USDA Forest Service, US Department of Agriculture
Northern Research Station

Illinois' Forest Resources, 2012

Research Note NRS-168

This publication provides an overview of forest resource attributes for Illinois based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) Program of the Northern Research Station (NRS) 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, Illinois, 2012

	2012 estimate	Sampling error (%)	Change since 2007 (%)
Forest Land Estimates			
Area (1,000 acres)	4,886	1.6	0.9
Number of live trees 1-inch diameter or larger (1,000,000 trees)	2,060	2.6	-4.4
Biomass of live trees 1-inch diameter or larger (1,000 tons)	247,139	2.2	4.8
Net volume in live trees (1,000,000 ft^3)	9,103	2.4	4.7
Annual net growth of live trees (1,000 ft^3/year)	170,484	6.8	-28.8
Annual mortality of live trees (1,000 ft^3/year)	135,663	6.1	29.8
Annual harvest removals of live trees (1,000 ft^3/year)	45,316	18.7	23.2
Annual other removals of live trees (1,000 ft^3/year)	17,059	39.2	55
Timberland Estimates			
Area (1,000 acres)	4,819	1.6	2.4
Number of live trees 1-inch diameter or larger (1,000,000 trees)	2,035	2.6	-3.1
Biomass of live trees 1-inch diameter or larger (1,000 tons)	243,356	2.2	6.6
Net volume in live trees (1,000,000 ft^3)	8,958	2.4	6.6
Net volume of growing-stock trees (1,000,000 ft^3)	7,365	2.6	-1.0
Annual net growth of growing-stock trees (1,000 ft^3)	166,453	6.5	-35.9
Annual mortality of growing-stock trees (1,000 ft^3/year)	96,454	6.4	31.7
Annual harvest removals of growing-stock trees (1,000 ft^3/year)	41,148	19.5	21.8
Annual other removals of growing-stock trees (1,000 ft^3/year)	14,108	28.6	-16.8

Note: Sampling errors in the tables and figures in this report represent 68% confidence intervals for the estimated values. Volumes are for 5-inch and larger diameter trees.

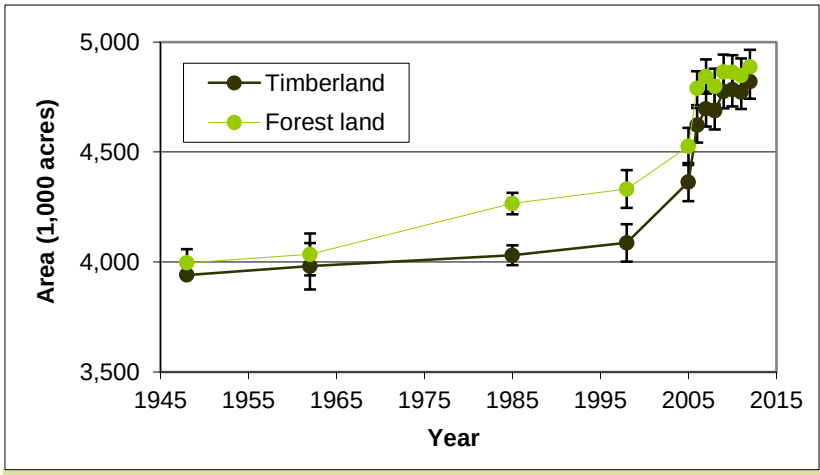


Figure 1.—Area of timberland and forest land by year, Illinois, 1948-2012.

