USDA Forest Service, U.S. Department of Agriculture
Northern Research Station

Minnesota's Forest Resources, 2007

Research Note NRS-24

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. More comprehensive reports with key findings and definitions are reported every 5 years (Miles et al. 2007).

Table 1.—Annual estimates, uncertainty, and change

	Estimate	Sampling error (%)	Change since 2006 (%)
Forest Land Estimates			
Area (1,000 acres)	16,723.5	0.5	2.0
Number of live trees 1-inch diameter or larger (million trees)	12,882.9	1.2	2.9
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	479,132.1	1.1	1.9
Net volume of live trees (1,000,000 ft^3)	17,947.8	1.2	1.2
Annual net growth of live trees (1,000 ft^3/year)	428,881.9	4.1	0.0
Annual mortality of live trees (1,000 ft^3/year)	336,872.1	3.3	0.0
Annual harvest removals of live trees (1,000 ft^3/year)	264,550.0	7.0	
Annual other removals of live trees (1,000 ft^3/year)	30,874.4	16.8	3.4
Timberland Estimates			
Area (1,000 acres)	15,414.2	0.6	2.0
Number of live trees 1-inch diameter or larger (million trees)	11,963.9	1.3	2.5
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	450,549.7	1.1	2.0
Net volume of live trees (1,000,000 ft^3)	16,819.0	1.2	1.4
Net volume of growing-stock trees (1,000,000 ft^3)	14,798.8	1.3	-0.9
Annual net growth of growing-stock trees (1,000 ft^3/year)	440,659.6	3.7	-6.2
Annual mortality of growing stock trees (1,000 ft^3/year)	242,585.4	3.0	2.1
Annual harvest removals of growing stock trees (1,000 ft^3/year)	243,453.8	7.1	3.0
Annual other removals of growing stock trees (1,000 ft^3/year)	58,870.3	15.8	3.0

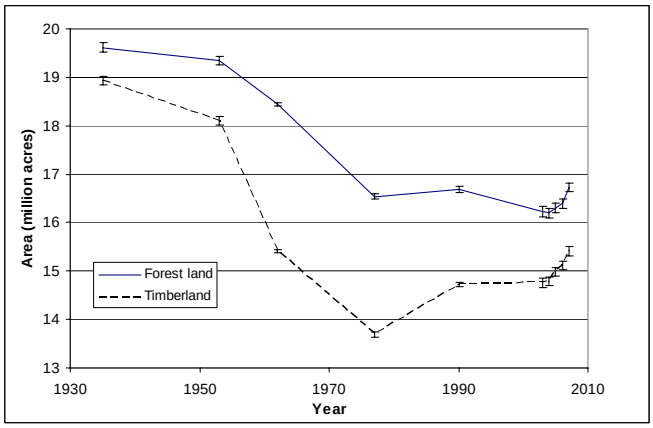

Figure 1.—Area of timberland and forest land by year.

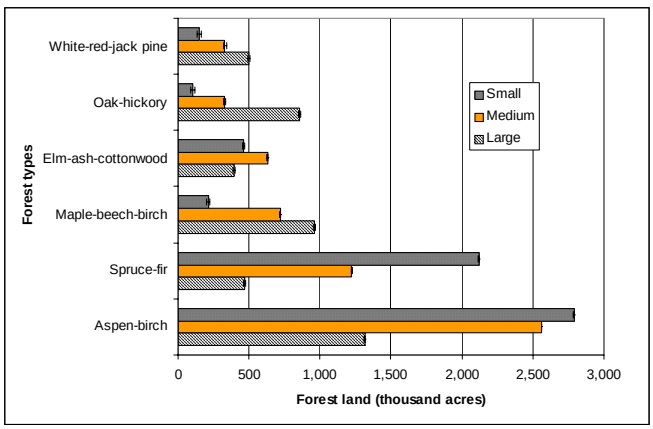

Figure 2.—Area of forest land by top six forest types and stand-size class.

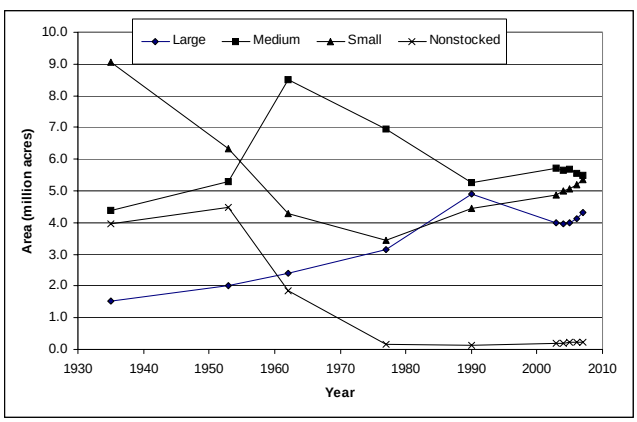

Figure 3.—Area of timberland by stand-size class and year.

