



Forests of New Jersey, 2013

This publication provides an overview of forest resource attributes in New Jersey based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program of the U.S. Forest Service, Northern Research Station (NRS). These estimates, along with web-posted core tables, will be updated annually. For more information, please refer to inventory citations on page 4 of this report.

Overview

New Jersey is home to 2 million acres of forest land (Table 1). No net change in forest area has occurred since 2008. Timberland accounts for 87 percent of forest land,

13 percent is reserved, and less than one-half of a percent, or 8 thousand acres, is unproductive. Fifty-one percent of forest land is publicly owned.



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Table 1.—New Jersey's forest statistics, 2013

	2013 estimate	Sampling error (%)	Change since 2008 (%)
Forest Land			
Area (thousand acres)	2,002	2.2	0
Number of live trees ≥ 1 in diameter (million trees)	917	5.1	-7.3
Live-tree aboveground biomass (thousand oven-dry tons)	117,140	3.5	7.5
Net volume of live trees ≥ 5 in diameter (million ft ³)	4,220	3.7	7.7
Net growth of live trees ≥ 5 in (thousand ft ³ /yr)	78,502	11.2	-17.2
Annual mortality of live trees ≥ 5 in (thousand ft ³ /yr)	44,044	11.7	26.1
Annual harvest removals of live trees ≥ 5 in (thousand ft ³ /yr)	14,649	31.0	-36.5
Annual other removals of live trees ≥ 5 in (thousand ft ³ /yr)	1,885	54.8	-63.8
Timberland			
Area (thousand acres)	1,736	3.1	-0.6
Number of live trees ≥ 1 in diameter (million trees)	799	5.8	-8.8
Live-tree aboveground biomass (thousand oven-dry tons)	100,502	4.1	6.6
Net volume of live trees ≥ 5 in diameter (million ft ³)	3,630	4.3	7.0
Net volume of growing-stock trees ≥ 5 in diameter (million ft ³)	3,330	4.5	3.3
Net growth of growing-stock trees ≥ 5 in (thousand ft ³ /yr)	65,869	11.4	-26.1
Annual mortality of growing-stock trees ≥ 5 in (thousand ft ³ /yr)	31,958	13.3	38.6
Annual harvest removals of growing-stock trees ≥ 5 in (thousand ft ³ /yr)	11,214	33.5	-44.4
Annual other removals of growing-stock trees ≥ 5 in (thousand ft ³ /yr)	6,523	52.5	-73.5



Forest Area

The area of New Jersey forest land has remained fairly consistent since 2008 (Fig. 1). Forest area is widely distributed, however, it is heavily concentrated in the northwestern and southeastern portions of the State (Fig. 2).

The composition of forest types between these two regions varies considerably. Hardwoods, which make up 77 percent of forest land (1.5 million acres), are largely concentrated in the northern half of the State. Conversely, the distribution of softwoods is primarily in the south. Two forest type groups—oak/hickory and loblolly/shortleaf pine—occupy 68 percent of forest land in New Jersey, 932,600 and 433,300 acres, respectively. Of these two groups, white oak/red oak/hickory (294,000 acres) and pitch pine (417,800 acres) are the largest forest types in New Jersey.

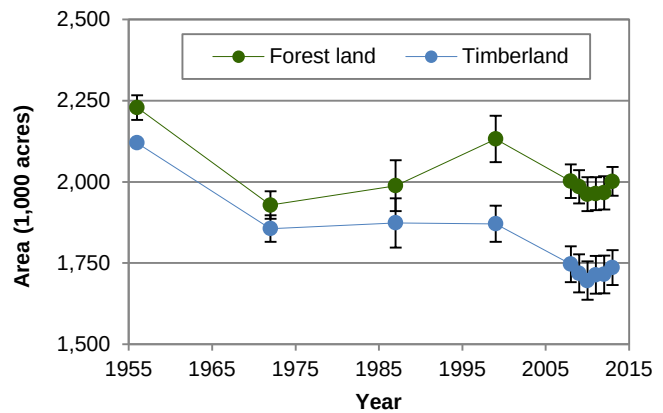


Figure 1.—Area of timberland and forest land by year, New Jersey, 1956-2013. Error bars represent 68 percent confidence intervals around the mean.

Impact of Changes in Reserved Status

FIA defines reserved land as land that is withdrawn by law(s) prohibiting the management of land for the production of wood products (not merely controlling or prohibiting wood-harvesting methods). Because of differences in the interpretation and implementation of this definition, certain areas of land have historically fluctuated in and out of reserved status. In an effort to increase consistency among states and across inventory years, a refined set of procedures for determining reserved status have been implemented with version 6.0 of the FIA field manual.

The reserved status variable plays an important role in the differentiation of forest land and timberland, as well as on subsequent calculations such as volume and growth. Therefore, slight changes in the reserved land and timberland estimates for New Jersey have occurred. Classification procedures identical to those employed in the 2013 inventory have been retroactively applied to data and tools since 2012, thus comparisons between the current results for 2013 and those for previously published data may be invalid.

