USDA Forest Service, US Department of Agriculture
Northern Research Station

Maryland's Forest Resources, 2009

Research Note NRS-87

This publication provides an overview of forest resource attributes for Maryland 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 2008
Forest Land Estimates			
Area (1,000 acres)	2,454	3.4	-1.6
Number of live trees 1-inch diameter or larger (million trees)	1,445	5.4	-2.5
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	177,951	4.2	0.9
Net volume in live trees (1,000,000 ft^3)	6,559	4.4	1.4
Annual net growth of live trees (1,000 ft^3/year) *	178,744	6.1	N/A
Annual mortality of live trees (1,000 ft^3/year) *	58,253	9.8	N/A
Annual removals of live trees (1,000 ft^3/year) *	69,719	17.9	N/A
Timberland Estimates			
Area (1,000 acres)	2,318	3.7	-2.2
Number of live trees 1-inch diameter or larger (million trees)	1,395	5.6	-2.8
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	168,348	4.4	0.4
Net volume in live trees (1,000,000 ft^3)	6,205	4.6	0.8
Net volume of growing-stock trees (1,000,000 ft^3)	5,934	4.7	0.1
Annual net growth of growing-stock trees (1,000 ft^3/year) *	175,803	7.3	N/A
Annual mortality of growing-stock trees (1,000 ft^3/year) *	43,734	10.8	N/A
Annual removals of growing-stock trees (1,000 ft^3/year) *	67,011	17.8	N/A

* Growth, removals and mortality data are based on changes from the 1999 to 2008 remeasurement data.

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

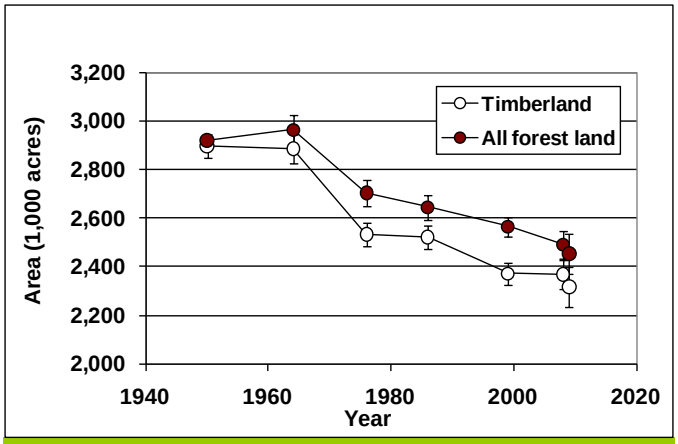


Figure 1. – Area of timberland and forest land by year.

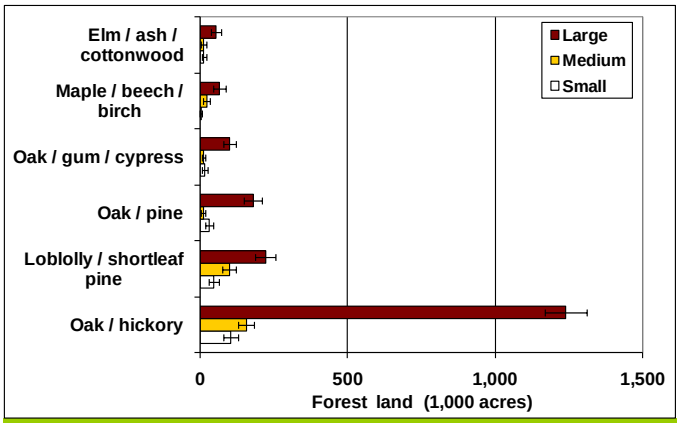


Figure 2. – Area of forest land area by top six forest type group and stand size class, 2005-2009.

