

Indiana's Forest Resources, 2012

Research Note NRS-173

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 2012	Sampling error (%)	Change since 2008 (%)
Forest Land Estimates			
Area (1,000 acres)	4,855.3	1.0	2.3
Number of live trees 1-inch diameter or larger (million trees)	2,191.1	1.8	-0.1
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	268,068.2	1.4	4.5
Net volume in live trees (1,000,000 ft ³)	10,313.1	1.5	5.4
Annual net growth of live trees (1,000 ft ³ /year)	245,962.2	4.2	-29.4
Annual mortality of live trees (1,000 ft ³ /year)	112,371.7	5.7	14.0
Annual harvest removals of live trees (1,000 ft ³ /year)	77,255.3	14.5	-5.8
Annual other removals of live trees (1,000 ft ³ /year)	9,028.1	36.2	50.2
Timberland Estimates			
Area (1,000 acres)	4,773.4	1.1	3.0
Number of live trees 1-inch diameter or larger (million trees)	2,146.8	1.9	0.5
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	263,415.1	1.5	5.3
Net volume in live trees (1,000,000 ft ³)	10,135.9	1.6	6.3
Net volume of growing-stock trees (1,000,000 ft ³)	9,192.7	1.7	6.5
Annual net growth of growing-stock trees (1,000 ft ³ /year)	238,641.7	4.4	-25.0
Annual mortality of growing-stock trees (1,000 ft ³ /year)	83,729.0	6.6	11.0
Annual harvest removals of growing-stock trees (1,000 ft ³ /year)	73,078.3	14.9	1.0
Annual other removals of growing-stock trees (1,000 ft ³ /year)	5,836.2	37.2	-28.2

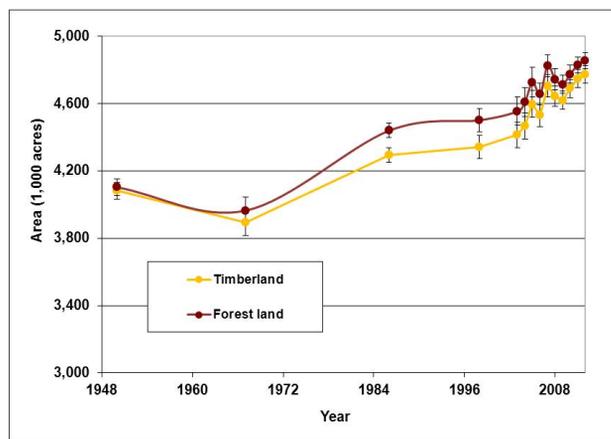


Figure 1. – Area of timberland and forest land by year.

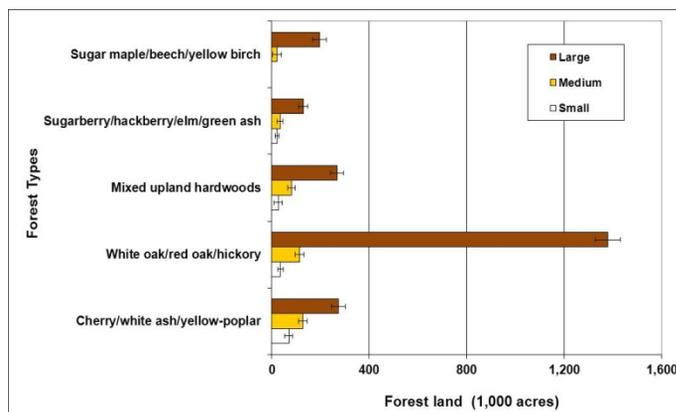


Figure 2. – Area of forest land area by top five forest types and stand-size class, 2008-2012.

