



Forests of Wisconsin, 2013

This resource update provides an overview of forest resources in Wisconsin based on an inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program at the Northern Research Station in cooperation with the Wisconsin Department of Natural Resources. Data estimates are based on field data collected using the FIA annualized sample design and are updated yearly. The estimates presented in this update are for the measurement year 2013 with comparisons made to data reported in 2008. The sample plot population in Wisconsin consists of 12,545 plots, collected across a period of 5 years (about 2,500 plots, or about 20 percent of the data per year). The estimates in 2013 consist of 5 years (100 percent) of data collected using the annualized sampling and estimation procedures. Growth, removals, and mortality estimates are based on 5 years of data (100

percent of the total sample), or 12,545 plots. The data used in this publication were accessed from the FIA database in March and April, 2014.

Overview

Wisconsin is home to 17.1 million acres of forest land. Forested area has increased by about 2.4 percent (404,000 acres) since 2008 (Table 1). The number of live trees on Wisconsin’s forest land in 2013 was estimated at 11.4 billion trees, an increase of 4.2 percent from 2008. Net volume experienced an increase of about 6.5 percent. Average annual net growth and average annual mortality increased by 4.9 and 10.5 percent, respectively, since 2008, but average annual harvest removals decreased by 1.6 percent (Table 1). Similar trends were observed on Wisconsin’s timberlands (Table 1).

Table 1.—Wisconsin forest statistics, change between 2008 and 2013

	2008 Estimate	Sampling error (percent)	2013 Estimate	Sampling error (percent)	Change since 2008
Forest Land					
Area (thousand acres)	16,697.2	0.5	17,101.2	0.5	2.4
Number of live trees ≥1 in diameter (million trees)	10,919.1	1.1	11,375.6	1.1	4.2
Net volume in live trees ≥5 in diameter (million cubic feet)	23,244.3	1.0	24,754.7	0.9	6.5
Live tree (≥ 1 in diameter) aboveground biomass (thousand oven-dry tons)	603,869.5	0.9	640,499.2	0.8	6.1
Annual net growth live trees ≥5 in (million ft ³ /yr)	621.8	2.2	652.5	1.9	4.9
Annual harvest removals of live trees ≥5 in (million ft ³ /yr)	352.1	5.3	346.5	4.7	-1.6
Annual mortality of live trees ≥5 in (million ft ³ /yr)	278.3	2.7	307.5	2.3	10.5
Timberland					
Area (thousand acres)	16,208.7	0.5	16,580.2	0.5	2.3
Number of live trees ≥1 in diameter (million trees)	10,611.2	1.1	11,040.8	1.2	4.0
Net volume live trees ≥5 in diameter (million cubic feet)	22,563.8	1.0	24,015.7	1.0	6.4
Live tree (≥1 in diameter) aboveground biomass (thousand oven-dry tons)	586,542.7	0.9	621,763.8	0.9	6.0
Net growth of growing-stock trees (million ft ³ /yr)	568.5	2.1	559.1	1.9	-1.7
Annual harvest removals of growing-stock trees (million ft ³ /yr)	298.5	5.5	303.3	4.9	1.6
Annual mortality of growing-stock trees (million ft ³ /yr)	200.4	3.0	235.2	2.5	17.4



Forest Area

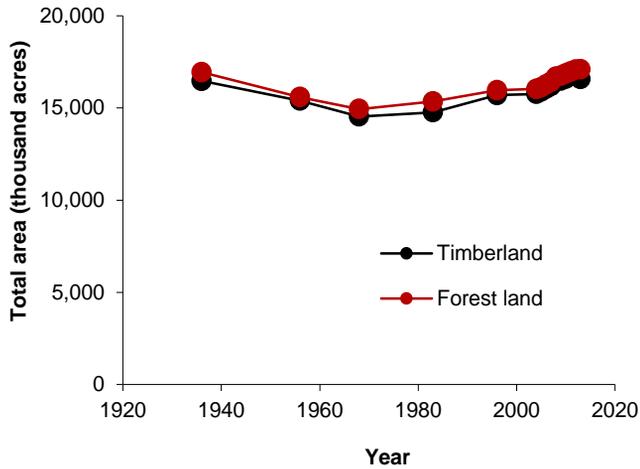


Figure 1.—Area of forest land and timberland by year, Wisconsin.

