



Forests of New Jersey, 2015

This publication provides an overview of forest resources in New Jersey based on an annual inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program at the Northern Research Station. Estimates are based on field data collected using an annualized sample design and are updated yearly. Information about the FIA program is available at <http://fia.fs.fed.us>. For the 2015 inventory, estimates of current variables such as area, volume, and biomass are based on 929 plots collected from 2010-2015. Change variables such as growth, removals, and mortality are based on 731 plots collected in 2005-2010 and remeasured in 2010-2015. See Bechtold and Patterson (2005) and O’Connell et al. (2013) for definitions and technical details.

Overview

Of New Jersey’s nearly 2 million acres of forest land, 52 percent is publicly owned (Table 1). Timberland accounts for 87 percent of forest land, 12 percent is reserved, and less than one-half of a percent (2,500 acres) is other forest land.



Photo by Rich Widmann, U.S. Forest Service.

Table 1.—New Jersey forest statistics, 2015

	2015 estimate	Sampling error (%)	2010 estimate	Sampling error (%)	Change since 2010 (%)
Forest Land					
Area (thousand acres)	1,990.4	2.1	1,962.0	2.7	1.4
Number of live trees ≥1 in diameter (million trees)	912.5	4.6	924.6	5.3	-1.3
Live-tree aboveground biomass (thousand oven-dry tons)	117,303.9	3.1	111,050.1	3.7	5.6
Net volume of live trees ≥5 in diameter (million ft ³)	4,243.3	3.3	3,994.5	3.9	6.2
Net growth of live trees ≥5 in (thousand ft ³ /yr)	68,557.4	13.5	82,625.4	14.0	-17.0
Annual mortality of live trees ≥5 in (thousand ft ³ /yr)	54,070.5	11.2	40,101.6	17.2	34.8
Annual harvest removals of live trees ≥5 in (thousand ft ³ /yr)	9,683.8	33.0	19,305.2	44.8	-49.8
Annual other removals of live trees ≥5 in (thousand ft ³ /yr)	1,282.8	59.4	3,700.7	63.7	-65.3
Timberland					
Area (thousand acres)	1,740.3	2.9	1,684.6	3.6	3.3
Number of live trees ≥1 in diameter (million trees)	802.8	5.3	801.4	6.2	0.2
Live-tree aboveground biomass (thousand oven-dry tons)	101,275.5	3.7	94,274.1	4.5	7.4
Net volume of live trees ≥5 in diameter (million ft ³)	3,678.1	3.9	3,396.5	4.6	8.3
Net volume of growing-stock trees ≥5 in diameter (million ft ³)	3,347.2	4.1	3,180.3	4.7	5.2
Net growth of growing-stock trees ≥5 in (thousand ft ³ /yr)	58,110.6	13.6	72,686.6	12.8	-20.1
Annual mortality of growing-stock trees ≥5 in (thousand ft ³ /yr)	36,699.8	13.4	29,375.7	19.1	24.9
Annual harvest removals of growing-stock trees ≥5 in (thousand ft ³ /yr)	6,128.9	40.0	13,980.7	49.7	-56.2
Annual other removals of growing-stock trees ≥5 in (thousand ft ³ /yr)	4,456.3	67.7	7,009.4	59.2	-36.4

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

Forest Area

Forest land in New Jersey has remained around 2 million acres since 2008 (Fig. 1). In an effort to improve consistency, FIA’s definition of forest land was revised in 1999 (Widmann 2005). As a result, areas previously classified as nonforest, e.g., forested rights-of-way and urban lands, were reclassified as forest land. Subsequently, these changes resulted in an increase in forest land in 1999, while timberland remained constant.

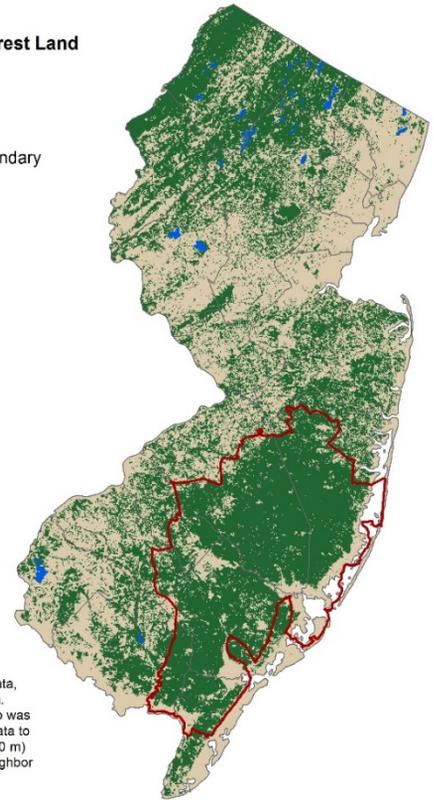
Forest land is distributed throughout New Jersey. The highest concentrations of forest land occur in the northwestern and southeastern portions of the State, with the bulk of forest land occurring in the Pinelands (Fig. 2).

