

Minnesota's Forest Resources, 2009

Research Note NRS-78

This publication provides an overview of forest resource attributes for Minnesota 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, uncertainty, and change

	Estimate	Sampling error (%)	Change since 2004 (%)
Forest Land Estimates			
Area (1,000 acres)	17,183.2	.5	6.1%
Number of live trees 1-inch diameter or larger (million trees)	13,354.6	1.2	9.3%
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	465,299.9	1.0	6.1%
Net volume of live trees (1,000,000 ft ³)	18,317.7	1.2	4.2%
Annual net growth of live trees (1,000 ft ³ /year)	441,349.9	3.3	36.4%
Annual mortality of live trees (1,000 ft ³ /year)	336,072.3	2.6	-20.1%
Annual harvest removals of live trees (1,000 ft ³ /year)	252,250.5	6.0	-21.6%
Annual other removals of live trees (1,000 ft ³ /year)	8,416.9	26.0	175.0%
Timberland Estimates			
Area (1,000 acres)	15,748.4	0.6	6.6%
Number of live trees 1-inch diameter or larger (million trees)	12,294.3	1.2	8.8%
Biomass of live trees 1-inch diameter or larger (1,000 tons)	434,057.8	1.1	6.5%
Net volume of live trees (1,000,000 ft ³)	17,015.7	1.2	4.5%
Net volume of growing-stock trees (1,000,000 ft ³)	14,450.3	1.3	-5.1%
Annual net growth of growing-stock trees (1,000 ft ³ /year)	397,139.4	3.0	-15.2%
Annual mortality of growing-stock trees (1,000 ft ³ /year)	245,849.3	2.5	-7.1%
Annual harvest removals of growing-stock trees (1,000 ft ³ /year)	230,983.9	6.0	-20.3%
Annual other removals of growing-stock trees (1,000 ft ³ /year)	45,581.0	17.5	-20.0%

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

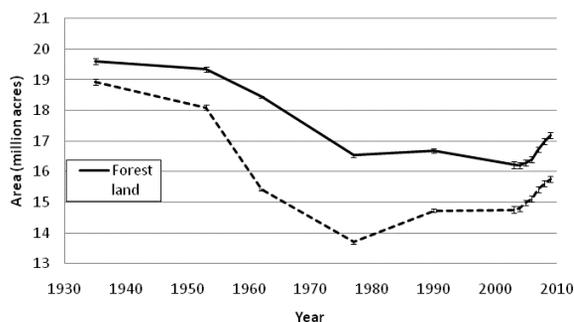


Figure 1. – Area of timberland and forest land by year.

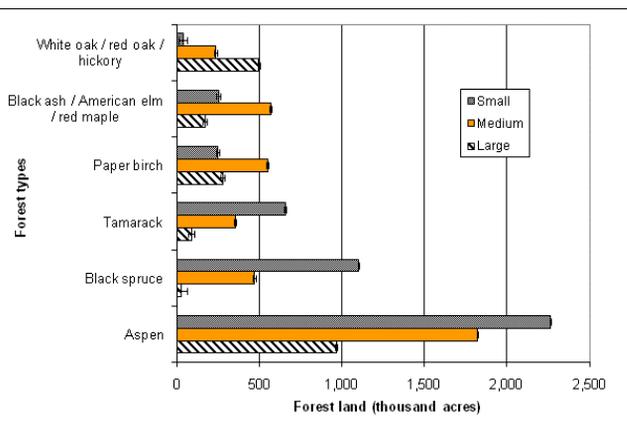


Figure 2. – Area of forest land area by top six forest types and stand size class, 2005-2009.

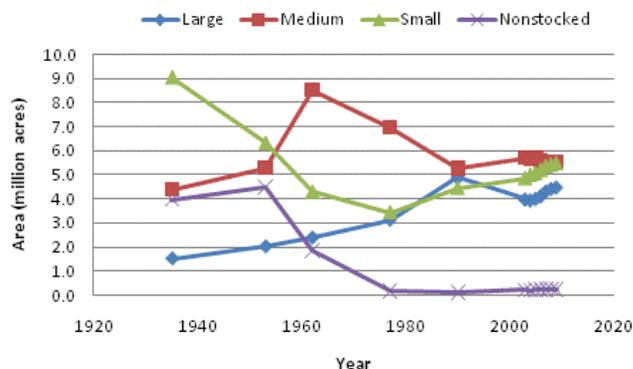


Figure 3. – Area of timberland by stand size class and year.