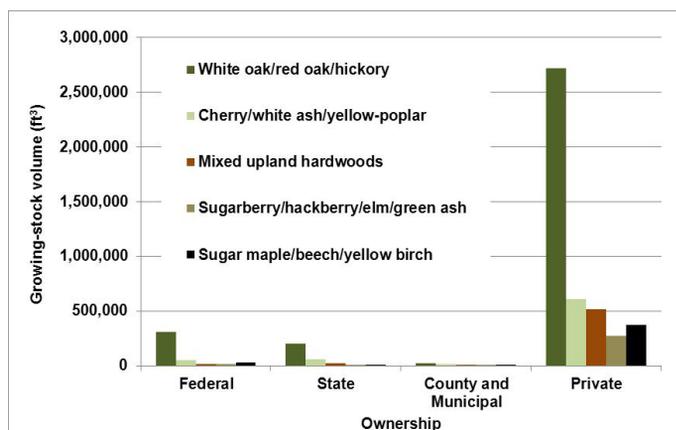


Figure 3. – Area of timberland by stand-size class and ownership.

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



Table 2. – Top 10 tree species by statewide volume estimates, 2008-2012

Rank	Species	Volume of live trees on forest land (1,000,000 ft ³)	Sampling Error (%)	Change since 2008 (%)	Volume of sawtimber trees on timberland (1,000,000 bdf)	Sampling error (%)	Change since 2008 (%)
1	Yellow-poplar	1,191.0	5.8	9.10	5,321.6	6.3	11.30
2	Sugar maple	1,090.6	4.3	3.70	3,342.1	5.4	6.20
3	White oak	740.0	5.6	0.00	2,890.8	5.9	2.40
4	White ash	566.3	6.0	4.00	1,972.4	7.1	9.90
5	Black oak	550.1	6.9	-0.30	2,218.2	7.4	2.30
6	Red maple	479.1	7.9	18.30	1,364.0	9.9	20.10
7	Northern red oak	458.2	7.0	6.30	1,910.7	7.5	11.40
8	American sycamore	436.9	8.6	6.10	1,784.1	9.1	5.80
9	Shagbark hickory	372.4	6.5	10.20	1,439.9	7.2	11.40
10	Black cherry	331.5	6.7	14.70	844.2	8.5	36.80
	Other softwoods	346.3	9.1	10.00	1,125.5	11.4	12.70
	Other hardwoods	3,750.5	2.7	3.70	11,967.9	3.3	4.80
	All Species	10,313.1	1.5	5.40	36,181.5	1.9	7.70