Two forest-type groups—oak/hickory (867,300 acres) and loblolly/shortleaf pine (467,000 acres)—occupy 67 percent of forest land in New Jersey. Within these two groups, white oak/red oak/hickory (256,000 acres) and pitch pine (444,500 acres) are the largest forest types, respectively.

Forest land consists mainly of sawtimber stands (69 percent); 25 percent of forest land is made up of poletimber stands, 5 percent contain sapling-seedling 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.

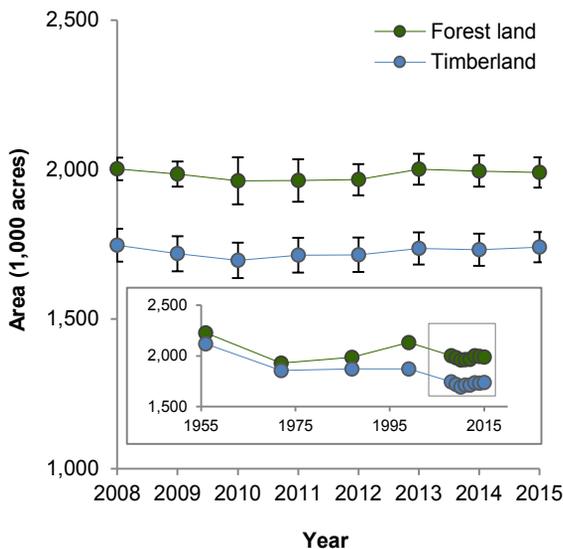


Figure 1.—Area of timberland and forest land by year, New Jersey.

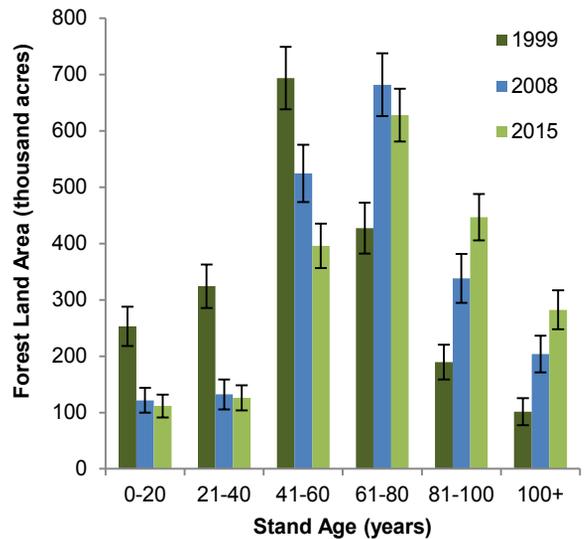


Figure 3.—Area of forest land by stand age and inventory year, New Jersey.

Volume, Biomass, and Trends

New Jersey’s forest land contains approximately 912.5 million trees (greater than 1 inch diameter at breast height [d.b.h.]) (Table 1). Species composition varies across the State. Red maple (*Acer rubrum*), eastern redcedar (*Juniperus virginiana*), and sweet birch (*Betula lenta*) are the most numerous species in the northern half of the State, while pitch pine (*Pinus rigida*), red maple, and Atlantic white-cedar (*Chamaecyparis thyoides*) are the most numerous species in the south.

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 117.3 million tons on forest land, which equates to 58.7 million tons of carbon in New Jersey’s forests (Table 1).

Forest growth decreased by 17 percent since 2010 (Table 1). Pitch pine had the highest growth, followed by yellow-poplar and red maple; these three species accounted for 52 percent of growth statewide. In contrast, mortality increased by 35 percent since 2010 (Table 1). Four species made up 46 percent of total mortality: pitch pine, red maple, white ash (*Fraxinus americana*), and scarlet oak (*Quercus coccinea*) (Table 2).

