



Forests of Rhode Island, 2013

This report provides an overview of forest resources in Rhode Island based on an inventory conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program of the Northern Research Station. Estimates are based on field data collected using the FIA annualized sample design. Results are for the measurement years 2009-2013 with comparisons made to 2003-2007. Forest resource measurements were taken on 123 plots with about 20 percent of the plots measured each year. Estimates will be updated and published annually.

For core tables and more information, including definitions and technical details, please refer to the inventory citations on page 4 of this report or visit <http://fia.fs.fed.us>.

Overview

As of 2013, Rhode Island has an estimated 367,400 acres of forest land (Table 1). The forest land area has not substantially changed since 2007. The estimated number of live trees on Rhode Island's forest land in 2013 is 172 million containing a total aboveground biomass of 25 million tons. The estimated volume of trees, ≥ 5 inch diameter at breast height (d.b.h.), is 870 million ft^3 . The estimated annual net growth of these trees is 21 million ft^3/yr with annual mortality, harvest removals, and other removals, such as land clearing, equal to 25, 3, and 9 percent of the annual growth, respectively.

Table 1.—Rhode Island forest statistics, 2003-2007 and 2009-2013

	2007 Estimate	Sampling error (percent)	2013 Estimate	Sampling error (percent)	Change since 2007 (percent)
Forest Land					
Area (thousand acres)	355.9	3.9	367.4	3.6	3.2
Number of live trees ≥ 1 in diameter (million trees)	178.3	8.0	171.5	7.7	-3.8
Live tree aboveground biomass (thousand oven-dry tons)	21,878.4	5.0	24,818.4	4.7	13.4
Net volume live trees ≥ 5 in diameter (million ft^3)	776.4	5.7	870.1	5.2	12.1
Net growth live trees ≥ 5 in (thousand ft^3/yr)	21,146.6	7.0	21,037.0	16.7	-0.5
Annual mortality of live trees ≥ 5 in (thousand ft^3/yr)	2,773.0	21.8	5,174.3	18.6	86.6
Annual harvest removals of live trees ≥ 5 in (thousand ft^3/yr)	5,054.4	41.8	572.8	58.3	-88.7
Annual other removals of live trees ≥ 5 in (thousand ft^3/yr)	201.7	115.7	1,996.0	83.2	889.6
Timberland					
Area (thousand acres)	338.9	4.1	353.2	3.9	4.2
Number of live trees ≥ 1 in diameter (million trees)	172.1	8.3	167.4	8.0	-2.7
Live tree aboveground biomass (thousand oven-dry tons)	20,998.8	5.3	24,018.2	5.0	14.4
Net volume live trees ≥ 5 in diameter (million ft^3)	748.6	6.1	844.9	5.5	12.9
Net volume of growing stock trees (million ft^3)	699.7	6.4	748.5	6.2	7.0
Net growth live trees ≥ 5 in (thousand ft^3/yr)	18,224.7	7.4	17,741.6	14.0	-2.7
Annual mortality of live trees ≥ 5 in (thousand ft^3/yr)	1,795.6	27.7	3,076.9	21.4	71.4
Annual harvest removals of live trees ≥ 5 in (thousand ft^3/yr)	4,131.2	44.6	454.9	59.8	-89.0
Annual other removals of live trees ≥ 5 in (thousand ft^3/yr)	155.5	115.7	2,354.8	60.5	1,414.3



Forest Area

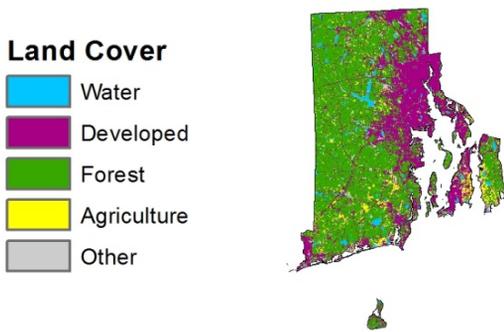


Figure 1.—Forest and other land cover, Rhode Island, 2011.
Source: National Land Cover Database (Jin et al. 2013)

An estimated 55 percent of the land area of Rhode Island meets the FIA definition of forest land. This forest land is not evenly distributed across the State (Fig. 1). The distribution is largely determined by development patterns and, to a lesser extent, arable lands. If left alone, most land in the State would naturally revert to forest. Areas surrounding Providence and along the coast have the lowest occurrences of forest land.

The area of forest land in Rhode Island has decreased from an estimated 434,000 acres of in 1952, the first year FIA started collecting data in the State, to an estimated 367,400 acres in 2013, the nominal year of the most recent inventory results (Fig. 2). The general decrease from the earliest estimates is presumably due to increased development. The forest land estimates in 2007 and 2013 are not substantially different, but FIA will continue to monitor this trend to determine if the recession or other factors may be allowing increased reversion of nonforest land to forest land.

There have been relatively few stand replacing events over the past few decades and this has resulted in the percentage of the forest land that is in the largest stand size class¹ steadily increasing (Fig. 3). This has important implications for forest resilience (i.e., the ability of the forests to withstand severe weather events or insect infestations), wildlife habitat, and other ecological functions.

