East Texas Forestlands

Curtis L. VanderSchaaf
Forest Resource Analyst
cvanderschaaf@tfs.tamu.edu

TEXAS FOREST SERVICE
The Texas A&M University System

March 2010

A copy of the East Texas Forestlands factsheet can be downloaded from:
http://txforestservice.tamu.edu/EconDev/Pubs

East Texas Forestlands

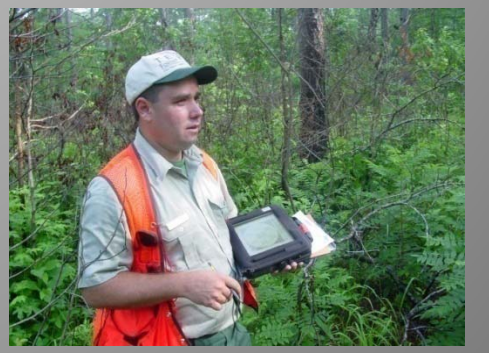
Several sources of data were used to produce the East Texas Forestlands factsheet and slide presentation:

FIA – Forest Inventory and Analysis

NWOS – National Woodland Owner Survey

Harvest Trends

Timber Price Trends



TEXAS FOREST SERVICE
The Texas A&M University System

East Texas Forestlands

Forest Inventory and Analysis

The FIA is a national program designed to quantify the amount of resources in forestlands.

Texas Forest Service in conjunction with the USDA Forest Service annually measures 20% of all plots established in East Texas.

Variables include total height, diameter, volume, biomass, etc.

All FIA plots in East Texas are measured over a 5-year period.

TEXAS FOREST SERVICE
The Texas A&M University System

East Texas Forestlands

NWOS, Harvest Trends, and Texas Timber Price Trends

National Woodland Owner Survey – NWOS assesses forestland owner characteristics. Data were obtained from questionnaires sent out from 2002 to 2006 to an area weighted sample of 857 East Texas family forest land owners. There was a 45 percent return rate.

Harvest Trends - Texas Forest Service conducts an annual assessment of the amount of primary wood products produced in the state and the amount of stumpage purchased by county and exported to other states to produce primary wood products.

Texas Timber Price Trends – Texas Forest Service produces a bi-monthly publication reporting average prices paid for standing timber, commonly called stumpage price.

TEXAS FOREST SERVICE
The Texas A&M University System

East Texas Forestlands

Forestland versus Timberland

Forestland – land that is at least 10 percent stocked by forest trees of any size or that has been at least 10% stocked in the past, and not currently developed for a nonforest use

Timberland – forestland that is producing or capable of producing in excess of 20 cubic feet per acre per year

All timberland is forestland.

Examples of forestland that WOULD NOT BE classified as timberland are an extremely dry sandy, low fertility site or a marshland which produce less than 20 cubic feet/acre/yr of woody volume growth.

Failing to be classified as timberland does not relate to current stocking but rather potential stocking and site productivity.

TEXAS FOREST SERVICE
The Texas A&M University System

Forestland

Acres

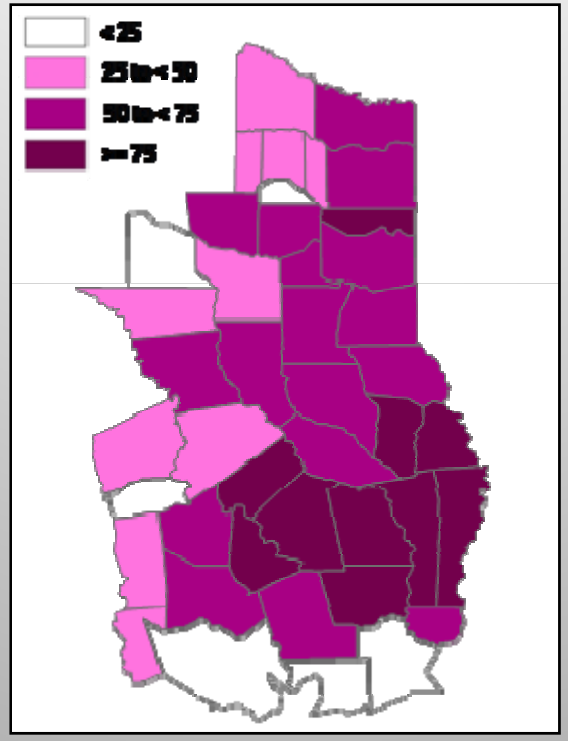
Forestland makes up about 54 percent of the East Texas region.

Almost all forestland is timberland (99 percent).

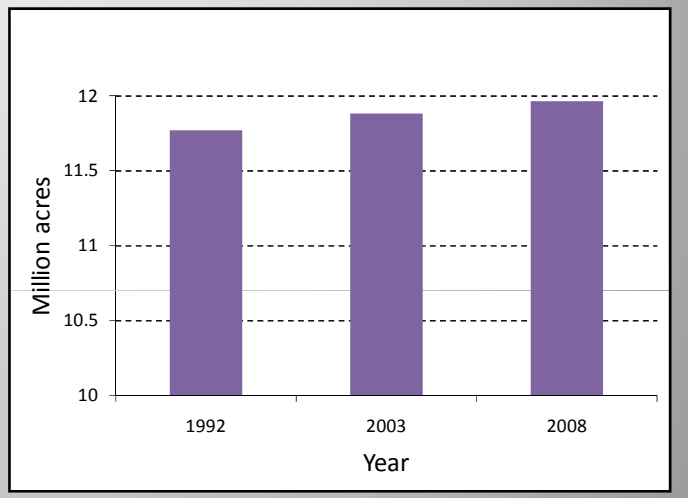
Nearly 39 percent of the region's Timberland is located in just 10 of the 43 counties.

There were 11,964, 913 acres of timberland estimated in 2008.

