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Illinois' Forest Resources, 2005

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Abstract
Results of the completed 2005 Illinois annual inventory show an estimated 4.5 million acres of forest land that supports 7.6 billion cubic feet (ft^3) of total net live-tree volume. Since 1948, timberland area has steadily increased and now represents 96 percent of total forest land. Growing-stock volume on timberland has risen to an estimated 6.8 billion ft^3. Ten percent of live-tree volume on timberland is in cull trees. Live-tree aboveground biomass is 210.5 million dry tons. Net growth of growing stock increased by an average of 327 million ft^3/yr. Growing-stock was removed at an average of 60.6 million ft^3/yr. Average annual mortality of growing stock was 86.6 million ft^3/yr. Oak wilt, gypsy moth, emerald ash borer, Dutch elm disease, Asian longhorned beetle, and drought were among Illinois' forest health concerns.

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INTRODUCTION

Historically, the Northern Research Station's Forest Inventory and Analysis (NRS-FIA) program conducted inventories of a state's forests on a periodic basis. In Illinois, periodic inventories were completed in 1948, 1962, 1985, and 1998 (Essex and Gansner 1965, Raile and Leatherberry 1988, Schmidt et al. 2000, Central States Forest Experiment Station 1949). When NRS-FIA began fieldwork for the fifth inventory of Illinois' forest resources in 2001, it initiated an annual inventory system in which one-fifth of the field plots (considered one panel) in the State are measured each year. A complete annual inventory consists of measurements and data compiled and reported for all plots in all five panels. Once all panels have been measured and the inventory is complete, a new inventory will begin and one panel of plots will be remeasured every year on a 5-year cycle. For example, in Illinois, the field plots measured in 2005 will be remeasured in 2010.

This report presents results from the completed fifth inventory (2001-05) of Illinois' forest resources. These results are estimates based on sampling techniques of Bechtold and Patterson (2005). Estimates were compiled assuming that the data from the 2001, 2002, 2003, 2004, and 2005 panels represent one sample. All of the tables in this report and many others can be generated at the Mapmaker Program at http://www.nrs.fs.fed.us/fia/data-tools/mapping-tools/default.asp.

As a result of ongoing efforts to improve the efficiency and reliability of the inventory, several changes in procedures and definitions have occurred since the last Illinois inventory in 1998 (Schmidt et al. 2000). These changes will have little impact on statewide estimates of forest area, timber volume and tree biomass; however, they may have significant impacts on plot classification variables such as forest type and stand-size class. For the purpose of growth, removal, and mortality estimates, the 1998 inventory (Schmidt et al. 2000) was processed using estimation/summary routines for the 2001-2005 panels. Because these changes allow limited comparison of inventory estimates among separate inventories in this report, it is inappropriate to directly compare all portions of the 2005 data with those published for earlier inventories.

RESULTS

Area

Prior to Euro-American settlement, Illinois was a mixture of tall grass prairie and eastern deciduous forest. Forests then occupied an estimated 14 million acres, or about 40 percent of the state's total land area (Illinois State Natural Survey Division 1960). For nearly 120 years (1800 to the 1920's), forest-land[1] area (which includes reserved and low-productivity land) declined, reaching a low of 3.0 million acres in 1924 (Telford 1926). By the 1950's, forest land was on the rise and in 1962 totaled an estimated 4.0 million acres. In 2005, forest land occupied 4.5 million acres, or about 13 percent of the state's total land area (Table 1, U.S. Census Bureau 2006). Most forest land in Illinois is privately owned. Currently, an estimated 169.0 thousand private landowners (Illinois Department of Natural Resources 2003) hold 3.7 million acres of the state's forest land (Table 1). Private landowners have been instrumental in the conservation and regeneration of Illinois' forests. Eighteen percent of forest land is publicly owned (Table 1). This ensures that people will have access to forest recreation opportunities, that wildlife habitat is maintained, and that forests remain a

[1] *Forest land is land that is at least 10-percent stocked with trees of any size, or that formerly had such tree cover and is not currently developed for a nonforest use. The minimum area for classification of forest land is 1 acre. In addition, strips of timber must have a crown width of at least 120 feet.*

THE AUTHORS

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vital component of the landscape and economy of Illinois. Public forest lands in Illinois are mostly within the Shawnee National Forest, state parks, county forest preserves, and park districts.

Forest land has three components:

1. Timberland[2]—forest land that is not restricted from harvesting by statute, administrative regulation, or designation and is capable of growing trees at a rate of 20 cubic feet (ft^3) per acre per year.

2. Reserved—forest land that is restricted from harvesting by statute, administrative regulation, or designation (e.g., state parks, national parks and lakeshores, and federal wilderness areas).

3. Other forest land—forest land that is not capable of growing trees at a rate of 20 ft^3 per acre per year and is not restricted from harvesting.

Illinois timberland totals 4.3 million acres and accounts for 96 percent of total forest land in the state (Table 2). Timberland has remained relatively stable since 1948, slowly increasing with successive inventories (Fig. 1). The remaining 4 percent of forest land, 162.2 thousand acres, is classified as reserved or other forest land. Most reserved forest land in Illinois is in county forest preserves, state parks, state natural areas, and on the Shawnee National Forest.

Most timberland stands in Illinois are dominated by hardwood trees; 97 percent of total timberland area is in the hardwood forest type group (Table 2). Hardwood timberland stands are largely of natural origin; only 23 thousand acres or 0.5 percent of hardwoods were planted. By contrast, 64 percent of the 112 thousand acres of timberland in the softwood type group were planted (Table 2).

Illinois timberland contains a variety of tree species. To facilitate describing forest composition, tree species are grouped into national forest-type groups that reflect the combination of species on a particular site. This classification is based on the species forming a plurality of live-tree stocking on the site. Three hardwood forest-type groups—oak/hickory, elm/ash/cottonwood, and maple/beech/birch—occupy 94 percent of timberland in Illinois (Fig. 2). The oak/hickory group alone occupies nearly two-thirds of timberland, the bulk of which is in the white oak/red oak/hickory forest type (1.5 million acres) (Table 3). The elm/ash/cottonwood forest-type group, which typically occurs on floodplains, is found on 22 percent of timberland (Fig. 2). Illinois floodplains in the

[2] Timberland may not be equivalent to the area actually available for commercial timber harvesting or other access. The actual availability of land for various uses depends on owner decisions that consider economic, environmental, and social factors.

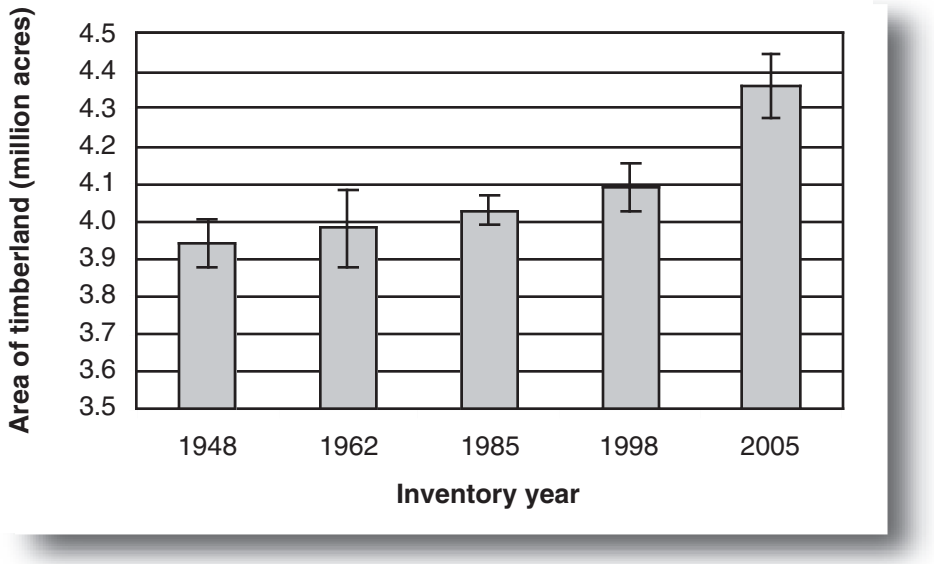


Figure 1.—*Area of timberland, Illinois, 1948-2005. The vertical line at the top of each bar represents the sample error associated with each inventory.*

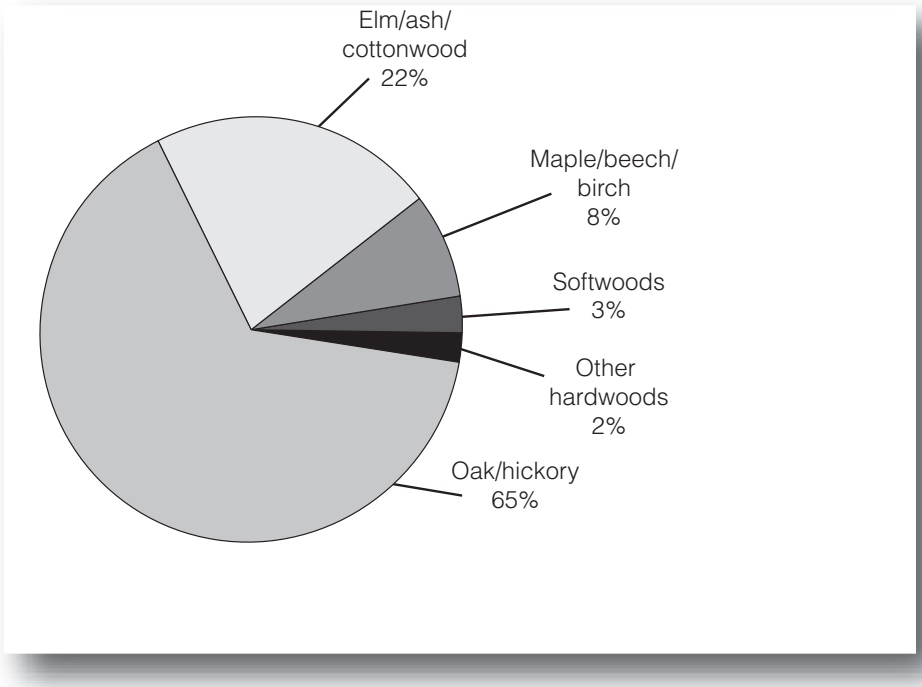


Figure 2.—*Area of timberland by forest type group, Illinois, 2005.*

elm/ash/cottonwood forest-type group are variable in composition; major species include silver maple, green ash, river birch, pin oak, pecan, sycamore, cottonwood, hackberry, and immature elm. Nearly 8 percent of timberland is represented by the maple/beech/birch forest-type group (Fig. 2). In northern Illinois, a large portion of this group is composed of the sugar maple/basswood forest type; stands along the eastern and southern borders of the state are dominated by sugar maple, beech, and tulip-poplar.

