



Forest
Service

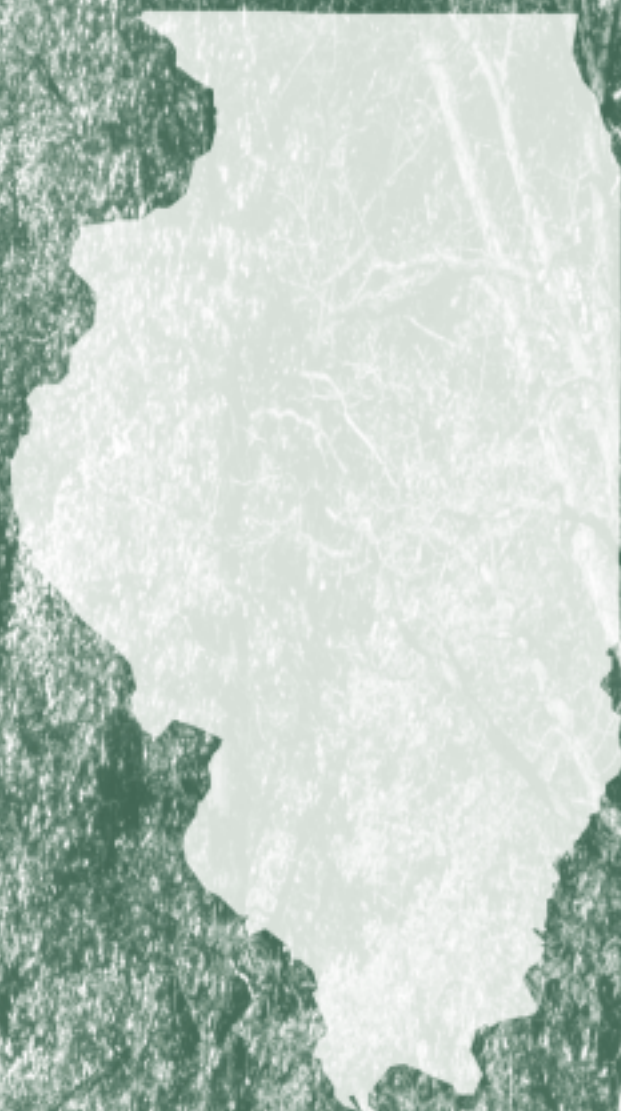
North Central
Research
Station

Resource Bulletin
NC - 236



Illinois's Forest Resources in 2002

Earl C. Leatherberry, Gary J. Brand, and Dick C. Little



North Central Research Station
U.S. Department of Agriculture - Forest Service
1992 Folwell Avenue
Saint Paul, Minnesota 55108
2004
www.ncrs.fs.fed.us



CONTENTS

Results	1
Area	1
Volume	4
Biomass	6
Forest Health	6
Summary	8
Appendix	9
Inventory Methods	9
Sampling Phases	10
Phase 1	10
Phase 2	10
Phase 3	10
Literature Cited	12
Table Titles	12
Tables	13



Illinois's Forest Resources in 2002

The North Central Research Station's Forest Inventory and Analysis (NCFIA) program began fieldwork for the fifth forest inventory of Illinois in 2001. This inventory initiated the new annual inventory system in which one-fifth of the field plots (considered one panel) in the State are measured each year. A complete inventory consists of measuring and compiling the data for all plots (or five panels). Once all panels have been measured, each will be remeasured approximately every 5 years. For example, in Illinois, the field plots measured in 2002 will be remeasured in 2007.

In 2002, NCFIA continued the annual inventory effort with the second panel of the fifth Illinois forest inventory. Reports of previous inventories of Illinois are dated 1948, 1962, 1985, and 1998. This fifth inventory of Illinois's forest resources will be completed in 2005. However, because each year's sample is a systematic sample of the State's forest and because timely information is needed about Illinois's forest resources, estimates have been prepared from data gathered during the first 2 years of the inventory. Data presented in this report represent 40 percent of the field plots (or two panels) for a complete inventory and are a combination of the first year's panel from 2001 and the second year's panel from 2002. An earlier report for the 2001 panel (Leatherberry 2003) has been published. The results presented are estimates based on sampling techniques; estimates were compiled assuming that the 2001 and 2002 data represent one sample. As additional annual inventories are completed, the precision of the estimates will increase and additional data will be released.

Data from new inventories are often compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must be similar. As a result of our 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). Although these changes will have little impact on statewide estimates of forest area, timber volume, and tree biomass, they may have significant impacts on plot classification variables such as forest type and stand-size class. Some of these changes make it inappropriate to directly compare portions of the 2002 data with those published for earlier inventories.

RESULTS

Area

The area that is Illinois was once a mix of tall grass prairie and eastern deciduous forest. At the time of initial Euro-American settlement, forests occupied an estimated 14 million acres, or about 40 percent of the land area that is Illinois (Illinois State Natural Survey Division 1960). Over a 120-year period—from 1800 to the 1920s—forest land area in Illinois declined to a low of 3.0 million acres (Telford 1926). By the 1950s, forest land area was trending up and in 1962 totaled an estimated 4 million acres. Forest land in 2002 occupied 4.3 million acres of land, or about 12 percent of the State's land area (table 1). Forest land in Illinois is mostly in private ownerships. Presently, there are an estimated 169,000 private forest landowners in Illinois (Illinois Department of Natural Resources 2001). Those

About the Authors:

Earl C. Leatherberry is a Resource Analyst and **Gary J. Brand** is a Research Forester with the North Central Research Station, St. Paul, MN.