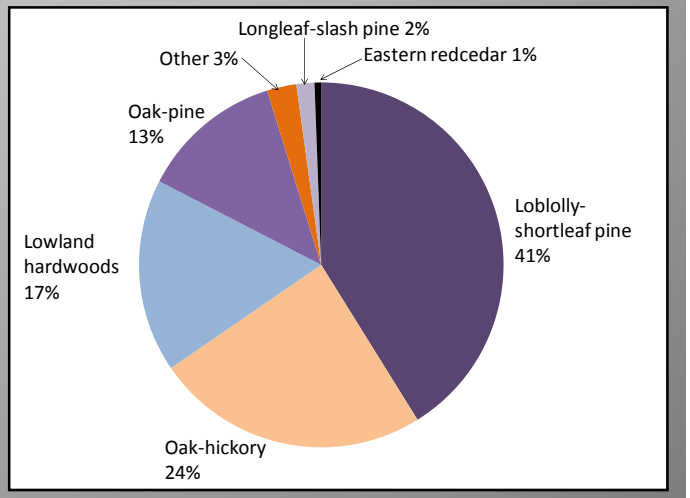
Percent forestland by county, 2008



Area of timberland, 1992-2008



Area of timberland, 2008



Southern pine forests consist primarily of loblolly pine – about half planted and half occurring naturally.

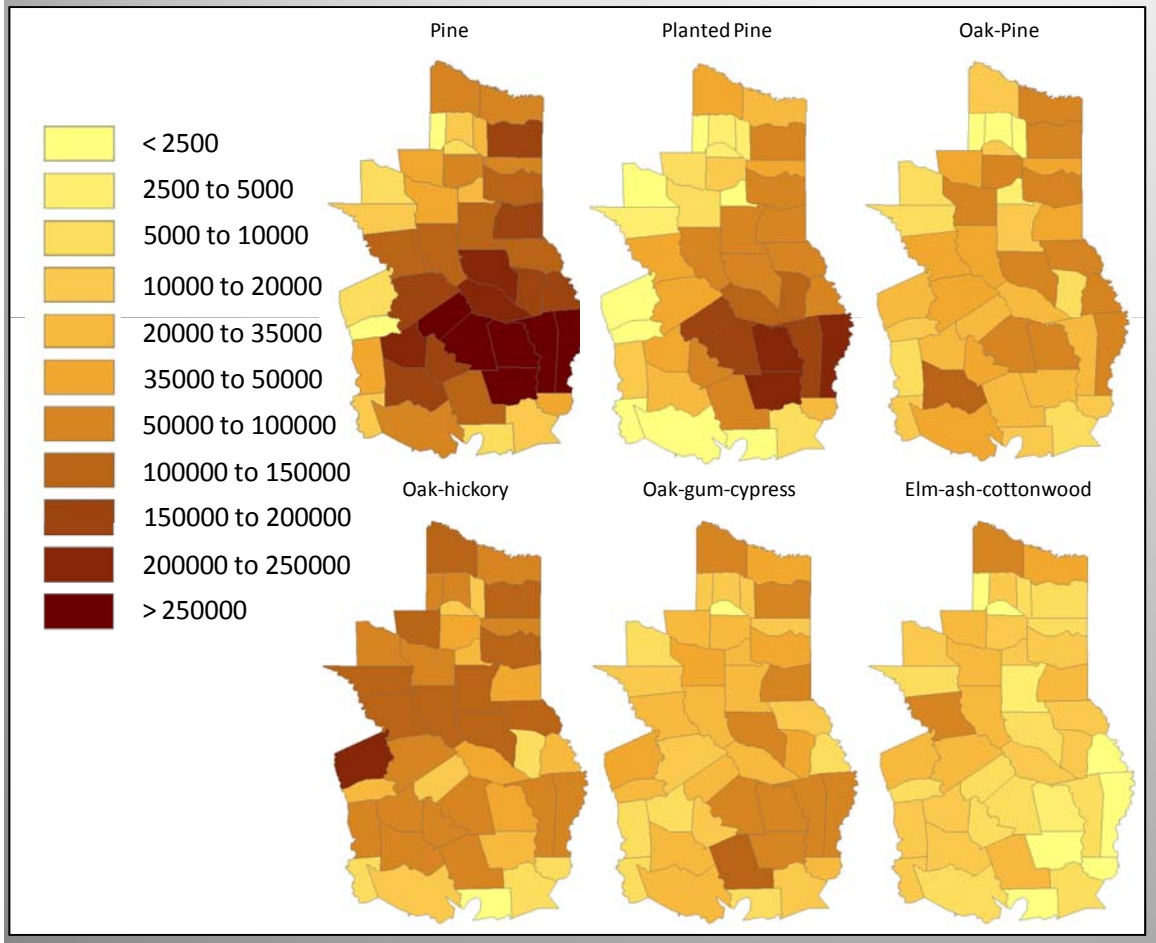
Lowland hardwoods consist of the oak-gum-cypress and elm-ash-cottonwood forest types.

