	0.0	24.2	10.5	0.0	0.0	0.0	0.0	0.0
Pinyon-juniper	14.9	0.0	0.0	0.0	0.0	0.0	0.0	14.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	5,316.8	1,033.0	1,150.2	1,083.2	641.0	534.1	340.7	335.7	117.2	51.1	12.1	0.0	0.0	18.6	0.0
Hardwood															
Oak-pine	1,570.0	327.6	221.6	203.1	212.4	215.5	251.4	63.4	50.1	22.0	0.0	0.0	0.0	3.0	0.0
Oak-hickory	4,319.2	737.8	363.2	439.5	609.8	807.3	622.6	333.0	211.9	66.0	52.2	19.2	0.0	56.7	0.0
Oak-gum-cypress	1,542.6	114.7	153.8	133.3	185.3	277.3	315.4	239.8	85.8	31.5	0.0	0.0	0.0	5.7	0.0
Elm-ash-cottonwood	1,249.0	173.6	121.8	120.0	206.2	220.2	185.0	113.7	65.1	29.9	7.5	6.0	0.0	0.0	0.0
Other hardwoods	31.8	10.2	0.0	6.0	1.5	0.0	1.5	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	53.2	12.4	25.4	0.0	0.0	0.0	11.8	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0
Exotic hardwoods	225.7	98.9	74.4	16.8	5.5	16.2	12.5	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0
Total hardwoods	8,991.5	1,475.2	960.2	918.6	1,220.7	1,536.5	1,400.1	762.5	412.9	149.4	63.3	25.2	0.0	66.9	0.0
Nonstocked	157.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	157.8	0.0
All groups	14,466.2	2,508.2	2,110.4	2,001.8	1,861.7	2,070.6	1,740.9	1,098.2	530.1	200.5	75.4	25.2	0.0	243.3	0.0

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



Appendix A—Core Tables

Table A.7—Area of forest land by forest-type group and stand origin, Texas, 2008

Forest-type group	Total	Stand origin	
		Natural stands	Artificial regeneration
		<i>acres</i>	
Softwood			
Longleaf-slash pine	191.4	63.8	127.6
Loblolly-shortleaf pine	5,050.0	2,648.6	2,401.4
Other eastern softwoods	262.1	262.1	0.0
Pinyon-juniper	9,502.7	9,502.7	0.0
Total softwoods	15,006.2	12,477.2	2,529.0
Hardwood			
Oak-pine	1,704.5	1,493.5	211.0
Oak-hickory	13,621.7	13,504.1	117.6
Oak-gum-cypress	2,144.9	2,128.6	16.4
Elm-ash-cottonwood	2,728.8	2,728.8	0.0
Other hardwoods	633.2	627.3	5.9
Woodland hardwoods	23,405.6	23,405.6	0.0
Exotic hardwoods	237.6	225.7	12.0
Total hardwoods	44,476.4	44,113.4	363.0
Nonstocked	3,000.2	2,968.1	32.1
All groups	62,482.8	59,558.8	2,924.0

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 A.7.1—Area of timberland by forest-type group and stand origin, Texas, 2008

Forest-type group	Total	Stand origin	
		Natural stands	Artificial regeneration
		<i>acres</i>	
Softwood			
Longleaf-slash pine	191.4	63.8	127.6
Loblolly-shortleaf pine	4,992.9	2,591.5	2,401.4
Other eastern softwoods	117.6	117.6	0.0
Pinyon-juniper	14.9	14.9	0.0
Total softwoods	5,316.8	2,787.9	2,529.0
Hardwood			
Oak-pine	1,570.0	1,359.0	211.0
Oak-hickory	4,319.2	4,201.5	117.6
Oak-gum-cypress	1,542.6	1,526.2	16.4
Elm-ash-cottonwood	1,249.0	1,249.0	0.0
Other hardwoods	31.8	25.9	5.9
Woodland hardwoods	53.2	53.2	0.0
Exotic hardwoods	225.7	213.7	12.0
Total hardwoods	8,991.5	8,628.6	363.0
Nonstocked	157.8	125.8	32.1
All groups	14,466.2	11,542.2	2,924.0

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 A.8—Area of forest land disturbed annually by forest-type group and disturbance class, Texas, 2008

Forest-type group	Disturbance class							
	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other natural
	<i>acres</i>							
Softwood								
Longleaf-slash pine	1.4	0.0	6.7	0.0	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	0.0	0.0	14.6	15.6	0.0	0.0	5.1	1.3
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pinyon-juniper	0.0	5.0	6.2	21.5	3.4	2.7	23.0	0.0
Total softwoods	1.4	5.0	27.6	37.1	3.4	2.7	28.1	1.3
Hardwood								
Oak-pine	0.0	0.3	10.3	1.9	0.0	0.0	0.6	1.2
Oak-hickory	8.8	40.5	9.3	48.3	37.0	1.0	34.7	4.2
Oak-gum-cypress	0.0	4.7	29.1	0.0	3.0	2.5	3.0	3.0
Elm-ash-cottonwood	3.5	6.3	10.3	12.9	7.9	3.3	11.2	1.5
Other hardwoods	0.0	0.0	0.0	3.4	0.0	0.0	2.7	0.0
Woodland hardwoods	15.5	4.0	27.3	60.1	56.1	3.5	76.2	4.6
Exotic hardwoods	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0
Total hardwoods	27.8	55.9	87.7	126.6	103.9	10.2	128.4	14.5
Nonstocked	0.0	3.0	10.3	27.8	3.7	0.0	11.7	0.0
All groups	29.2	63.9	125.6	191.5	111.0	12.9	168.1	15.8

Numbers in 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.



Appendix A—Core Tables

Table A.8.1—Area of timberland disturbed annually by forest-type group and disturbance class, Texas, 2008

Forest-type group	Disturbance class							
	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other natural
	<i>acres</i>							
Softwood								
Longleaf-slash pine	1.4	0.0	6.7	0.0	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	0.0	0.0	12.6	13.7	0.0	0.0	5.1	1.3
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pinyon-juniper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	1.4	0.0	19.3	13.7	0.0	0.0	5.1	1.3
Hardwood								
Oak-pine	0.0	0.3	5.7	1.9	0.0	0.0	0.6	1.2
Oak-hickory	0.0	2.5	9.3	2.2	9.7	1.0	11.2	0.0
Oak-gum-cypress	0.0	4.7	25.2	0.0	0.0	2.5	0.0	0.0
Elm-ash-cottonwood	3.5	0.0	3.7	0.0	4.9	3.3	4.6	1.5
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0
Total hardwoods	3.5	7.5	45.3	4.1	14.6	6.7	16.4	2.7
Nonstocked	0.0	0.0	1.9	0.0	0.7	0.0	0.0	0.0
All groups	4.9	7.5	66.5	17.8	15.3	6.7	21.5	4.0

Numbers in 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 A.8.2—Area of forest land treated annually by forest-type group and treatment class, Texas, 2008

Forest-type group	Treatment class										
	Cutting					Other					
	Total treated	Final harvest	Partial harvest	Seed-tree/shelterwood harvest	Commercial thinning	Timber improvement	Salvage cutting	Site preparation	Artificial regeneration	Natural regeneration	Other silvicultural
Softwood											
Longleaf-slash pine	10.8	2.3	3.1	0.0	5.5	0.0	0.0	1.1	2.3	0.2	2.9
Loblolly-shortleaf pine	273.9	60.6	30.9	6.6	172.3	0.0	0.0	72.8	88.1	7.6	17.7
Other eastern softwoods	2.0	0.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Pinyon-juniper	20.9	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.0
Total softwoods	307.7	63.5	38.8	6.6	177.8	0.0	0.0	73.9	90.3	8.4	51.6
Hardwood											
Oak-pine	69.4	20.6	23.9	2.5	22.4	0.0	0.0	15.6	26.5	11.2	9.2
Oak-hickory	191.6	68.8	66.9	1.3	17.4	0.5	0.0	18.2	10.9	57.7	74.2
Oak-gum-cypress	21.1	3.4	16.3	0.0	0.0	1.3	0.0	0.0	0.0	4.8	9.3
Elm-ash-cottonwood	3.8	0.7	2.9	0.0	0.3	0.0	0.0	1.0	0.0	7.8	6.4
Other hardwoods	4.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	9.3
Woodland hardwoods	10.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	0.0	0.0	102.5
Exotic hardwoods	9.1	1.2	4.9	1.6	1.4	0.0	0.0	1.2	1.0	2.8	0.0
Total hardwoods	309.1	95.7	115.0	5.3	41.6	1.9	0.0	38.7	38.5	85.3	210.9
Nonstocked	27.6	14.5	0.0	0.0	0.0	1.3	0.0	4.9	1.4	1.6	32.7
All groups	644.4	173.7	153.8	11.9	219.4	3.1	0.0	117.5	130.3	95.3	295.2

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.



Appendix A—Core Tables

Table A.8.3—Area of timberland treated annually by forest-type group and treatment class, Texas, 2008

Forest-type group	Treatment class											
	Total treated	Final harvest	Partial harvest	Seed-tree/shelterwood harvest	Cutting		Timber stand improvement	Salvage cutting	Site preparation	Artificial regeneration	Natural regeneration	Other silvicultural
					Com- mercial thinning							
Softwood												
Longleaf-slash pine	10.8	2.3	3.1	0.0	5.5	0.0	0.0	0.0	1.1	2.3	0.2	2.9
Loblolly-shortleaf pine	273.9	60.6	30.9	6.6	172.3	0.0	0.0	0.0	72.8	88.1	7.6	17.7
Other eastern softwoods	2.0	0.6	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Pinyon-juniper	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 softwoods	286.8	63.5	35.4	6.6	177.8	0.0	0.0	0.0	73.9	90.3	8.4	20.6
Hardwood												
Oak-pine	69.4	20.6	23.9	2.5	22.4	0.0	0.0	0.0	15.6	26.5	11.2	9.2
Oak-hickory	150.6	68.8	53.5	1.3	17.4	0.5	0.0	0.0	18.2	10.9	57.7	11.6
Oak-gum-cypress	21.1	3.4	16.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	4.8	0.0
Elm-ash-cottonwood	3.8	0.7	2.9	0.0	0.3	0.0	0.0	0.0	1.0	0.0	7.8	3.5
Other hardwoods	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	9.1	1.2	4.9	1.6	1.4	0.0	0.0	0.0	1.2	1.0	2.8	0.0
Total hardwoods	255.1	95.7	101.5	5.3	41.6	1.9	0.0	0.0	36.0	38.5	85.3	24.3
Nonstocked	15.8	14.5	0.0	0.0	0.0	1.3	0.0	0.0	4.9	1.4	0.8	1.1
All groups	557.7	173.7	136.9	11.9	219.4	3.1	0.0	0.0	114.8	130.3	94.5	46.0

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 A.9—Area of timberland by forest-type group and stand-size class, Texas, 2008

Forest-type group	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
<i>acres</i>					
Softwood					
Longleaf-slash pine	191.4	132.9	40.5	18.0	0.0
Loblolly-shortleaf pine	4,992.9	2,656.5	1,349.6	986.8	0.0
Other eastern softwoods	117.6	46.1	44.4	27.1	0.0
Pinyon-juniper	14.9	14.9	0.0	0.0	0.0
Total softwoods	5,316.8	2,850.4	1,434.5	1,031.9	0.0
Hardwood					
Oak-pine	1,570.0	771.4	263.7	534.9	0.0
Oak-hickory	4,319.2	2,045.5	1,083.1	1,190.6	0.0
Oak-gum-cypress	1,542.6	1,058.9	259.7	224.0	0.0
Elm-ash-cottonwood	1,249.0	670.5	302.4	276.0	0.0
Other hardwoods	31.8	6.0	14.2	11.7	0.0
Woodland hardwoods	53.2	3.6	26.8	22.9	0.0
Exotic hardwoods	225.7	6.5	50.0	169.2	0.0
Total	8,991.5	4,562.4	1,999.9	2,429.2	0.0
Nonstocked	157.8	0.0	0.0	0.0	157.8
All groups	14,466.2	7,412.8	3,434.4	3,461.1	157.8

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.



Appendix A—Core Tables

Table A.10—Number of live trees on forest land by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)															
	All classes	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+
<i>million trees</i>																
Softwood																
Longleaf and slash pines	56.1	20.1	8.6	9.8	6.9	5.0	2.8	1.6	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.0
Loblolly and shortleaf pines	2,019.6	769.8	521.5	304.7	179.9	94.7	58.0	34.0	22.9	14.0	8.6	7.8	2.7	0.7	0.3	0.0
Other yellow pines	0.1	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
Cypress	16.1	3.8	1.8	1.9	2.4	1.6	1.5	0.8	0.4	0.5	0.4	0.2	0.4	0.1	0.1	0.1
Other eastern softwoods	357.7	201.1	83.5	32.1	18.2	12.9	4.1	3.2	1.4	0.7	0.3	0.1	0.0	0.0	0.0	0.0
Western woodland softwoods	770.4	296.5	194.8	130.0	72.8	36.4	20.7	10.4	4.7	2.2	0.8	0.5	0.4	0.1	0.0	0.1
Total softwoods	3,220.0	1,291.5	810.1	478.6	280.3	150.5	87.1	50.1	30.0	17.7	10.4	8.6	3.6	0.9	0.4	0.2
Hardwood																
Select white oaks	146.9	95.0	23.7	9.0	5.9	3.6	2.7	2.4	1.4	1.0	0.6	1.0	0.4	0.2	0.0	0.0
Select red oaks	209.5	96.0	41.2	31.8	19.8	9.3	4.4	2.4	1.7	0.6	0.9	0.8	0.2	0.1	0.0	0.1
Other white oaks	1,598.9	481.8	397.1	292.3	185.7	104.2	55.8	32.3	18.5	10.7	7.9	7.6	2.8	1.2	0.5	0.5
Other red oaks	1,338.5	862.0	242.1	88.4	47.7	31.6	21.3	15.1	11.6	6.6	3.6	5.0	2.1	0.8	0.3	0.3
Hickory	239.0	150.0	34.7	16.5	11.8	8.2	7.2	4.4	2.5	1.4	1.0	0.8	0.4	0.1	0.0	0.0
Hard maple	18.0	13.4	2.7	1.1	0.4	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	242.0	197.0	27.0	9.5	4.6	2.1	1.0	0.7	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Beech	8.0	4.1	0.9	0.8	0.3	0.6	0.3	0.2	0.3	0.2	0.3	0.1	0.0	0.0	0.0	0.0
Sweetgum	1,200.4	859.1	185.3	70.4	36.5	21.3	12.5	6.9	3.7	2.0	1.2	1.2	0.4	0.0	0.0	0.0
Tupelo and blackgum	194.0	122.6	39.9	12.1	7.3	4.8	2.2	2.0	0.9	0.9	0.5	0.5	0.2	0.0	0.0	0.0
Ash	346.5	227.1	51.8	28.5	14.2	9.3	5.7	4.3	1.9	1.7	1.1	0.8	0.1	0.0	0.0	0.0
Cottonwood and aspen	13.0	4.8	1.8	1.1	1.1	1.1	0.3	0.4	0.4	0.5	0.4	0.2	0.4	0.3	0.1	0.0
Basswood	3.2	1.8	0.0	0.4	0.5	0.3	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	5.5	1.5	1.3	0.5	0.7	0.4	0.4	0.4	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0
Other eastern soft hardwoods	2,424.0	1,563.3	466.1	188.8	97.4	47.8	28.0	14.4	8.4	4.7	2.5	1.6	0.7	0.0	0.3	0.0
Other eastern hard hardwoods	385.9	313.4	44.3	17.3	6.2	2.3	1.1	0.8	0.3	0.2	0.0	0.1	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	2,207.8	1,790.5	276.7	82.9	32.8	13.5	5.4	3.0	1.6	0.7	0.3	0.2	0.2	0.0	0.0	0.0
Western woodland hardwoods	6,139.1	2,960.9	1,401.0	745.9	444.3	253.1	149.8	83.0	47.5	25.0	14.5	10.9	2.3	0.6	0.2	0.1
Total hardwoods	16,720.1	9,744.2	3,237.7	1,597.1	917.2	513.6	298.3	172.6	100.9	56.5	34.7	30.9	10.3	3.5	1.5	1.2
All species	19,940.1	11,035.6	4,047.8	2,075.7	1,197.5	664.2	385.4	222.7	130.9	74.2	45.1	39.5	13.9	4.4	1.9	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 Palm species have been included (species codes 906 to 915).



Table A.10.1—Number of live trees on timberland by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)															
	All classes	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+
<i>million trees</i>																
Softwood																
Longleaf and slash pines	56.0	20.1	8.6	9.8	6.9	5.0	2.7	1.6	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.0
Loblolly and shortleaf pines	2,003.7	764.4	519.7	301.8	178.4	93.3	56.9	33.5	22.6	13.7	8.2	7.5	2.6	0.7	0.3	0.0
Other yellow pines	0.1	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
Cypress	15.4	3.8	1.8	1.9	2.3	1.4	1.4	0.6	0.4	0.5	0.4	0.2	0.4	0.1	0.1	0.1
Other eastern softwoods	209.7	128.3	41.3	17.6	10.0	6.6	2.1	2.0	1.1	0.5	0.1	0.1	0.0	0.0	0.0	0.0
Western woodland softwoods	0.1	0.0	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
Total softwoods	2,284.9	916.7	571.4	331.2	197.7	106.2	63.2	37.8	24.6	15.0	9.0	7.8	3.1	0.8	0.4	0.1
Hardwood																
Select white oaks	119.9	75.7	19.3	7.6	5.3	3.5	2.6	1.9	1.2	0.9	0.6	0.8	0.2	0.2	0.0	0.0
Select red oaks	62.7	37.1	8.1	5.5	3.6	1.9	1.3	1.6	1.3	0.5	0.7	0.7	0.2	0.1	0.0	0.1
Other white oaks	327.0	113.6	52.6	46.9	39.5	26.5	18.5	11.7	6.6	4.7	2.7	2.3	0.8	0.2	0.1	0.3
Other red oaks	1,126.9	764.3	172.8	67.0	37.8	25.9	18.4	13.6	9.9	6.0	3.4	4.6	1.8	0.7	0.3	0.3
Hickory	200.9	128.0	29.5	13.8	9.8	6.6	5.5	3.4	1.7	1.2	0.5	0.6	0.2	0.0	0.0	0.0
Hard maple	18.0	13.4	2.7	1.1	0.4	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	237.4	193.4	26.5	9.2	4.5	1.9	0.9	0.7	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Beech	7.4	3.6	0.9	0.7	0.3	0.6	0.3	0.2	0.3	0.2	0.3	0.1	0.0	0.0	0.0	0.0
Sweetgum	1,195.7	857.3	183.9	69.6	36.0	21.1	12.3	6.9	3.7	2.0	1.2	1.1	0.4	0.0	0.0	0.0
Tupelo and blackgum	184.7	115.8	38.5	11.9	7.0	4.6	2.2	1.9	0.9	0.8	0.4	0.4	0.2	0.0	0.0	0.0
Ash	255.1	169.3	38.3	18.7	9.9	6.7	4.3	3.5	1.7	1.2	0.8	0.5	0.1	0.0	0.0	0.0
Cottonwood and aspen	4.3	1.4	1.8	0.3	0.1	0.2	0.0	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0
Basswood	2.6	1.8	0.0	0.2	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	1.5	0.4	0.0	0.3	0.4	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	1,295.8	882.2	228.3	88.8	44.3	21.9	12.8	8.1	4.0	2.1	1.5	1.3	0.4	0.0	0.2	0.0
Other eastern hard hardwoods	311.6	254.2	33.8	14.7	5.0	2.2	0.9	0.6	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	916.4	671.6	163.3	50.7	18.8	6.4	2.4	1.7	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	24.3	13.6	3.5	3.4	1.9	1.0	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	6,292.3	4,296.8	1,003.9	410.3	225.0	131.7	83.0	56.5	32.8	20.3	12.2	12.6	4.5	1.4	0.7	0.9
All species	8,577.3	5,213.5	1,575.3	741.5	422.7	237.9	146.1	94.3	57.4	35.3	21.2	20.4	7.6	2.1	1.1	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.