Dick C. Little is Council Liaison through the University of Illinois, Urbana-Champaign with the Illinois Forestry Development Council, Urbana, IL.

owners have been instrumental in the conservation and propagation of forests. The 18 percent of forest land that is in public ownership in Illinois ensures that people will have access to forest recreation opportunities, that wildlife habitat is maintained, and that forests remain a vital component of the landscape and the economy of Illinois. Public forest lands in Illinois are mostly within the Shawnee National Forest, State parks, county forest preserves, and park districts.

Nearly 4.1 million acres of forest land are classified as timberland¹ and account for 96 percent of total forest land in the State (table 2). The 4 percent—about 185 thousand acres—of forest land that is not timberland in Illinois is classified as reserved forest land. Reserved forest land is restricted from harvesting by statute, administrative

¹ Timberland, a subset of forest land, is capable of growing trees at a minimum level (20 cubic feet per acre per year) and is not restricted from harvest. 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 upon owner decisions that consider economic, environmental, and social factors.

regulation, or designation. Most reserved forest land is in county forest preserves and on the Shawnee National Forest.

To assess trends in forest land area, timberland area statistics are used because sampling errors were derived for estimates of timberland area for each of the Illinois inventories but not for forest land area. Since the first Illinois inventory in 1948, timberland area has remained relatively stable, increasing slightly over the years (fig. 1). The 2002 estimate, as shown in figure 1, has a larger sampling error because the estimate is based on a partial inventory.

Most timberland stands in Illinois are populated with hardwood trees; about 97 percent of total timberland area is in the hardwood forest type group (table 2). Timberland stands are largely of natural origin—only 89 thousand acres were planted (table 2). The vast majority of planted acres are in the softwood forest type group. Two-thirds of the 108.0 thousand acres of timberland in the softwood type group are planted, most of that on publicly owned timberland. The nearly 18 thousand acres of

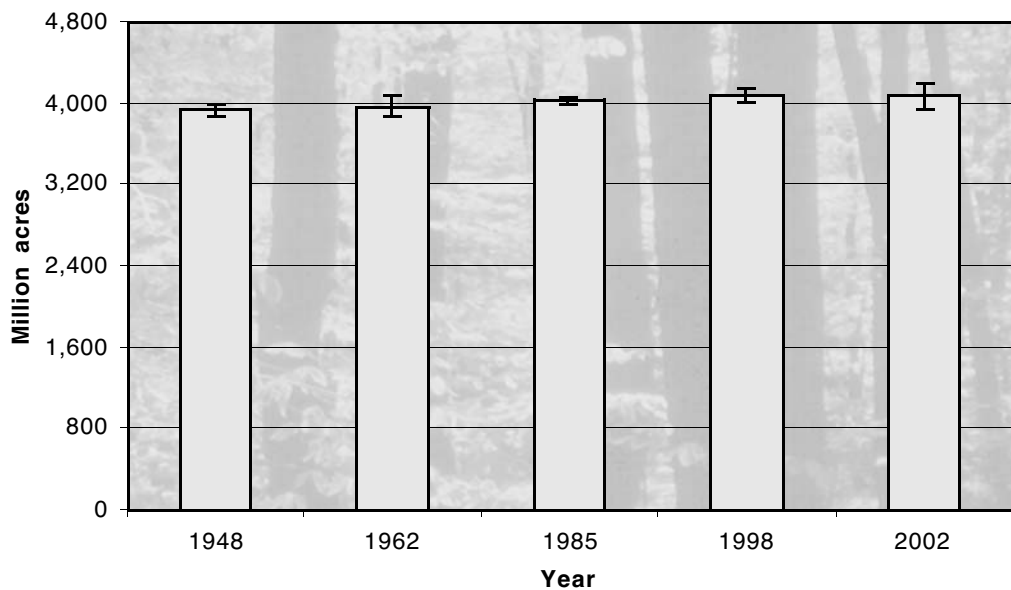


Figure 1. — Area of timberland, Illinois, 1948-2002. (Note: The sample error associated with each inventory is represented by the vertical line at the top of each bar).

hardwood plantings probably are high-valued species such as black walnut.

A variety of tree species are found on timberland in Illinois. To facilitate describing forest composition, the various tree species are put into forest type groups that reflect the combination of tree species occurring on a particular site. The classification is based on the species forming a plurality of live tree stocking on the site. The forest type group names are from the national Forest Inventory and Analysis (FIA) program's list of forest types. The national forest type group list was developed to ensure consistency in reporting across regions of the country and may not always effectively describe a particular local situation. For example, in table 3 the pinyon/juniper forest type group is used to describe the forest type that contains eastern redcedar. An estimated 34.0 thousand acres of timberland in Illinois are classified in the pinyon/juniper forest type group. In reality there is no pinyon or juniper in forested areas in Illinois; the pinyon/juniper is actually eastern redcedar. (see Miles *et al.* 2001 for a complete list of national FIA forest types with detailed types.)