TEXAS FOREST SERVICE
The Texas A&M University System

Forestland

Acres

Area of timberland by forest type and county, 2008

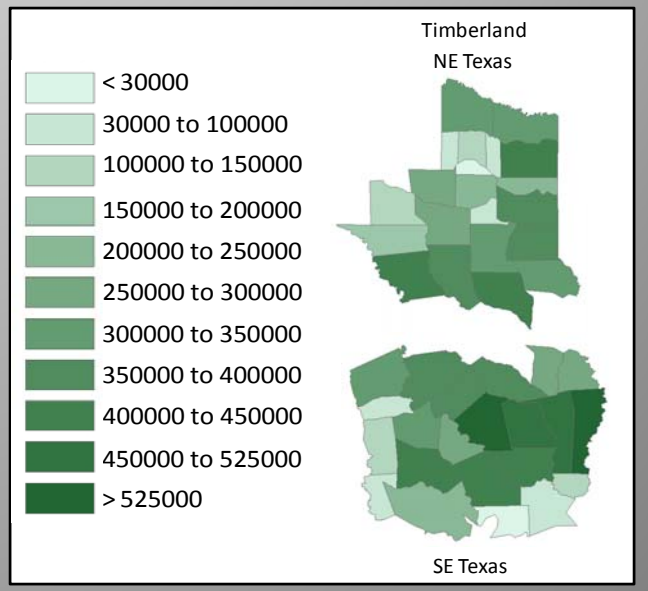


Acres of timberland planted by species, 2008

(Other includes bald cypress, cherrybark oak, longleaf pine, Scotch pine and Virginia pine)

Region	Species	Acres
SE Texas	Loblolly pine	1,883,074
	Other	17,160
	Slash pine	104,097
NE Texas	Loblolly pine	882,616
	Other	18,256
	Slash pine	9,344

Area of timberland across all forest types by county, 2008

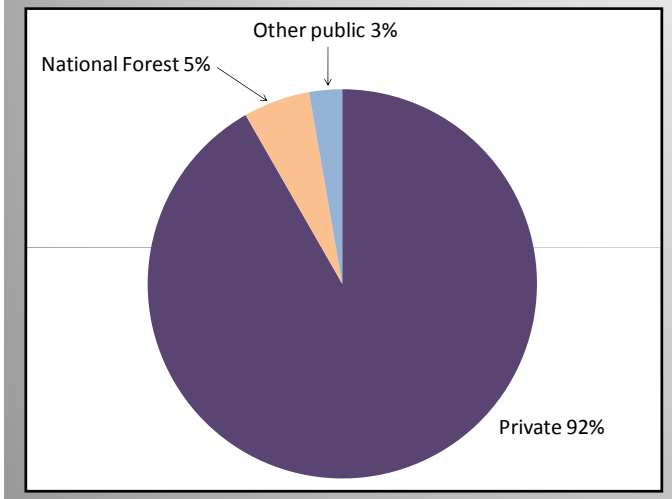


TEXAS FOREST SERVICE
The Texas A&M University System

Forestland

Ownership

Percent forestland by county, 2008



Private owners, consisting of Timber Investment Management Organizations (TIMOs) and Real Estate Investment Trusts (REITs) as well as family forest owners, control 92 percent of the timberland.

Questionnaires were sent out from 2002 to 2006 in an area weighted sample of 857 family forest owners. There was a 45 percent return rate.

According to survey results, timber was harvested on 74 percent of the family forest acreage.

The vast majority of owners possessed small tracts of land while just a few people held large tracts.

Response by family forest owner (formerly Non-Industrial Private Forest, or NIPF), 2006

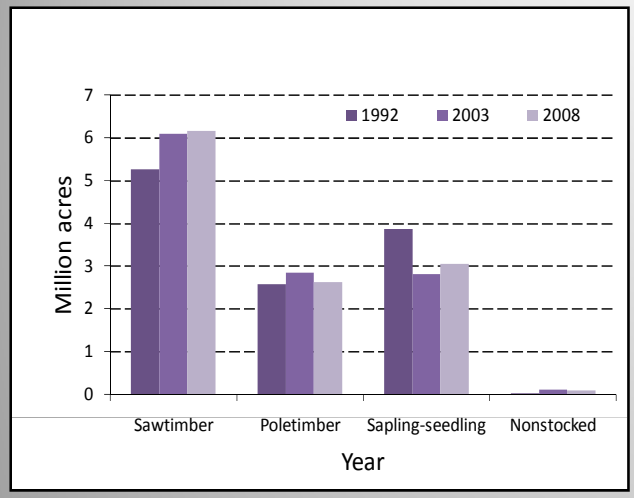
Timber activity	Area	
	million acres	percent
Timber harvest		
Yes	4.8	74
No	1.5	24
No answer	0.1	2
Harvested past 5 years	2.3	36

Size of forest	Area		Owners	
	thousand	percent	thousand	percent
Acres	Acres		Number	
1-9	346	5	94	45
10-19	680	11	55	26
20-49	914	14	31	15
50-99	1125	18	17	8
100-1000	2505	39	11	5
> 1000	841	13	~ 1	-

Forestland

Stand Structure

Stand-product class by survey year, timberland, 1992 to 2008



Stand-product class is the same as stand-size class.

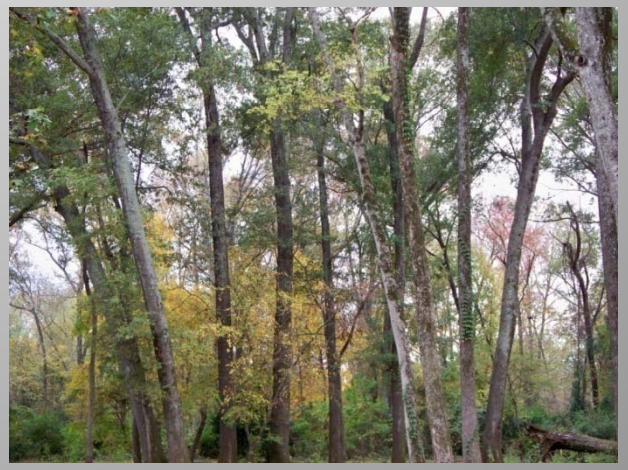
Sawtimber sized stands constitute 52 percent of the region.

Poletimber sized stands constitute 22 percent.

Sapling-seedling sized stands make up the remaining 26 percent.