^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.11—Number of growing-stock trees on timberland by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (<i>inches at breast height</i>)													
	All classes	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+
<i>million trees</i>														
Softwood														
Longleaf and slash pines	26.9	9.5	6.9	4.9	2.7	1.6	0.6	0.3	0.2	0.0	0.1	0.0	0.0	0.0
Loblolly and shortleaf pines	706.1	294.6	175.4	92.1	56.2	33.3	22.2	13.4	8.0	7.5	2.6	0.6	0.3	0.0
Other yellow pines	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	0.0
Cypress	9.2	1.7	2.1	1.3	1.4	0.6	0.3	0.5	0.4	0.2	0.4	0.1	0.1	0.1
Other eastern softwoods	23.1	9.5	6.5	3.9	1.4	1.1	0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Total softwoods	765.3	315.5	191.0	102.1	61.6	36.5	23.6	14.3	8.6	7.8	3.0	0.7	0.4	0.1
Hardwood														
Select white oaks	21.5	5.8	4.7	3.2	2.2	1.9	1.0	0.9	0.6	0.7	0.2	0.2	0.0	0.0
Select red oaks	14.3	4.4	2.4	1.6	1.2	1.4	1.2	0.5	0.7	0.6	0.2	0.1	0.0	0.0
Other white oaks	98.2	26.4	23.2	17.9	12.5	7.6	4.1	2.9	1.8	1.1	0.6	0.1	0.0	0.0
Other red oaks	148.6	49.4	29.2	20.3	15.1	11.6	9.0	4.9	3.1	3.6	1.6	0.5	0.2	0.1
Hickory	26.3	7.2	6.1	4.4	3.6	1.9	1.1	0.9	0.4	0.5	0.0	0.0	0.0	0.0
Hard maple	1.1	0.6	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	9.6	4.7	2.5	1.3	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beech	2.1	0.5	0.2	0.4	0.3	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Sweetgum	136.3	58.9	31.8	19.5	11.4	6.6	3.5	2.0	1.2	1.0	0.4	0.0	0.0	0.0
Tupelo and blackgum	23.4	8.3	5.4	3.9	1.9	1.8	0.6	0.7	0.4	0.3	0.1	0.0	0.0	0.0
Ash	31.3	11.8	6.4	5.0	2.9	2.8	0.8	0.9	0.4	0.3	0.0	0.0	0.0	0.0
Cottonwood and aspen	1.0	0.2	0.0	0.2	0.0	0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0
Basswood	0.5	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	0.5	0.2	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	98.3	42.4	24.3	13.4	7.6	5.1	2.5	1.2	0.7	0.7	0.2	0.0	0.2	0.0
Other eastern hard hardwoods	9.5	5.6	2.0	1.2	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	622.4	226.6	138.7	92.8	59.8	41.6	24.3	15.3	9.4	9.0	3.4	1.0	0.4	0.3
All species	1,387.7	542.1	329.6	194.9	121.4	78.2	47.9	29.6	18.0	16.8	6.4	1.7	0.8	0.3

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

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

^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.13—Net^a volume of live trees on forest land by forest-type group and stand-size class, Texas, 2008

Forest-type group ^b	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood					
Longleaf-slash pine	299.1	252.2	46.0	0.9	0.0
Loblolly-shortleaf pine	9,007.3	7,452.7	1,420.4	134.1	0.0
Other eastern softwoods	213.7	161.6	48.7	3.5	0.0
Pinyon-juniper	3,426.7	2,486.5	757.4	182.7	0.0
Total softwoods	12,946.8	10,353.0	2,272.5	321.3	0.0
Hardwood					
Oak-pine	2,032.1	1,597.3	294.1	140.6	0.0
Oak-hickory	7,838.6	4,667.3	2,670.8	500.5	0.0
Oak-gum-cypress	3,071.3	2,689.2	302.1	80.0	0.0
Elm-ash-cottonwood	2,264.5	1,645.4	525.3	93.8	0.0
Other hardwoods	218.8	38.3	147.0	33.4	0.0
Woodland hardwoods	4,036.9	2,849.6	693.4	494.0	0.0
Exotic hardwoods	78.0	10.7	33.1	34.1	0.0
Total hardwoods	19,540.2	13,498.0	4,665.8	1,376.4	0.0
Nonstocked	100.0	0.0	0.0	0.0	100.0
All groups	32,587.0	23,851.0	6,938.3	1,697.7	100.0

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.

^b Palm species have been included (species codes 906 to 915).



Table A.13.1—Net^a volume of live trees on timberland by forest-type group and stand-size class, Texas, 2008

Forest-type group ^b	All size classes	Stand-size class			Non-stocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood					
Longleaf-slash pine	299.1	252.2	46.0	0.9	0.0
Loblolly-shortleaf pine	8,814.5	7,263.5	1,416.9	134.1	0.0
Other eastern softwoods	98.3	70.5	25.2	2.6	0.0
Pinyon-juniper	12.2	12.2	0.0	0.0	0.0
Total softwoods	9,224.2	7,598.4	1,488.1	137.6	0.0
Hardwood					
Oak-pine	1,929.6	1,541.5	254.9	133.2	0.0
Oak-hickory	4,216.0	3,120.4	905.6	189.9	0.0
Oak-gum-cypress	2,734.4	2,422.7	262.5	49.3	0.0
Elm-ash-cottonwood	1,393.9	1,099.7	263.5	30.7	0.0
Other hardwoods	17.7	3.9	13.5	0.3	0.0
Woodland hardwoods	13.3	8.7	3.6	1.0	0.0
Exotic hardwoods	76.8	10.7	31.9	34.1	0.0
Total hardwoods	10,381.7	8,207.7	1,735.6	438.5	0.0
Nonstocked	8.6	0.0	0.0	0.0	8.6
All groups	19,614.5	15,806.1	3,223.7	576.1	8.6

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

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

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table 14—Net^a volume of live trees on forest land by species group and ownership group, Texas, 2008

Species group ^b	All ownerships	Ownership group				
		U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
<i>million cubic feet</i>						
Softwood						
Longleaf and slash pines	312.8	42.7	0.0	0.0	177.2	92.9
Loblolly and shortleaf pines	9,067.5	1,907.0	144.6	138.9	1,696.3	5,180.6
Other yellow pines	0.2	0.1	0.0	0.0	0.1	0.0
Cypress	293.3	0.0	31.4	64.3	27.8	169.7
Other eastern softwoods	432.7	0.9	19.4	11.4	1.6	399.5
Western woodland softwoods	557.6	0.0	0.0	19.2	5.1	533.3
Total softwoods	10,664.1	1,950.8	195.4	233.9	1,908.1	6,375.9
Hardwood						
Select white oaks	488.7	51.7	46.8	10.5	92.1	287.5
Select red oaks	617.0	18.9	14.6	21.8	78.6	483.1
Other white oaks	4,259.6	44.5	100.5	68.5	87.9	3,958.1
Other red oaks	2,998.5	85.3	108.9	39.9	317.1	2,447.3
Hickory	595.7	23.6	18.9	10.1	20.0	523.1
Hard maple	11.7	0.9	0.0	0.0	4.4	6.3
Soft maple	103.7	5.7	3.7	1.0	19.7	73.6
Beech	57.9	3.9	3.0	0.0	16.8	34.1
Sweetgum	1,485.7	78.5	53.4	21.0	195.1	1,137.7
Tupelo and blackgum	345.1	21.2	23.7	4.5	84.4	211.3
Ash	628.0	29.7	21.2	33.0	22.1	521.9
Cottonwood and aspen	241.1	0.4	6.3	0.0	0.0	234.4
Basswood	10.5	0.0	0.3	0.2	0.3	9.6
Black walnut	32.4	0.0	0.0	0.0	0.0	32.4
Other eastern soft hardwoods	2,280.2	38.9	92.1	102.9	54.8	1,991.6
Other eastern hard hardwoods	116.5	3.9	4.6	1.2	11.2	95.6
Eastern noncommercial hardwoods	530.0	5.5	30.1	21.9	48.0	424.5
Western woodland hardwoods	7,120.7	0.0	169.0	223.2	4.2	6,724.3
Total hardwoods	21,922.8	412.8	697.1	559.9	1,056.8	19,196.4
All species	32,587.0	2,363.6	892.5	793.8	2,964.9	25,572.2

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.

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Table 14.1—Net^a volume of live trees on timberland by species group and ownership group, Texas, 2008

Species group ^b	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non-industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	311.5	41.4	0.0	0.0	177.2	92.9
Loblolly and shortleaf pines	8,879.5	1,812.2	74.7	115.8	1,696.3	5,180.6
Other yellow pines	0.2	0.1	0.0	0.0	0.1	0.0
Cypress	269.2	0.0	7.4	64.3	27.8	169.7
Other eastern softwoods	262.6	0.1	7.3	3.5	1.6	250.1
Western woodland softwoods	0.1	0.0	0.0	0.0	0.0	0.1
Total softwoods	9,723.2	1,853.8	89.4	183.6	1,903.0	5,693.3
Hardwood						
Select white oaks	427.2	51.0	28.2	2.3	92.1	253.6
Select red oaks	367.4	16.5	8.7	7.5	78.6	256.0
Other white oaks	1,650.7	34.1	21.6	36.1	87.9	1,471.0
Other red oaks	2,735.3	78.6	54.8	33.8	317.1	2,250.9
Hickory	460.0	19.9	12.8	6.3	20.0	401.1
Hard maple	11.7	0.9	0.0	0.0	4.4	6.3
Soft maple	100.8	4.9	1.6	1.0	19.7	73.6
Beech	54.8	3.9	0.0	0.0	16.8	34.1
Sweetgum	1,468.1	75.5	39.3	21.0	195.1	1,137.2
Tupelo and blackgum	324.6	20.8	3.7	4.5	84.4	211.2
Ash	492.2	27.7	8.2	31.3	22.1	403.0
Cottonwood and aspen	62.6	0.0	5.3	0.0	0.0	57.3
Basswood	8.0	0.0	0.0	0.2	0.3	7.5
Black walnut	9.1	0.0	0.0	0.0	0.0	9.1
Other eastern soft hardwoods	1,285.8	38.2	27.1	55.7	54.8	1,110.1
Other eastern hard hardwoods	98.0	3.9	1.5	0.9	11.2	80.6
Eastern noncommercial hardwoods	311.0	5.0	11.1	8.4	48.0	238.5
Western woodland hardwoods	23.8	0.0	0.6	0.0	0.0	23.2
Total hardwoods	9,891.3	381.0	224.4	209.0	1,052.5	8,024.4
All species	19,614.5	2,234.8	313.8	392.6	2,955.6	13,717.7

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

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

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.15—Net^a volume of live trees on forest land by species group and diameter class, Texas, 2008

Species group ^b	Diameter class (inches at breast height)														million cubic feet		
	All classes	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+			
Softwood																	
Longleaf and slash pines	312.8	24.0	46.2	60.1	54.7	49.3	29.9	20.6	16.2	2.6	9.2	0.0	0.0	0.0	0.0	0.0	0.0
Loblolly and shortleaf pines	9,067.5	697.0	1,067.4	1,115.6	1,155.2	1,034.6	1,011.9	833.9	660.5	846.3	416.1	149.8	79.1	0.0	0.0	0.0	0.0
Other yellow pines	0.2	0.2	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	0.0	0.0
Cypress	293.3	6.9	17.6	18.0	26.0	21.7	16.2	21.6	24.1	20.2	47.2	15.1	22.3	36.4			
Other eastern softwoods	432.7	64.8	81.1	100.0	53.2	57.6	35.0	22.6	12.2	3.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland softwoods	557.6	89.0	102.5	90.3	84.9	66.9	42.7	25.9	14.7	12.9	15.3	3.2	0.0	9.2			
Total softwoods	10,664.1	881.9	1,314.8	1,384.0	1,374.0	1,230.2	1,135.6	924.5	727.7	885.9	490.3	168.0	101.4	45.7			
Hardwood																	
Select white oaks	488.7	21.6	32.6	38.1	45.4	57.7	46.6	48.6	41.4	80.2	36.4	32.2	7.8	0.0	0.0	0.0	0.0
Select red oaks	617.0	66.6	87.5	73.1	63.4	53.2	58.9	25.9	45.2	56.5	25.0	28.1	7.4	26.3			
Other white oaks	4,259.6	483.4	607.9	612.2	529.7	445.1	350.1	265.2	248.7	311.2	163.4	96.0	40.8	106.0			
Other red oaks	2,998.5	201.1	238.2	293.9	319.6	339.8	359.4	265.9	197.1	350.5	224.7	97.7	52.2	58.4			
Hickory	595.7	28.6	54.8	67.7	98.2	86.8	69.1	49.2	46.2	52.0	26.9	6.8	0.0	9.4			
Hard maple	11.7	2.4	2.0	1.7	1.6	0.9	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	103.7	25.0	24.2	18.4	14.2	12.7	3.4	1.9	0.0	3.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beech	57.9	2.1	1.6	6.1	4.4	5.2	9.3	9.6	12.6	5.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgum	1,485.7	151.4	209.7	231.2	228.3	187.9	143.2	101.1	76.3	97.4	50.1	0.0	0.0	9.2			
Tupelo and blackgum	345.1	29.3	40.1	47.4	35.2	46.9	27.8	37.1	22.8	32.5	15.1	4.8	5.1	1.1			
Ash	628.0	66.6	71.4	82.0	83.5	92.6	54.8	66.3	48.9	49.0	8.1	4.8	0.0	0.0			
Cottonwood and aspen	241.1	2.4	4.0	9.9	5.4	11.2	13.9	20.4	18.1	13.9	50.7	55.5	19.6	16.1			
Basswood	10.5	1.0	2.3	2.0	0.8	0.9	1.9	0.0	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	32.4	1.1	2.7	2.6	3.3	5.6	0.7	2.0	3.1	3.5	0.0	7.9	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	2,280.2	351.6	395.9	348.8	333.8	250.3	190.7	140.9	97.5	87.5	44.7	0.0	38.4	0.0			
Other eastern hard hardwoods	116.5	36.5	27.1	20.4	11.1	10.1	5.4	4.1	0.0	1.7	0.0	0.0	0.0	0.0			
Eastern noncommercial hardwoods	530.0	144.5	120.1	87.1	51.5	45.8	34.1	15.1	9.7	6.2	14.2	0.0	0.0	1.7			
Western woodland hardwoods	7,120.7	794.1	1,028.4	1,071.7	1,046.1	916.0	744.2	541.6	398.8	396.1	125.4	32.5	14.4	11.2			
Total hardwoods	21,922.8	2,409.4	2,950.5	3,014.5	2,875.2	2,568.6	2,113.5	1,598.1	1,266.5	1,548.6	786.7	366.2	185.7	239.3			
All species	32,587.0	3,291.3	4,265.4	4,398.5	4,249.2	3,798.8	3,249.2	2,522.6	1,994.1	2,434.5	1,277.0	534.2	287.2	285.0			

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.

^b Palm species have been included (species codes 906 to 915).



Table A.15.1—Net^a volume of live trees on timberland by species group and diameter class, Texas, 2008

Species group ^b	Diameter class (inches at breast height)													
	All classes	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	311.5	23.9	46.2	60.1	53.4	49.3	29.9	20.6	16.2	2.6	9.2	0.0	0.0	0.0
Loblolly and shortleaf pines	8,879.5	689.4	1,057.4	1,097.9	1,130.1	1,017.2	995.0	812.5	632.0	815.1	410.8	143.0	79.1	0.0
Other yellow pines	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	269.2	6.7	16.3	15.7	25.0	17.4	13.2	21.6	24.1	20.2	43.6	15.1	22.3	28.1
Other eastern softwoods	262.6	37.1	46.7	54.5	28.9	39.8	27.2	17.6	4.5	3.8	2.5	0.0	0.0	0.0
Western woodland softwoods	0.1	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
Total softwoods	9,723.2	757.3	1,166.8	1,228.3	1,237.4	1,123.7	1,065.3	872.2	676.7	841.7	466.1	158.0	101.4	28.1
Hardwood														
Select white oaks	427.2	19.2	30.7	37.5	43.9	50.6	41.5	45.2	41.4	65.8	21.7	21.8	7.8	0.0
Select red oaks	367.4	16.6	22.6	21.2	22.1	39.0	45.0	23.8	37.2	53.0	25.0	28.1	7.4	26.3
Other white oaks	1,650.7	95.1	178.9	218.2	234.3	210.8	160.8	142.9	118.2	117.2	73.5	20.1	9.8	71.1
Other red oaks	2,735.3	171.1	205.8	256.2	288.4	318.2	325.2	250.0	186.7	326.0	204.9	92.1	52.2	58.4
Hickory	460.0	25.0	46.5	57.4	79.6	68.9	46.6	43.3	28.9	43.0	11.4	0.0	0.0	9.4
Hard maple	11.7	2.4	2.0	1.7	1.6	0.9	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	100.8	24.3	23.9	17.0	13.7	12.7	3.4	1.9	0.0	3.9	0.0	0.0	0.0	0.0
Beech	54.8	1.9	1.6	6.1	4.4	5.2	7.8	8.3	12.6	5.0	2.0	0.0	0.0	0.0
Sweetgum	1,468.1	149.7	206.6	229.3	226.2	187.9	143.2	101.1	76.3	94.9	43.8	0.0	0.0	9.2
Tupelo and blackgum	324.6	28.9	38.8	45.8	34.3	45.4	26.1	34.4	19.6	25.3	15.1	4.8	5.1	1.1
Ash	492.2	46.2	53.9	66.3	65.9	79.1	50.3	50.0	32.7	35.1	8.1	4.8	0.0	0.0
Cottonwood and aspen	62.6	0.7	0.3	2.0	0.9	1.8	0.0	7.0	2.3	7.4	10.7	13.4	0.0	16.1
Basswood	8.0	0.6	1.3	1.7	0.0	0.9	1.9	0.0	0.0	1.6	0.0	0.0	0.0	0.0
Black walnut	9.1	0.8	1.5	1.1	0.0	1.9	0.7	0.0	3.1	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	1,285.8	193.0	209.5	187.4	175.8	156.9	106.8	72.4	61.5	66.5	31.9	0.0	24.2	0.0
Other eastern hard hardwoods	98.0	31.9	23.1	18.8	8.4	8.9	4.2	2.7	0.0	0.0	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	311.0	98.6	77.7	46.9	27.1	27.7	21.6	8.3	1.6	0.0	0.0	0.0	0.0	1.7
Western woodland hardwoods	23.8	4.4	4.6	4.1	3.5	5.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	9,891.3	910.3	1,129.1	1,218.6	1,230.2	1,222.1	987.1	794.5	622.0	844.8	448.0	185.1	106.4	193.2
All species	19,614.5	1,667.6	2,295.9	2,446.9	2,467.6	2,345.8	2,052.4	1,666.7	1,298.7	1,686.5	914.1	343.1	207.9	221.3

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 Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.16—Net^a volume of live trees on forest land by forest-type group and stand origin, Texas, 2008

Forest-type group ^b	Stand origin		
	Total	Natural stands	Artificial regeneration
	<i>million cubic feet</i>		
Softwood			
Longleaf-slash pine	299.1	125.1	174.1
Loblolly-shortleaf pine	9,007.3	6,544.7	2,462.6
Other eastern softwoods	213.7	213.7	0.0
Pinyon-juniper	3,426.7	3,426.7	0.0
Total softwoods	12,946.8	10,310.1	2,636.7
Hardwood			
Oak-pine	2,032.1	1,980.9	51.2
Oak-hickory	7,838.6	7,823.6	15.0
Oak-gum-cypress	3,071.3	3,058.1	13.2
Elm-ash-cottonwood	2,264.5	2,264.5	0.0
Other hardwoods	218.8	218.7	0.0
Woodland hardwoods	4,036.9	4,036.9	0.0
Exotic hardwoods	78.0	73.9	4.0
Total hardwoods	19,540.2	19,456.7	83.5
Nonstocked	100.0	100.0	0.0
All groups	32,587.0	29,866.8	2,720.2

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.