Note: When available, sampling error bars provided in figures.

Table 2.—Top 10 tree species by statewide volume estimates

Rank	Species	Volume of live trees on forest land (1,000,000 ft^3)	Sampling Error (%)	Change since 2006 (%)	Volume of sawtimber trees on timberland (1,000,000 bdft)	Sampling error (%)	Change since 2006 (%)
1	Quaking aspen	3,477.6	2.6	-3.0	7,034.4	3.8	-4.5
2	Paper birch	1,254.6	3.2	-2.9	1,413.4	5.4	-7.7
3	Northern white-cedar	1,058.9	6.0	0.8	2,914.3	7.3	-1.5
4	Bur oak	1,013.8	4.8	8.6	2,122.3	6.7	4.4
5	Red pine	969.6	6.9	4.8	3,747.3	7.9	7.3
6	Northern red oak	952.4	5.0	2.2	2,791.5	6.3	0.2
7	Black ash	950.3	4.6	0.2	1,336.5	7.1	-0.3
8	American basswood	942.9	5.0	4.0	2,246.0	6.5	3.8
9	Black spruce	883.1	4.6	1.2	850.2	7.5	3.0
10	Sugar maple	694.6	6.2	2.1	1,008.1	9.5	-2.5
	Other softwood species	2,720.1	3.0	0.9	6,801.8	3.8	0.0
	Other hardwood species	3,029.8	3.1	4.0	5,016.8	5.4	-0.8
	All species	17,947.8	1.2	1.2	37,282.6	1.9	-0.3

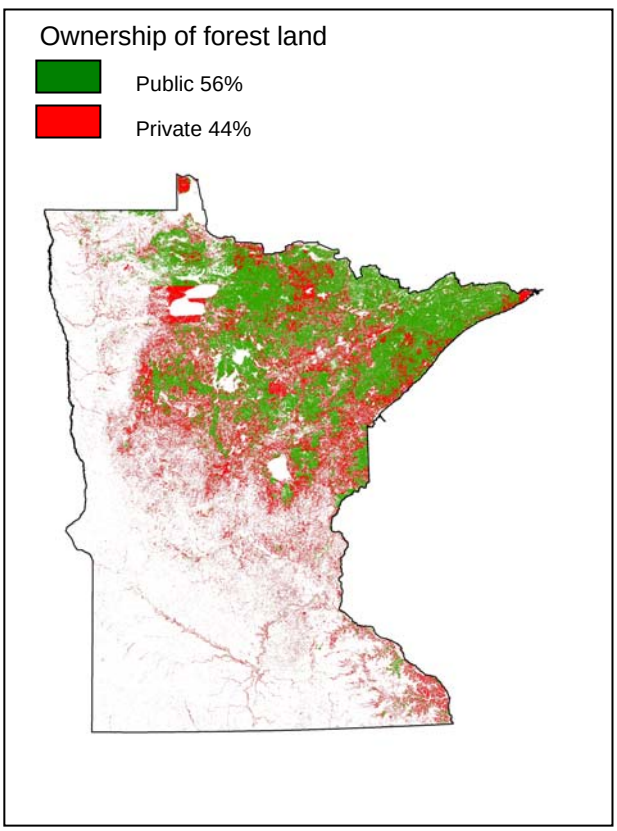

Figure 4.—Area of forest land by major owner group (33% of Minnesota is forested).

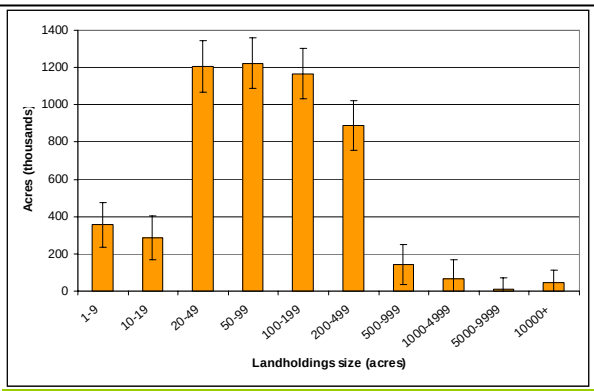

Figure 5.—Area of family forest land by size of forest landholding.

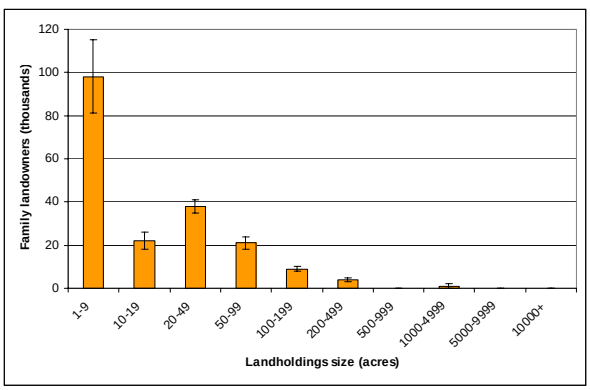

Figure 6.—Number of family forest landowners by size of forest landholding.

