

Nebraska's Forest Resources, 2009

Research Note NRS-93

This publication provides an overview of forest resource attributes for Nebraska based on an annual inventory program 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.

Table 1.—Annual estimates and uncertainty for Nebraska, 2009

	Estimate 2009	Sampling error (%)
Forest Land Estimates		
Area (1,000 acres)	1,497.7	4.3
Number of live trees 1-inch diameter or larger (million trees)	390.7	6.5
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	43,991.5	6.5
Net volume of live trees (million cubic feet)	2,011.2	7.1
Annual net growth of live trees (1,000 cubic feet per year)	58,116.4	16.7
Annual mortality of live trees (1,000 cubic feet per year)	26,506.4	18.3
Annual removals of live trees (1,000 cubic feet per year)	14,115.3	36.5
Timberland Estimates		
Area (1,000 acres)	1,403.1	4.5
Number of live trees 1-inch diameter or larger (million trees)	364.9	6.8
Dry biomass of live trees 1-inch diameter or larger (1,000 tons)	42,257.1	6.7
Net volume of live trees (million cubic feet)	1,945.5	7.4
Net volume of growing-stock trees (million cubic feet)	1,173.4	10.3
Annual net growth of growing-stock trees (1,000 cubic feet per year)	23,070.3	26.6
Annual mortality of growing-stock trees (1,000 cubic feet per year)	15,412.1	26.6
Annual removals of growing-stock trees (1,000 cubic feet per year)	9,447.6	44.5

Note: Sampling errors in Tables 1 and 2 in this report represent 68% confidence intervals for the estimated values.

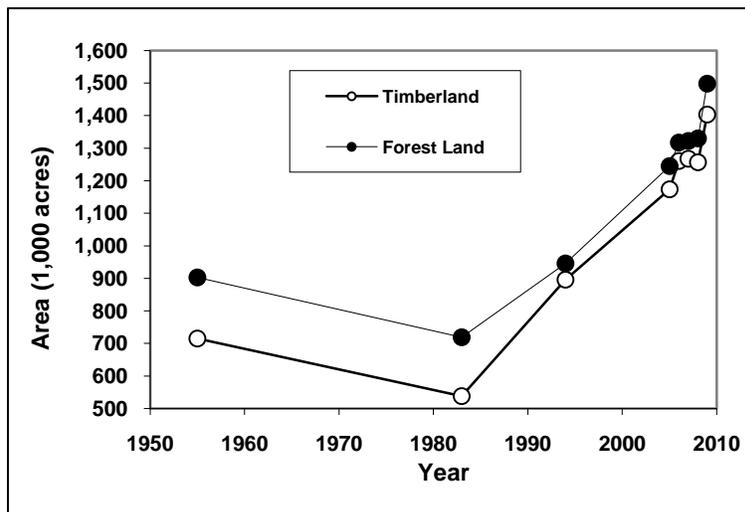


Figure 1.—Area of timberland and forest land by year.

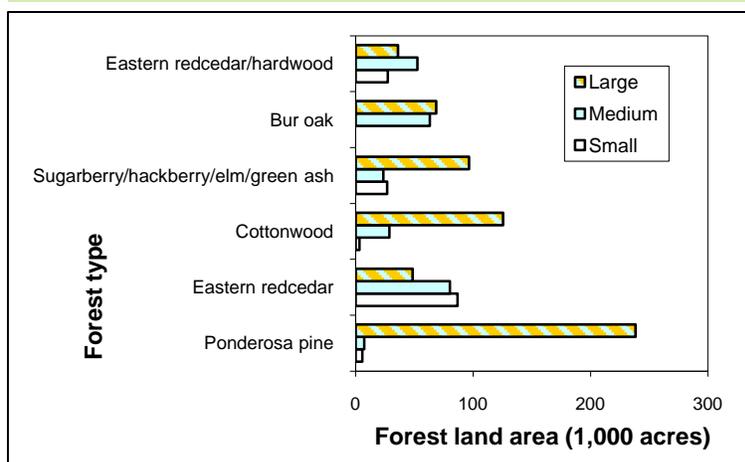


Figure 2.—Area of forest land by top six forest types and stand-size class.

NOTE: Large diameter trees are ≥ 11.0 d.b.h. for hardwoods and ≥ 9.0 d.b.h. for softwoods. Medium diameter trees are ≥ 5.0 d.b.h. but not as large as large diameter trees. Small diameter trees are < 5.0 d.b.h.

