

# Indiana's Forest Resources, 2010

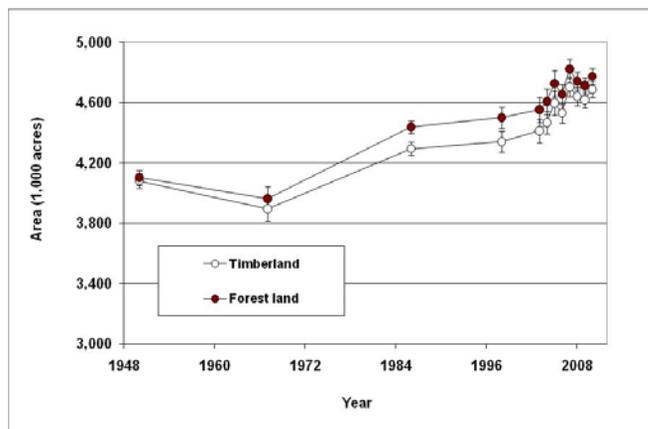
Research Note NRS-103

This publication provides an overview of forest resource attributes for Indiana 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 estimates, along with web-posted core tables, will be updated annually. For more information please refer to page 4 of this report.

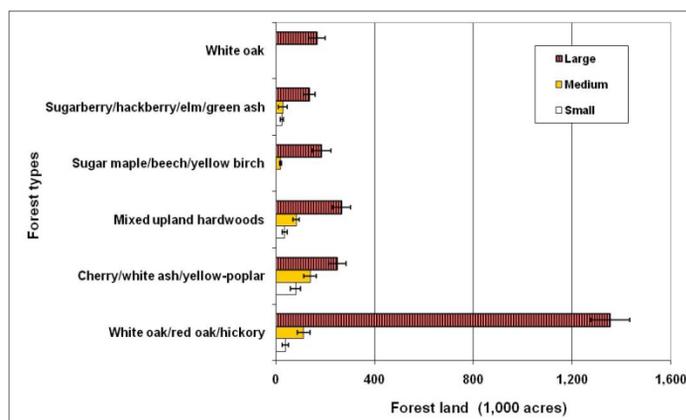
**Table 1. – Annual estimates, uncertainty, and change**

	Estimate 2010	Sampling error (%)	Change since 2006 (%)
<b>Forest Land Estimates</b>			
Area (1,000 acres)	4,775.2	1.1	2.6
Number of live trees 1-inch diameter or larger (million trees)	2,198.9	1.9	-2.2
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	260,591.4	1.5	5.6
Net volume in live trees (1,000,000 ft <sup>3</sup> )	9,963.7	1.6	6.3
Annual net growth of live trees (1,000 ft <sup>3</sup> /year)	279,226.3	5.0	-29.0
Annual mortality of live trees (1,000 ft <sup>3</sup> /year)	109,624.2	7.2	21.7
Annual harvest removals of live trees (1,000 ft <sup>3</sup> /year)	88,186.8	14.6	16.2
Annual other removals of live trees (1,000 ft <sup>3</sup> /year)	5,659.5	52.5	26.5
<b>Timberland Estimates</b>			
Area (1,000 acres)	4,689.1	1.1	3.6
Number of live trees 1-inch diameter or larger (million trees)	2,148.1	1.9	-2.0
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	256,038.2	1.5	7.1
Net volume in live trees (1,000,000 ft <sup>3</sup> )	9,792.3	1.7	7.9
Net volume of growing-stock trees (1,000,000 ft <sup>3</sup> )	8,867.8	1.7	7.2
Annual net growth of growing-stock trees (1,000 ft <sup>3</sup> /year)	274,003.8	5.2	-23.0
Annual mortality of growing-stock trees (1,000 ft <sup>3</sup> /year)	80,435.8	8.5	20.6
Annual harvest removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	82,749.4	15.1	34.5
Annual other removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	6,262.7	39.9	-32.7