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).

Table A.16.1—Net^a volume of live trees on timberland by forest-type group and stand origin, Texas, 2008

Forest-type group ^b	Stand origin		
	Total	Natural stands	Artificial regeneration
	<i>million cubic feet</i>		
Softwood			
Longleaf-slash pine	299.1	125.1	174.1
Loblolly-shortleaf pine	8,814.5	6,351.9	2,462.6
Other eastern softwoods	98.3	98.3	0.0
Pinyon-juniper	12.2	12.2	0.0
Total softwoods	9,224.2	6,587.5	2,636.7
Hardwood			
Oak-pine	1,929.6	1,878.4	51.2
Oak-hickory	4,216.0	4,200.9	15.0
Oak-gum-cypress	2,734.4	2,721.2	13.2
Elm-ash-cottonwood	1,393.9	1,393.9	0.0
Other hardwoods	17.7	17.7	0.0
Woodland hardwoods	13.3	13.3	0.0
Exotic hardwoods	76.8	72.8	4.0
Total hardwoods	10,381.7	10,298.2	83.5
Nonstocked	8.6	8.6	0.0
All groups	19,614.5	16,894.3	2,720.2

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.

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Table A.17—Net^a volume of growing-stock trees on timberland by species group and diameter class, Texas, 2008

Species group ^b	Diameter class (inches at breast height)													
	All classes	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	25.0–29.0	29.0–33.0	33.0–36.9	37.0+
<i>million cubic feet</i>														
Softwood														
Longleaf and slash pines	309.1	23.2	46.1	59.3	52.8	49.3	29.9	20.6	16.2	2.6	9.2	0.0	0.0	0.0
Loblolly and shortleaf pines	8,770.2	676.9	1,044.4	1,086.6	1,119.3	1,011.3	981.5	798.5	618.0	813.9	407.4	133.3	79.1	0.0
Other yellow pines	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	262.4	6.3	15.6	14.8	24.0	16.8	12.0	21.6	22.1	20.2	43.6	15.1	22.3	28.1
Other eastern softwoods	155.4	21.4	31.5	34.5	20.1	22.9	13.7	4.2	3.2	3.8	0.0	0.0	0.0	0.0
Total softwoods	9,497.4	728.1	1,137.6	1,195.1	1,216.2	1,100.3	1,037.1	844.8	659.5	840.6	460.1	148.4	101.4	28.1
Hardwood														
Select white oaks	406.0	15.8	27.8	35.3	39.6	50.6	36.5	45.2	41.4	62.5	21.7	21.8	7.8	0.0
Select red oaks	308.0	14.2	14.9	18.0	21.7	35.8	43.2	23.8	35.5	47.8	25.0	28.1	0.0	0.0
Other white oaks	1,101.4	61.2	117.8	159.0	171.4	151.6	107.3	96.9	87.2	70.2	56.4	10.8	0.0	11.6
Other red oaks	2,351.6	135.8	169.5	212.5	246.9	282.1	300.8	216.7	174.6	274.2	190.2	73.6	37.7	36.9
Hickory	325.3	15.2	31.6	41.1	55.5	45.3	33.8	34.8	21.8	33.9	2.9	0.0	0.0	9.4
Hard maple	8.4	1.5	1.2	0.7	1.1	0.9	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	62.3	13.8	14.9	12.7	8.8	7.3	3.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Beech	42.2	1.5	1.3	4.0	4.4	3.7	6.7	8.3	9.5	2.9	0.0	0.0	0.0	0.0
Sweetgum	1,377.5	133.0	188.0	217.6	213.0	180.5	138.5	101.1	76.3	85.6	43.8	0.0	0.0	0.0
Tupelo and blackgum	273.9	21.9	31.5	39.0	30.5	42.5	21.0	32.3	18.7	23.8	7.9	4.8	0.0	0.0
Ash	355.6	32.7	38.5	52.8	47.8	67.6	30.0	38.7	19.9	27.6	0.0	0.0	0.0	0.0
Cottonwood and aspen	62.4	0.6	0.2	2.0	0.9	1.8	0.0	7.0	2.3	7.4	10.7	13.4	0.0	16.1
Basswood	3.9	0.4	0.6	1.7	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	6.6	0.6	0.3	0.9	0.0	1.9	0.7	0.0	2.2	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	814.6	105.5	127.1	125.8	114.7	106.1	71.5	48.7	34.4	37.8	18.9	0.0	24.2	0.0
Other eastern hard hardwoods	48.7	14.2	11.0	11.7	4.5	5.1	1.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	7,548.6	567.9	776.1	934.9	960.8	982.9	795.4	659.5	523.7	673.7	377.4	152.5	69.7	74.0
All species	17,046.0	1,295.9	1,913.8	2,130.1	2,177.0	2,083.2	1,832.5	1,504.3	1,183.2	1,514.3	837.6	300.8	171.1	102.2

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.

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.18—Net^a volume of growing-stock trees on timberland by species group and ownership group, Texas, 2008

Species group ^b	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	309.1	41.0	0.0	0.0	176.2	91.9
Loblolly and shortleaf pines	8,770.2	1,809.5	74.4	102.5	1,688.5	5,095.3
Other yellow pines	0.2	0.1	0.0	0.0	0.1	0.0
Cypress	262.4	0.0	5.1	64.2	27.7	165.4
Other eastern softwoods	155.4	0.1	2.9	3.0	0.4	149.2
Total softwoods	9,497.4	1,850.7	82.3	169.7	1,892.9	5,501.8
Hardwood						
Select white oaks	406.0	50.5	28.2	2.0	89.3	236.0
Select red oaks	308.0	16.1	8.4	6.5	70.7	206.2
Other white oaks	1,101.4	30.8	21.3	16.6	84.6	948.1
Other red oaks	2,351.6	73.0	44.7	22.5	294.1	1,917.3
Hickory	325.3	18.6	10.2	4.8	17.7	274.1
Hard maple	8.4	0.9	0.0	0.0	3.5	4.1
Soft maple	62.3	4.1	0.8	1.0	13.3	43.1
Beech	42.2	3.1	0.0	0.0	13.3	25.9
Sweetgum	1,377.5	74.0	38.4	20.1	188.3	1,056.6
Tupelo and blackgum	273.9	19.0	3.5	4.3	77.4	169.6
Ash	355.6	20.8	5.5	17.8	21.0	290.6
Cottonwood and aspen	62.4	0.0	5.3	0.0	0.0	57.1
Basswood	3.9	0.0	0.0	0.2	0.3	3.4
Black walnut	6.6	0.0	0.0	0.0	0.0	6.6
Other eastern soft hardwoods	814.6	33.9	15.4	32.7	40.3	692.4
Other eastern hard hardwoods	48.7	1.4	0.9	0.3	6.2	39.9
Total hardwoods	7,548.6	346.3	182.5	128.7	920.0	5,971.0
All species	17,046.0	2,197.0	264.8	298.5	2,812.9	11,472.8

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.

^b Palm species have been included (species codes 906 to 915).



Table A.19—Net^a volume of sawtimber trees on timberland by species group and diameter class, Texas, 2008

Species group ^b	Diameter class (inches at breast height)												
	All classes	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+	
<i>million board feet^c</i>													
Softwood													
Longleaf and slash pines	1,205.4	219.5	243.1	260.4	172.9	124.9	104.2	17.2	63.3	0.0	0.0	0.0	0.0
Loblolly and shortleaf pines	38,376.4	3,922.2	5,080.6	5,229.0	5,557.4	4,811.7	3,921.0	5,424.5	2,864.0	974.2	591.7	0.0	0.0
Other yellow pines	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
Cypress	1,305.5	44.6	91.7	74.3	58.0	111.1	118.2	116.1	260.9	94.0	143.4	193.3	0.0
Other eastern softwoods	504.8	142.4	96.1	121.0	76.7	24.9	19.9	23.9	0.0	0.0	0.0	0.0	0.0
Total softwoods	41,391.9	4,328.6	5,511.5	5,684.6	5,864.9	5,072.5	4,163.2	5,581.8	3,188.2	1,068.2	735.1	193.3	0.0
Hardwood													
Select white oaks	1,579.2	0.0	134.8	203.7	162.0	217.6	210.8	336.0	131.1	135.7	47.4	0.0	0.0
Select red oaks	1,383.2	0.0	71.7	149.0	204.9	122.9	197.2	283.7	163.3	190.5	0.0	0.0	0.0
Other white oaks	3,539.0	0.0	622.9	638.4	500.4	476.0	455.3	387.3	323.2	63.7	0.0	71.7	0.0
Other red oaks	9,131.5	0.0	924.7	1,205.2	1,412.3	1,093.3	923.5	1,525.0	1,115.6	447.9	239.1	244.8	0.0
Hickory	1,077.1	0.0	193.7	184.1	152.3	169.5	113.5	186.4	16.6	0.0	0.0	61.0	0.0
Hard maple	21.8	0.0	3.8	3.4	0.0	14.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	77.0	0.0	28.4	27.8	14.4	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Beech	139.4	0.0	16.1	14.1	26.1	32.9	38.1	12.1	0.0	0.0	0.0	0.0	0.0
Sweetgum	3,940.1	0.0	761.6	774.9	668.8	528.1	424.9	508.0	273.8	0.0	0.0	0.0	0.0
Tupelo and blackgum	774.5	0.0	95.4	158.7	87.0	146.5	90.4	125.5	44.1	26.9	0.0	0.0	0.0
Ash	975.6	0.0	155.9	263.2	129.9	181.1	98.2	147.3	0.0	0.0	0.0	0.0	0.0
Cottonwood and aspen	357.4	0.0	3.2	7.6	0.0	35.2	12.5	42.2	64.5	83.2	0.0	109.0	0.0
Basswood	4.8	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	18.7	0.0	0.0	7.0	2.6	0.0	9.1	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	1,966.4	0.0	396.1	417.9	314.2	226.3	170.2	194.1	100.9	0.0	146.8	0.0	0.0
Other eastern hard hardwoods	43.8	0.0	15.1	19.6	4.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	25,029.6	0.0	3,423.4	4,074.9	3,683.7	3,255.5	2,743.7	3,747.6	2,233.0	948.0	433.3	486.5	0.0
All species	66,421.5	4,328.6	8,934.9	9,759.5	9,548.7	8,328.0	6,907.0	9,329.4	5,421.2	2,016.2	1,168.4	679.7	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.

^b Palm species have been included (species codes 906 to 915).

^c International ¼-inch rule.



Appendix A—Core Tables

Table A.20—Net^a volume of sawtimber trees on timberland by species group and ownership group, Texas, 2008

Species group ^b	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
	<i>million board feet^c</i>					
Softwood						
Longleaf and slash pines	1,205.4	232.2	0.0	0.0	633.9	339.2
Loblolly and shortleaf pines	38,376.4	9,718.5	421.6	556.7	5,833.1	21,846.5
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	1,305.5	0.0	23.7	284.9	120.0	876.9
Other eastern softwoods	504.8	0.0	11.6	10.4	0.0	482.7
Total softwoods	41,391.9	9,950.7	457.0	852.0	6,587.0	23,545.3
Hardwood						
Select white oaks	1,579.2	192.9	114.4	6.6	329.5	935.7
Select red oaks	1,383.2	63.1	37.9	12.5	369.3	900.5
Other white oaks	3,539.0	54.2	74.1	54.6	350.2	3,005.9
Other red oaks	9,131.5	265.5	193.2	76.8	1,210.8	7,385.1
Hickory	1,077.1	36.6	28.6	13.7	51.1	947.1
Hard maple	21.8	3.4	0.0	0.0	8.9	9.5
Soft maple	77.0	6.3	1.9	0.0	28.6	40.3
Beech	139.4	11.5	0.0	0.0	38.8	89.1
Sweetgum	3,940.1	198.7	132.2	68.0	585.8	2,955.4
Tupelo and blackgum	774.5	41.5	15.8	21.5	206.2	489.6
Ash	975.6	62.9	14.1	48.1	78.5	772.1
Cottonwood and aspen	357.4	0.0	32.5	0.0	0.0	324.9
Basswood	4.8	0.0	0.0	0.0	0.0	4.8
Black walnut	18.7	0.0	0.0	0.0	0.0	18.7
Other eastern soft hardwoods	1,966.4	81.0	35.2	78.8	69.1	1,702.3
Other eastern hard hardwoods	43.8	0.0	0.0	0.0	3.5	40.4
Total hardwoods	25,029.6	1,017.6	679.9	380.5	3,330.3	19,621.2
All species	66,421.5	10,968.3	1,136.9	1,232.5	9,917.2	43,166.6

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

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

^a Excludes rotten, missing, and form cull defects volume.

^b Palm species have been included (species codes 906 to 915).

^c International ¼-inch rule.



Table A.21—Aboveground dry weight of live trees on forest land by ownership class and land status, Texas, 2008

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timber-land	Un-productive	Total	Productive	Un-productive
<i>thousand tons</i>							
U.S. Forest Service							
National forest	55,052.2	52,411.7	52,411.7	0.0	2,640.5	2,640.5	0.0
National grassland	976.8	793.8	338.7	455.1	183.0	183.0	0.0
Other Forest Service	148.6	148.6	148.6	0.0	0.0	0.0	0.0
Total	56,177.6	53,354.0	52,898.9	455.1	2,823.6	2,823.6	0.0
Other Federal							
National Park Service	6,049.0	0.0	0.0	0.0	6,049.0	5,697.7	351.4
Bureau of Land Management	66.7	66.7	0.0	66.7	0.0	0.0	0.0
U.S. Fish and Wildlife Service	4,079.6	1,944.2	801.0	1,143.2	2,135.4	1,987.3	148.1
Dept. of Defense/Dept. of Energy	12,044.4	11,906.6	6,918.1	4,988.5	137.8	22.5	115.2
Other Federal	1,691.1	1,691.1	789.9	901.2	0.0	0.0	0.0
Total	23,930.9	15,608.6	8,509.0	7,099.7	8,322.2	7,707.5	614.8
State and local government							
State	11,472.0	10,704.0	6,872.2	3,831.8	768.0	499.9	268.2
Local	10,121.7	8,992.6	3,366.5	5,626.1	1,129.1	205.0	924.1
Other non-Federal public	193.8	0.0	0.0	0.0	193.8	0.0	193.8
Total	21,787.6	19,696.6	10,238.7	9,457.9	2,091.0	704.9	1,386.1
Forest industry							
Corporate	81,252.0	81,252.0	81,252.0	0.0	0.0	0.0	0.0
Unincorporated local partnership/association/club	28.3	28.3	28.3	0.0	0.0	0.0	0.0
Native American	200.3	200.3	200.3	0.0	0.0	0.0	0.0
Individual	650.4	650.4	421.6	228.9	0.0	0.0	0.0
Total	82,131.0	82,131.0	81,902.2	228.9	0.0	0.0	0.0
Nonindustrial private							
Corporate	100,290.3	100,290.3	77,865.3	22,425.0	0.0	0.0	0.0
Conservation/natural resources organization	3,881.3	3,881.3	1,745.7	2,135.6	0.0	0.0	0.0
Unincorporated local partnership/association/club	39,846.6	39,846.6	13,933.8	25,912.7	0.0	0.0	0.0
Native American	2,799.0	2,799.0	1,888.6	910.4	0.0	0.0	0.0
Individual	586,784.6	586,784.6	284,386.9	302,397.8	0.0	0.0	0.0
Total	733,601.8	733,601.8	379,820.3	353,781.5	0.0	0.0	0.0
All classes	917,628.9	904,392.1	533,369.0	371,023.1	13,236.8	11,235.9	2,000.8

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.



