



# Forests of Vermont, 2017

This publication provides an overview of the forest resources in Vermont based upon inventories conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program of the Northern Research Station. Information about the national and regional FIA program is available online at [www.fia.fs.fed.us](http://www.fia.fs.fed.us).

Since 2003, FIA has implemented an annual inventory measuring 14 percent of sample plots each year. For the 2017 inventory, estimates for current variables, such as area, volume, and biomass, are based on 1,125 (925 forested) plots inventoried from 2011–2017. Change variables, such as net growth, removals, and mortality, are based on 970 (775 forested) plots inventoried in 2008–2012 and resampled in 2011–2017. Estimates from earlier annual and periodic inventories are included for comparison. See Bechtold and Patterson (2005) and O’Connell et al.(2017) for definitions and technical details.

Additional data and reports are available online ([www.nrs.fs.fed.us/fia/data-tools/state-reports/VT](http://www.nrs.fs.fed.us/fia/data-tools/state-reports/VT)). A complete set of inventory tables is available at <https://doi.org/10.2737/FS-RU-164>.

## Overview

Vermont contains an estimated 4.5 million acres of forest land (Table 1) and covers 76.2 percent of the land area in the State. Most of the forest land, 94.8 percent, is classified as timberland, meaning that it exceeds a minimum level of productivity and is not legislatively reserved from timber harvesting.

On the forest land in Vermont, there are an estimated 3.4 billion live trees that are at least 1 inch in diameter (Table 1). These trees have a total above ground biomass of 286.8 million tons and trees at least 5 inches in diameter have a total net volume of 10.6 billion ft<sup>3</sup>. The ratio of net growth to removals is 2.0:1.

**Table 1.—Vermont forest statistics, 2017 and 2012. Volumes are for trees 5 inches and larger in diameter. Number of trees and biomass are for trees 1 inch and larger in diameter. Sampling errors and error bars shown in tables and figures in this report represent 68 percent confidence intervals.**

	2017 Estimate	Sampling error (percent)	2012 Estimate	Sampling error (percent)	Change since 2012 (percent)
<b>Forest Land</b>					
Area (thousand acres)	4,494	1.0	4,596	1.0	-2.2
Number of live trees (million trees)	3,372	2.7	3,486	2.6	-3.3
Aboveground biomass of live trees (thousand oven-dry tons)	286,775	1.6	284,117	1.6	0.9
Net volume of live trees (million ft <sup>3</sup> )	10,615	1.8	10,514	1.8	1.0
Annual net growth of live trees (thousand ft <sup>3</sup> /yr)	181,079	4.8	191,094	5.4	-5.2
Annual mortality of trees (thousand ft <sup>3</sup> /yr)	115,619	6.0	111,203	5.7	4.0
Annual harvest removals of live trees (thousand ft <sup>3</sup> /yr)	87,420	14.8	93,719	14.1	-6.7
<b>Timberland</b>					
Area (thousand acres)	4,262	1.2	4,344	1.2	-1.9
Number of live trees (million trees)	3,192	2.9	3,297	2.8	-3.2
Aboveground biomass of live trees (thousand oven-dry tons)	270,299	1.8	266,729	1.8	1.3
Net volume of live trees (million ft <sup>3</sup> )	10,021	2.0	9,884	2.0	1.4
Net volume of growing stock trees (million ft <sup>3</sup> )	8,736	2.2	8,750	2.1	-0.1
Annual net growth of growing stock trees (thousand ft <sup>3</sup> /yr)	159,117	3.9	183,396	4.0	-13.2
Annual mortality of growing stock trees (thousand ft <sup>3</sup> /yr)	75,894	6.5	68,586	6.0	10.7
Annual harvest removals of growing stock trees (thousand ft <sup>3</sup> /yr)	71,690	14.5	78,054	14.2	-8.2



# Forest Area

Vermont's forest land area has decreased since 2012 (Fig. 1). An estimated 79.1 percent of the forest land is privately owned and 20.9 percent is publicly owned (Fig. 2).

Currently, 69.7, 23.3, and 6.8 percent of the timberland in Vermont is in large, medium, and small stand sizes, respectively (Fig. 3).

