



FORESTS OF east Texas, 2013

This resource update provides an overview of forest resources in east Texas based on an inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program at the Southern Research Station in cooperation with the Texas A&M Forest Service. Forest resource estimates are based on field data collected using the FIA annualized sample design and are updated yearly. The estimates presented in this update are for the measurement year 2013 with comparisons made to data reported in previous years, and are limited to the southeast and northeast survey units of the State. The data used in this publication were accessed from the FIA Database on September 2, 2014.

Overview

Overall, the forest resources of east Texas have remained stable since 2012. There has been little change in the amount of forest land or in the amount of timberland (a subset of productive forest land not reserved from potential timber harvesting) (table 1). As would be expected, total numbers of trees and the amount of wood volume they hold have not changed substantially since 2012. This short-term stability reflects the longer term trends reported in Brandeis and

others (2014) and Cooper and Bentley (2012), where forest area remained stable, and wood volumes increased from 1975 to 2003 then changed relatively little to the present.

A mixed hardwood and loblolly pine stand in Houston County, Texas.
(photo courtesy of Ron Billings, Texas A&M Forest Service)

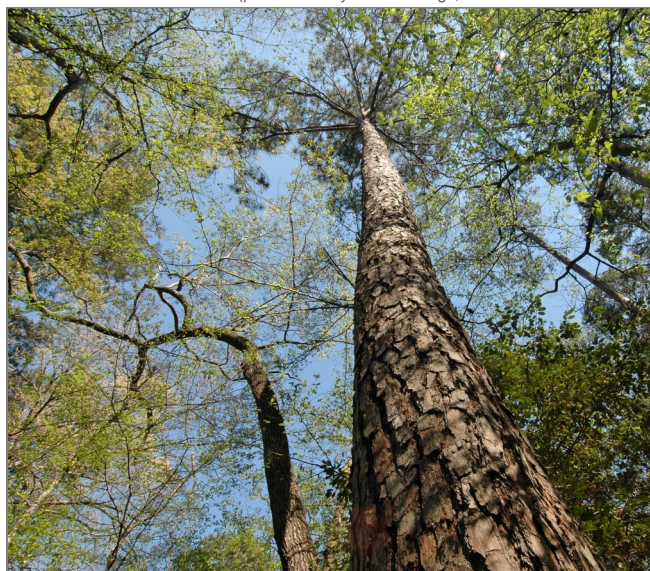


Table 1—East Texas forest statistics, change between 2012 and 2013

Forest statistics	2012 estimate	Sampling error (percent)	2013 estimate	Sampling error (percent)	Change since 2012
Forest land					
Area (<i>thousand acres</i>)	12,071.37	0.88	12,086.35	0.89	14.98
Number of live trees ≥1.0 inch d.b.h. (<i>million trees</i>)	7,696.06	1.95	7,593.06	1.95	-103.00
Net volume of live trees ≥5.0 inches d.b.h. (<i>million cubic feet</i>)	17,856.34	2.02	17,714.73	2.00	-141.61
Live tree aboveground biomass (<i>thousand oven-dry tons</i>)	447,749.74	1.76	443,347.03	1.76	-4,402.70
Net annual growth of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	694.30	3.89	614.39	4.53	-79.91
Annual removals of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	620.26	5.71	571.93	5.86	-48.33
Annual mortality of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	297.85	5.68	343.65	5.64	45.81
Timberland					
Area (<i>thousand acres</i>)	11,892.45	0.93	11,906.54	0.93	14.09
Number of live trees ≥1.0 inch d.b.h. (<i>million trees</i>)	7,595.29	1.98	7,494.72	1.99	-100.56
Net volume of live trees ≥5.0 inches d.b.h. (<i>million cubic feet</i>)	17,447.53	2.06	17,320.26	2.04	-127.27
Live tree aboveground biomass (<i>thousand oven-dry tons</i>)	438,028.79	1.80	433,926.91	1.80	-4,101.88
Net annual growth of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	700.44	3.80	623.01	4.48	-77.42
Annual removals of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	627.54	5.67	577.21	5.82	-50.33
Annual mortality of live trees ≥5.0 inches d.b.h. (<i>million cubic feet per year</i>)	284.96	5.75	332.23	5.78	47.27



Forest Area

The 254 counties of Texas are consolidated into seven FIA survey units—Southeast (unit 1), Northeast (unit 2), North Central (unit 3), South (unit 4), West Central (unit 5), Northwest (unit 6), and West (unit 7). East Texas is made up of units 1 and 2 with a total of 43 counties, while central and west Texas consist of units 3 through 7 (fig. 1). In 2013, forest area stayed near 12.1 million acres, covering 57 percent of Southeast Texas and 43 percent of Northeast Texas. Hardwood forest types make up the majority of timberland area in east Texas, accounting for 6.4 million acres, compared to 5.4 million acres for softwood forest types. Loblolly-shortleaf pine is the most abundant forest-type group, with 5.3 million acres accounting for 44 percent of all timberland (fig. 2) and 97 percent of softwood timberland. Loblolly-shortleaf pine stands on nonindustrial private land alone accounted for 37 percent of the timberland acres. East Texas’ softwood timberland area is split nearly equally between natural stands (2.6 million acres, or 49 percent) and planted stands (2.8 million acres, or 51 percent).



