New Jersey's Forest Resources, 2012

Research Note NRS-183

This publication provides an overview of forest resource attributes for 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. These estimates, along with web-posted core tables, will be updated annually. For more information, refer to page 4 of this report.

Table 1.—Annual estimates and uncertainty, New Jersey, 2012

	2012 estimate	Sampling error (%)
Forest Land Estimates		
Area (1,000 acres)	1,967	2.6
Number of live trees 1-inch diameter or larger (1,000,000 trees)	912	5.4
Biomass of live trees 1-inch diameter or larger (1,000 tons)	113,575	3.6
Net volume in live trees (1,000,000 ft^3)	4,088	3.7
Annual net growth of live trees (1,000 ft^3/year)	76,956	12.3
Annual mortality of live trees (1,000 ft^3/year)	43,095	12.2
Annual harvest removals of live trees (1,000 ft^3/year)	15,855	33.8
Annual other removals of live trees (1,000 ft^3/year)	2,370	54.3
Timberland Estimates		
Area (1,000 acres)	1,838	3.0
Number of live trees 1-inch diameter or larger (1,000,000 trees)	853	5.7
Biomass of live trees 1-inch diameter or larger (1,000 tons)	105,618	4.0
Net volume in live trees (1,000,000 ft^3)	3,798	4.1
Net volume of growing-stock trees (1,000,000 ft^3)	3,519	4.3
Annual net growth of growing-stock trees (1,000 ft^3/year)	72,141	12.0
Annual mortality of growing-stock trees (1,000 ft^3/year)	33,650	13.6
Annual harvest removals of growing-stock trees (1,000 ft^3/year)	13,337	35.0
Annual other removals of growing-stock trees (1,000 ft^3/year)	4,254	50.3

Note: Sampling errors shown in the tables and figures in this report represent 68% confidence intervals for the estimated values. Volumes are for 5-inch and larger diameter trees.

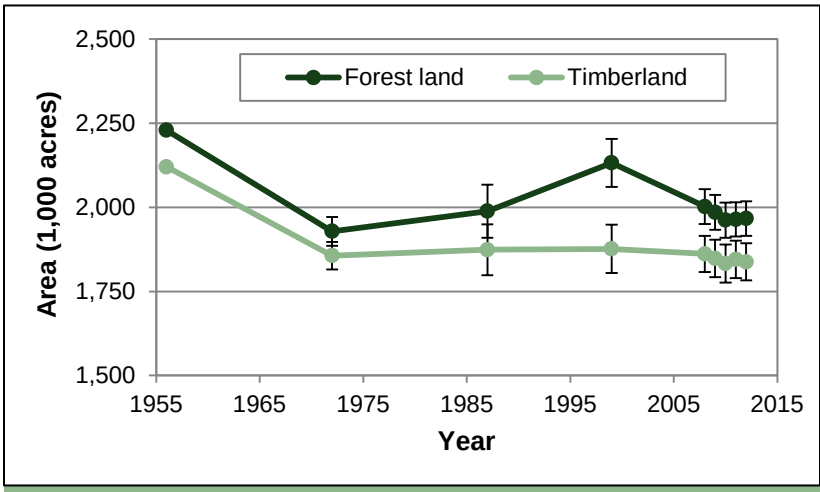


Figure 1.—Area of timberland and forest land by year, New Jersey.

