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Forest Inventory & Analysis Factsheet

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This science update is a brief look at some of the basic metrics that describe the status and trends of forest resources in Virginia. Estimates presented here are for the measurement year 2011. Information for the factsheets is updated by means of the Forest Inventory and Analysis (FIA) annualized sample design. Each year 20 percent of the sample plots (one panel) in Virginia are visited and measured by field crews, the data compiled, and new estimates produced. It is important that users keep in mind that in each year of new estimates, only 20 percent of the data are new, with the older data making up the remaining 80 percent of the sample. This may result in some spikes in estimates when comparing successive survey years, but in most instances the annualized design should give a reasonable indication of directional trends in the resource. After 5 years of measurements, the full sample complement (a cycle) is complete and a new survey cycle begins. The most reliable trend information (especially that concerning magnitude of change) comes from comparing two full cycles of data.

This fact sheet is based on data processed and posted on the FIA database (FIADB) on June 12th, 2012 at http://fia.fs.fed.us/tools-data/. Definitions can be found in the FIADB user's manual at http://fia.fs.fed.us/tools-data/docs/default.asp. Additional information concerning definitions and descriptive statistics can be found in the resource bulletin "Virginia's Forests, 2007" (RB–SRS–159) at http://www.srs.fs.usda.gov/pubs/33513.

Forest-Land Area

In 2011, about 15.9 million acres, or 62 percent, of Virginia's land area was forested. This was an increase of <1 percent since 2007 when forest land area also totaled 15.9 million acres (table 1). At the survey unit level the Coastal Plain saw the biggest decrease (2.1 percent) and the Northern Mountains saw the biggest increase (1.8 percent). Proportionally, the Southern Piedmont was the most heavily forested (67 percent) and the North Piedmont the least (57 percent) (fig. 1).

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

Survey unit	2001	2007	2011	Change since 2007	
	acres				percent
Coastal Plain	3,820,450	3,784,086	3,704,043	-80,043	-2.12
Southern Piedmont	3,757,400	3,759,718	3,791,292	31,574	0.84
Northern Piedmont	2,507,126	2,518,892	2,517,997	-895	-0.04
Northern Mountains	2,725,578	2,729,182	2,778,438	49,256	1.80
Southern Mountains	3,098,925	3,076,625	3,115,271	38,646	1.26
All units	15,909,478	15,868,503	15,907,041	38,538	0.24

Central Blue Ridge western flank and Shenandoah Valley, Shenandoah National Park, Green/Rockingham County, Virginia. (photo © Gary P. Fleming)

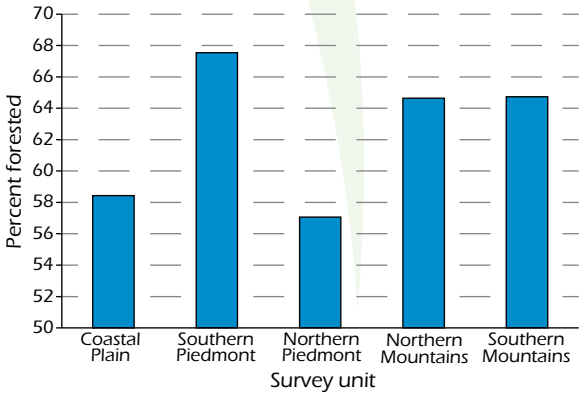

Figure 1—Percentage of forest land that was forested by survey unit, Virginia, 2011.

Beech flowers, near Kents Store, Fluvanna County, Virginia.
(photo © Gary P. Fleming)

Forest-Type Group and Stand Size

The predominant forest-type group in Virginia was oak-hickory (table 2). It occupied about 61 percent of the forest land area. The loblolly-shortleaf pine group and the oak-pine group ranked second and third, respectively. Since 2007, area of the oak-hickory group decreased by 1.6 percent, area of the loblolly-shortleaf pine group increased by 0.3 percent, and that of the oak-pine group increased by 3.6 percent. Twenty-one percent of the loblolly-shortleaf pine group was in the small diameter stand-size class, while only 11 percent of the oak-hickory group was in this class (table 2). Overall the majority (63 percent) of forest land in Virginia was in the large diameter stand-sized class (table 2).

Table 2— Area of forest land by forest-type group and stand-size class, Virginia 2011