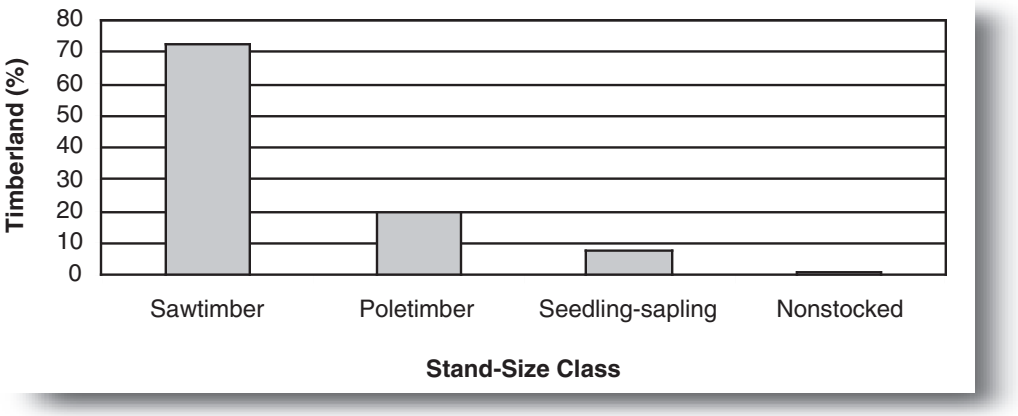
Although softwoods only account for about 3 percent of total timberland area, they contribute to increased biodiversity in what would otherwise be a sea of hardwoods (Table 3). Softwood timberland area is predominantly eastern redcedar, which occupies 31.5 thousand acres (28 percent). Shortleaf and white pine stands account for 26 and 22 percent of softwood timberland area, respectively (Table 3).

Stand-size class is a measure of the average diameter of the dominant trees in a stand. There are three classes: sawtimber—large trees, softwoods at least 9 inches in diameter at breast height (d.b.h.) and hardwoods at least 11 inches in d.b.h.; poletimber—medium trees, 5 inches in d.b.h. to sawtimber size; and sapling/seedling—small trees, 1 to 5 inches in d.b.h. or live trees less than 1 inch in d.b.h. that are expected to survive.

Timberland area in Illinois consists largely of stands with sawtimber-size trees. Sawtimber stands occupy 3.1 million acres, or 72 percent of timberland; this suggests that the majority of Illinois' forests are maturing (Table 3, Fig. 3). Mature stands are more likely to succumb to wind-throw, insects, or disease pathogens. Twenty percent of timberland area is made up of poletimber stands, 7.5 percent contains sapling-seedling stands, and the remaining 0.5 percent is nonstocked[3] (Table 3). The relatively small area of sapling-seedling stands may be related to how timber is harvested in much of the state. Often, mature timber is removed as single, scattered trees or in small groups. The lack of significant disturbances in hardwood stands may not open stands to progressive seedling development because smaller trees in the understory are generally outcompeted by larger, canopy dominant trees. Exceptions include species, such as sugar maple, which are tolerant of understory conditions and can take advantage of gaps in the canopy.

[3] *Nonstocked land is timberland that is less than 10-percent stocked with live trees.*

Figure 3.—*Stand-size class as a percentage of total timberland area, Illinois, 2005.*



Volume

Net volume is the gross volume less deductions for rot, sweep, or other defects that limit use for timber products. It is computed from a 1-foot stump to a 4-inch top diameter outside the bark for live trees at least 5 inches in d.b.h. Total net volume of live trees on forest land in Illinois is an estimated 7.9 billion ft^3, or 1,758 ft^3 per acre of forest land (Table 4). Eight of every 10 ft^3 of live volume is on privately owned forest land. Virtually all (97 percent) of the net volume of live trees is in hardwoods. Two species groups, other eastern soft hardwoods and select white oaks, are predominant; each represents about 16 percent of the total live-tree volume. The largest components of the other eastern soft hardwoods species group are American sycamore and American elm; white and bur oak dominate the select white oak group (Table 4).

Growing-stock volume has traditionally been used to ascertain wood volume. It is the amount of solid wood on timberland in commercial trees[4] 5 inches in d.b.h. or larger, from 1 foot above ground (stump) to a minimum 4-inch top diameter, with deductions for poor form or defect. Excluded are rough, rotten, and dead trees and trees of noncommercial species. Growing-stock volume on Illinois timberland totals 6.8 billion ft^3, or 90 percent of the total live volume on timberland (Table 5).

The remaining 10 percent of live-tree volume on timberland (746.6 million ft^3) is in cull trees. Cull trees are unsuitable for use as wood products due to poor form, rot, or defect, or because they are considered an undesirable species. The volume of cull trees is often used for commercial purposes. For instance, rough trees are sometimes harvested for chipping or to make pallets. Salvable dead trees contain 114.7 million ft^3 of wood volume (Table 5). Salvable dead trees are standing or down dead trees that are considered merchantable by regional standards. They have some commercial applications and serve as an important source of firewood. Salvable dead trees also play an important role in overall species diversity, providing habitat for a wealth of wildlife species, including cavity nesting birds and mammals that require den sites.

Total growing-stock volume has significantly increased in every inventory, rising from 2.4 billion ft^3 in 1948 to 6.8 billion ft^3 in 2005 (Fig. 4, Table 6). Currently, 97 percent of total growing-stock volume is in hardwood species. Sixty-eight percent of total growing-stock volume is contained in five forest types: white oak/red oak/hickory (37 percent), mixed upland hardwoods and silver maple/American elm (9 percent each), sugarberry/hackberry/elm/green ash (7 percent), and white oak (6 percent). Total net volume of softwood growing stock is 196.7 million ft^3. The majority of this volume is in softwood-dominated stands (174.6 million ft^3); however, a small amount (22.1 million ft^3) is in hardwood-dominated stands (Table 6).

[4] *Commercial trees are tree species presently or prospectively suitable for industrial wood products (does not include species of typically small size, poor form, or inferior quality, e.g., hophornbeam, osage-orange, and redbud).*

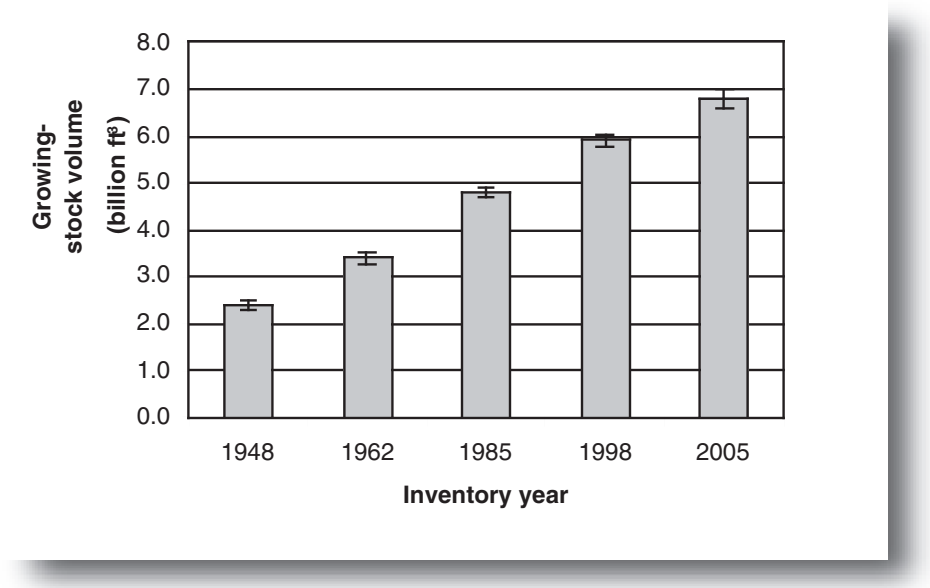


Figure 4.—*Growing-stock volume on timberland, Illinois, 1948-2005. The vertical line at the top of each bar represents the sample error associated with each inventory.*

More than one-fourth of growing-stock volume is in trees that are 21 inches or larger in d.b.h. (Table 7). A significant amount of this volume is in oak species, particularly white, black, and northern red oak, as well as in eastern cottonwood, silver maple, and American sycamore. Of the 3 percent of net volume of growing stock occupied by softwoods, 86 percent is in trees that are less than 17 inches in d.b.h. (Table 7).

Sawtimber volume is the volume of the saw log portion of live sawtimber in board feet and is generally measured using the International 1/4-inch rule. Net sawtimber volume on Illinois timberland totals 25.3 billion board feet; 96 percent of this volume is in hardwood species (Table 8). Half of the volume of sawtimber is in seven hardwood species—white oak (14 percent), black oak and silver maple (8 percent each), northern red oak (7 percent), eastern cottonwood (5 percent), and shagbark hickory and American sycamore (4 percent each) (Table 8).

Biomass

Live-tree aboveground biomass is estimated for growing-stock trees, nongrowing-stock trees, and live trees that are 1 to 5 inches in d.b.h. In 2005, the estimate of live-tree aboveground biomass on timberland in Illinois was 210.5 million dry tons, or an average of 48 dry tons per acre of timberland (Table 9). Eighty-three percent of tree biomass is in growing-stock trees, 11 percent is in nongrowing-stock trees, and approximately 6 percent is in trees less than 5 inches in d.b.h. (Table 9). For both growing-stock and nongrowing-stock trees, nearly three-fourths of total aboveground biomass is in the boles of trees. The remainder is in stumps, tops, and limbs. Ninety-eight percent (205.9 million dry tons) of live-tree aboveground biomass is in hardwood species (Table 9). Biomass estimates have become increasingly important for analyses of questions related to wood fiber availability for fuels, assessment of fuels in forest stands, and investigation of carbon sequestration by vegetative biomass and emissions reduction assurances.

Growth, Removals, and Mortality

Between 1998 and 2005, net growth (gross growth minus mortality) of growing stock on timberland increased by an average of 327 million ft^3/yr (Table 10). Ninety-eight percent of annual net growth was due to growth in hardwoods. Net softwood growth reached an average of 7.8 million ft^3/yr (Table 10). Overall, net growth was highest in the other eastern soft hardwoods species group (19 percent); this species group contains hackberry, American sycamore, and the elms. Other fast-growing species groups in Illinois include other select white oaks (42.0 million ft^3/yr), soft maples (33.7 million ft^3/yr), and cottonwood and aspen (30.4 million ft^3/yr) (Table 10).

Since 1998, growing stock has been removed from timberland at an average of 60.6 million ft^3/yr (Table 11). Virtually all removals were from hardwoods as softwood removals totaled 43 thousand ft^3/yr, or less than 0.1 percent of total removals. The other eastern soft hardwoods species group had the highest average annual removals at 10.8 million ft^3/yr, followed by the select white oaks at 10.2 million ft^3/yr. Oak species account for 36 percent of annual removals. Eighty-seven percent of growing-stock removals were on private land (Table 11).

Average annual mortality of growing stock on timberland from 1998 to 2005 was 86.6 million ft^3/yr (Table 12). Hardwood mortality accounted for 98 percent of the total, or 84.8 million ft^3/yr. Two percent of annual mortality, 1.7 million ft^3/yr, was in softwood species. Seventy-seven percent of softwood mortality was in the other yellow pines and the eastern white and red pine species groups (Table 12). On average, more than one-third of annual mortality occurred in the other eastern soft hardwood species group; much of this mortality is likely due to the death of elm trees. Twenty-one percent of total annual mortality was in oak species groups (Table 12).

FOREST HEALTH

The following information about the insects and pathogens affecting Illinois' forests was gathered from the 2005 Insect and Disease Conditions Report (http://www.na.fs.fed.us/fhp/pcond/) and the Central States Forest Health Watch newsletter (http://na.fs.fed.us/fhp/fhw/csfhw/) published by the USDA Forest Service's Northeastern Area, State and Private Forestry. Additional information was obtained from the national Forest Health Monitoring (FHM) program (http://fhm.fs.fed.us/) and the Illinois Department of Agriculture (http://www.agr.state.il.us/index.html). Several issues of concern in 2005 are highlighted here. For more information on the health of Illinois' forests, contact the Illinois Department of Natural Resources.

Native Insects

In 2005, populations of eastern tent caterpillar reached high densities in the southern third of Illinois. Insect activity completely defoliated black cherry trees in this region. Conversely, after an outbreak in southeastern Illinois in 2002, infestation by forest tent caterpillar was low. A viral infection from previous years has caused a collapse in population density from which this insect has not recovered.

