

Vermont's Forest Resources, 2012

Research Note NRS-177

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

Table 1. – Annual estimates and uncertainty

	2012 estimate	Sampling error (%)	Change Since 2007 (%)
Forest Land Estimates			
Area (1,000 acres)	4,596	1.0	0.2
Number of live trees 1-inch diameter or larger (1,000,000 trees)	3,486	2.6	-0.7
Biomass of live trees 1-inch diameter or larger (1,000 tons)	284,117	1.6	4
Net volume in live trees 5-inch diameter or larger (1,000,000 ft ³)	10,514	1.8	4
Annual net growth of live trees 5-inch diameter or larger (1,000 ft ³ /year)	191,124	5.4	6.5
Annual mortality of live trees 5-inch diameter or larger (1,000 ft ³ /year)	110,895	5.7	-7.8
Annual harvest removals of live trees 5-inch diameter or larger (1,000 ft ³ /year)	93,503	14.1	-19.8
Annual other removals of live trees 5-inch diameter or larger (1,000 ft ³ /year)	2,431	71.5	-20.9
Timberland Estimates			
Area (1,000 acres)	4,475	1.1	-0.3
Number of live trees 1-inch diameter or larger (1,000,000 trees)	3,390	2.7	-1
Biomass of live trees 1-inch diameter or larger (1,000 tons)	277,255	1.7	3.2
Net volume in live trees 5-inch diameter or larger (1,000,000 ft ³)	10,266	1.9	3.3
Net volume of growing-stock trees (1,000,000 ft ³)	9,101	2.0	1.7
Annual net growth of growing-stock trees (1,000 ft ³)	185,050	4.2	3.3
Annual mortality of growing-stock trees (1,000 ft ³ /year)	73,392	6.6	-13.2
Annual harvest removals of growing-stock trees (1,000 ft ³ /year)	78,760	14.1	-20.9
Annual other removals of growing-stock trees (1,000 ft ³ /year)	17,236	35.9	87.1

Note: When available, sampling errors/bars provided in figures and tables represent 68 percent confidence intervals

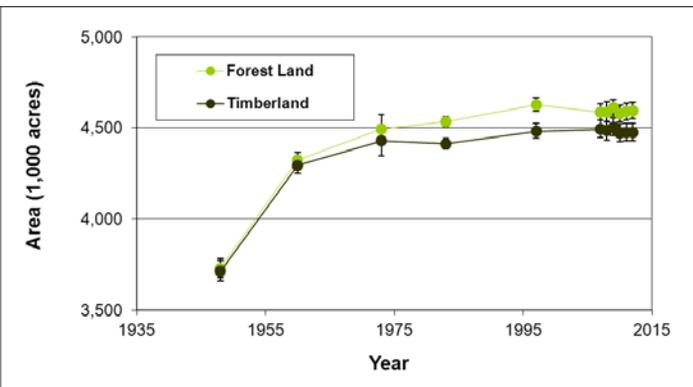


Figure 1. – Area of timberland and forest land by year, 1948-2012.

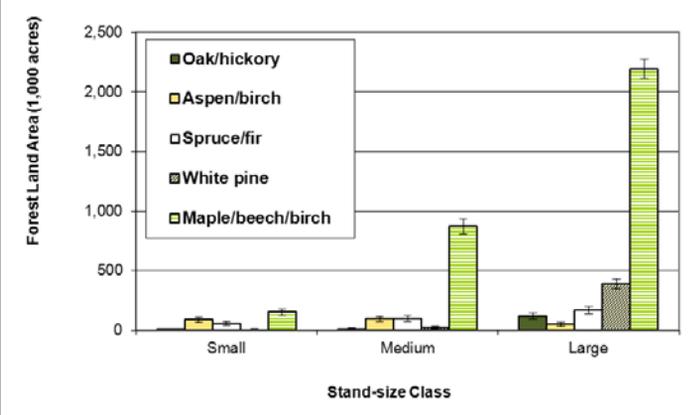


Figure 2. – Area of forest land by top five forest types and stand-size class, 2012.