Figure 1—Forest survey regions in Texas.

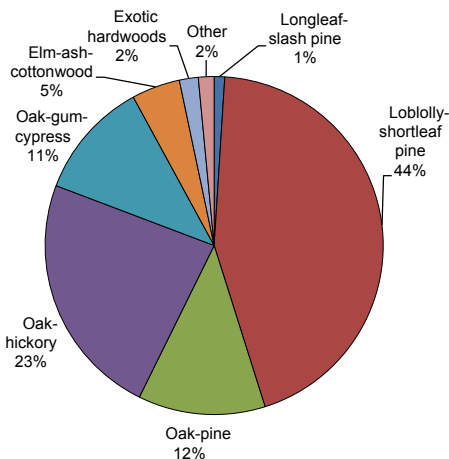


Figure 2—Distribution of timberland area by forest-type group, east Texas, 2013.

Oak-hickory is the predominant hardwood forest-type group with 2.8 million acres (covering 23 percent of the timberland) followed by oak-pine (1.4 million acres) and oak-gum-cypress (1.3 million acres) (fig. 2). Areas within the non-pine forests categorized in the survey as “artificial regeneration” are actually transition areas, as opposed to planted hardwoods. These include recently harvested and re-planted pine plantations with hardwood remnants left onsite that temporarily outnumber the pines.

Ownership of east Texas’ 11.9 million acres of timberland has remained relatively stable across most ownership groups since 2012, with notable exceptions. Nonindustrial private landowners still control the majority (55 percent) of east Texas’ timberland, and public agencies (Federal, State, and other) hold <9 percent (fig. 3). The exceptions to ownership stability are on corporately held lands. The trend observed in recent years of forest industry reducing timberland ownership continued into 2013 (fig. 4). Forest industry-held land has decreased by 92 percent since 2004, making up just over 2 percent of timberland in 2013. Over the same period, other corporate owners, including Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs), increased their share of timberland by 257 percent to hold 34 percent of timberland.

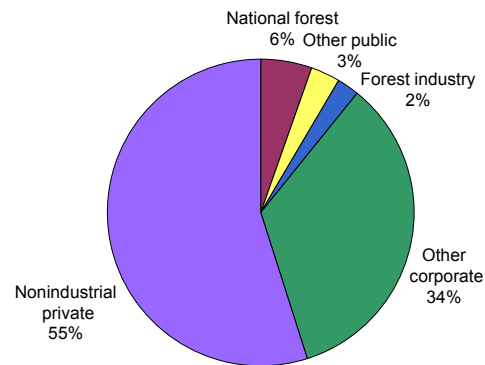


Figure 3—Distribution of timberland area by ownership class, east Texas, 2013.

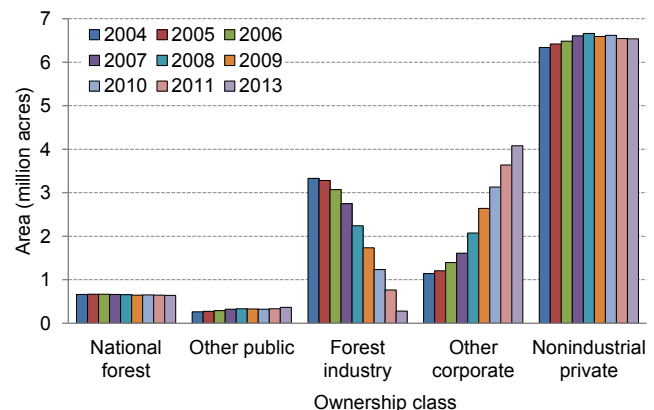


Figure 4—Timberland by ownership class and survey year, east Texas, 2004–13.

