



# East Oklahoma, 2008

## FOREST INVENTORY & ANALYSIS FACTSHEET



Turner Falls, photo courtesy of Oklahoma Forestry Services.

### Forest Land Area

The 18 counties in east Oklahoma are consolidated into two FIA survey units – the Southeast (unit 1) and the Northeast (unit 2) (fig. 1). This area contains almost 5.8 million acres of forest land and covers 54 percent of the surveyed land area (table 1). Eighty-nine (89) percent of the forest land is considered available for timber production and known as timberland. The remaining forest land area is reserved forest land where timber removals are prohibited by law or unproductive forest land (produces < 20 cubic feet per acre per year). The area of forest land in east Oklahoma has remained relatively stable for the last 50 years.

**Table 1—Area by land class and survey, east Oklahoma**

Land class	1956	1966	1976	1986	1992	2008
	<i>million acres</i>					
Timberland	5.63	4.82	4.32	4.75	4.90	5.10
Other/reserved	0.12	0.65	0.60	0.51	0.52	0.64
<b>Total forest land</b>	<b>5.75</b>	<b>5.47</b>	<b>4.93</b>	<b>5.26</b>	<b>5.42</b>	<b>5.74</b>
Nonforest land	4.05	4.19	5.19	5.30	4.69	4.82
<b>Total land area</b>	<b>9.80</b>	<b>9.66</b>	<b>10.12</b>	<b>10.56</b>	<b>10.10</b>	<b>10.56</b>
Percent forested	59	57	49	50	54	54

Totals may not sum due to rounding.

Total land area estimates changed slightly over time due to improvements in measurement techniques and refinements in classification of small bodies of water and streams.

### Introduction

This science update summarizes the key findings of the seventh forest survey of east Oklahoma representing the period of 1993 to 2008 (16 years since the last survey). Field work for cycle 6 data collection ended in December 1992; however, historical reports are labeled 1993. The science update will use 1992 as the correct year for the cycle 6 survey. Currently, Forest Inventory and Analysis (FIA) and Oklahoma Forestry Services field crews are measuring plots in the Central and West regions of Oklahoma. This data will be added at a future date.

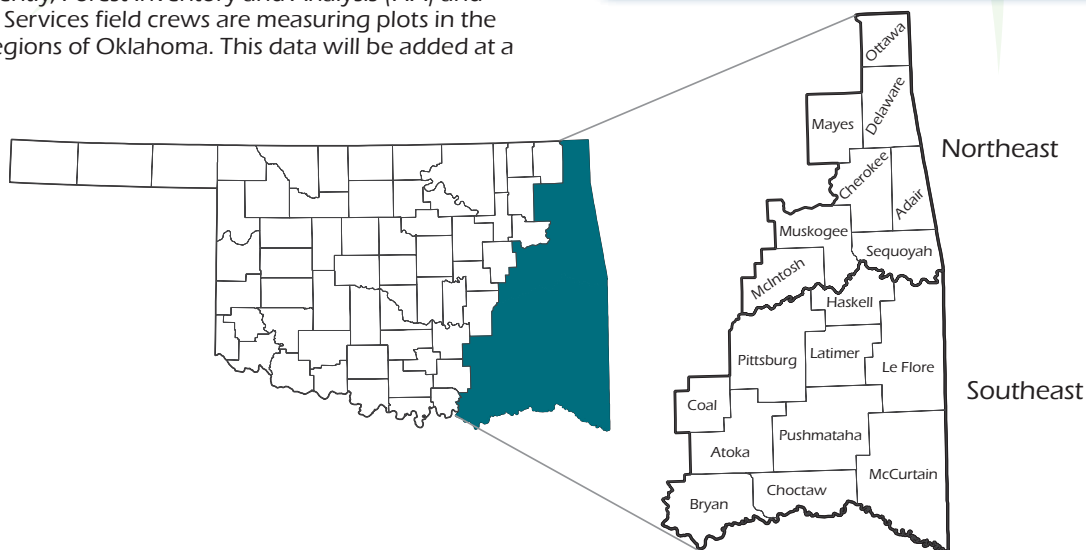


Figure 1—Counties and survey units, east Oklahoma, 2008.

East Oklahoma is mostly comprised of hardwoods covering 77 percent of the timberland area (fig. 4). Upland hardwood dominates, covering 57 percent of the area. Softwoods make up 22 percent and nonstocked forest areas are 1 percent. The majority of the softwood management group (98 percent) is located in the Southeast unit of east Oklahoma.

