

Ohio's Forest Resources, 2011

Research Note NRS-146

This publication provides an overview of forest resource attributes for Ohio 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 2011	Sampling error (%)	Change since 2006 (%)
Forest Land Estimates			
Area (1,000 acres)	8,088	1.1	2.1
Number of live trees 1-inch diameter or larger (million trees)	4,129	2.1	1.7
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	477,115	1.6	7.0
Net volume in live trees (1,000,000 ft ³)	16,387	1.7	6.6
Annual net growth of live trees (1,000 ft ³ /year)	482,284	3.9	NA
Annual mortality of live trees (1,000 ft ³ /year)	181,638	5.5	NA
Annual harvest removals of live trees (1,000 ft ³ /year)	207,906	9.9	NA
Annual other removals of live trees (1,000 ft ³ /year)	9,722	34.7	NA
Timberland Estimates			
Area (1,000 acres)	7,865	1.1	2.3
Number of live trees 1-inch diameter or larger (million trees)	4,030	2.2	1.6
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	462,494	1.7	6.9
Net volume in live trees (1,000,000 ft ³)	15,885	1.8	6.5
Net volume of growing-stock trees (1,000,000 ft ³)	13,741	2.0	0.9
Annual net growth of growing-stock trees (1,000 ft ³ /year)	382,226	3.6	NA
Annual mortality of growing-stock trees (1,000 ft ³ /year)	118,217	6.1	NA
Annual harvest removals of growing-stock trees (1,000 ft ³ /year)	169,408	10.1	NA
Annual other removals of growing-stock trees (1,000 ft ³ /year)	17,746	32.2	NA

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

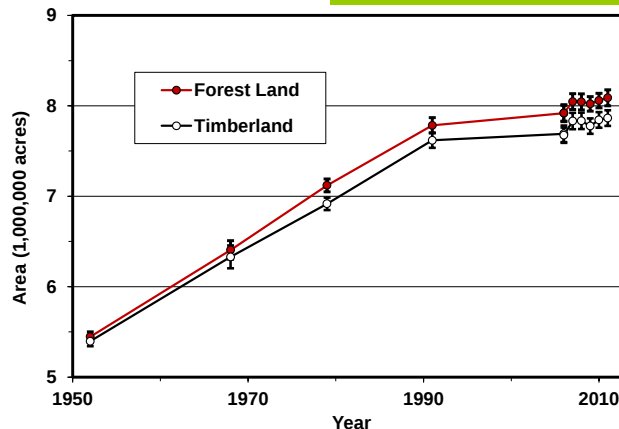


Figure 1. – Area of timberland and forest land by year.

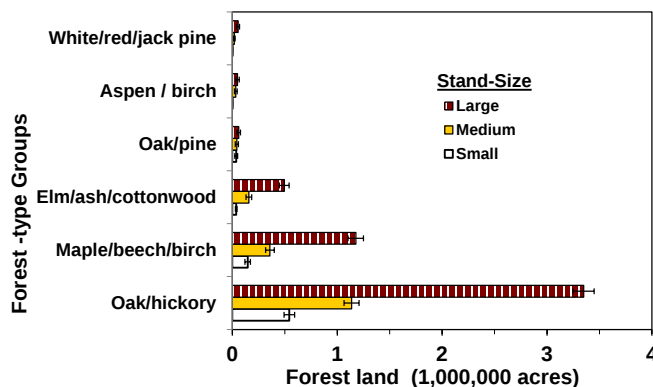


Figure 2. – Forest land area by stand-size class* for top six forest type groups, 2011.

