



Missouri's Forest Resources, 2006

Research Note NRS-4

This publication provides an overview of forest resource attributes for Missouri based on an annual inventory conducted by the Forest Inventory and Analysis program at the Northern Research Station of the U.S. Forest Service. These annual estimates, along with web-posted core tables, will be updated annually. For more information regarding past inventory reports for this state, inventory program information, and sampling/estimation procedures, please refer to the citations at the end of this report.

Table 1.—Annual estimates, uncertainty, and change

Missouri		2006 estimate	SE (%)	% change from 2005 estimate
Forest land	Area (1,000 acres)	15,078.3	0.7	2.9
Forest land	Number of all live trees 1-inch diameter or larger (million trees)	8,395.6	1.3	1.9
Forest land	Biomass of all live trees 1-inch diameter or larger (1,000 tons)	607,334.7	1.0	3.2
Forest land	Net volume of live trees (million cubic feet)	19,432.1	1.1	3.5
Forest land	Net volume of growing-stock trees (million cubic feet)	17,077.5	1.2	4.3
Forest land	Annual net growth of live trees (thousand cubic feet per year)	544,576.9	4.3	8.8
Forest land	Annual mortality of live trees (thousand cubic feet per year)	230,993.0	5.6	-3.1
Forest land	Annual removals of live trees (thousand cubic feet per year)	194,689.1	10.5	3.5
Timberland	Area (1,000 acres)	14,674.2	0.7	3.2
Timberland	Number of all live trees 1-inch diameter or larger (million trees)	8,156.9	1.3	2.1
Timberland	Biomass of all live trees 1-inch diameter or larger (1,000 tons)	590,140.7	1.0	3.3
Timberland	Net volume of live trees (million cubic feet)	18,883.7	1.2	3.7
Timberland	Net volume of growing-stock trees (million cubic feet)	16,595.2	1.2	4.3
Timberland	Annual net growth of live trees (thousand cubic feet per year)	579,252.3	4.4	9.4
Timberland	Annual mortality of live trees (thousand cubic feet per year)	223,992.6	5.7	-3.7
Timberland	Annual removals of live trees (thousand cubic feet per year)	207,732.7	10.3	0.7
Timberland	Annual net growth of growing-stock trees (thousand cubic feet per year)	538,350.9	3.9	5.8
Timberland	Annual mortality of growing-stock trees (thousand cubic feet per year)	136,998.5	7.0	-5.2
Timberland	Annual removals of growing-stock trees (thousand cubic feet per year)	162,987.9	11.2	2.4