In New Jersey, the change in the reserved status variable has resulted in an increase in the estimate of reserved land and a decrease in the estimate of timberland.

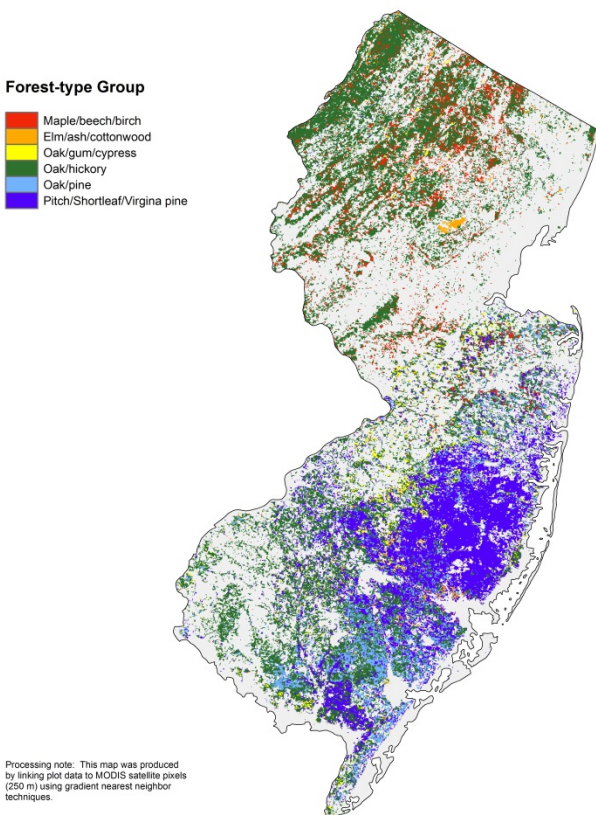


Figure 2.—Distribution of forest land by forest-type group and approximate plot locations, New Jersey, 2013.

Volume, Biomass, and Trends

Live-tree and sapling biomass continues to increase and currently totals 117.1 million tons on forest land (Table 1). Biomass is distributed across the State, with the largest concentrations in the northwest (Fig. 4)

New Jersey's forest land contains about 917.4 million trees (greater than 1 inch diameter at breast height [d.b.h.]) (Table 1), the composition of which varies across the State. Red maple, eastern redcedar, and sweet birch are the most numerous species in the north, while pitch pine, red maple, and Atlantic white-cedar are the most numerous species in the south (Fig. 5).

The volume of live trees in New Jersey is increasing (Table 1). Pitch pine (609.7 million ft³) is the most voluminous species on forest land and nearly all (99 percent) of this volume is found in southern New Jersey. Red maple and white oak follow pitch pine in terms of highest volume in the south. In contrast, northern red oak, yellow-poplar, and red maple are the top ranking species by volume in the north, making up nearly one-third of regional volume.

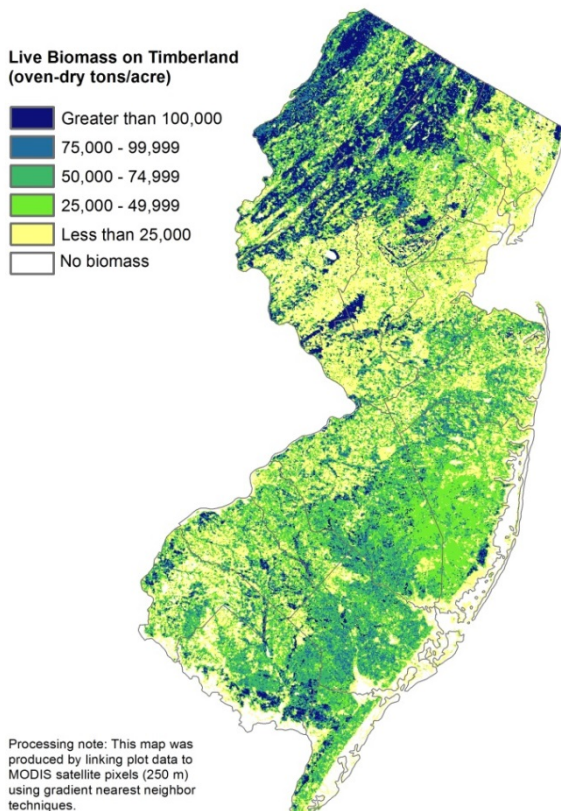


Figure 4.—Distribution of live-tree and sapling biomass on forest land, New Jersey, 2013.

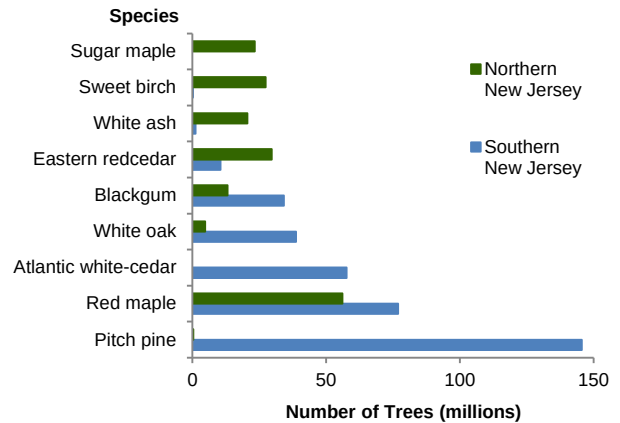


Figure 5.—Top species on forest land by number of trees in northern and southern New Jersey, 2013.