Volume, Biomass, and Trends

Total all-live volume on timberland was 17.3 billion cubic feet. Inventory volume has been relatively stable since the start of the annualized forest inventory in 2003. Loblolly pine (*Pinus taeda*) remained first in both volume and number of live trees (table 2), followed by sweetgum (*Liquidambar styraciflua*). By volume, shortleaf pine (*Pinus echinata*) was the third greatest, while water oak (*Quercus nigra*) was third in number. In 2013, all-live volume in softwood species amounted to 9.7 billion cubic feet, while hardwood species totaled 7.6 billion cubic feet. The loblolly-shortleaf pine forest-type group accounted for 9.4 billion cubic feet, or 97 percent of the all-live softwood volume. Volume on forest industry land decreased to 385.6 million cubic feet, a dramatic reduction from 2004 volumes of 4.4 billion cubic feet, resulting from the divestiture of forest acreage previously mentioned. During this same time, volume for other corporate ownership increased from 1.3 billion cubic feet to 5.1 billion cubic feet.

Table 2—Number and volume of all live trees, east Texas, 2013

Species	Number (million trees)	Volume (million ft ³)
Loblolly pine	1,901.37	8,351.36
Sweetgum	1,105.92	1,406.04
Shortleaf pine	105.46	1,229.55
Water oak	524.38	1,025.02
Post oak	171.80	759.27
Southern red oak	170.46	615.42
Willow oak	155.83	425.24
White oak	95.46	331.23
Baldcypress	17.65	283.14
Blackgum	186.37	271.29
Cherrybark oak	65.59	254.60
Winged elm	509.14	239.75
Slash pine	36.01	230.08
Green ash	123.65	181.10
Other	2,423.98	2,111.65



A young loblolly pine plantation in east Texas. (photo courtesy of Ron Billings, Texas A&M Forest Service)

All-live volume of softwoods has increased in most diameter classes since 2004, with the largest increases occurring in the 7.0- to 8.9-inch and 9.0- to 10.9-inch classes. Volume by 2-inch diameter class shows the majority (61 percent) is centered within the 7.0- to 16.9-inch diameter classes. Except for the gradual reduction of very large (21.0+) trees, all-live volume of hardwoods by diameter classes has remained fairly stable since 2004.

In 2013, total average annual net growth for all-live trees on timberland was 623.0 million cubic feet. Total volume of annual removals for all-live trees on timberland was 577.2 million cubic feet, while mortality averaged 332.2 million cubic feet (fig. 5). Average annual net growth for all-live softwood species on timberland averaged 554.5 million cubic feet per year, a decrease of 12 percent since 2009. Average annual softwood removals were 425.8 million cubic feet per year, a decline of 24 percent since 2009, while average annual softwood mortality was 135.2 cubic feet per year, showing a 49-percent increase during the same timeframe. Average annual net growth for hardwood species averaged 68.5 million cubic feet per year, a 73-percent decrease since 2009. Average annual removals of hardwood species decreased 27 percent from the 2009 level to 151.4 million cubic feet per year. Average annual hardwood mortality, on the other hand, has increased 87 percent since 2006 to 197.0 million cubic feet. As mentioned in Brandeis and others (2014), the effects of the historic drought of 2011 on growth and mortality, particularly in hardwood species, are still being observed.

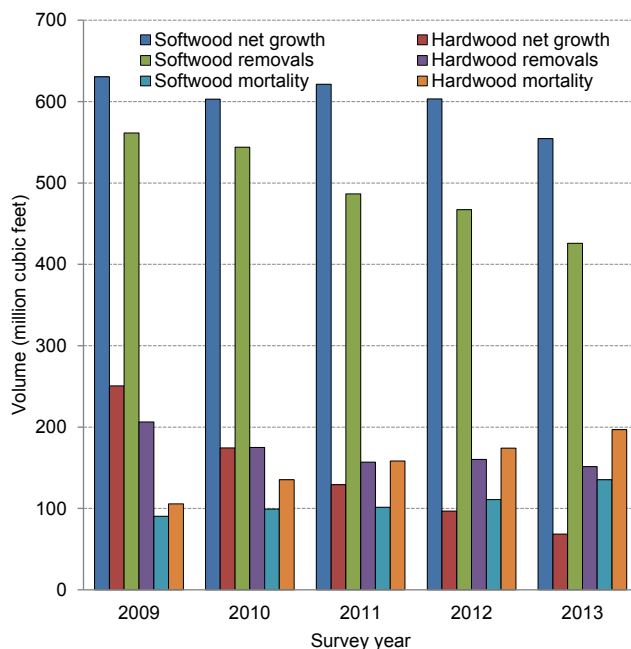


Figure 5—All-live average annual growth, removals, and mortality on timberland by survey year, east Texas, 2009 to 2013.