## Ownership of Timberland

Private landowners control 4.4 million timberland acres (86 percent) (fig. 2). The remaining 14 percent is publicly owned and includes national forest lands, other Federal lands, State, and local lands. Family forest ownership dominates with 2.9 million acres or 57 percent of the timberland area.

Since the last inventory, there has been a shift in some ownership classes. Many of the vertically integrated forest industries have divested their land holdings. Most of these large parcels were purchased by a variety of corporate ownerships such as timber investment management organizations, real estate investment trusts, limited liability company, or other incorporated ownership. Since 1992 corporate ownerships increased 265 percent while forest industry ownership declined 45 percent. Public ownerships increased 24 percent and individual and family ownerships increased slightly (fig. 3).

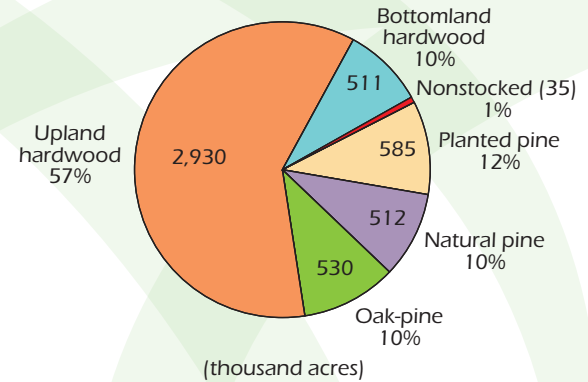


Figure 4—Area of timberland by forest management type, east Oklahoma, 2008.

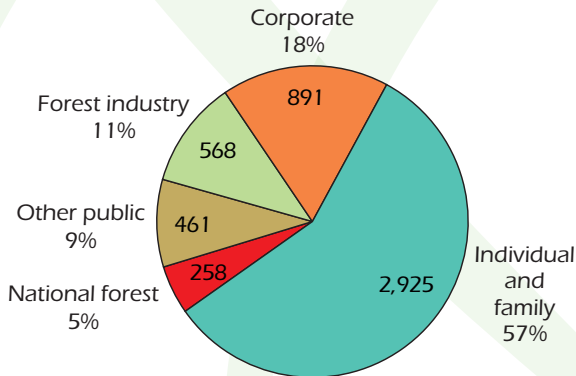


Figure 2—Area of timberland by ownership, east Oklahoma, 2008.

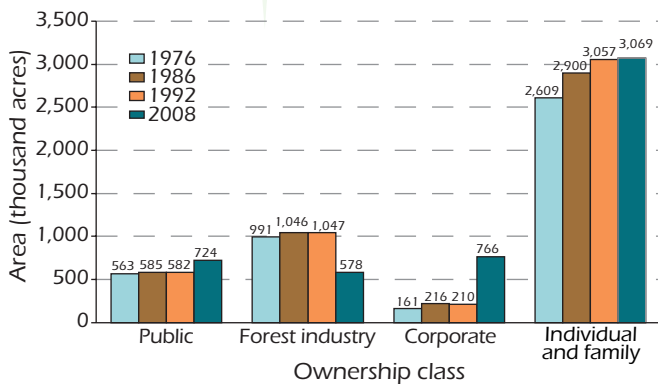


Figure 3—Timberland area of ownership class by survey year, east Oklahoma.

Forest management-type groups experience change over time resulting from forest management operations or natural disturbances. Since 1976, the combined area of softwood management types has increased 29 percent to a total of 1.1 million acres (fig. 5). However, natural softwood has declined 40 percent and planted pine has added 585,000 acres. Upland hardwood area has increased 24 percent since 1976 while oak-pine has declined 24 percent. Bottomland hardwood has remained relatively stable.

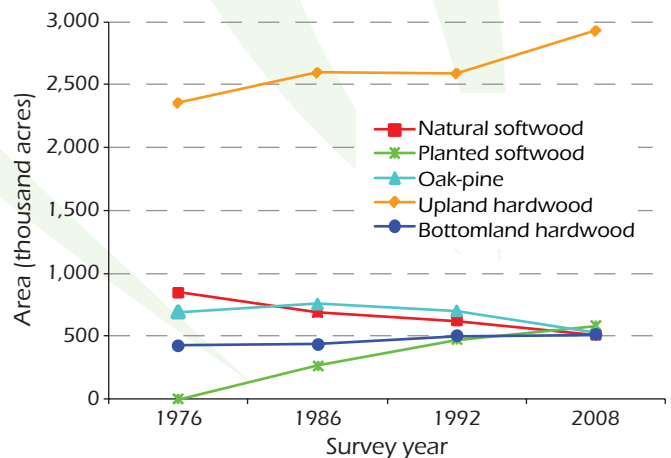


Figure 5—Area of timberland by forest management type, east Oklahoma, 2008.