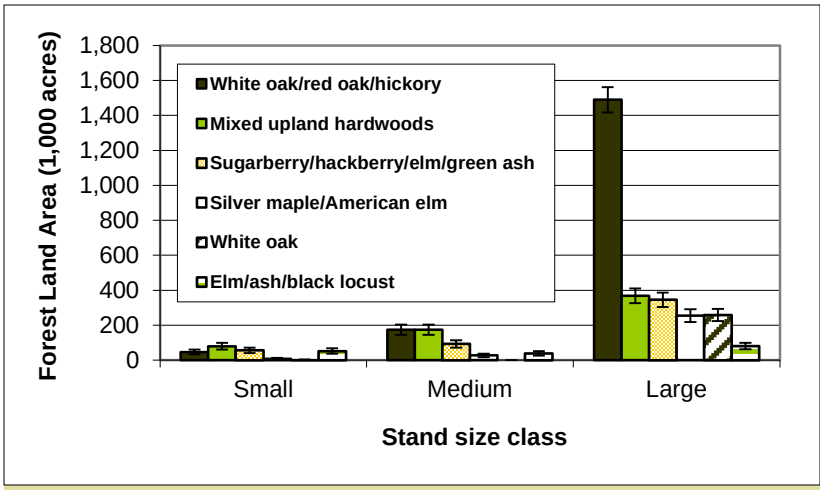


Figure 2.—Area of forest land by top six forest types and stand-size class, Illinois, 2012.

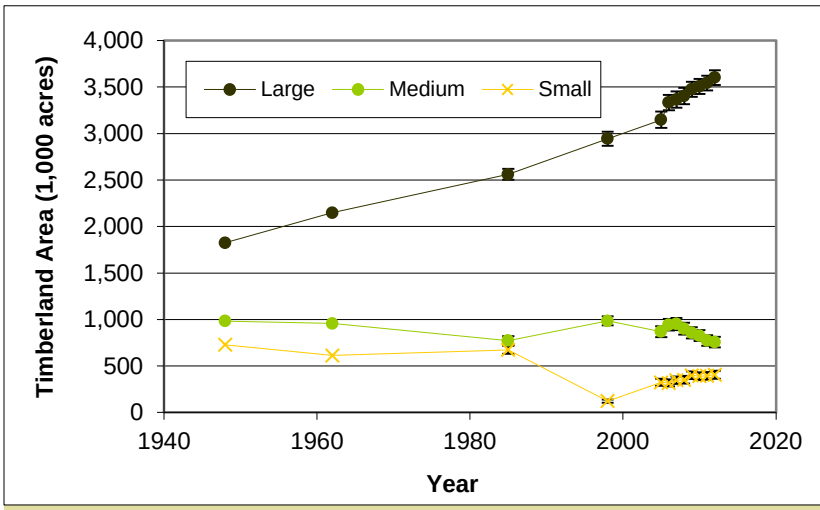
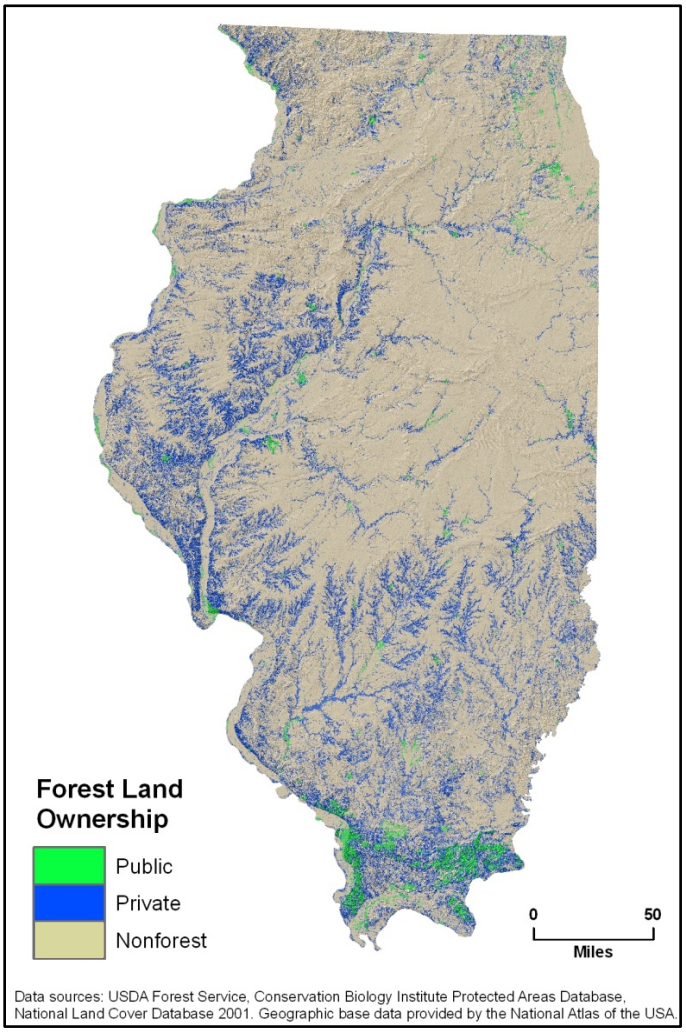