Appendix A—Core Tables

Table A.21.1—Aboveground green weight of live trees on forest land by ownership class and land status, Texas, 2008

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timber-land	Un-productive	Total	Productive	Un-productive
		<i>thousand tons</i>					
U.S. Forest Service							
National forest	110,104.5	104,823.4	104,823.4	0.0	5,281.1	5,281.1	0.0
National grassland	1,953.6	1,587.5	677.3	910.2	366.1	366.1	0.0
Other Forest Service	297.1	297.1	297.1	0.0	0.0	0.0	0.0
Total	112,355.2	106,708.1	105,797.8	910.2	5,647.2	5,647.2	0.0
Other Federal							
National Park Service	12,098.1	0.0	0.0	0.0	12,098.1	11,395.3	702.7
Bureau of Land Management	133.4	133.4	0.0	133.4	0.0	0.0	0.0
U.S. Fish and Wildlife Service	8,159.2	3,888.4	1,602.0	2,286.4	4,270.8	3,974.5	296.3
Dept. of Defense/ Dept. of Energy	24,088.8	23,813.2	13,836.2	9,977.0	275.5	45.0	230.5
Other Federal	3,382.2	3,382.2	1,579.7	1,802.5	0.0	0.0	0.0
Total	47,861.7	31,217.3	17,017.9	14,199.3	16,644.5	15,414.9	1,229.5
State and local government							
State	22,944.1	21,408.0	13,744.4	7,663.6	1,536.1	999.7	536.4
Local	20,243.5	17,985.2	6,732.9	11,252.3	2,258.2	410.1	1,848.2
Other non-Federal public	387.6	0.0	0.0	0.0	387.6	0.0	387.6
Total	43,575.1	39,393.2	20,477.3	18,915.9	4,181.9	1,409.8	2,772.1
Forest industry							
Corporate	162,504.1	162,504.1	162,504.1	0.0	0.0	0.0	0.0
Unincorporated local partnership/association/club	56.5	56.5	56.5	0.0	0.0	0.0	0.0
Native American	400.7	400.7	400.7	0.0	0.0	0.0	0.0
Individual	1,300.8	1,300.8	843.1	457.7	0.0	0.0	0.0
Total	164,262.1	164,262.1	163,804.4	457.7	0.0	0.0	0.0
Nonindustrial private							
Corporate	200,580.7	200,580.7	155,730.7	44,850.0	0.0	0.0	0.0
Conservation/natural resources organization	7,762.5	7,762.5	3,491.4	4,271.1	0.0	0.0	0.0
Unincorporated local partnership/association/club	79,693.2	79,693.2	27,867.7	51,825.5	0.0	0.0	0.0
Native American	5,598.0	5,598.0	3,777.1	1,820.9	0.0	0.0	0.0
Individual	1,173,569.2	1,173,569.2	568,773.7	604,795.5	0.0	0.0	0.0
Total	1,467,203.6	1,467,203.6	759,640.6	707,563.0	0.0	0.0	0.0
All classes	1,835,257.8	1,808,784.2	1,066,738.0	742,046.2	26,473.6	22,471.9	4,001.7

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 A.22—Aboveground dry weight of live trees on forest land by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)															
	All classes	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+
Softwood																
Longleaf and slash pines	7,730.7	106.8	270.2	638.8	1,097.6	1,408.4	1,262.6	1,141.8	684.8	476.5	369.3	58.8	215.1	0.0	0.0	0.0
Loblolly and shortleaf pines	214,394.9	2,775.1	9,168.4	18,783.0	24,817.7	24,766.1	25,255.3	22,506.6	21,852.0	18,029.1	14,206.2	18,235.2	8,982.1	3,263.9	1,694.4	0.0
Other yellow pines	6.3	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	7,037.0	11.7	41.3	114.6	318.9	343.4	538.2	480.8	372.6	509.2	584.4	509.6	1,200.8	387.8	597.4	1,026.5
Other eastern softwoods	12,402.4	633.1	1,326.3	1,940.7	2,028.5	2,329.6	1,203.2	1,283.4	780.1	476.6	265.0	82.3	53.6	0.0	0.0	0.0
Western woodland softwoods	12,680.9	785.9	1,432.0	1,824.7	2,029.7	1,724.8	1,562.2	1,219.8	747.6	451.3	252.0	214.4	245.2	50.8	0.0	140.5
Total softwoods	254,192.2	4,312.5	12,238.2	23,308.0	30,292.3	30,572.4	29,821.5	26,632.3	24,437.0	19,942.8	15,677.0	19,100.2	10,696.7	3,702.5	2,291.8	1,166.9
Hardwood																
Select white oaks	14,987.0	381.2	490.5	599.8	863.9	1,018.5	1,243.0	1,600.8	1,318.3	1,385.6	1,198.5	2,444.1	1,093.3	1,090.0	259.6	0.0
Select red oaks	19,394.4	363.3	732.3	1,797.1	2,255.7	1,846.6	1,572.2	1,436.6	1,601.9	771.0	1,331.4	1,956.1	782.0	906.3	255.1	1,726.8
Other white oaks	132,295.0	1,794.6	6,659.1	11,696.0	16,212.3	16,953.1	14,944.3	12,959.0	10,517.2	8,279.5	7,835.8	10,332.0	5,362.6	3,312.5	1,606.5	3,830.5
Other red oaks	97,410.4	4,101.3	5,738.5	6,186.2	6,894.4	8,247.0	8,955.4	9,542.6	10,211.2	7,670.0	5,710.5	10,403.5	6,766.5	3,087.4	1,717.4	2,178.3
Hickory	17,634.7	578.0	707.8	846.7	1,437.0	1,752.9	2,556.4	2,308.2	1,869.6	1,343.4	1,294.4	1,495.8	931.1	189.4	0.0	324.1
Hard maple	471.1	60.3	68.9	67.9	57.5	49.0	45.6	24.1	0.0	97.7	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	4,156.0	777.1	685.1	655.2	616.7	474.0	360.2	340.2	81.2	67.6	0.0	98.7	0.0	0.0	0.0	0.0
Beech	1,807.2	18.9	16.7	55.4	39.0	154.9	118.0	145.9	304.0	291.8	397.1	164.8	100.7	0.0	0.0	0.0
Sweetgum	40,677.3	2,940.8	3,620.1	4,045.5	4,758.3	5,097.3	5,021.6	4,170.4	3,224.0	2,278.7	1,757.8	2,328.5	1,214.1	0.0	0.0	220.4
Tupelo and blackgum	9,384.3	519.1	841.6	592.8	808.2	971.5	758.4	1,053.3	667.9	911.1	559.1	860.7	454.5	125.5	132.3	128.4
Ash	14,746.3	782.2	1,080.7	1,729.2	1,606.5	1,727.9	1,634.2	1,768.4	1,075.1	1,221.9	985.5	891.1	170.8	72.8	0.0	0.0
Cottonwood and aspen	5,625.5	20.9	43.9	53.0	83.1	201.2	110.8	237.0	299.4	450.9	438.5	323.7	1,184.1	1,308.2	471.3	399.3
Basswood	228.0	8.7	0.0	17.3	41.5	43.1	15.8	21.3	46.2	0.0	0.0	34.1	0.0	0.0	0.0	0.0
Black walnut	1,057.9	6.0	11.9	30.2	79.3	78.3	99.1	174.4	26.7	63.1	104.8	112.9	0.0	271.3	0.0	0.0
Other eastern soft hardwoods	64,279.1	5,208.5	8,417.4	7,505.9	8,347.4	7,443.2	7,281.2	5,576.7	4,410.7	3,327.4	2,411.6	2,108.5	1,206.0	0.0	1,034.6	0.0
Other eastern hard hardwoods	5,585.9	1,299.2	1,017.6	962.8	715.6	534.7	339.2	345.5	183.8	136.6	0.0	50.9	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	24,439.9	5,417.2	4,945.0	4,356.9	3,141.6	2,153.9	1,245.2	1,099.4	882.5	372.5	259.4	130.6	374.1	0.0	0.0	61.7
Western woodland hardwoods	209,316.7	7,112.9	14,160.9	24,958.0	29,842.0	29,286.0	27,137.9	22,629.2	18,117.5	13,075.1	9,300.7	9,448.2	2,900.8	813.9	230.0	303.7
Total hardwoods	663,436.6	31,390.2	49,238.1	66,156.0	77,800.1	78,033.0	73,438.6	65,433.0	54,837.2	41,743.8	33,584.9	43,184.0	22,540.6	11,177.3	5,706.7	9,173.2
All species	917,628.9	35,702.8	61,476.3	89,464.0	108,092.4	108,605.4	103,260.0	92,065.3	79,274.2	61,686.6	49,251.9	62,284.2	33,237.3	14,879.7	7,998.5	10,340.2

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.
^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.22.1—Aboveground dry weight of live trees on timberland by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)															
	All classes	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+
<i>thousand tons</i>																
Softwood																
Longleaf and slash pines	7,700.2	106.8	270.2	636.1	1,097.6	1,408.4	1,234.8	1,141.8	684.8	476.5	369.3	58.8	215.1	0.0	0.0	0.0
Loblolly and shortleaf pines	210,172.4	2,761.7	9,138.0	18,583.0	24,587.1	24,376.3	24,710.5	22,129.2	21,489.2	17,564.0	13,596.1	17,569.4	8,870.3	3,103.2	1,694.4	0.0
Other yellow pines	6.3	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	6,465.1	11.7	41.3	112.0	295.1	296.8	517.7	384.4	302.8	509.2	584.4	509.6	1,108.8	387.8	597.4	806.0
Other eastern softwoods	7,428.6	403.8	726.5	1,100.6	1,163.3	1,267.3	656.0	886.1	610.2	381.4	97.4	82.3	53.6	0.0	0.0	0.0
Western woodland softwoods	2.5	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	231,775.1	3,283.9	10,176.0	20,438.0	27,145.6	27,348.8	27,119.1	24,541.6	23,086.9	18,931.1	14,647.2	18,220.1	10,247.8	3,491.0	2,291.8	806.0
Hardwood																
Select white oaks	13,094.2	340.9	424.6	527.4	812.0	1,002.4	1,201.3	1,406.7	1,172.0	1,294.0	1,198.5	2,021.3	658.3	775.0	259.6	0.0
Select red oaks	12,214.3	175.9	198.1	398.1	555.0	540.2	583.7	1,084.2	1,291.9	708.6	1,155.6	1,852.9	782.0	906.3	255.1	1,726.8
Other white oaks	50,170.4	435.4	1,057.9	2,696.0	4,911.2	6,000.7	6,540.5	6,028.8	4,718.2	4,403.5	3,649.0	3,868.7	2,274.3	619.8	373.2	2,593.2
Other red oaks	86,993.3	3,577.5	4,345.3	4,977.4	5,760.1	7,056.9	7,970.4	8,891.4	9,177.0	7,176.7	5,372.6	9,710.8	6,145.5	2,935.9	1,717.4	2,178.3
Hickory	13,790.1	489.7	588.7	733.4	1,220.4	1,487.6	2,077.5	1,840.9	1,268.2	1,188.9	822.7	1,247.6	500.4	0.0	0.0	324.1
Hard maple	471.1	60.3	68.9	67.9	57.5	49.0	45.6	24.1	0.0	97.7	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	4,050.0	763.5	674.6	635.9	608.8	430.6	348.9	340.2	81.2	67.6	0.0	98.7	0.0	0.0	0.0	0.0
Beech	1,700.4	18.0	16.7	51.0	39.0	154.9	118.0	145.9	245.5	248.8	397.1	164.8	100.7	0.0	0.0	0.0
Sweetgum	40,223.5	2,930.0	3,593.7	3,999.3	4,689.2	5,054.3	4,977.1	4,170.4	3,224.0	2,278.7	1,757.8	2,263.6	1,065.1	0.0	0.0	220.4
Tupelo and blackgum	8,833.9	492.1	808.2	585.2	780.2	938.3	735.0	1,020.1	627.5	841.7	484.0	681.0	454.5	125.5	132.3	128.4
Ash	11,440.0	590.8	832.1	1,186.4	1,198.5	1,369.1	1,292.8	1,510.1	992.4	917.6	711.3	595.3	170.8	72.8	0.0	0.0
Cottonwood and aspen	1,568.8	10.5	43.9	14.6	6.6	41.0	18.1	39.1	0.0	158.9	88.1	175.4	255.1	318.0	0.0	399.3
Basswood	178.1	8.7	0.0	11.0	23.8	33.1	0.0	21.3	46.2	0.0	0.0	34.1	0.0	0.0	0.0	0.0
Black walnut	298.6	4.7	0.0	22.7	44.8	34.9	0.0	60.1	26.7	0.0	104.8	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	36,990.4	3,237.5	4,685.6	4,128.8	4,455.9	4,033.7	3,930.1	3,554.2	2,482.1	1,778.4	1,575.8	1,642.8	866.2	0.0	619.2	0.0
Other eastern hard hardwoods	4,507.5	1,058.1	764.1	830.4	602.4	491.7	264.6	275.2	138.2	82.7	0.0	0.0	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	14,402.4	2,846.6	3,607.3	2,830.6	1,912.1	1,084.5	625.6	618.9	564.4	217.8	33.0	0.0	0.0	0.0	0.0	61.7
Western woodland hardwoods	667.0	37.5	53.5	119.8	115.8	86.9	79.8	138.4	35.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	301,594.0	17,077.6	21,763.3	23,815.9	27,793.4	29,890.1	30,808.9	31,170.0	26,090.6	21,461.5	17,350.2	24,357.1	13,273.0	5,753.3	3,356.8	7,632.1
All species	533,369.0	20,361.6	31,939.3	44,253.9	54,939.0	57,238.9	57,928.1	55,711.6	49,177.6	40,392.7	31,997.4	42,577.1	23,520.8	9,244.3	5,648.6	8,438.2

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.

^a Palm species have been included (species codes 906 to 915).



Table A.22.2—Aboveground green weight of live trees on forest land by species group and diameter class, Texas, 2008

Species group ^a	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+	
thousand tons																
Softwood																
Longleaf and slash pines	15,461.4	213.5	540.4	1,277.6	2,195.2	2,816.8	2,525.1	2,283.6	1,369.6	953.0	738.7	117.5	430.3	0.0	0.0	0.0
Loblolly and shortleaf pines	428,669.9	5,550.1	18,336.7	37,566.0	49,635.3	49,532.3	50,510.6	45,013.1	43,703.9	36,058.2	28,412.5	36,470.4	17,964.2	6,527.8	3,388.8	0.0
Other yellow pines	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	14,074.0	23.3	82.6	229.2	637.8	686.9	1,076.3	961.5	745.1	1,018.4	1,168.7	1,019.3	2,401.6	775.6	1,194.8	2,052.9
Other eastern softwoods	24,804.8	1,266.2	2,652.6	3,881.3	4,057.0	4,659.3	2,406.5	2,566.8	1,560.2	953.2	530.0	164.6	107.2	0.0	0.0	0.0
Western woodland softwoods	25,361.9	1,571.9	2,864.1	3,649.5	4,059.5	3,124.4	2,439.6	1,495.2	902.6	504.0	428.7	490.3	101.6	0.0	280.9	
Total softwoods	508,394.5	8,625.1	24,476.3	46,616.1	60,584.7	61,144.8	59,642.9	53,264.6	48,874.1	39,885.5	31,354.0	38,200.5	21,393.5	7,404.9	4,583.6	2,333.9
Hardwood																
Select white oaks	29,974.0	762.3	980.9	1,199.6	1,727.8	2,036.9	2,486.0	3,201.6	2,636.6	2,771.1	2,397.0	4,888.2	2,186.5	2,179.9	519.2	0.0
Select red oaks	38,668.9	726.7	1,464.5	3,594.2	4,511.5	3,693.1	3,144.5	2,873.3	3,203.9	1,542.0	2,662.8	3,912.1	1,564.1	1,812.6	510.1	3,453.5
Other white oaks	264,590.0	3,589.2	13,318.3	23,392.0	32,424.6	33,906.2	29,888.6	25,918.1	21,034.3	16,558.9	15,671.7	20,664.1	10,725.2	6,624.9	3,212.9	7,661.1
Other red oaks	194,820.7	8,202.7	11,477.0	12,372.5	13,788.7	16,494.0	17,910.8	19,085.3	20,422.4	15,339.9	11,421.0	20,806.9	13,533.0	6,174.9	3,434.9	4,356.7
Hickory	35,269.4	1,155.9	1,415.7	1,693.3	2,874.0	3,505.7	5,112.7	4,616.5	3,739.2	2,686.8	2,588.7	2,991.6	1,862.2	378.8	0.0	648.2
Hard maple	942.2	120.7	137.8	135.8	115.0	98.1	91.3	48.2	0.0	195.3	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	8,312.0	1,554.3	1,370.1	1,310.4	1,233.4	948.0	720.5	680.4	162.3	135.2	0.0	197.5	0.0	0.0	0.0	0.0
Beech	3,614.4	37.7	33.5	110.8	78.0	309.9	235.9	291.8	608.1	583.7	794.1	329.6	201.4	0.0	0.0	0.0
Sweetgum	81,354.5	5,881.5	7,240.2	8,091.0	9,516.6	10,194.6	10,043.2	8,340.8	6,448.0	4,557.3	3,515.5	4,656.9	2,428.1	0.0	0.0	440.9
Tupelo and blackgum	18,768.6	1,038.3	1,683.2	1,185.7	1,616.4	1,942.9	1,516.7	2,106.6	1,335.8	1,822.2	1,118.2	1,721.3	909.0	251.1	264.5	256.7
Ash	29,492.6	1,564.4	2,161.3	3,458.4	3,213.1	3,455.7	3,268.4	3,536.8	2,150.2	2,443.9	1,971.0	1,782.1	341.6	145.6	0.0	0.0
Cottonwood and aspen	11,251.0	41.9	87.8	106.1	166.3	402.5	221.7	473.9	598.9	901.9	877.0	647.3	2,368.3	2,616.5	942.6	798.5
Basswood	456.0	17.4	0.0	34.7	82.9	86.2	31.6	42.7	92.4	0.0	0.0	68.1	0.0	0.0	0.0	0.0
Black walnut	2,115.7	12.0	23.9	60.4	158.5	156.5	198.3	348.7	53.3	126.2	209.5	225.7	0.0	542.5	0.0	0.0
Other eastern soft hardwoods	128,558.2	10,417.0	16,834.8	15,011.8	16,694.8	14,886.4	14,562.4	11,153.3	8,821.4	6,654.8	4,823.2	4,217.0	2,412.0	0.0	2,069.2	0.0
Other eastern hard hardwoods	11,171.8	2,598.3	2,035.3	1,925.5	1,431.2	1,069.5	678.5	690.9	367.7	273.1	0.0	101.8	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	48,879.9	10,834.4	9,890.0	8,713.7	6,283.3	4,307.7	2,490.4	2,198.8	1,764.9	745.0	518.7	261.3	748.1	0.0	0.0	123.4
Western woodland hardwoods	418,633.4	14,225.8	28,321.8	49,916.0	59,684.0	58,571.9	54,275.8	45,258.3	36,234.9	26,150.3	18,601.3	18,896.4	5,801.5	1,627.8	460.0	607.4
Total hardwoods	1,326,873.3	62,780.5	98,476.2	132,311.9	155,600.2	156,066.0	146,877.1	130,866.0	109,674.3	83,487.6	67,169.9	86,368.0	45,081.1	22,354.5	11,413.5	18,346.5
All species	1,835,257.8	71,405.5	122,952.5	178,928.0	216,184.9	217,210.8	206,520.0	184,130.7	158,548.4	123,373.1	98,523.9	124,568.5	66,474.6	29,759.4	15,997.1	20,680.3