## Forest Disturbance

On the average, almost 5 percent of all forest land experiences some form of disturbance each year (including silvicultural treatment) (fig. 6). Harvesting occurs on 2 percent of the timberland area and accounts for 43 percent of all disturbance area. Fire and weather account for almost 49 percent of all disturbances on forest land each year.

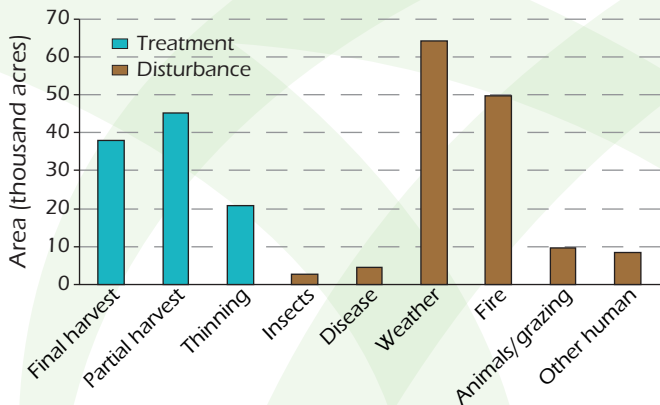


Figure 6—Area of timberland treated annually by treatment or disturbance class, east Oklahoma, 2008.

## Inventory Volume

Total volume on timberland has increased 2.4 billion cubic feet or almost 85 percent since 1976 (fig. 7). Hardwood volume doubled in volume and softwood volume increased 59 percent. Volume by 2-inch diameter class shows the majority of the volume (60 percent) is centered within the 7.0- to 14.9-inch diameter classes. Within this range of diameter classes, there is 72 percent of the softwood volume and 54 percent of the hardwood volume (fig. 8). The increase of tree volume over the last 30 years along with a stable forest land base indicates a sustainable timber resource in east Oklahoma.

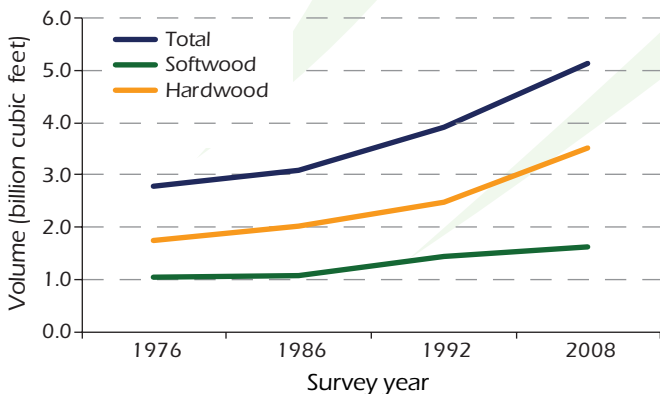


Figure 7—Volume of live trees on timberland by survey year, east Oklahoma.

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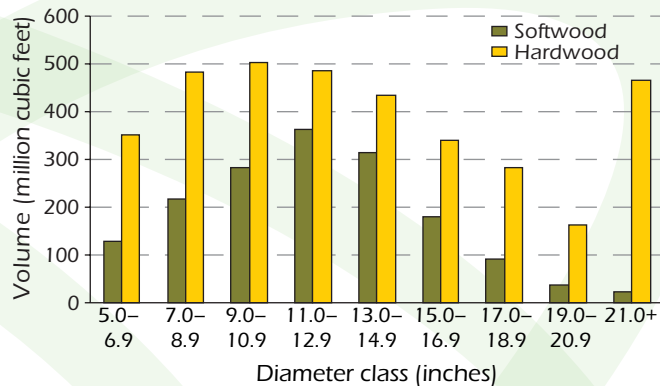


Figure 8—Volume of softwood and hardwood by 2-inch diameter classes on timberland, east Oklahoma, 2008.

## Average Annual Net Growth, Removals, and Mortality (GRMs)

**Net Change**—is an indicator of whether the forest tree-volume is increasing or decreasing, on average, each year during the survey period.

- For the survey period 1987-92, the average net change was 106 million cubic feet each year (fig. 9). Softwood inventory increased 56 million cubic feet and hardwood increased 50 million cubic feet per year.
- For the survey period 1993-2008, the average net change was 47 million cubic feet each year (fig. 9). Softwood inventory increased 22 million cubic feet and hardwood increased 25 million cubic feet per year.