Three hardwood forest type groups—oak/hickory, elm/ash/cottonwood, and maple/beech/birch—occupy 95 percent of the timberland area in Illinois (fig. 2). Softwoods occupy only 3 percent of the total timberland area; however, softwoods are important because they increase tree biodiversity in an otherwise sea of hardwoods. For instance, the majority (68 percent) of area in the softwood forest type has pines on it, with white pine stands generally found in northern Illinois and shortleaf pine stands generally found in the southern part of the State. The remaining softwood timberland area is mostly eastern redcedar. Some eastern redcedar is probably also mixed in with oak in the oak/pine hardwood type group.

As forests mature and are affected by natural and human-caused events, forest stands take on certain size characteristics. Stand-size class is a measure of the average diameter of the dominant trees in a stand. There are three stand-size classes: sawtimber—large trees, softwoods at least 9 inches in diameter at breast height (d.b.h.) and hardwoods at least 11 inches d.b.h.; poletimber—medium trees, trees 5 inches d.b.h. to sawtimber size; and

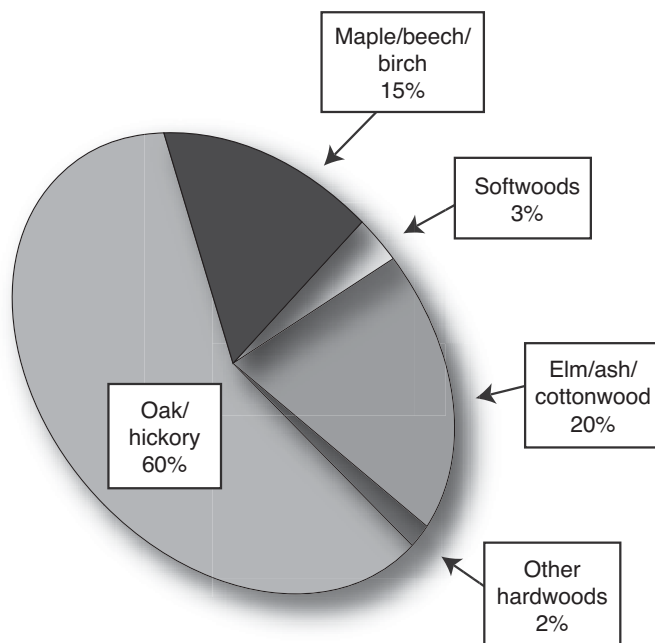


Figure 2. — Area of timberland by forest type, Illinois, 2002.

sapling/seedling—small trees, trees 1 to 5 inches d.b.h.

Between 1998 and 2002, the area of larger trees—sawtimber-size trees—increased only slightly, accounting for 73 percent of timberland area (table 3, fig. 3). The substantial area of sawtimber-size stands points to a maturing forest. The area in poletimber-size trees declined as some stands grew into the sawtimber-size stands. The area in sapling-seedling-size stands increased; however, those stands occupy less than 10 percent of timberland area. The smaller area of sapling-seedling stands may be related to how timber is harvested in much of the State. Often, mature timber is removed either as single scattered trees or in small groups. The lack of significant disturbances in hardwood stands may not open stands to progressive seedling development. Smaller trees in the understory are dominated by larger trees. However, the increase in area of sapling-seedling stands between 1998 and 2002 may point toward an emergence of softwoods in the State's forests. Ensuing panels of the fifth Illinois inventory will provide more definitive information about change in stand-size class.

Volume

Total net volume of all live trees on forest land in Illinois is just less than 7.5 billion cubic feet, which equates to 1,749 cubic feet per acre of forest land (table 4). Net volume is the amount of soundwood computed from a 1-foot stump to a 4-inch top diameter outside bark for live trees at least 5 inches d.b.h. Almost 8 of every 10 cubic feet (79 percent) of all live volume are on privately owned forest land. Virtually all—96 percent—of net volume of all live trees is contained in hardwoods, and 38 percent is in oak trees.

Growing-stock volume on timberland is a measure that has traditionally been used to ascertain wood volume useful for commercial purposes. Growing-stock volume is the amount of solid wood on timberland in commercial trees 5.0 inches d.b.h. and over, from 1 foot above ground (stump) to a minimum 4-inch top diameter with deductions made for poor form or defect. Growing-stock volume excludes rough, rotten, and dead trees and noncommercial tree species. Growing-stock volume on Illinois timberland area totals 6.3 billion cubic feet, representing 89 percent of total live volume (table 5). Eleven percent of all live volume on timberland is in

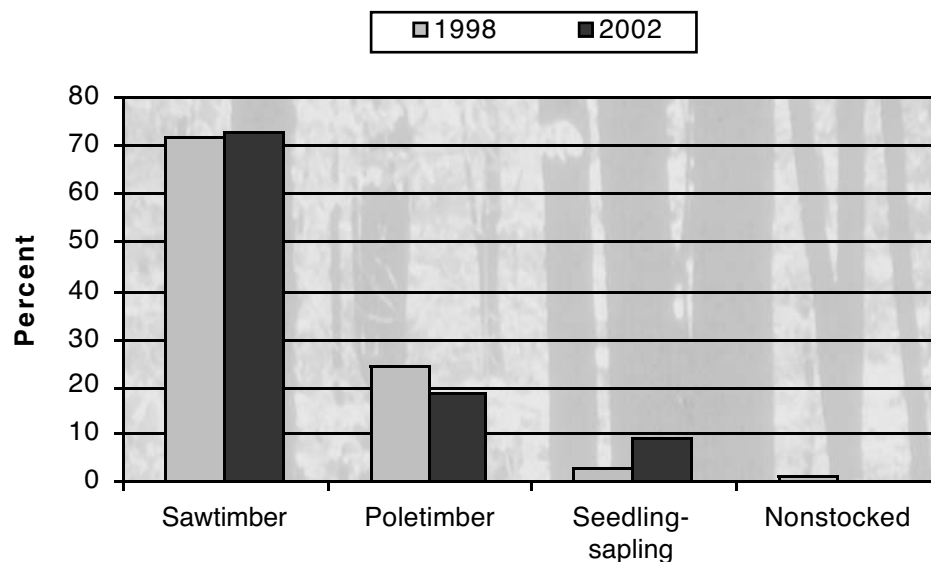


Figure 3. — Stand-size class as a percentage of total timberland area, Illinois, 1998 and 2002.

