

Image credit: Terry Spivey, USDA Forest Service, Bugwood.org

# Michigan's Forest Resources, 2008

Research Note NRS-50

This publication provides an overview of forest resource attributes for Michigan based on an annual inventory (2004-2008) conducted by the Forest Inventory and Analysis (FIA) program of the Northern Research Station, U.S. Forest Service. These estimates, along with web-posted core tables, are updated annually. For more information please refer to page 4 of this report or visit our website: [www.fia.fs.fed.us/](http://www.fia.fs.fed.us/).

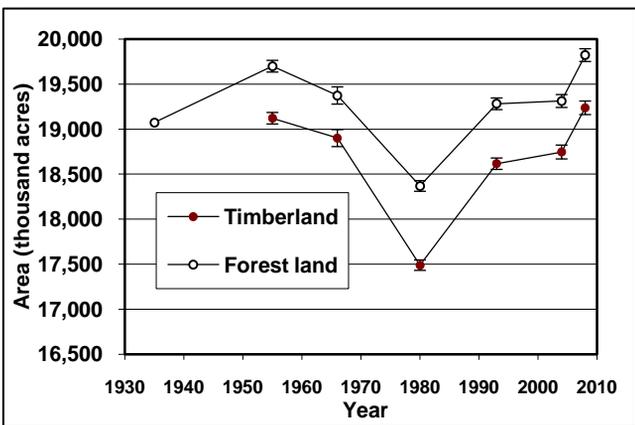


Figure 1. – Area of timberland and forest land by year.

**Table 1. – Annual estimates, sampling error, and change**  
Note: Volumes are for 5-inch and larger diameter trees

	Estimate	Error (%)	Change since 2003 (%)
<b>Forest Land Estimates</b>			
Area (1,000 acres)	19,821	0.4	2.9
Number of live trees 1-inch diameter or larger (1,000,000 trees)	14,028	0.9	2.4
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	796,127	0.7	4.5
Net volume in live trees (1,000,000 ft <sup>3</sup> )	31,553	0.7	4.4
Annual net growth of live trees (1,000 ft <sup>3</sup> /year)	757,822	2.1	NA
Annual mortality of live trees (1,000 ft <sup>3</sup> /year)	341,460	2.3	NA
Annual harvest removals of live trees (1,000 ft <sup>3</sup> /year)	339,369	5.1	NA
Annual other removals of live trees (1,000 ft <sup>3</sup> /year)	32,852	11.3	NA
<b>Timberland Estimates</b>			
Area (1,000 acres)	19,237	0.4	3.0
Number of live trees 1-inch diameter or larger (1,000,000 trees)	13,627	0.9	2.4
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	773,826	0.7	4.8
Net volume in live trees (1,000,000 ft <sup>3</sup> )	30,632	0.7	4.7
Net volume of growing-stock trees (1,000,000 ft <sup>3</sup> )	28,353	0.8	3.8
Annual net growth of growing-stock trees (1,000 ft <sup>3</sup> /year)	697,016	2.1	-11.7
Annual mortality of growing-stock trees (1,000 ft <sup>3</sup> /year)	272,655	2.5	19.8
Annual harvest removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	302,474	5.1	31.9
Annual other removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	36,640	11.9	-55.0

Note that changes in inventory design and definitions make it inappropriate to directly compare some previously published estimates with these current estimates. Sampling errors and error bars represent 68% confidence intervals.

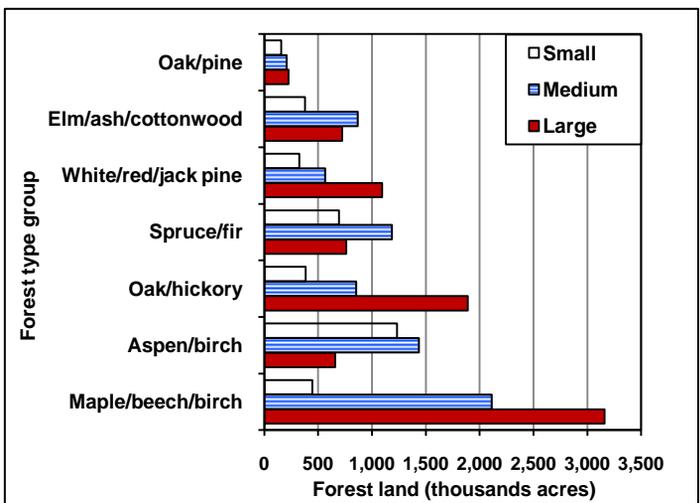


Figure 2. – Area of forest land for top seven forest type groups by stand-size class (based on tree size), Michigan, 2004-2008.

