



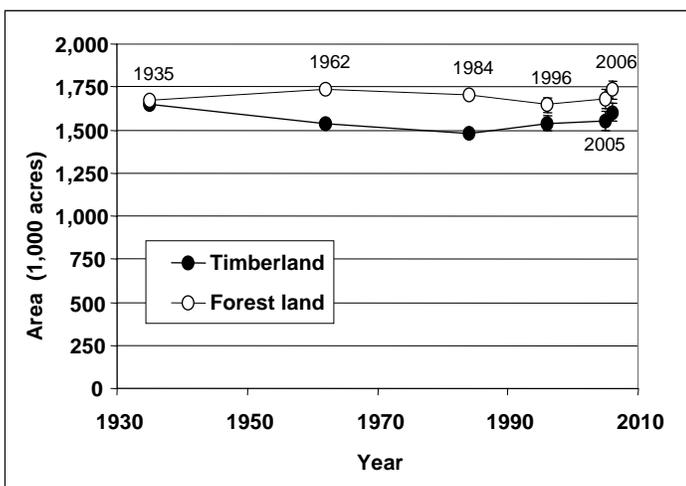
# South Dakota's Forest Resources, 2006

Research Note NRS-10

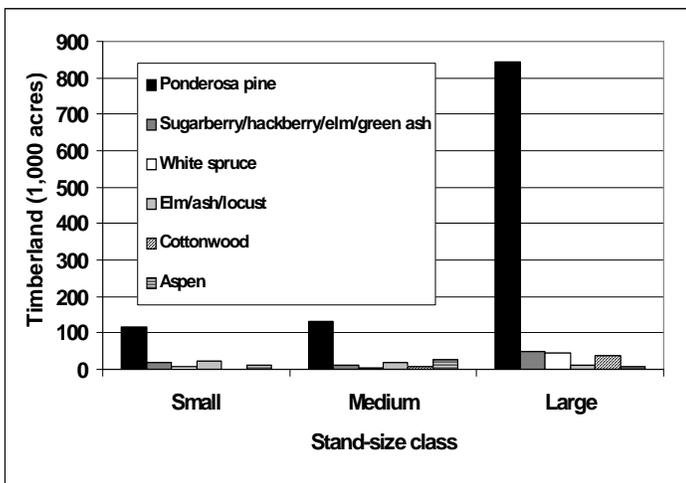
This publication provides an overview of forest resource attributes for South Dakota based on an annual inventory conducted by the Forest Inventory and Analysis program at the Northern Research Station of the U.S. Forest Service. These annual estimates, along with web-posted core tables, will be updated annually. For more information regarding past inventory reports for South Dakota, inventory program information, and sampling/estimation procedures, please refer to the citations at the end of this report. For definitions of terms used in this report, see 'Glossary of Terms' at: <http://nrs.fs.fed.us/fia/data-tools/state-reports/SD/>.

**Table 1 - Annual estimates, uncertainty, and change, South Dakota, 2006**

	Estimate	Sampling error (%)	Change since 2005 (%)
<b>Forest Land Estimates</b>			
Area (1,000 acres)	1734.7	3.0	3.1
Number of live trees 1-inch diameter or larger (million trees)	522.1	6.3	2.1
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	34,395.1	4.6	4.2
Net volume in live trees (1,000,000 ft <sup>3</sup> )	1,752.8	4.2	3.1
Net volume of growing-stock trees (1,000,000 ft <sup>3</sup> )	1,585.7	4.2	0.9
Annual net growth of live trees (1,000 ft <sup>3</sup> /year)	47,701.4	32.5	NA
Annual mortality of live trees (1,000 ft <sup>3</sup> /year)	22718.9	29.9	NA
Annual removals of live trees (1,000 ft <sup>3</sup> /year)	13,370.6	66.5	NA
<b>Timberland Estimates</b>			
Area (1,000 acres)	1,601.2	3.2	3.1
Number of live trees 1-inch diameter or larger (million trees)	487.1	6.6	2.5
Biomass of live trees 1-inch diameter or larger (1,000 tons)	31,496.5	4.8	4.0
Net volume in live trees (1,000,000 ft <sup>3</sup> )	1,634.6	4.4	3.2
Net volume of growing-stock trees (1,000,000 ft <sup>3</sup> )	1,487.5	4.4	1.7
Annual net growth of growing-stock trees (1,000 ft <sup>3</sup> /year)	37,858.0	33.7	NA
Annual mortality of growing-stock trees (1,000 ft <sup>3</sup> /year)	17,770.9	32.6	NA
Annual removals of growing-stock trees (1,000 ft <sup>3</sup> /year)	13,377.6	66.0	NA



