



Forests of Illinois, 2017

This update provides an overview of forest resources in Illinois following an inventory by the USDA Forest Service, Forest Inventory and Analysis program, Northern Research Station. Estimates are derived from field data collected using an annualized sample design. Current variable estimates such as area and volume are based on 5,994 (1,046 forested) plots measured in 2011–2017. Change variables such as net growth, removals, and mortality are based on 5,914 (964 forested) plots measured in 2005–2011 and resampled in 2011–2017. See Bechtold and Patterson (2005), O’Connell et al. (2014), Gormanson et al. (2017) for more details. A complete set of inventory tables is available at <https://doi.org/10.2737/FS-RU-147>.

Timberland accounts for 94 percent of forest land; 6 percent of forest land is reserved or unproductive.



View of the Garden of the Gods Wilderness Area. Photo by U.S. Forest Service, Shawnee National Forest.

Overview

Since 2012, forest area in Illinois has increased by 2.6 percent, and now totals 5.0 million acres (Table 1).

Table 1.—Illinois forest statistics, 2017

	2017 estimate	Sampling error (%)	2012 estimate	Sampling error (%)	Change since 2012 (%)
Forest Land					
Area (thousand acres)	5,011.1	1.6	4,885.7	1.6	2.6
Number of live trees ≥1 inch diameter (million trees)	2,067.4	2.7	2,060.0	2.6	0.4
Aboveground biomass of live trees ≥1 inch diameter (million oven-dry tons)	258.9	2.1	247.3	2.2	4.7
Net volume of live trees ≥5 inches diameter (million ft ³)	9,555.5	2.3	9,110.2	2.4	4.9
Net growth of live trees ≥5 inches diameter (million ft ³ /yr)	179.4	6.9	170.9	6.8	5.0
Annual mortality of live trees ≥5 inches diameter (million ft ³ /yr)	161.9	5.9	135.7	6.1	19.3
Annual harvest removals of live trees ≥5 inches diameter (million ft ³ /yr)	54.2	17.8	45.3	18.7	19.6
Timberland					
Area (thousand acres)	4,698.2	1.8	4,563.8	1.8	2.9
Number of live trees ≥1 inch diameter (million trees)	1,957.6	2.8	1,941.5	2.7	0.8
Aboveground biomass of live trees ≥1 inch diameter (million oven-dry tons)	242.2	2.3	230.6	2.4	5.0
Net volume of live trees ≥5 inches diameter (million ft ³)	8,913.2	2.5	8,466.9	2.6	5.3
Net volume of growing-stock trees ≥5 inches diameter (million ft ³)	7,137.9	2.8	6,952.6	2.8	2.7
Net growth of growing-stock trees ≥5 inches diameter (million ft ³ /yr)	140.8	6.9	139.0	6.5	1.3
Annual mortality of growing-stock trees ≥5 inches diameter (million ft ³ /yr)	106.2	6.9	92.8	6.5	14.3
Annual harvest removals of growing-stock trees ≥5 inches diameter (million ft ³ /yr)	40.5	15.1	41.2	19.5	-1.7

Note: Sampling errors in tables and figures in this report represent 68% confidence intervals for estimated values.

Forest Area

Illinois' forest land area has gradually increased since 1945 (Fig. 1). Forest land is most heavily concentrated in the western and southern portions of the State, particularly within the Shawnee National Forest (Fig. 2). The majority of forest land in Illinois (83 percent) is privately owned.

Hardwood species dominate the Illinois landscape. Two hardwood forest-type groups—oak/hickory and elm/ash/cottonwood—occupy 93 percent of forest land in the State. The oak/hickory group alone occupies over two-thirds of forest land, the bulk of which resides in the white oak/red oak/hickory forest type (1.7 million acres). Softwood-dominated forest-type groups, with 66,000 acres, represent 1.3 percent of forest land.

Forest land consists mainly of sawtimber stands (77 percent); 15 percent of forest land is made up of poletimber stands, 8 percent contain sapling-seedling stands, and less than 1 percent is nonstocked. The average age of forest stands continues to increase, with 52 percent of stands aged 61 years or older in 2017 (Fig. 3).

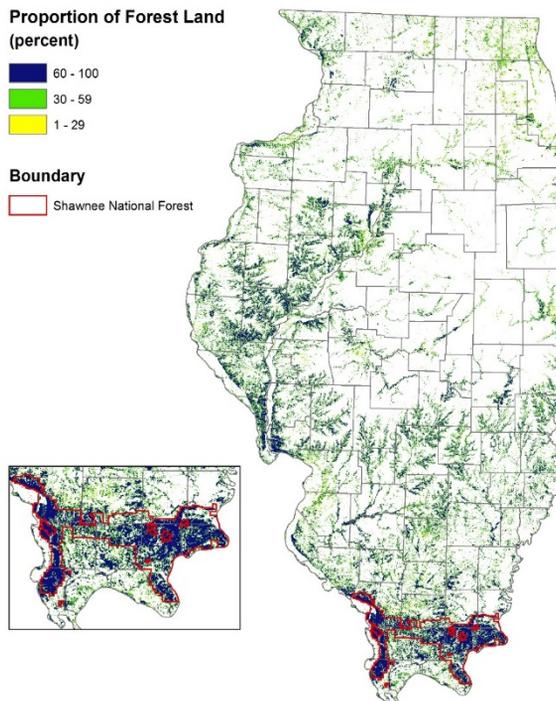


Figure 2.—Distribution of forest land, Illinois, 2009.