Stand-diameter by stand-product class, timberland, 2008

Stand-product class	Area	Not Determined	Stand-diameter class (inches d.b.h.) 0 to < 5	5 to < 9	9 to < 20	20 to < 40
	thousand acres					
Sawtimber	6163.4	-	122.8	876.3	4822.5	341.9
Poletimber	2636.9	6.1	103.5	2077.7	433.3	16.3
Sapling-seedling	3055.7	79.4	1933.0	807.0	213.6	22.7
Nonstocked	109.0	28.9	52.4	17.1	9.1	1.5
Total	11964.9	114.3	2211.6	3778.1	5478.4	382.4



Sawtimber. As defined by FIA, softwood species 9.0 inches d.b.h and larger and hardwoods 11.0 inches d.b.h. and larger

Poletimber. As defined by FIA, softwood species 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h.

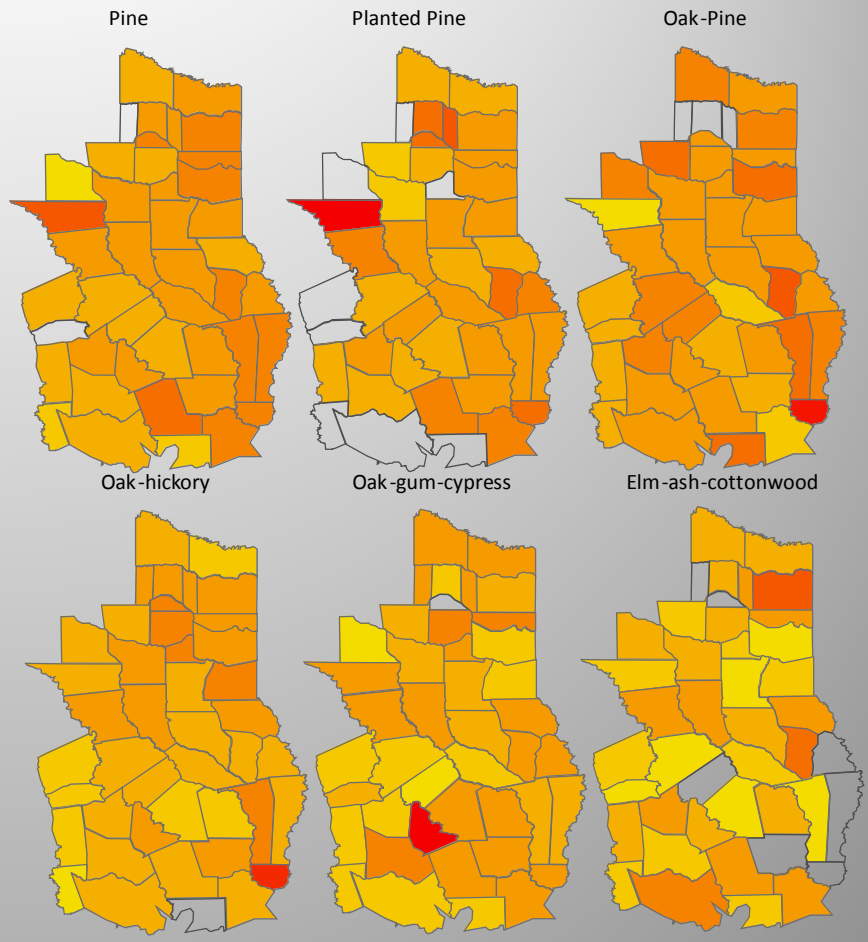
Saplings. As defined by FIA, Live trees 1.0 to 4.9 inches d.b.h.

Seedlings. As defined by FIA, live trees < 1.0 inch d.b.h. and ≥ 1 foot tall for hardwoods, ≥ 6 inches tall for softwoods

TEXAS FOREST SERVICE
The Texas A&M University System

Trees Per Acre

None recorded
0 to 200
200 to 400
400 to 600
600 to 800
800 to 1000
1000 to 1200
1200 to 1400
1400 to 1600
1600 to 1800
1800 to 2000
2000 to 2200



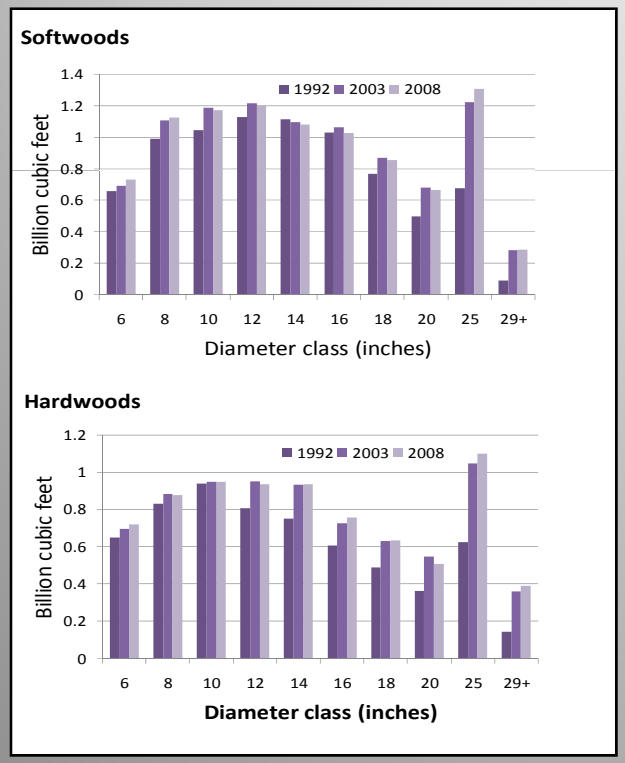
Across all forest types, there was an average of 638 trees per acre.

TEXAS FOREST SERVICE
The Texas A&M University System

Volume

Stand Structure

Volume in live trees by dbh, timberland, 1992 to 2008



Softwood volume is 9.5 billion cubic feet for live trees.

Hardwood volume is 7.8 billion cubic feet for live trees.