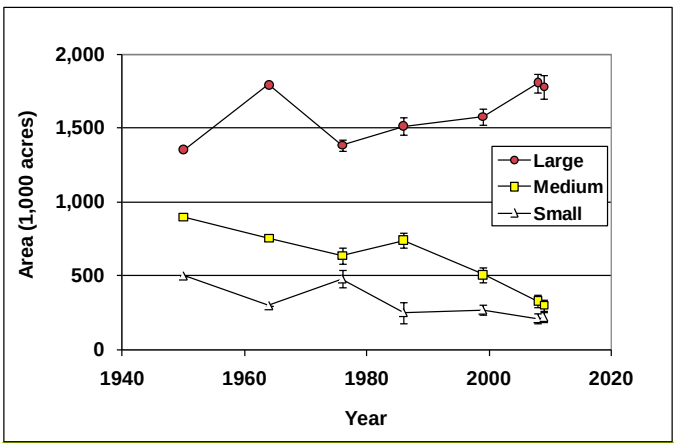
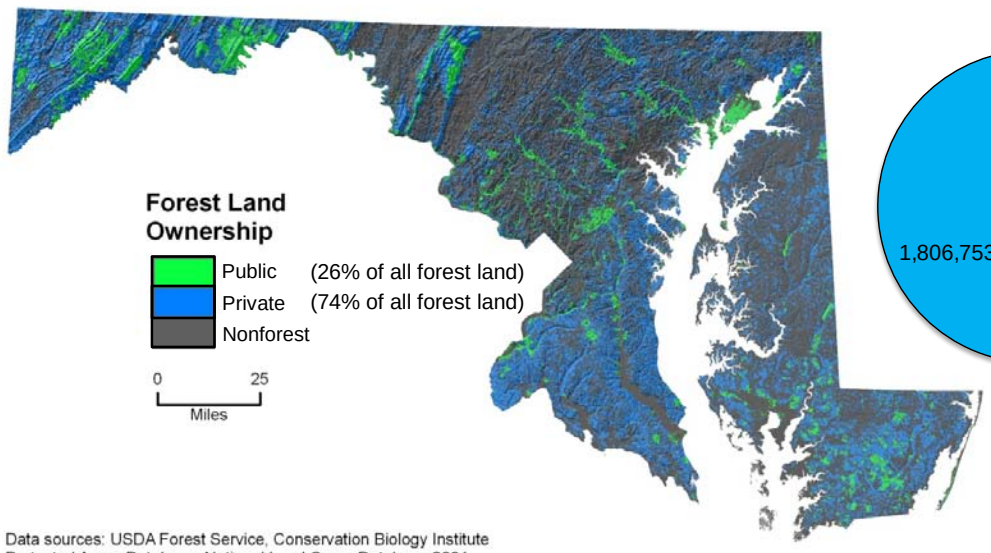


Figure 3. – Area of timberland by stand size class and year.

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 2008 (%)	Volume of sawtimber trees on timberland (1,000,000 bdft)	Sampling error (%)	Change since 2008 (%)
1	Yellow-poplar	1,247	11.1	3.3	6,005	12.3	3.4
2	Red maple	751	8.7	1.3	2,248	11.6	3.7
3	Loblolly pine	684	11.4	13.9	2,284	13.1	20.8
4	White oak	488	10.3	-0.7	1,909	12.2	1.1
5	Sweetgum	487	11.4	2.5	1,503	13.9	4.6
6	Chestnut oak	253	16.3	-11.3	757	19.4	-11.5
7	Northern red oak	235	15.4	-0.9	862	19.5	-0.3
8	Black cherry	219	17.3	-3.0	534	23.5	-4.4
9	Black oak	207	14.6	0.0	858	15.9	0.9
10	American beech	189	15.9	1.0	675	21.4	14.8
	Other softwoods	283	16.9	-6.7	833	17.9	-5.6
	Other hardwoods	1,517	6.4	0.6	4,753	8.0	-1.4
	All species	**6,559**	**4.4**	**1.4**	**23,220**	**5.5**	**2.7**



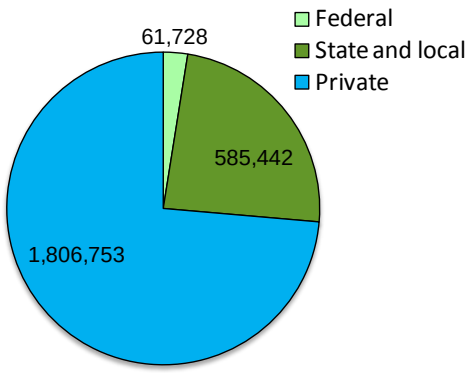


Figure 4. – Distribution of ownerships and area of forest land (acres) by ownership group, Maryland, 2005-2009.