While forest growth has decreased by 17 percent since 2008, mortality has increased by 26 percent (Table 1). Pitch pine, white ash, scarlet oak, and Atlantic white-cedar are the largest contributors to mortality and account for 40 percent of total mortality. While not among the top grossing species in terms of total mortality, silver maple, American elm, and eastern hemlock have mortality to volume ratios greater than 4 percent, indicating a yearly loss greater than 4 percent of total statewide volume.

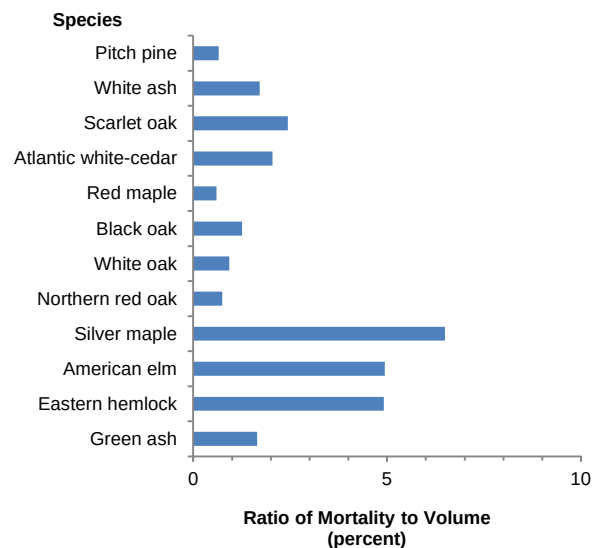


Figure 6.—Average annual mortality of growing stock as a percentage of total growing-stock volume by species, New Jersey, 2013. (Species listed in decreasing order of total mortality.)

Southern Pine Beetle

Southern pine beetle (*Dendroctonus frontalis*; SPB) is native to the southeastern United States, with Burlington and Ocean counties marking the northernmost range of SPB (Clarke and Nowak 2009). Pitch, shortleaf, loblolly, pond, and Virginia pines are the preferred hosts, however, during outbreaks, SPB may attack all pine species. Tree mortality rapidly results from girdling, which is caused by beetle gallery construction and blockage of water-conducting cells by growth of blue stain fungi, spores of which are carried by SPB (Clarke and Nowak 2009). The current outbreak of southern pine beetle in New Jersey has been ongoing since 2001.

Stand density is considered a critical factor in determining risk and expansion rate (Clarke and Nowak 2009). High density pine stands increase the risk of SPB outbreak. The majority of susceptible pine stands (64 percent) are high density stands where the basal area of susceptible trees is greater than 80 ft²/acre.

As susceptible stands cover 21 percent of New Jersey forest land, SPB has the potential to affect a vast area, largely concentrated in southern New Jersey, and cause extensive pine mortality. In addition, large amounts of dead trees increase the risk of forest fire.

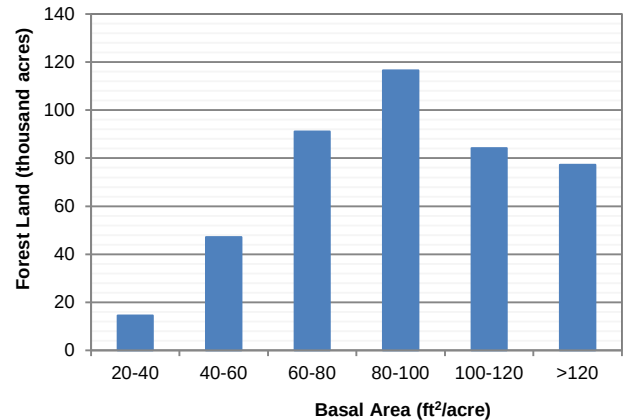


Figure 7.—Forest land by basal area for pitch, loblolly, shortleaf, pond and Virginia pine forest types, New Jersey, 2013.



Southern pine beetle. Photo by Erich Vallery, U.S. Forest Service.

Literature Cited

Clarke, S.R.; Nowak, J.T. 2009. **Southern pine beetle**. Forest Insect and Disease Leaflet 49. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region. 8 p.

Additional 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.

Crocker, S.J.; Nelson, M.D.; Barnett, C.J.; Brand, G.J.; Butler, B.J.; et al. 2011. **New Jersey's Forests 2008**. Resour. Bull. NRS-59. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 52 p.

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Contact Information

Susan J. Crocker, Research Forester
USDA Forest Service, Northern Research Station
1992 Folwell Ave.
St. Paul, MN 55108
Ph: 651-649-5136 / Fax: 651-649-5140
scrocker@fs.fed.us
Northern FIA: <http://nrs.fs.fed.us/fia/>
National FIA: <http://fia.fs.fed.us>

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