Exotic Insects

Asian Longhorned Beetle

Asian longhorned beetle (ALB) was discovered in Chicago in 1998. Surveys conducted to locate infested trees show that eradication efforts have yielded a continued decrease in the number of new infestations of ALB since it was initially discovered. In 2005, there were no new infestations in Chicago. As a result of the continued pattern of reduced activity over several years, the majority of quarantined areas in the Chicago area have been deregulated. Oz Park, which had two infested trees in 2003, is the only remaining quarantined area. Surveys still continue in areas that were formerly quarantined. If ALB is not detected in the next 2 years, Illinois infestations will be classified as eradicated. For more information on the status of ALB in the United States, please visit the USDA Forest Service ALB webpage, http://www.na.fs.fed.us/fhp/alb/index.shtm.

Gypsy Moth

Gypsy moth, a native to Europe and Asia, was introduced to North America in 1869. Since that time, gypsy moth has spread across the Northeastern United States and populations have become established in northeastern counties in Illinois. As part of a joint program among the Forest Service, Illinois Department of Agriculture, and USDA Animal and Plant Health Inspection Service, nearly 30 thousand acres have been treated for gypsy moth under the "Slow the Spread" program. Traps placed in 85 counties in central and southern Illinois caught eight moths, a decrease from the previous year; each moth was caught from a different county. Overall, 2005 populations have remained spotty and have caused little noticeable defoliation. Additional information on gypsy moth can be found by visiting the USDA Forest Service gypsy moth webpage, http://www.fs.fed.us/ne/morgantown/4557/gmoth/.

Emerald Ash Borer

Discovered in southeastern Michigan in 2002, emerald ash borer (EAB) is a bark-boring beetle native to Asia. A pest of ash (*Fraxinus* spp.), larvae feed and produce galleries in the phloem and outer sapwood. This activity disrupts the flow of water and nutrients, girdling the tree and killing it. Depending on the severity of the infestation, ash mortality occurs within 1 to 3 years of initial infestation. The 2005 distribution of EAB extended from Michigan to Indiana and Ohio. In 2006, during the writing of this report, EAB was positively identified at four locations in northeastern Illinois and one location in Maryland. Based on its life history traits and the extent of its damage, EAB is believed to have been present in Illinois for 3 to 5 years before its discovery. Therefore, although surveys conducted in 2005 did not reveal evidence of the beetle, EAB was present in Illinois during the current inventory period.

The method of EAB introduction is unknown. However, beetles are believed to have been introduced to Illinois via firewood originating in Michigan. This type of human-assisted transportation of infested materials has rapidly increased the spread of EAB. The result of both natural and artificial spread, EAB has killed tens of millions of ash in infested zones since 2002. The entire Illinois ash resource, which consists of ash in urban and suburban settings and more than 130 million ash trees on forest land (a live-tree volume of 423 million ft^3), is at risk for substantial mortality. More information on EAB can be found at http://www.emeraldashborer.info.

Diseases

Oak Wilt

Oak wilt, caused by the fungus *Ceratocystis fagacearum*, continues to be the most important source of oak mortality in the Central United States. An endemic disease, oak wilt occurs in patches on the landscape; a suite of natural checks and balances keeps this disease from reaching epidemic proportions. All species of oak are susceptible to oak wilt; however, the disease occurs more frequently and progresses more rapidly in red oak species (O'Brien et al. 2000). Once the fungus is introduced to a tree, it enters the vascular system. The tree then plugs water-conducting tissues in an attempt to block fungal growth. This action disrupts the translocation of water from the roots to the canopy, causing foliage to wilt and die. The disease progresses rapidly and tree mortality occurs within a year of infection (O'Brien et al. 2000). Oak wilt has no cure, so prevention and early detection are important in maintaining tree health. Fungal spores are spread via root grafts or sap-feeding beetles. Injured trees or trees with fresh pruning wounds attract beetles. To avoid spread of the fungus by beetles, trees should not be pruned between April 15 and July 1 (O'Brien et al. 2000).

Dutch Elm Disease

Elm mortality resulting from Dutch elm disease (DED) continues to increase each year. Forty-five counties in Illinois reported moderate to heavy elm mortality in 2005. DED is caused by the fungi *Ophiostoma ulmi* and *O. novo-ulmi*. Susceptibility of elms varies by species. In general, American elm is highly susceptible (Haugen 1998). DED is spread overland by elm bark beetles that pick up fungal spores in diseased trees and deposit them in healthy trees as they bore through the inner bark and sapwood or fed in twig crotches. Local spread is facilitated by root grafts, which allow the fungus to readily move between trees. Following introduction of the fungus, the tree clogs water-conducting tissues in an attempt to block growth of the fungus. Water is then prevented from reaching the crown, causing leaves to wilt and die and leading to tree mortality. Trees are often killed before they reach sawtimber-size; thus, aging stands present a future health risk (Haugen 1998).

Sudden Oak Death

First reported in central California in 1995, sudden oak death (SOD) is caused by the fungal-like pathogen *Phytophthora ramorum*. Species susceptible to *P. ramorum* include a variety of oaks, Douglas-fir, and *Rhododendron* spp. as well as many other trees and shrubs (O'Brien et al. 2002). On oak species, *P. ramorum* causes bleeding cankers to form along the

stem. Cankered trees can survive for one to several years following infection. However, mortality occurs within weeks of the onset of crown dieback. Established populations of *P. ramorum* are known to occur only on the West Coast (O'Brien et al. 2002), but transportation of infected nursery stock has introduced the SOD pathogen to nurseries in a number of eastern and southern states. All Illinois samples collected during the 2005 survey tested negative for *P. ramorum*. Additional information on SOD is available at the California Oak Mortality Task Force webpage, www.suddenoakdeath.org.

Weather

Drought

The summer of 2005 brought extreme drought conditions to west-central and northwestern Illinois. During the same period, southern Illinois experienced moderate to severe drought conditions. By the fall, drought conditions in the northern portion of Illinois were severe to extreme. Many trees in northern and central Illinois had smaller leaves and lost their leaves early (National Drought Mitigation Center 2006). Periods of prolonged drought increase the risk of forest fire and may have a significant impact on tree growth and tree health. Newly planted species, urban trees, and nonnative species are more susceptible to drought (National Drought Mitigation Center 2006).

SUMMARY

Continuing the trend that characterized the latter portion of the 20th century, Illinois timberland is increasing. With an estimated 4.3 million acres, the state's timberland area is dominated by hardwoods. The majority of hardwood stands are in oak/hickory forest types. Sawtimber stands occupy 72 percent of timberland, suggesting that Illinois' forests are maturing. Growing-stock volume is increasing and totals 6.8 billion ft^3. Illinois' forests face threats from native and nonnative insects and diseases. Oak wilt is among the state's major forest health concerns as it remains an important source of oak mortality. Although management programs for ALB have limited additional spread, EAB has emerged as a new threat to the diversity of Illinois' forests.

APPENDIX

Accuracy of the Inventory

Sampling errors measure the uncertainty in estimates derived from a portion of a population rather than from the population as a whole. The 2005 Illinois forest inventory includes a total sample of 6,107 plots over the entire state. The following are sampling errors for the estimates of statewide totals in this report.

Table no.	Variable	Estimate	Sampling error
			Percent
1	Area of forest land (thousand acres)	4,525.2	1.87
2	Area of timberland (thousand acres)	4,363.0	1.98
4	All-live volume on forest land (thousand ft^3)	7,954,936	2.73
5	All-live volume on timberland (thousand ft^3)	7,639,856	2.87
6	Growing-stock volume on timberland (thousand ft^3)	6,875,239	2.99
8	Sawtimber volume on timberland (thousand board feet)	25,388,658	3.32
9	All-live aboveground biomass on timberland (thousand dry tons)	210,590	2.67
10	Growing-stock growth on timberland (thousand ft^3/yr)	327,082	11.83
11	Growing-stock removals on timberland (thousand ft^3/yr)	60,685	24.01
12	Growing-stock mortality on timberland (thousand ft^3/yr)	86,651	12.52

These sampling errors indicate that the chances are two in three that if a 100-percent inventory had been taken using the same methods, the results would have been within the limits indicated. For example, the estimated growing-stock volume on timberland is 6,875.2 million ft^3 with a sampling error of +/- 2.99 percent (+/- 205.5 million ft^3).

Inventory Methods

Since the 1998 inventory of Illinois, several changes have been made to NRS-FIA inventory methods to improve the quality of the inventory, and to meet increasing demands for timely forest-resource information. The most significant difference between inventories has been the change from a periodic to an annual inventory. Historically, NRS-FIA inventoried each state on a cycle that averaged 12 years. However, the need for timely and consistent data across large geographical regions combined with national legislative mandates resulted in NRS-FIA's implementation of an annual inventory system.

The first annual inventory of Illinois began in 2001. Under this system, about one-fifth of all field plots are measured each year. With the completion of the 2005 measurements, the entire inventory cycle is now complete. For this and subsequent inventories, NRS-FIA will analyze and report results as a moving 5-year average. For example, NRS-FIA will be able to generate a report based on inventory results for 2002 through 2006 or for 2003 through 2007.

Other significant changes between inventories include a new sampling design and field plot configuration, use of new remote-sensing technology, and gathering of additional field and remotely sensed data. Changes in remote sensing technology since the previous inventory in 1998 have allowed NRS-FIA to use classifications of Multi-Resolution Land Characterization data and other available remote-sensing products to stratify the total area of the State and improve estimates.

New algorithms were used in 2003 to assign forest type and stand-size class to each condition observed on a plot. These algorithms are being used by FIA nationwide to provide consistency from state to state and will be

used to reassign the forest type and stand-size class of every plot in the 1998 inventory when it is updated. As a result, changes in forest type and stand-size class will reflect actual changes in the forest rather than changes in how values are computed. Because the list of recognized forest types, groupings of these forest types for reporting purposes, models used to assign stocking values to individual trees, definition of nonstocked, and names given to the forest types have changed with the new algorithms, comparison between the published 2005 inventory results and those published for the 1998 inventory may not be valid. For additional details on algorithms used in both inventories, contact NRS-FIA.

Sampling Phases

The 2005 Illinois survey is based on a three-phase inventory. In the first phase, classified satellite imagery is used to stratify the state and aerial photographs are used to select plots for measurement. The second phase involves measuring a traditional FIA suite of mensurational variables (basic tree and stand attributes), and the third focuses on measuring of a suite of variables related to forest health.

The only plots that could not be measured were: (1) plots on private land where field personnel were unable to obtain permission from the owner to measure the field plot, and (2) plots that were inaccessible because of a hazard or danger to field personnel. The methods used in preparing this report were adjusted to account for sites where access was denied or hazardous.

Phase 1

The 2005 inventory used a classification of satellite imagery. FIA used the imagery to form two initial strata: forest and nonforest. Pixels within 60 m (2-pixel widths) of a forest/nonforest boundary formed two additional strata: forest/forest edge and nonforest edge. Forest pixels within 60 m on the forest side of a forest/nonforest boundary were classified in a forest edge stratum. Pixels within 60 m of the boundary on the nonforest side were classified in a nonforest edge stratum. The estimated population total for a variable is the sum across all strata of the product of each stratum's estimated area and the variable's estimated mean per unit area for the stratum.