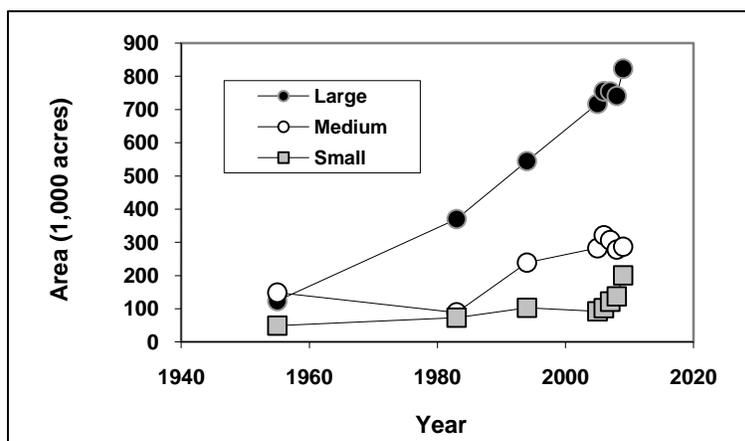
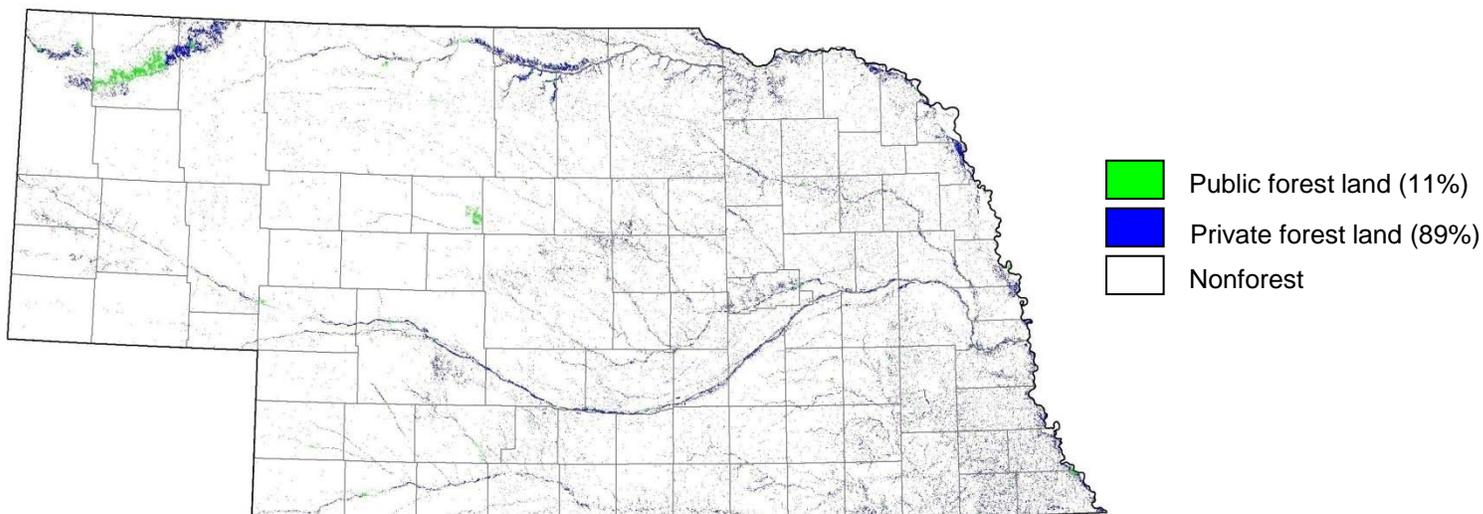


Figure 3.—Area of timberland by stand-size class and year.

Table 2.—Top 10 tree species by statewide volume estimates, Nebraska, 2009

Rank	Species	Volume of live trees on forest land (million cubic feet)	Sampling error (%)	Volume of sawtimber trees on timberland (million board feet)	Sampling error (%)
1	Cottonwood	624.1	18.5	2,351.3	22.1
2	Ponderosa pine	326.7	15.2	1,084.1	18.1
3	Bur oak	274.3	15.1	437.9	23.1
4	Eastern redcedar	155.8	12.7	71.5	24.9
5	Green ash	119.4	14.4	134.4	26.8
6	American basswood	80.2	28.9	206.7	36.1
7	Hackberry	68.4	23.4	109.0	50.3
8	Red mulberry	61.0	21.5	18.4	47.9
9	American elm	49.7	14.4	35.7	32.7
10	Black willow	36.5	31.0	74.3	37.1
	Other softwoods	23.1	37.2	23.3	112.9
	Other hardwoods	192.0	12.4	251.1	19.8
	All Species	2,011.2	7.1	4,797.7	13.6

Forest Land Ownership



Data sources for map: USDA Forest Service, Conservation Biology Institute Protected Areas Database, National Land Cover Database 2001. Geographic base data from the National Atlas of the USA.