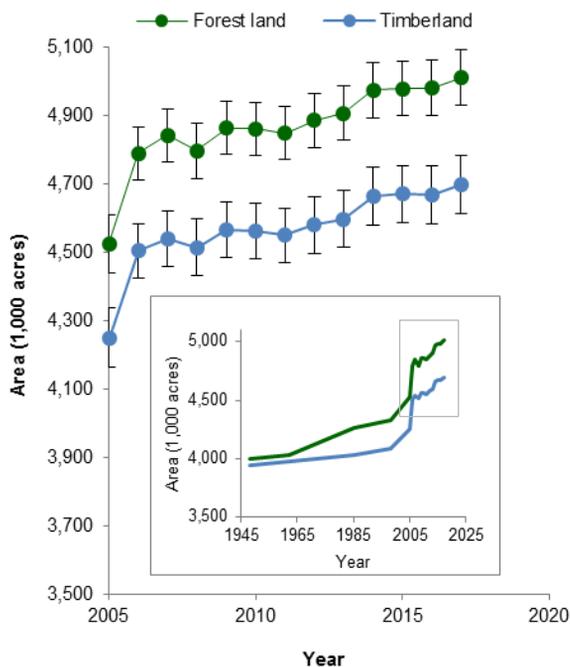


Figure 1.—Area of timberland and forest land by year, Illinois.

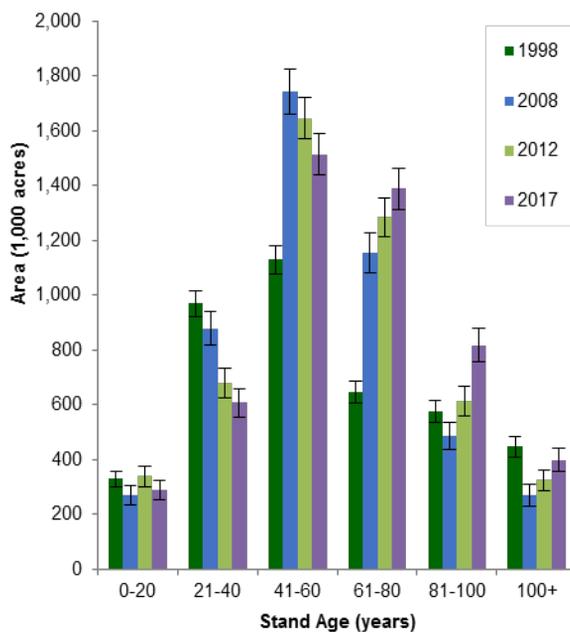


Figure 3.—Area of forest land by stand age and inventory year, Illinois, 2017.

Volume, Biomass, and Trends

Illinois' forest land contains over 2.0 billion trees (greater than or equal to 1 inch diameter at breast height [d.b.h.]) (Table 1). Ninety-eight tree species were recorded on Illinois forest land during the 2017 inventory. American elm (207.0 million trees), hackberry, sugar maple, and black cherry (96.5 million trees) are the most numerous species (Table 2); these four species account for 28 percent of the total number of trees in Illinois. Twenty oak species were recorded on forest land, equating to 9 percent of trees abundance. (Note: Estimates in Table 2 are ranked by volume, therefore not all species referenced in the text will appear in the table.)

In terms of volume, species composition varies. White oak is the most voluminous species, followed by silver maple, and black oak (Table 2). Oaks make up nearly one-third of total live-tree volume.

Live-tree and sapling biomass totals 258.9 million tons on forest land, which equates to 129.4 million tons of carbon in Illinois' forests (Table 1).

Average annual net growth of live trees on forest land increased by 5 percent since 2012 (Table 1). While silver maple had the highest growth by species (11 percent), oaks represented 19 percent of total growth.

Since 2012, average annual mortality on forest land increased by 19 percent (Table 1). Four species account for one-third of total mortality: silver maple, American elm (13.4 million ft³), northern red oak, and black oak (Table 2). High ash mortality (13.4 million ft³) is likely due in large part to emerald ash borer (EAB) activity.

Average annual removals of live trees on forest land was an estimated 69.0 million ft³. (Note: because removals occur on a small number of plots, there is higher variability in the estimates annually.) Harvest removals accounted for 78 percent of total removals in 2017 (Table 1). Pin oak had the highest harvest removals (12.0 million ft³), followed by black oak and white oak (Table 2).