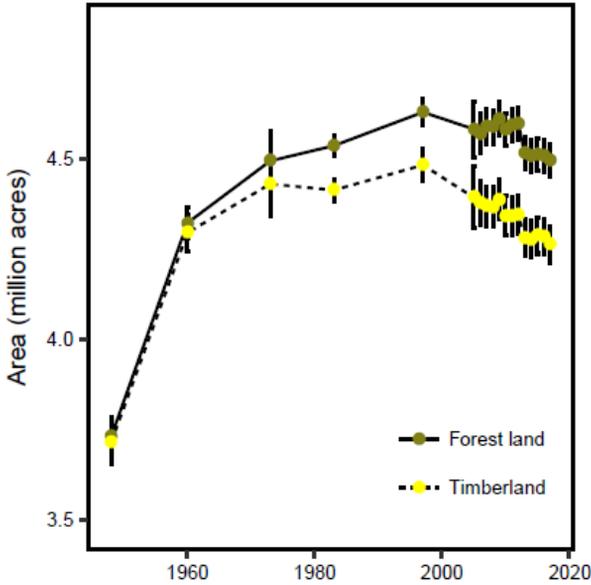


Figure 1.—Area of forest land and timberland, Vermont.

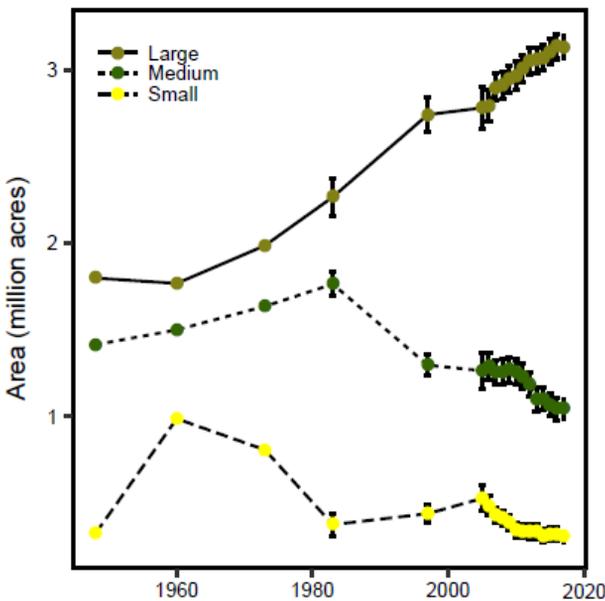


Figure 3.—Area of timberland by stand-size class, Vermont.

The most common forest-type group is maple/beech/birch, representing 70.7 percent of Vermont's forest land area (Fig. 4). The next most common forest-type groups are white/red/jack pine, spruce/fir, and aspen/birch.

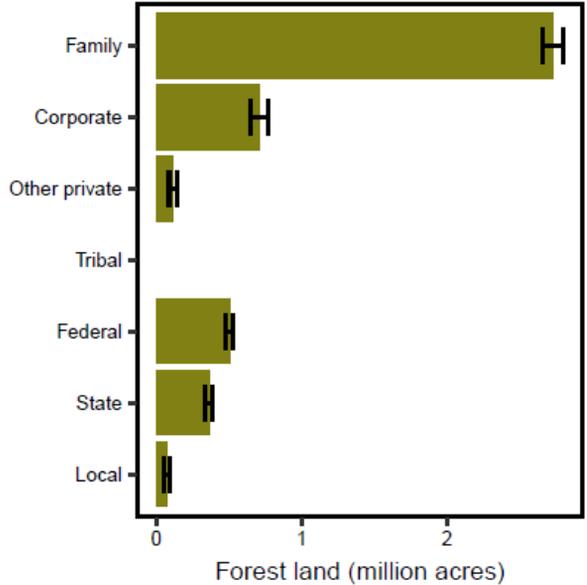


Figure 2.—Area of forest land by ownership group, Vermont, 2017.

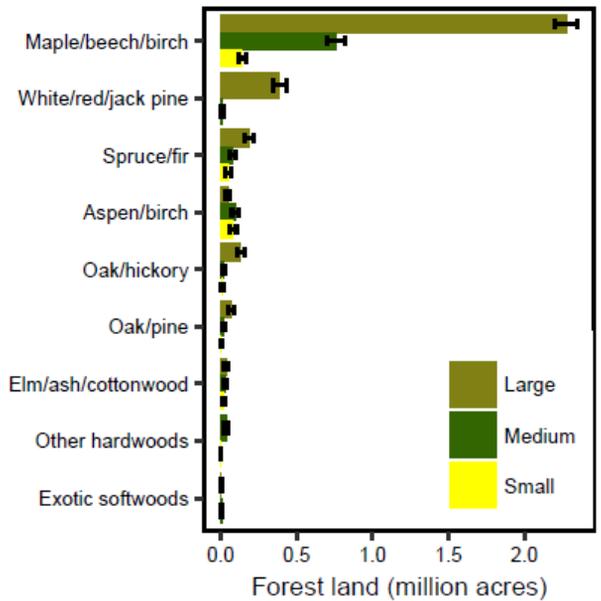


Figure 4.—Area of forest land by forest-type group, Vermont, 2017.

# Forest Composition

Vermont’s forests contain a wide variety of tree species with over 55 species sampled in 2017. This composition looks different depending on whether the number or volume of trees are examined.