TEXAS FOREST SERVICE
The Texas A&M University System

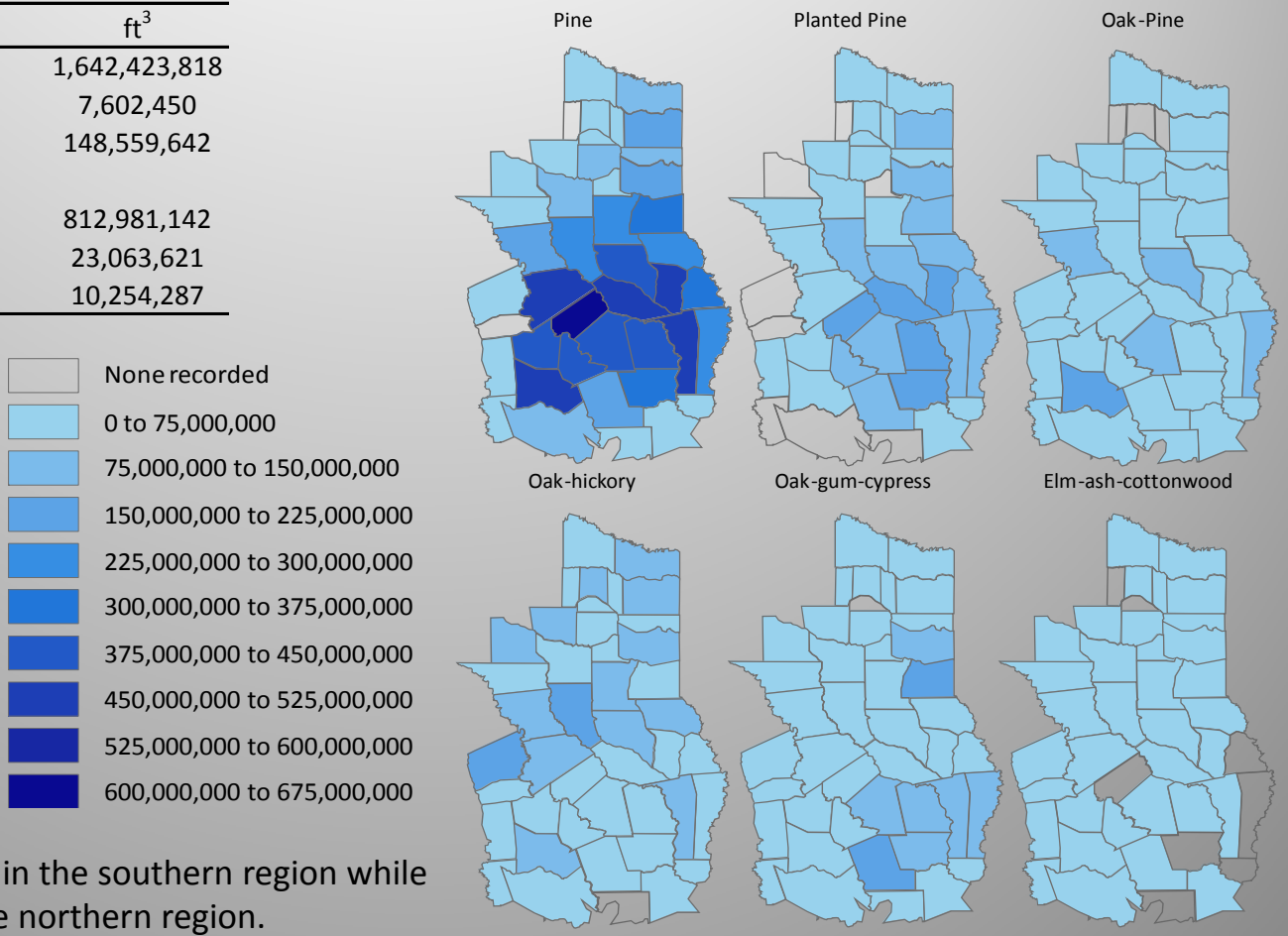
Volume

Amount

Growing stock volume of plantation timberland by species, 2008

Region	Species	ft^3
SE Texas	Loblolly pine	1,642,423,818
	Other	7,602,450
	Slash pine	148,559,642
NE Texas	Loblolly pine	812,981,142
	Other	23,063,621
	Slash pine	10,254,287

Growing stock volume (ft^3) on timberland by forest type and county, 2008



Pine is more heavily concentrated in the southern region while oak-hickory is more plentiful in the northern region.

Growing-stock trees. Live trees that contain at least one 12-foot or two 8-foot logs in the saw-log portion, either currently or potentially, if too small to qualify as a sawlog. The log(s) must meet dimension and merchantability standards to qualify. Trees must have one-third of the gross board-foot volume in sound wood, either currently or potentially.

TEXAS FOREST SERVICE
The Texas A&M University System

Volume

Change

Growth to removals ratio and average annual live tree (growing stock in parentheses) growth, removals, and mortality for timberland, 2003 to 2008

Item	Softwoods	Hardwoods
Net growth-to-removals ratio	1.17 (1.17)	1.62 (1.69)
	million ft³	
Component of change		
Gross growth	742.5 (729.4)	381.7 (325.3)
Mortality	74.9 (72.1)	74.8 (53.3)
Net growth	667.5 (657.3)	306.9 (272.0)
Removals	568.8 (560.2)	189.5 (161.1)

Components of change between 2003 and 2008

Item	Sample estimate
Land area (1,000 acres)	
Forestland	12128.7
Timberland	11964.9
Reserved forestland	126.7
Other forestland	37.1
All live on timberland (*million ft³*)	
Inventory	17292.3
Net annual growth	974.4
Annual mortality*	149.7
Annual removals	758.3
Growing stock on timberland (*million ft³*)	
Inventory	15982.9
Net annual growth	929.3
Annual mortality*	125.3
Annual removals	721.3
Sawtimber on timberland (*million fbm*)	
Inventory	62897.5
Net annual growth	3517.8
Annual mortality*	536.6
Annual removals	2616.0

*** Net annual growth includes annual mortality.**

The positive net growth-to-removals ratios indicate growth exceeded removals.