Forest-type group	All size classes	Stand-size class: Large diameter	Medium diameter	Small diameter	Non-stocked
	thousand acres				
Softwood types					
White-red-jack pine	168.2	125.4	25.6	17.2	0.0
Spruce-fir	7.6	7.6	0.0	0.0	0.0
Loblolly-shortleaf pine	2,933.2	1,229.1	1,075.1	629.1	0.0
Other eastern softwoods	87.8	15.3	32.7	39.8	0.0
Total softwoods	3,196.9	1,377.4	1,133.4	686.1	0.0
Hardwood types	0.0	0.0	0.0	0.0	0.0
Oak-pine	1,696.4	894.1	428.5	373.7	0.0
Oak-hickory	9,705.0	6,874.8	1,804.2	1,025.9	0.0
Oak-gum-cypress	378.8	277.0	51.5	50.2	0.0
Elm-ash-cottonwood	397.1	262.3	75.7	59.0	0.0
Maple-beech-birch	359.3	295.4	36.4	27.6	0.0
Aspen-birch	4.3	0.0	4.3	0.0	0.0
Other hardwoods	42.7	21.4	13.6	7.6	0.0
Exotic hardwoods	33.4	0.0	10.5	22.9	0.0
Total hardwoods	12,616.9	8,625.1	2,424.8	1,567.0	0.0
Nonstocked	93.3	0.0	0.0	0.0	93.3
All groups	15,907.0	10,002.5	3,558.2	2,253.1	93.3

Numbers in rows and columns may not sum to totals due to rounding
0.0 = no sample for the cell or a value of >0.00 but <0.05

Ownership of the Forest

The majority (13.0 million acres, or 82 percent) of Virginia's forest land was private forest ownership, an increase of 0.3 percent since 2007. Public ownership ranked second with 2.9 million acres (18 percent). Forest industry, a subset of private, owned 1.2 percent of forest land across the State, a decrease of 65 percent since 2007

Tree Volume

Volume of live trees ≥5.0 inches diameter at breast height (d.b.h.) increased from 33.1 to 35.2 billion cubic feet, a 6.2 percent change since 2007 (fig. 2). Softwoods made up 23 percent of the live volume and hardwoods 77 percent. Hardwoods saw a 6.3 percent increase in volume (25.5 to 27.1 billion cubic feet), and softwoods saw a 6.1 percent increase (7.6 to 8.1 billion cubic feet). By unit, hardwood volume increased the most in the Southern Mountains (9.7 percent) and softwoods increased the most in the Northern Piedmont (9.7 percent).

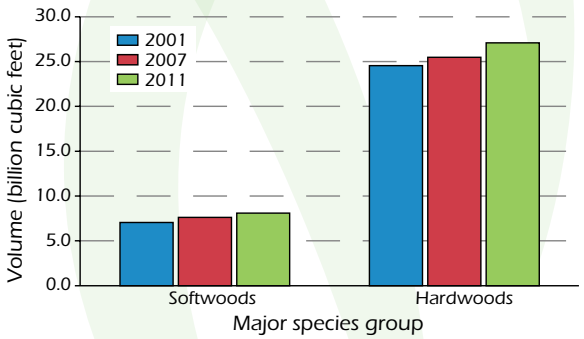

Figure 2—Volume of live trees ≥5.0 inches d.b.h. on forest land by major species group and survey year, Virginia.

Red spruce forest, Slabcamp Run, Allegheny Mountain, Laurel Fork Special Biologic Area (USFS), Highland County, Virginia.
(photo © Virginia Natural Heritage Program, Gary P. Fleming)

Crescent Rocks, view toward Shenandoah Valley, Shenandoah National Park, Page County, Virginia. (photo © Gary P. Fleming)

Top Species for Number of Trees

Yellow-poplar continued to rank first for live-tree volume with 5.6 billion cubic feet in 2011, an increase of 10.5 percent from 2007 (table 3). This species contained 15.8 percent of the live-tree volume for all trees ≥5.0 inches d.b.h. Loblolly pine was the second most dominant species, and increased by 12.8 percent to 4.8 billion cubic feet. It was the predominant softwood species, accounting for almost 60 percent of the softwood live-tree volume. Loblolly pine showed the largest gain in volume of any single species in Virginia, increasing by 546.6 million cubic feet. Chestnut oak, white oak, and red maple continued to rank next in live-tree volume. Virginia pine and eastern white pine were still the second and third ranked softwoods for volume.

Table 3—Top 20 tree species dominant for volume (≥5.0 inches d.b.h.) on forest land by survey year, Virginia

Species	2007	2011	Change from 2007
	million cubic feet		*percent*
Yellow-poplar	5,044.1	5,571.6	10.5
Loblolly pine	4,261.3	4,807.9	12.8
Chestnut oak	3,103.1	3,277.2	5.6
White oak	2,993.8	3,135.5	4.7
Red maple	2,269.1	2,357.8	3.9
Northern red oak	1,653.9	1,765.7	6.8
Virginia pine	1,487.6	1,323.4	-11.0
Sweetgum	1,137.1	1,190.2	4.7
Scarlet oak	1,041.8	1,096.1	5.2
Black oak	1,023.3	1,023.0	0.0
Eastern white pine	774.4	887.5	14.6
Pignut hickory	669.6	700.8	4.7
Mockernut hickory	613.9	635.5	3.5
American beech	576.8	619.0	7.3
Southern red oak	577.1	592.9	2.7
Sugar maple	379.2	414.1	9.2
White ash	377.3	412.8	9.4
Blackgum	390.5	405.1	3.7
Sweet birch	281.9	305.5	8.4
American sycamore	255.7	294.2	15.0

d.b.h. = diameter at breast height.