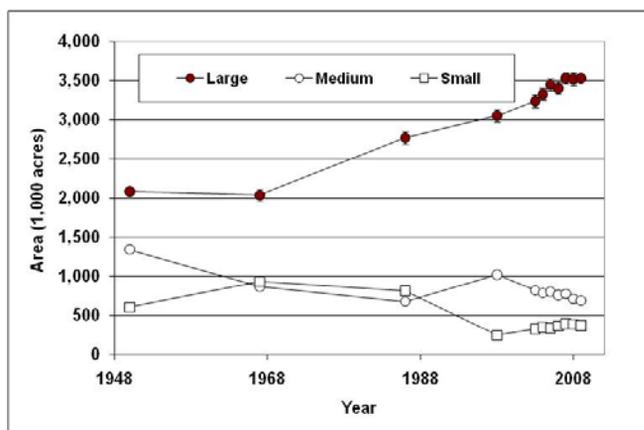
Note: When available, sampling errors/bars provided in figures and tables represent 68 percent confidence intervals.



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



**Figure 2. – Area of forest land area by top six forest types and stand size class, 2006-2010.**

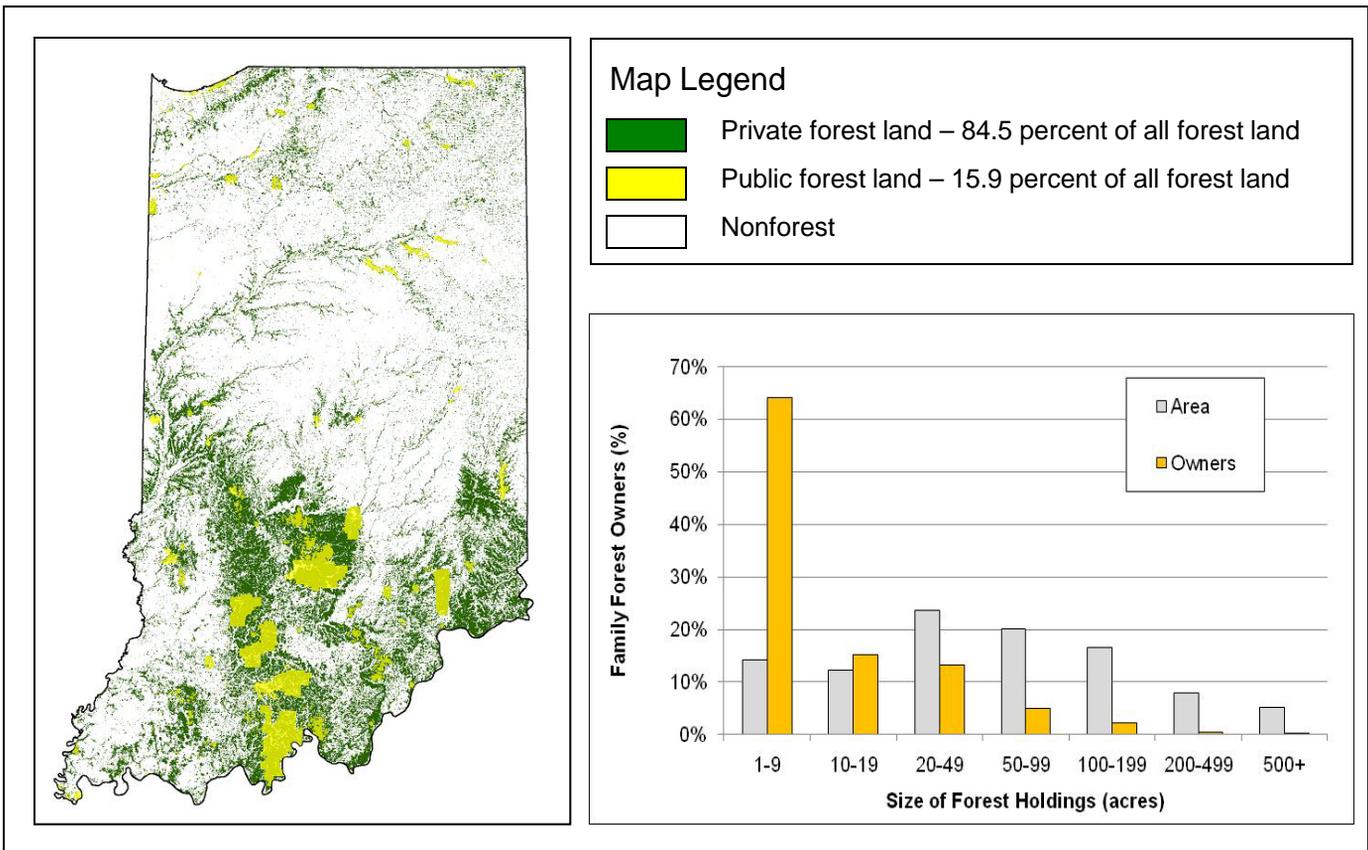


**Figure 3. – Area of timberland by stand size class and year.**



**Table 2. – Top 10 tree species by statewide volume estimates, 2006-2010**

Rank	Species	Volume of live trees on forest land (1,000,000 ft <sup>3</sup> )	Sampling Error (%)	Change since 2006 (%)	Volume of sawtimber trees on timberland (1,000,000 bdf)	Sampling error (%)	Change since 2006 (%)
1	Yellow-poplar	1,161.1	6.1	12.10	5,157.2	6.7	12.50
2	Sugar maple	1,051.1	4.6	13.50	3,172.9	5.7	15.80
3	White oak	728.7	6.0	-2.50	2,796.2	6.3	-2.40
4	White ash	547.6	6.2	4.00	1,859.7	7.6	13.00
5	Black oak	543.1	7.2	-5.00	2,166.9	7.7	-2.30
6	Northern red oak	470.5	7.3	15.40	1,922.8	7.8	15.80
7	Red maple	434.6	8.5	41.30	1,190.9	10.9	59.00
8	American sycamore	418.1	9.0	-1.70	1,745.0	9.4	2.70
9	Shagbark hickory	355.0	6.9	18.20	1,378.0	7.7	25.80
10	Black cherry	312.1	7.0	17.70	737.6	9.0	23.00
	<b>Other softwoods</b>	<b>333.6</b>	<b>9.3</b>	<b>9.30</b>	<b>1,104.8</b>	<b>11.6</b>	<b>7.40</b>
	<b>Other hardwoods</b>	<b>3,608.3</b>	<b>2.8</b>	<b>1.50</b>	<b>11,504.9</b>	<b>3.5</b>	<b>5.70</b>
	<b>All Species</b>	<b>9,963.7</b>	<b>1.6</b>	<b>6.30</b>	<b>34,736.9</b>	<b>2.0</b>	<b>9.30</b>