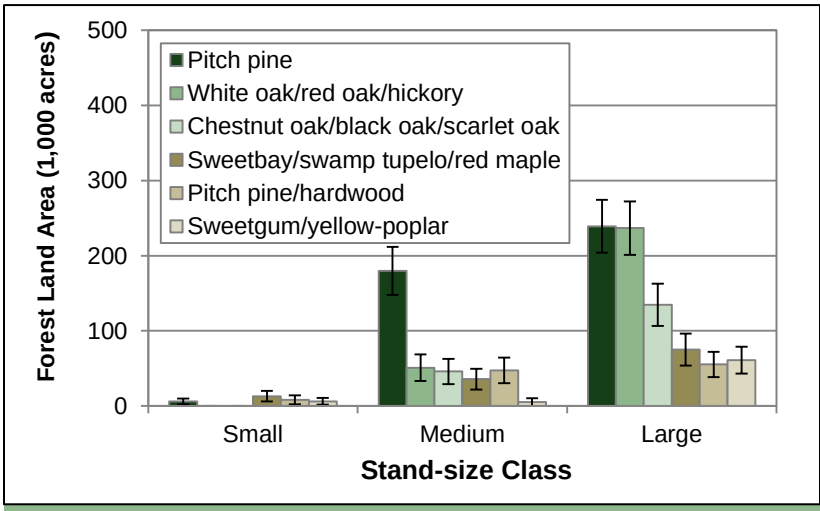


Figure 2.—Area of forest land by top six forest types and stand-size class, New Jersey, 2012.

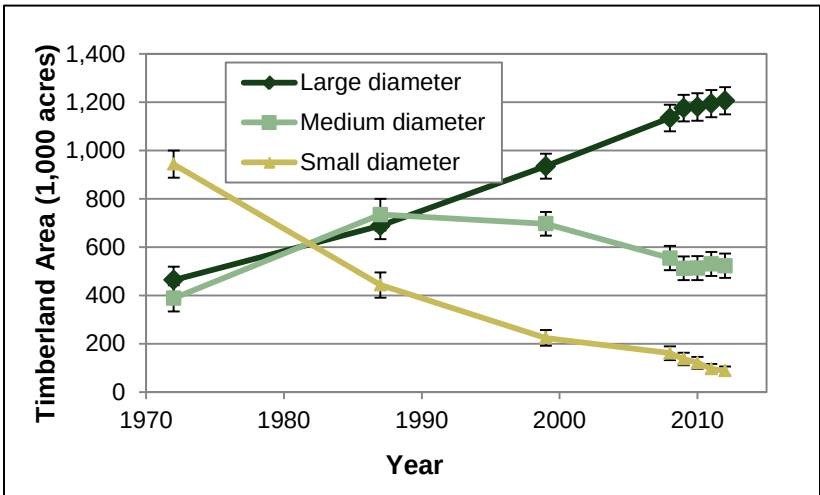
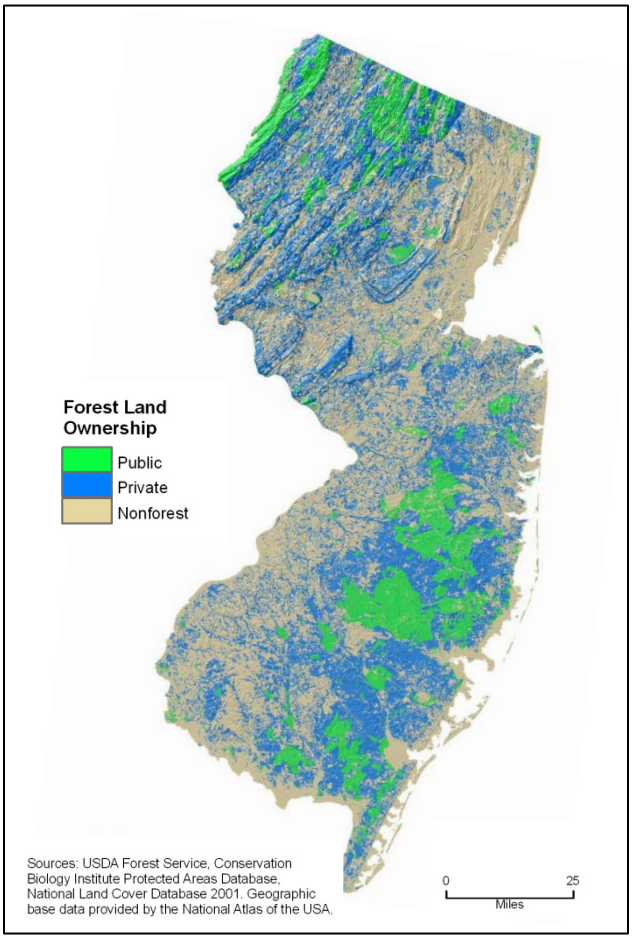


Figure 3.—Area of timberland by stand-size class and year, New Jersey, 2012.

