



Forests of New Jersey, 2017

This resource update provides an overview of forest resources in New Jersey following an inventory by the USDA Forest Service, Forest Inventory and Analysis program (FIA), Northern Research Station (NRS). Estimates are derived from field data collected using an annualized sample design and are updated yearly.

For the 2017 inventory, estimates of current variables such as area, volume, and biomass are based on 1,218 plots measured in 2011–2017. Change variables such as net growth, removals, and mortality are based on 733 plots measured in 2006–2011 and resampled in 2011–2017. Estimates from earlier annual and periodic inventories are shown for comparison. See Bechtold and Patterson (2005), Burrill et al. (2018), and

Gormanson et al. (2018) for definitions and technical details. A complete set of inventory tables is available at <https://doi.org/10.2737/FS-RU-167>.

Overview

Forest land makes up a large portion of New Jersey; 40 percent of land, or nearly 2 million acres, is forested (Table 1). New Jersey ranks 28th of 56 U.S. states and territories inventoried by FIA, in terms of percentage of forest land area. Ownership of forest land is evenly distributed among private (47 percent) and public (53 percent) ownership. Timberland is 86 percent of forest land, 14 percent is reserved, and three-tenths of 1 percent is other forest land.

Table 1.—New Jersey forest statistics, 2017

	2017 estimate	Sampling error (%)	2012 estimate	Sampling error (%)	Change since 2012 (%)
Forest Land					
Area (thousand acres)	1,994.2	1.9	1,966.5	2.6	1.4
Number of live trees ≥1 inch diameter (million trees)	878.4	4.1	911.6	5.4	-3.6
Aboveground biomass of live trees ≥1 inch diameter (million oven-dry tons)	118.8	2.7	113.6	3.6	4.6
Net volume of live trees ≥5 inches diameter (million ft ³)	4,327.8	2.8	4,087.2	3.7	5.9
Net growth of live trees ≥5 inches diameter (million ft ³ /yr)	67.8	11.7	77.3	12.2	-12.2
Annual mortality of live trees ≥5 inches diameter (million ft ³ /yr)	50.2	11.8	43.1	12.2	16.5
Annual harvest removals of live trees ≥5 inches diameter (million ft ³ /yr)	7.8	35.9	15.9	33.8	-50.8
Timberland					
Area (thousand acres)	1,714.2	2.6	1,666.7	3.5	2.8
Number of live trees ≥1 inch diameter (million trees)	764.3	4.8	780.1	6.2	-2.0
Aboveground biomass of live trees ≥1 inch diameter (million oven-dry tons)	100.8	3.3	95.3	4.4	5.8
Net volume of live trees ≥5 inches diameter (million ft ³)	3,692.0	3.5	3,445.7	4.6	7.1
Net volume of growing-stock trees ≥5 inches diameter (million ft ³)	3,349.2	3.6	3,186.5	4.7	5.1
Net growth of growing-stock trees ≥5 inches diameter (million ft ³ /yr)	51.8	12.6	67.3	12.0	-22.9
Annual mortality of growing-stock trees ≥5 inches (million ft ³ /yr)	34.1	14.5	29.3	14.5	16.6
Annual harvest removals of growing-stock trees ≥5 inches (million ft ³ /yr)	5.2	41.0	12.0	37.0	-56.7

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



Forest Area

In an effort to improve consistency, FIA’s definition of forest land was revised in 1999. As a result, some areas previously classified as nonforest, e.g., forested rights-of-way and urban lands, were reclassified as forest land. These changes resulted in an increase in forest land in 1999, while timberland had little change. Forest land area in New Jersey has remained consistent since 2008 (Fig. 1).

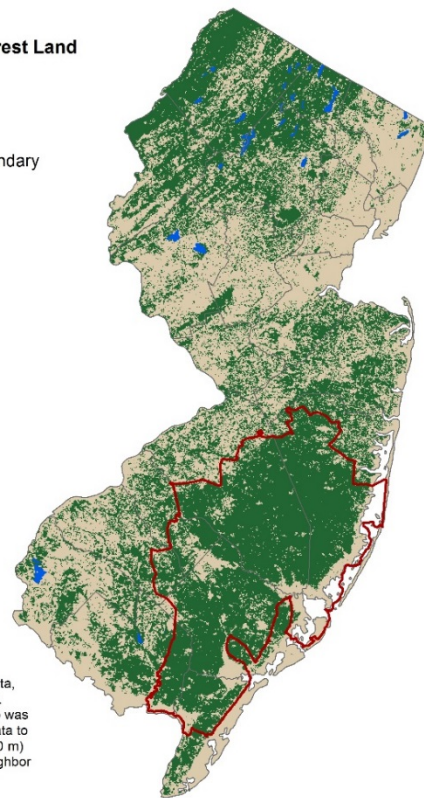
While forest land covers much of New Jersey, most forest area is found in the northwestern and southeastern portions of the State, with the bulk of forest land occurring in the Pinelands (Fig. 2).

Sixty-five percent of New Jersey forest land is occupied by two forest-type groups—oak/hickory (828,300 acres) and loblolly/shortleaf pine (473,800 acres). Within these two groups, pitch pine (444,300 acres) and white oak/red oak/hickory (244,400 acres) are the largest forest types, respectively.