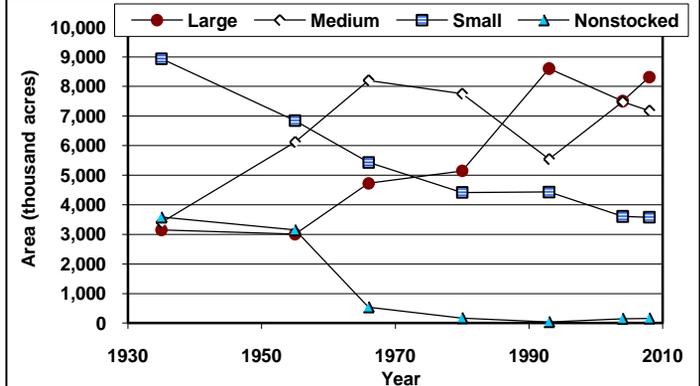


Figure 3. – Area of timberland by stand-size class (based on tree size) and year.

Image credit: Terry Spivey, USDA Forest Service, Bugwood.org

Table 2. – Top 10 species by statewide volume estimates, 2004-2008

Rank	Species	Volume of live trees 5-inch diameter and larger on forest land (1,000,000 ft <sup>3</sup> )	Sampling error (%)	Change since 2003 (%)	Volume of sawtimber trees on timberland (1,000,000 board feet)	Sampling error (%)	Change since 2003 (%)
1	Sugar maple	4,580	2.2	1.6	10,695	2.9	4.8
2	Red maple	3,975	2.1	9.7	8,065	3.1	12.0
3	Northern white-cedar	2,670	3.3	4.3	7,202	4.1	5.4
4	Red pine	2,084	4.2	2.1	8,044	4.7	6.8
5	Quaking aspen	1,648	3.0	0.5	3,540	4.3	2.1
6	Northern red oak	1,579	3.9	4.5	5,485	4.4	9.2
7	Eastern white pine	1,387	4.4	4.6	5,845	5.0	4.0
8	Bigtooth aspen	1,274	4.4	4.7	3,300	5.8	7.0
9	Eastern hemlock	923	4.9	3.3	3,828	5.4	3.6
10	American basswood	850	4.4	1.8	2,508	5.5	4.3
	<b>Other softwoods</b>	<b>2,714</b>	<b>2.2</b>	<b>-0.9</b>	<b>5,939</b>	<b>3.1</b>	<b>-0.9</b>
	<b>Other hardwoods</b>	<b>7,868</b>	<b>1.5</b>	<b>7.3</b>	<b>19,628</b>	<b>2.3</b>	<b>9.4</b>
	<b>All Species</b>	<b>31,553</b>	<b>0.7</b>	<b>4.4</b>	<b>84,079</b>	<b>1.1</b>	<b>6.4</b>