Table 2.—Top 10 tree species by statewide volume estimates, New Jersey, 2012

Rank	Species	Volume of live trees on forest land (1,000,000 ft³)	Sampling error (%)	Volume of sawtimber trees on timberland (1,000,000 bdft)	Sampling error (%)
1	Pitch pine	616	9.7	1,555	10.9
2	Red maple	506	11.0	1,084	15.9
3	Yellow-poplar	303	19.1	1,527	21.1
4	White oak	279	11.9	877	18.3
5	Northern red oak	258	15.3	1,096	17.3
6	White ash	209	14.5	762	18.1
7	Chestnut oak	194	15.3	603	19.0
8	Black oak	187	15.6	679	20.0
9	Sweetgum	185	24.9	584	25.5
10	Atlantic white-cedar	149	35.9	409	37.9
	Other softwoods	192	19.5	485	24.6
	Other hardwoods	1,010	7.2	2,689	10.6
	All Species	**4,088**	**3.7**	**12,350**	**5.6**



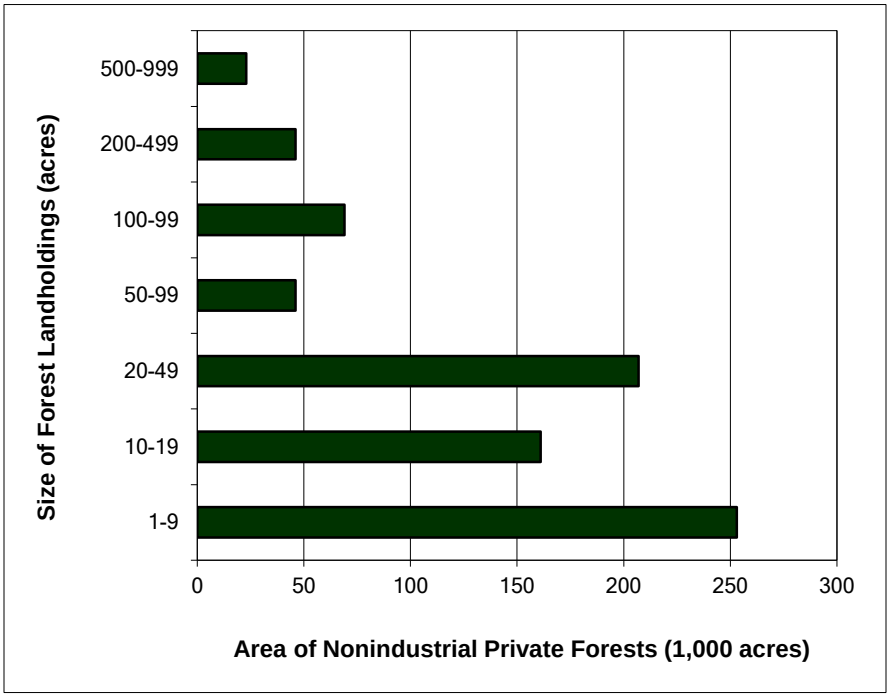


Figure 4.—Distribution of forest land by major owner group (map) and size of nonindustrial private forest landholdings (graph), New Jersey, 2006.

Hemlock and the Adelgid

While its range extends to southern New Jersey, eastern hemlock (*Tsuga canadensis*) primarily grows in small, dense pockets in cool, moist ravines or steep slopes in the northern half of the State (Fig. 5; Collins and Anderson 1994). Because of these site requirements, hemlock forests are scattered across nearly 85,000 acres of New Jersey forest land (Fig. 6). Though hemlock is generally not the dominant species in a stand, it makes up 25 to 50 percent of total stand basal area on over 13,000 acres (Fig. 7).