live cull trees—773.3 million cubic feet. Cull volume often is used for commercial purposes. For instance, rough trees are sometimes used to make pallets or for chipping. Dead trees are also used for commercial purposes; they are an important source of firewood. Salvable dead trees contain 216.2 million cubic feet of wood volume. Salvable dead trees are also used for commercial purposes; they are an important source of firewood and are important to wildlife species, such as cavity nesting birds and mammals that require den sites.

Total growing-stock volume has increased in every inventory since 1948, going from over 2 billion cubic feet to 6.3 billion cubic feet in 2002 (fig. 4). Presently, 96 percent of total growing-stock volume is in hardwood species (table 6). The oak/hickory and the elm/ash/cottonwood hardwood type groups when combined account for 86 percent of growing-stock volume. Growing-stock volume present in softwoods amounts to 4 percent (272.2 million cubic feet) of total growing-stock volume. However, a small amount of that volume from softwood species (44.1 million cubic feet) is present in hardwood stands because softwood trees are sometimes present in hardwood-dominated stands.

The increase in growing-stock volume over the years reflects a forest where trees continue to put on volume. Much of the growing-stock volume on timberland in Illinois is in large-diameter trees. For instance, more than half—56 percent—of growing-stock volume is in trees that are 15 inches d.b.h. and larger (table 7). Trees in the cottonwood and aspen and the selected white oak species groups have significant volume in trees that are 21 inches d.b.h. and larger.

Sawtimber volume is a subset of growing-stock volume. It is the volume of the saw log portion of live sawtimber measured in board feet. Sawtimber volume is generally measured with the International 1/4-inch rule. Sawtimber volume in Illinois totals 23.6 billion board feet (table 8). Ninety-five percent of all sawtimber volume is in hardwood trees; the remaining 5 percent of sawtimber volume is in softwoods. On an individual species group basis, four species groups—select white oaks with 4.8 billion board feet, other red oaks with 3.1 billion board feet, other eastern soft hardwoods with 2.7 billion board feet, and hickory with 2.3 billion board feet—account for over half the sawtimber volume in Illinois. Of total sawtimber volume, 31 percent is in trees with diameters of 21 inches or larger.

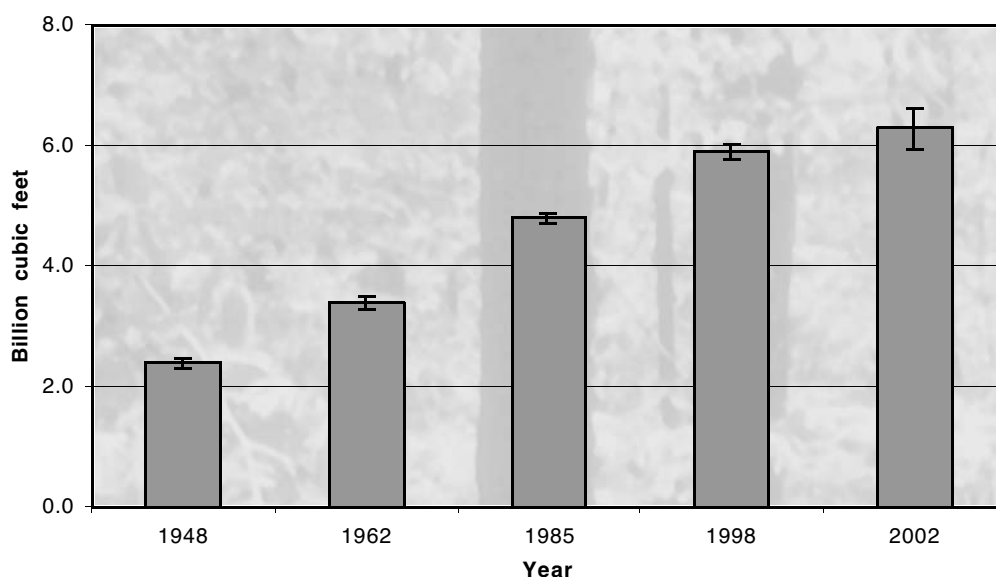


Figure 4. — Growing-stock volume, Illinois, 1948-2002. (Note: The sampling errors associated with each inventory are represented by vertical lines at the top of each bar.)

Biomass

Live aboveground tree biomass in Illinois timberland area was estimated to be 196.7 million dry tons in 2002 (an average of 48 dry tons per acre of timberland). All live aboveground tree biomass is estimated for growing-stock trees, non-growing-stock trees, and all live 1- to 5-inch d.b.h. trees (table 9). Eighty-two percent of tree biomass is in growing-stock trees, 12 percent is in non-growing-stock trees, and the remaining 6 percent is in trees less than 5 inches d.b.h. For both growing-stock and non-growing-stock trees, nearly three-fourths of total aboveground biomass is in the bole of trees. The remaining aboveground biomass is in stumps, tops, and limbs. Ninety-seven percent (191.3 million dry tons) of all live aboveground tree biomass is in hardwood species. Biomass estimates are increasing in importance for analyses of questions relating to carbon sequestration, wood fiber availability for fuel, and assessment of fuel in forest stands.