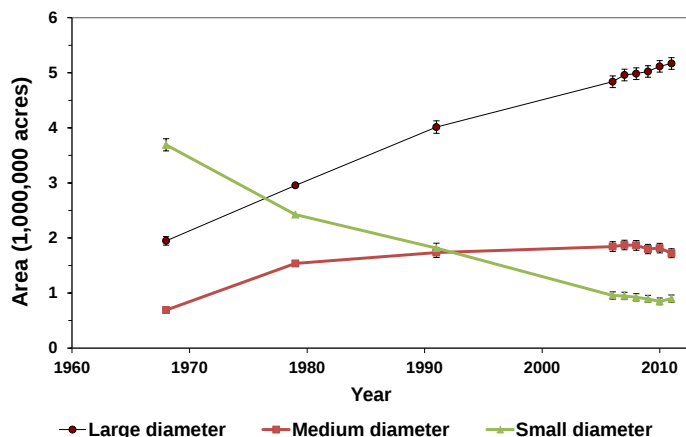
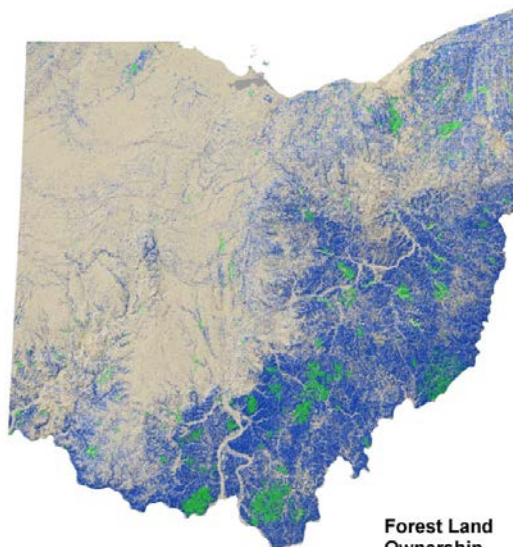


Figure 3. – Area of timberland by stand-size class* and year.

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

Table 2. – Top 10 tree species by statewide volume estimates, 2007-2011.

Rank	Species	Volume of live trees on forest land (million ft ³)	Sampling Error (%)	Change since 2006 (%)	Volume of sawtimber trees on timberland (million bdf)	Sampling error (%)	Change since 2006 (%)
1	Red maple	1,671	5.2	10.2	3,945	7.3	8.6
2	Yellow-poplar	1,636	6.9	6.9	6,471	8.4	14.7
3	Sugar maple	1,414	5.5	11.2	3,718	7.4	8.4
4	Black cherry	1,130	6.0	4.5	2,636	9.3	-4.3
5	White ash	973	6.1	0.4	3,031	8.5	-2.3
6	White oak	962	6.9	0.3	3,801	8.1	0.9
7	Northern red oak	863	7.8	12.3	3,458	9.6	10.7
8	Shagbark hickory	518	7.6	13.1	1,529	9.6	14.0
9	American beech	503	9.9	-5.9	1,695	13.1	-12.5
10	Black oak	480	9.8	1.5	1,827	11.7	-3.7
	Softwood species	611	11.8	0.9	1,924	14.5	7.4
	Other hardwood species	5,626	2.9	7.0	16,584	4.2	8.4
	All species	16,387	1.7	6.6	50,620	2.6	6.1



Forest Land
Ownership

Public
Private

Data sources: USDA Forest Service, Conservation Biology Institute Protected Areas Database, National Land Cover Database 2001. Geographic base data provided by the National Atlas of the USA.

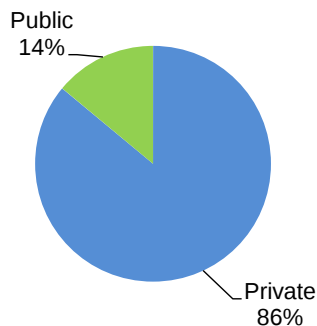


Figure 4. – Area of forest land by major owner group (2011).

Drivers of Tree Mortality in Ohio

The volume of trees that die from natural causes such as insects, diseases, fire, wind, and suppression from other trees is reported as mortality; harvested trees are not included (harvested trees and trees lost due to land use change are included in removals). Tree mortality is a natural process that occurs in a functioning ecosystem although dramatic increases in mortality can indicate problems in forest health. In Ohio, mortality of growing-stock trees has averaged 118 million cubic feet since 2006, a rate of 0.8 percent of inventory volume (Fig. 5). This is about the same rate (0.9) as reported for the period 1991-2006, and higher than the 0.6 average rate reported for 1971-1991. By FIA unit, mortality rates were highest across the Northwestern, Northeastern, and East-Central units of the State (Fig. 6). Over a third of the mortality was made up of only two species; elm-20 percent, and ash-16 percent (Fig. 7). As a percentage of their total volume, six of the major species in the State had mortality rates higher than the State average; elm, scarlet oak, black locust, Virginia pine, ash, and aspen (Fig. 8).