Average annual removals of live trees on forest land totaled an estimated 10.9 million ft³, for a growth-to-removals ratio of 7.42 (Table 1). Removals due to harvesting accounted for 88 percent of total removals in 2015. Sweetgum (*Liquidambar styraciflua*) and black oak (*Quercus velutina*) comprised 43 percent of total harvest removals (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, New Jersey, 2015

Common Name	Latin Name	Number (million trees) ^a	Net Volume (million ft ³) ^b	Aboveground biomass (thousand dry 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
Pitch pine	<i>Pinus rigida</i>	176.8	679.0	15,476.7	14,160.6	8,080.9	95.4
Red maple	<i>Acer rubrum</i>	133.9	477.2	13,382.4	9,165.2	5,766.3	78.1
Yellow-poplar	<i>Liriodendron tulipifera</i>	10.3	326.6	6,632.1	12,413.4	208.5	9.1
White oak	<i>Quercus alba</i>	40.8	271.3	9,091.5	-1,118.6	3,546.3	226.4
Northern red oak	<i>Quercus rubra</i>	11.1	258.6	8,205.4	4,773.5	3,364.1	866.2
White ash	<i>Fraxinus americana</i>	17.7	221.9	6,416.7	1,135.4	5,675.8	29.8
Chestnut oak	<i>Quercus prinus</i>	15.6	207.8	6,718.7	3,153.3	1,690.9	46.7
Sweetgum	<i>Liquidambar styraciflua</i>	21.9	200.1	4,809.8	3,390.8	596.2	2,175.9
Black oak	<i>Quercus velutina</i>	12.0	170.0	5,246.6	4,917.9	3,104.7	1,960.0
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>	55.9	153.4	2,438.6	1,824.8	2,212.3	--
Scarlet oak	<i>Quercus coccinea</i>	21.6	144.8	5,185.0	-316.3	5,411.9	564.6
Sweet birch	<i>Betula lenta</i>	26.0	133.5	4,340.5	1,346.6	1,150.1	348.0

^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.

National Woodland Owner Survey

An estimated 29 percent of New Jersey’s forest land is owned by families, individuals, trusts, and estates, collectively referred to as family forest owners (Table 3). To better understand this important group of landowners, the FIA program conducts the National Woodland Owner Survey (NWOS; www.fia.fs.fed.us/nwos). Between 2011 and 2013, 115 family forest ownerships with at least 10 acres of forest land in New Jersey participated in the NWOS.

As of 2013, there are an estimated 11,000 family forest ownerships with 10 or more acres of forest land in New Jersey. The average size of these family forest holdings is 31 acres and the average length of ownership is 24 years. The most common activity on family forest land is cutting trees for personal use, such as firewood (Table 3). Eighty-one percent of family forest owners are male. Additional attributes of these family forest ownerships are included in Table 3. Supplementary results and details about the NWOS are available in Butler et al. (2016).

Inventory Sources

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O’Connell, B.M.; LaPoint, E.B.; Turner, J.A.; Ridley, T.; Pugh, S.A.; et al. 2014. **The Forest Inventory and Analysis Database: Database description and user guide version 6.0.1 for Phase 2**. Washington, DC: U.S. Department of Agriculture, Forest Service. 748 p. <http://www.fia.fs.fed.us/library/database-documentation/>.

Table 3.—Selected attributes of family forest ownerships (10+ ac), New Jersey, 2013. (Sampling errors are listed parenthetically.)

Attribute	Percentage of ownerships	Percentage of acreage
Size of holdings^a		
10-49 ac	83 (16)	50 (9)
50-99 ac	11 (3)	24 (5)
100+ ac	5 (1)	25 (5)
Reasons for owning^b		
Beauty	84 (16)	79 (12)
Protect nature	73 (15)	72 (11)
Family legacy	71 (15)	69 (11)
Recreation (not hunting)	46 (11)	46 (8)
Timber production	16 (4)	28 (6)
Forestry activities		
Harvesting (personal)	53 (12)	51 (9)
Reduced invasive plants	34 (9)	32 (7)
Trail construction/maintenance	33 (8)	39 (8)
Harvesting (commercial) ^c	27 (7)	38 (7)
Reduced insects/disease	21 (7)	17 (4)
Demographics		
Age (<45)	7 (3)	8 (3)
Gender (male)	81 (16)	87 (14)

^a Numbers may not sum to 100 due to rounding.

^b Includes owners who rated topics as important or very important.

^c In the previous 5 years.

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