



FORESTS OF east Texas, 2015

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 (SRS) in cooperation with Texas A&M Forest Service. 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). The estimates presented in this update are limited to east Texas, which is made up of units 1 and 2 with a total of 43 counties (fig. 1). Forest resource estimates are based on field data collected using the FIA annualized sample design and are updated yearly (Bechtold and Patterson 2005). The data used in this publication were accessed from the FIA Database on December 4, 2017.

East Texas was allocated 3,986 plots, and 3,905 of these were sampled. Reported estimates on current values such as area and volume are based on these 3,905 plots. Estimates on change variables such as growth, disturbance, and removals are based on the 3,717 plots, which were remeasured.

Overview

East Texas is home to 12.2 million acres of forest land (± 0.1 million acres) (table 1). Reported forested area has decreased by only 7,500 acres since 2014 — less difference than the sampling error. The number of live trees on Texas’s forest land in 2015 was estimated at 7.3 ± 0.1 billion trees, a decrease of <0.1 percent from 2014. Net volume and aboveground biomass each increased almost 1 percent, with 2015 net volume at $17.6 (\pm 0.3)$ billion cubic feet and aboveground biomass at $440.6 (\pm 6.5)$ million dry tons. Average annual net growth increased 4 percent to $593.1 (\pm 25.3)$ million cubic feet per year while removals decreased to $551.6 (\pm 31.2)$ million cubic feet per year, a reduction of 4 percent. Annual mortality increased < 1 percent to $366.7 (\pm 17.4)$ million cubic feet per year. Timberland followed the same general trends but there were some differences. More than twice as many acres were removed from timberland than forest land, though the change in timberland was still < 1 percent. Mortality increased to a greater extent on timberland than on forest land, but again the increase was only about 1 percent.

Table 1 - East Texas forest statistics, change between 2014 and 2015

Forest statistics	2014 estimate ^a	Sampling error percent	2015 estimate ^b	Sampling error percent	Change since 2014
Forest land					
Area (thousand acres)	12,157.7	0.74	12,150.1	0.74	-7.5
Number of live trees ≥ 1 inch d.b.h. (million trees)	7,396.4	1.79	7,328.5	1.86	-67.9
Net volume live trees ≥ 5 inches d.b.h. (million cubic feet)	17,467.2	1.66	17,620.4	1.68	153.2
Live trees aboveground biomass (thousand oven-dry tons)	437,599.1	1.45	440,633.5	1.47	3,034.3
Net growth live trees ≥ 5 inches d.b.h. (million cubic feet per year)	570.8	4.70	593.1	4.27	22.3
Annual removals of live trees ≥ 5 inches d.b.h. (million cubic feet per year)	575.9	5.58	551.6	5.66	-24.2
Annual mortality of live trees ≥ 5 inches d.b.h. (million cubic feet per year)	365.8	5.23	366.7	4.77	0.8
Timberland					
Area (thousand acres)	11,974.2	0.78	11,956.2	0.79	-17.9
Number of live trees ≥ 1 inch d.b.h (million trees)	7,283.5	1.82	7,215.5	1.89	-68.1
Net volume live trees ≥ 5 inches d.b.h. (million cubic feet)	17,080.2	1.71	17,198.1	1.73	117.9
Live trees aboveground biomass (thousand oven-dry tons)	428,183.5	1.49	430,393.0	1.51	2,209.5
Net growth live trees ≥ 5 inches d.b.h. (million cubic feet per year)	577.6	4.66	590.5	4.29	12.9
Annual removals of live trees ≥ 5 inches d.b.h. (million cubic feet per year)	582.7	5.53	562.8	5.66	-19.8
Annual mortality of live trees ≥ 5 inches d.b.h. (million cubic feet per year)	357.0	5.33	360.8	4.84	3.8

^aEstimates for 2014 comprise panels 2010, 2011, 2012, 2013, 2014.

^bEstimates for 2015 comprise panels 2011, 2012, 2013, 2014, 2015.