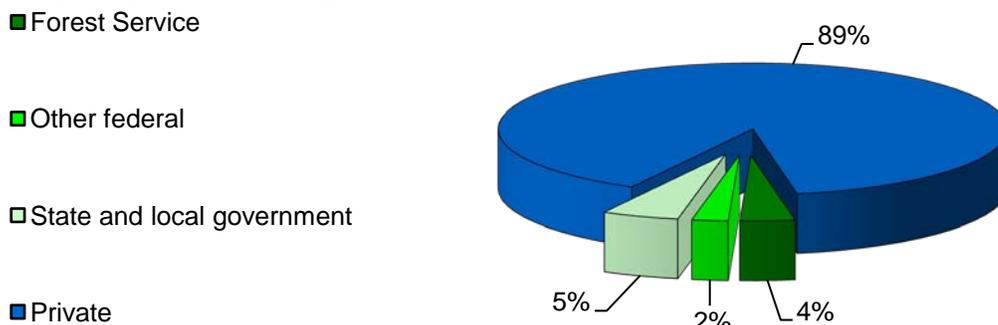


Figure 4.—Distribution of forest land by major owner group, Nebraska, 2009.

Special Issue: mapping all tree cover in Nebraska

Historically, the FIA program was designed to conduct inventories on commercial forest land but has since expanded to include all forest land. Currently, there has also been interest in trees outside the forest (TOF) with recent attention to such issues as biofuels production and carbon sequestration. In the context of FIA, TOF includes patches of trees that are too small or shaped in such a way that they do not meet the length, width, and/or area requirements set out in the program's definition of 'forest land'. Much of the tree cover in the Plains States, however, occurs as TOF as opposed to definitional forest land (Fig. 5) and, therefore, is not included in the inventory. Furthermore, commonly used land cover datasets, such as the National Land Cover Database of 2001, can only identify landscape features with a minimum size comparable to a baseball diamond, which also excludes TOF. As a result, information about TOF is scarce and detailed maps that convey their spatial extent and arrangement are not available for large areas, such as a county.



Figure 5.—Example of tree cover that does not meet FIA's definition of forest land but is commonly found in agricultural landscapes.



Figure 6.—Example of the tree cover class for an area in Kearney County, NE, produced using an object-based image analysis technique.

Using an object-based image analysis (OBIA) technique, we are able to generate land-cover classification products that accurately identify and quantify tree cover from high-resolution digital aerial imagery. Figure 6 shows a close-up example of the tree cover class for an area in Kearney County, NE, that was produced using the OBIA procedure. Table 3 lists some metrics that were derived from the county-level output classification datasets for Kearney and Nemaha Counties that can be used to describe the amount and spatial pattern of tree cover across the county.

Tree Cover Metrics	Kearney	Nemaha
Area of tree cover (acres)	4,387	36,279
Percent of county area	1.3%	13.8%
FIA 2008 estimate of forest land (acres)	441	17,710
Number of patches	11,118	14,629
Average patch size (acres)	0.4	2.5
Minimum patch size (acres)	0.01	0.01
Maximum patch size (acres)	82	3,453
Largest patch index (% of tree-covered area occupied by the largest patch)	2%	10%
Patch density (number of patches/sq mile)	22	36

Table 3.—Examples of metrics derived from the land-cover classification products for Kearney and Nemaha Counties, NE.

Citation for this Publication

Meneguzzo, D.M. 2011. **Nebraska's forest resources, 2009**. Res. Note NRS-93. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

FIA Program Information

Bechtold, W.A.; Patterson, P.L., eds. 2005. **The enhanced Forest Inventory and Analysis Program: national sampling design and estimation procedures**. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.

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USDA Forest Service. 2007. Forest inventory and analysis national core field guide, Vol. 1, field data collection procedures for phase 2 plots, ver. 4.0. Available at <http://www.fia.fs.fed.us/library/field-guides-methods-proc/> (verified 24 Nov 2009).

Additional Nebraska Inventory Information

Meneguzzo, D.M.; Brand, G.J.; Lovett, W.R. 2007. **Nebraska's forest resources in 2005**. Resour. Bull. NRS-16. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 21 p.

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Raile, G.K. 1986. **Nebraska's second forest inventory**. Resour. Bull. NC-96. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 87 p.

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Definitions

Forest land - Land at least 10 percent stocked by forest trees of any size, or land formerly having such tree cover and not currently developed for a nonforest use. The minimum area for classification as forest land is 1 acre. Roadside, stream-side, and shelterbelt strips of timber must be at least 120 feet wide to qualify as forest land. Unimproved roads and trails, streams and other bodies of water, or natural clearings in forested areas are classified as forest, if less than 120 feet in width or 1 acre in size. Grazed woodlands, reverting fields, and pastures that are not actively maintained are included if the above qualifications are satisfied. Forest land includes three subcategories: timberland, reserved forest land, and other forest land.

Timberland - Forest land that is producing or is capable of producing wood at a rate of 20 cubic feet/acre/year and is not withdrawn from timber utilization by statute or administrative regulation.

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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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Information published in this report and in related tables is based on the Forest Inventory and Analysis Database (FIADB) processed using National Information Management System (NIMS) version 4.0, November 2010. Due to periodic changes to FIADB and NIMS, trend analyses should be made using FIA's online estimation tools, not by comparing published reports or tables. FIA estimates, tabular data, and maps may be generated at <http://www.fia.fs.fed.us/tools-data/>.

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