Phase 2

Phase 2 involved measuring the annual sample of Illinois field plots. Current FIA precision standards for annual inventories require a sampling intensity of one plot for approximately every 6,000 acres. FIA has divided the entire area of the United States into nonoverlapping hexagons, each of which contains 5,937 acres (McRoberts 1999). An array of field plots was established by selecting one plot from each hexagon based on the following rules: (1) if a FHM plot (Mangold 1998) fell within a hexagon, it was selected; (2) if no FHM plot fell within a hexagon, the existing NRS-FIA plot from the 1990 inventory nearest the hexagon center was selected; and (3) if neither FHM nor existing NRS-FIA plots fell within the hexagon, a new NRS-FIA plot was established in the hexagon (McRoberts 1999). This array of plots is designated the federal base sample and is considered an equal probability sample; its measurement in Illinois is funded by the Federal government.

The total federal base sample of plots was systematically divided into five interpenetrating, nonoverlapping subsamples or panels. Each year, the plots in a single panel are measured; panels are selected on a 5-year, rotating basis (McRoberts 1999). For estimation purposes, the measurement of each panel of plots can be considered an independent systematic sample of all land in a state. Field crews measure vegetation on plots forested at the time of the last inventory and on plots currently classified as forest by trained photointerpreters using aerial photographs or digital orthoquads.

Phase 3

NRS-FIA has two categories of field plot measurements: phase 2 field plots (standard FIA plots) and phase 3 plots (forest health plots)—to optimize our ability to collect data when available for measurement. Both types of plots are uniformly distributed both geographically

and temporally. Phase 3 plots are measured with the full suite of FHM vegetative and health variables (Mangold 1998) as well as the full suite of measures associated with phase 2 plots. Phase 3 plots must be measured between June 1 and August 30 to accommodate the additional measurement of nonwoody, understory vegetation; ground cover; soils; and other variables. On phase 2 plots, only variables that can be measured throughout the entire year are collected. Results of the 2005 annual inventory are based on field measurements of 1,004 forested phase 2 plots and 84 forested phase 3 plots.

The new national FIA plot configuration (Fig. 5) was first used for data collection in Illinois in 1998. This configuration was also used in the 2005 inventory and will be used in subsequent years.

The overall plot layout for the new configuration consists of four subplots. The centers of subplots 2, 3, and 4 are located 120 feet from the center of subplot 1. The azimuths to subplots 2, 3, and 4 are 0, 120, and 240 degrees, respectively, from the center of subplot 1. The center of the new plot is located at the same point as the center of the previous plot if a previous plot existed at the same location. Trees with a d.b.h. of 5 inches or larger are measured on a 24-foot-radius (1/24-acre) circular subplot. All trees with a d.b.h. 1 inch or larger but less than 5 inches are measured on a 6.8-foot-radius (1/300-acre) circular microplot located 12 feet east of the center of each of the four subplots. Seedlings [trees less than 1 inch d.b.h. and at least 6 inches tall (softwood species) or 12 inches tall (hardwood species)] are counted but not individually measured on this same microplot. Forest conditions on the four subplots are recorded. Factors that differentiate forest conditions are changes in forest type, stand-size class, land use, ownership, and density. Each condition that occurs anywhere on any subplot is identified, described, and mapped if the area of the condition meets or exceeds 1 acre in size.

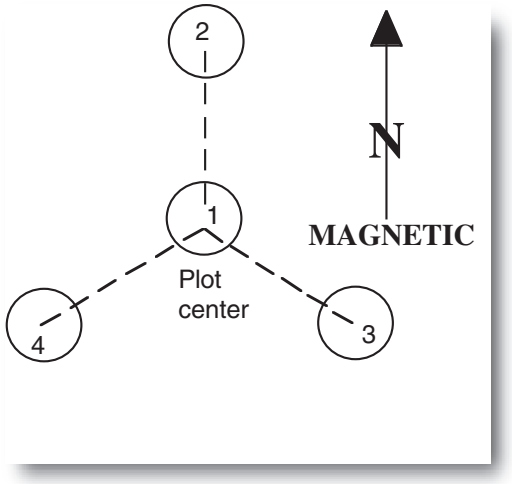


Figure 5.—*Current NRS-FIA field plot design.*

Field plot measurements are combined with phase 1 estimates in the data compilation and table production process. However, other tabular data can be generated at the Forest Inventory and Analysis Data Center webpage, http://www.nrs.fs.fed.us/fia/data-tools/mapping-tools/default.asp.

For additional information, contact: Program Manager, Forest Inventory and Analysis, Northern Research Station, 1992 Folwell Avenue, St. Paul, MN 55108 or State Forester, Illinois Department of Natural Resources, Office of Resource Conservation, Division of Forest Resources, 1 Natural Resource Way, Springfield, IL 62702-1271

LITERATURE CITED

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.

Central States Forest Experiment Station. 1949. **Forest resources of Illinois.** For. Surv. Rel. 7. Columbus, OH: U.S. Department of Agriculture, Forest Service, Central States Forest Experiment Station.

Essex, B.L.; Gansner, D.A. 1965. **Illinois' timber resources.** Resour. Bull. LS-3. St. Paul, MN: U.S. Department of Agriculture, Forest Service, Lakes States Forest Experiment Station. 56 p.

Haugen, L. 1998. **How to identify, prevent, and control Dutch elm disease.** NA-PR-07-98. Radnor, PA: U.S. Department of Agriculture, Forest Service, Northeastern Area, State and Private Forestry. 26 p. http://www.na.fs.fed.us/spfo/pubs/howtos/ht_ded/ht_ded.htm

Illinois Department of Natural Resources. 2003. **Illinois forest resource facts.** Springfield, IL: Illinois Department of Natural Resources, Division of Forest Resources. http://dnr.state.il.us/conservation/forestry/Fact.htm.

Illinois State Natural Survey Division. 1960. **Forest, wildlife and recreational resources.** Springfield, IL: Illinois Department of Registration and Education, Division of Industrial Planning and Development. 47 p.

Mangold, R.D. 1998. **Forest health monitoring field methods guide (National 1998).** Research Triangle Park, NC: U.S. Department of Agriculture, Forest Service, National Forest Health Monitoring Program. 429 p.

McRoberts, R.E. 1999. **Joint annual forest inventory and monitoring system, the North Central perspective.** Journal of Forestry. 97(12): 27-31.

National Drought Mitigation Center. 2006. **Drought impact reporter database.** Lincoln, NE: National Drought Mitigation Center, University of Nebraska-Lincoln. http://droughtreporter.unl.edu/.

O'Brien, J.G.; Mielke, M.E.; Oak, S.; Moltzan, B. 2002. **Sudden oak death: pest alert.** NA-PR-02-02. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Area, State and Private Forestry. 2 p.

O'Brien, J.G.; Mielke, M.E.; Starkey, D.; Juzwik, J. 2000. **How to identify, prevent, and control oak wilt.** NA-PR-03-00. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Area, State and Private Forestry. 28 p. http://www.na.fs.fed.us/spfo/pubs/howtos/ht_oakwilt/toc.htm

Raile, G.K.; Leatherberry, E.C. 1988. **Illinois' forest resources.** Resour. Bull. NC-105. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 113 p.

Schmidt, T.L.; Hansen, M.H.; Solomakos, J.A. 2000. **Illinois' forests in 1998.** Resour. Bull. NC-198. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 133 p.

Telford, C.J. 1926. **Third report on a forest survey of Illinois.** Illinois Natural History Survey Bulletin. 1(1): 1-102.

U.S. Census Bureau. 2006. **State and county quick facts.** Last revised 8 June 2006. Washington, DC: U.S. Census Bureau. http://quickfacts.census.gov/qfd/states/17000.html.

TABLE TITLES

TABLES

Table 1. -- Area of forest land by forest type group, forest type, and owner category, Illinois, 2001-2005

(In thousand acres)

Forest type group/ forest type	Owner category			
	All owners	Public	Private	Unidentified owner
Softwood type groups				
White / red / jack pine group				
Jack pine	7.8	6.3	1.5	- -
Red pine	7.1	- -	7.1	- -
Eastern white pine	24.6	11.7	12.9	- -
All forest types	39.5	18.0	21.5	- -
Loblolly / shortleaf pine group				
Shortleaf pine	29.6	22.2	7.4	- -
All forest types	29.6	22.2	7.4	- -
Pinyon / juniper group				
Eastern redcedar	31.5	2.8	28.6	- -
All forest types	31.5	2.8	28.6	- -
Exotic softwoods group				
Scotch pine	12.5	1.8	10.7	- -
All forest types	12.5	1.8	10.7	- -
All softwood groups	113.0	44.7	68.3	- -
Hardwood type groups				
Oak / pine group				
Oak / pine group	1.0	- -	1.0	- -
Eastern redcedar / hardwood	27.8	- -	27.8	- -
Shortleaf pine / oak	6.3	6.0	0.3	- -
Loblolly pine / hardwood	3.0	3.0	- -	- -
Other pine / hardwood	6.3	- -	6.3	- -
All forest types	44.4	9.0	35.4	- -
Oak / hickory group				
Post oak / blackjack oak	78.8	8.2	70.6	- -
White oak / red oak / hickory	1,561.4	267.0	1,294.4	- -
White oak	241.3	57.0	184.3	- -
Northern red oak	68.9	17.8	51.1	- -
Yellow-poplar / white oak / red oak	20.9	18.1	2.8	- -
Sassafras / persimmon	81.0	6.0	75.0	- -
Sweetgum / yellow-poplar	68.6	22.9	45.7	- -
Bur oak	61.5	12.1	49.4	- -
Yellow-poplar	8.2	5.7	2.5	- -
Black walnut	36.6	5.4	31.2	- -
Black locust	28.3	7.4	20.9	- -
Chestnut oak / black oak / scarlet oak	7.6	- -	7.6	- -
Mixed upland hardwoods	669.4	54.4	615.0	- -
All forest types	2,932.6	482.0	2,450.6	- -
Oak / gum / cypress group				
Swamp chestnut oak / cherrybark oak	5.5	- -	5.5	- -
Sweetgum / Nuttall oak / willow oak	0.9	- -	0.9	- -
Overcup oak / water hickory	6.0	- -	6.0	- -
Baldcypress / water tupelo	17.0	3.0	14.0	- -
Sweetbay / swamp tupelo / red maple	13.0	- -	13.0	- -
All forest types	42.5	3.0	39.5	- -

(Table 1 continued on next page)

(Table 1 continued)

Forest type group/ forest type	Owner category			
	All owners	Public	Private	Unidentified owner
Hardwood type groups				
Elm / ash / cottonwood group				
Black ash / American elm / red maple	7.3	1.2	6.0	--
River birch / sycamore	77.0	5.9	71.1	--
Cottonwood	66.2	19.7	46.5	--
Willow	35.0	16.1	18.9	--
Sycamore / pecan / American elm	78.2	14.6	63.6	--
Sugarberry / hackberry / elm / green ash	436.9	92.8	344.1	--
Silver maple / American elm	264.9	54.4	210.5	--
Red maple / lowland	21.8	--	21.8	--
Cottonwood / willow	31.9	15.1	16.8	--
All forest types	1,019.1	219.8	799.3	--
Maple / beech / birch group				
Sugar maple / beech / yellow birch	158.8	14.0	144.8	--
Black cherry	18.6	--	18.6	--
Cherry / ash / yellow-poplar	43.3	6.7	36.6	--
Hard maple / basswood	63.3	--	63.3	--
Elm / ash / locust	61.0	12.6	48.4	--
Red maple / upland	4.2	--	4.2	--
All forest types	349.1	33.3	315.8	--
Aspen / birch group				
Aspen	1.4	--	1.4	--
All forest types	1.4	--	1.4	--
Exotic hardwoods group				
Other exotic hardwoods	1.5	--	1.5	--
All forest types	1.5	--	1.5	--
All hardwood groups	4,390.6	747.1	3,643.4	--
Nonstocked	21.7	3.1	18.5	--
All forest groups	4,525.2	795.0	3,730.2	--