For private lands, the ratio across all species was 1.33 for all trees and 1.31 for growing stock trees.

Biomass

Standing Biomass (oven-dry tons) – Aboveground Wood and Bark

Softwood biomass is 206.1 million oven-dry tons for live trees (dbh of 1.0 inch or greater).

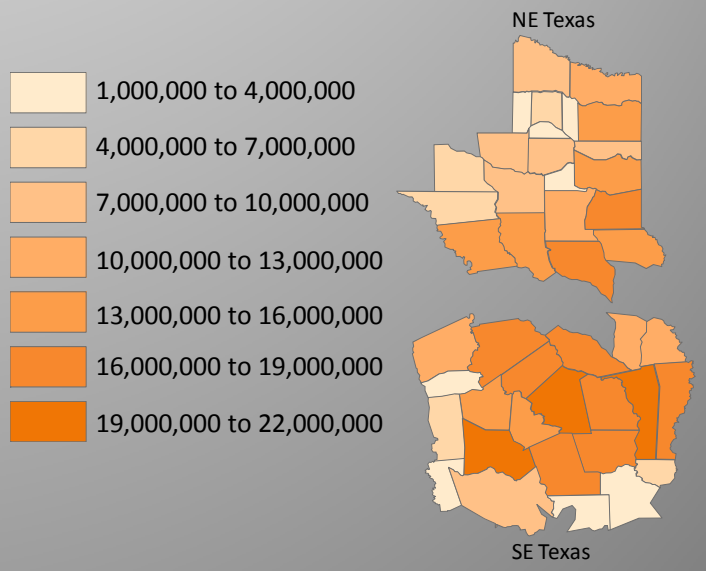
Hardwood biomass is 238.7 million oven-dry tons for live trees.

Biomass of all trees (oven-dry tons) on plantation forestland by species, 2008

Region	Species	Oven-dry tons
SE Texas	Loblolly pine	46,488,146
	Other	221,687
	Slash pine	4,464,736
NE Texas	Loblolly pine	22,924,925
	Other	539,690
	Slash pine	278,597

Standing biomass (oven-dry tons) of all trees on forestland by forest type and county, 2008

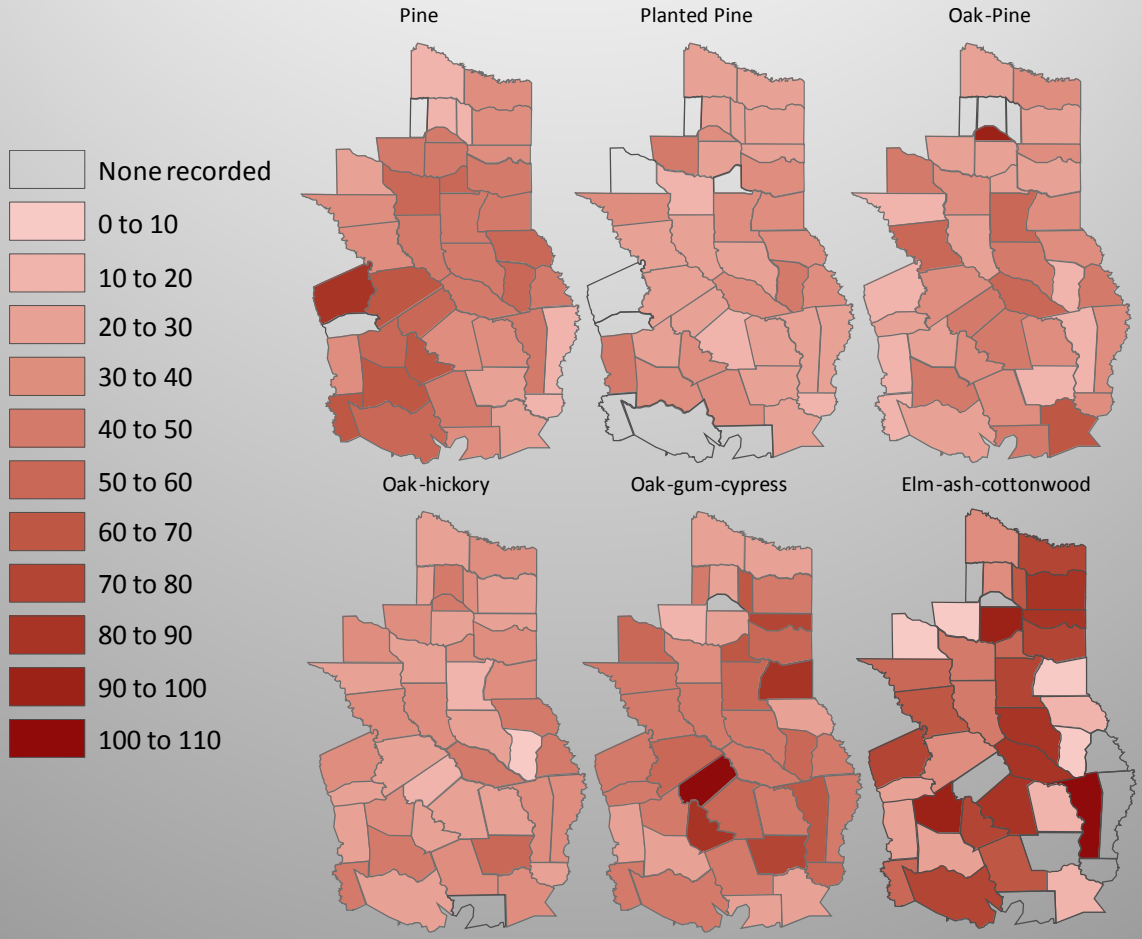
Standing biomass (oven-dry tons) of all trees on forestland by county, 2008