Figure 3.—Area of timberland by stand-size class and year, Illinois, 2012.

Table 2.—Top 10 tree species by statewide volume estimates, Illinois, 2012

Rank	Species	Volume of live trees on forest land (1,000,000 ft³)	Sampling error (%)	Change since 2007 (%)	Volume of sawtimber trees on timberland (1,000,000 bdft)	Sampling error (%)	Change since 2007 (%)
1	White oak	962	7.2	-11.5	3,563	8.0	-14.7
2	Silver maple	844	12.8	10.0	2,549	14.5	4.0
3	Black oak	623	8.3	17.1	2,260	8.9	11.9
4	Northern red oak	462	10.4	-4.2	1,810	11.4	-3.1
5	Eastern cottonwood	357	17.3	1.7	1,388	16.9	6.7
6	Shagbark hickory	348	8.3	10.3	1,095	10.1	10.2
7	Black walnut	322	7.9	19.6	984	9.5	20.1
8	Green ash	314	10.3	0	943	12.8	4.7
9	American sycamore	314	15.8	4.6	1,174	15.3	6.3
10	Sugar maple	302	10.7	8.1	848	14.1	0.9
n/a	Other softwoods	290	16.7	15.6	1,024	20.1	10.6
n/a	Other hardwoods	3,966	3.3	5.9	10,238	4.4	0.5
n/a	**All Species**	**9,103**	**2.4**	**4.7**	**27,876**	**2.9**	**1.1**