Forest Area

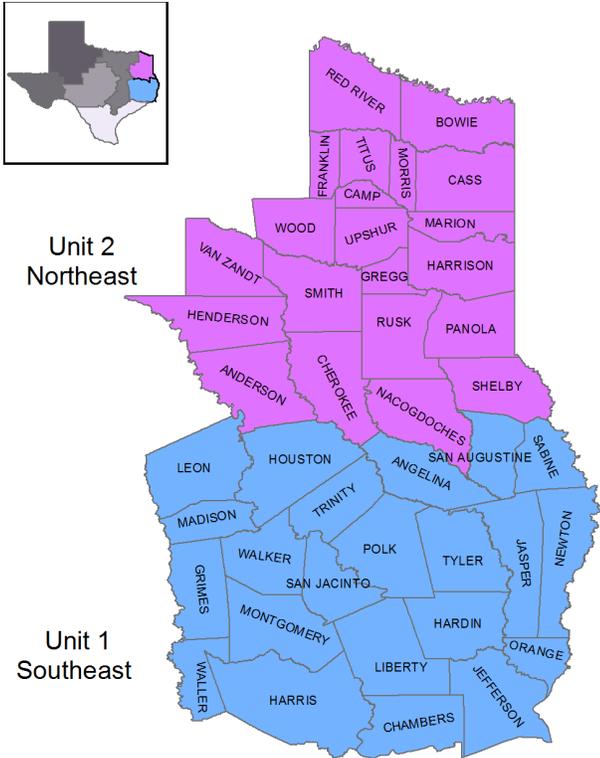


Figure 1--FIA survey units of Texas, with east Texas detail.

The 12.2 million acres of forest land described in the overview section contributes approximately 54 percent of the total area of east Texas (all land and water area). Almost all (98 percent) of the forest land in east Texas is timberland (fig. 2). FIA defines timberland as forest land that is capable of producing at least 20 cubic feet per acre per year of industrial wood, and which is not reserved (withdrawn from wood extraction by law or statute). The majority of discussions and figures within this publication will be focused on timberland.

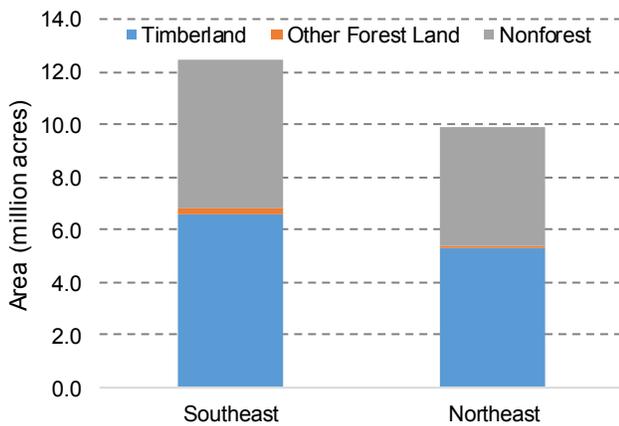


Figure 2—Timberland and forest land by unit, east Texas, 2015.

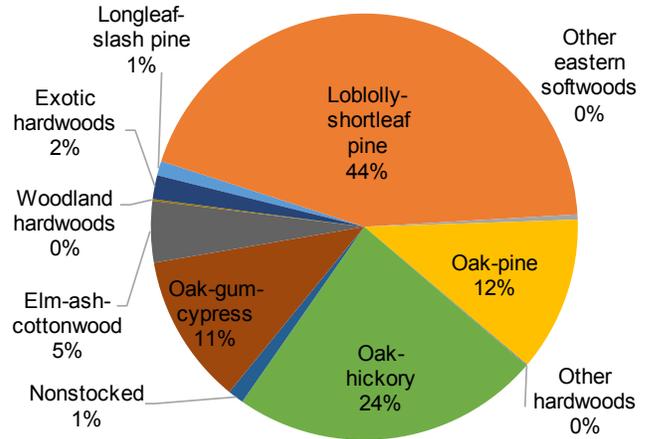


Figure 3—Distribution of timberland by forest-type group, east Texas, 2015. Total area = 12.0 million acres.