Biomass

Average Standing Biomass Per Acre

Average standing biomass (oven-dry tons) per acre of all trees on forestland by county, 2008



TEXAS FOREST SERVICE
The Texas A&M University System

TEXAS FOREST SERVICE
The Texas A&M University System

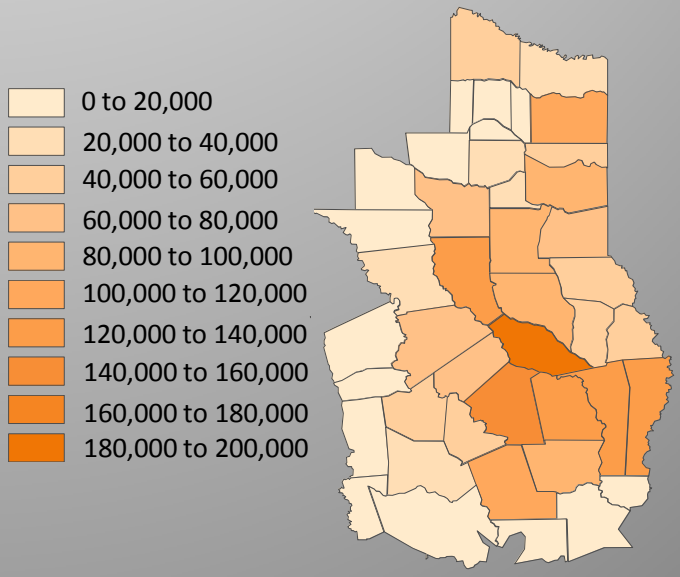
Logging Residue

Harvesting operations produce logging residue – or biomass – that can potentially be used to produce bioenergy and biofuel.

An estimated 2.3 million green tons of logging residue (including tops, limbs, and unutilized cull trees but excluding stumps) was generated during 2008 harvests.

Due to logistics, harvesting techniques, and economics, not all logging residue will be available for bioenergy/biofuel production – some believe only 30 to 60% of residues will be utilizable.

Logging residue (green tons per acre), 2008



Acres Planted by Year

Both the number of family forest (formerly non-industrial private forest landowners) and the total number (also includes private companies and public agencies) of acres planted have declined over the past decade.

'Year' refers to fiscal year. For example, fiscal year 2006 began on Oct 1, 2005 and ended Sept. 30, 2006.

All species are included.

	Number of acres	
Year	Family forest	All
1999	48,358	147,089
2000	43,181	164,430
2001	48,438	156,875
2002	33,164	114,392
2003	26,358	90,193
2004	36,896	113,686
2005	33,296	103,601
2006	26,710	92,030
2007	37,229	105,936
2008	25,960	86,546

TEXAS FOREST SERVICE
The Texas A&M University System

Major Mill Shutdowns/Closures

Company Name	Mill Location	Mill Type
Abitibi-Consolidated Inc.	Lufkin, TX	Paper mill
Clemsa Lumber Co.	Pollok, TX	Lumber mill
Georgia-Pacific	Logansport, LA	Plywood
Georgia-Pacific	Springhill, LA	Plywood
International Paper Co.	Bastrop, LA	Paper mill
Louisiana-Pacific Corp.	Silsbee, TX	Oriented Strand Board (OSB)
Norbord Inc.	Jefferson, TX	Oriented Strand Board (OSB)
North American Procurement Co.	Moscow, TX	Chip mill
Pasadena Paper Co.	Pasadena, TX	Paper mill
Potlatch Corp.	Prescott, AR	Lumber mill
Temple-Inland	Pineland, TX	Softwood Veneer
Weyerhaeuser	Mountain Pine, AR	Plywood

Several large-scale mills in East Texas and surrounding states have halted operations, some permanently while others indefinitely, resulting in an impact on the long term timber supply.

TEXAS FOREST SERVICE
The Texas A&M University System

Timber Stumpage Price Trends

Current softwood sawtimber stumpage prices are at their lowest since the late 1990s.

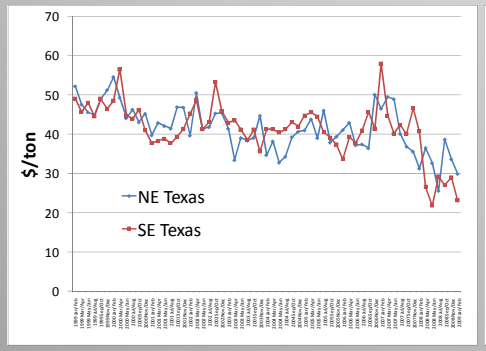
Hardwood sawtimber has also dropped after peaking in 2007-2008.

Hardwood and softwood pulpwood prices also dropped since peaking in 2007-2008.

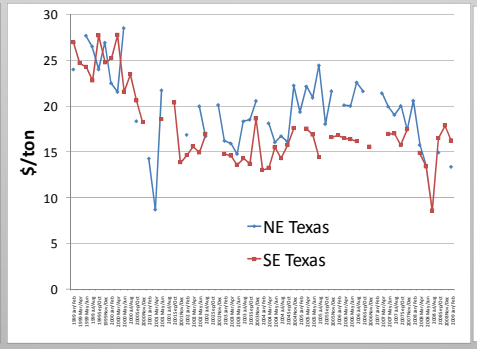
Chip-n-saw prices gradually dropped following a peak period from 2004 to 2007.

Prices below are from Jan/Feb 1999 to Jan/Feb 2009.