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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.22.3—Aboveground green weight of live trees on timberland by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)															
	1.0–	3.0–	5.0–	7.0–	9.0–	11.0–	13.0–	15.0–	17.0–	19.0–	21.0–	25.0–	29.0–	33.0–	37.0+	
	2.9	4.9	6.9	8.9	10.9	12.9	14.9	16.9	18.9	20.9	24.9	28.9	32.9	36.9		
	thousand tons															
Softwood																
Longleaf and slash pines	15,400.4	213.5	540.4	1,272.1	2,195.2	2,816.8	2,469.7	2,283.6	1,369.6	953.0	738.7	117.5	430.3	0.0	0.0	
Loblolly and shortleaf pines	420,344.8	5,523.4	18,276.0	37,166.0	49,174.1	48,752.6	49,421.1	44,258.4	42,978.4	35,128.1	27,192.2	35,138.7	17,740.6	6,206.4	3,388.8	
Other yellow pines	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Cypress	12,930.1	23.3	82.6	224.1	590.2	593.6	1,035.5	768.9	605.5	1,018.4	1,168.7	1,019.3	2,217.6	775.6	1,194.8	
Other eastern softwoods	14,857.1	807.6	1,453.0	2,201.2	2,326.7	2,534.7	1,312.1	1,772.2	1,220.3	762.7	194.8	164.6	107.2	0.0	0.0	
Western woodland softwoods	5.1	0.0	0.0	0.0	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total softwoods	463,550.1	6,567.8	20,352.0	40,876.0	54,291.2	54,697.7	54,238.3	49,083.1	46,173.8	37,862.3	29,294.4	36,440.1	20,495.7	6,982.0	4,583.6	
Hardwood																
Select white oaks	26,188.3	681.8	849.2	1,054.8	1,624.1	2,004.9	2,402.7	2,813.3	2,344.1	2,588.0	2,397.0	4,042.6	1,316.7	1,549.9	519.2	
Select red oaks	24,428.7	351.8	396.2	796.2	1,110.0	1,080.4	1,167.5	2,168.4	2,583.7	1,417.1	2,311.3	3,705.8	1,564.1	1,812.6	510.1	
Other white oaks	100,340.9	870.8	2,115.8	5,392.0	9,822.3	12,001.5	13,081.1	12,057.5	9,436.3	8,807.1	7,298.0	7,737.4	4,548.6	1,239.6	746.4	
Other red oaks	173,986.6	7,154.9	8,690.6	9,954.9	11,520.2	14,113.9	15,940.8	17,782.9	18,353.9	14,353.4	10,745.2	19,421.6	12,290.9	5,871.8	4,356.7	
Hickory	27,580.2	979.3	1,177.4	1,466.9	2,440.9	2,975.3	4,154.9	3,681.7	2,536.4	2,377.8	1,645.3	2,495.1	1,000.9	0.0	648.2	
Hard maple	942.2	120.7	137.8	135.8	115.0	98.1	91.3	48.2	0.0	195.3	0.0	0.0	0.0	0.0	0.0	
Soft maple	8,100.0	1,526.9	1,349.2	1,271.8	1,217.6	861.2	697.8	680.4	162.3	135.2	0.0	197.5	0.0	0.0	0.0	
Beech	3,400.7	35.9	33.5	102.0	78.0	309.9	235.9	291.8	491.0	497.7	794.1	329.6	201.4	0.0	0.0	
Sweetgum	80,447.0	5,860.0	7,187.5	7,998.5	9,378.4	10,108.6	9,954.1	8,340.8	6,448.0	4,557.3	3,515.5	4,527.2	2,130.2	0.0	440.9	
Tupelo and blackgum	17,667.9	984.2	1,616.3	1,170.5	1,560.4	1,876.6	1,470.1	2,040.2	1,255.0	1,683.4	967.9	1,362.1	909.0	251.1	256.7	
Ash	22,880.0	1,181.7	1,664.1	2,372.9	2,396.9	2,738.2	2,585.5	3,020.3	1,984.8	1,835.1	1,422.7	1,190.6	341.6	145.6	0.0	
Cottonwood and aspen	3,137.5	21.0	87.8	29.3	13.3	82.0	36.2	78.3	0.0	317.7	176.3	350.7	510.3	636.1	0.0	
Basswood	356.3	17.4	0.0	21.9	47.5	66.2	0.0	42.7	92.4	0.0	0.0	68.1	0.0	0.0	0.0	
Black walnut	597.2	9.5	0.0	45.3	89.7	69.7	0.0	120.1	53.3	0.0	209.5	0.0	0.0	0.0	0.0	
Other eastern soft hardwoods	73,980.9	6,475.1	9,371.2	8,257.6	8,911.9	8,067.4	7,860.2	7,108.4	4,964.3	3,556.8	3,151.5	3,285.7	1,732.4	0.0	1,238.5	
Other eastern hard hardwoods	9,015.0	2,116.2	1,528.3	1,660.8	1,204.8	983.5	529.1	550.3	276.5	165.5	0.0	0.0	0.0	0.0	0.0	
Eastern noncommercial hardwoods	28,804.7	5,693.2	7,214.7	5,661.1	3,824.3	2,169.0	1,251.1	1,237.7	1,128.8	435.5	66.0	0.0	0.0	0.0	123.4	
Western woodland hardwoods	1,333.9	75.0	107.0	239.5	231.6	173.8	159.6	276.9	70.5	0.0	0.0	0.0	0.0	0.0	0.0	
Total hardwoods	603,187.9	34,155.3	43,526.6	47,631.8	55,586.8	59,780.2	61,617.9	62,340.0	52,181.3	42,923.0	34,700.4	48,714.1	26,546.0	11,506.7	6,713.7	
All species	1,066,738.0	40,723.1	63,878.6	88,507.7	109,878.0	114,477.9	115,856.2	111,423.1	98,355.1	80,785.3	63,994.8	85,154.2	47,041.7	18,488.7	11,297.3	

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 Palm species have been included (species codes 906 to 915).



Table A.22.4—Merchantable dry weight of live trees on forest land by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)													
	All classes	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+
thousand tons														
Softwood														
Longleaf and slash pines	6,269.0	461.5	906.9	1,194.4	1,096.0	1,000.8	606.8	425.9	330.6	52.6	193.5	0.0	0.0	0.0
Loblolly and shortleaf pines	173,013.5	13,427.0	20,380.4	21,197.8	21,992.9	19,724.4	19,311.0	15,916.2	12,605.1	16,154.3	7,937.2	2,857.2	1,510.2	0.0
Other yellow pines	4.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	5,745.9	79.2	247.4	276.6	441.6	398.0	309.8	423.4	482.0	419.2	1,006.5	325.4	495.0	841.8
Other eastern softwoods	8,605.0	1,473.9	1,665.6	1,953.6	1,015.4	1,088.9	657.0	406.6	226.4	71.2	46.4	0.0	0.0	0.0
Western woodland softwoods	5,750.7	746.4	969.2	916.7	907.8	745.7	483.7	298.0	175.2	161.8	180.6	36.9	0.0	128.7
Total softwoods	199,388.8	16,192.7	24,169.5	25,539.1	25,453.7	22,957.8	21,368.3	17,470.0	13,819.4	16,859.1	9,364.2	3,219.5	2,005.1	970.4
Hardwood														
Select white oaks	10,964.0	404.6	651.7	788.4	975.9	1,267.6	1,046.8	1,111.8	959.0	1,889.6	883.6	794.3	190.6	0.0
Select red oaks	12,785.1	1,145.7	1,578.3	1,319.8	1,137.1	1,102.5	1,272.5	607.7	1,017.8	1,370.0	628.4	720.7	188.1	696.4
Other white oaks	94,104.4	7,749.6	12,084.8	13,068.8	11,616.1	10,155.5	8,192.6	6,345.8	6,016.0	7,893.4	4,166.1	2,625.8	1,112.7	3,077.1
Other red oaks	66,410.0	3,985.6	5,059.7	6,317.1	6,955.4	7,503.7	8,046.2	6,010.8	4,493.8	7,985.8	5,226.1	2,210.5	1,221.9	1,403.5
Hickory	12,771.4	538.2	1,075.1	1,370.5	2,049.6	1,854.0	1,506.7	1,089.8	1,049.1	1,207.3	627.5	158.7	0.0	244.8
Hard maple	253.5	44.2	42.2	37.7	35.2	19.5	0.0	74.7	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1,988.8	451.9	467.9	358.6	277.4	249.8	68.1	37.6	0.0	77.4	0.0	0.0	0.0	0.0
Beech	1,304.2	35.9	29.5	119.5	92.2	115.2	213.8	226.3	300.4	121.9	49.4	0.0	0.0	0.0
Sweetgum	27,922.8	2,722.1	3,767.8	4,203.8	4,228.4	3,555.3	2,763.8	1,979.1	1,514.7	1,963.3	1,028.2	0.0	0.0	196.0
Tupelo and blackgum	6,262.4	419.5	639.9	791.5	616.9	861.2	527.8	730.4	455.4	668.0	315.9	99.6	114.2	22.2
Ash	10,197.4	1,207.0	1,286.7	1,406.2	1,366.4	1,471.1	845.7	1,006.4	723.0	706.8	113.8	64.3	0.0	0.0
Cottonwood and aspen	4,757.8	38.1	65.8	168.2	94.7	203.6	258.6	386.9	346.4	277.1	1,023.9	1,139.6	406.6	348.3
Basswood	169.9	11.8	33.2	32.8	12.7	15.6	34.1	0.0	0.0	29.6	0.0	0.0	0.0	0.0
Black walnut	819.3	20.2	57.9	59.7	77.7	137.9	17.3	50.7	84.1	92.0	0.0	221.8	0.0	0.0
Other eastern soft hardwoods	40,217.1	5,219.6	6,593.7	6,082.2	6,021.6	4,631.6	3,601.7	2,703.0	1,905.6	1,716.1	916.6	0.0	825.5	0.0
Other eastern hard hardwoods	2,237.4	622.4	513.0	401.0	226.0	213.2	122.2	100.1	0.0	39.4	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	9,872.5	2,816.3	2,255.7	1,578.9	925.0	840.9	608.1	252.1	203.1	92.7	276.9	0.0	0.0	22.8
Western woodland hardwoods	120,157.3	13,401.5	17,505.6	18,266.3	17,762.3	15,288.0	12,360.0	9,160.7	6,707.9	6,652.8	2,084.2	525.5	203.1	239.4
Total hardwoods	423,195.4	40,834.2	53,708.6	56,371.0	54,470.9	49,486.3	41,486.0	31,874.0	25,766.4	32,783.3	17,340.5	8,560.8	4,262.7	6,250.6
All species	622,584.1	57,026.9	77,878.1	81,910.1	79,924.6	72,444.0	62,854.3	49,344.1	39,585.8	49,642.3	26,704.7	11,780.4	6,267.8	7,221.0

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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.22.5—Merchantable dry weight of live trees on timberland by species group and diameter class, Texas, 2008

Species group ^a	Diameter class (inches at breast height)													
	All classes	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+
Softwood														
Longleaf and slash pines	6,242.7	459.7	906.9	1,194.4	1,071.5	1,000.8	606.8	425.9	330.6	52.6	193.5	0.0	0.0	0.0
Loblolly and shortleaf pines	169,439.7	13,284.8	20,190.9	20,863.1	21,516.5	19,392.5	18,990.6	15,507.2	12,060.6	15,558.8	7,837.1	2,727.5	1,510.2	0.0
Other yellow pines	4.7	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	5,271.9	77.3	228.8	239.7	424.9	318.3	251.8	423.4	482.0	419.2	929.5	325.4	495.0	656.6
Other eastern softwoods	5,194.8	836.4	953.4	1,061.8	551.3	752.4	510.5	328.4	83.0	71.2	46.4	0.0	0.0	0.0
Western woodland softwoods	1.1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	186,154.9	14,662.9	22,281.1	23,359.0	23,564.3	21,463.9	20,359.8	16,684.9	12,956.3	16,101.8	9,006.5	3,052.9	2,005.1	656.6
Hardwood														
Select white oaks	9,531.4	357.6	612.7	775.9	943.7	1,112.0	931.5	1,037.4	959.0	1,546.9	527.6	536.3	190.6	0.0
Select red oaks	8,438.8	268.3	422.9	425.4	465.3	861.5	1,030.1	561.5	882.0	1,288.2	628.4	720.7	188.1	696.4
Other white oaks	37,076.8	1,774.3	3,641.8	4,603.9	5,069.8	4,709.8	3,704.0	3,373.4	2,783.3	2,816.1	1,801.5	495.8	240.8	2,062.3
Other red oaks	60,100.8	3,204.4	4,226.1	5,413.1	6,197.4	6,999.6	7,257.1	5,630.0	4,241.9	7,437.0	4,775.4	2,093.3	1,221.9	1,403.5
Hickory	9,830.8	465.9	911.0	1,162.0	1,664.4	1,472.4	1,017.5	982.8	660.4	1,001.1	268.6	0.0	0.0	244.8
Hard maple	253.5	44.2	42.2	37.7	35.2	19.5	0.0	74.7	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1,933.1	438.7	461.6	331.7	268.1	249.8	68.1	37.6	0.0	77.4	0.0	0.0	0.0	0.0
Beech	1,235.6	33.1	29.5	119.5	92.2	115.2	179.5	194.9	300.4	121.9	49.4	0.0	0.0	0.0
Sweetgum	27,580.9	2,690.8	3,712.3	4,168.1	4,190.2	3,555.3	2,763.8	1,979.1	1,514.7	1,914.5	895.9	0.0	0.0	196.0
Tupelo and blackgum	5,872.3	414.0	618.6	764.1	601.2	834.1	496.3	678.9	392.4	521.0	315.9	99.6	114.2	22.2
Ash	7,932.6	829.0	959.9	1,122.5	1,075.7	1,250.6	773.7	756.1	485.0	501.9	113.8	64.3	0.0	0.0
Cottonwood and aspen	1,270.5	10.5	5.3	34.2	15.5	33.4	0.0	134.2	45.9	148.2	218.1	277.0	0.0	348.3
Basswood	133.0	7.2	19.0	27.4	0.0	15.6	34.1	0.0	0.0	29.6	0.0	0.0	0.0	0.0
Black walnut	222.3	15.1	31.5	25.8	0.0	48.5	17.3	0.0	84.1	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	23,009.5	2,866.8	3,502.4	3,289.1	3,226.1	2,947.0	2,028.5	1,413.4	1,220.2	1,314.0	666.1	0.0	535.9	0.0
Other eastern hard hardwoods	1,850.5	536.2	429.8	367.1	167.6	188.0	94.5	67.3	0.0	0.0	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	5,614.7	1,854.4	1,408.5	827.7	473.1	483.6	375.7	139.5	29.4	0.0	0.0	0.0	0.0	22.8
Western woodland hardwoods	343.7	62.8	63.2	50.4	51.6	90.1	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	202,230.6	15,873.4	21,098.5	23,545.7	24,537.1	24,986.0	20,797.0	17,040.7	13,598.7	18,717.8	10,260.8	4,287.1	2,491.5	4,996.3
All species	388,385.6	30,536.3	43,379.7	46,904.8	48,101.4	46,449.9	41,156.8	33,725.5	26,555.0	34,819.6	19,267.2	7,339.9	4,496.6	5,652.9

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 Palm species have been included (species codes 906 to 915).



Table A.23—Total carbon^a of live trees on forest land by ownership class and land status, Texas, 2008

Ownership class	All forest land	Land status					
		Unreserved			Reserved		
		Total	Timber-land	Un-productive	Total	Productive	Un-productive
<i>thousand tons</i>							
U.S. Forest Service							
National forest	27,526.1	26,205.9	26,205.9	0.0	1,320.3	1,320.3	0.0
National grassland	488.4	396.9	169.3	227.6	91.5	91.5	0.0
Other Forest Service	74.3	74.3	74.3	0.0	0.0	0.0	0.0
Total	28,088.8	26,677.0	26,449.5	227.6	1,411.8	1,411.8	0.0
Other Federal							
National Park Service	3,024.5	0.0	0.0	0.0	3,024.5	2,848.8	175.7
Bureau of Land Management	33.4	33.4	0.0	33.4	0.0	0.0	0.0
U.S. Fish and Wildlife Service	2,039.8	972.1	400.5	571.6	1,067.7	993.6	74.1
Dept. of Defense/Dept. of Energy	6,022.2	5,953.3	3,459.0	2,494.3	68.9	11.3	57.6
Other Federal	845.6	845.6	394.9	450.6	0.0	0.0	0.0
Total	11,965.4	7,804.3	4,254.5	3,549.8	4,161.1	3,853.7	307.4
State and local government							
State	5,736.0	5,352.0	3,436.1	1,915.9	384.0	249.9	134.1
Local	5,060.9	4,496.3	1,683.2	2,813.1	564.6	102.5	462.0
Other non-Federal public	96.9	0.0	0.0	0.0	96.9	0.0	96.9
Total	10,893.8	9,848.3	5,119.3	4,729.0	1,045.5	352.4	693.0
Forest industry							
Corporate	40,626.0	40,626.0	40,626.0	0.0	0.0	0.0	0.0
Unincorporated local partnership/association/club	14.1	14.1	14.1	0.0	0.0	0.0	0.0
Native American	100.2	100.2	100.2	0.0	0.0	0.0	0.0
Individual	325.2	325.2	210.8	114.4	0.0	0.0	0.0
Total	41,065.5	41,065.5	40,951.1	114.4	0.0	0.0	0.0
Nonindustrial private							
Corporate	50,145.2	50,145.2	38,932.7	11,212.5	0.0	0.0	0.0
Conservation/natural resources organization	1,940.6	1,940.6	872.9	1,067.8	0.0	0.0	0.0
Unincorporated local partnership/association/club	19,923.3	19,923.3	6,966.9	12,956.4	0.0	0.0	0.0
Native American	1,399.5	1,399.5	944.3	455.2	0.0	0.0	0.0
Individual	293,392.3	293,392.3	142,193.4	151,198.9	0.0	0.0	0.0
Total	366,800.9	366,800.9	189,910.1	176,890.8	0.0	0.0	0.0
All classes	458,814.4	452,196.1	266,684.5	185,511.5	6,618.4	5,618.0	1,000.4

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



Appendix A—Core Tables

Table A.24—Average annual net growth of live trees by ownership class and land status, Texas, 2008

Ownership class	Land status	
	Timberland	Forest land
	<i>million cubic feet</i>	
U.S. Forest Service		
National forest	64.0	68.0
Other Forest Service	0.0	0.0
Total	64.0	68.0
Other Federal		
National Park Service	0.0	-7.1
U.S. Fish and Wildlife Service	1.4	1.4
Dept. of Defense/Dept. of Energy	10.1	9.6
Other Federal	7.9	-0.1
Total	19.4	3.8
State and local government		
State	1.0	1.0
Local	14.8	6.2
Total	15.8	7.2
Forest industry		
Individual	0.4	0.4
Native American	1.1	1.1
Corporate	213.6	213.6
Unincorporated partnership/association/club	0.3	0.3
Total	215.4	215.4
Nonindustrial private		
Corporate	162.7	162.9
Conservation/natural resources organization	1.2	1.2
Individual	466.9	454.6
Unincorporated partnership/association/club	20.4	20.4
Native American	2.4	2.4
Total	653.7	641.5
All classes	968.3	935.9

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 A.25—Average annual net growth of live trees on forest land by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	All size classes	Stand-size class			Nonstocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood					
Longleaf-slash pine	18.0	7.5	8.0	2.5	0.0
Loblolly-shortleaf pine	548.8	255.8	223.4	69.6	0.0
Other eastern softwoods	3.6	1.4	1.6	0.6	0.0
Total softwoods	570.4	264.7	233.0	72.7	0.0
Hardwood types					
Oak-pine	120.8	63.6	30.9	26.3	0.0
Oak-hickory	143.6	79.6	36.0	28.0	0.0
Oak-gum-cypress	54.9	32.7	14.6	7.7	0.0
Elm-ash-cottonwood	37.3	20.8	10.7	5.8	0.0
Other hardwoods	0.6	0.1	0.0	0.4	0.0
Woodland hardwoods	0.3	0.0	0.0	0.3	0.0
Exotic hardwoods	6.5	1.2	1.4	3.9	0.0
Total hardwoods	364.1	198.1	93.6	72.4	0.0
Nonstocked	1.4	0.0	0.0	0.0	1.4
All groups	935.9	462.7	326.6	145.1	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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.25.1—Average annual net growth of live trees on timberland by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	All size classes	Stand-size class			Nonstocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood					
Longleaf-slash pine	18.0	7.5	8.0	2.5	0.0
Loblolly-shortleaf pine	549.8	256.8	223.4	69.6	0.0
Other eastern softwoods	3.6	1.4	1.6	0.6	0.0
Total softwoods	571.4	265.7	233.0	72.7	0.0
Hardwood					
Oak-pine	129.2	71.7	31.1	26.3	0.0
Oak-hickory	150.9	85.3	38.4	27.2	0.0
Oak-gum-cypress	70.0	47.2	15.1	7.7	0.0
Elm-ash-cottonwood	37.7	21.3	10.7	5.7	0.0
Other hardwoods	0.6	0.2	0.0	0.4	0.0
Woodland hardwoods	0.3	0.0	0.0	0.3	0.0
Exotic hardwoods	6.9	1.2	1.8	3.9	0.0
Total hardwoods	395.6	226.9	97.1	71.5	0.0
Nonstocked	1.4	0.0	0.0	0.0	1.4
All groups	968.3	492.6	330.1	144.2	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 Palm species have been included (species codes 906 to 915).