Land Use Changes in Maryland

With increases in urban development and population growth over the last half century, Maryland has lost more than 450,000 acres of forest land. Recent inventories indicate that forest land is still being lost, but the rate of loss has slowed. With continued development in the Washington-Baltimore corridor and suburbs, pressure to expand developed areas remains strong. Figure 1 shows this trend of decreasing forest area, but the dynamics of forest change are more complicated. The gross amount of forest loss is actually higher, but some of these losses have been offset by gains in forest land in other parts of the state. In an effort to explore the dynamics of these changes in land use, a photo-based inventory of land use change in Maryland was conducted using FIA definitions (see Lister and others 2009 for more detailed methods).

Results of the study show a net loss (taking into account both losses and gains in forest land) of 28,000 acres of forest land in Maryland from 1998 to 2007, which averages to be more than 3,000 acres per year (Fig. 5). The gross forest loss (66,000 acres) was primarily due to conversion to development, accounting for 91 percent of the total forest loss. Most forest gains were from agriculture (91 percent). The loss of forest land to development is an expected result, as Maryland experienced increases in population and housing densities during this period.

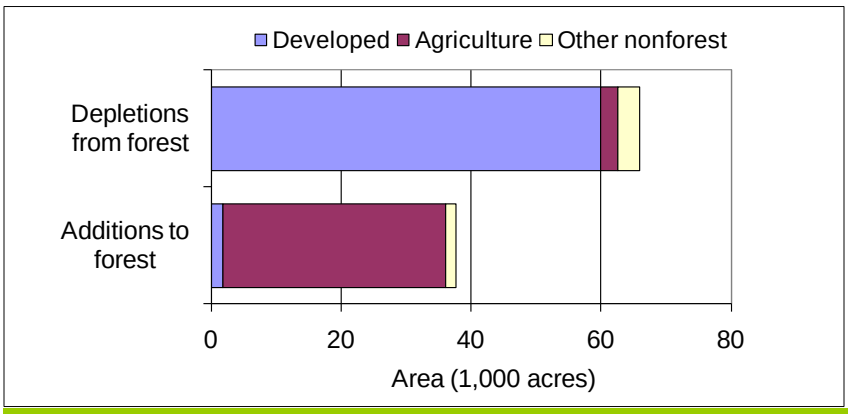


Figure 5. – Estimates of areas of different land use change categories.

