



Virginia, 2007

Anita K. Rose



Dogwood. (photo by Anita Rose)

Forest Land Area

In 2007, about 15,724,800 acres, or 62 percent, of Virginia's land area was forested (table 1). This was a slight decrease since 2001 when forest land area totaled 15,844,000 acres.

Table 1—Area of forest land by survey unit and year

Survey unit	2001 <i>thousand acres</i>	2007 <i>thousand acres</i>	Change <i>percent</i>
Coastal Plain	3,817.7	3,701.0	-3.1
Southern Piedmont	3,784.1	3,741.7	-1.1
Northern Piedmont	2,405.1	2,502.9	4.1
Northern Mountains	2,744.3	2,713.5	-1.1
Southern Mountains	3,092.9	3,065.6	-0.9
All units	15,844.0	15,724.8	-0.8

Forest Distribution

Over 49 percent of the land area in the majority of counties was forested (fig. 1).

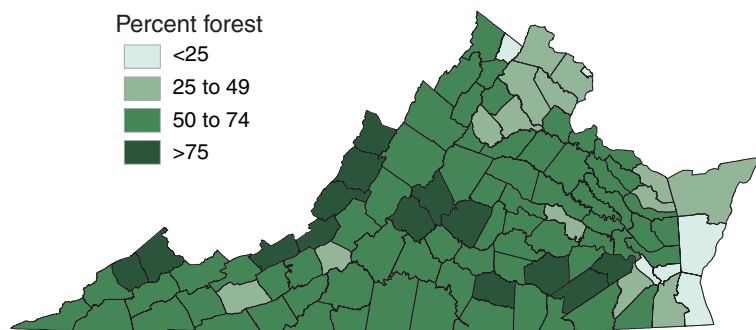


Figure 1—Percentage of land in forest by county, Virginia, 2007.

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Forest Ownership

The majority (12,375,300 acres) of Virginia's forest land was in nonindustrial private forest ownership, an increase of 2.3 percent since 2001 (fig. 2). Public ownership ranked second with 2,798,400 acres. Forest industry owned 551,200 of forest land across the State, a decrease of 46 percent.

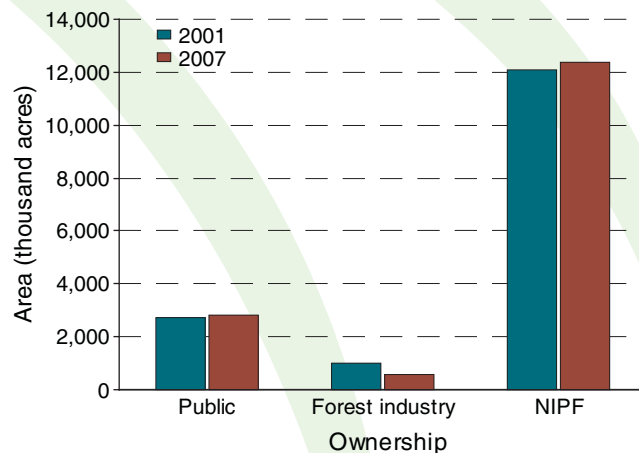


Figure 2—Area of forest land by ownership and year, Virginia.

Tree Volume

Volume of live trees ≥ 5.0 inches d.b.h. increased from 31.5 to 32.8 billion cubic feet (fig. 3). Softwoods made-up 23 percent of the live volume and hardwoods 77 percent. Thirty-four percent of the volume of hardwoods was in trees >16.9 inches d.b.h., while only 14 percent of the volume of softwoods was in trees of that size. Nearly 70 percent of the volume of softwoods was in the Coastal Plain and Southern Piedmont.

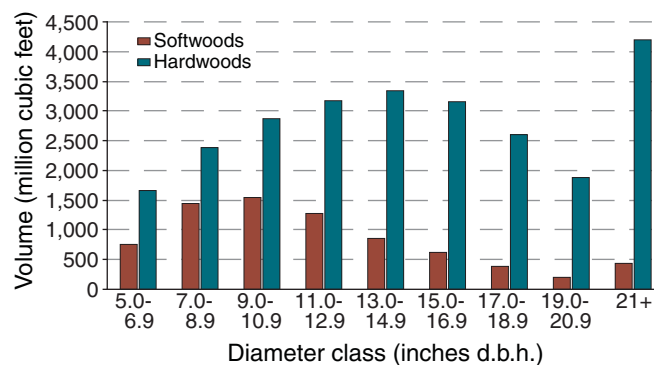


Figure 3—Live volume of softwoods and hardwoods on forest land by diameter class, Virginia, 2007.



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Top 10 Species for Volume

Yellow-poplar continued to dominate the State's live-tree volume with 5.0 billion cubic feet, an increase of 9 percent since 2001 (fig. 4). Loblolly pine was second, with 4.2 billion cubic feet. The top 10 species, 4 of which were oaks, accounted for 69 percent of the live-tree volume.