Harvest Decline

As discussed in the previous section, the 2013 overall amount of removal from timberlands was 577.2 million cubic feet. Compared to removals in 2012, totaling 627.5 million cubic feet, this was a reduction of 8 percent. Softwoods accounted for the majority of the removals, with the loblolly-shortleaf pine forest type alone accounting for 67 percent of the harvested volumes. Within the loblolly-shortleaf pine forest type, the harvest volume decreased 8 percent, from 260 million cubic feet in 2012 to 239 million cubic feet in 2013 (fig. 6). This volume is the lowest seen in the last decade. The decline in harvest is particularly noticeable over the last 5 years, with harvested volume declining 32 percent from a peak of 350 million cubic feet in 2009.

The same general trend is seen in acres of timberland where silvicultural cutting treatments were applied (fig. 7). For years 2010 through 2013, we see a steady decline in cuttings, with the exception of salvage cutting, which increased slightly over the same period. The economic recession and collapse of the housing market had a substantial effect on forests and forest industry across the South (Hodges and others 2012). It is likely the harvest and cutting decline is at least partially tied to the economic downturn, given the timeframe over which these reductions in harvest and cutting treatments took place. The increase in

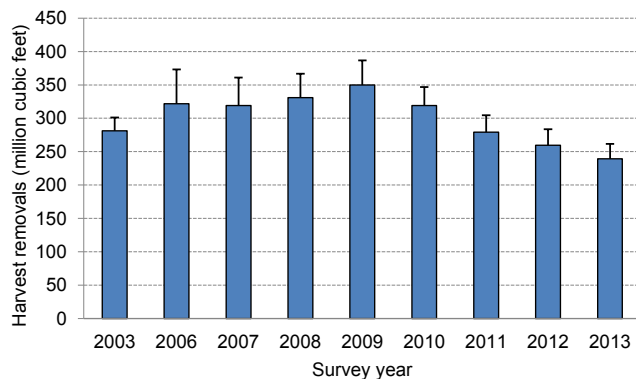


Figure 6—All-live harvested removals of loblolly-shortleaf pine on timberland, east Texas, 2003-13.

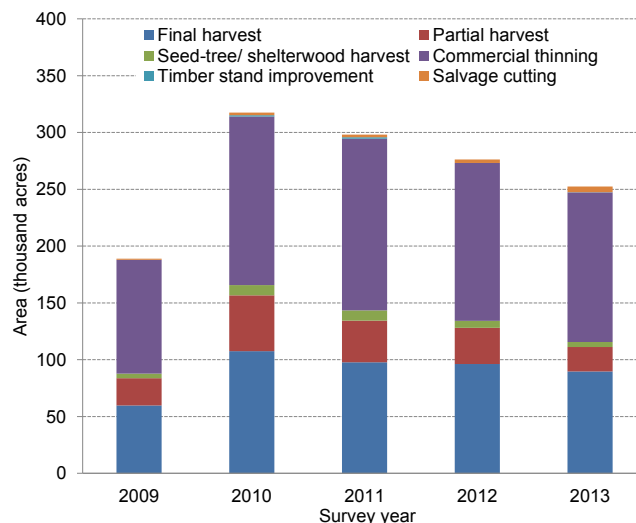


Figure 7—Area of timberland treated annually by treatment class (cutting), east Texas, 2009-13.

salvage cutting likely correlates to tree mortality and decline caused by the unprecedented drought (Brandeis and others 2014) and catastrophic wildfires of 2011, and the aftereffects of these events.

Literature Cited

- Brandeis, T.J.; Cooper, J.A.; Bentley, J.W. 2014. East Texas, 2012—forest inventory and analysis factsheet. e-Science Update SRS-086. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.
- Cooper, J.A.; Bentley, J.W. 2012. East Texas, 2011—forest inventory and analysis factsheet. e-Science Update SRS-052. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 5 p.
- Hodges, D.G.; Hartsell, A.J. [and others]. 2012. Recession effects on the forests and forest products industries of the South. *Forest Products Journal*. 61(8): 614–624.

How to Cite This Publication

Dooley, K.J.W.; Brandeis, T.J. 2014. Forests of east Texas, 2013. Resource Update FS-31. Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 4 p.



www.fia.fs.fed.us

Contact Information

Thomas J. Brandeis, Research Forester
Forest Inventory and Analysis
Southern Research Station, USDA Forest Service
4700 Old Kingston Pike
Knoxville, TN 37919
Phone: 865-862-2030 / Fax: 865-862-0262
Email: tjbrandeis@fs.fed.us
Southern FIA: <http://srsfia2.fs.fed.us>
National FIA: <http://fia.fs.fed.us>

Chris Brown, FIA Coordinator
Texas A&M Forest Service
200 Technology Way Suite 1281
College Station, TX 77845-3424
Phone: 979-458-6630 / Fax: 979-458-6633
Email: cbrown@tfs.tamu.edu
<http://txforests.tamu.edu>

USDA is an equal opportunity provider and employer

The published report is available online at <http://treesearch.fs.fed.us>