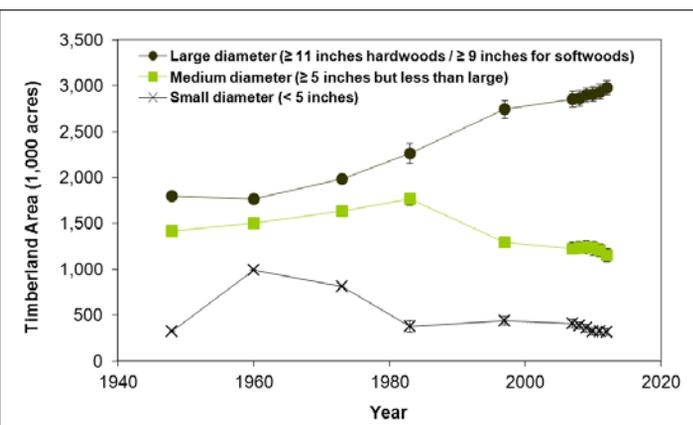


Figure 3. – Area of timberland by stand-size class and year, 1948-2012.

Table 2. – Top 10 tree species by statewide volume estimates (5-inch diameter and larger), 2012

Rank	Species	Volume of live trees on forest land (1,000,000 ft ³)	Sampling error (%)	Change since 2007 (%)	Volume of sawtimber trees on timberland (1,000,000 bdf)	Sampling error (%)	Change since 2007 (%)
1	Sugar maple	2,468	4.8	3.5	6,838	6.3	2.8
2	Red maple	1,286	5.7	4.8	2,932	7.7	6.0
3	Eastern hemlock	1,154	8.7	11.3	3,306	10.0	16.3
4	Eastern white pine	960	10.0	0.5	4,008	10.5	3.1
5	Yellow birch	760	6.0	4.3	1,867	8.7	6.6
6	American beech	605	7.0	-1.3	1,112	11.2	-4.8
7	White ash	546	8.6	11.5	1,710	11.2	17.4
8	Red spruce	519	8.9	3.7	1,505	10.8	10.1
9	Paper birch	415	9.0	-2.2	840	12.3	1.9
10	Balsam fir	387	9.7	-0.5	725	11.6	0.0
	Other softwoods	238	15.9	7.7	605	19.7	14.3
	Other hardwoods	1,176	6.0	3.0	3,310	8.4	4.5
	All Species	10,514	1.8	4.0	28,758	2.7	6.0

An Emerging Threat – Emerald Ash Borer

Although the emerald ash borer (EAB), *Agrilus planipennis* Fairmaire, has not been found in Vermont, it was discovered in neighboring Concord, NH, in March 2013. This exotic beetle was first discovered in the United States in southeastern Michigan near Detroit in the summer of 2002. Since then, it has spread into several other states that border Vermont: New York, Massachusetts, and New Hampshire. EAB probably arrived in the United States on solid wood packing material carried in cargo ships or airplanes originating in its native Asia.

The adult beetles feed on ash foliage but cause little damage, while larvae feed on the inner bark of ash trees, which disrupts the tree's ability to transport water and nutrients (Fig. 4) (Cappaert et al. 2005). North American ash (*Fraxinus* spp.) exhibit little or no resistance, and as this insect species expands its range, extensive ash mortality results. Trees typically die within 3 to 5 years of EAB infestation.

Although ash only comprises about 5 percent of the total volume in Vermont, it is widely distributed geographically (Fig. 5). Over 4.3 million board feet of ash are harvested each year which represents nearly 2 percent of Vermont's total saw log harvest. Most of the ash volume is white ash, but green and black ash are present at very low levels.



Figure 4. – EAB galleries (Michigan Department of Agriculture, bugwood.com); Inset - emerald ash borer adult (Debbie Miller, U.S. Forest Service, bugwood.com).

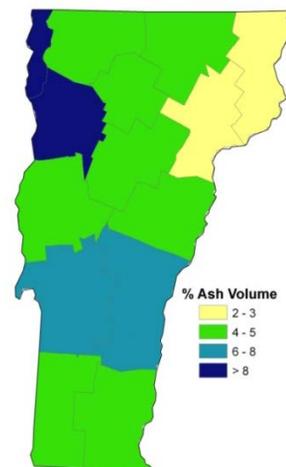


Figure 5. – Map of percent ash volume by county.

An Emerging Threat – Emerald Ash Borer - Continued

Ash is a minor component in most forests across Vermont comprising 5 percent of trees greater than 1 inch in diameter (Fig. 6). However, ash is important for biodiversity due to its value as a food source for many insect, bird, and small mammal species. For example, there are an estimated 43 native arthropod species associated with ash in North America that are totally dependent on ash for feeding or breeding purposes (Gandhi and Herms 2010).