Minnesota Issue Update – Carbon Stocks

Concern over global climate change has focused attention on the capacity of forests to act as carbon sinks. The introduction of markets for trading in carbon credits will result in a different mix of forest management practices and additional requests for information on forest carbon stocks.

The FIA program does not directly measure forest carbon stock. Instead, a combination of empirically derived carbon estimates (for stocks that are directly measured, such as standing live tree carbon) and models (based on forest attributes, such as forest type and stand age in the case of the leaf/litter carbon) are used in combination to estimate Minnesota's total forest carbon stock. The standard units for carbon stock reporting are metric. Estimation procedures are detailed by Smith et al. (2006).

There are 1.7 billion metric tonnes of forest carbon in Minnesota. This is equivalent to all the carbon emitted in the form of CO_2 in the United States in the year 2006. Soil organic carbon and live tree aboveground carbon were the largest components of the total forest carbon stock in Minnesota (Fig. 7). On a per-acre basis, soil organic carbon was highest on the least productive sites (many of the least productive sites in Minnesota are on peatlands) while live tree aboveground carbon was highest on the most productive sites (Fig. 8). Carbon sequestration tended to increase with increasing stand age (Fig. 9).

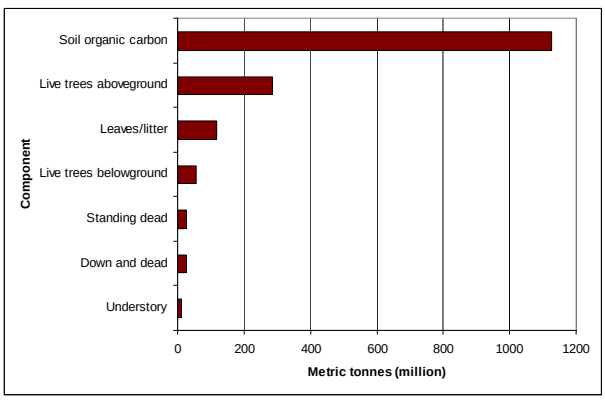

Figure 7.—Carbon stocks on forest land by component in Minnesota, 2002-2006.

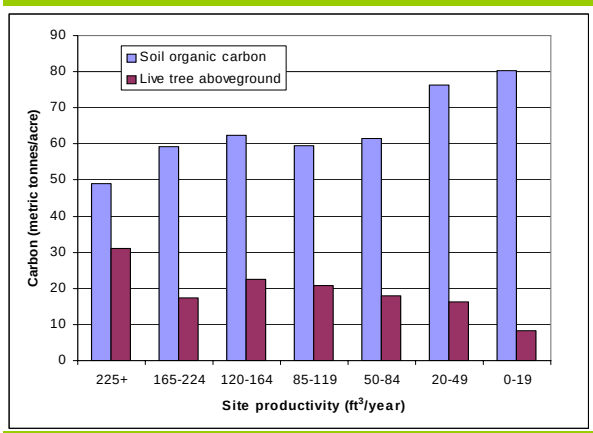

Figure 8.—Soil organic carbon and aboveground live tree carbon on forest land by forest productivity class in Minnesota, 2002-2006.

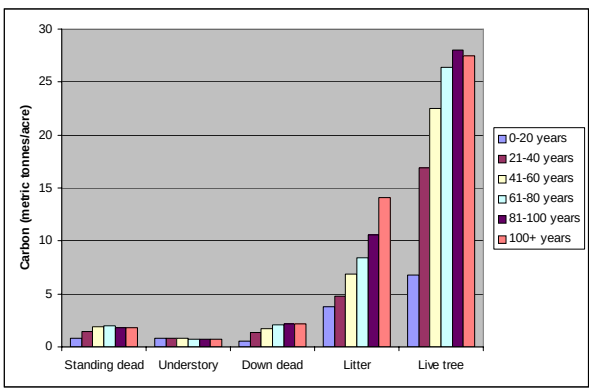

Figure 9.—Carbon stocks per acre of forest land by selected component and stand-age class, Minnesota, 2002-2006.

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FIA Program Information

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Special Issue Citation

Smith, J.E.; Heath, L.S.; Skog, K.E.; Birdsey, R.A. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types of the United States. Gen. Tech. Rep. NE-343. Newtown Square, PA: U.S. department of Agriculture, Forest Service, Northeastern Research Station. 216 p.

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