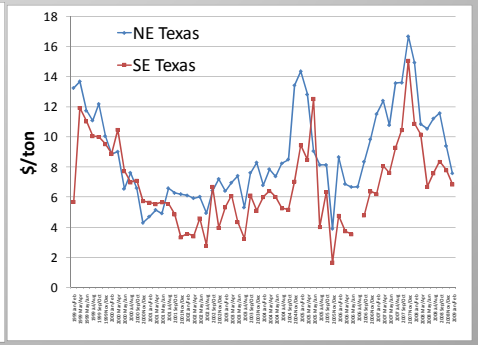
Softwood sawtimber



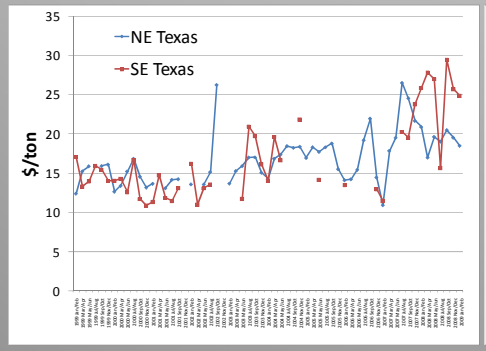
Softwood chip-n-saw



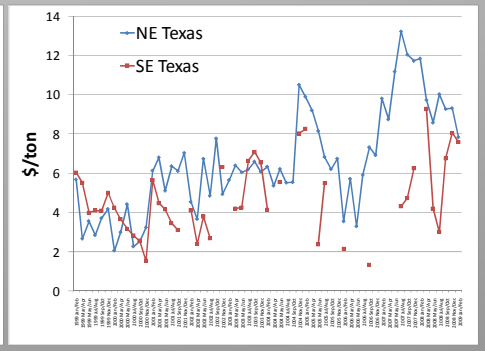
Softwood pulpwood



Hardwood sawtimber



Hardwood pulpwood



TEXAS FOREST SERVICE
The Texas A&M University System

Definition of Terms

Component of change. References the change in the volume of trees averaged over the years of the intersurvey period, specifically:

Average annual gross growth. Change in the volume of trees in the absence of cutting and mortality

Average annual mortality. Volume of trees that died from natural causes

Average net annual growth. Net change in volume in the absence of removals, and calculated as average annual gross growth minus average annual mortality

Average annual removal. Volume of trees removed from the inventory by harvesting, cultural operations, (e.g., timber-stand improvement), land clearing, or change in land use and averaged over the years of the intersurvey period

D.b.h. Tree stem diameter in inches measured outside the bark and 4.5 feet above the ground (breast height)

Family forest. Private land owned by individuals and families, including farms, where the owner does not own a primary wood-using plant or is not a formally incorporated company or organization. Formally referred to as non-industrial private forest (NIPF) owners.

TEXAS FOREST SERVICE
The Texas A&M University System

Forestland. Land at least 10% stocked by forest trees of any size or that has been at least 10% stocked in the past, and not currently developed for nonforest use. The minimum dimensions are 1 acre in size and 120 feet in width.

Timberland. Forestland capable of producing 20 cubic feet of wood volume per acre annually and not withdrawn from timber utilization

Reserved forestland. Public forestland capable of producing 20 cubic feet of wood volume per acre annually, but withdrawn from timber utilization through statute or administrative regulation

Other forestland. Forestland that is incapable of producing 20 cubic feet of wood volume per acre annually under natural conditions due to adverse site conditions such as sterile soils, dry climate, poor drainage, high elevation, steepness, or rockiness. The term is synonymous with woodland in earlier FIA reports.

Forest type. Forestland classification of the species forming a plurality of live tree stocking, and largely based on an algorithm of tallied trees

Growing-stock trees. Live trees that contain at least one 12-foot or two 8-foot logs in the saw-log portion, either currently or potentially, if too small to qualify as a sawlog. The log(s) must meet dimension and merchantability standards to qualify. Trees must have one-third of the gross board-foot volume in sound wood, either currently or potentially.

Definition of Terms

Growth-to-removals ratio. The ratio of net growth in volume divided by the volume removed by human activity, including harvesting, land clearing, and changes in land use

Hardwoods. Dicotyledonous trees, usually broadleaf and deciduous.

Logging residue. Woody material that is not removed from sites during harvesting operations. Types of logging residue include stumps, tops, limbs and unutilized cull trees.

Stump residue is the part of the tree that is lower than the cutting point and thus left after the harvesting operation, is generally not available commercially since the cost of obtaining the stump or root biomass is likely prohibitive.

Tops refer to the tops of the trees that are either broken during harvesting or are cut off the central stem of the tree due to a merchantability standard.

Limbs refer to the branches of the trees.

Cull trees are the trees that cannot be used to produce saw logs due to defects, rot, or form. Some cull trees are used as pulpwood and others are left unutilized as a part of logging residue.

Tops, limbs, and unutilized cull trees are the logging residue that is potentially available as biomass for energy production or chemical extraction.

Poletimber. As defined by FIA, softwood species 5.0 to 8.9 inches d.b.h. and hardwoods 5.0 to 10.9 inches d.b.h.

Saplings. As defined by FIA, Live trees 1.0 to 4.9 inches d.b.h.

Sawtimber. As defined by FIA, softwood species 9.0 inches d.b.h and larger and hardwoods 11.0 inches d.b.h. and larger

Seedlings. As defined by FIA, live trees < 1.0 inch d.b.h. and ≥ 1 foot tall for hardwoods, ≥ 6 inches tall for softwoods

Softwoods. Coniferous trees, usually evergreen, having needles or scale-like leaves

Stumpage. Standing trees in the forest

Volume. The amount of sound wood in live trees at least 5.0 inches d.b.h. from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem

TEXAS FOREST SERVICE
The Texas A&M University System