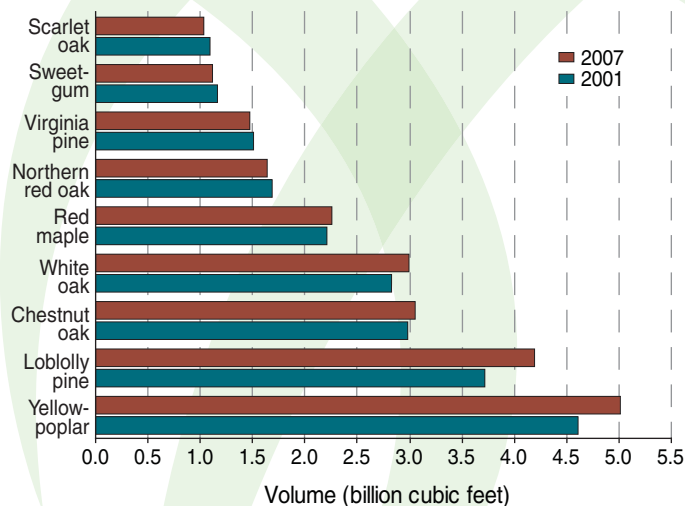


Figure 4—Top 10 species for volume on forest land by year, Virginia.

Average Annual Net Growth, Removals, and Mortality

At 92.4 cubic feet per acre per year, net growth was highest on forest industry land (fig. 5). Net growth increased on NIPF land from 67.7 to 72.1 cubic feet per acre per year, and on public land increased from 34.0 to 38.0 cubic feet per acre per year. Rates of removals were highest on forest industry lands, where they increased by 38 percent to 117.9 cubic feet per acre per year. Removals doubled on public lands, and increased by 19 percent on NIPF land. Per-acre mortality decreased on public land by 39 percent. On forest industry land mortality increased by 20 percent and on NIPF land, mortality decreased by 7 percent. Growth exceeded removals in all units except for the Coastal Plain, the area most heavily impacted by Hurricane Isabel.

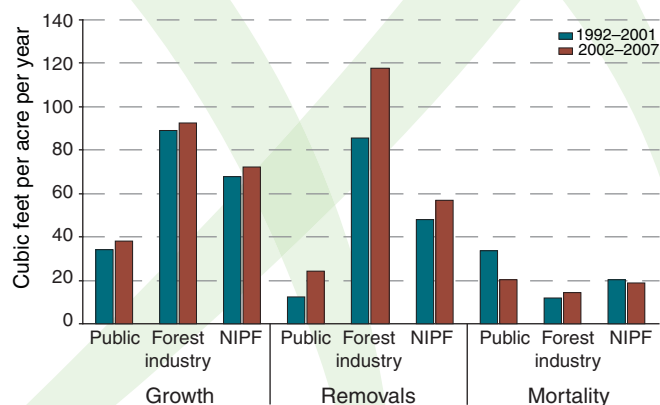


Figure 5—Growth, removals, and mortality by owner and year, Virginia.

James River. (photo by Anita Rose)



Invasive Plants

Tree-of-heaven (or *Ailanthus*), the most commonly occurring invasive tree in Virginia, occurred predominately along the western edge of the Northern Piedmont. Since the last survey, the number of trees of this species has increased by 30 percent, and the volume has increased by 52 percent (fig. 7). Paulownia, another invasive tree, also had increases in number of trees (from 2.4 to 8.5 million) and volume (3.6 to 9.7 million cubic feet).



Azelea. (photo by Anita Rose)

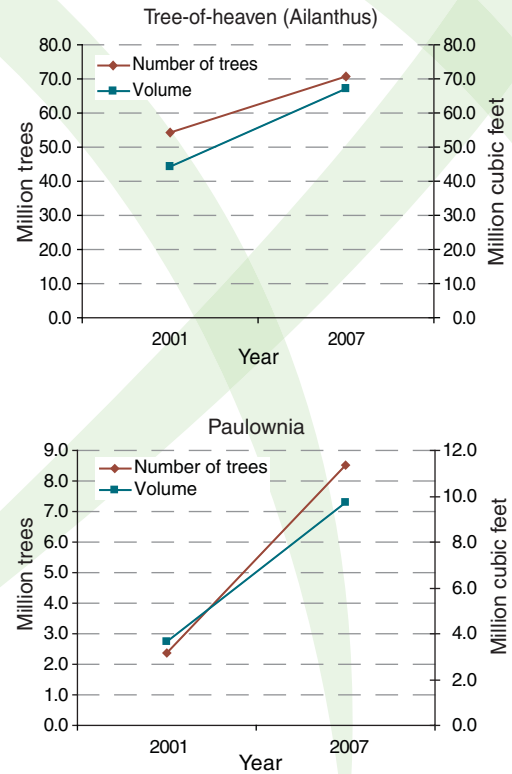


Figure 7—Number of trees and volume by species and year, Virginia.