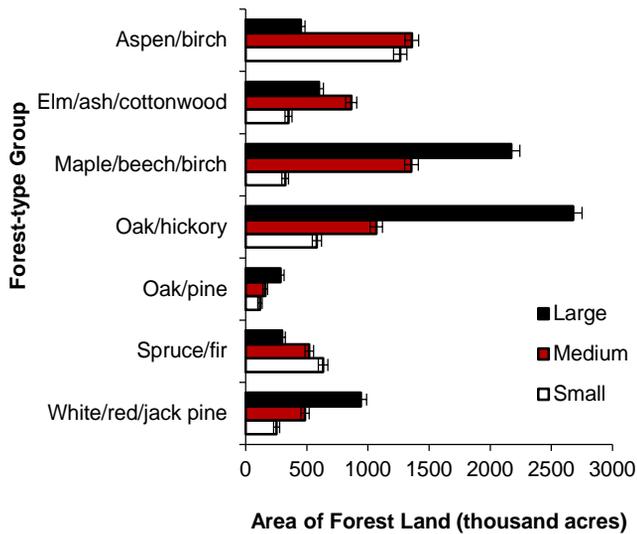


Figure 2.—Area of forest land by forest-type group and stand-size class, Wisconsin, 2013. Error bars represent one standard error, the 66 percent confidence interval.

The total area of Wisconsin’s forest land and timberland has remained relatively stable, with modest increases over the last decade (Fig. 1).

Some forest-type groups are much more common than others. Oak/hickory is the single most common forest-type group (4.3 million acres) and it is found primarily in the large stand-size class (Fig. 2). The maple/beech/birch forest-type group is slightly less common (3.9 million acres) and it is similar distributed across stand-size classes (Fig. 2). The aspen/birch forest-type group is also abundant (3.1 million acres), but it occurs largely in medium and small stand-size classes (Fig. 2).

Wisconsin is divided into five survey units (Fig. 3). Statewide, there 17.1 million acres of forest land area with more than 50 percent for all forest land found in the northern two survey units. There are 4.4 million acres of forest land in the northeastern unit and 5.7 million acres of forest land in the northwestern unit. Additional details on forest land ownership are discussed on page 4.

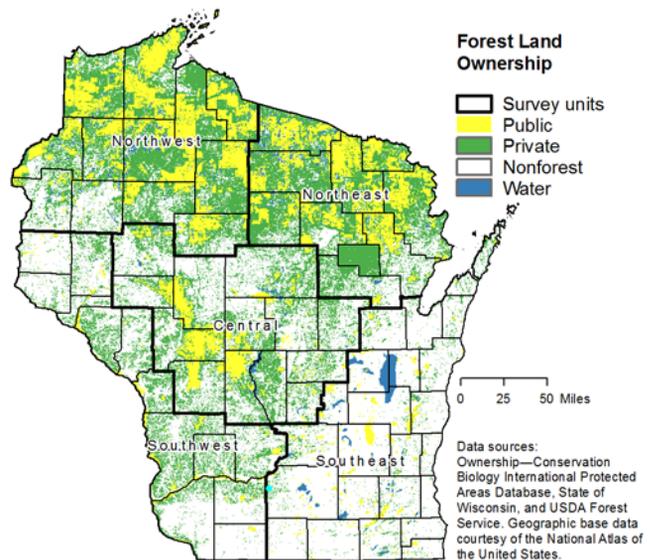


Figure 3.—Distribution of public and private forest ownership in Wisconsin.

Volume, Biomass, and Trends

Crews recorded 85 species (including unknowns collected to the genus level) on Wisconsin forest land in the measurement years included in the 2013 dataset. Quaking aspen (*Populus tremuloides*) is by far the most numerous tree in Wisconsin with an estimated 1.5 billion individuals (Table 2); red maple (*Acer rubrum*) is close behind with an estimated 1.2 billion trees in Wisconsin (Table 2).

Interestingly, the most numerous species, quaking aspen, is not the most voluminous species in the state. That distinction belongs to sugar maple (*Acer saccharum*) with a total volume of nearly 2.7 billion cubic feet. These sugar maples also store approximately 84 million tons of woody biomass in their tissues.

