

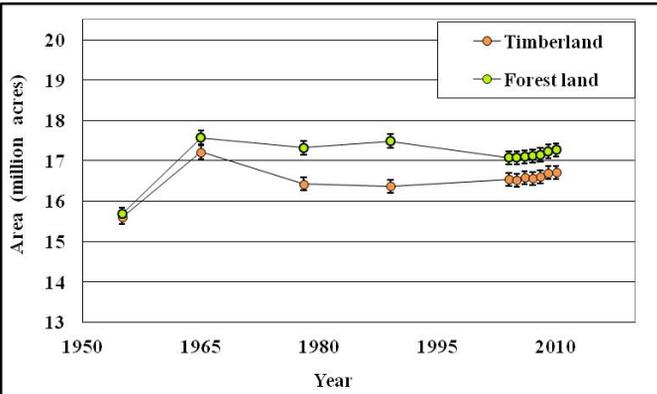
# Pennsylvania's Forest Resources, 2010

Research Note NRS-122

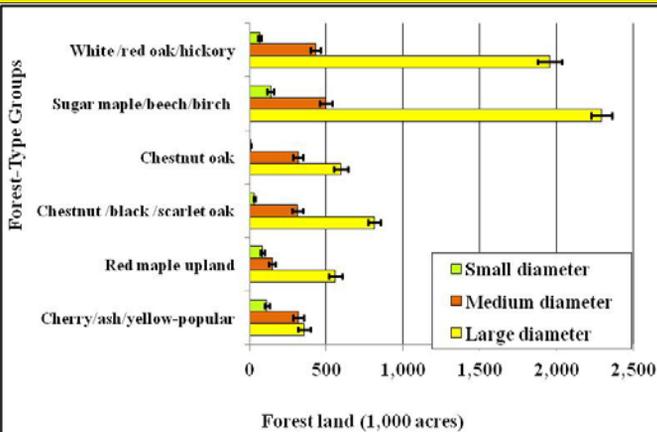
This publication provides an overview of forest resource attributes for Pennsylvania based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) program at the Northern Research Station of the U.S. Forest Service. These annual estimates, along with web-posted core tables, will be updated annually. For more information please refer to page 4 of this report.

**Table 1. - Annual estimates, uncertainty, and change.**

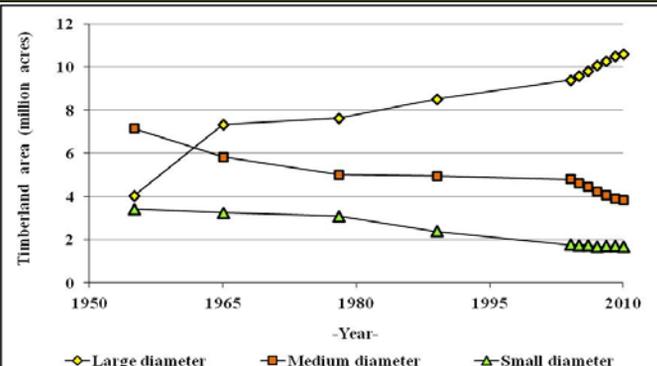
	Estimate (2010)	Sampling error (%)	Change(%) since 2005
<b>Forest Land Estimates</b>			
Area (1,000 acres)	16,764	0.7	1.1
Number of live trees > 1-inch diameter (million trees)	8,237	1.7	-2.6
Dry biomass of live trees > 1-inch diameter (1,000 tons)	1,034,357	1.0	5.2
Net volume of live trees > 5-inch diameter (million ft <sup>3</sup> )	36,205	1.1	5.7
Annual net growth of live trees > 5-inch diameter (1,000 ft <sup>3</sup> /year)	870,910	2.9	n/a
Annual mortality of live trees (1,000 ft <sup>3</sup> /year)	336,175	3.9	n/a
Annual harvest removals of live trees (1,000 ft <sup>3</sup> /year)	380,271	7.2	n/a
Annual other removals of live trees (1,000 ft <sup>3</sup> /year)	24,384	31.7	n/a
<b>Timberland Estimates</b>			
Area (1,000 acres)	16,216	0.8	1.2
Number of growing-stock trees > 5-inch diameter (million trees)	8,025	1.7	-2.8
Dry Biomass of live trees > 1-inch diameter (1,000 tons)	999,076	1.1	5.1
Net volume of live trees > 5-inch diameter (million ft <sup>3</sup> )	34,961	1.2	5.6
Net volume of growing-stock trees (million ft <sup>3</sup> )	32,460	1.2	3.8
Annual net growth of growing-stock trees (1,000 ft <sup>3</sup> /year)	762,870	2.9	n/a
Annual mortality of growing-stock trees (1,000 ft <sup>3</sup> /year)	245,197	4.4	n/a
Annual harvest removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	322,137	7.3	n/a
Annual other removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	52,533	24.9	n/a