In terms of volume, sugar maple (*Acer saccharum*) is the most common tree in Vermont followed by red maple and eastern hemlock (Table 2). Collectively, the 10 most voluminous tree species account for 86.4 percent of the total volume of live trees on forest land in Vermont. Of these species, yellow birch (*Betula alleghaniensis*), white ash (*Fraxinus americana*), and balsam fir (*Abies balsamea*) showed the most substantial increases in volume since 2012. In terms of number of trees, American beech (*Fagus grandifolia*) is the most numerous species in Vermont with 15.6 percent of the tree stems in the State (Fig. 5). Other common species include sugar maple, balsam fir, red maple (*A. rubrum*), and striped maple (*A. pensylvanicum*). The 10 most common species, in terms of numbers of stems, account for 82.9 percent of the trees in the State.

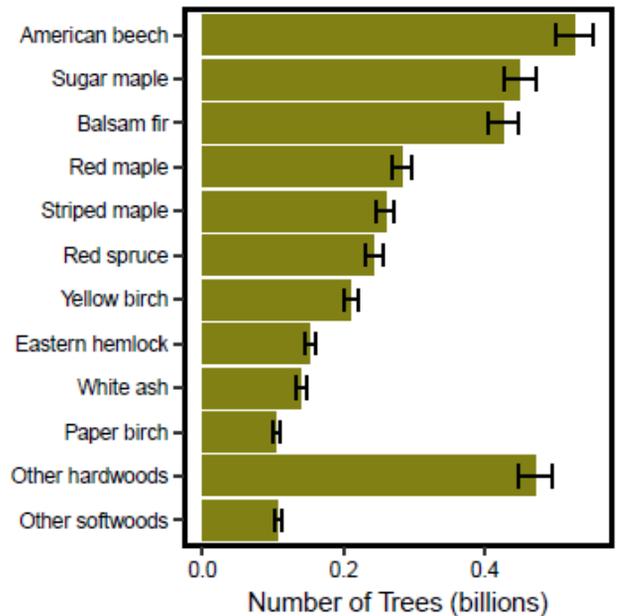


Figure 5.—Number of trees at least 1 inch in diameter by species, Vermont, 2017.

Table 2.—Net volume and percentage change in net volume on forest land; sawtimber volume and percentage change on timberland, Vermont, 2017 (top 10 species by net volume).

Rank	Species	Volume of live trees on forest land (million ft <sup>3</sup> )	Sampling error (%)	Change since 2012 (%)	Volume of sawtimber trees on timberland (million board ft)	Sampling error (%)	Change since 2012 (%)
1	Sugar maple	2,443.2	4.6	-1.0	6,514.2	6.3	-0.3
2	Red maple	1,308.3	5.6	1.8	2,958.5	7.7	5.2
3	Eastern hemlock	1,180.8	9.1	2.3	3,275.2	10.9	3.3
4	Eastern white pine	953.8	10.4	-0.7	4,075.0	11.2	1.7
5	Yellow birch	807.1	5.7	6.2	1,862.5	8.6	6.7
6	American beech	595.0	7.1	-1.7	876.9	12.4	-10.5
7	White ash	580.2	8.3	6.2	1,743.0	11.0	5.5
8	Red spruce	529.7	8.9	2.2	1,515.1	11.1	6.7
9	Balsam fir	405.1	9.8	4.8	732.9	12.3	3.7
10	Paper birch	366.1	9.5	-11.8	721.8	13.4	-13.3
	Other softwood	211.6	18.0	-11.1	508.9	23.3	-15.9
	Other hardwood	1,234.6	6.4	5.0	3,279.4	9.1	7.4
	All species	10,615.5	2.3	1.0	28,063.4	3.1	2.0

## Literature Cited

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>.

O’Connell, B.M.; Conkling, B.L.; Wilson, A.M. [et al.]. 2017. **Forest Inventory and Analysis database: Database description and user guide for phase 2, version 7.0**. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 830 p. <https://www.fia.fs.fed.us/library/database-documentation> (accessed May 26, 2017).

### How to Cite This Publication

Morin, Randall S. 2018. **Forests of Vermont, 2017**. Resource Update FS-164. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 3 p. <https://doi.org/10.2737/FS-RU-164>.

### Contact Information

Randall S. Morin, Research Forester  
 USDA Forest Service, Northern Research Station  
 11 Campus Blvd., Ste. 200  
 Newtown Square, PA 19073  
 Ph: 610-557-4054 / Fax: 610-557-4250  
[rsmorin@fs.fed.us](mailto:rsmorin@fs.fed.us)  
 Northern FIA: <http://nrs.fs.fed.us/fia/>  
 National FIA: <http://fia.fs.fed.us>