Table 2. – Top 10 tree species by statewide volume estimates , 2005-2009

Rank	Species	Volume of live trees on forest land (1,000,000 ft ³)	Sampling error (%)	Change since 2004 (%)	Volume of sawtimber trees on timberland (1,000,000 bdf)	Sampling error (%)	Change since 2004 (%)
1	Quaking aspen	3,462.4	2.62	-6.14%	6,369.6	3.97	-17.71%
2	Paper birch	1,230.3	3.35	-9.05%	1,283.2	5.95	-18.94%
3	Northern white-cedar	1,117.9	5.9	11.48%	2,950.3	7.28	2.35%
4	Red pine	1,078.5	6.89	24.21%	4,109.6	7.74	26.33%
5	Bur oak	1,015.3	4.71	13.48%	1,888.2	6.77	-15.84%
6	American basswood	987.5	4.54	8.12%	1,336.3	7.14	4.62%
7	Black ash	963.4	5.13	9.27%	2,950.3	6.55	4.81%
8	Northern red oak	958.3	4.95	6.24%	2,285.0	6.49	-3.24%
9	Black spruce	908.3	4.61	3.52%	840.6	7.43	4.47%
10	Tamarack (native)	701.1	5.42	7.02%	1,344.8	7.11	-0.54%
	Other softwood species	2,081.8	3.39	3.74%	5,356.8	4.58	0.51%
	Other hardwood species	3,813.0	2.74	7.59%	5,785.6	4.70	-16.08%
	All species	18,317.7	1.2	4.15%	11,142.3	1.92	-5.86%

Ownership of forest land

- Public 56%
- Private 44%
- Nonforest

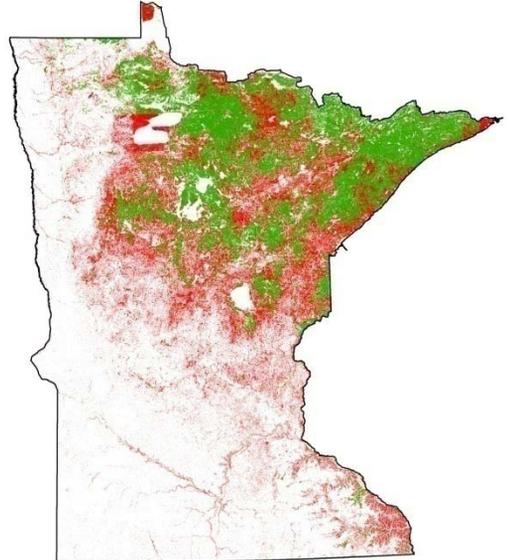


Figure 4. – Area of forest land by major owner group (34% of Minnesota land is forested).

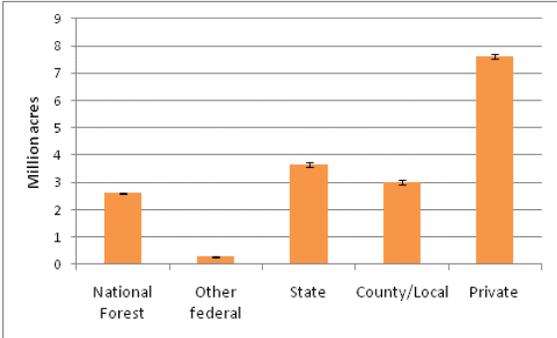


Figure 5. – Area of forest land by ownership group, 2005- 2009.

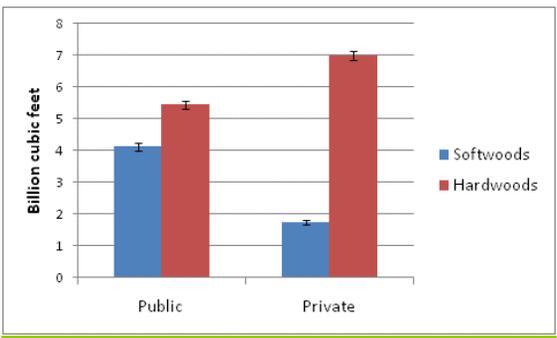


Figure 6. – Forest land live tree volume by owner group and major species group, 2005-2009.