Table A.26—Average annual net growth of live trees on forest land by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	18.7	0.7	0.0	0.0	13.7	4.2
Loblolly and shortleaf pines	610.7	61.5	0.9	2.3	175.0	371.0
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	6.0	0.0	1.0	0.3	1.2	3.5
Other eastern softwoods	10.4	0.0	0.0	0.3	0.1	9.9
Total softwoods	645.8	62.2	2.0	3.0	190.0	388.6
Hardwood						
Select white oaks	5.1	1.2	0.8	0.3	-0.2	3.0
Select red oaks	10.0	-0.2	-1.2	0.1	-0.9	12.1
Other white oaks	30.7	0.5	-1.0	0.5	3.1	27.7
Other red oaks	97.7	2.5	1.2	1.2	9.3	83.4
Hickory	9.7	0.5	0.2	0.9	0.2	7.8
Hard maple	0.4	0.0	0.0	0.0	0.0	0.4
Soft maple	3.2	0.2	0.0	-0.2	0.3	2.9
Beech	1.7	0.2	0.0	0.0	1.2	0.3
Sweetgum	60.7	0.3	1.7	0.7	8.5	49.6
Tupelo and blackgum	7.2	0.7	-0.8	0.3	0.2	6.8
Ash	8.2	-0.9	0.3	0.3	1.3	7.2
Cottonwood and aspen	3.6	0.0	0.4	0.0	0.0	3.2
Basswood	0.2	0.0	0.0	0.0	0.0	0.1
Black walnut	0.6	0.0	0.0	0.0	0.0	0.6
Other eastern soft hardwoods	38.6	1.3	-0.4	-0.7	1.6	36.8
Other eastern hard hardwoods	2.3	0.1	-0.1	0.1	0.6	1.7
Eastern noncommercial hardwoods	9.8	-0.6	0.7	0.7	0.2	8.9
Western woodland hardwoods	0.5	0.0	0.0	0.0	0.0	0.5
Total hardwoods	290.1	5.7	1.9	4.2	25.4	252.9
All species	935.9	68.0	3.8	7.1	215.4	641.5

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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.26.1—Average annual net growth of live trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	18.7	0.7	0.0	0.0	13.7	4.2
Loblolly and shortleaf pines	615.8	57.8	4.0	7.8	175.0	371.2
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	5.3	0.0	0.3	0.3	1.2	3.5
Other eastern softwoods	10.4	0.0	0.0	0.3	0.1	9.9
Total softwoods	650.2	58.6	4.4	8.4	190.0	388.8
Hardwood						
Select white oaks	5.0	1.2	0.8	0.3	-0.2	3.0
Select red oaks	12.2	-0.2	0.3	0.5	-0.9	12.4
Other white oaks	39.1	0.5	0.7	1.6	3.1	33.3
Other red oaks	104.8	2.4	5.2	2.5	9.3	85.4
Hickory	10.9	0.5	0.4	0.9	0.2	8.8
Hard maple	0.4	0.0	0.0	0.0	0.0	0.4
Soft maple	3.1	0.2	-0.1	-0.2	0.3	2.9
Beech	1.7	0.2	0.0	0.0	1.2	0.3
Sweetgum	61.3	0.2	2.2	0.7	8.5	49.7
Tupelo and blackgum	7.9	0.7	0.0	0.3	0.2	6.9
Ash	8.7	-0.9	0.8	0.3	1.3	7.3
Cottonwood and aspen	3.6	0.0	0.4	0.0	0.0	3.2
Basswood	0.2	0.0	0.0	0.0	0.0	0.1
Black walnut	0.6	0.0	0.0	0.0	0.0	0.6
Other eastern soft hardwoods	44.2	1.3	3.6	-0.4	1.6	38.1
Other eastern hard hardwoods	2.6	0.1	0.2	0.1	0.6	1.7
Eastern noncommercial hardwoods	11.5	-0.6	0.7	0.8	0.2	10.4
Western woodland hardwoods	0.4	0.0	0.0	0.0	0.0	0.4
Total hardwoods	318.2	5.4	15.1	7.4	25.4	264.9
All species	968.3	64.0	19.4	15.8	215.4	653.7

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

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

^a Palm species have been included (species codes 906 to 915).



Table A.27—Average annual net growth of growing-stock trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non-industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	18.6	0.7	0.0	0.0	13.6	4.3
Loblolly and shortleaf pines	610.0	57.5	4.0	7.8	173.7	367.0
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	5.1	0.0	0.2	0.3	1.2	3.3
Other eastern softwoods	7.0	0.0	0.0	0.3	0.0	6.6
Total softwoods	640.7	58.2	4.3	8.4	188.5	381.2
Hardwood						
Select white oaks	5.3	1.1	0.8	0.2	0.0	3.0
Select red oaks	12.1	-0.2	0.3	0.5	-0.4	11.9
Other white oaks	31.4	0.4	0.7	1.5	3.7	25.1
Other red oaks	99.4	2.5	2.1	1.1	9.2	84.4
Hickory	9.4	0.5	0.1	0.9	0.2	7.7
Hard maple	0.2	0.0	0.0	0.0	-0.1	0.2
Soft maple	2.4	0.2	0.1	-0.1	0.2	2.0
Beech	1.0	0.1	0.0	0.0	0.3	0.6
Sweetgum	59.4	0.1	2.2	0.6	8.5	48.0
Tupelo and blackgum	5.7	0.6	-0.1	0.3	0.2	4.7
Ash	9.6	-0.6	0.7	0.2	1.3	8.0
Cottonwood and aspen	3.5	0.0	0.4	0.0	0.0	3.1
Basswood	0.1	0.0	0.0	0.0	0.0	0.1
Black walnut	0.4	0.0	0.0	0.0	0.0	0.4
Other eastern soft hardwoods	32.1	0.9	2.5	-0.5	1.4	27.8
Other eastern hard hardwoods	1.5	0.1	0.0	0.0	0.4	1.1
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	273.5	5.9	9.7	4.7	25.0	228.2
All species	914.2	64.1	14.0	13.1	213.5	609.4

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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.27.1—Average annual net growth of sawtimber on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Non- industrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	84.6	4.7	0.0	0.0	65.2	14.8
Loblolly and shortleaf pines	2,377.1	274.8	24.5	34.1	548.0	1,495.8
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	28.0	0.0	1.6	0.2	5.9	20.3
Other eastern softwoods	24.9	0.0	0.3	1.2	0.0	23.4
Total softwoods	2,514.6	279.4	26.4	35.5	619.1	1,554.3
Hardwood						
Select white oaks	8.3	4.8	4.0	0.6	-5.0	3.9
Select red oaks	54.2	-1.8	1.6	2.2	-3.4	55.6
Other white oaks	136.9	0.4	4.5	5.6	17.7	108.6
Other red oaks	407.3	8.8	8.8	0.3	36.3	353.0
Hickory	44.1	1.4	1.3	4.0	1.9	35.4
Hard maple	-0.5	0.1	0.0	0.0	-1.0	0.4
Soft maple	5.5	0.7	0.2	0.0	0.8	3.7
Beech	4.1	0.3	0.0	0.0	0.5	3.3
Sweetgum	196.3	5.1	11.2	3.5	25.5	150.9
Tupelo and blackgum	16.8	0.6	0.0	1.3	-1.6	16.5
Ash	20.6	-3.0	2.4	0.6	4.9	15.6
Cottonwood and aspen	21.2	0.0	2.9	0.0	0.0	18.3
Basswood	0.2	0.0	0.0	0.0	0.0	0.2
Black walnut	0.9	0.0	0.0	0.0	0.0	0.9
Other eastern soft hardwoods	79.0	4.1	3.6	-0.3	2.5	69.1
Other eastern hard hardwoods	0.1	0.0	0.0	0.0	0.0	0.1
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	994.7	21.7	40.6	17.9	79.0	835.6
All species	3,509.4	301.1	66.9	53.3	698.1	2,389.9

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 Palm species have been included (species codes 906 to 915).



Table A.28—Average annual net mortality of live trees by ownership class and land status, Texas, 2008

Ownership class	Land status	
	Timberland	Forest land
	<i>million cubic feet</i>	
U.S. Forest Service		
National forest	14.7	15.2
Other Forest Service	0.3	0.3
Total	15.0	15.5
Other Federal		
National Park Service	0.0	10.4
Dept. of Defense/Dept. of Energy	2.3	2.3
Other Federal	0.1	0.1
Total	2.4	12.8
State and local government		
State	5.5	5.5
Local	0.5	0.6
Total	6.0	6.1
Forest industry		
Corporate	23.3	23.3
Total	23.3	23.3
Nonindustrial private		
Corporate	18.9	18.9
Conservation/natural resources organization	0.0	0.0
Unincorporated partnership/association/club	3.5	3.5
Native American	0.3	0.3
Individual	77.8	78.4
Total	100.6	101.1
All classes	147.3	158.9

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.



Appendix A—Core Tables

Table A.29—Average annual mortality of live trees on forest land by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	All size classes	Stand-size class			Nonstocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood types					
Longleaf-slash pine	5.0	4.7	0.3	0.0	0.0
Loblolly-shortleaf pine	69.5	61.7	6.3	1.5	0.0
Other eastern softwoods	0.4	0.4	0.0	0.0	0.0
Total softwoods	75.0	66.8	6.6	1.5	0.0
Hardwood types					
Oak-pine	19.0	15.0	2.8	1.2	0.0
Oak-hickory	27.0	20.5	5.0	1.4	0.0
Oak-gum-cypress	28.7	25.9	2.5	0.2	0.0
Elm-ash-cottonwood	7.9	6.2	1.6	0.0	0.0
Other hardwoods	0.1	0.1	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	1.1	0.4	0.4	0.3	0.0
Total hardwoods	83.7	68.1	12.4	3.2	0.0
Nonstocked	0.1	0.0	0.0	0.0	0.1
All groups	158.9	135.0	19.0	4.7	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 Palm species have been included (species codes 906 to 915).



Table A.29.1—Average annual mortality of live trees on timberland by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	Stand-size class				Nonstocked
	All size classes	Large diameter	Medium diameter	Small diameter	
	<i>million cubic feet</i>				
Softwood types					
Longleaf-slash pine	5.0	4.7	0.3	0.0	0.0
Loblolly-shortleaf pine	64.9	57.1	6.3	1.5	0.0
Other eastern softwoods	0.4	0.4	0.0	0.0	0.0
Total softwoods	70.4	62.3	6.6	1.5	0.0
Hardwood types					
Oak-pine	18.9	14.9	2.8	1.2	0.0
Oak-hickory	26.6	20.3	4.9	1.4	0.0
Oak-gum-cypress	23.0	21.1	1.6	0.2	0.0
Elm-ash-cottonwood	7.3	5.6	1.6	0.0	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	1.1	0.4	0.4	0.3	0.0
Total hardwoods	76.9	62.3	11.4	3.2	0.0
Nonstocked	0.0	0.0	0.0	0.0	0.0
All groups	147.3	124.5	18.0	4.7	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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.30—Average annual mortality of live trees on forest land by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	6.9	0.1	0.0	0.0	1.8	5.0
Loblolly and shortleaf pines	69.9	9.9	4.4	3.1	12.1	40.5
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.3	0.0	0.0	0.0	0.0	0.3
Other eastern softwoods	0.6	0.0	0.0	0.0	0.0	0.6
Total softwoods	77.8	10.0	4.5	3.1	13.9	46.4
Hardwood						
Select white oaks	4.6	0.0	0.1	0.0	0.3	4.2
Select red oaks	4.6	1.1	1.9	0.0	0.0	1.6
Other white oaks	8.3	0.3	1.9	0.2	0.2	5.7
Other red oaks	25.9	0.3	1.6	0.4	5.2	18.4
Hickory	2.6	0.1	0.4	0.1	0.2	1.7
Hard maple	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1.3	0.0	0.0	0.1	0.5	0.7
Beech	0.7	0.0	0.1	0.0	0.0	0.6
Sweetgum	10.7	1.2	1.1	0.2	0.6	7.7
Tupelo and blackgum	1.0	0.0	0.2	0.0	0.4	0.4
Ash	2.8	1.5	0.1	0.0	0.0	1.2
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.1	0.0	0.0	0.0	0.0	0.1
Black walnut	0.1	0.0	0.0	0.0	0.0	0.1
Other eastern soft hardwoods	11.6	0.2	0.6	1.9	0.3	8.4
Other eastern hard hardwoods	1.6	0.1	0.2	0.0	0.0	1.4
Eastern noncommercial hardwoods	5.1	0.6	0.1	0.2	1.6	2.6
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	81.1	5.5	8.3	3.1	9.4	54.8
All species	158.9	15.5	12.8	6.2	23.3	101.1

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 Palm species have been included (species codes 906 to 915).



Table A.30.1—Average annual mortality of live trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	6.9	0.1	0.0	0.0	1.8	5.0
Loblolly and shortleaf pines	65.8	9.4	0.7	3.1	12.1	40.5
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.3	0.0	0.0	0.0	0.0	0.3
Other eastern softwoods	0.6	0.0	0.0	0.0	0.0	0.6
Total softwoods	73.6	9.5	0.8	3.1	13.9	46.4
Hardwood						
Select white oaks	4.6	0.0	0.1	0.0	0.3	4.2
Select red oaks	3.0	1.1	0.3	0.0	0.0	1.6
Other white oaks	6.2	0.3	0.1	0.0	0.2	5.6
Other red oaks	24.3	0.3	0.0	0.4	5.2	18.4
Hickory	2.5	0.1	0.4	0.1	0.2	1.7
Hard maple	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	1.3	0.0	0.0	0.1	0.5	0.7
Beech	0.6	0.0	0.0	0.0	0.0	0.6
Sweetgum	9.8	1.2	0.4	0.2	0.6	7.5
Tupelo and blackgum	0.8	0.0	0.0	0.0	0.4	0.4
Ash	2.8	1.5	0.1	0.0	0.0	1.2
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.1	0.0	0.0	0.0	0.0	0.1
Black walnut	0.1	0.0	0.0	0.0	0.0	0.1
Other eastern soft hardwoods	10.9	0.2	0.1	1.9	0.3	8.3
Other eastern hard hardwoods	1.6	0.1	0.1	0.0	0.0	1.4
Eastern noncommercial hardwoods	4.9	0.6	0.0	0.2	1.6	2.5
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	73.7	5.5	1.6	2.9	9.4	54.2
All species	147.3	15.0	2.4	6.0	23.3	100.6

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

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

^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.31—Average annual mortality of growing-stock trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	6.8	0.1	0.0	0.0	1.8	4.9
Loblolly and shortleaf pines	63.3	9.4	0.7	3.1	11.8	38.3
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.3	0.0	0.0	0.0	0.0	0.3
Other eastern softwoods	0.1	0.0	0.0	0.0	0.0	0.1
Total softwoods	70.5	9.5	0.8	3.1	13.6	43.5
Hardwood						
Select white oaks	4.0	0.0	0.1	0.0	0.0	3.9
Select red oaks	3.0	1.1	0.3	0.0	0.0	1.6
Other white oaks	4.2	0.3	0.1	0.0	0.0	3.8
Other red oaks	17.7	0.1	0.0	0.4	4.1	13.0
Hickory	1.8	0.1	0.4	0.1	0.2	1.1
Hard maple	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	0.6	0.0	0.0	0.1	0.4	0.2
Beech	0.3	0.0	0.0	0.0	0.0	0.3
Sweetgum	7.7	1.2	0.2	0.2	0.5	5.6
Tupelo and blackgum	0.8	0.0	0.0	0.0	0.4	0.4
Ash	2.0	1.2	0.0	0.0	0.0	0.8
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	7.0	0.2	0.1	1.9	0.1	4.7
Other eastern hard hardwoods	0.9	0.0	0.1	0.0	0.0	0.8
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	49.9	4.2	1.4	2.7	5.6	36.1
All species	120.4	13.7	2.1	5.8	19.2	79.6

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

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

^a Palm species have been included (species codes 906 to 915).