Forest Health

The information presented about pathogens and insects affecting Illinois forests was obtained from the National Forest Health Monitoring Program (FHM) at: <http://www.na.fs.fed.us/spfo/fhm/index.htm>. Some of that information is highlighted below. For a more complete discussion of forest health in Illinois, visit the FHM Web site or contact the Illinois Department of Natural Resources.

In 2002, forest health specialists identified several forest health concerns in Illinois. During April and May of 2002, black cherry trees in two counties in central Illinois and six counties in the southeastern part of the State were attacked by the forest tent caterpillar (*Malacosoma disstria*) (fig. 5). Moderate to heavy defoliation occurred.

White oak species and hackberry trees in Illinois have been affected by a leaf condition in the spring called leaf tatters for approximately the last 13 years. In severe cases of leaf

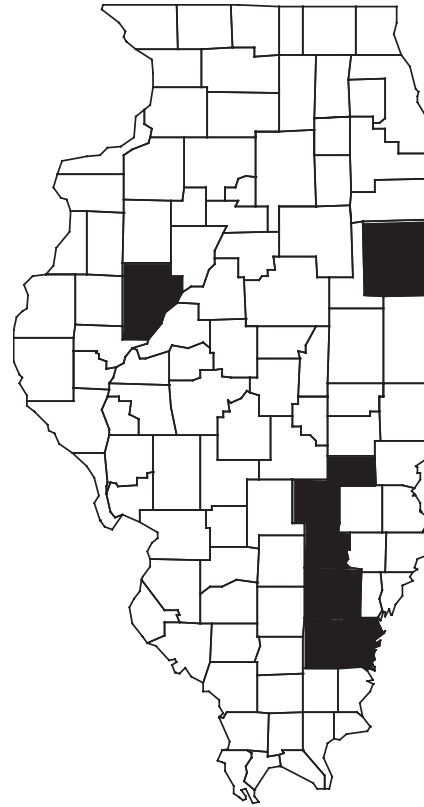


Figure 5. — Counties with infestations of the eastern tent caterpillar, Illinois, 2002. (Source: USDA Forest Service, State and Private Forestry Health Protection Program.)

tatters, there is no development of leaf tissues between the major leaf veins. The first spring flush of leaves is affected, but the second spring flush develops normally. The cause remains unknown but herbicide drift from agricultural fields is suspected. Trees severely affected may be weakened. It is advisable to water affected trees during drought conditions to lessen stress. In 2002, leaf tatters were reported only in the northern half of Illinois (fig. 6). The cool, very wet spring in the southern half of the State greatly delayed spring planting, and as a result, leaf development was advanced before field herbicides were applied

In several central and southern counties, moderate to heavy infestations of bagworms (*Thyridopteryx ephemeraeformis*) occurred during 2002 (fig. 7). Spruce, white pine, juniper, and arborvitae are common hosts. Complete defoliation of evergreens results in tree death. This insect is more commonly found in urban landscapes, although Christmas tree plantations containing spruce and white pine are vulnerable. Bagworm is best controlled with an insecticide applied in mid-June after all the overwintering eggs have hatched.

The Asian longhorned beetle (*Anoplophora glabripennis*), an exotic invasive insect, is of

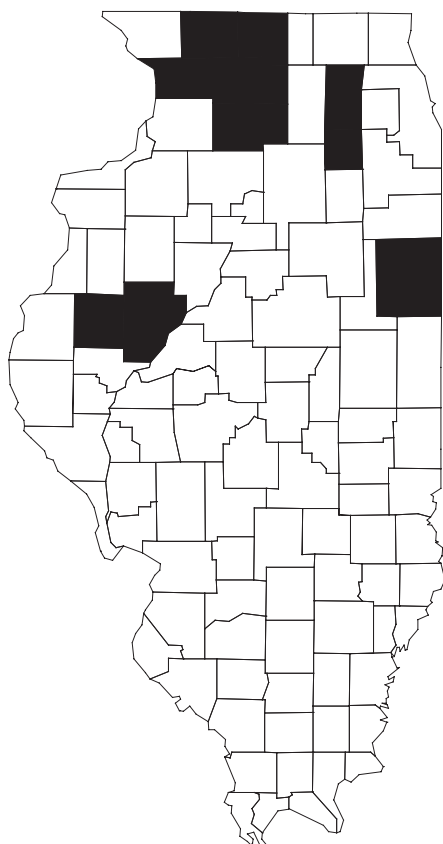


Figure 6. — Counties with white oak foliage showing symptoms of leaf tatters, Illinois, 2002. (Source: USDA Forest Service, State and Private Forestry Health Protection Program.)