**Figure 4. – Area and number of family forests in Indiana by size of forest landholdings, Indiana, 2004-2008.**

## How Common are Standing Dead Trees?

Standing dead trees (snags) are important indicators of wildlife habitat, structural diversity, past mortality events, and carbon storage. FIA collects data on standing dead trees of numerous species and sizes in varying stages of decay. According to inventory data, sassafras (*Sassafras albidum*), American elm (*Ulmus americana*), and slippery elm (*Ulmus rubra*) are the top three species in terms of total snags in Indiana's forest land comprising nearly 27 percent of all snags (Fig. 5). It is estimated that there are over 51 million snags in Indiana's forests. The number of snags per acre in Indiana's forests has been steadily declining for the past 25 years (Fig. 6). Today, on average there are 11 snags per acre of forest land in Indiana.

The occurrence of snags in Indiana's forests is the result of diseases and insects, weather damage, fire, flooding, drought, and competition. The dominance of sassafras and American elm snags in particular might be accounted for by diseases such as Nectria canker (of fungal origin) and Dutch elm disease. Additionally, normal forest maturation dynamics may be responsible for mortality rates in the population of these two species. Smaller trees and certain early-successional species suffer competition-induced deaths, ensuring gap succession (creation of small openings through tree mortality), which is an important part of a mature forest. Once dead, snags provide areas for foraging, nesting, roosting, hunting perches, and cavity excavation for wildlife, from primary colonizers such as insects, bacteria, and fungi to birds, mammals, and reptiles. The Indiana bat (*Myotis sodalis*), one of only two species designated as state and federally endangered species, roosts primarily in the cavities and under exfoliating bark of snags of many hardwood species abundant in the oak/hickory forest type.