Forest land consists mainly of sawtimber (large diameter) stands (71 percent); 23 percent of forest land is made up of poletimber (medium diameter) stands, 5 percent contain sapling-seedling (small diameter) stands, and 1 percent is nonstocked. The average age of forest stands continues to increase (Fig. 3). Currently, 69 percent of stands are over 61 years of age.

Distribution of Forest Land

- Forest
- Nonforest
- Water
- Pinelands boundary



Sources: USDA-FS FIA data, NJ Pinelands Commission. Processing note: This map was produced by linking plot data to MODIS satellite pixels (250 m) using gradient nearest neighbor techniques.

Figure 2.—Distribution of forest land, New Jersey, 2009.

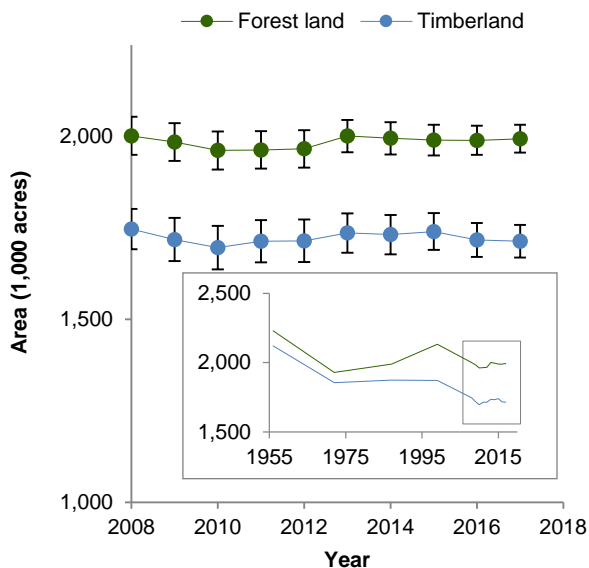


Figure 1.—Area of timberland and forest land by year, New Jersey.

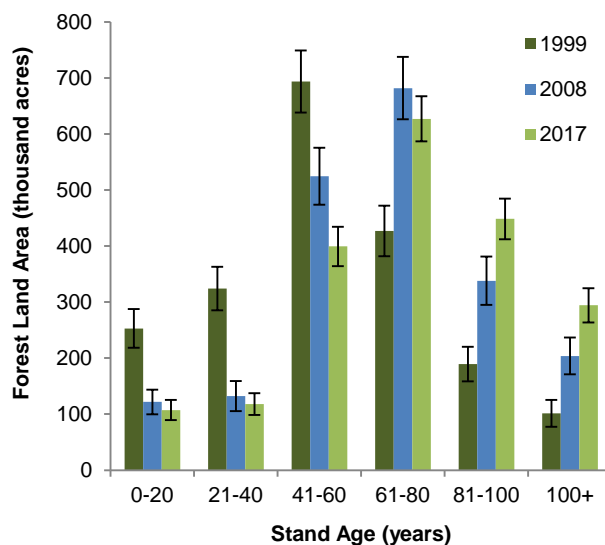


Figure 3.—Area of forest land by stand age and inventory year, New Jersey.

Volume, Biomass, and Trends

Species composition varies across New Jersey. The northern half of the State is dominated by red maple (*Acer rubrum*), sweet birch (*Betula lenta*), eastern redcedar (*Juniperus virginiana*), and sugar maple (*Acer saccharum*). However, in the southern half of New Jersey, pitch pine (*Pinus rigida*), red maple, and Atlantic white-cedar (*Chamaecyparis thyoides*) are the most numerous species.

Pitch pine is the most voluminous species on forest land, followed by red maple and yellow-poplar (*Liriodendron tulipifera*) (Table 2). Live-tree and sapling biomass totals 118.8 million tons on forest land, which equates to 59.4 million tons of carbon in New Jersey’s forests (Table 1).

Pitch pine, with the highest net growth, yellow-poplar, northern red oak (*Quercus rubra*), and red maple account for 53 percent of total growth (Table 2).

Since 2012, total net growth has decreased by 12 percent (Table 1). Over the past 5 years, net growth decreased by 11.4, 40.1, and 16.6 percent for pitch pine, yellow-poplar, and red maple, respectively, while net growth increased by 22.4 percent for northern red oak. Negative net growth of eastern hemlock (*Tsuga canadensis*) continues (45.7 percent increase since 2012) and is likely influenced by hemlock woolly adelgid (Table 2).

In contrast, mortality increased by 16 percent since 2012 (Table 1). Four species make up 46 percent of total mortality: pitch pine, red maple, white ash (*Fraxinus americana*), and scarlet oak (*Quercus coccinea*) (Table 2). Since 2012, pitch pine mortality has increased by 63.9 percent, likely a result of increased southern pine beetle activity. Mortality of white ash and eastern hemlock increased by 23.8 and 12.0 percent, respectively, over the same period.