**Figure 1. - Area of forest land and timberland by year.**



**Figure 2. - Area of forest land by size class and top six forest-type groups.**



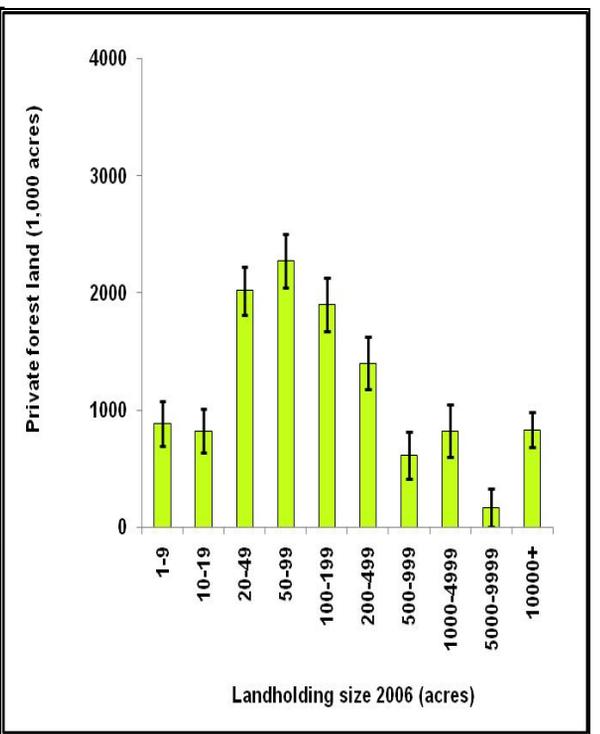
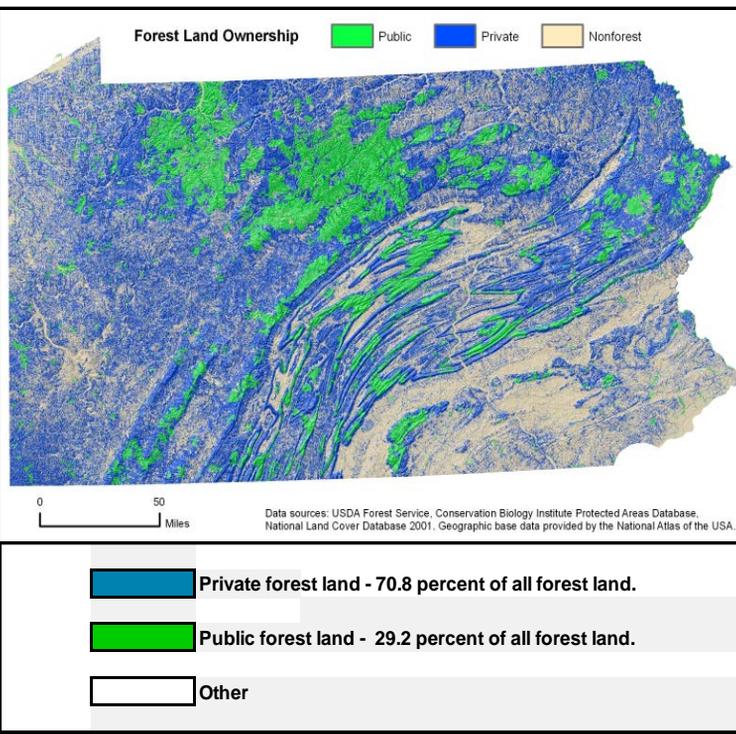
**Figure 3. - Area of timberland by stand size class and year.**

Note: When available, sampling errors/bars provided in figures and tables represent 68 percent confidence interval.