The primary threat to the health of hemlock is the hemlock woolly adelgid (*Adelges tsugae*; HWA). This tiny, sap-feeding insect from Asia was first reported in Virginia in 1951. By 1978, the adelgid had spread to Burlington County, New Jersey, and it has since been found throughout the State (Smith-Fiola et al. 2004).

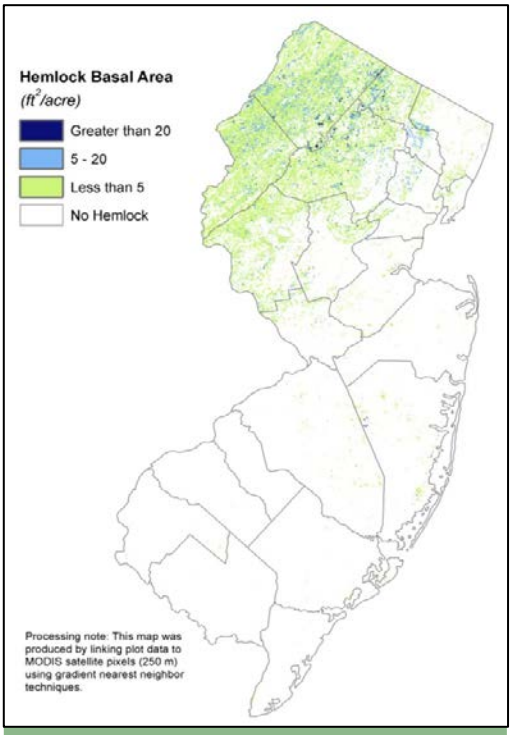


Figure 5.—Hemlock density on forest land, New Jersey, 2012.

Currently, average annual mortality of hemlock totals approximately 864,000 cubic feet of growing-stock volume and 2.3 million board feet of sawtimber volume on timberland. This represents a nearly sixfold increase in the rate of hemlock mortality since 2008 (Fig. 8). Because of its unique growth location, the loss of hemlock could affect soil stability, water temperature and water quality. Continued monitoring of the hemlock resource will help to quantify the impacts of HWA in New Jersey.

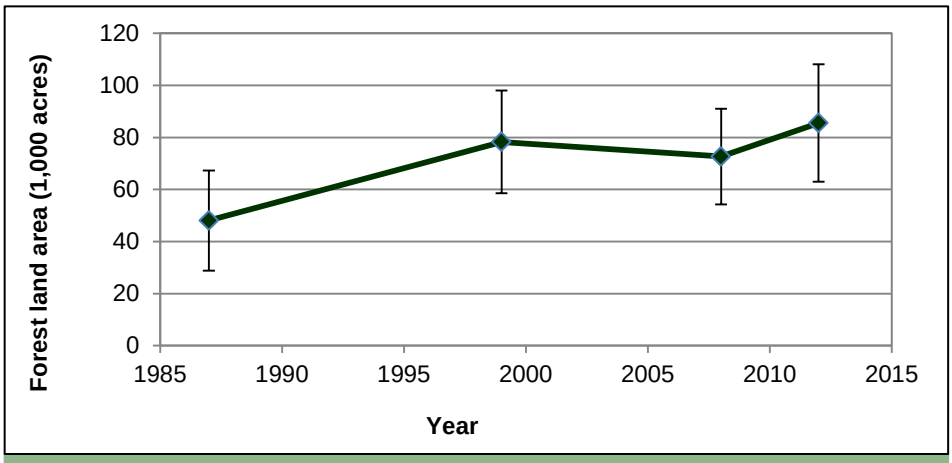


Figure 6.—Area of forest land with hemlock present, New Jersey, 2012.