Table 2.—Number, volume, biomass, growth, mortality, and removals of live trees on forest land by species for selected species by volume, New Jersey, 2017

Common Name	Latin Name	Number (million trees) ^a	Net volume (million ft ³) ^b	Aboveground biomass (million dry tons) ^a	Average annual net growth (thousand ft ³) ^b	Average annual mortality (thousand ft ³) ^b
Pitch pine	<i>Pinus rigida</i>	167.3	705.7	15,894.3	13,356.9	7,521.4
Red maple	<i>Acer rubrum</i>	119.7	491.4	13,691.0	6,875.9	5,766.4
Yellow-poplar	<i>Liriodendron tulipifera</i>	8.9	329.7	6,679.7	8,025.5	209.5
White oak	<i>Quercus alba</i>	43.9	259.8	8,722.2	1,619.6	3,170.2
White ash	<i>Fraxinus americana</i>	17.6	223.6	6,519.5	251.8	5,599.8
Northern red oak	<i>Quercus rubra</i>	9.6	220.2	7,005.0	7,623.5	2,125.9
Chestnut oak	<i>Quercus prinus</i>	15.3	195.3	6,329.5	3,669.2	1,281.6
Scarlet oak	<i>Quercus coccinea</i>	20.2	178.6	6,328.7	1,041.9	4,190.7
Black oak	<i>Quercus velutina</i>	11.4	163.9	5,067.3	1,817.9	2,553.6
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>	43.8	160.0	2,468.3	1,715.3	2,084.0
Green ash	<i>Fraxinus pennsylvanica</i>	2.6	18.9	548.2	-291.5	--
Eastern hemlock	<i>Tsuga canadensis</i>	4.3	24.9	481.7	-503.8	1,002.8

^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.

Trends in forest age and size

Forest age and stand-size class are good indicators of the successional and structural stage of forests. Diversity among age and size classes provides a range of habitat conditions for many species of wildlife and improves overall forest health.

There is an increasing trend in the maturity of New Jersey's forest land. Since 1999, the overall forest age across the State has steadily climbed (Fig. 3). The distribution of age classes varies; some of the oldest forest stands are concentrated in the Highlands of north-central New Jersey and in the Pinelands (Fig. 4).

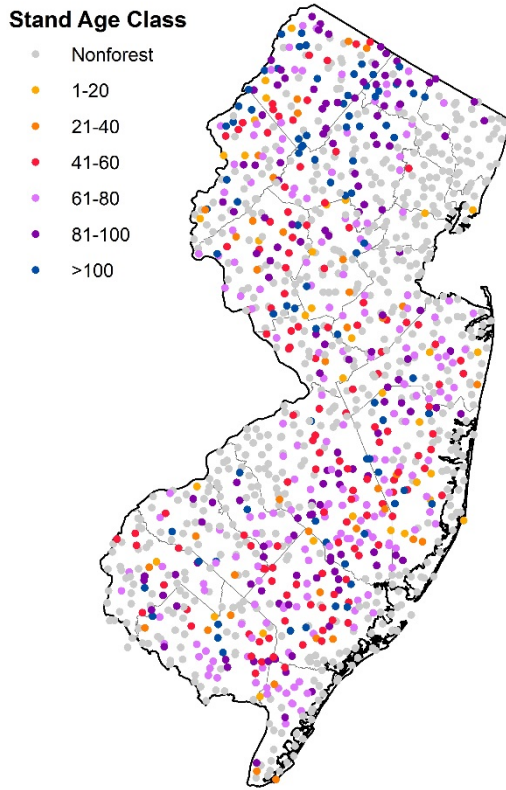


Figure 4.—Distribution of forest age class, New Jersey, 2017.

The preponderance of forest stands are in the large-diameter, or sawtimber stand-size class. Within this class, 53 percent of area is made up by the five most abundant forest types (Fig. 5). Alone, pitch pine comprises 20 percent of large diameter stands.

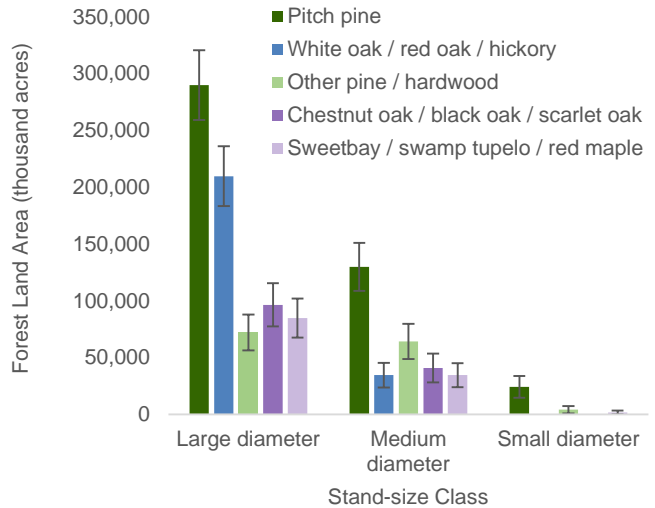


Figure 5.—Area of forest land by stand-size class for the top 5 most abundant forest types, New Jersey, 2017. Forest types listed in order of abundance.

Inventory Sources

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. <https://doi.org/10.2737/SRS-GTR-80>.

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