Of the top 10 most voluminous species, red maple, eastern white pine, and red pine are all growing vigorously with each accumulating nearly 80 million cubic feet per year (Table 2). Quaking aspen mortality dwarfs that of other major species in Wisconsin (Table 2). Several species are removed in harvests, but quaking aspen is the most highly sought (Table 2).



Figure 4.—Quaking aspens (left, *Populus tremuloides*) are the most numerous tree in Wisconsin. Sugar maples (right, *Acer saccharum*) have the most volume and biomass in Wisconsin’s forests. Photos courtesy of Jason Sharman and Steven Katovich, bugwood.org

Table 2.—Number, volume, biomass, growth, mortality, and removals of live trees on forest land by species of the top 10 tree species by net volume, Wisconsin, 2009-2013.

Common Name	Latin Name	Million Trees ^a	Net Volume ^b (million ft ³)	Aboveground Biomass ^a (thousand dry tons)	Average Annual Net Growth ^b (thousand ft ³)	Average Annual Mortality ^b (thousand ft ³)	Average Annual Harvest Removals ^b (thousand ft ³)
Sugar maple	<i>Acer saccharum</i>	884.5	2680.2	84436.0	62135.2	10536.0	30263.1
Red maple	<i>Acer rubrum</i>	1257.0	2585.8	72512.9	79867.4	12768.3	36823.5
Northern red oak	<i>Quercus rubra</i>	226.9	2025.8	60661.6	57312.5	10718.7	26447.4
Quaking aspen	<i>Populus tremuloides</i>	1563.4	1774.9	42557.7	42697.9	64902.7	52816.4
Eastern white pine	<i>Pinus strobus</i>	355.7	1773.4	30283.1	76629.3	4575.8	13148.3
Red pine	<i>Pinus resinosa</i>	258.5	1718.1	31316.9	76314.6	2845.0	37378.4
American basswood	<i>Tilia americana</i>	260.1	1270.0	21537.2	25966.8	8742.4	13809.8
Northern white-cedar	<i>Thuja occidentalis</i>	250.9	874.1	13642.1	17862.3	2493.0	2091.0
White oak	<i>Quercus alba</i>	101.8	856.1	25948.2	14948.1	4582.5	7673.7
Black ash	<i>Fraxinus nigra</i>	463.3	679.8	19880.1	16239.3	4504.1	2485.2

^a Trees ≥ 1 in diameter

^b Trees ≥ 5 in diameter

Forest Ownership in Context

Table 3.—Forest land ownership in Wisconsin, 2013

NASF Survey Category	Forest land area (acres)
Individuals	9,786,927.9
Corporate	1,049,358.4
Forest industry	412,540.9
Native American	395,369.1
Other private	305,763.7
Federal	1,623,334.1
State	1,173,775.2
Other government	2,354,095.4

The National Association of State Foresters is conducting a national survey of forest ownership by state. A summary for Wisconsin is provided in Table 3.

The largest land owner in the state is individuals; they collectively own 57 percent of forest land in the state. Corporate and forest industry holders differ in one important way: forest industrial owners own both forest land and a wood processing facility while corporate forest owners only own forest land. Corporate forest ownership is a relatively new category resulting from the sale of forest land by traditional forest industrial landowners to timber investment management organizations and real estate investment trusts.

Ownership by individuals is nearly double the combined public ownership in the state (30 percent). The largest public land ownership is held by other governments, composed primarily of county forest land. Wisconsin is famous for its large county forest land ownership.

Additional Inventory Resources

Hansen, M.H.; Perry, C.H.; Brand, G.; McRoberts, R.E. 2008. **Wisconsin's forest, 2004: statistics and quality assurance**. Resour. Bull. NRS-24. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 98 p.

Perry, C.H.; Everson, V.A.; Brown, I.K.; Cummings-Carlson, J.; Dahir, S.E.; et al. 2008. **Wisconsin's forests, 2004**. Resour. Bull. NRS-23. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 104 p.

Perry, C.H.; Everson, V.A.; Butler, B.J.; Crocker, S.J.; Dahir, S.E.; et al. 2012. **Wisconsin's Forests 2009**. Resour. Bull. NRS-67. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 62 p. [with DVD].



Figure 7.—Wisconsin's forests are a critical part of the character and beauty of the state. Photo courtesy of Paul Bolstad, bugwood.org.

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