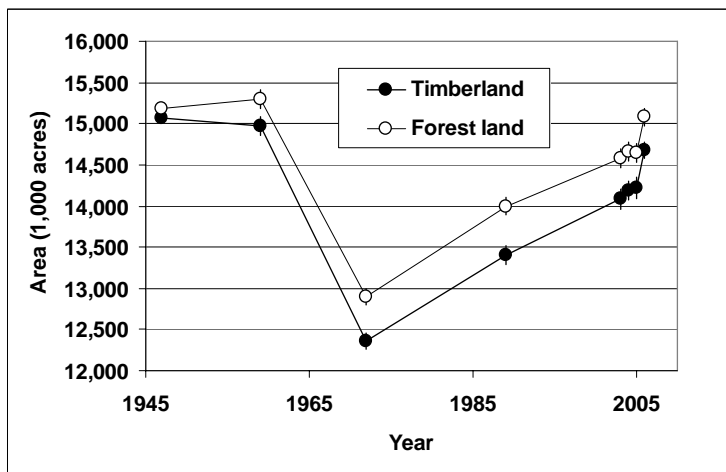


Figure 1.—Area of timberland and forest land by year

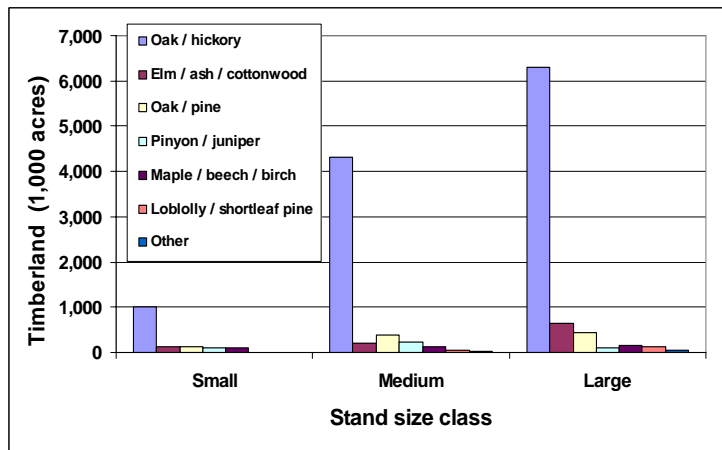


Figure 2.—Timberland area of top six forest types by stand size class



Table 2.—Top 10 species by volume estimates

Rank	Species	Volume of live trees on timberland (million cubic feet)	Sampling error (%)	Change since 2005 (%)	Volume of sawtimber on timberland (million board feet)	Sampling error (%)	Change since 2005 (%)
1	White oak	3,821.9	2.8	3.8	11,866.5	3.5	5.0
2	Black oak	2,812.0	3.1	2.7	9,454.0	3.8	3.8
3	Post oak	1,937.7	3.5	4.2	4,504.3	4.6	7.2
4	Northern Red oak	1,019.2	5.4	1.1	3,762.4	6.3	2.9
5	Shortleaf pine	824.2	7.3	2.4	3,460.8	7.7	4.0
6	Scarlet oak	608.0	6.2	3.8	2,017.0	7.6	5.4
7	Eastern Redcedar	593.8	5.4	5.2	1,168.2	8.0	2.7
8	Black walnut	542.2	6.3	4.9	1,557.9	8.1	4.0
9	Shagbark hickory	506.9	5.8	5.4	1,225.6	8.5	7.0
10	Black hickory	437.5	4.9	3.7	935.8	8.3	1.5
	Other softwood species	11.2	68.7	27.3	48.5	73.1	30.7
	Other hardwood species	5,769.1	2.5	4.2	13,419.7	3.8	6.3
	All species	18,883.7	1.2	3.7	53,420.5	1.6	5.0