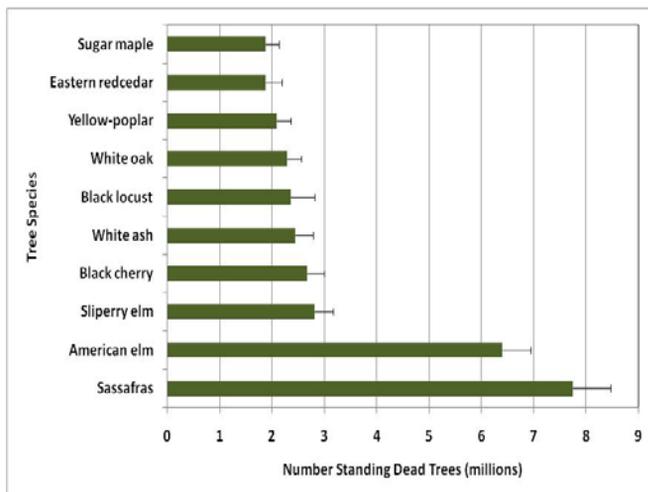


Figure 5. – Top ten tree species in terms of number of standing dead trees, 2006-2010.

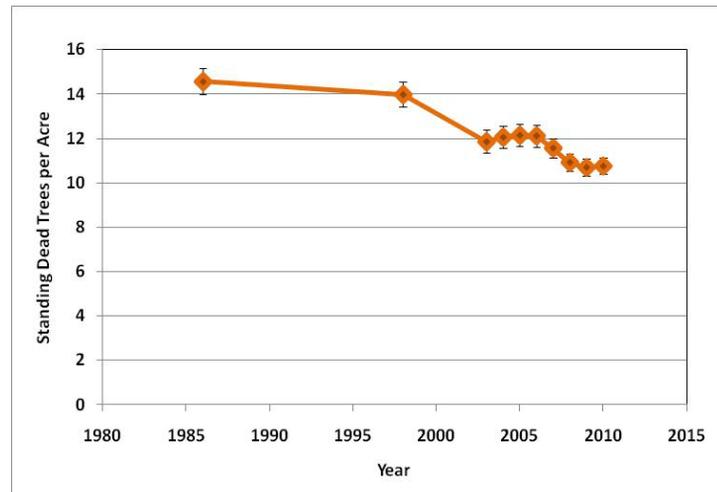


Figure 6. – Average number of standing dead trees per acre of forest land over time.



### 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. 2005. Forest inventory and analysis national core field guide, Vol. 1, field data collection procedures for phase 2 plots, Ver. 3.0. Washington, DC: U.S. Department of Agriculture, Forest Service. Available at <http://www.fia.fs.fed.us/library/field-guides-methods-proc/> (verified Aug. 1, 2008).

### Additional Indiana Inventory Information

Woodall, C.W.; Webb, M.N.; Wilson, B.T.; Settle, J.; Piva, R.J.; Perry, C.H.; Meneguzzo, D.M.; Crocker, S.J.; Butler, B.J.; Hansen, M.; Hatfield, M.; Brand, G.; Barnett, C. 2011. Indiana's Forests 2008. Resour. Bull. NRS-45. Newtown Square: U.S. Department of Agriculture, Forest Service, Northern Research Station. 56 p.

Woodall, C.W.; Johnson, D.; Gallion, J.; Perry, C.; Butler, B.; Piva, R.; Jepsen, E.; Nowak, D.; Marshall, P. 2005. Indiana's forests, 1999-2003 Part A. Resour. Bull. NC-253A. St. Paul, MN: U.S. Department of Agriculture, Forest Service North Central Research Station. 95 p.

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Estimates, tabular data, and maps from this report may be generated at: [fiatools.fs.fed.us](http://fiatools.fs.fed.us)

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