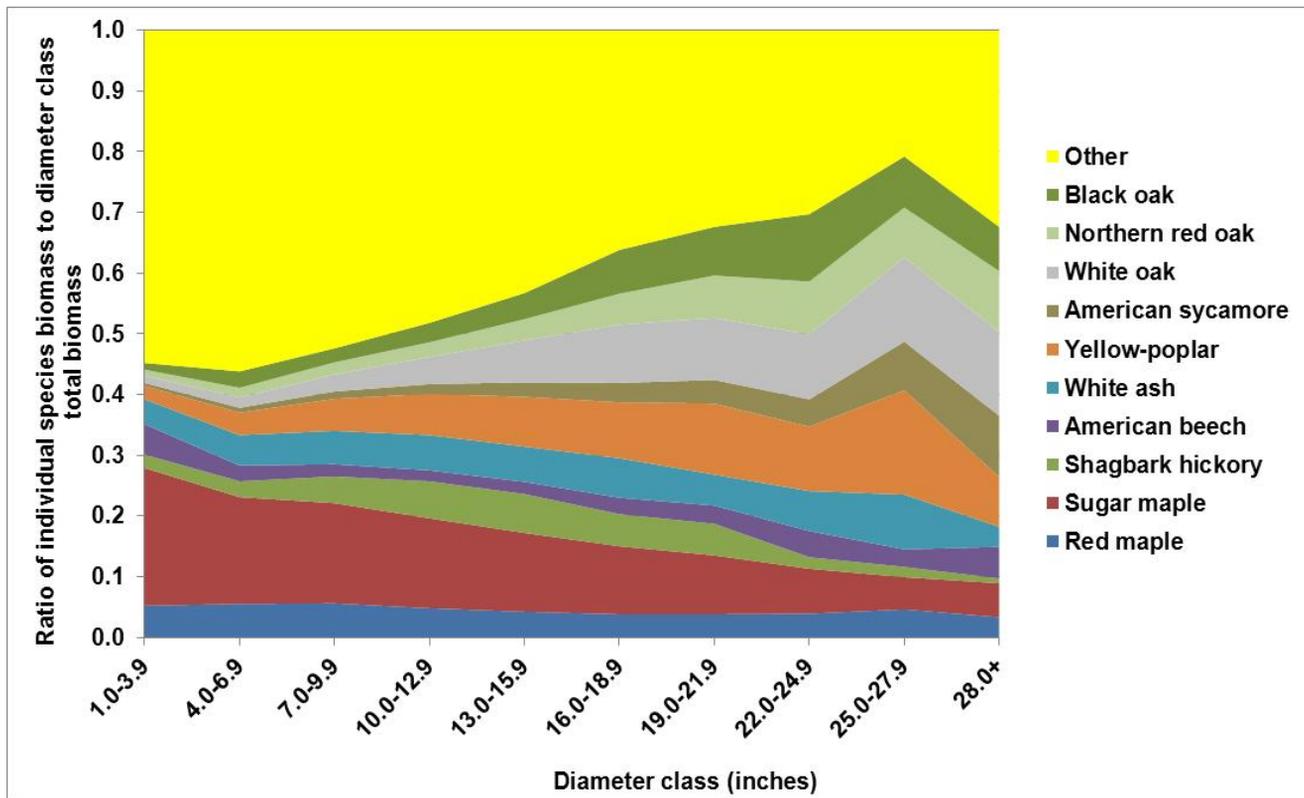


Figure 4. – Ratio of individual tree species biomass to total biomass by diameter class, 2008-2012.



Status of Indiana Bat Habitat

Although many bat species hibernate in caves during winter months, forests provide critical habitat to these fauna during their active seasons. Most importantly, larger diameter trees in the Midwest, in proximity to canopy gaps or forest ecotones for insect foraging opportunities, provide optimal roosting habitat for bats. The Indiana bat (*Myotis sodalis*) is a federally endangered bat species that makes its summer home across Indiana's forests. The Indiana bat generally prefers large, standing dead hardwood species, especially for maternity roosting trees. The species, size, and live/dead status of trees often delineate preferred Indiana bat habitat. The density (number per forest land acre) of standing dead trees in Indiana's forests is limited for larger diameter trees (Fig. 5).

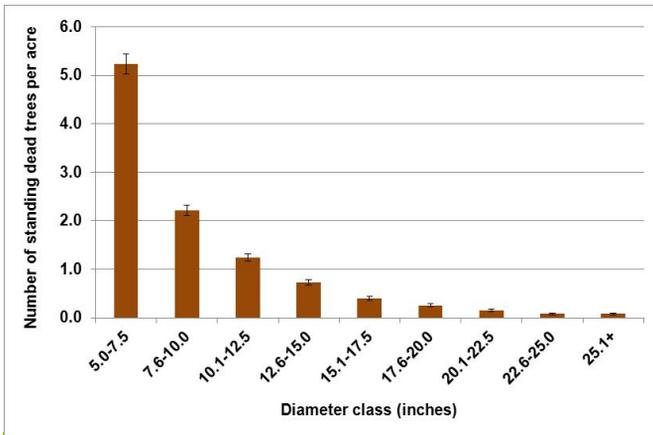


Figure 5. – Density (number/acre) of standing dead trees (i.e., snags), by d.b.h. class on forest land, Indiana, 2008-2012.