Much of the mortality can be explained by insects and diseases that target specific species and by stand dynamics. The high rate of mortality for elm can be attributed to Dutch elm disease and ash mortality can likely be attributed to the emerald ash borer that has been active across the northern portion of the State, although other diseases also attack ash. Ash and elm species represent a larger portion of total inventory volume in the Southwestern and northern units of the State than in the southern and East-Central units. The mortality rate in the Southwestern unit will likely increase as the emerald ash borer becomes more established in this unit. Some of the other species with high mortality rates are mostly early successional species that are intolerant of shaded conditions that are becoming more prevalent as Ohio's forest mature. Aspen, black locust, and scarlet oak, are rated as very intolerant of shade, and Virginia pine is rated as intolerant (Burns1990).

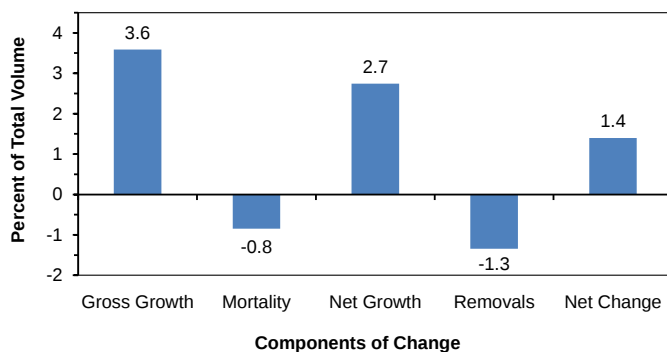


Figure 5. – Components of average annual change as a percentage of total growing-stock volume on timberland, Ohio, 2007-2011.

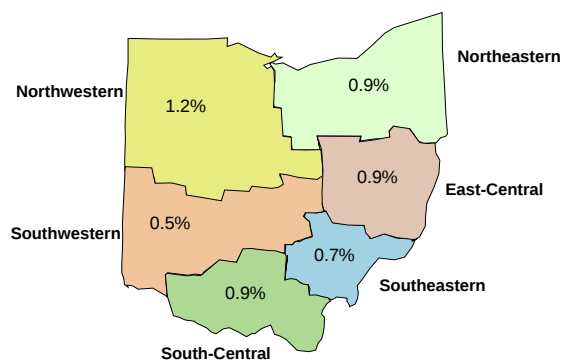


Figure 6. – Average annual mortality rate (percent of unit total growing-stock volume) on timberland, by FIA unit, Ohio, 2007-2011.

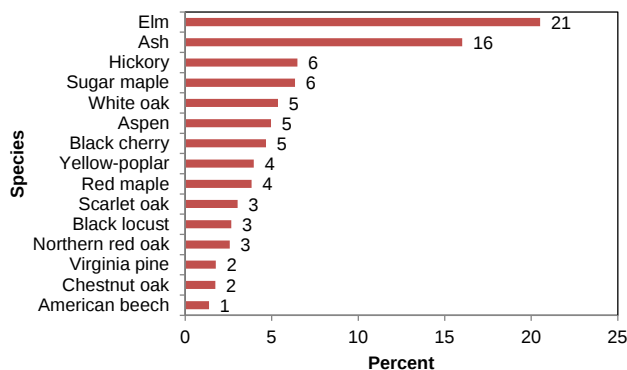


Figure 7. – Percentage of total mortality by major species, Ohio, 2011.

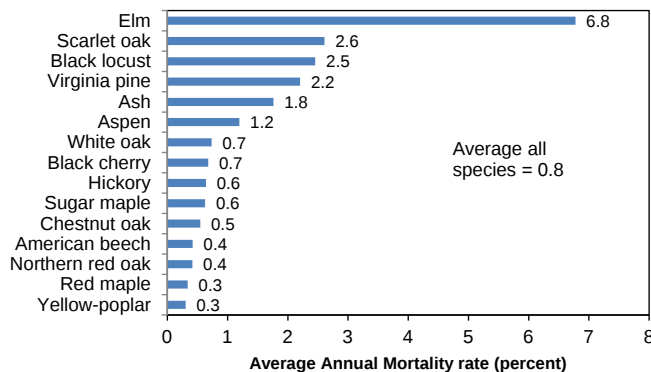


Figure 8. – Average annual mortality rate (percent of species total growing-stock volume) for major species on timberland, Ohio, 2007-2011.

Citation for this Publication

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FIA Program Information

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Additional Ohio Inventory Information

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

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