Although the number of ash trees is split nearly evenly between the north and south units, the diameter distribution is quite different. The number of ash trees less than 5 inches in diameter is higher in the southern half of the State and the number in the larger diameters is greater in the northern half (Fig. 7).

The state of New Hampshire has issued a quarantine for Merrimack County. The quarantine makes it illegal to move any ash material or hardwood firewood out of the area into nonquarantined areas. Merrimack County is located in the south central part of New Hampshire within about 15 miles of Windsor County, Vermont (Fig. 6).

The estimates provided in this report will be important baselines to compare against the potential future impacts of EAB. For the most up to date information about EAB visit www.emeraldashborer.info.

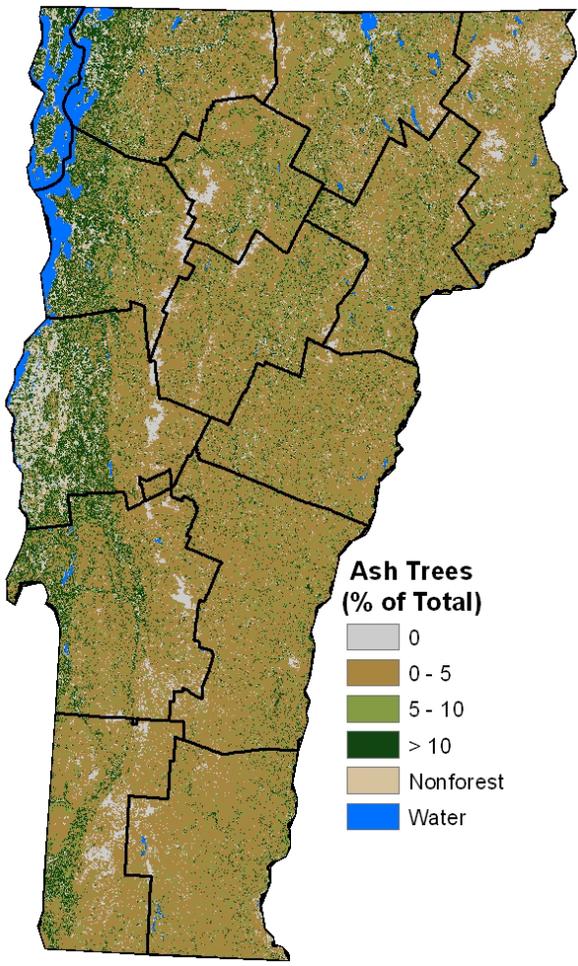


Figure 6. – Map of percent of forest trees that are ash.

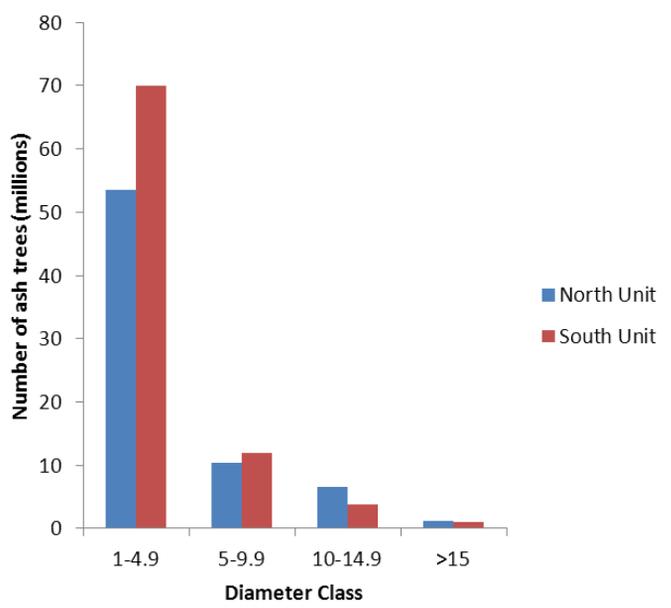


Figure 7. – Number of ash trees by diameter class and survey unit, Vermont, 2012.

Citation for this Publication

Morin, R.S. 2013. **Vermont's forest resources, 2012**. Res. Note. NRS-177. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

FIA Program Information

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Additional Information

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Additional Vermont Inventory Information

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Estimates, tabular data, and maps from this report may be generated at: <http://www.fia.fs.fed.us/tools-data/>
 Glossary of terms available here: <http://www.nrs.fs.fed.us/fia/data-tools/state-reports/glossary/default.asp>
 Information from the Vermont Department of Forests, Parks, and Recreation can be obtained here: <http://www.vtpr.org/>

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