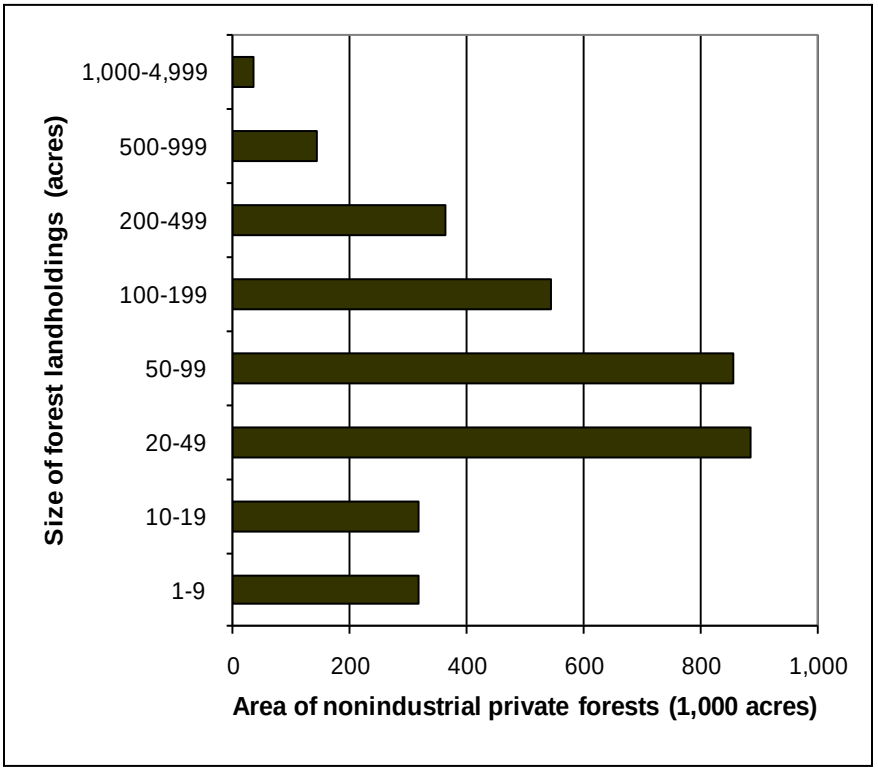


Figure 4.—Distribution of forest land by major owner group (map) and size of nonindustrial private forest landholdings (graph), Illinois, 2006.

Effects of increasing forest area on net growth

Illinois has seen an increasing trend in forest land since 1948 (Fig. 1). While forest land area has risen slightly over the past 6 years, the last significant increase occurred between 2005 and 2006.

In 2005, FIA began to use newer, enhanced aerial imagery and geographic information systems (GIS) data. Use of this data enabled FIA to improve the accuracy with which forest land was identified in the office, thus increasing the number of plots which were sent to the field for ground measurement and subsequently increasing the overall estimate of forest land. As a result, these small changes in forest area have had a larger impact on net growth estimates due to growth of trees on lands that reverted from a nonforest land use to a forested land use.

Net growth is gross growth minus mortality. FIA identifies several components of net growth (Bechtold and Paterson 2005). These include:

- Ingrowth – volume of trees that grew across the minimum d.b.h. threshold (1 inch for live trees and 5 inches for growing-stock trees)
- Reversion – volume of trees on land that went from a nonforest to a forest land use between inventories
- Survivor growth – growth of trees tallied during the previous inventory that survived until the current inventory
- Cut growth – growth of cut trees between previous inventory and the midpoint of the measurement interval
- Diversion growth – the growth of trees on land that went from a forest to a nonforest land use between inventories.
- Mortality – volume of trees that die from natural causes between inventories

Net growth for live trees on Illinois forest land decreased by 43 percent between 2006 and 2012 (Fig. 5). This decrease is largely related to the limited number of remeasured plots between 2006 and 2010, as well as to reversion. As plot remeasurement began in 2006 (with ~ 20% of remeasured plots), estimates of growth, removals, and mortality had relatively high sampling errors. The precision of the estimates increased as more plots were remeasured.

Additionally, use of better imagery resulted in a lag in the detection of reverted lands. Estimates of reversion between 2006 and 2009 increased as reversion which took place in the late 90s and early 2000s was not identified until the late 2000s. Reversion subsequently decreased as the entire set of plots from the first annual inventory were remeasured using the new imagery. Estimates of reversion are expected to decrease over time, as use of improved imagery is repeated over the next inventory cycle.

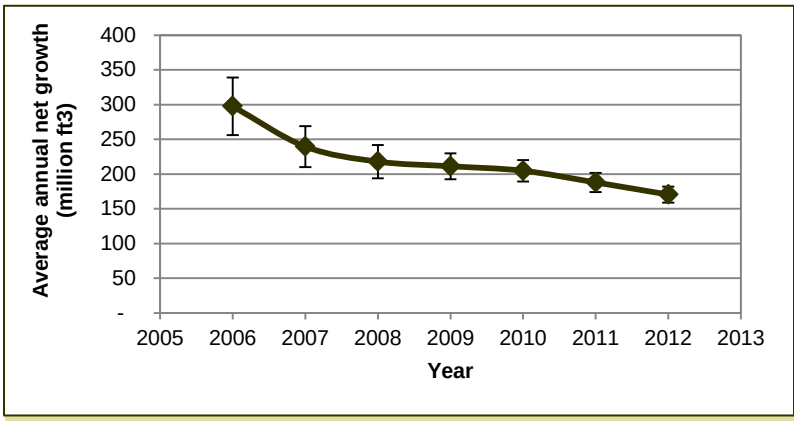


Figure 5.—Average annual net growth by year, Illinois.