**Figure 1 - Area of timberland and forest land by year, South Dakota, 2006**



**Figure 2 - Area of timberland area of top six forest types by stand-size class, South Dakota, 2006**



Table 2 - Top 10 species by volume, South Dakota, 2006

Rank	Species	Volume of live trees on timberland (1,000,000 ft <sup>3</sup> )	Sampling Error (%)	Change since 2005 (%)	Volume of sawtimber trees on timberland (1,000,000 bdf)	Sampling error (%)	Change since 2005 (%)
1	Ponderosa pine	1,182.3	4.6	0.2	4,675.8	5.2	-0.4
2	White spruce	84.4	24.1	3.6	296.4	25.3	4.7
3	Eastern cottonwood	84.1	38.8	25.0	393.8	39.9	26.1
4	Green ash	71.5	25.4	12.8	104.9	41.6	3.0
5	Bur oak	60.8	31.8	3.6	114.2	36.8	6.7
6	American elm	45.9	26.7	34.2	25.6	40.4	32.0
7	Boxelder	27.6	37.2	6.6	18.1	100.4	-1.6
8	Rocky Mountain juniper	26.0	43.3	13.5	0.0	0.0	-100.0
9	Quaking aspen	21.2	33.2	-7.8	8.6	55.8	-10.4
10	Eastern redcedar	8.3	46.4	18.6	31.8	50.4	30.3
	Other softwood species	0.0	0.0	0.0	0.0	0.0	0.0
	Other hardwood species	22.5	30.6	9.8	21.8	94.6	3.8
	<b>All species</b>	<b>1,634.6</b>	<b>4.4</b>	<b>3.2</b>	<b>5,691.0</b>	<b>5.2</b>	<b>1.7</b>

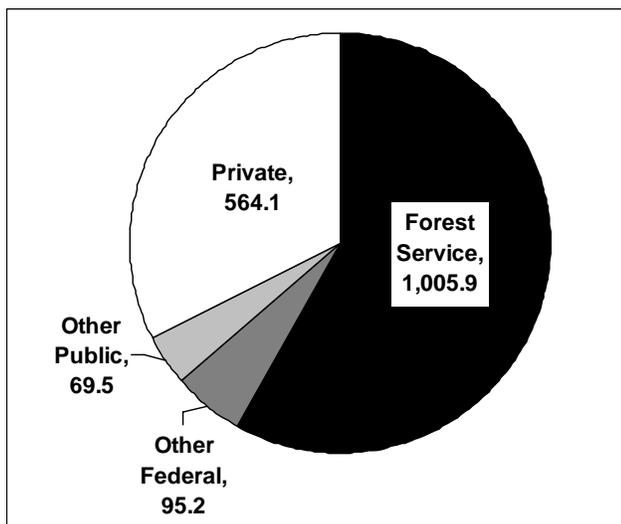


Figure 3 – Area of forest land (1,000 acres) by ownership group, South Dakota, 2006

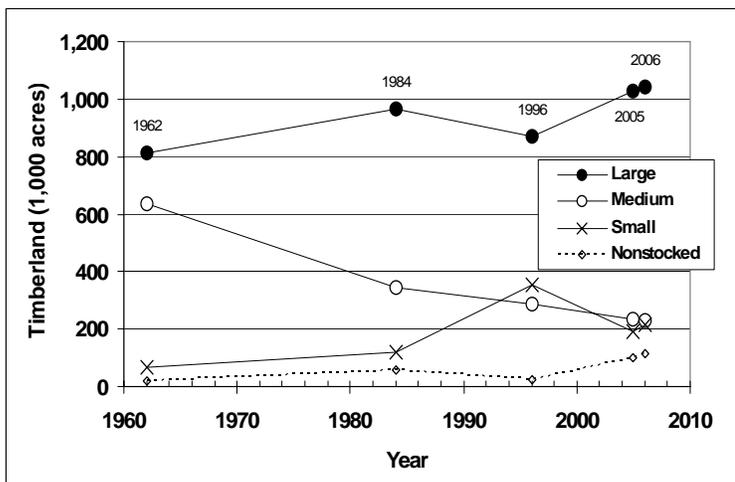


Figure 4 - Area of timberland by stand size-class and year, South Dakota, 1962, 1984, 1996, 2005, and 2006



## South Dakota Issue Update – The Pine Bark Beetle Epidemic

Two insect pests have dramatically affected the ponderosa pine forests of South Dakota. Both are native species and grow to epidemic proportions when climatic and growing conditions are right, as was the case in the 1890s, 1940s, 1970s, and the present.