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table 2. -- Area of timberland by major forest type group, stand origin, and owner category, Illinois, 2001-2005

(In thousand acres)

Major forest type group and stand origin	Owner category			
	All owners	Public	Private	Unidentified owner
Softwood type groups				
Natural	40.3	6.3	34.0	- -
Planted	72.2	37.9	34.3	- -
All softwood types	112.5	44.2	68.3	- -
Hardwood type groups				
Natural	4,205.5	582.6	3,622.9	- -
Planted	23.4	9.1	14.3	- -
All hardwood types	4,228.9	591.7	3,637.2	- -
Nonstocked	21.7	3.1	18.5	- -
All groups	4,363.0	639.1	3,724.0	- -

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table 3. -- Area of timberland by forest type group, forest type, and stand-size class, Illinois, 2001-2005

(In thousand acres)

Forest type group/ forest type	Stand-size class				
	All stands	Sawtimber	Poletimber	Sapling-seedling	Non-stocked
Softwood type groups					
White / red / jack pine group					
Jack pine	7.8	6.3	1.5	- -	- -
Red pine	7.1	7.1	- -	- -	- -
Eastern white pine	24.6	21.6	3.0	- -	- -
All forest types	39.5	35.0	4.5	- -	- -
Loblolly / shortleaf pine group					
Shortleaf pine	29.1	28.2	0.6	0.3	- -
All forest types	29.1	28.2	0.6	0.3	- -
Pinyon / juniper group					
Eastern redcedar	31.5	5.2	20.3	6.0	- -
All forest types	31.5	5.2	20.3	6.0	- -
Exotic softwoods group					
Scotch pine	12.5	5.3	5.3	1.8	- -
All forest types	12.5	5.3	5.3	1.8	- -
All softwood groups	112.5	73.7	30.7	8.1	- -
Hardwood type groups					
Oak / pine group					
Oak / pine group	1.0	1.0	- -	- -	- -
Eastern redcedar / hardwood	27.8	12.7	7.0	8.0	- -
Shortleaf pine / oak	6.3	6.0	0.3	- -	- -
Loblolly pine / hardwood	3.0	3.0	- -	- -	- -
Other pine / hardwood	6.3	6.3	- -	- -	- -
All forest types	44.4	29.0	7.4	8.0	- -
Oak / hickory group					
Post oak / blackjack oak	78.8	66.8	9.1	2.9	- -
White oak / red oak / hickory	1,509.2	1,226.0	230.9	52.3	- -
White oak	227.8	220.6	7.1	- -	- -
Northern red oak	63.3	63.3	- -	- -	- -
Yellow-poplar / white oak / red oak	20.9	15.1	- -	5.8	- -
Sassafras / persimmon	76.9	29.8	43.1	4.0	- -
Sweetgum / yellow-poplar	61.0	30.0	29.0	2.1	- -
Bur oak	53.5	50.1	2.0	1.3	- -
Yellow-poplar	8.2	3.5	4.7	- -	- -
Black walnut	36.6	22.2	8.4	6.1	- -
Black locust	28.3	4.2	24.1	- -	- -
Chestnut oak / black oak / scarlet oak	7.6	- -	- -	7.6	- -
Mixed upland hardwoods	642.9	359.6	204.0	79.3	- -
All forest types	2,815.1	2,091.1	562.6	161.5	- -
Oak / gum / cypress group					
Swamp chestnut oak / cherrybark oak	5.5	5.5	- -	- -	- -
Sweetgum / Nuttall oak / willow oak	0.9	- -	0.9	- -	- -
Overcup oak / water hickory	6.0	6.0	- -	- -	- -
Baldcypress / water tupelo	17.0	7.3	6.7	3.0	- -
Sweetbay / swamp tupelo / red maple	13.0	13.0	- -	- -	- -
All forest types	42.5	31.9	7.6	3.0	- -

(Table 3 continued on next page)

(Table 3 continued)

Forest type group/ forest type	Stand-size class				
	All stands	Sawtimber	Poletimber	Sapling-seedling	Non-stocked
Hardwood type groups					
Elm / ash / cottonwood group					
Black ash / American elm / red maple	7.3	2.7	4.6	--	--
River birch / sycamore	77.0	58.3	18.7	--	--
Cottonwood	66.2	65.7	0.5	--	--
Willow	35.0	14.9	11.4	8.7	--
Sycamore / pecan / American elm	69.1	50.8	6.1	12.1	--
Sugarberry / hackberry / elm / green ash	423.7	258.6	99.7	65.4	--
Silver maple / American elm	256.3	218.8	16.3	21.2	--
Red maple / lowland	21.8	9.9	11.9	--	--
Cottonwood / willow	23.9	23.9	--	--	--
All forest types	980.3	703.6	169.2	107.5	--
Maple / beech / birch group					
Sugar maple / beech / yellow birch	158.8	123.4	19.6	15.8	--
Black cherry	18.6	--	7.0	11.6	--
Cherry / ash / yellow-poplar	43.3	8.7	23.5	11.1	--
Hard maple / basswood	63.3	51.3	12.0	--	--
Elm / ash / locust	55.5	22.2	30.3	3.0	--
Red maple / upland	4.2	4.2	--	--	--
All forest types	343.7	209.8	92.4	41.5	--
Aspen / birch group					
Aspen	1.4	--	1.4	--	--
All forest types	1.4	--	1.4	--	--
Exotic hardwoods group					
Other exotic hardwoods	1.5	1.5	--	--	--
All forest types	1.5	1.5	--	--	--
All hardwood groups	4,228.9	3,066.8	840.6	321.5	--
Nonstocked	21.7	--	--	--	21.7
All forest groups	4,363.0	3,140.5	871.3	329.5	21.7

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table 4. -- Net volume of all live trees on forest land by species group, species, and owner category, Illinois, 2001-2005

(In thousand cubic feet)

Species group/ species	Owner category			
	All owners	Public	Private	Unidentified owner
Softwoods				
Loblolly and shortleaf pines				
Shortleaf pine	68,453	59,868	8,585	- -
Loblolly pine	2,401	2,401	- -	- -
All species	70,854	62,270	8,585	- -
Other yellow pines				
Scotch pine	6,052	795	5,257	- -
All species	6,052	795	5,257	- -
Eastern white and red pines				
Red pine	20,064	2,651	17,413	- -
Eastern white pine	84,524	35,888	48,636	- -
All species	104,588	38,540	66,049	- -
Jack pine				
Jack pine	5,341	4,265	1,076	- -
All species	5,341	4,265	1,076	- -
Spruce and balsam fir				
White spruce	4,350	3,393	957	- -
All species	4,350	3,393	957	- -
Cypress				
Baldcypress	7,009	- -	7,009	- -
All species	7,009	- -	7,009	- -
Other eastern softwoods				
Eastern redcedar	42,951	4,364	38,587	- -
Tamarack (native)	1,731	1,731	- -	- -
Blue spruce	130	- -	130	- -
All species	44,812	6,095	38,717	- -
Total softwoods	243,006	115,356	127,650	- -
Hardwoods				
Select white oaks				
White oak	957,299	214,107	743,192	- -
Swamp white oak	38,092	13,827	24,265	- -
Bur oak	234,225	25,371	208,854	- -
Chinkapin oak	21,353	1,226	20,127	- -
All species	1,250,968	254,531	996,437	- -
Select red oaks				
Cherrybark oak	15,601	715	14,886	- -
Northern red oak	447,694	109,038	338,656	- -
Shumard oak	269	- -	269	- -
All species	463,563	109,753	353,811	- -
Other white oaks				
Overcup oak	7,589	- -	7,589	- -
Post oak	139,618	32,236	107,382	- -
All species	147,207	32,236	114,971	- -

(Table 4 continued on next page)

(Table 4 continued)

Species group/ species	Owner category			
	All owners	Public	Private	Unidentified owner
Hardwoods				
Other red oaks				
Scarlet oak	7,200	4,667	2,533	- -
Northern pin oak	19,810	1,508	18,302	- -
Southern red oak	30,644	6,688	23,955	- -
Shingle oak	167,851	17,008	150,843	- -
Blackjack oak	6,897	1,150	5,747	- -
Pin oak	166,950	14,291	152,658	- -
Willow oak	188	- -	188	- -
Black oak	526,419	108,464	417,955	- -
All species	925,958	153,777	772,181	- -
Hickory				
Hickory spp.	653	- -	653	- -
Water hickory	890	890	- -	- -
Bitternut hickory	121,864	18,424	103,440	- -
Pignut hickory	213,235	62,849	150,386	- -
Pecan	25,379	- -	25,379	- -
Shellbark hickory	19,431	997	18,434	- -
Shagbark hickory	303,505	31,024	272,482	- -
Black hickory	4,734	- -	4,734	- -
Mockernut hickory	82,449	11,297	71,152	- -
All species	772,141	125,481	646,660	- -
Yellow birch				
Yellow birch	874	- -	874	- -
All species	874	- -	874	- -
Hard maple				
Black maple	13,774	- -	13,774	- -
Sugar maple	269,588	57,684	211,905	- -
All species	283,362	57,684	225,678	- -
Soft maple				
Red maple	119,284	25,177	94,107	- -
Silver maple	655,053	168,788	486,264	- -
All species	774,337	193,966	580,371	- -
Beech				
American beech	19,860	10,208	9,652	- -
All species	19,860	10,208	9,652	- -
Sweetgum				
Sweetgum	103,383	32,529	70,855	- -
All species	103,383	32,529	70,855	- -
Tupelo and blackgum				
Water tupelo	1,847	69	1,778	- -
Blackgum	21,424	12,537	8,886	- -
All species	23,271	12,606	10,665	- -
Ash				
White ash	156,400	21,664	134,735	- -
Black ash	3,004	754	2,250	- -
Green ash	263,582	60,249	203,333	- -
Pumpkin ash	958	- -	958	- -
All species	423,944	82,668	341,276	- -

(Table 4 continued)

Species group/ species	Owner category			
	All owners	Public	Private	Unidentified owner
Hardwoods				
Cottonwood and aspen				
Balsam poplar	- -	- -	- -	- -
Eastern cottonwood	327,609	82,357	245,252	- -
Bigtooth aspen	3,759	504	3,256	- -
Swamp cottonwood	424	- -	424	- -
Quaking aspen	1,107	- -	1,107	- -
All species	332,899	82,860	250,039	- -
Basswood				
American basswood	72,136	5,520	66,616	- -
All species	72,136	5,520	66,616	- -
Yellow-poplar				
Yellow-poplar	126,959	68,679	58,280	- -
All species	126,959	68,679	58,280	- -
Black walnut				
Black walnut	237,273	41,310	195,963	- -
All species	237,273	41,310	195,963	- -
Other eastern soft hardwoods				
Boxelder	129,141	19,032	110,110	- -
Ohio buckeye	4,950	1,061	3,889	- -
River birch	41,474	1,624	39,850	- -
Northern catalpa	864	- -	864	- -
Sugarberry	2,861	382	2,478	- -
Hackberry	219,172	35,400	183,772	- -
Butternut	1,329	- -	1,329	- -
Cucumbertree	473	444	28	- -
American sycamore	278,019	28,654	249,365	- -
Black cherry	182,717	20,847	161,870	- -
Black willow	78,908	32,810	46,098	- -
Sassafras	57,832	8,730	49,102	- -
Winged elm	6,605	2,931	3,674	- -
American elm	251,755	27,669	224,086	- -
Siberian elm	1,647	- -	1,647	- -
Slippery elm	90,413	10,772	79,642	- -
All species	1,348,161	190,355	1,157,805	- -
Other eastern hard hardwoods				
Flowering dogwood	3,466	1,468	1,998	- -
Common persimmon	21,069	1,611	19,458	- -
Honeylocust	158,280	14,725	143,555	- -
Kentucky coffeetree	6,308	150	6,158	- -
Mulberry spp.	311	- -	311	- -
White mulberry	6,057	477	5,580	- -
Red mulberry	25,277	2,581	22,696	- -
Black locust	71,642	15,713	55,929	- -
Rock elm	282	91	191	- -
All species	292,692	36,816	255,877	- -