There is an average of less than 1 standing dead tree per acre with a diameter at breast height (d.b.h.) in excess of 15.0 inches. In addition to snags, Indiana bats may use crevasses of living trees for roosting in tree species such as shagbark and shellbark hickories which average more than 1 per forest land acre with d.b.h. in excess of 12 inches (Fig. 6). In order to assess potential future bat habitat, the current d.b.h. distribution of live trees for bat preferred species was ascertained (Fig. 7). Indiana averaged more than 12 live trees per forest land acre with a d.b.h. in excess of 12.5 inches of preferred roost tree species. Although the current density of standing dead trees maybe limited on some forest acreage, there is active management potential to increase bat habitat through selective management of tree species and/or retention of future snags. Despite the current prevalence of bat habitat across Indiana's forests, the onset of white nose syndrome will present additional future challenges to Indiana bat conservation.

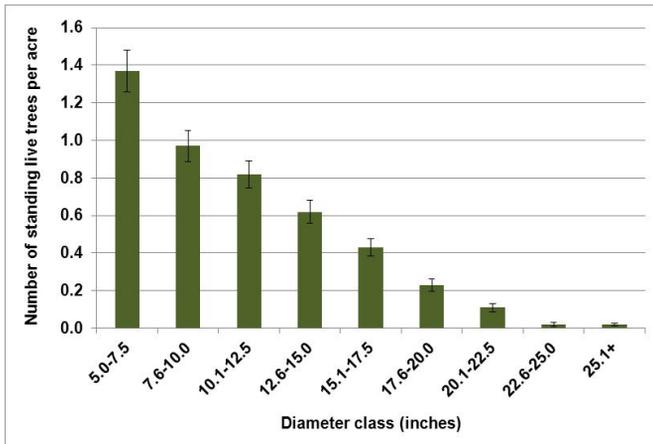


Figure 6. – Density (number/acre) of standing live shagbark and shellbark hickories by d.b.h. class on forest land, Indiana, 2008-2012.

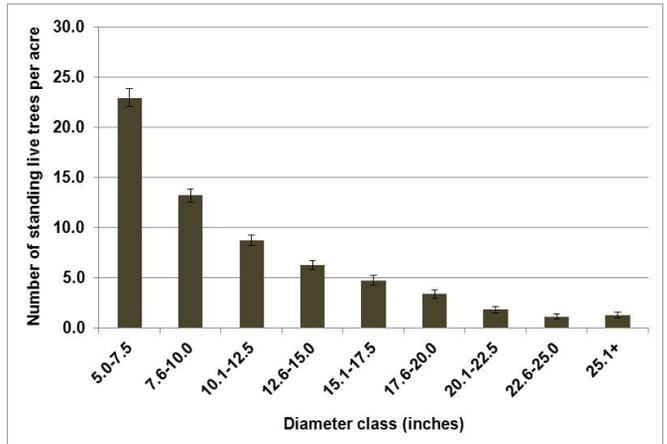


Figure 7. – Density (number/acre) of standing live oaks, maples (excluding boxelder), hickories, eastern cottonwood, American elm, slippery elm, and black locust, by d.b.h. class on forest land, Indiana, 2008-2012.



Citation for this Publication

Woodall, C.W.; Gallion, J. 2013. **Indiana's forest resources, 2012**. Res. Note NRS-173. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

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. 2011. **Forest inventory and analysis national core field guide, Vol. 1, field data collection procedures for phase 2 plots, Ver. 5.1**. Washington, DC: U.S. Department of Agriculture, Forest Service. Available at <http://www.fia.fs.fed.us/library/field-guides-methods-proc/> (verified April 1, 2012).

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.

Contact Information

Lead analyst: Christopher Woodall, 651-649-5141, cwoodall@fs.fed.us

Data processing/access: Mark Hatfield, 651-649-5169, mahatfield@fs.fed.us

Estimates, tabular data, and maps from this report may be generated at: fiatools.fs.fed.us

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternate means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, DC 20250-9410, or call (800)795-3272 (voice) or (202)720-6382 (TDD). USDA is an equal opportunity provider and employer.