Table A.31.1—Average annual mortality of sawtimber on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million board feet^b</i>					
Softwood						
Longleaf and slash pines	25.7	0.0	0.0	0.0	5.1	20.5
Loblolly and shortleaf pines	328.1	52.1	2.6	20.4	62.9	190.2
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	1.3	0.0	0.0	0.0	0.0	1.3
Other eastern softwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total softwoods	355.1	52.1	2.6	20.4	68.0	212.0
Hardwood						
Select white oaks	23.0	0.0	0.0	0.0	0.0	23.0
Select red oaks	17.6	6.3	1.5	0.0	0.0	9.8
Other white oaks	15.0	0.6	0.0	0.0	0.0	14.4
Other red oaks	73.1	0.0	0.0	2.0	19.1	52.0
Hickory	5.2	0.0	0.6	0.3	0.0	4.3
Hard maple	0.0	0.0	0.0	0.0	0.0	0.0
Soft maple	0.8	0.0	0.0	0.0	0.8	0.0
Beech	1.0	0.0	0.0	0.0	0.0	1.0
Sweetgum	11.0	0.5	0.8	0.6	0.0	9.1
Tupelo and blackgum	1.3	0.0	0.0	0.0	1.3	0.0
Ash	6.3	5.3	0.0	0.0	0.0	0.9
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.0	0.0	0.0	0.0	0.0	0.0
Black walnut	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern soft hardwoods	15.1	0.0	0.0	4.9	0.0	10.2
Other eastern hard hardwoods	1.6	0.0	0.0	0.0	0.0	1.6
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	171.0	12.7	2.9	7.9	21.3	126.4
All species	526.2	64.8	5.5	28.2	89.3	338.4

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 Palm species have been included (species codes 906 to 915).

^b International ¼-inch rule.



Appendix A—Core Tables

Table A.32—Average annual net removals of live trees by ownership class and land status, Texas, 2008

Ownership class	Land status	
	Timberland	Forest land
	<i>million cubic feet</i>	
U.S. Forest Service		
National forest	0.9	0.9
Total	0.9	0.9
State and local government		
State	0.4	0.4
Total	0.4	0.4
Forest industry		
Corporate	213.1	213.1
Unincorporated partnership/association/club	2.1	2.1
Total	215.2	215.2
Nonindustrial private		
Corporate	152.1	153.4
Conservation/natural resources organization	0.9	0.9
Unincorporated partnership/association/club	16.3	16.3
Individual	347.4	346.7
Total	516.7	517.3
All classes	733.2	733.8

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



Table A.33—Average annual removals of live trees on forest land by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	All size classes	Stand-size class			Nonstocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood					
Longleaf-slash pine	21.5	19.0	2.5	0.0	0.0
Loblolly-shortleaf pine	504.4	364.1	136.8	3.5	0.0
Other eastern softwoods	0.6	0.6	0.0	0.0	0.0
Total softwoods	526.5	383.7	139.4	3.5	0.0
Hardwood					
Oak-pine	72.3	56.1	12.8	3.3	0.0
Oak-hickory	97.9	65.6	24.2	8.1	0.0
Oak-gum-cypress	29.9	23.4	4.9	1.5	0.0
Elm-ash-cottonwood	6.2	5.9	0.3	0.0	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.8	0.0	0.8	0.0	0.0
Total hardwoods	207.1	151.0	43.1	12.9	0.0
Nonstocked	0.2	0.0	0.0	0.0	0.2
All groups	733.8	534.7	182.5	16.4	0.2

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.

^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.33.1—Average annual removals of live trees on timberland by forest-type group and stand-size class, Texas, 2008

Forest-type group ^a	All size classes	Stand-size class			Nonstocked
		Large diameter	Medium diameter	Small diameter	
<i>million cubic feet</i>					
Softwood types					
Longleaf-slash pine	21.5	19.0	2.5	0.0	0.0
Loblolly-shortleaf pine	504.4	364.1	136.8	3.5	0.0
Other eastern softwoods	0.6	0.6	0.0	0.0	0.0
Total softwoods	526.5	383.7	139.4	3.5	0.0
Hardwood types					
Oak-pine	71.0	54.8	12.8	3.3	0.0
Oak-hickory	97.9	65.6	24.2	8.1	0.0
Oak-gum-cypress	29.9	23.4	4.9	1.5	0.0
Elm-ash-cottonwood	6.2	5.9	0.3	0.0	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	1.5	0.0	1.5	0.0	0.0
Total hardwoods	206.5	149.7	43.8	12.9	0.0
Nonstocked	0.2	0.0	0.0	0.0	0.2
All groups	733.2	533.4	183.2	16.4	0.2

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.

^a Palm species have been included (species codes 906 to 915).



Table A.34—Average annual removals of live trees on forest land by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	21.5	0.0	0.0	0.0	12.6	8.8
Loblolly and shortleaf pines	524.5	0.9	0.0	0.4	182.2	341.0
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern softwoods	1.7	0.0	0.0	0.0	0.2	1.5
Total softwoods	547.6	0.9	0.0	0.4	195.0	351.3
Hardwood						
Select white oaks	8.9	0.0	0.0	0.0	0.6	8.3
Select red oaks	8.3	0.0	0.0	0.0	2.2	6.1
Other white oaks	29.2	0.0	0.0	0.0	2.9	26.4
Other red oaks	58.3	0.0	0.0	0.0	4.4	53.9
Hickory	9.3	0.0	0.0	0.0	1.2	8.0
Hard maple	0.6	0.0	0.0	0.0	0.0	0.6
Soft maple	1.0	0.0	0.0	0.0	0.0	1.0
Beech	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgum	41.3	0.0	0.0	0.0	5.4	36.0
Tupelo and blackgum	2.6	0.0	0.0	0.0	0.4	2.2
Ash	2.9	0.0	0.0	0.0	0.9	2.0
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	1.1	0.0	0.0	0.0	0.0	1.1
Black walnut	0.5	0.0	0.0	0.0	0.0	0.5
Other eastern soft hardwoods	17.0	0.0	0.0	0.0	1.3	15.7
Other eastern hard hardwoods	1.1	0.0	0.0	0.0	0.1	1.0
Eastern noncommercial hardwoods	3.9	0.0	0.0	0.0	0.7	3.3
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	186.1	0.0	0.0	0.0	20.1	166.0
All species	733.8	0.9	0.0	0.4	215.2	517.3

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 Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.34.1—Average annual removals of live trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	21.5	0.0	0.0	0.0	12.6	8.8
Loblolly and shortleaf pines	524.1	0.9	0.0	0.4	182.2	340.6
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern softwoods	1.7	0.0	0.0	0.0	0.2	1.5
Total softwoods	547.3	0.9	0.0	0.4	195.0	351.0
Hardwood						
Select white oaks	8.9	0.0	0.0	0.0	0.6	8.3
Select red oaks	8.3	0.0	0.0	0.0	2.2	6.1
Other white oaks	29.2	0.0	0.0	0.0	2.9	26.4
Other red oaks	57.4	0.0	0.0	0.0	4.4	53.0
Hickory	9.3	0.0	0.0	0.0	1.2	8.0
Hard maple	0.6	0.0	0.0	0.0	0.0	0.6
Soft maple	1.0	0.0	0.0	0.0	0.0	1.0
Beech	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgum	41.8	0.0	0.0	0.0	5.4	36.4
Tupelo and blackgum	2.7	0.0	0.0	0.0	0.4	2.3
Ash	2.9	0.0	0.0	0.0	0.9	2.0
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	1.1	0.0	0.0	0.0	0.0	1.1
Black walnut	0.5	0.0	0.0	0.0	0.0	0.5
Other eastern soft hardwoods	16.9	0.0	0.0	0.0	1.3	15.6
Other eastern hard hardwoods	1.1	0.0	0.0	0.0	0.1	1.0
Eastern noncommercial hardwoods	4.1	0.0	0.0	0.0	0.7	3.4
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	185.9	0.0	0.0	0.0	20.1	165.7
All species	733.2	0.9	0.0	0.4	215.2	516.7

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

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

^a Palm species have been included (species codes 906 to 915).



Table A.35—Average annual removals of growing-stock trees on timberland by species group and ownership group, Texas, 2008

Species group ^a	Ownership group					
	All ownerships	U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
	<i>million cubic feet</i>					
Softwood						
Longleaf and slash pines	21.4	0.0	0.0	0.0	12.6	8.8
Loblolly and shortleaf pines	516.5	0.9	0.0	0.4	180.6	334.6
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern softwoods	1.0	0.0	0.0	0.0	0.0	1.0
Total softwoods	539.0	0.9	0.0	0.4	193.3	344.4
Hardwood						
Select white oaks	8.0	0.0	0.0	0.0	0.5	7.4
Select red oaks	7.3	0.0	0.0	0.0	1.4	5.9
Other white oaks	25.4	0.0	0.0	0.0	1.2	24.1
Other red oaks	50.7	0.0	0.0	0.0	3.9	46.9
Hickory	7.6	0.0	0.0	0.0	1.2	6.4
Hard maple	0.6	0.0	0.0	0.0	0.0	0.6
Soft maple	0.6	0.0	0.0	0.0	0.0	0.6
Beech	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgum	38.3	0.0	0.0	0.0	5.0	33.3
Tupelo and blackgum	2.4	0.0	0.0	0.0	0.4	2.0
Ash	2.3	0.0	0.0	0.0	0.8	1.5
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.4	0.0	0.0	0.0	0.0	0.4
Black walnut	0.3	0.0	0.0	0.0	0.0	0.3
Other eastern soft hardwoods	12.4	0.0	0.0	0.0	1.1	11.3
Other eastern hard hardwoods	0.6	0.0	0.0	0.0	0.1	0.5
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	156.9	0.0	0.0	0.0	15.6	141.3
All species	695.9	0.9	0.0	0.4	208.9	485.7

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

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

^a Palm species have been included (species codes 906 to 915).



Appendix A—Core Tables

Table A.35.1—Average annual removals of sawtimber on timberland by species group and ownership group, Texas, 2008

Species group ^a	All ownerships	Ownership group				
		U.S. Forest Service	Other Federal	State and local government	Forest industry	Nonindustrial private
<i>million board feet^b</i>						
Softwood						
Longleaf and slash pines	94.7	0.0	0.0	0.0	56.5	38.2
Loblolly and shortleaf pines	1,980.1	0.0	0.0	2.5	627.8	1,349.9
Other yellow pines	0.0	0.0	0.0	0.0	0.0	0.0
Cypress	0.0	0.0	0.0	0.0	0.0	0.0
Other eastern softwoods	2.2	0.0	0.0	0.0	0.0	2.2
Total softwoods	2,077.0	0.0	0.0	2.5	684.3	1,390.3
Hardwood						
Select white oaks	23.2	0.0	0.0	0.0	0.0	23.2
Select red oaks	31.1	0.0	0.0	0.0	5.7	25.4
Other white oaks	90.0	0.0	0.0	0.0	1.5	88.5
Other red oaks	176.2	0.0	0.0	0.0	2.1	174.1
Hickory	24.0	0.0	0.0	0.0	5.1	18.9
Hard maple	1.3	0.0	0.0	0.0	0.0	1.3
Soft maple	0.6	0.0	0.0	0.0	0.0	0.6
Beech	0.0	0.0	0.0	0.0	0.0	0.0
Sweetgum	98.3	0.0	0.0	0.0	13.9	84.4
Tupelo and blackgum	4.4	0.0	0.0	0.0	0.7	3.8
Ash	5.6	0.0	0.0	0.0	2.5	3.1
Cottonwood and aspen	0.0	0.0	0.0	0.0	0.0	0.0
Basswood	0.8	0.0	0.0	0.0	0.0	0.8
Black walnut	0.6	0.0	0.0	0.0	0.0	0.6
Other eastern soft hardwoods	21.6	0.0	0.0	0.0	1.0	20.6
Other eastern hard hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Eastern noncommercial hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Western woodland hardwoods	0.0	0.0	0.0	0.0	0.0	0.0
Total hardwoods	477.9	0.0	0.0	0.0	32.5	445.4
All species	2,554.9	0.0	0.0	2.5	716.8	1,835.6

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

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

^a Palm species have been included (species codes 906 to 915).

^b International ¼-inch rule.



Appendix B—Inventory Methods

The following is a general description of the sample design and methods used to derive forest resource estimates provided in this report. Current procedures were implemented during the 2003 survey. Readers wishing to learn about how current methodology differs from the older surveys should refer to the inventory methods section of the 2003 State report (Rudis and others 2008). These changes necessitate caution when making long-term comparisons with previous forest resource estimates.

One of the major impacts on the data interpretation and analysis is the startup of central and west Texas in 2004. Adding to the complexity, FIA plots in the western region (central and west Texas) will be measured on a 10-year cycle, in contrast with the 5-year cycle for east Texas plots.

Sample Design

In 1995, FIA began efforts to standardize an inventory design to be used in all States. The FIA inventory today is a three-phase, fixed-plot sample survey (Bechtold and Patterson 2005). The three phases of the current sampling method are arranged on a hexagonal grid design, with each successive phase sampled with less intensity. There are 16 phase 2 (P2) hexagons for every phase 3 (P3) hexagon, and 27 phase 1 (P1) hexagons for every P2 hexagon. P1 hexagons represent about 222 acres, while P2 and P3 hexagons represent roughly 6,000 and 96,000 acres, respectively.

The P1 stratified estimation procedures reduce variance associated with estimates of forest land area and produce more-precise estimates than simple random sampling. A statistical estimation technique is used to classify digital satellite imagery and initially stratify the land base as forest or nonforest to assign a representative acreage to each sample plot. Pixels within 0.04 mile (2 pixel widths) of a forest/nonforest boundary form two additional strata: (1) forest edge, and (2) nonforest edge. Forest pixels within 0.04 mile of the boundary on the forest side are classified as forest edge while pixels within 0.04 mile of the boundary on the nonforest side are classified as nonforest edge. The estimated population total for the variable is the sum across all strata of the product of each stratum's area (from the pixel count) and variable's mean per unit area (from plot measurements) for the stratum.

The P2 sample design utilizes a fixed-radius plot consisting of four subplots spaced 120 feet apart in a triangular fashion. The cumulative sample area of these four subplots is 1/6 of an acre. The cluster plot is a 1.5-acre circle that circumscribes the outer boundary of the three outer subplots. Trees ≥ 5 inches d.b.h. are measured on each subplot. Trees ≥ 1.0 but < 5.0 inches d.b.h. and seedlings (< 1.0 -inch d.b.h.) are measured on a microplot (1/300 of an acre; 6.8-foot radius) on each of the four subplots. The microplot is offset 12 feet at 90 degrees from the subplot center. A unique feature of this plot design is in the mapping of different land use and forest conditions that are encountered on the cluster plot. Since the plots are placed on



Appendix B—Inventory Methods

the ground without bias, i.e., systematically but at a scale large enough to be considered random, there is a probability that the cluster plot will straddle more than one type of land use or forest condition. When this does occur, a boundary is drawn across the plot so that the different homogeneous units are identified and isolated.

There are two steps in the mapping process. The first step involves identifying forest and nonforest areas on the plot and establishing a boundary line on the plot if both are present. The second step involves identifying homogeneous areas in the forested portion of the plot based on six factors: (1) forest type, (2) stand size, (3) ownership, (4) stand density, (5) regeneration status, and (6) reserved status. These, too, are mapped into separate entities.

P3 procedures involve sampling on a subset (1/16th) of the P2 sample locations. P3 measurements are combined with P2 measurements to assess the overall health of forested ecosystems within each State. P3 data collection includes variables pertaining to tree crown health, down woody material (DWM), foliar ozone injury, lichen diversity, and soil composition. Tree crown health, DWM, and soil composition measurements are collected by using the same plot design used during P2 data collection, while lichen data are collected within a 120-foot-radius circle centered on subplot one of each FIA P3 field plot.

Davis Mountains, TX. (photo by Ron Billings, Texas Forest Service)





Appendix C—Reliability of the Data

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

Measurement error is also called nonsampling or data acquisition error. These are errors that arise in the acquisition, recording, or editing of statistical data (Burt and Barber 1996). There are three elements of measurement error: (1) biased error, caused by instruments not properly calibrated; (2) compensating error, caused by instruments of moderate precision; and (3) accidental error, caused by human error in measuring, recording, and compiling. All of these are held to a minimum by a system, the FIA quality assurance (QA) program that incorporates training, check plots, and editing and checking for consistency. The goal of the QA program is to provide a framework to assure the production of complete, accurate, and unbiased forest assessments for given standards.

It is not possible to determine measurement error statistically, but it is held to a minimum level through a number of quality control procedures. These methods include use of nationally standardized field manuals, use of portable data recorders (PDRs), thorough entry-level training, periodic review training, supervision, use of check plots, editing checks, and an emphasis on careful work. Additionally, data quality is assessed and documented by using performance measurements and post-survey assessments. These assessments are then used to identify areas of the data collection process that need improvement or refinement in order to meet quality objectives of the program.

Editing checks in the PDR and office screen out logical and data entry inconsistencies and errors for all plots. Use of PDRs also helps ensure that specified procedures are followed. The minimum national standards for annual training of field crews are: (1) a minimum of 40 hours for new employees, and (2) a minimum of 8 hours for returning employees. Field crew members are certified on a test plot. All crews are required to have at least one certified person present on the plot at all times.

Field audits consist of hot checks, cold checks, and blind checks. A hot check is an inspection normally done as part of the training process. The inspector is present with the crew to document crew performance as plots are measured. The recommended intensity for hot checks is 2 percent of the plots installed.

Cold checks are done at regular intervals throughout the field season. The crew that installed the plot is not present at the time of inspection and does not know when or which plots will be remeasured. The inspector visits the completed plot, evaluates the crew's data collection, and notes corrections where necessary. The recommended intensity for cold checks is 5 percent of the plots installed.

A blind check is a complete reinstallation measurement of a previously completed plot. However, the QA crew performs the remeasurement without the previously recorded data. This type of blind measurement provides a direct, unbiased observation of measurement precision from two independent crews. Plots selected for blind checks are chosen to be a representative subsample of all plots measured and are randomly selected. Blind checks are planned to take place within 2 weeks of the date of the field measurement. The recommended intensity for blind checks is 3 percent of the plots installed.



Sampling Error

A measure of reliability of inventory statistics is provided by sampling errors. 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, meaning that the chances are two out of three that the true population value is within the limits indicated by a confidence interval.

FIA inventories supported by the full complement of sample plots are designed to achieve reliable statistics at the survey unit and State levels. However, users should note that sampling error increases as the area considered decreases in magnitude. Sampling errors and associated confidence intervals are often unacceptably high for small components of the total resource.

Sampling errors (in percent) and associated confidence intervals around the sample estimates for timberland area, inventory volumes, and components of change are presented in the following table C.1.

Statistical confidence may be computed for any subdivision of the State totals by using the following formula. Sampling

errors obtained from 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 State total

SE_t = sampling error for State total

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

X_t = total area or volume for State

For example, the estimate of sampling error for volume of softwood on timberland is computed as:

$$SE_s = 2.09 \frac{\sqrt{19,606.9}}{\sqrt{9,708.3}} = 2.97$$

Thus, the sampling error is 2.97 percent, and the resulting confidence interval (two times out of three) for softwood live-tree inventory on public timberland is 9,708.3 ± 288.3 million cubic feet.