(Table 4 continued on next page)

(Table 4 continued)

Species group/ species	Owner category			
	All owners	Public	Private	Unidentified owner
Hardwoods				
Eastern noncommercial hardwoods				
Ailanthus	194	194	- -	- -
Mimosa, silktree	59	- -	59	- -
Serviceberry spp.	- -	- -	- -	- -
Pawpaw	299	109	191	- -
American hornbeam, musclewood	943	348	596	- -
Eastern redbud	4,536	1,344	3,192	- -
Hawthorn spp.	3,509	1,369	2,140	- -
Cockspur hawthorn	518	238	281	- -
Downy hawthorn	249	83	166	- -
Osage-orange	92,211	2,276	89,935	- -
Apple spp.	653	- -	653	- -
Eastern hophornbeam	8,991	976	8,015	- -
Cherry and plum spp.	82	- -	82	- -
Chokecherry	- -	- -	- -	- -
American plum	654	- -	654	- -
Peachleaf willow	46	- -	46	- -
Russian-olive	- -	- -	- -	- -
All species	112,942	6,935	106,008	- -
Total hardwoods	7,711,930	1,497,912	6,214,018	- -
All species groups	7,954,936	1,613,268	6,341,668	- -

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 5. -- Net volume of all live trees and salvable dead trees on timberland by class of timber and softwood/hardwood species category, Illinois, 2001-2005

(In thousand cubic feet)

Class of timber	All species	Softwood species	Hardwood species
Live trees			
Growing-stock trees			
Sawtimber			
Saw log portion	4,866,861	157,694	4,709,167
Upper stem portion	618,729	19,662	599,066
Total	5,485,590	177,357	5,308,233
Poletimber	1,389,649	51,731	1,337,918
All growing-stock trees	6,875,239	229,088	6,646,151
Cull trees			
Rough trees[1]			
Sawtimber size	517,051	9,413	507,638
Poletimber size	201,829	3,352	198,477
Total	718,879	12,765	706,115
Rotten trees[1]			
Sawtimber size	39,742	- -	39,742
Poletimber size	5,997	- -	5,997
Total	45,738	- -	45,738
All live cull trees	764,617	12,765	751,853
All live trees	7,639,856	241,853	7,398,004
Salvable dead trees			
Sawtimber size	87,994	515	87,480
Poletimber size	26,706	1,764	24,941
All salvable dead trees	114,700	2,279	112,421
All classes	7,754,556	244,131	7,510,425

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

[1] Includes noncommercial species.

Table 6. -- Net volume of growing stock on timberland by forest type group, forest type, and softwood/hardwood species category, Illinois, 2001-2005

(In thousand cubic feet)

Forest type group/ forest type	All species	Softwood species	Hardwood species
Softwood type groups			
White / red / jack pine group			
Jack pine	16,721	16,439	282
Red pine	14,692	14,692	- -
Eastern white pine	61,045	59,206	1,840
All forest types	92,459	90,337	2,122
Loblolly / shortleaf pine group			
Shortleaf pine	70,769	57,421	13,347
All forest types	70,769	57,421	13,347
Pinyon / juniper group			
Eastern redcedar	19,942	15,439	4,503
All forest types	19,942	15,439	4,503
Exotic softwoods group			
Scotch pine	13,598	11,421	2,176
All forest types	13,598	11,421	2,176
All softwood groups	196,767	174,618	22,149
Hardwood type groups			
Oak / pine group			
Oak / pine group	7,623	7,155	469
Eastern redcedar / hardwood	11,012	3,520	7,492
Shortleaf pine / oak	12,709	6,306	6,402
Loblolly pine / hardwood	12,378	2,401	9,977
Other pine / hardwood	11,067	3,139	7,928
All forest types	54,789	22,522	32,267
Oak / hickory group			
Post oak / blackjack oak	106,593	- -	106,593
White oak / red oak / hickory	2,551,931	13,931	2,537,999
White oak	451,498	1,044	450,455
Northern red oak	125,550	146	125,404
Yellow-poplar / white oak / red oak	43,980	1,293	42,687
Sassafras / persimmon	84,275	379	83,896
Sweetgum / yellow-poplar	120,481	- -	120,481
Bur oak	108,883	- -	108,883
Yellow-poplar	18,774	- -	18,774
Black walnut	22,931	- -	22,931
Black locust	29,242	- -	29,242
Chestnut oak / black oak / scarlet oak		- -	
Mixed upland hardwoods	609,222	6,474	602,748
All forest types	4,273,360	23,266	4,250,094

(Table 6 continued on next page)

(Table 6 continued)

Forest type group/ forest type	All species	Softwood species	Hardwood species
Hardwood type groups			
Oak / gum / cypress group			
Swamp chestnut oak / cherrybark oak	14,086	- -	14,086
Sweetgum / Nuttall oak / willow oak	1,683	- -	1,683
Overcup oak / water hickory	8,537	- -	8,537
Baldcypress / water tupelo	11,374	7,009	4,365
Sweetbay / swamp tupelo / red maple	31,083	- -	31,083
All forest types	66,763	7,009	59,754
Elm / ash / cottonwood group			
Black ash / American elm / red maple	15,588	- -	15,588
River birch / sycamore	173,405	- -	173,405
Cottonwood	199,663	277	199,386
Willow	40,168	- -	40,168
Sycamore / pecan / American elm	153,736	- -	153,736
Sugarberry / hackberry / elm / green ash	505,737	886	504,851
Silver maple / American elm	596,836	- -	596,836
Red maple / lowland	27,006	- -	27,006
Cottonwood / willow	75,325	- -	75,325
All forest types	1,787,463	1,163	1,786,301
Maple / beech / birch group			
Sugar maple / beech / yellow birch	265,426	259	265,167
Black cherry	6,408	- -	6,408
Cherry / ash / yellow-poplar	41,659	154	41,506
Hard maple / basswood	90,062	- -	90,062
Elm / ash / locust	70,309	97	70,212
Red maple / upland	19,260	- -	19,260
All forest types	493,124	510	492,614
Aspen / birch group			
Aspen	2,007	- -	2,007
All forest types	2,007	- -	2,007
All hardwood groups	6,677,506	54,470	6,623,036
Nonstocked	967	- -	967
All forest groups	6,875,239	229,088	6,646,151

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 7. -- Net volume of growing stock on timberland by species group, species, and diameter class, Illinois, 2001-2005

(In thousand cubic feet)

Species group/ species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods											
Loblolly and shortleaf pines											
Shortleaf pine	67,452	2,855	8,553	13,416	18,602	13,609	4,456	3,526	1,015	1,422	--
Loblolly pine	2,401	--	--	--	--	559	--	--	--	1,842	--
All species	69,854	2,855	8,553	13,416	18,602	14,168	4,456	3,526	1,015	3,264	--
Other yellow pines											
Scotch pine	5,366	704	2,322	2,340	--	--	--	--	--	--	--
All species	5,366	704	2,322	2,340	--	--	--	--	--	--	--
Eastern white and red pines											
Red pine	20,064	1,919	7,957	6,450	1,744	790	1,204	--	--	--	--
Eastern white pine	83,615	1,752	6,487	12,568	18,996	15,046	12,689	6,623	4,513	4,942	--
All species	103,679	3,671	14,444	19,018	20,739	15,836	13,893	6,623	4,513	4,942	--
Jack pine											
Jack pine	5,181	796	2,718	940	--	727	--	--	--	--	--
All species	5,181	796	2,718	940	--	727	--	--	--	--	--
Spruce and balsam fir											
White spruce	4,350	832	536	938	593	1,451	--	--	--	--	--
All species	4,350	832	536	938	593	1,451	--	--	--	--	--
Cypress											
Baldcypress	7,009	76	218	234	480	--	--	--	2,478	3,522	--
All species	7,009	76	218	234	480	--	--	--	2,478	3,522	--
Other eastern softwoods											
Eastern redcedar	31,788	6,946	6,930	8,503	4,087	3,544	1,779	--	--	--	--
Tamarack (native)	1,731	--	--	--	--	--	--	--	1,731	--	--
Blue spruce	130	--	130	--	--	--	--	--	--	--	--
All species	33,649	6,946	7,060	8,503	4,087	3,544	1,779	--	1,731	--	--
Total softwoods	229,088	15,881	35,850	45,389	44,501	35,726	20,127	10,149	9,737	11,728	--
Hardwoods											
Select white oaks											
White oak	844,215	10,508	17,961	32,629	57,216	81,862	101,760	111,882	107,498	244,970	77,929
Swamp white oak	36,292	383	961	2,209	1,142	1,708	2,062	4,465	5,022	18,339	--
Bur oak	174,866	1,305	475	2,605	2,403	8,599	7,842	17,235	14,425	81,133	38,845
Chinkapin oak	20,791	643	1,225	2,598	2,146	2,673	2,451	2,829	1,765	4,460	--
All species	1,076,163	12,838	20,622	40,040	62,909	94,842	114,116	136,411	128,710	348,902	116,773
Select red oaks											
Cherrybark oak	14,886	644	972	922	--	2,596	--	5,815	--	3,937	--
Northern red oak	396,817	6,581	7,468	15,760	23,410	28,628	45,235	50,035	45,675	139,267	34,758
Shumard oak	269	--	--	269	--	--	--	--	--	--	--
All species	411,971	7,225	8,440	16,951	23,410	31,224	45,235	55,850	45,675	143,204	34,758
Other white oaks											
Overcup oak	4,996	--	--	--	--	824	1,223	--	--	2,949	--
Post oak	128,949	2,566	6,670	14,485	23,012	17,131	14,719	13,135	14,697	22,534	--
All species	133,945	2,566	6,670	14,485	23,012	17,955	15,942	13,135	14,697	25,483	--
Other red oaks											
Scarlet oak	7,200	--	--	--	--	373	997	2,359	--	--	3,471
Northern pin oak	18,805	61	234	3,530	589	1,121	919	5,963	--	--	6,388
Southern red oak	30,248	199	--	--	591	1,959	3,706	2,889	4,351	16,552	--
Shingle oak	140,980	6,637	10,957	13,082	11,914	29,675	16,308	15,788	8,323	28,296	--
Blackjack oak	5,671	218	188	1,957	490	--	2,819	--	--	--	--
Pin oak	140,609	1,884	3,681	7,227	12,010	14,420	13,210	21,521	14,169	39,329	13,158
Willow oak	188	--	188	--	--	--	--	--	--	--	--
Black oak	475,103	8,772	12,860	25,783	41,303	70,438	77,189	68,123	39,216	94,893	36,526
All species	818,803	17,771	28,108	51,579	66,898	117,985	115,148	116,643	66,060	179,070	59,543

(Table 7 continued on next page)

(Table 7 continued)