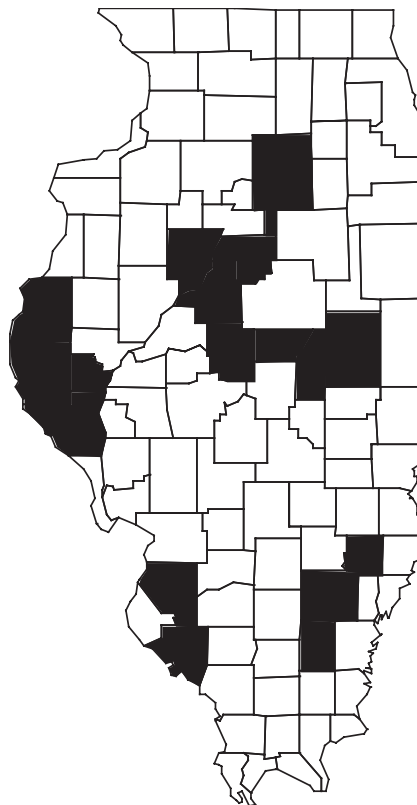


Figure 7. — Bagworm infestations by county, Illinois, 2002. (Source: USDA Forest Service, State and Private Forestry Health Protection Program.)

great concern to forest health. The Asian longhorned beetle was found infesting live trees in the Chicago area in the late 1990s. Extensive surveys have been carried out to locate and destroy infested trees. Over 400 infested trees initially were identified in 1998; removal began in 1999. By 2001, over 1,500 trees had been removed. A Federal quarantine is now in effect to prevent the shipment of infested wood out of the known infested areas in Chicago. Through the cooperative efforts and programs of State, Federal, and local agencies, and the Chicago mass media, the number of beetle-infested trees has been greatly reduced in Illinois.

Summary

The area of timberland in Illinois is holding steady, as it did throughout the second half of the 20th century. Most timberland stands are populated with hardwood trees; about 97 percent of total area of timberland is in hardwood forest type groups. Softwoods, especially eastern redcedar, appear to be increasing. Growing-stock volume continues to increase as the forest matures. In general, the forest of Illinois is in good health, with areas of local concern. These findings are presented with the caveat that data are not yet sufficient to make definitive statements about how Illinois's forest resources have changed since the previous inventory in 1998. As additional data become available under the annual inventory system, a clearer picture of the status and direction of Illinois's forests will emerge.



APPENDIX

Inventory Methods

Since the 1998 inventory of Illinois, several changes have been made in the NCFIA inventory methods to improve the quality of the inventory as well as meet the increasing demands for timely forest resource information. The most significant change between the inventories is the change from periodic inventories to annual inventories. Historically, the NCFIA inventoried each State on a cycle that averaged about 15 years. However, the need for timely and consistent data across large geographical regions, combined with national legislative mandates, resulted in NCFIA's implementation of an annual inventory system. The annual inventory system began in Illinois in 2001.

With an annual inventory system, about one-fifth of all field plots are measured each year. After 5 years, an entire inventory cycle will be completed. After the first 5 years, NCFIA will report and analyze results as a moving 5-year average. For example, NCFIA will be able to generate a report based on inventory results for 2001 through 2005 or for 2002 through 2006. Although there are great advantages to an annual inventory, one difficulty is reporting on results in the first 4 years. With the 2002 annual measurements, 40 percent of all field plots have been measured. Sampling error estimates for the 2002 inventory results are area of forest land 3.05 percent, area of timberland 3.31 percent, number of growing-stock trees on timberland 5.19 percent, volume of growing stock on timberland 5.33 percent, and volume of sawtimber on timberland 5.84 percent. These sampling error estimates are higher than those for the last periodic inventory completed in 1998 (i.e., 1.61

percent for timberland area and 2.18 percent for growing-stock volume) because of the smaller sample sizes. Thus, caution should be used when drawing conclusions based on this limited data set. As we complete ensuing measurements, we will have additional confidence in our results because of the increased number of field plots measured. As each measurement year is completed, the precision of estimates will improve.

Other significant changes between inventories include the implementation of new remote sensing technology, the implementation of a new field plot design, and the gathering of additional data. Changes in remote sensing technology since the previous inventory in 1998 has allowed NCFIA to use computer-assisted classifications of Multi-Resolution Land Characterization (MRLC) data and other available remote sensing products to stratify the total area of the State and to improve estimates. Inventories in Illinois before 1998 used manual interpretation of aerial photographs to stratify the sample. In 1998, a computer-assisted classification of Landsat Thematic Mapper satellite imagery was used.

New algorithms were used in 2001-2002 to assign forest type and stand-size class to each condition observed on a plot. These algorithms are being used nationwide by FIA to provide consistency among States and will be used to reassign the forest type and stand-size class of every plot in the 2001 inventory when it is updated. This will be done so that changes in forest type and stand-size class will reflect actual changes in the forest and not changes in how values are computed. 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 changed with the new algorithms. As a result, comparison between

the published 2002 inventory results and those published for the previous inventories may not be valid. For additional details about algorithms used in both inventories, please contact NCFIA.

Sampling Phases

The 2002 Illinois survey was based on a three-phase inventory. The first phase used classified satellite imagery to stratify the State and aerial photographs to select plots for measurement. The second phase entailed measurement of the traditional FIA set of mensurational variables, and the third phase focused on a set of variables related to the health of the forest.

The only land that could not be sampled was private land where field personnel could not obtain permission from the owner to measure the field plot, and plots that could not be accessed because of a hazard or danger to field personnel. The methods used in the preparation of this report make the necessary adjustments to account for sites where access was denied or hazardous.