At 5.3 million acres (44 percent), loblolly-shortleaf pine is the most dominant forest-type group on timberland, followed by three major oak groups: oak-hickory at 2.8 million acres (24 percent); oak-pine at 1.4 million acres (12 percent); and oak-gum-cypress at almost 1.4 million acres (11 percent) (fig. 3). Overall, about 26 percent of the timberlands are artificially regenerated, but for the longleaf-slash and loblolly-shortleaf pine groups, the proportion is greater than half.

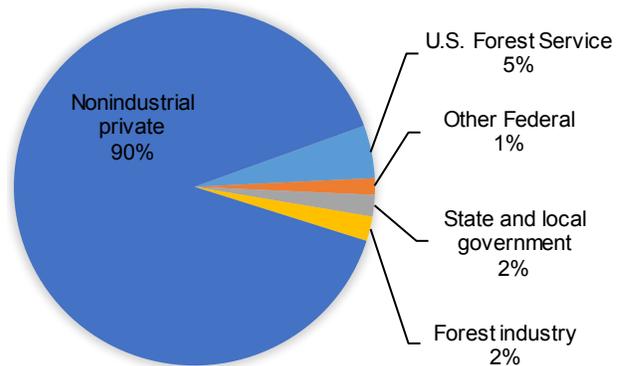


Figure 4—Distribution of timberland by ownership group, east Texas, 2015. Total area = 12.0 million acres.

Timberland ownership maintained the same pattern as previous years (Brandeis 2015) with close to 90 percent being owned by nonindustrial private landowners (fig. 4). This group includes all nongovernmental individuals, groups, and corporations who do not own an industrial processing plant for forest products.

Volume, Biomass, and Trends

Table 2 - Number, volume, and biomass of all live trees on timberland, east Texas, 2015

Species	Number trees ^a (million)	Net volume trees ^b (million cubic feet)	Aboveground dry biomass ^a (million short tons)
Loblolly pine	1,871.75	8,203.92	174.32
Sweetgum	1,034.03	1,359.16	35.09
Shortleaf pine	94.48	1,088.06	22.23
Water oak	509.97	1,048.49	32.34
Post oak	156.73	727.44	22.16
Southern red oak	152.86	581.99	16.67
Willow oak	150.30	398.83	12.04
White oak	96.16	334.76	10.04
Blackgum	151.25	271.51	6.93
All others	2,997.93	3,183.91	98.58
Total	7,215.46	17,198.05	430.39

^a Trees ≥1" diameter.

^b Trees ≥5" diameter.

Net all-live volume (volume excluding rotten, missing, and form cull) on timberland was 17.2 billion cubic feet. This is a slight increase from the 17.1 billion cubic feet reported in 2014, and is consistent with previous reported volumes since the start of the annualized forest inventory in 2003. The timberlands of east Texas hold approximately 430.4 million tons of biomass (aboveground dry weight). By individual species, loblolly pine contributed the most to this total, at 174.3 million tons, and was also first in volume and number of all-live trees, followed by sweetgum (table 2).

Net growth, which is growth less mortality, continued the downward trend in softwoods, though the decrease was much lower than the past few years, and for hardwoods, growth actually increased compared to 2014, though it was still down significantly from 2011 levels (fig. 5). Mortality of softwood species has increased nearly 50 percent since 2011: 101.4 million cubic feet in 2011 to 151.1 million cubic feet in 2015. Over that same time period, hardwood mortality increased from 158.6 to 209.8 million cubic feet. However, the largest jumps were in 2014 and earlier, and the rate of increase appears to be slowing. Hardwood removals are nearly back to 2013 rates, at 151.0 million cubic feet. Softwood removals are still down considerably, at 411.9 million cubic feet. [Note: starting with inventory year 2013, the definition of reserved land changed, so some of the removal volumes reported above are the result of volume no longer considered timberland.] Looking strictly at harvested removals, the average annual volume for inventory year 2015 was 538.8 million cubic feet, 404.2 million cubic feet from softwoods and 134.6 million cubic feet from hardwoods.