The first pest is the mountain pine beetle (MPB), which began increasing in numbers in 1996. In 1995, there were about 992 trees killed by MPB in South Dakota. In 1996, there were 1,143 trees killed, and by 1997, the number of trees killed by MPB had increased to 4,894. Mortality is still increasing in parts of the Black Hills with current annual losses of trees in the hundreds of thousands. Most of the area affected by MPB is located within the Black Hills National Forest.

In 2006, it is estimated that 111,000 ponderosa pine trees were killed by MPB across 41,400 acres. A multi-stand, landscape-level episode of beetle-caused, ponderosa pine mortality continues around Deerfield Reservoir and is the largest outbreak in the Black Hills. This outbreak has been ongoing since 2003 and is still producing widespread, intense tree mortality. Suppression efforts to treat this area and reduce beetle spread continue; during 2006, more than 200,000 infested trees were removed to help reduce beetle populations. Areas around Harney Peak, including the Black Elk Wilderness, have intensified mountain pine beetle activity since 2005. Widespread mortality is now evident throughout the wilderness area and this trend is expected to continue.

The second pest is the pine engraver beetle, usually referred to by its genus name, *Ips*. *Ips* usually attack and colonize dead and dying trees that have been stressed by ice storms, snow storms, forest fires, and other pine beetle activity. Infestations have decreased in the Black Hills from the historically high levels in 2000-2003, while forested areas with drought-stressed trees in the wildland-urban interface or fire-damaged trees are becoming susceptible. In contrast to MPB in the central and northern Black Hills, activity by pine engraver beetles was concentrated around the periphery of the Black Hills and often associated with recent fires.

Note: The 2004 aerial survey was flown earlier in the year than the surveys of other years, so some trees were not yet showing the signs of mortality. The actual number of trees killed in 2004 is greater than the survey estimated. The survey design for the aerial survey was changed in 2005, so data from earlier inventories should be interpreted with caution.

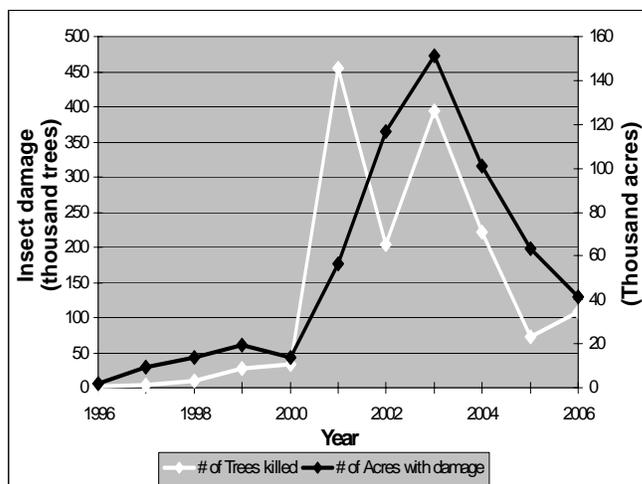


Figure 5 - Mountain pine beetle and *Ips* beetle damage, South Dakota, 1996-2006

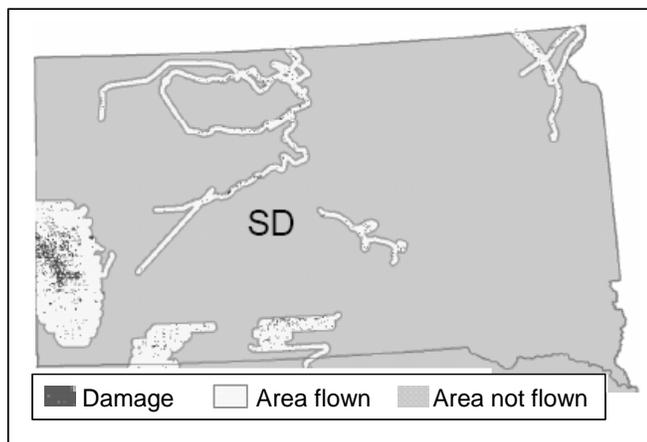


Figure 6 - Area flown for forest insect and disease aerial survey, South Dakota, 2006 (Courtesy of U.S. Forest Service, Region 2)



### Citation for this Publication

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### References

South Dakota map (Fig. 6) website:  
<http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/download/image/2005.pdf>

### FIA Program Information

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