Phase 1

The 2002 inventory used a computer-assisted 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 edge formed two additional strata—forest/nonforest and nonforest/forest. Forest pixels within 60 m on the forest side of a forest/nonforest boundary were classified into a forest edge stratum. Pixels within 60 m of the boundary on the nonforest side were classified into 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 of the inventory consisted of the measurement of the annual sample of field

plots in Illinois. 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 non-overlapping 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 Forest Health Monitoring (FHM) plot (Mangold 1998) fell within a hexagon, it was selected; (2) if no FHM plot fell within a hexagon, the existing NCFIA plot from the 1990 inventory nearest the hexagon center was selected; and (3) if neither FHM nor existing NCFIA plots fell within the hexagon, a new NCFIA 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, non-overlapping subsamples or panels. Each year the plots in a single panel are measured, and panels are selected on a 5-year, rotating basis (McRoberts 1999). For estimation purposes, the measurement of each panel of plots may 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 photos or digital orthoquads.

Phase 3

NCFIA 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 plot are uniformly distributed both geographically and temporally. Phase 3 plots are measured with the full set of FHM vegetative and health variables (Mangold 1998) collected as well as the full set 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 non-woody understory vegetation, ground cover, soils, and other variables. We anticipate that in Illinois the complete 5-year annual inventory will involve about 50 phase 3 field plots. On the remaining plots, referred to as phase 2 plots, only variables that can be measured throughout the entire year are collected. In Illinois, the complete 5-year annual inventory is expected to involve about 770 phase 2 forested plots. The 1999-2002 annual inventory results represent field measures on 604 phase 2 forested plots and 40 phase 3 field plots.

The new national FIA plot design (fig. 8) was first used for data collection in Illinois in 1998. This design was also used in the 2000 and 2001 inventories and will be used in subsequent years. The national plot design requires mapping forest conditions on each plot.

The overall plot layout for the new design 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. The center of the new plot is located at the same point as the center of the previous plot if a previous plot existed within the sample unit. Trees with a d.b.h. 5 inches and larger are measured on a 24-foot-radius (1/24 acre) circular subplot. All trees less than 5 inches d.b.h. 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. Forest conditions that occur on any of 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 of the subplots is identified, described, and mapped if the area of the condition meets or exceeds 1 acre in size.

Field plot measurements are combined with phase 1 estimates in the compilation process and table production. The number of published tables generated from less than five panels of data is limited. However, at www.ncrs.fs.fed.us/4801/fiadb/index.htm, other tabular data can be generated. For additional information, contact:

Program Manager
Forest Inventory and Analysis
North Central Research Station
1992 Folwell Ave.
St. Paul, MN 55108

or

State Forester
Illinois Department of Natural Resources
Office of Resources Conservation
1 Natural Resources Way
Springfield, IL 62702-1271

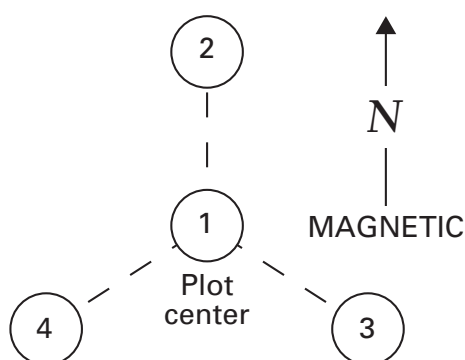


Figure 8. — Current NCFIA field plot design.

LITERATURE CITED

**Illinois Department of Natural Resources.
2001.**

Illinois forest resource facts. Springfield, IL: State of Illinois, Division of Resource Protection and Stewardship.
<http://dnr.state.il.us/conservation/forestry/Fact.htm>.

**Illinois State Natural Survey Division.
1960.**

Atlas of Illinois resources, section 3: forest, wildlife and recreational resources. Springfield, IL: State of Illinois, Division of Industrial Planning and Development. 46 p.

Leatherberry, E.C. 2003.

Illinois's forests in 2001. Res. Note NC-385. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 8 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. (Revision 0, April 1998)

McRoberts, R.E. 1999.

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

**Miles, P.D.; Brand, G.J.; Alerich, C.L.;
Bednar, L.F.; Woudenberg, S.W.; Glover,
J.F.; Ezzell, E.N. 2001.**

The Forest Inventory and Analysis database: database description and users manual version 1.0. Gen. Tech. Rep. NC-218. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 130 p.

**Schmidt, T.L.; Hansen, M.H.; Solomakos,
J.A. 2000.**

Illinois's 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.

TABLE TITLES

Table 1.—Area of forest land by forest type group and owner category, Illinois, 2001-2002

Table 2.—Area of timberland by major forest type group, stand origin, and owner category, Illinois, 2001-2002

Table 3.—Area of timberland by forest type group and stand-size class, Illinois, 2001-2002

Table 4.—Net volume of all live trees on forest land by species group and owner category, Illinois, 2001-2002

Table 5.—Net volume of all live trees and salvable dead trees on timberland by class of timber and softwood/hardwood categories, Illinois, 2001-2002

Table 6.—Net volume of growing stock on timberland by forest type group and softwood/hardwood species categories, Illinois, 2001-2002

Table 7.—Net volume of growing stock on timberland by species group and diameter class, Illinois, 2001-2002

Table 8.—Net volume of sawtimber on timberland by species group and diameter class, Illinois, 2001-2002

Table 9.—All live aboveground tree biomass on timberland by owner category, softwood/hardwood species category, and tree biomass component, Illinois, 2001-2002