Species group/ species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Hardwoods											
Hickory											
Hickory spp.	61	61	--	--	--	--	--	--	--	--	--
Bitternut hickory	117,786	7,217	10,570	15,590	15,653	16,165	17,860	13,013	7,213	8,546	5,960
Pignut hickory	206,288	13,508	22,542	24,768	43,305	35,371	28,456	13,245	10,732	14,362	--
Pecan	24,610	765	1,909	1,574	569	2,218	--	--	6,018	4,671	6,886
Shellbark hickory	19,068	785	2,074	2,544	3,732	2,545	3,754	1,471	2,164	--	--
Shagbark hickory	281,241	17,800	22,751	33,793	39,508	47,145	40,966	23,894	11,003	32,457	11,925
Black hickory	4,734	408	913	505	579	920	1,410	--	--	--	--
Mockernut hickory	80,068	5,436	12,049	11,046	12,739	9,939	10,300	4,039	8,174	6,346	--
All species	733,857	45,980	72,808	89,819	116,085	114,302	102,745	55,661	45,304	66,381	24,770
Hard maple											
Black maple	11,732	2,469	1,892	2,217	1,236	963	--	--	--	2,956	--
Sugar maple	248,271	21,214	22,900	29,682	23,242	33,819	32,959	24,242	16,948	37,755	5,509
All species	260,003	23,683	24,791	31,898	24,478	34,782	32,959	24,242	16,948	40,710	5,509
Soft maple											
Red maple	100,350	5,793	8,998	12,055	14,169	11,501	4,247	6,805	6,631	30,151	--
Silver maple	547,983	11,460	23,666	28,929	40,261	56,894	51,409	63,595	77,745	120,635	73,390
All species	648,333	17,253	32,664	40,984	54,430	68,395	55,656	70,400	84,375	150,786	73,390
Beech											
American beech	15,385	390	274	140	252	1,067	1,116	2,105	2,210	1,527	6,303
All species	15,385	390	274	140	252	1,067	1,116	2,105	2,210	1,527	6,303
Sweetgum											
Sweetgum	87,125	6,329	8,663	13,274	10,627	11,761	12,927	3,545	13,855	6,144	--
All species	87,125	6,329	8,663	13,274	10,627	11,761	12,927	3,545	13,855	6,144	--
Tupelo and blackgum											
Water tupelo	1,820	756	788	277	--	--	--	--	--	--	--
Blackgum	18,419	1,661	2,518	4,125	976	3,781	--	2,001	1,991	1,365	--
All species	20,239	2,416	3,306	4,402	976	3,781	--	2,001	1,991	1,365	--
Ash											
White ash	141,371	10,137	15,910	14,355	15,521	19,407	12,611	19,805	20,401	8,292	4,931
Black ash	3,004	283	1,216	271	--	1,233	--	--	--	--	--
Green ash	228,591	19,279	23,765	31,191	42,783	31,307	31,757	15,916	11,755	15,266	5,570
Pumpkin ash	958	350	608	--	--	--	--	--	--	--	--
All species	373,923	30,049	41,499	45,818	58,304	51,948	44,368	35,722	32,156	23,558	10,501
Cottonwood and aspen											
Eastern cottonwood	298,781	1,857	3,345	8,431	8,353	11,407	22,013	23,099	21,521	58,505	140,250
Bigtooth aspen	3,713	210	306	760	504	--	--	--	1,933	--	--
Swamp cottonwood	424	--	--	424	--	--	--	--	--	--	--
Quaking aspen	1,107	89	199	--	819	--	--	--	--	--	--
All species	304,025	2,156	3,850	9,615	9,676	11,407	22,013	23,099	23,453	58,505	140,250
Basswood											
American basswood	63,829	4,033	5,397	6,136	7,885	8,526	7,869	6,798	5,017	12,167	--
All species	63,829	4,033	5,397	6,136	7,885	8,526	7,869	6,798	5,017	12,167	--
Yellow-poplar											
Yellow-poplar	121,094	4,213	5,535	9,385	10,351	13,852	7,479	8,464	22,854	32,555	6,406
All species	121,094	4,213	5,535	9,385	10,351	13,852	7,479	8,464	22,854	32,555	6,406
Black walnut											
Black walnut	209,585	9,186	18,165	24,324	31,562	33,200	34,338	18,522	18,204	22,084	--
All species	209,585	9,186	18,165	24,324	31,562	33,200	34,338	18,522	18,204	22,084	--

(Table 7 continued on next page)

(Table 7 continued)

Species group/ species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Hardwoods											
Other eastern soft hardwoods											
Boxelder	66,305	7,562	10,540	8,219	11,703	10,394	4,593	3,879	4,560	4,855	--
Ohio buckeye	3,541	934	543	812	--	--	1,252	--	--	--	--
River birch	40,379	2,763	4,255	5,392	4,287	5,368	7,664	3,323	--	7,327	--
Northern catalpa	239	66	172	--	--	--	--	--	--	--	--
Sugarberry	2,394	732	414	--	1,249	--	--	--	--	--	--
Hackberry	200,489	15,388	22,718	30,504	23,255	23,894	20,641	13,838	16,106	27,510	6,635
Butternut	1,329	70	135	--	1,124	--	--	--	--	--	--
Cucumbertree	473	28	--	197	247	--	--	--	--	--	--
American sycamore	261,148	4,245	7,092	10,421	10,630	17,150	29,022	21,285	15,231	74,906	71,167
Black cherry	149,238	19,153	22,835	24,023	26,491	20,135	15,498	9,339	6,479	5,284	--
Black willow	64,421	4,124	6,511	7,618	4,568	11,497	3,926	4,107	--	22,071	--
Sassafras	44,821	11,584	11,493	5,688	5,982	1,789	2,642	1,367	--	4,276	--
Winged elm	4,678	2,328	1,610	740	--	--	--	--	--	--	--
American elm	209,249	37,559	39,251	32,727	39,117	16,178	12,843	9,032	12,146	10,396	--
Siberian elm	325	174	151	--	--	--	--	--	--	--	--
Slippery elm	78,584	11,002	13,736	12,849	12,050	8,706	7,289	4,485	5,607	2,860	--
All species	1,127,611	117,711	141,456	139,190	140,703	115,112	105,370	70,654	60,129	159,484	77,803
Other eastern hard hardwoods											
Flowering dogwood	1,357	1,294	63	--	--	--	--	--	--	--	--
Common persimmon	20,523	6,591	4,850	2,446	2,630	2,434	--	1,572	--	--	--
Honeylocust	136,169	3,504	7,792	11,831	14,977	26,386	18,450	11,613	18,693	22,923	--
Kentucky coffeetree	6,308	--	--	150	703	813	--	--	--	4,643	--
White mulberry	2,192	1,335	526	331	--	--	--	--	--	--	--
Red mulberry	8,843	1,328	1,697	490	2,296	1,775	1,257	--	--	--	--
Black locust	64,585	4,780	11,726	12,812	10,220	11,568	5,918	2,955	--	--	4,607
Rock elm	282	282	--	--	--	--	--	--	--	--	--
All species	240,259	19,114	26,654	28,059	30,826	42,976	25,624	16,140	18,693	27,565	4,607
Total hardwoods	6,646,151	322,916	448,902	566,101	672,384	773,115	742,907	659,392	600,333	1,299,488	560,614
All species groups	6,875,239	338,796	484,752	611,489	716,885	808,841	763,034	669,541	610,071	1,311,216	560,614

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 8. -- Net volume of sawtimber on timberland by species group, species, and diameter class, Illinois, 2001-2005

(In thousand board feet) [1]

Species group/ species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Softwoods									
Loblolly and shortleaf pines									
Shortleaf pine	285,161	66,282	93,655	70,217	23,140	18,716	5,432	7,719	--
Loblolly pine	12,557	--	--	2,819	--	--	--	9,737	--
All species	297,718	66,282	93,655	73,036	23,140	18,716	5,432	17,457	--
Other yellow pines									
Scotch pine	11,148	11,148	--	--	--	--	--	--	--
All species	11,148	11,148	--	--	--	--	--	--	--
Eastern white and red pines									
Red pine	49,388	30,885	8,537	3,902	6,064	--	--	--	--
Eastern white pine	376,495	58,891	91,899	76,150	65,553	34,088	23,842	26,072	--
All species	425,883	89,776	100,436	80,052	71,618	34,088	23,842	26,072	--
Jack pine									
Jack pine	8,215	4,540	--	3,675	--	--	--	--	--
All species	8,215	4,540	--	3,675	--	--	--	--	--
Spruce and balsam fir									
White spruce	13,500	4,246	2,685	6,569	--	--	--	--	--
All species	13,500	4,246	2,685	6,569	--	--	--	--	--
Cypress									
Baldcypress	32,459	927	2,020	--	--	--	11,995	17,517	--
All species	32,459	927	2,020	--	--	--	11,995	17,517	--
Other eastern softwoods									
Eastern redcedar	94,045	46,993	21,312	17,392	8,348	--	--	--	--
Tamarack (native)	7,747	--	--	--	--	--	7,747	--	--
All species	101,792	46,993	21,312	17,392	8,348	--	7,747	--	--
Total softwoods	890,715	223,912	220,108	180,724	103,106	52,803	49,015	61,046	--
Hardwoods									
Select white oaks									
White oak	3,538,488	--	280,405	394,283	481,905	519,694	489,173	1,066,920	306,108
Swamp white oak	146,418	--	5,720	8,276	9,729	20,704	23,133	78,856	--
Bur oak	732,945	--	11,872	41,278	37,025	80,508	65,678	346,461	150,123
Chinkapin oak	75,255	--	10,619	13,017	11,641	13,143	8,056	18,779	--
All species	4,493,105	--	308,615	456,854	540,300	634,049	586,039	1,511,017	456,231
Select red oaks									
Cherrybark oak	60,644	--	--	12,931	--	28,870	--	18,844	--
Northern red oak	1,769,778	--	115,888	142,910	226,260	249,241	225,556	666,535	143,389
All species	1,830,422	--	115,888	155,841	226,260	278,111	225,556	685,378	143,389
Other white oaks									
Overcup oak	25,012	--	--	4,175	6,275	--	--	14,562	--
Post oak	514,998	--	113,506	85,968	72,341	64,371	71,768	107,044	--
All species	540,011	--	113,506	90,143	78,616	64,371	71,768	121,606	--
Other red oaks									
Scarlet oak	32,562	--	--	1,857	4,919	11,577	--	--	14,209
Northern pin oak	68,619	--	2,945	5,493	4,597	29,287	--	--	26,297
Southern red oak	143,910	--	2,972	9,665	18,238	14,059	21,050	77,926	--
Shingle oak	539,225	--	58,861	147,131	80,859	77,266	40,427	134,681	--
Blackjack oak	16,486	--	2,440	--	14,046	--	--	--	--
Pin oak	590,792	--	59,173	71,092	64,984	105,223	68,686	182,986	38,649
Black oak	2,051,369	--	204,098	349,781	382,100	335,190	190,399	442,523	147,278
All species	3,442,963	--	330,489	585,018	569,744	572,602	320,562	838,116	226,432

(Table 8 continued on next page)

(Table 8 continued)

