

# Pennsylvania's Forest Resources, 2009

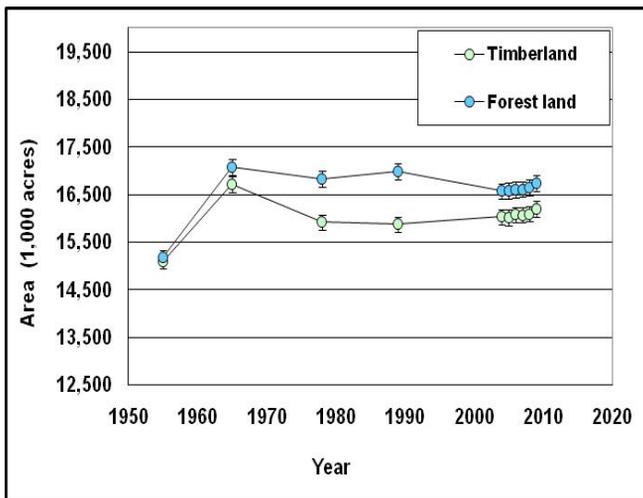
Research Note NRS-90

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.

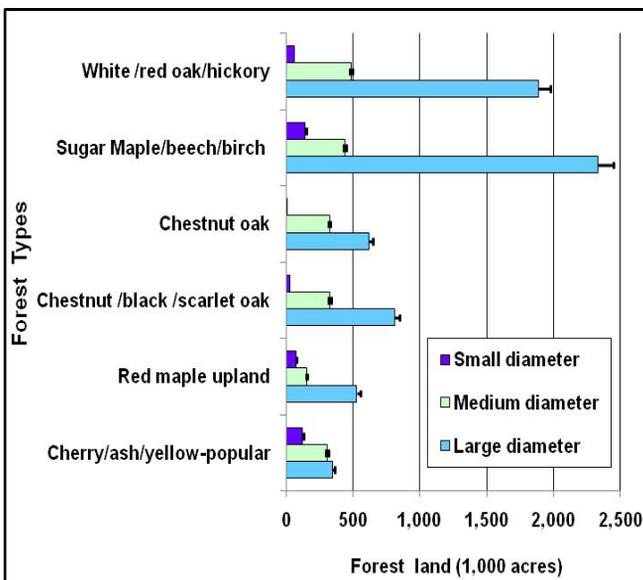
**Table 1. - Annual estimates, uncertainty, and change.**

	Estimate (2009)	Sampling error (%)	Change(%) since 2004
<b>Forest land estimates</b>			
Area (1,000 acres)	16,740	0.7	1.0
Number of live trees > 1-inch diameter (million trees)	8,287	1.7	-2.0
Dry biomass of live trees > 1-inch diameter (1,000 tons)	1,023,292	1.0	5.4
Net volume of live trees > 5-inch diameter (1,000,000 ft <sup>3</sup> )	35,796	1.1	6.0
Annual net growth of live trees > 5-inch diameter (1,000 ft <sup>3</sup> /year)	865,743	2.8	N/A
Annual mortality of live trees > 5-inch diameter(1,000 ft <sup>3</sup> /year)	323,138	4.0	N/A
Harvest removals of live trees > 5-inch diameter(1,000 ft <sup>3</sup> /year)	404,054	6.8	N/A
Other removals of live trees > 5-inch diameter(1,000 ft <sup>3</sup> /year)	20,679	35.3	N/A
<b>Timberland estimates</b>			
Area (1,000 acres)	16,202	0.8	1.0
Number of growing-stock trees > 5-inch diameter (million trees)	6,794	1.8	-5.2
Dry Biomass of live trees > 1-inch diameter (1,000 tons)	988,358	1.1	5.1
Net volume of live trees > 5-inch diameter (1,000,000 ft <sup>3</sup> )	34,563	1.2	5.7
Net volume of growing-stock trees (1,000,000 ft <sup>3</sup> )	32,280	1.2	4.4
Annual net growth of growing-stock trees (1,000 ft <sup>3</sup> /year)	767,682	2.7	N/A
Annual mortality of growing-stock trees (1,000 ft <sup>3</sup> /year)	234,433	4.5	N/A
Harvest removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	340,813	6.9	N/A