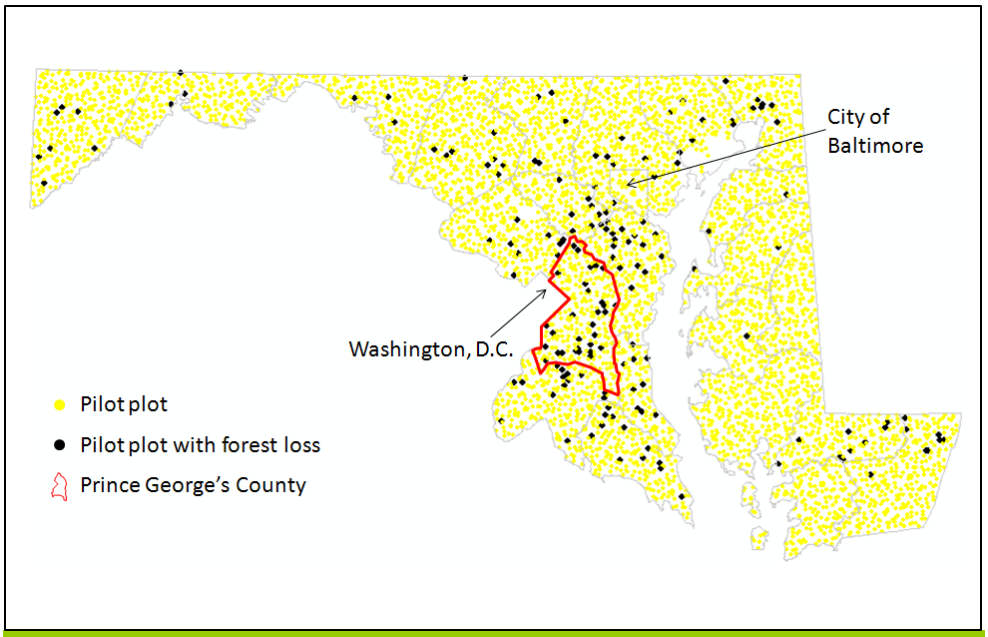


Figure 6. – Distribution of land-use plots highlighting plots showing forest loss, 1998-2007, Maryland.

Figure 6 shows the distribution of forest loss in Maryland between 1998 and 2007. There is a high proportion of forest loss plots in the growing suburbs of Baltimore and Washington D.C., an area of the state that has experienced the greatest pressure from urban expansion. For example, the highest proportion of forest loss plots is found in Prince George's county, which borders Washington, D.C. From 2000 through 2007 more than 22,000 new housing units were approved for construction, making this one of the fastest growing counties in the state.

Citation for this Publication

Lister, T.W.; Perdue, J.; Lister, A. 2011. **Maryland's forest resources, 2009.** Res. Note NRS-87. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

FIA Program Information

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.

Smith, W.B. 2002. **Forest Inventory and Analysis: a national inventory and monitoring program.** Environmental Pollution. 116: 233-242.

USDA Forest Service. 2005. **Forest inventory and analysis national core field guide, Vol. 1, field data collection procedures for phase 2 plots, Ver. 3.0.** Available at http://www.fia.fs.fed.us/library/field-guides-methods-proc/ (verified Aug. 1, 2008).

Additional Maryland Inventory Information

Brooks, R.T.; DiGiovanni, D.M. 1989. **Forest wildlife habitat statistics for Maryland and Delaware-1986.** Res. Bull. NE-110. Broomall, PA: US. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 171 p.

Ferguson, R.H. 1967. **The timber resources of Maryland.** Resour. Bull. NE-7. Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 93 p.

Frieswyk, T.S. 2001. **Forest statistics for Maryland: 1986 and 1999.** Resour. Bull. NE-154. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 164 p.

Frieswyk, T.S.; DiGiovanni, D.M. 1988. **Forest statistics for Maryland-1976 and 1986.** Resour. Bull. NE-107. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 157 p.

Frieswyk, T.S.; DiGiovanni, D.M. 1990. **Biomass statistics for Maryland-1986.** Resour. Bull. NE-113. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 138 p.

Lister, T.W.; Lister, A.J.; Alexander, E. 2009. **Estimating fine-scale land use change dynamics using an expedient photointerpretation-based method.** In: McWilliams, Will; Moisen, Gretchen; Czaplewski, Ray, comps. Forest Inventory and Analysis (FIA) Symposium 2008; 2008 October 21-23; Park City, UT. Proc. RMRS-P-56CD. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. CD.

Lister, T.W.; Perdue, J.; Butler, B.; Barnett, C.; O'Connell, B. 2010. **Maryland's forest resources, 2008.** Res. Note NRS-69. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

Northeastern Forest Experiment Station. 1955. **The timber resource in Maryland.** Upper Darby, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 41 p.

Powell, D.S.; Kingsley, N.P. 1980. **The forest resources of Maryland.** Resour. Bull. NE-61. Broomall, PA: U.S. Department of Agriculture, Forest Service, Northeastern Forest Experiment Station. 103 p.

Contact Information

Lead Analyst: Tonya Lister (610) 557-4033, tlister01@fs.fed.us
Data processing/access: Chuck Barnett, (610) 557-4031, cjbarnett@fs.fed.us
Field data collection: Tom Willard, (717) 718-7881, thomaswillard@fs.fed.us
Estimates, tabular data, and maps from this report may be generated at: www.fiatools.fs.fed.us