Species group/ species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Hardwoods									
Hickory									
Bitternut hickory	419,243	--	77,723	80,721	88,762	64,545	35,888	42,406	29,197
Pignut hickory	723,587	--	215,202	176,080	141,927	66,045	53,425	70,909	--
Pecan	98,771	--	2,745	10,740	--	--	29,162	22,670	33,454
Shellbark hickory	66,058	--	18,008	12,284	18,170	7,151	10,445	--	--
Shagbark hickory	1,003,108	--	190,661	228,362	198,891	115,909	53,422	158,029	57,833
Black hickory	14,402	--	2,867	4,553	6,983	--	--	--	--
Mockernut hickory	249,851	--	61,537	48,135	50,021	19,610	39,725	30,822	--
All species	2,575,020	--	568,743	560,875	504,755	273,260	222,067	324,836	120,484
Hard maple									
Black maple	24,381	--	5,907	4,640	--	--	--	13,834	--
Sugar maple	822,574	--	111,141	162,188	158,084	115,227	79,666	172,775	23,492
All species	846,955	--	117,049	166,828	158,084	115,227	79,666	186,609	23,492
Soft maple									
Red maple	317,808	--	61,416	50,312	18,637	29,896	28,992	128,555	--
Silver maple	2,073,254	--	174,710	249,010	225,793	279,147	339,823	516,161	288,609
All species	2,391,062	--	236,126	299,323	244,430	309,043	368,815	644,716	288,609
Beech									
American beech	69,789	--	1,276	5,369	5,587	10,413	10,838	7,341	28,965
All species	69,789	--	1,276	5,369	5,587	10,413	10,838	7,341	28,965
Sweetgum									
Sweetgum	264,391	--	48,422	53,607	58,648	15,857	61,719	26,139	--
All species	264,391	--	48,422	53,607	58,648	15,857	61,719	26,139	--
Tupelo and blackgum									
Blackgum	45,879	--	4,506	17,408	--	9,025	8,937	6,002	--
All species	45,879	--	4,506	17,408	--	9,025	8,937	6,002	--
Ash									
White ash	471,916	--	70,215	89,849	59,409	94,128	97,360	39,281	21,675
Black ash	5,761	--	--	5,761	--	--	--	--	--
Green ash	715,647	--	193,552	145,203	149,683	75,646	56,113	71,455	23,997
All species	1,193,325	--	263,766	240,813	209,092	169,774	153,473	110,735	45,671
Cottonwood and aspen									
Eastern cottonwood	1,271,306	--	38,363	55,090	108,181	115,667	109,067	295,880	549,058
Bigtooth aspen	11,812	--	2,297	--	--	--	9,515	--	--
Quaking aspen	3,959	--	3,959	--	--	--	--	--	--
All species	1,287,077	--	44,619	55,090	108,181	115,667	118,582	295,880	549,058
Basswood									
American basswood	239,243	--	39,873	42,923	39,363	33,731	24,598	58,754	--
All species	239,243	--	39,873	42,923	39,363	33,731	24,598	58,754	--
Yellow-poplar									
Yellow-poplar	525,986	--	51,285	71,265	39,043	44,295	120,610	171,200	28,289
All species	525,986	--	51,285	71,265	39,043	44,295	120,610	171,200	28,289
Black walnut									
Black walnut	749,363	--	152,706	160,473	164,747	87,685	85,476	98,277	--
All species	749,363	--	152,706	160,473	164,747	87,685	85,476	98,277	--

(Table 8 continued on next page)

(Table 8 continued)

Species group/ species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
Hardwoods									
Other eastern soft hardwoods									
Boxelder	181,452	--	53,616	47,768	21,164	17,442	20,371	21,089	--
Ohio buckeye	5,708	--	--	--	5,708	--	--	--	--
River birch	125,601	--	19,542	24,490	34,938	15,005	--	31,625	--
Sugarberry	5,990	--	5,990	--	--	--	--	--	--
Hackberry	583,093	--	109,228	110,749	92,961	62,009	70,456	113,674	24,014
Butternut	5,115	--	5,115	--	--	--	--	--	--
Cucumbertree	1,124	--	1,124	--	--	--	--	--	--
American sycamore	1,059,094	--	48,482	78,740	136,778	98,494	72,128	352,017	272,454
Black cherry	379,550	--	121,722	92,667	70,698	42,415	28,899	23,148	--
Black willow	198,146	--	20,538	51,677	17,915	17,530	--	90,486	--
Sassafras	72,253	--	27,609	8,217	12,161	6,267	--	17,998	--
American elm	452,722	--	184,224	75,226	58,733	39,680	51,845	43,015	--
Slippery elm	186,273	--	56,850	39,579	32,481	20,603	24,413	12,347	--
All species	3,256,120	--	654,040	529,115	483,538	319,447	268,112	705,400	296,468
Other eastern hard hardwoods									
Common persimmon	30,337	--	12,037	11,223	--	7,076	--	--	--
Honeylocust	507,081	--	68,980	120,984	84,109	52,404	83,018	97,586	--
Kentucky coffeetree	26,450	--	3,225	3,678	--	--	--	19,548	--
Red mulberry	24,456	--	10,591	8,129	5,736	--	--	--	--
Black locust	158,907	--	47,038	52,715	26,906	13,468	--	--	18,780
All species	747,231	--	141,871	196,729	116,751	72,949	83,018	117,134	18,780
Total hardwoods	24,497,943	--	3,192,781	3,687,674	3,547,140	3,125,504	2,809,837	5,909,139	2,225,868
All species groups	25,388,658	223,912	3,412,889	3,868,398	3,650,245	3,178,307	2,858,852	5,970,186	2,225,868

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand board feet. Columns and rows may not add to their totals due to rounding.

[1] International 1/4-inch rule.

Table 9. -- All live aboveground tree biomass on timberland by owner category, softwood/hardwood species category, and tree biomass component, Illinois, 2001-2005

(In thousand dry tons)

Owner category and softwood/hardwood category	All components	Tree biomass component						
		All live 1-5 inch trees	Growing-stock trees			Non-growing-stock trees		
			Total	Boles	Stumps, tops, and limbs	Total	Boles	Stumps, tops, and limbs
Public								
Softwoods	2,112	38	2,057	1,723	333	18	13	5
Hardwoods	32,303	1,795	28,458	21,131	7,327	2,050	1,484	565
Total	34,415	1,834	30,514	22,854	7,660	2,067	1,497	570
Private								
Softwoods	2,553	142	2,133	1,683	451	277	205	73
Hardwoods	173,622	9,385	142,941	105,481	37,460	21,297	15,738	5,558
Total	176,175	9,527	145,074	107,164	37,910	21,574	15,943	5,631
All ownerships								
Softwoods	4,665	180	4,190	3,406	784	295	217	78
Hardwoods	205,924	11,180	171,398	126,612	44,786	23,346	17,222	6,124
Total	210,590	11,360	175,588	130,018	45,570	23,641	17,440	6,201

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the aboveground tree biomass rounds to less than 1 thousand dry tons. Columns and rows may not add to their totals due to rounding.

Table 10. -- Average annual net growth of growing stock on timberland by species group and owner category, Illinois, 1998 to 2001-2005

(In thousand cubic feet per year)

Species group	Owner category			
	All owners	Public	Private	Unidentified owner
Softwoods				
Loblolly and shortleaf pines	1,891	1,832	59	- -
Other yellow pines	-97	68	-165	- -
Eastern white and red pines	3,871	2,499	1,372	- -
Jack pine	721	684	37	- -
Spruce and balsam fir	633	565	68	- -
Other eastern softwoods	791	505	286	- -
Total softwoods	7,811	6,152	1,658	- -
Hardwoods				
Select white oaks	42,075	14,890	27,185	- -
Select red oaks	22,923	8,179	14,744	- -
Other white oaks	3,221	518	2,703	- -
Other red oaks	20,207	5,479	14,727	- -
Hickory	28,093	8,573	19,519	- -
Hard maple	11,857	1,878	9,979	- -
Soft maple	33,748	2,996	30,752	- -
Beech	502	477	25	- -
Sweetgum	4,172	603	3,569	- -
Tupelo and blackgum	766	195	571	- -
Ash	19,376	4,823	14,554	- -
Cottonwood and aspen	30,483	4,834	25,649	- -
Basswood	5,129	429	4,701	- -
Yellow-poplar	8,371	3,736	4,635	- -
Black walnut	11,228	948	10,280	- -
Other eastern soft hardwoods	61,189	13,641	47,548	- -
Other eastern hard hardwoods	15,933	2,708	13,224	- -
Total hardwoods	319,271	74,907	244,364	- -
All species groups	327,082	81,060	246,022	- -

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 11. -- Average annual removals of growing stock on timberland by species group and owner category, Illinois, 1998 to 2001-2005

(In thousand cubic feet per year)

Species group	Owner category			
	All owners	Public	Private	Unidentified owner
Softwoods				
Other eastern softwoods	43	--	43	--
Total softwoods	43	--	43	--
Hardwoods				
Select white oaks	10,225	1,815	8,410	--
Select red oaks	4,416	--	4,416	--
Other white oaks	821	--	821	--
Other red oaks	6,626	1,325	5,301	--
Hickory	4,401	1,701	2,701	--
Hard maple	916	96	820	--
Soft maple	3,710	--	3,710	--
Sweetgum	2,269	2,115	154	--
Ash	3,914	--	3,914	--
Cottonwood and aspen	8,871	--	8,871	--
Basswood	813	--	813	--
Yellow-poplar	1,196	--	1,196	--
Black walnut	1,146	--	1,146	--
Other eastern soft hardwoods	10,855	586	10,269	--
Other eastern hard hardwoods	464	80	384	--
Total hardwoods	60,641	7,717	52,924	--
All species groups	60,685	7,717	52,968	--

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 12. -- Average annual mortality of growing stock on timberland by species group and owner category, Illinois, 1998 to 2001-2005

(In thousand cubic feet per year)

Species group	Owner category			
	All owners	Public	Private	Unidentified owner
Softwoods				
Loblolly and shortleaf pines	314	314	--	--
Other yellow pines	603	--	603	--
Eastern white and red pines	748	27	721	--
Jack pine	70	--	70	--
Other eastern softwoods	21	--	21	--
Total softwoods	1,757	342	1,415	--
Hardwoods				
Select white oaks	2,846	962	1,884	--
Select red oaks	1,971	420	1,551	--
Other white oaks	924	--	924	--
Other red oaks	12,228	2,192	10,036	--
Hickory	6,351	324	6,028	--
Hard maple	2,153	241	1,912	--
Soft maple	12,724	2,331	10,393	--
Sweetgum	1,332	816	516	--
Tupelo and blackgum	35	35	--	--
Ash	5,924	833	5,092	--
Cottonwood and aspen	64	64	--	--
Basswood	18	--	18	--
Yellow-poplar	34	34	--	--
Black walnut	1,321	43	1,278	--
Other eastern soft hardwoods	32,516	1,213	31,303	--
Other eastern hard hardwoods	4,452	245	4,207	--
Total hardwoods	84,895	9,753	75,142	--
All species groups	86,651	10,095	76,557	--

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Crocker, Susan J.; Brand, Gary J.; Little, Dick C.

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Results of the completed 2005 Illinois annual inventory show an estimated 4.5 million acres of forest land that supports 7.6 billion cubic feet (ft^3) of total net live-tree volume. Since 1948, timberland area has steadily increased and now represents 96 percent of total forest land. Growing-stock volume on timberland has risen to an estimated 6.8 billion ft^3. Ten percent of live-tree volume on timberland is in cull trees. Live-tree aboveground biomass is 210.5 million dry tons. Net growth of growing stock increased by an average of 327 million ft^3/yr. Growing stock was removed at an average of 60.6 million ft^3/yr. Average annual mortality of growing stock was 86.6 million ft^3/yr. Oak wilt, gypsy moth, emerald ash borer, Dutch elm disease, Asian longhorned beetle, and drought were among Illinois' forest health concerns.

KEY WORDS: Annual inventory, forest land, timberland, forest type, volume, biomass, growth, removals, mortality, forest health, Illinois

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Capitalizing on the strengths of existing science capacity in the Northeast and Midwest to attain a more integrated cohesive landscape scale research program