Growth, Removals, and Mortality

Net growth for all live trees on forest land averaged 1,037.0 million cubic feet per year (fig. 3). This was an increase of 3.9 percent from the 2007 survey, when it averaged 998.3 million cubic feet per year. Live-tree removals on forest land averaged 545.0 million cubic feet per year. This was a decrease of 30 percent from the 2007 survey, when removals averaged 777.4 million cubic feet per year. Across the State, mortality averaged 302.2 million cubic feet per year. This was a 2.8 percent increase since the 2007 survey, when mortality averaged 293.8 million cubic feet per year.

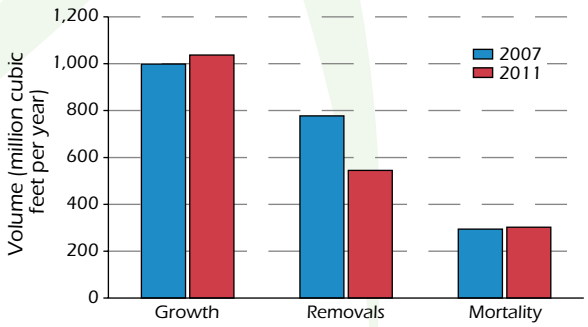

Figure 3—Net annual growth, removals, and mortality by survey year, Virginia.

Nonnative Invasive Plants (NNIPs)

Japanese honeysuckle, nonnative roses, and tree-of-heaven were the most often occurring invasive species in Virginia's forests (table 4). These three invasive species occurred on 45, 19, and 11 percent of forested plots, respectively. At the unit level, Japanese honeysuckle was the most frequently occurring NNIP in the Coastal Plain and the Piedmont. Nonnative roses were most frequently occurring in the Mountains, with Japanese honeysuckle a close second. Between the 2007 survey and 2011 survey, the number of tree-of-heaven increased by 15.6 percent, from 71.5 to 82.6 million trees. In addition, the volume of this species increased by 16.7 percent, from 67.6 to 78.9 million cubic feet. Paulownia, another invasive tree species, also increased in number of trees (from 8.6 to 9.8 million stems) and volume (9.8 to 14.5 million cubic feet).

Table 4—Occurrence of nonnative invasive plants by species, unit, plot, and subplot, Virginia 2011

Species	Coastal Plain		Southern Piedmont		Northern Piedmont		Northern Mountains		Southern Mountains		All units	
	Plots	Sub-plots	Plots	Sub-plots	Plots	Sub-plots	Plots	Sub-plots	Plots	Sub-plots	Plots	Sub-plots
	number											
Autumn olive	7	9	7	10	31	59	31	60	67	105	143	243
Bush honeysickle	—	—	29	62	1	1	6	10	6	10	42	83
Chinese lespedeza	32	56	35	53	9	11	2	3	9	20	87	143
Chinese privet	77	116	57	94	30	54	6	17	16	25	186	306
Chinese silvergrass	—	—	1	1	—	—	—	—	2	7	3	8
Chinese yams	—	—	—	—	—	—	1	4	—	—	1	4
Chinese/Japanese wisteria	2	3	4	4	1	2	2	5	2	3	11	17
English ivy	5	8	2	2	6	7	—	—	—	—	13	17
Garlic mustard	—	—	—	—	21	49	13	24	3	8	37	81
Japanese honeysuckle	426	1,097	462	1,187	292	771	79	183	111	219	1,370	3,457
Japanese privet	6	16	1	1	—	—	1	1	—	—	8	18
Kudzu	1	1	3	4	1	3	1	1	2	5	8	14
Mimosa	8	13	1	1	4	4	—	—	2	2	15	20
Nepalese browntop	15	29	47	82	77	137	29	49	58	107	226	404
Nonnative bamboo	1	1	1	1	1	3	—	—	—	—	3	5
Nonnative roses	29	47	108	161	126	213	89	174	217	437	569	1,032
Oriental bittersweet	—	—	2	3	20	45	4	5	14	27	40	80
Paulownia	12	14	15	21	26	38	9	9	10	10	72	92
Periwinkle	—	—	7	10	—	—	1	1	2	2	10	13
Russian olive	1	1	—	—	—	—	—	—	—	—	1	1
Sacred bamboo	1	1	1	3	—	—	—	—	—	—	2	4
Shrubby lespedeza	24	35	15	26	12	17	14	29	22	47	87	154
Tall fescue	5	5	6	8	22	34	20	45	36	68	89	160
Thorny olive	—	—	—	—	—	—	—	—	3	4	3	4
Tree-of-heaven	37	42	101	164	100	159	57	101	49	66	344	532
Winged burning bush	—	—	1	1	1	1	2	3	4	6	8	11
Wintercreeper	18	49	5	5	—	—	—	—	—	—	23	54

— = no sample for the cell.

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Rich montane oak-hickory forest and interrupted fern fiddleheads, Thunder Ridge (USFS), Bedford County, Virginia. (photo © Virginia Natural Heritage Program, Gary P. Fleming)

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