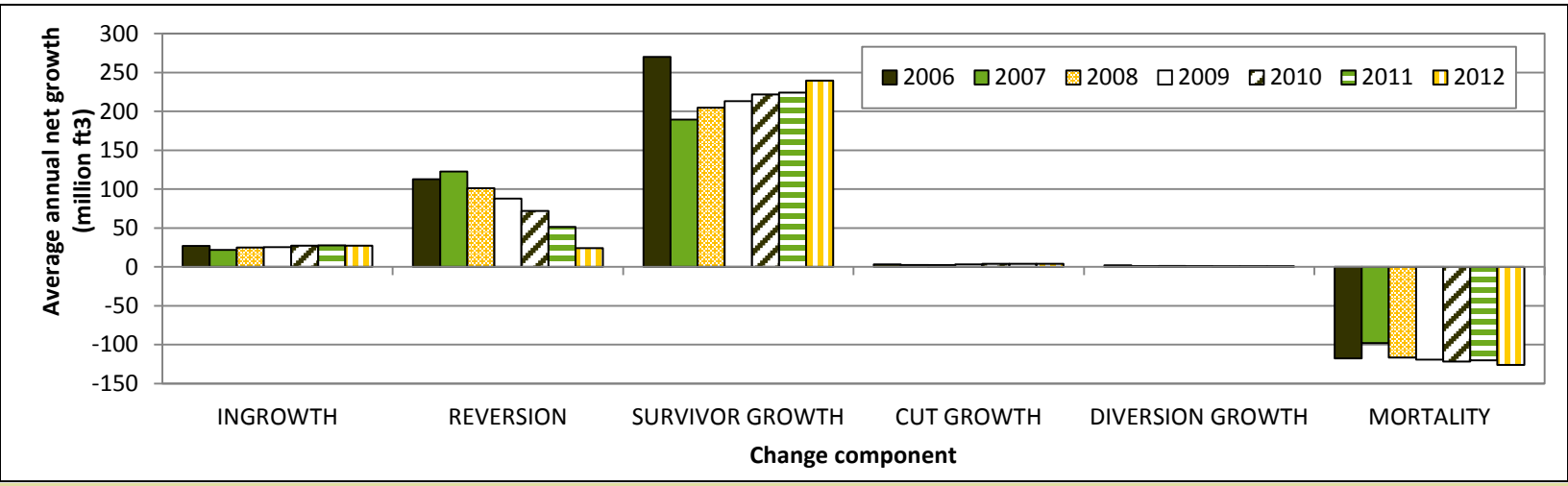


Figure 6.—Average annual net growth by change component and year, Illinois.

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FIA Program and Illinois Inventory Information

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Definitions

Forest land — Land that is at least 10 percent stocked by trees of any size or formerly having had such tree cover and is not currently developed for nonforest uses. The area with trees must be at least 1 acre in size and at least 120 feet wide.

Timberland — Forest land that is producing or is capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands and is not withdrawn from timber utilization by statute or administrative regulation.

Growing-stock volume — The amount of sound wood in live, commercial tree species; trees must be at least 5 inches in d.b.h. or greater and free of defect.

Sawtimber volume — Net volume of the saw log portion of live sawtimber, measured in board feet, from a 1-foot stump to minimum top diameter (9 inches for hardwoods and 7 inches for softwoods).

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Heading image credit: Paul Wray, Iowa State University, Bugwood.org

Information published in this report and in related tables is based on data collected between 2007 and 2011, stored in the Forest Inventory and Analysis Database (FIADB), collected under field guides 3.0 to 5.1 and compiled in the National Information Management System (NIMS) version 6.0 installed November 2012. 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://fiatools.fs.fed.us/.