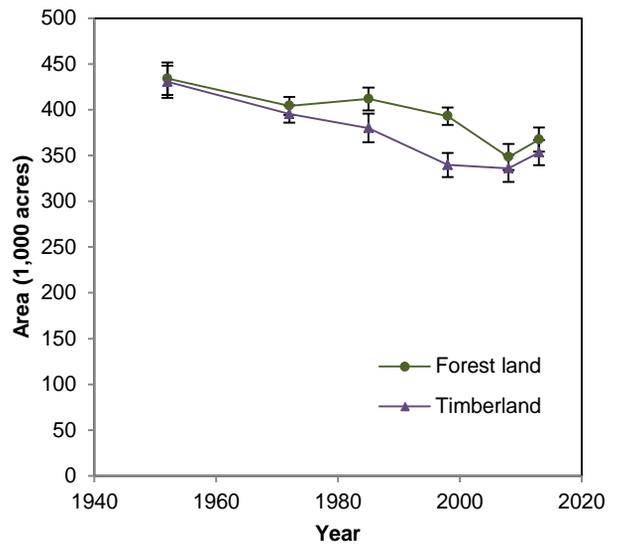


Figure 2.—Area of forest land and timberland, Rhode Island, 1952-2013.

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

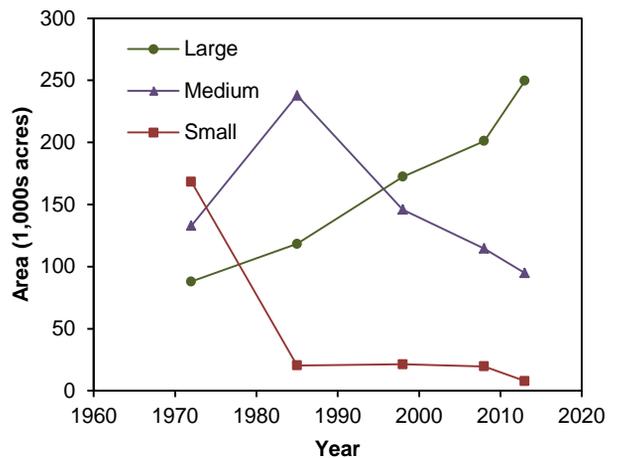


Figure 3.—Area of timberland by stand-size class¹, Rhode Island, 1972-2013.

¹Small: dominated by trees less than 5.0 inches d.b.h.; Medium: dominated by trees 5.0 to 8.9 inches d.b.h. for softwoods and 5.0 to 10.9 inches d.b.h. for hardwoods; Large: dominated by trees ≥ 9.0 inches for softwoods and 11.0 inches d.b.h. for hardwoods.

Forest Composition

There are many different ways to characterize the composition of forests, three are presented here: forest-type groups, volume, and numbers of stems. Each provides a somewhat different view of the resource and there are many other potential metrics that can be examined.

Forest-type groups are amalgamations of forest types which are calculated based on the plurality of trees within the plot/condition. In Rhode Island, the oak/hickory forest-type group is by far the most common forest type group, representing 62 percent of the State’s forest land (Fig. 4). In Rhode Island, this group is indeed dominated by oaks, northern red, scarlet, black, and white oaks in particular, but it also includes substantial amounts of red maple and other species.

The forests of Rhode Island contain a wide variety of tree species, with 46 species observed on the FIA plots inventoried between 2009 and 2013. In terms of total volume (Table 2) and number of trees (Fig. 5), red maple is the most common tree in the State. This species accounts for an estimated 22 percent of the volume and 28 percent of the number of trees. Ranking of the next most common species vary substantially depending on whether volume or number of trees are examined, but includes eastern white pine and a number of oak and birch species. Collectively, the ten most common tree species account for 90 percent of the volume of live trees and 84 percent of the number of trees in the State.

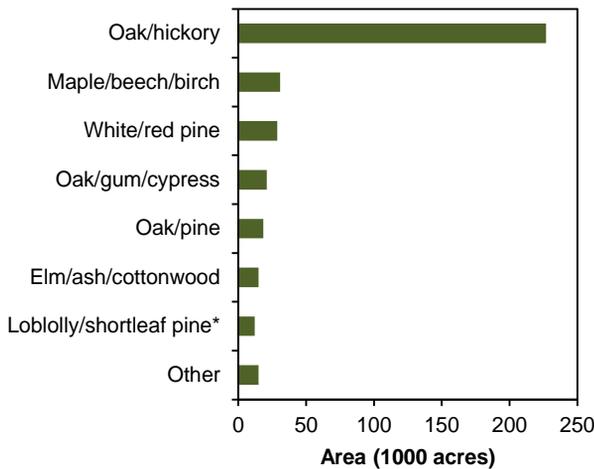


Figure 4.—Area of forest land by forest-type group, Rhode Island, 2009-2013. * Represented by the pitch pine forest type in Rhode Island.