Table C.1—Statistical reliability estimates, Texas, 2008

Variable	Sample estimate	Sampling error percent
<i>Area (thousand acres)</i>		
Forest land	62,481.0	0.90
Timberland	14,462.0	1.35
Reserved forest land	297.5	18.34
Other forest land	47,721.5	1.17
<i>All-live tree (million trees)</i>		
Inventory (forest land)	19,935.5	1.51
Inventory (timberland)	8,569.5	1.98
<i>All-live volume (million cubic feet)</i>		
Inventory (forest land)	32,354.0	1.54
Inventory (timberland)	19,606.9	2.09



Table D.1—Tree species by scientific and common name recorded on forest sampled conditions and ≥1.0 inch d.b.h., Texas, 2008

Scientific name ^a	Common name	Scientific name ^a	Common name
<i>Acer barbatum</i>	Florida maple	<i>Liquidambar styraciflua</i>	Sweetgum
<i>A. negundo</i>	Boxelder	<i>Maclura pomifera</i>	Osage-orange
<i>A. rubrum</i>	Red maple	<i>Magnolia grandiflora</i>	Southern magnolia
<i>Aesculus glabra</i> var. <i>arguta</i>	Texas buckeye ^b	<i>M. spp.</i>	Magnolia spp. ^b
<i>Ailanthus altissima</i>	Ailanthus ^b	<i>M. virginiana</i>	Sweetbay
<i>Albizia julibrissin</i>	Mimosa/silktree ^b	<i>Melia azedarach</i>	Chinaberry
<i>Amelanchier</i> spp.	Serviceberry ^b	<i>Morus alba</i>	White mulberry ^b
<i>Asimina triloba</i>	Pawpaw ^b	<i>M. rubra</i>	Red mulberry
<i>Betula nigra</i>	River birch	<i>M. spp.</i>	Mulberry spp. ^b
<i>B. spp.</i>	Birch spp. ^b	<i>J. nigra</i>	Black walnut
<i>Bumelia lanuginosa</i>	Chittamwood	<i>Juniperus silicicola</i>	Southern redcedar ^b
<i>Carpinus caroliniana</i>	American hornbeam	<i>J. virginiana</i>	Eastern redcedar
<i>Carya aquatica</i>	Water hickory	<i>Nyssa aquatica</i>	Water tupelo
<i>C. cordiformis</i>	Bitternut hickory	<i>N. sylvatica</i>	Blackgum
<i>C. glabra</i>	Pignut hickory	<i>N. sylvatica</i> var. <i>biflora</i>	Swamp tupelo
<i>C. illinoensis</i>	Pecan	<i>Ostrya virginiana</i>	Eastern hophornbeam
<i>C. laciniosa</i>	Shellbark hickory ^b	<i>Oxydendrum arboreum</i>	Sourwood ^b
<i>C. myristiciformis</i>	Nutmeg hickory ^b	<i>Persea borbonia</i>	Redbay
<i>C. ovata</i>	Shagbark hickory	<i>Pinus echinata</i>	Shortleaf pine
<i>C. spp.</i>	Hickory spp.	<i>P. elliotii</i>	Slash pine
<i>C. texana</i>	Black hickory	<i>P. palustris</i>	Longleaf pine
<i>C. tomentosa</i>	Mockernut hickory	<i>P. taeda</i>	Loblolly pine
<i>Castanea pumila</i>	Allegheny chinkapin ^b	<i>P. virginiana</i>	Virginia pine
<i>Catalpa bignonioides</i>	Southern catalpa	<i>Planera aquatica</i>	Water-elm, planertree
<i>Celtis laevigata</i>	Sugarberry	<i>Platanus occidentalis</i>	Sycamore
<i>C. occidentalis</i>	Hackberry	<i>Populus deltoides</i>	Eastern cottonwood
<i>Cercis canadensis</i>	Eastern redbud	<i>P. spp.</i>	Cottonwood and poplar spp.
<i>Cornus florida</i>	Flowering dogwood	<i>Prosopis pubescens</i>	Screwbean mesquite ^b
<i>Crataegus crus-galli</i>	Cockspur hawthorn ^b	<i>Prunus americana</i>	Wild plum ^b
<i>C. mollis</i>	Downy hawthorn ^b	<i>P. serotina</i>	Black cherry
<i>C. spp.</i>	Hawthorn	<i>P. spp.</i>	Cherry and plum other than black ^b
<i>Diospyros virginiana</i>	Common persimmon	<i>P. virginiana</i>	Chokecherry ^b
<i>Fagus grandifolia</i>	American beech	<i>Quercus alba</i>	White oak
<i>Fraxinus americana</i>	White ash	<i>Q. falcata</i> var. <i>falcata</i>	Southern red oak
<i>F. caroliniana</i>	Carolina ash ^b	<i>Q. falcata</i> var. <i>pagodifolia</i>	Cherrybark oak
<i>F. pennsylvanica</i>	Green ash	<i>Q. incana</i>	Bluejack oak
<i>Gleditsia aquatica</i>	Waterlocust	<i>Q. laevis</i>	Turkey oak ^b
<i>G. triacanthos</i>	Honeylocust	<i>Q. laurifolia</i>	Laurel oak
<i>Ilex opaca</i>	American holly	<i>Q. lyrata</i>	Overcup oak
<i>Juglans cinerea</i>	Butternut ^b		

continued



Appendix D—Species List

Table D.1—Tree species by scientific and common name recorded on forest sampled conditions and ≥ 1.0 inch d.b.h., Texas, 2008 (continued)

Scientific name ^a	Common name	Scientific name ^a	Common name
<i>Quercus marilandica</i>	Blackjack oak	<i>Salix amygdaloides</i>	Peachleaf willow ^b
<i>Q. michauxii</i>	Swamp chestnut oak	<i>S. nigra</i>	Black willow
<i>Q. minima</i>	Dwarf live oak ^b	<i>S. spp.</i>	Willow
<i>Q. muehlenbergii</i>	Chinkapin oak	<i>Sapindus drummondii</i>	Western soapberry ^b
<i>Q. nigra</i>	Water oak	<i>Sapium sebiferum</i>	Chinese tallowtree
<i>Q. nuttallii</i>	Nuttall oak	<i>Sassafras albidum</i>	Sassafras
<i>Q. phellos</i>	Willow oak	<i>Taxodium distichum</i>	Baldcypress
<i>Q. rubra</i>	Northern red oak ^b	<i>Tilia americana</i>	American basswood
<i>Q. shumardii</i>	Shumard oak	<i>T. americana</i> var.	
<i>Q. spp.</i>	Oak spp.—deciduous	<i>caroliniana</i>	Carolina basswood
<i>Q. stellata</i>	Post oak	<i>Ulmus alata</i>	Winged elm
<i>Q. stellata</i> var. <i>margaretta</i>	Dwarf post oak ^b	<i>Ulmus americana</i>	American elm
<i>Q. stellata</i> var. <i>mississippiensis</i>	Delta post oak	<i>U. crassifolia</i>	Cedar elm
<i>Q. velutina</i>	Black oak	<i>U. pumila</i>	Siberian elm ^b
<i>Q. virginiana</i>	Live oak	<i>U. rubra</i>	Slippery elm
<i>Robinia pseudoacacia</i>	Black locust	<i>U. spp.</i>	Elm spp.
<i>Salix alba</i>	White willow ^b		

D.b.h.= diameter at breast height.

^a Little (1979).

^b Taxa with an average basal area <1.0 square feet per 1,000 acres.



Table E.1—Industries included in the forest products sector by group category and with corresponding NAICS and IMPLAN sector codes and general description

Forest products sector	NAICS 2007 code	IMPLAN sector	Description
Timber logging	1131-2	15	Forestry, forest products, and timber tract production
	1133	16	Commercial logging
Primary			
Sawmill panel	3211	95	Sawmills and wood preservation
	321211-2	96	Veneer and plywood manufacturing
	321219	98	Reconstituted wood product manufacturing
Pulp	32211	104	Pulpmills
	32212	105	Paper mills
	32213	106	Paperboard mills
Secondary			
Durable goods	321213-4	97	Engineered wood member and truss manufacturing
	32191	99	Wood windows and doors and millwork manufacturing
	32192	100	Wood container and pallet manufacturing
	321991	101	Manufactured home (mobile home) manufacturing
	321992	102	Prefabricated wood building manufacturing
	321999	103	All other miscellaneous wood product manufacturing
	33711	295	Wood kitchen cabinet and countertop manufacturing
	337122	297	Nonupholstered wood household furniture manufacturing
	337129	300	Wood television, radio, and sewing machine cabinet manufacturing
337211-12	301	Office furniture and custom architectural woodwork and millwork manufacturing	
Nondurable goods	32221	107	Paperboard container manufacturing
	322221-2	108	Coated and laminated paper, packaging paper and plastics film manufacturing
	322223-6	109	All other paper bag and coated and treated paper manufacturing
	32223	110	Stationery product manufacturing
	322291	111	Sanitary paper product manufacturing
	322299	112	All other converted paper product manufacturing

NAICS = North American industry classification system; IMPLAN = IMPact analysis for PLANning.



Appendix E—Economic Impact Tables

Table E.2—Texas counties sorted by FIA survey unit

Southeast	North Central	South	West Central	Northwest	Northwest (cont'd)
Angelina	Austin	Aransas	Bandera	Andrews	Lynn
Chambers	Bastrop	Atascosa	Bell	Archer	Martin
Grimes	Brazos	Bee	Bexar	Armstrong	Midland
Hardin	Burleson	Brazoria	Blanco	Bailey	Mitchell
Harris	Caldwell	Brooks	Bosque	Baylor	Moore
Houston	Clay	Calhoun	Brown	Borden	Motley
Jasper	Collin	Cameron	Burnet	Briscoe	Nolan
Jefferson	Colorado	Dimmit	Callahan	Carson	Ochiltree
Leon	Cooke	Duval	Coleman	Castro	Oldham
Liberty	Dallas	Fort Bend	Comal	Childress	Parmer
Madison	Delta	Frio	Comanche	Cochran	Potter
Montgomery	Denton	Galveston	Concho	Coke	Randall
Newton	DeWitt	Hidalgo	Coryell	Collingsworth	Reagan
Orange	Ellis	Jackson	Crockett	Cottle	Roberts
Polk	Falls	Jim Hogg	Eastland	Crosby	Scurry
Sabine	Fannin	Jim Wells	Edwards	Dallam	Shackelford
San Augustine	Fayette	Karnes	Erath	Dawson	Sherman
San Jacinto	Freestone	Kenedy	Gillespie	Deaf Smith	Sterling
Trinity	Goliad	Kleberg	Hamilton	Dickens	Stonewall
Tyler	Gonzales	La Salle	Hays	Donley	Swisher
Walker	Grayson	Live Oak	Hood	Fisher	Taylor
Waller	Guadalupe	McMullen	Kendall	Floyd	Terry
	Hill	Matagorda	Kerr	Foard	Throckmorton
Northeast	Hopkins	Maverick	Kimble	Gaines	Tom Green
Anderson	Hunt	Nueces	Kinney	Garza	Wheeler
Bowie	Jack	Refugio	Lampasas	Glasscock	Wichita
Camp	Johnson	San Patricio	Llano	Gray	Wilbarger
Cass	Kaufman	Starr	McCulloch	Hale	Yoakum
Cherokee	Lamar	Victoria	McLennan	Hall	
Franklin	Lavaca	Webb	Mason	Hansford	West
Gregg	Lee	Wharton	Medina	Hardeman	Brewster
Harrison	Limestone	Willacy	Menard	Hartley	Crane
Henderson	Milam	Wilson	Mills	Haskell	Culberson
Marion	Montague	Zapata	Palo Pinto	Hemphill	Ector
Morris	Navarro	Zavala	Real	Hockley	El Paso
Nacogdoches	Parker		Runnels	Howard	Hudspeth
Panola	Rains		San Saba	Hutchinson	Jeff Davis
Red River	Robertson		Schleicher	Irion	Loving
Rusk	Rockwall		Somervell	Jones	Pecos
Shelby	Tarrant		Stephens	Kent	Presidio
Smith	Washington		Sutton	King	Reeves
Titus	Wise		Travis	Knox	Terrell
Upshur	Young		Uvalde	Lamb	Upton
Van Zandt			Val Verde	Lipscomb	Ward
Wood			Williamson	Lubbock	Winkler



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This bulletin describes forest resources of the State of Texas at the time of the 2008 forest inventory. This bulletin addresses forest area, volume, growth, removals, mortality, forest health, timber product output, and the economy of the forest sector.

Keywords: Annual inventory, FIA, forest health, ownership, Texas, timber product output.



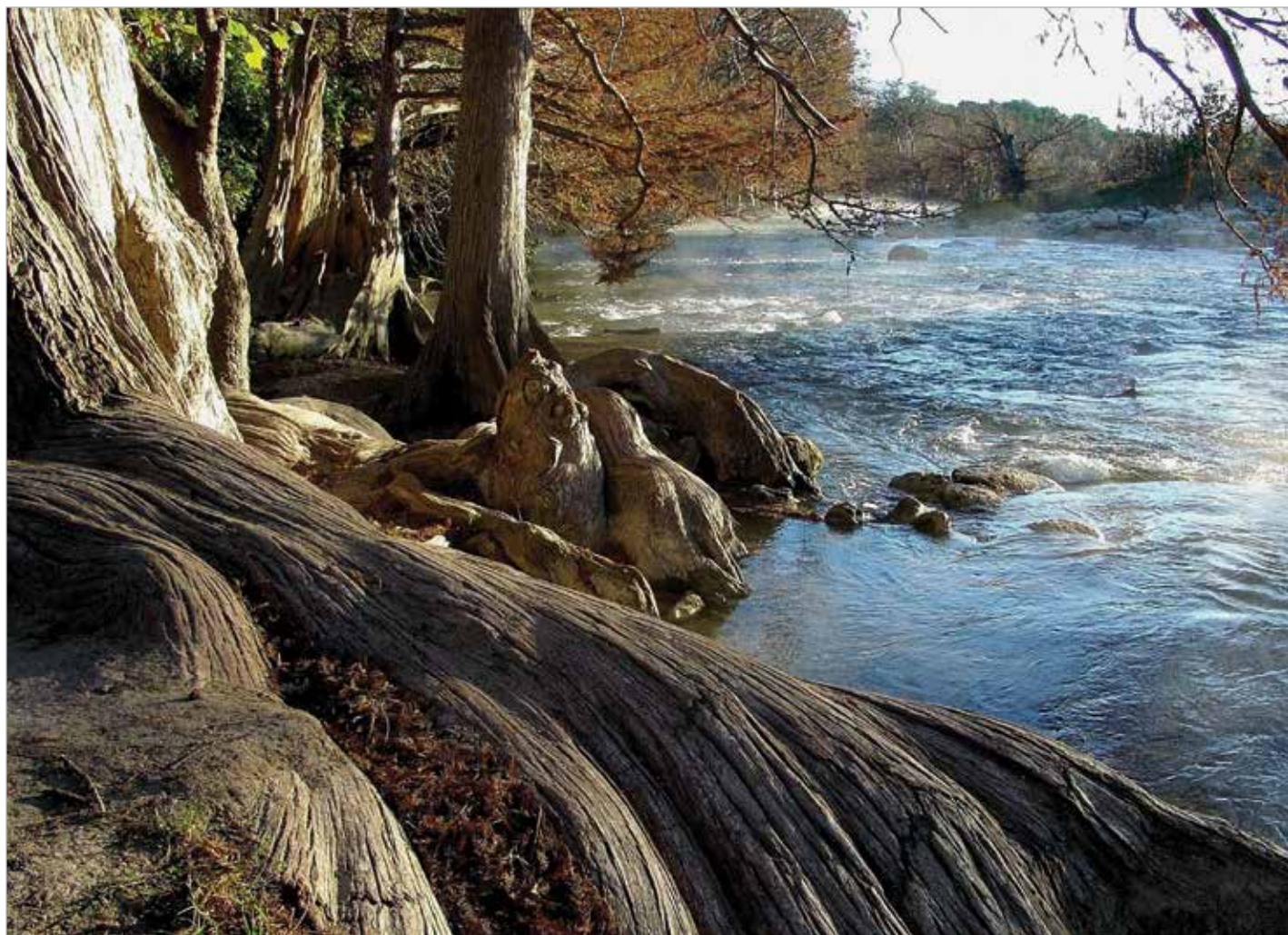
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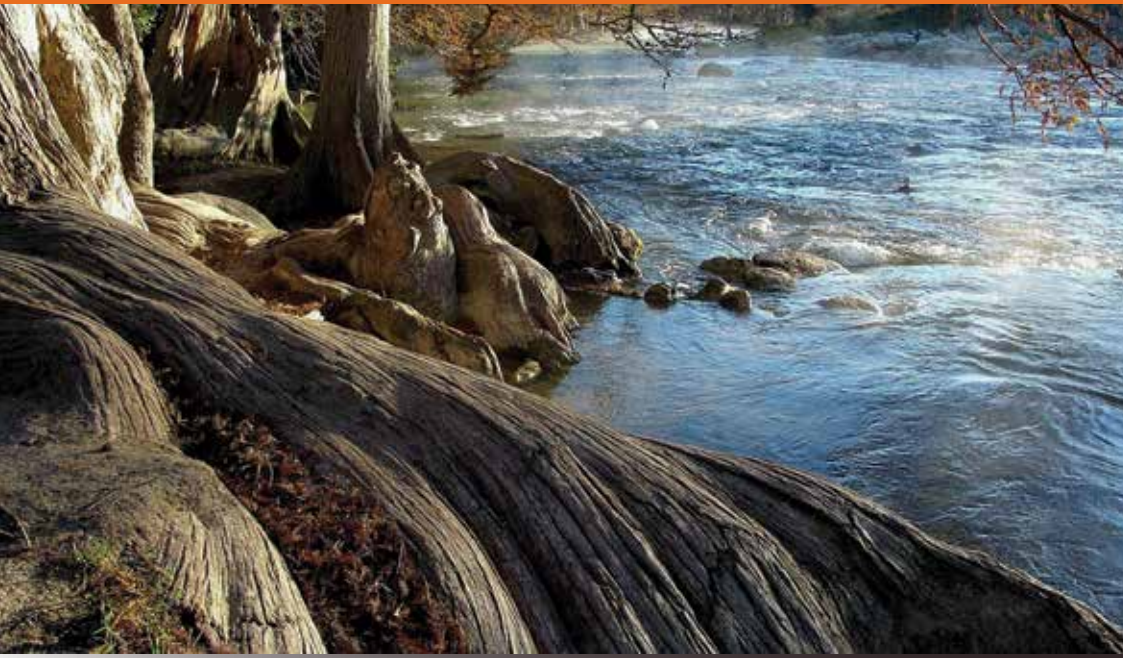


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