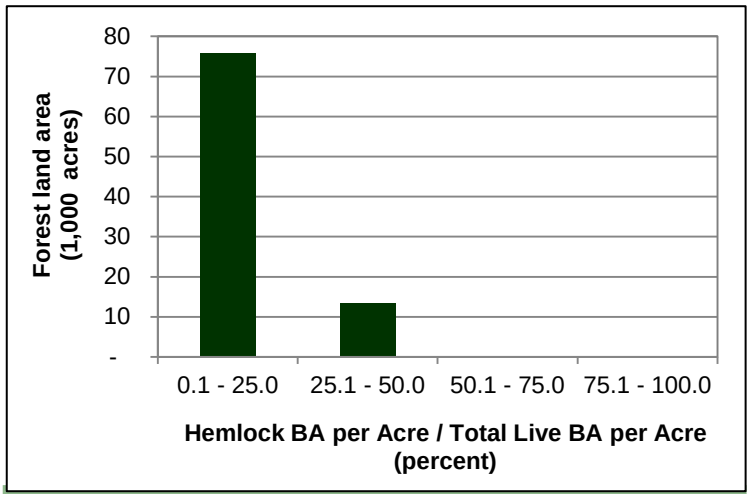


Figure 7.—Presence of hemlock on forest land, as a percentage of total live-tree basal area, New Jersey, 2012.

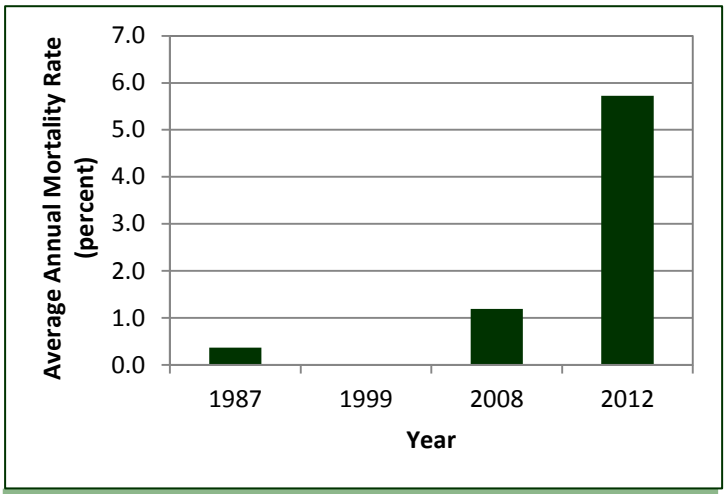


Figure 8.—Average annual mortality of hemlock growing stock per unit volume on timberland by inventory year, New Jersey, 2012.

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References

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.

Collins, B.R.; Anderson, K.H. 1994. **Plant communities of New Jersey: a study in landscape diversity.** New Brunswick, NJ: Rutgers University Press. 287 p.

Crocker, S.J.; Nelson, M.D.; Barnett, C.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. [DVD included].

Griffith, D.M.; Widmann, R.H. 2001. **Forest statistics for New Jersey: 1987 and 1999.** Resour. Bull. NE-152. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, North Central Research Station. 70 p.

Smith-Fiola, D.; Hamilton, G.C.; Lashomb, J. 2004. **The hemlock woolly adelgid: Life cycle, monitoring and pest management in New Jersey.** New Brunswick, NJ: Rutgers, The State University of New Jersey, Cooperative Research and Extension. 2 p. Available at: http://njaes.rutgers.edu/pubs/publication.asp?pid=FS751. (Accessed August 5, 2013).

Smith, W.B. 2002. Forest inventory and analysis: a national inventory and monitoring program. Environmental Pollution. 116: 233-242.

USDA Forest Service. 2007**. Forest inventory and analysis national core field guide, Vol. 1, field data collection procedures for phase 2 plots, ver. 4.0.** Washington, DC: U.S. Department of Agriculture, Forest Service. Available at http://www.fia.fs.fed.us/library/field-guides-methods-proc/ (verified September 2, 2011).

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Information published in this report and in related tables is based on data collected between 2007 and 2011, stored in the Forest Inventory and Analysis Database (FIADB), and compiled in National Information Management System (NIMS) version 5.1(patch 1), January 2012. Due to periodic changes to FIADB and NIMS, trend analyses should be made using FIA's online estimation tools, not by comparing published reports or tables. FIA estimates, tabular data, and maps may be generated at http://fiatools.fs.fed.us/.

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