**Table 2. - Top 10 species by statewide volume estimates, 2010.**

Rank	Species	Volume of live trees on forest land (million ft <sup>3</sup> )	Sampling error (%)	Change (%) since 2005	Volume of sawtimber trees on timberland (million bdf <sup>t</sup> )	Sampling error (%)	Change (%) since 2005
1	Red maple	6,742.1	2.6	6.6	16,325.4	3.8	14.6
2	Black cherry	3,825.2	4.1	7.5	12,126.1	5.4	10.4
3	Northern red oak	3,481.6	4	7.3	13,669.5	4.6	10.9
4	Sugar maple	2,625.3	4.9	4.5	7,754.2	6.1	12.0
5	Chestnut oak	2,547.2	4.3	2.0	6,852.5	5.1	8.5
6	Eastern hemlock	1,804.3	5.9	1.5	5,123.9	6.8	2.8
7	Yellow-poplar	1,709.7	7.6	17.4	7,310.4	8.6	24.2
8	White ash	1,697.7	5.1	3.7	5,179.5	6.8	4.6
9	White oak	1,632.2	5.3	-0.3	5,415.8	6.6	4.2
10	Sweet birch	1,527.5	4.7	7.8	2,903.9	6.6	15.7
	Other hardwoods	6,977.3	2.3	3.5	19,069.0	3.4	10.5
	Other softwoods	1,635.2	6.6	12.5	5,220.4	7.6	17.2
	<b>All species</b>	<b>36,205.2</b>	<b>1.1</b>	<b>5.7</b>	<b>106,950.6</b>	<b>1.6</b>	<b>11.4</b>



**Figure 4. - Area of forest land by major owner group (2007) and size of family forest landholding (2006).**

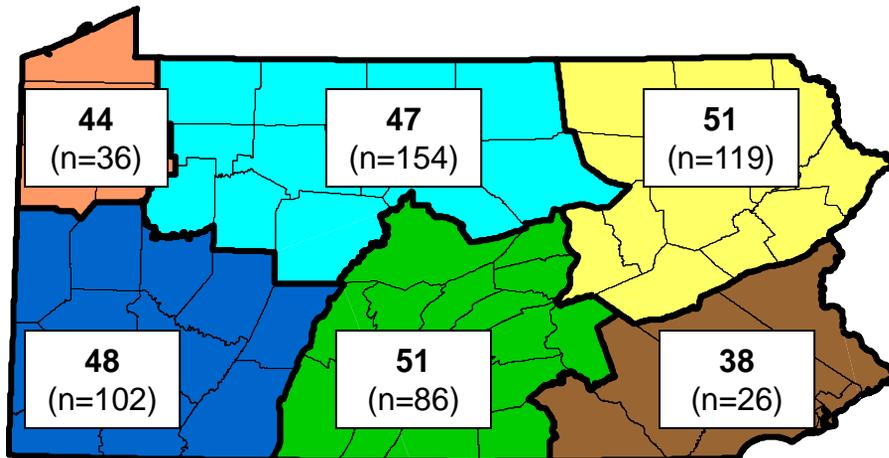


## Forest Regeneration

The first comprehensive report for Pennsylvania using the new annual forest inventory system (Bechtold and others 2005) found that **“the most disturbing finding from the forest inventory is the general lack of understory plants and tree regeneration across much of Pennsylvania.”** (McWilliams et al. 2007). This finding was based on the Pennsylvania Regeneration Study (PRS) that had been ongoing since 2001. Each year, 20 percent of the FIA plots are visited with PRS measurements being taken. The process requires 5 years to complete a full cycle of measurements of all the plots. The first inventory provided baseline measurements for the period 2001-2005. The completion of the 2010 field work represents the first re-measurement (2006-2010) .

The PRS evaluates forest understory and overstory relationships and specifically, the adequacy of advance tree-seedling and sapling regeneration (ATSSR). Ultimately, it is this component of trees that will replace the existing high-canopy trees (Marquis 1994). Only samples with adequate light for seedling establishment and development, or from 40- to 75-percent stocked are analyzed. Stands with less than 40 percent stocking have more available light, but are not included in the analysis because often these conditions are the result of poor management practices with little chance of improvement. Stand conditions that are more than 75-percent stocked do not generally receive enough light for adequate regeneration establishment. Eliminating these stocking classes provides better focus on the deer-soil-plant interactions that are at the center of the forest regeneration issue in Pennsylvania.

The percentage of plots with adequate ATSSR for 2001-2005 was 51 percent compared to 48 percent for 2006-2010. This illustrates the severity of understory conditions and the long-term nature of expected ecosystem response. It should be noted the difference between the two estimates are not statistically significant. The current results by ecopolitical region range from 38 percent in the southeast region to 51 percent in the southwest and northeast regions (Fig. 5).



**Figure 5. - Percentage of samples adequately stocked with advance tree seedling and sapling regeneration for canopy replacement species and samples 40- to-75-percent stocked, by ecopolitical region, Pennsylvania, 2006-2010. The number of samples (n) is in parentheses.**

### Citation for this Publication

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### FIA Program Information

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### Additional Pennsylvania Inventory Information

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