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



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

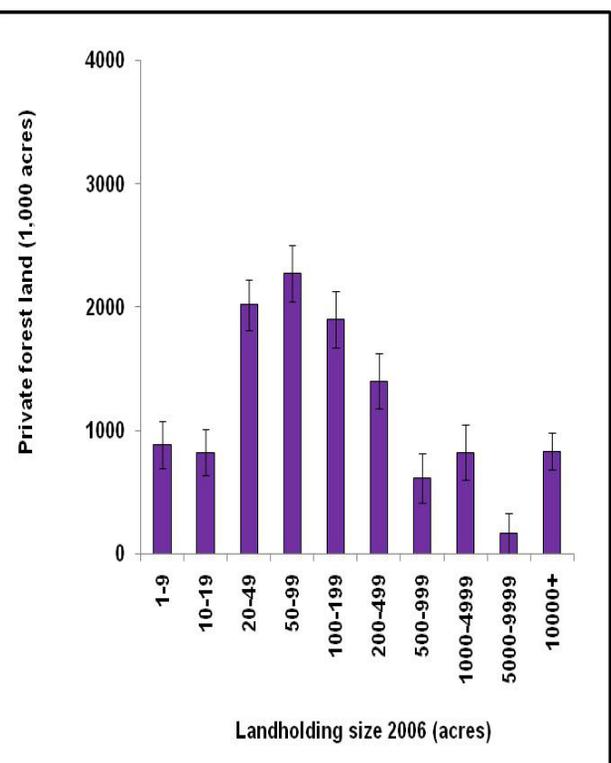
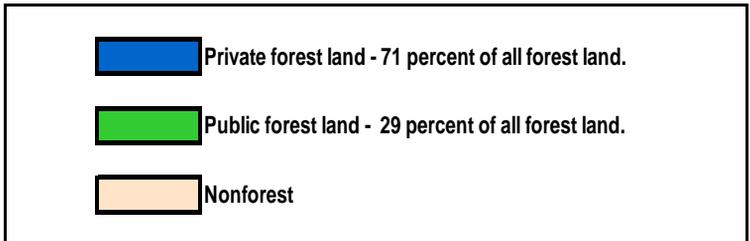
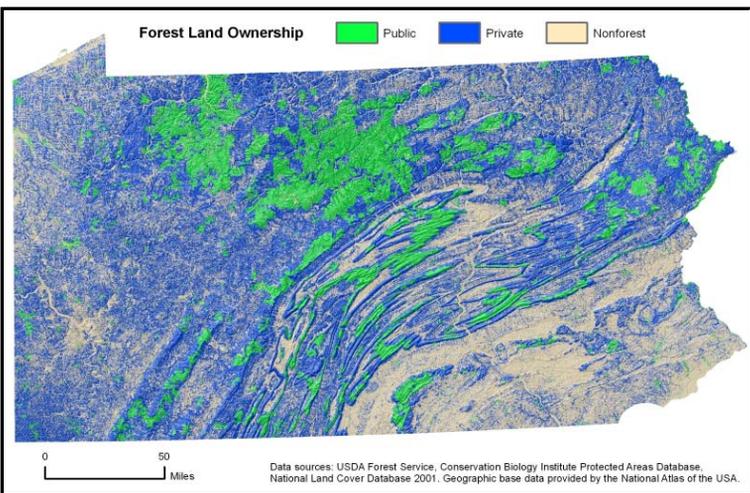


**Figure 2. - Area of forest land by size class of the top six forest types.**



**Table 2. - Top 10 species by statewide volume estimates 2009.**

Rank	Species	Volume of live trees on forest land (1,000,000 ft <sup>3</sup> )	Sampling error (%)	Change (%) since 2004	Volume of sawtimber trees on timberland (1,000,000 bdf <sup>t</sup> )	Sampling error (%)	Change (%) since 2004
1	Red maple	6,657	2.6	7.0	15,917	3.9	13.2
2	Black cherry	3,727	4.1	5.6	11,717	5.6	7.7
3	Northern red oak	3,408	3.9	7.6	13,241	4.6	10.3
4	Chestnut oak	2,591	4.3	5.1	6,925	5.1	12.5
5	Sugar maple	2,582	4.9	3.1	7,562	6.0	9.7
6	Eastern hemlock	1,777	5.9	3.0	5,023	6.8	5.5
7	White ash	1,703	5.2	5.8	5,229	6.9	7.8
8	Yellow-poplar	1,675	7.6	17.4	7,065	8.5	24.6
9	White oak	1,646	5.2	1.9	5,373	6.6	4.8
10	Sweet birch	1,505	4.6	8.2	2,872	6.6	16.6
	Other hardwoods	6,894	2.3	3.0	18,700	3.3	9.7
	Other softwoods	1,632	6.5	14.3	5,170	7.5	18.8
	<b>All species</b>	<b>35,796</b>	<b>1.1</b>	<b>6.0</b>	<b>104,794</b>	<b>1.6</b>	<b>11.2</b>



**Figure 3. - Area of forest land by major owner group (2007) and size of family forest landholding (2006).**

## Pennsylvania Issue Update – Basic Carbon Stocks and Flux

The importance of Pennsylvania's forests seems to grow faster as each decade passes. Among the many new reasons to value forest land, the ability to sequester carbon from the atmosphere has emerged as critical to the Nation's carbon footprint and information that characterizes this function is in high demand. As a starting point, the FIA database now contains estimates for the basic carbon "pools." These pools include carbon in trees (live and dead), understory vegetation, down woody debris, and soil. Trees and soil account for 8 out of 10 tons of carbon sequestered in Pennsylvania's forests, or 47 and 36 percent, respectively (Fig. 4).