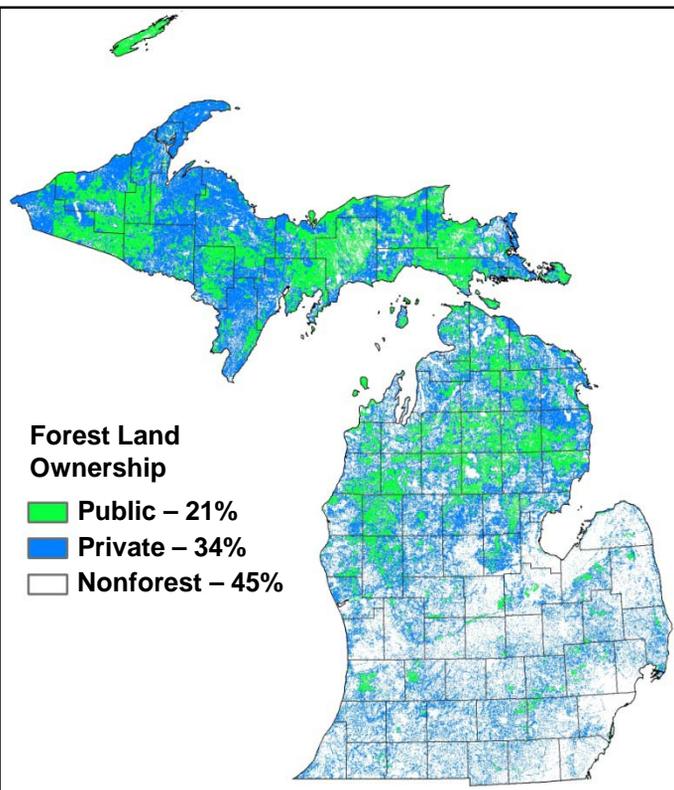


Figure 4. – Area of forest land by major ownership group. Note: National Land Cover Database (NLCD) 2001 used to delineate forest and nonforest. Protected Areas Database (PAD version 4.6) 2007 used to delineate public and private ownership.

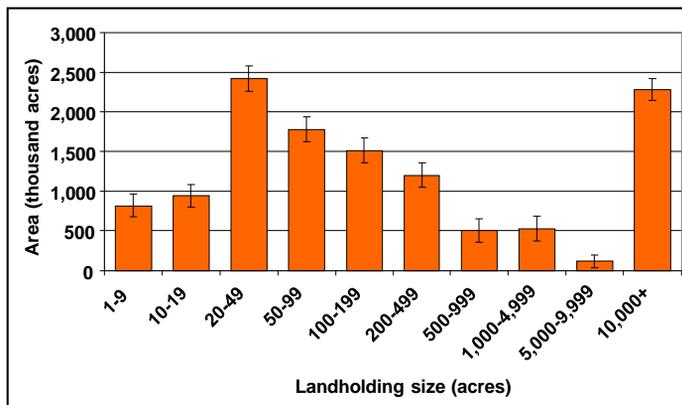


Figure 5. – Area of private forest land by size of forest landholding, Michigan, 2006.

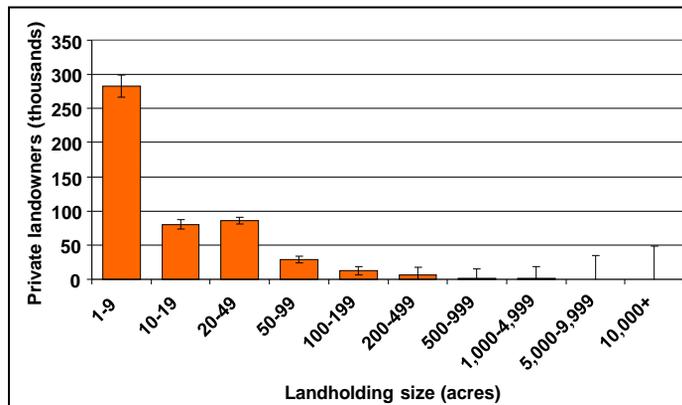


Figure 6. – Number of private forest landowners by size of forest landholding, Michigan, 2006.

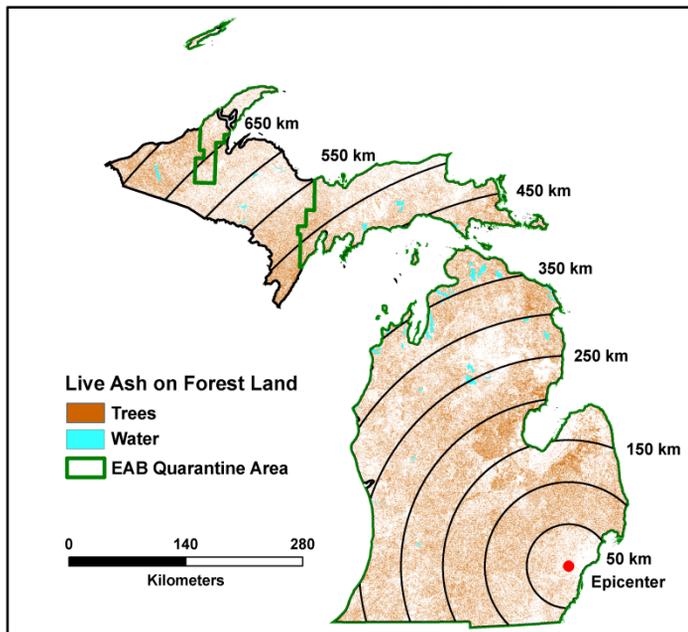
Image credit: Terry Spivey, USDA Forest Service, Bugwood.org