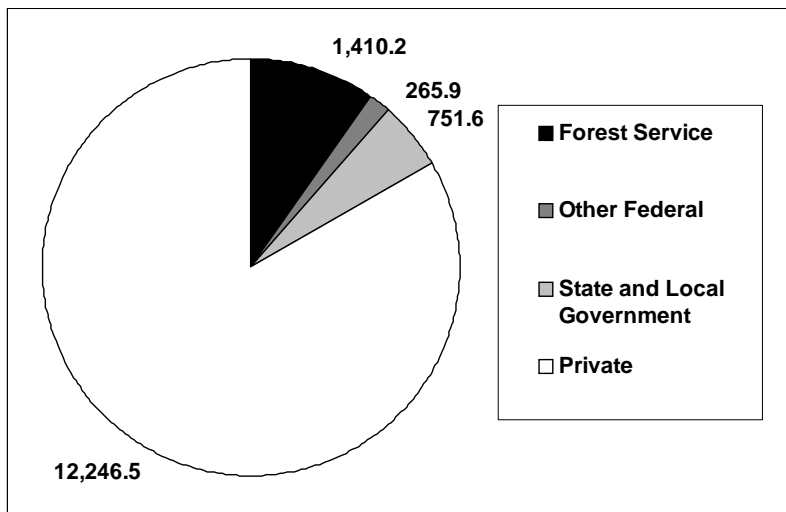


Figure 3.—Forest land area (1,000 acres) by ownership group

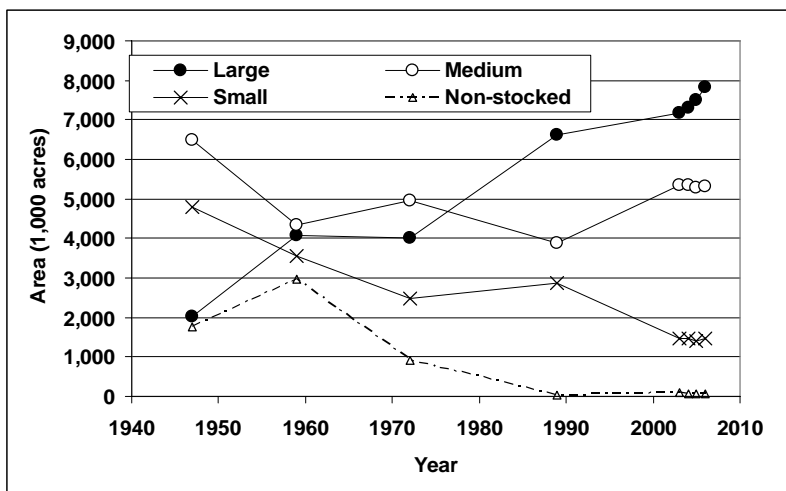


Figure 4.—Area of timberland by stand size class and year

[Large diameter: Stands with an live-tree stocking value of at least 10 (base 100) and with more than 50 percent of the stocking in medium- and large-diameter trees; and with the stocking of large-diameter trees equal to or greater than the stocking of medium-diameter trees. Medium diameter: Stands with more than 50 percent of the stocking in medium- and large-diameter trees; and with the stocking of large-diameter trees less than the stocking of medium-diameter trees. Small diameter: Stands on which at least 50 percent of the stocking is in small-diameter trees. Nonstocked: Forest land with all live stocking less than 10.]



Missouri Issue Update – Utilization and Sustainability

A Missourian might ask about the state’s forests: “I’ve heard we are overcutting our forests. Is that true?” To answer this question, we must look at growth, removals, and mortality (GRM).

Table 1 of this report summarizes volume, area, and change components – net growth, removals and mortality. GRM is complicated to report because the numbers not only reflect the actual growth, harvesting, and death of Missouri’s trees, but also the movement into and out of forest land classification (and its subcategories: timberland, nonproductive forest land, and reserved land) and nonforest. For example if, say, 6,000 acres of timberland were placed into a state park – a “reserved” category – the volume would be treated as a removal from timberland and lumped with the volume of trees actually harvested. In this case, the forest land estimates would not change, because we are moving land from one subcategory of forest land to another. If 6,000 acres that were previously categorized as non-forest are now classified as timberland, the volume on those acres would be added to timberland and to forest land (because it used to be nonforest). So the growth numbers would include this total volume increase even though the trees did not “grow” that much in the interval since the last inventory.

To get back to the Missourian’s question, we looked at two categories of forest land use: 1) land that was timberland before and remained as timberland; and 2) land that was previously categorized as other forest land (reserved land and nonproductive forest land) and is now classified as timberland. This restriction most closely represents the actual changes on the land. Using these categories, we looked at growth, removals, and mortality of live trees on timberland, so we wouldn’t be confounded by changes between forest land categories or with growing stock.

Figure 5 compares 2004, 2005, and 2006 to the previous cumulative years. (By cumulative, we mean that 2004 summarizes only the 2004 panel’s change from 1999, 2005 summarizes the 2004 and 2005 panels’ change from 1999 and 2000, and so on.) A growth-to-removals ratio of 1.0 means that growth equals removals; any ratio greater than 1.0 means that growth exceeded removals.

In Figure 5, we compare growth to removals, growth to mortality, and growth to the sum of both removals and mortality. Growth exceeded removals + mortality by about 15 percent over the past 3 years. Considering only harvesting (the one factor humans have any control over), we see growth exceeded removals by about 200 percent. These data tell us that, even with the forest health problems in Missouri’s forests such as oak decline, growth far exceeded removals and mortality.

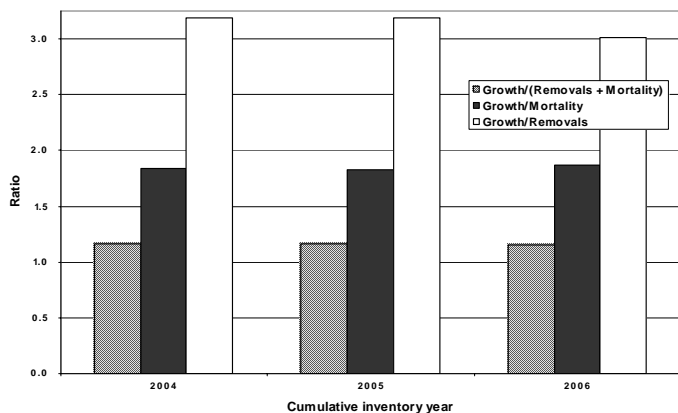


Figure 5.—Ratio of growth to removals, to mortality, and to a combination of both removals and mortality, Missouri, 2004-2006



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