One benefit of FIA's annual inventory system is the ability to track trends in conditions in a timely fashion. The change, or "flux," in carbon pools is depicted in Fig. 4. As shown, carbon pools are stable. Any significant increase in the amount of carbon sequestered is due to expansion of carbon stored in trees. Although the forest's role in storing carbon is not news, estimates of the amount and flux in carbon pools now provide a measure of Pennsylvania's contribution; and hence, add to the understanding of climate change, which has scientists worldwide searching for information. Future expansion in carbon stocks will rely on forest managers ability to keep land in forest and provide for stewardship of this valuable treasure.

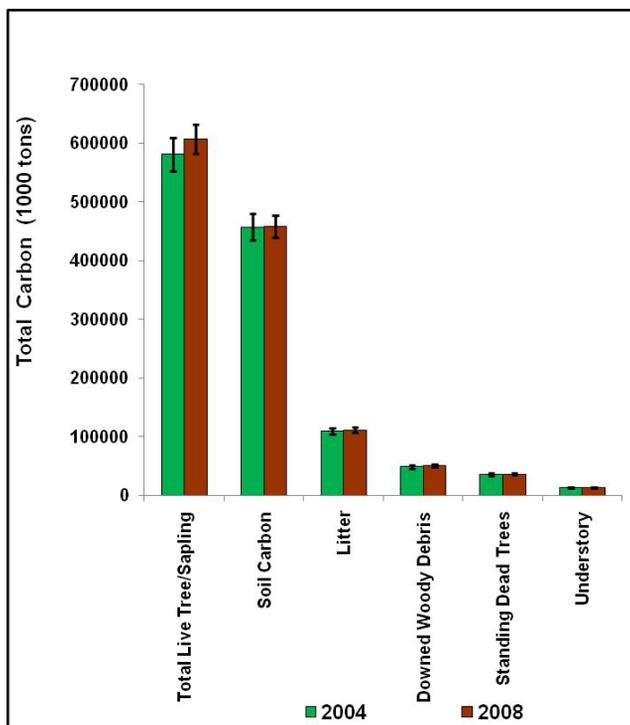
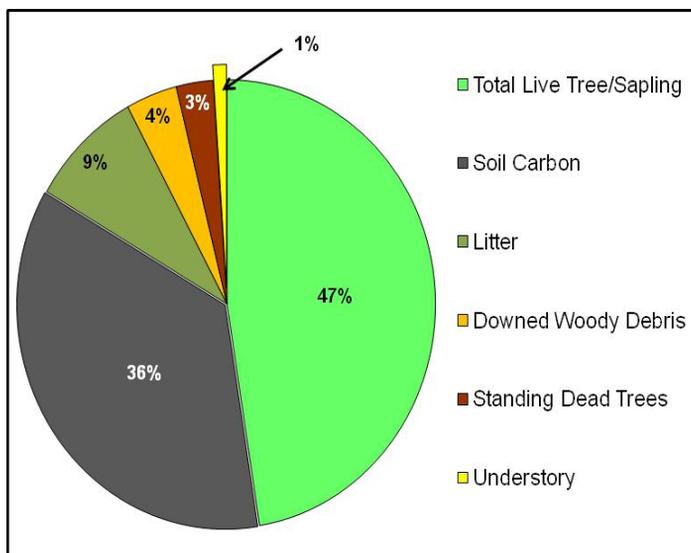


Figure 4. – Percent of carbon stock on forest land (2008) and changes between 2004-2008, Pennsylvania.



### Citation for this Publication

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### FIA Program Information

Bechtold, W.A.; Patterson, P.L., eds. 2005. **The enhanced Forest Inventory and Analysis Program: national sampling design and estimation procedures**. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.

Smith, W.B. 2002. **Forest inventory and analysis: a national inventory and monitoring program**. Environmental Pollution. 116: 233-242.

USDA Forest Service. 2009. **Forest inventory and analysis national core field guide, Vol. 1**, field data collection procedures for Phase 2 plots, Ver. 4.0. Available at [www.fia.fs.fed.us/library/field-guides-methods-proc](http://www.fia.fs.fed.us/library/field-guides-methods-proc) (verified August 5, 2008).

### Additional Pennsylvania Inventory Information

Ferguson, Roland H. 1955. **The timber resources of Pennsylvania**. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 46 p.

Ferguson, Roland H. 1968. **The timber resources of Pennsylvania**. Res. Bull. NE-8. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 145 p.

Considine, Thomas J.; Powell, Douglas S. 1980. **Forest statistics for Pennsylvania, 1978**. Res. Bull. NE-65. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 88 p.

Alerich, Carol A. 1993. **Forest statistics for Pennsylvania, 1978 and 1989**. Res. Bull. NE-126. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 244 p.

Widmann, Richard H. 1995. **Forest resources of Pennsylvania**. Res. Bull. NE-131. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 41 p.

McWilliams, William H.; Stout, Susan L.; Bowersox, Todd W.; McCormick, Larry H. 1995. **Advance tree-seedling regeneration and herbaceous cover in Pennsylvania forests**. Northern Journal of Applied Forestry. 12(4): 187-191.

McWilliams, William H.; Cassell, Seth P.; Alerich, Carol L.; et al. 2007. **Pennsylvania's forest 2004**. Res. Bull. NRS-20. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 86 p.

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