Minnesota Issue Update – Emerald Ash Borer

The emerald ash borer (EAB), an invasive Asian insect, was inadvertently introduced into North America sometime prior to 2002. Beetle infestations were first identified in the Detroit area. The infestation has spread rapidly - possibly due to the transport of infested firewood. In 2010 EAB was found in Ramsey, Hennepin, and Houston counties (Fig. 7) .

Beetles lay their eggs in the bark furrows of ash trees. Larvae (Fig. 8) hatch from the eggs and begin feeding on the cambium layer located just under the bark. The cambium layer transports water and nutrients throughout the tree. Damage to the cambium layer results in thinning of the crown and eventual tree mortality - typically within 3 to 4 years. Adult beetles (Fig. 9) emerge in June leaving “D” shaped emergence holes that are approximately 1/6th of an inch in diameter.

The primary hosts for EAB are black ash, green ash, and white ash. In Minnesota these three species occur on 4.2 million acres of forest land and comprise 8 percent of the total live tree volume. Black ash is the most abundant of the three ash species (Fig. 10). In some areas of northern Minnesota black ash forms pure stands (Fig. 11). There is concern over what will replace the black ash in these areas should extirpation occur. Black ash is of particular cultural importance to Native Americans as a material for woven wood baskets.

Green ash is an important urban tree particularly in the western part of the state (Fig. 12) . Efforts are currently aimed at slowing the spread of EAB by removing stressed ash trees and managing for non-ash species.



Figure 7. – Confirmed infestations of emerald ash borer.



Figure 8. – EAB larva. Photo courtesy of David Cappaert, Michigan State University, Bugwood.org



Figure 9. – EAB adult. Photo courtesy of David Cappaert, Michigan State University, Bugwood.org

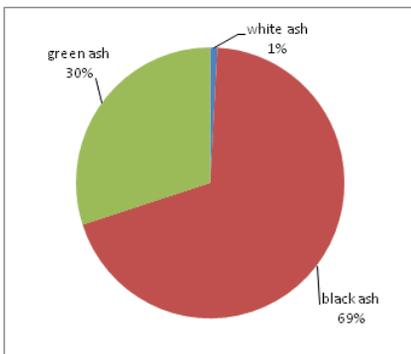


Figure 10. – Percentage of ash by ash species.

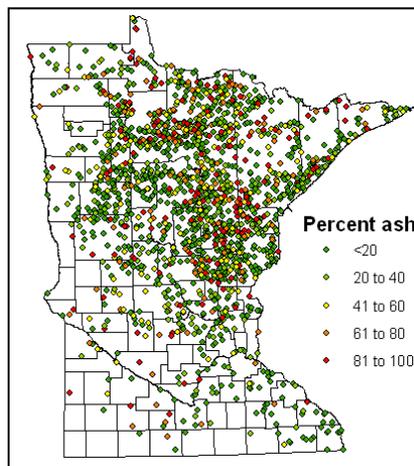


Figure 11. – Ash volume as percent of total volume on plots with ash.

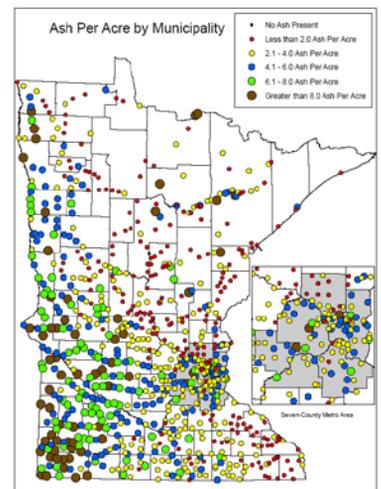


Figure 12. – Urban ash tree assessment. Photo courtesy of MN DNR

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FIA Program Information

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Special issue citation

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Estimates, tabular data, and maps from this report may be generated at: fiatools.fs.fed.us

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