On the average each year since 1987, net growth of tree volume has exceeded removals for east Oklahoma (fig. 10) and represents about 1 percent of total timberland volume (fig. 11). This is one of the **key indicators of a sustainable timber resource**.

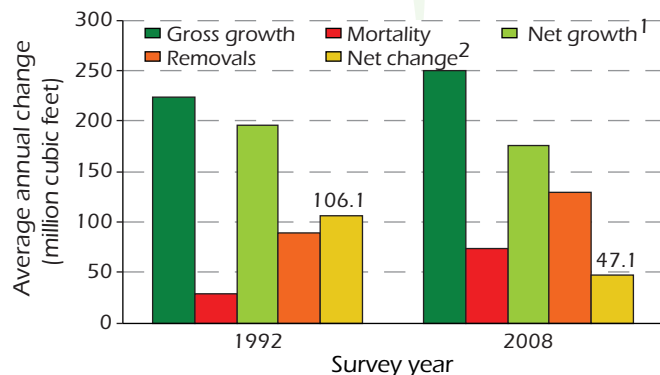


Figure 9—Average annual change for live trees on timberland by survey year, east Oklahoma.

<sup>1</sup> Net growth = gross growth - mortality.

<sup>2</sup> Net change = net growth - removals.



Well managed forests protect water quality, photo courtesy of Oklahoma Forestry Services.

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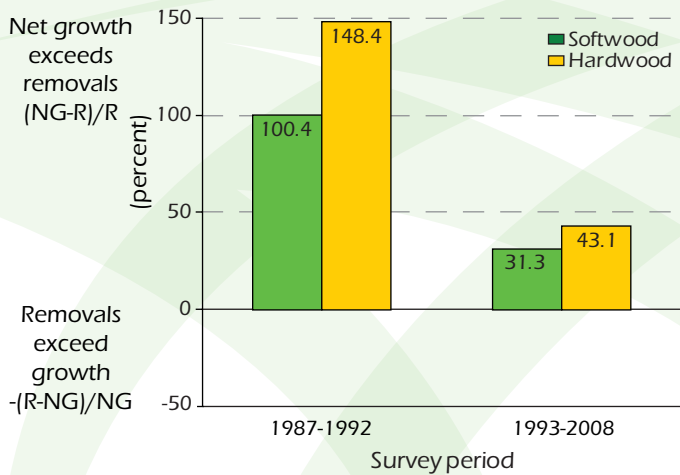


Figure 10—Percent increase or decrease relationship of net growth and removals (live trees), east Oklahoma.



Figure 11—Average annual net growth and removals for live trees compared to total volume, east Oklahoma. Note: Net growth and removals are shown on the same scale as total volume. Net change represents about 3 to 1 percent of the total volume or less in the 1993 and 2008 surveys, respectively.

<sup>1</sup> Net growth = gross growth - mortality.

**Net Growth**—(average annual gross growth minus mortality) indicates how much tree volume is added each year during the survey period representing 1993 to 2008.

- Total = 176 million cubic feet per year, a 10 percent decrease since 1987-92 survey
- Softwood = 94 million cubic feet per year, a 17 percent decrease since 1987-92 survey
- Hardwood = 82 million cubic feet per year, a 2 percent decrease since 1987-92 survey

**Removals**—total average annual removals of all live trees by harvesting or land clearing (conversion to nonforest), or change to reserve forest land status.

- Total = 129 million cubic feet per year, a 44 percent increase since 1987-92 survey
- Softwood = 71 million cubic feet per year, a 27 percent increase since 1987-92 survey
- Hardwood = 58 million cubic feet per year, a 71 percent increase since 1987-92 survey

**Mortality**—annual mortality of live trees.

- Total = 73 million cubic feet per year, a 159 percent increase since 1987-92 survey
- Softwood = 13 million cubic feet per year, a 247 percent increase since 1987-92 survey
- Hardwood = 60 million cubic feet per year, a 146 percent increase since 1987-92 survey

Note: The 16 years between plot remeasurement represents an extended period for calculating growth, removals, and mortality. Average annual net growth and removals are comparable with historical survey values. However, average annual mortality is indicating a higher value than experienced in previous surveys. While the percent change appears high, the total values are not excessive in relation to total inventory volume which increased 85 percent since 1976. Therefore, a comparison of mortality volume per acre shows current values 30 percent higher than 1992, and 11 percent higher than in 1976.

Loblolly pines along forest road, photo courtesy of Forest Inventory and Analysis.

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