# Michigan Issue Update – Ash and Emerald Ash Borer

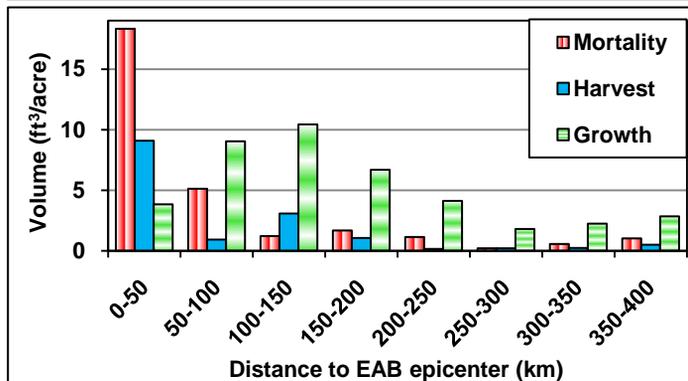
Ash trees (black, green, and white) are present on more than 5.8 million acres of Michigan’s forest land (Fig. 7). In stands where ash resides, it generally accounts for less than 25 percent of total live-tree basal area. Statewide, the ash resource has made gains regularly since 1980 resulting in a 40-percent increase in the number of trees on timberland (live trees at least 1 inch d.b.h. with increases in small, medium, and large size classes). The emerald ash borer (EAB) (*Agrilus planipennis*) has reversed this trend in Southeast Michigan (Fig. 8 and 9).

This nonnative wood-boring beetle was discovered near Detroit in 2002. From 1980 thru 2004 within 50 km of what is now the epicenter of the invasion (Siegert et al. 2008), growth of ash (7 to 27 ft<sup>3</sup>/acre) was many times more than mortality (1 to 2 ft<sup>3</sup>/acre). In 2008, average annual mortality was over 18 ft<sup>3</sup>/acre and growth was 4 ft<sup>3</sup>/acre. With the rise in mortality, average annual harvests rose from no observed harvests to approximately 9 ft<sup>3</sup>/acre in 2008. There have been ongoing efforts to utilize ash in Southeast Michigan (Southeast Michigan RC&D Council 2010).

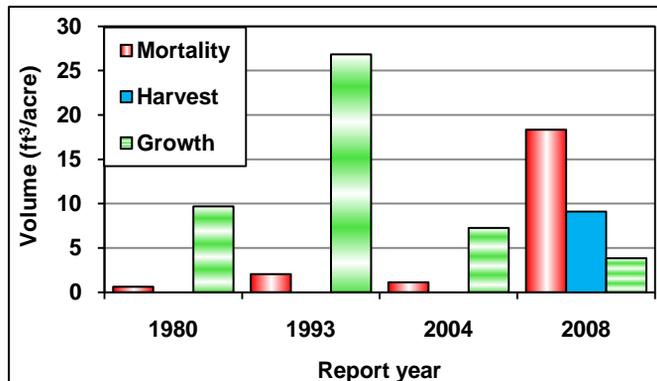
Most mortality is within 50 km of the epicenter followed by a notable amount in the next 50 km (Fig. 8) but there are outlier outbreaks and associated quarantines in other areas (Fig. 7). EAB will not be eradicated but there are ongoing efforts to slow the rate of ash mortality (e.g., SLAM [MSU Extension 2010]).



**Fig 7. – Live ash trees (at least 1 inch d.b.h.) on forest land in relation to EAB epicenter and quarantine areas, Michigan. Note: National Land Cover Database 2001 used to delineate forest. Ash trees estimated from 2005 FIA data. Quarantine areas delineated in January 2010.**



**Figure 8. – Mortality, harvest, and growth of ash growing stock on timberland by distance to EAB epicenter, Michigan Lower Peninsula, average annual 2000-2003 to 2005-2008.**



**Figure 9. – Mortality, harvest, and growth of ash growing stock on timberland within 50 km of EAB epicenter by report year, Michigan.**



Image credit: Terry Spivey, USDA Forest Service, Bugwood.org

### Citation for this Publication

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### FIA Program Information

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### Special Issue

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Estimates, tabular data, and maps from report may be generated at: <http://www.fia.fs.fed.us/tools-data/default.asp>

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