Ozone-Induced Foliar Injury

During the 2007 survey, 15,016 plants from various locations in Virginia (biosites) were evaluated. The majority of injury occurred in 2003, when 3.8 percent of plants on 25.0 percent of biosites had injury (fig. 6). No injury was detected in 2005.

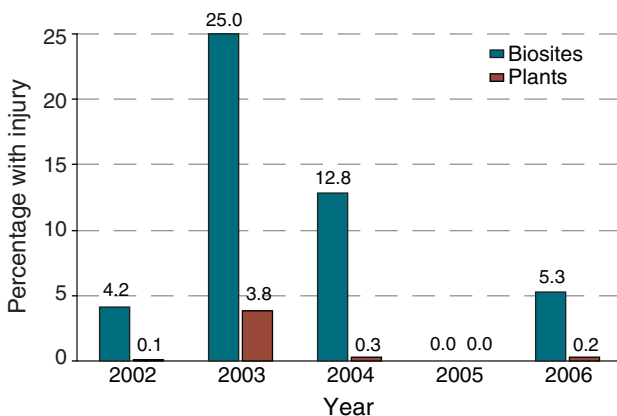


Figure 6—Percentage of biosites and bioindicator plants with ozone-induced foliar injury, by year, Virginia.

Soils

Only 22 percent of forest health (P3) plots in Virginia had soil compaction on >5 percent of the plot area (fig. 8). More than 5 percent of the plot area was bare soil on just over one-third of the plots.

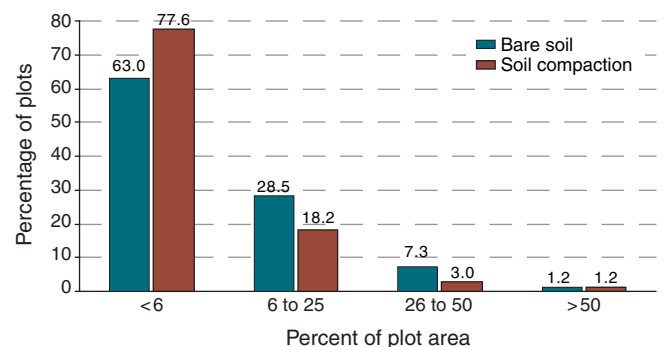


Figure 8—Distribution of bare soil and compaction on P3 plots by percent of plot area, Virginia, 2007.

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Down Woody Debris

Biomass of coarse woody debris and fine woody debris on P3 plots averaged 2.9 tons per acre and 3.5 tons per acre, respectively, for the State (table 2). The Coastal Plain had both the highest average amount of fine woody debris and the lowest average amount of coarse woody debris.

Table 2—Fuel loadings on P3 plots by survey unit and fuel class, Virginia, 2007

Survey unit	Plots <i>n</i>	FWD			Total	CWD 1,000- hr.
		1- hr.	10- hr.	100- hr.		
		----- tons/acre -----				
Coastal Plain	38	0.2	0.9	3.0	4.1	2.4
Southern Piedmont	41	0.2	0.8	2.0	3.0	2.7
Northern Piedmont	27	0.1	0.7	2.5	3.3	2.6
Northern Mountains	28	0.2	0.8	2.5	3.4	3.5
Southern Mountains	27	0.2	0.7	2.7	3.7	3.4
All	161	0.2	0.8	2.5	3.5	2.9

FWD = fine woody debris; CWD = coarse woody debris.

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Sampling Error

Sampling error is associated with the natural and expected deviation of the sample from the true population mean. Sampling errors for State totals are based on one standard deviation. That is, there is a 68.27 percent probability that the confidence interval given for each sample estimate will cover the true population mean (table 3). For specific post-defined strata the sampling error can be calculated using the following formula. Sampling errors obtained by this method are only approximations of reliability because this process assumes constant variance across all subdivisions of totals.

$$SE_s = SE_t \frac{\sqrt{X_t}}{\sqrt{X_s}}$$

where

SE_s = sampling error for subdivision of survey unit or State total

SE_t = sampling error for survey unit or State total

X_s = sum of values for the variable of interest (area or volume) for subdivision of survey unit or State

X_t = total area or volume for survey unit or State

Table 3—Statistical reliability for Virginia, 2007

Item	Sample estimate and 68.27 percent confidence interval	Sampling error percent
Forest land (1,000 acres)	15,724.8 ± 105.4	0.7
All live volume on forest land ^a	32,812.1 ± 436.4	1.3
All live volume on timberland ^a	31,698.7 ± 440.6	1.4
Net annual growth	1,030.4 ± 30.6	3.0
Annual removals	827.5 ± 59.7	7.2
Annual mortality	286.0 ± 13.1	4.6

^a Million cubic feet.

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