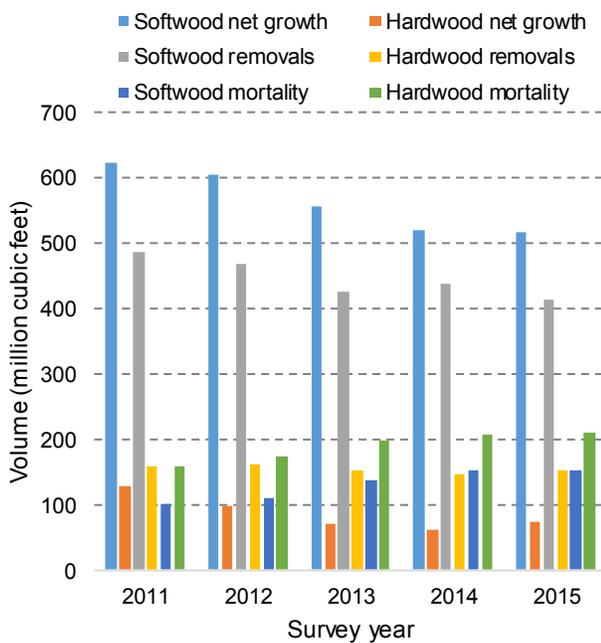


Figure 5 – Average annual net growth, removals, and mortality on timberland by major species group, east Texas, 2015.



East Texas forests provide habitat for a variety of wildlife. (Photograph by Kerry J. W. Dooley)

Drought effects in east Texas 2011-2015

Table 3 – Average annual acres of disturbed forest by forest-type group and disturbance type, east Texas 2015

Forest-type group	Disturbance								
	Insects	Disease	Drought	Other weather	Fire	Domestic animals	Wild animals	Human	Other natural
<i>thousand acres</i>									
Longleaf-slash pine	0.0	0.0	0.0	3.3	3.4	0.0	0.0	0.0	0.0
Loblolly-shortleaf pine	1.7	1.1	35.8	22.1	40.6	4.2	1.2	1.1	0.0
Other eastern softwoods	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0	0.0
Oak-pine	0.9	0.6	15.3	13.8	5.6	0.0	1.4	0.0	0.0
Oak-hickory	0.3	1.0	42.4	13.7	12.7	0.0	0.0	0.0	0.0
Oak-gum-cypress	0.0	0.3	15.9	25.9	2.6	0.0	1.3	1.5	2.2
Elm-ash-cottonwood	0.0	0.0	9.3	0.4	0.2	2.1	0.9	0.0	0.0
Other hardwoods	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodland hardwoods	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Exotic hardwoods	0.0	0.0	2.4	1.7	0.0	1.7	0.2	0.9	0.9
Nonstocked	0.0	0.3	1.7	0.3	0.0	0.0	0.0	0.0	0.0
All groups	2.9	3.3	127.4	81.3	65.1	8.0	5.0	3.5	3.1

The summer of 2011 in Texas was the hottest of any State ever on record. It was also the driest, with a statewide average of 2.44 inches of rain—5.29 inches below average. These records go back to the late 19th century, but dendrochronologists conducted a tree-ring analysis indicating that since the year 1550, only the summer of 1789 had a drought as severe as 2011 (National Oceanic and Atmospheric Administration 2011).

FIA crews collect data on disturbances at the stand level on all forested plots. If 25 percent of the stand, or 50 percent of a particular species, is affected, the crew records what kind of disturbance it was and in what year it occurred. Because 2015 data begins with plots collected in 2011, this is a prime year to review recorded drought disturbance data. Of the 12.2 million acres of forest land in east Texas, an annual average of 127.4 thousand acres showed drought effects—far more than any other disturbance (table 3). Both proportionally and in total area, hardwoods saw more acres affected than softwoods. Bearing in mind that the effects must be observable, meet the cited thresholds, and that drought effects on trees may be delayed, this is a substantial area of forest directly impacted by drought.

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UPDATE: This resource update was revised in January 2018.

How to Cite This Publication

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