Table 2.—Number, volume, biomass, growth, mortality, and removals of live trees on forest land by species for the top 12 tree species by net volume, Illinois, 2017

Common name	Latin name	Number (million trees) ^a	Net Volume (million ft ³) ^b	Aboveground biomass (thousand tons) ^a	Average annual net growth (thousand ft ³) ^b	Average annual mortality (thousand ft ³) ^b	Average annual harvest removals (thousand ft ³) ^b
White oak	<i>Quercus alba</i>	49.5	1,021.7	28,418.8	12,498.7	7,615.2	3,941.3
Silver maple	<i>Acer saccharinum</i>	64.6	886.2	18,570.5	19,965.3	15,536.4	527.2
Black oak	<i>Quercus velutina</i>	36.3	636.2	17,726.3	6,994.0	12,107.8	4,403.2
Northern red oak	<i>Quercus rubra</i>	20.9	436.3	12,372.0	1,793.6	12,126.4	2,095.0
Eastern cottonwood	<i>Populus deltoides</i>	12.6	408.0	7,503.8	11,856.6	4,670.7	930.5
Black walnut	<i>Juglans nigra</i>	48.5	348.7	8,728.5	13,840.4	3,075.5	652.5
Shagbark hickory	<i>Carya ovata</i>	73.5	345.2	11,503.6	6,260.7	2,841.3	2,443.3
Green ash	<i>Fraxinus pennsylvanica</i>	93.9	342.4	9,348.5	5,652.8	7,323.9	2,161.7
Sugar maple	<i>Acer saccharum</i>	127.6	339.2	10,441.9	8,765.5	1,324.0	2,995.9
American sycamore	<i>Platanus occidentalis</i>	11.5	329.3	6,805.5	7,119.7	2,390.2	--
Hackberry	<i>Celtis occidentalis</i>	145.0	317.9	8,705.1	12,730.9	2,980.1	569.4
Pignut hickory	<i>Carya glabra</i>	35.9	310.8	10,080.6	5,369.7	2,340.5	1,084.3

^a Trees ≥1 inch d.b.h.

^b Trees ≥5 inches d.b.h.

Note: Table cells without observations are indicated by --. A value of 0 is due to rounding of a small value.

Illinois' Ash Resource Changes after Introduction of Emerald Ash Borer

Emerald ash borer (*Agrilus planipennis*; EAB), a wood-boring beetle native to Asia, has inhabited the forests of Illinois for over a decade. EAB was initially detected in 2006 in the urban forests of northeastern Illinois, where notable changes in forest resources have occurred. Since 2005, the largest losses in the number of ash trees (greater than or equal to 5 inches d.b.h.) has occurred in the northeastern portion of the State; three northeastern counties (Kane, Kankakee, and Grundy) saw a 100 percent loss of ash (Fig. 4).

As spread has continued throughout the State, the impacts of EAB activity have become more prevalent on forest land and in heavily forested areas, such as western and southern Illinois. While gains in the number of ash trees occurred in many counties across the State, these increases were primarily small diameter trees. Statewide, there was a 29 percent increase in the number of trees in the 1 to 2.9 inch diameter class between 2005 and 2017. In contrast, there was a 16 percent decrease in trees 3 to 4.9 inches d.b.h.; trees greater than 5 inches d.b.h. increased by 7 percent over the same period.

Annual ash mortality (trees greater than or equal to 5 inches d.b.h.) continues to rise, increasing from 8.2 million ft³ to 13.5 million ft³ between 2010 and 2017. The current ratio of ash mortality-to-volume is 2.7.

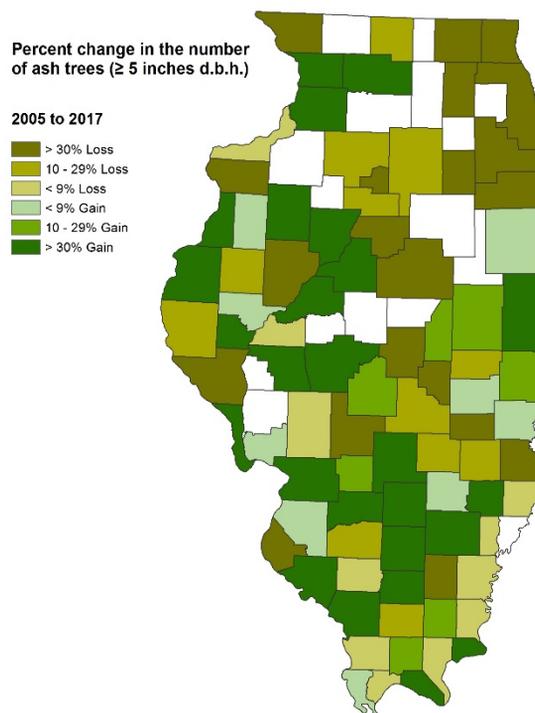


Figure 4.—Percent change in the number of ash trees (greater than or equal to 5 inches d.b.h.) on forest land by county, Illinois, 2005 to 2017.

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