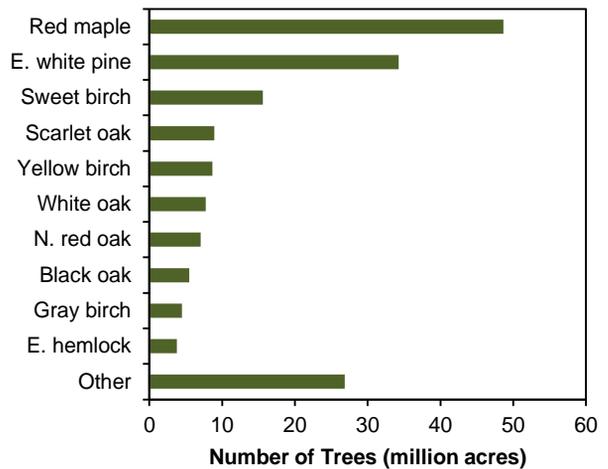


Figure 5.—Number of trees ≥1 in diameter by species, Rhode Island, 2009-2013.

Table 2.—Top 10 trees species by volume estimates, Rhode Island, 2009-2013

Rank	Species	Volume of live trees on forest land (million ft ³)	Sampling error (%)	Change since 2007 (%)	Volume of sawtimber trees on timberland (million board ft)	Sampling error (%)	Change since 2007 (%)
1	Red maple	192.8	10.7	2.2	329.4	18.2	2.5
2	Eastern white pine	156.9	20.9	16.4	697.7	22.5	17.5
3	Northern red oak	118.4	17.3	39.3	445.1	20.8	67.0
4	Scarlet oak	91.0	15.5	15.8	230.5	18.0	45.5
5	Black oak	85.9	18.3	10.7	292.7	21.0	11.6
6	White oak	71.0	14.7	25.4	228.6	19.9	27.7
7	Pitch pine	21.5	47.9	-1.4	79.2	53.5	1.4
8	Sweet birch	16.7	28.8	-4.0	9.7	47.7	-67.9
9	Blackgum	15.2	34.2	58.3	47.5	44.9	96.3
10	Yellow birch	14.1	34.0	60.2	17.3	47.0	38.4
	Other softwoods	13.0	42.8	-57.9	30.4	60.3	-60.8
	Other hardwoods	73.5	14.8	10.4	155.4	19.5	1.2
	All species	870.1	5.2	12.1	2,563.5	8.4	18.8

Forest Ownership of Rhode Island

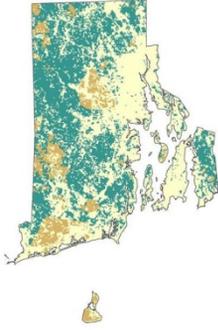


Figure 6.—Private (■) and public (■) forest ownership, Rhode Island, 2013 (Hewes et al. 2014).

An estimated 74 percent of Rhode Island’s forests are privately owned (Fig. 6). Of these private forests, most are owned by families and individuals, collectively referred to as family forest ownerships. This group accounts for 46 percent of the forest land in the State.

Other private ownerships, including corporate, tribal, conservation groups, and clubs, account for an additional 28 percent of the State’s forest land. State and local governments control 16 and 10 percent of the State’s forest land, respectively. No forested inventory plots fell on Federal lands in Rhode Island.

The 2011-2013 National Woodland Owner Survey (NWOS; Butler et al. In preparation) provides insights into the dominant ownership group, family forest ownerships, and focuses specifically on family forest ownerships with 10+ acres of forest land. There are an estimated 6,000 family forest ownerships in Rhode Island with 10+ acres of forest land. On average they have 18 acres of forest land. The reasons for owning this land are varied, but most are related to amenity values, such as nature protection and privacy (Fig. 7). More information will be available in forthcoming NWOS reports (www.fia.fs.fed.us/nwos).

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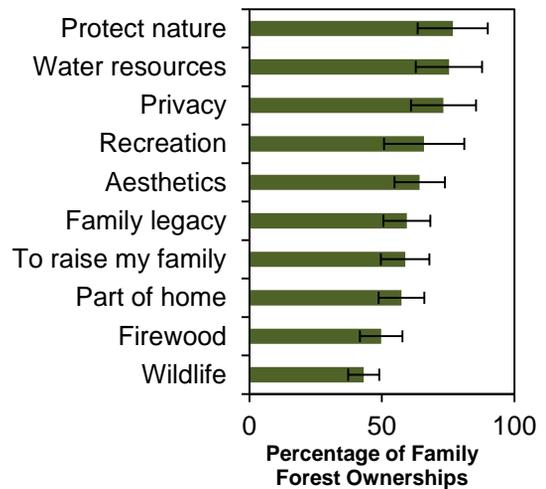


Figure 7.—Reasons for owning* forest land, family forest ownerships with 10+ acres of forest land, Rhode Island, 2011-2013. * Many ownerships have multiple reasons for owning.

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Contact Information

Brett J. Butler, Research Forester
 USDA Forest Service, Northern Research Station
 160 Holdsworth Way
 Amherst, MA 01002
 Ph: 413-545-1387 / Fax: 413-545-1860
bbutler01@fs.fed.us
 Northern FIA: <http://nrs.fs.fed.us/fia/>
 National FIA: <http://fia.fs.fed.us>

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