TABLES

Table 1. -- Area of forest land by forest type group and owner category, Illinois, 2001 - 2002

(In thousand acres)

Forest type group	Owner category			Unidentified owner
	All owners	Public	Private	
Softwood type groups				
White / red / jack pine	30.3	15.1	15.2	--
Loblolly / shortleaf pine	43.6	42.9	0.7	--
Pinyon / juniper	34.0	--	34.0	--
All softwood types	108.0	58.0	50.0	--
Hardwood type groups				
Oak / pine	23.1	--	23.1	--
Oak / hickory	2,551.8	504.5	2,047.3	--
Oak / gum / cypress	80.7	--	80.7	--
Elm / ash / cottonwood	847.9	126.6	721.4	--
Maple / beech / birch	635.6	73.4	562.3	--
Aspen / birch	3.5	--	3.5	--
All hardwood types	4,142.7	704.4	3,438.3	--
Nonstocked	7.7	--	7.7	--
All forest types	4,258.4	762.4	3,495.9	--

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 total due to rounding.

Table 2. -- Area of timberland by major forest type group, stand origin, and owner category, Illinois, 2001 - 2002

(In thousand acres)

Major forest type group and stand origin	Owner category		
	All owners	Public	Unidentified owner
Softwood type groups			
Natural	36.1	2.1	34.0
Planted	71.8	55.9	15.9
All softwood types	108.0	58.0	50.0
Hardwood type groups			
Natural	3,940.6	519.8	3,420.8
Planted	17.5	--	17.5
All hardwood types	3,958.1	519.8	3,438.3
Nonstocked	7.7	--	7.7
All groups	4,073.7	577.8	3,495.9

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 and stand-size class, Illinois, 2001 - 2002

(In thousand acres)

Forest type group	Stand-size class			
	All stands	Sawtimber	Poletimber	Sapling-seedling Non-stocked
Softwood type groups				
White / red / jack pine	30.3	30.3	--	--
Loblolly / shortleaf pine	43.6	40.8	2.1	0.7
Pinyon / juniper	34.0	13.9	20.1	--
All softwood types	108.0	85.1	22.2	0.7
Hardwood type groups				
Oak / pine	23.1	15.4	--	7.7
Oak / hickory	2,434.4	1,875.7	421.7	137.0
Oak / gum / cypress	80.7	65.3	15.4	--
Elm / ash / cottonwood	807.2	534.3	118.9	154.1
Maple / beech / birch	609.2	378.0	151.7	79.5
Aspen / birch	3.5	--	3.5	--
All hardwood types	3,958.1	2,868.6	711.2	378.3
Nonstocked	7.7	--	--	7.7
All forest types	4,073.7	2,953.7	733.4	379.0

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 4. -- Net volume of all live trees on forest land by species group and owner category, Illinois, 2001 - 2002

(In thousand cubic feet)

Species group	Owner category			
	All owners	Public	Private	Unidentified owner
Softwoods				
Loblolly and shortleaf pines	113,404	113,404	--	--
Other yellow pines	454	--	454	--
Eastern white and red pines	109,972	54,213	55,759	--
Cypress	12,499	--	12,499	--
Other eastern softwoods	53,674	3,081	50,594	--
Total softwoods	290,004	170,697	119,306	--
Hardwoods				
Select white oaks	1,353,506	313,230	1,040,276	--
Select red oaks	466,573	101,122	365,452	--
Other white oaks	164,236	33,930	130,305	--
Other red oaks	863,192	132,307	730,885	--
Hickory	719,441	158,438	561,003	--
Yellow birch	2,235	--	2,235	--
Hard maple	237,210	54,638	182,572	--
Soft maple	547,864	183,057	364,807	--
Beech	7,011	1,271	5,739	--
Sweetgum	115,381	34,184	81,198	--
Tupelo and blackgum	23,038	10,165	12,872	--
Ash	366,613	68,892	297,721	--
Cottonwood and aspen	332,949	--	332,949	--
Basswood	133,078	4,618	128,460	--
Yellow-poplar	82,113	34,894	47,218	--
Black walnut	207,116	34,909	172,207	--
Other eastern soft hardwoods	1,151,532	182,870	968,663	--
Other eastern hard hardwoods	245,010	43,957	201,053	--
Eastern noncommercial hardwoods	140,080	2,158	137,922	--
Total hardwoods	7,158,178	1,394,640	5,763,538	--
All species groups				
	7,448,182	1,565,338	5,882,845	--

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that 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, Illinois, 2001 - 2002

(In thousand cubic feet)

Class of timber	All species	Softwood species	Hardwood species
Live trees			
Growing-stock trees			
Sawtimber			
Saw log portion	4,511,076	204,666	4,306,410
Upper stem portion	580,863	23,266	557,597
Total	5,091,938	227,932	4,864,006
Poletimber	1,228,436	44,302	1,184,135
All growing-stock trees	6,320,375	272,234	6,048,141
Cull trees			
Rough trees ¹			
Sawtimber size	549,135	15,173	533,962
Poletimber size	212,626	2,333	210,293
Total	761,761	17,506	744,255
Rotten trees ¹			
Sawtimber size	7,854	--	7,854
Poletimber size	3,658	--	3,658
Total	11,512	--	11,512
All live cull trees	773,273	17,506	755,767
All live trees	7,093,648	289,740	6,803,908
Salvable dead trees			
Sawtimber size	170,596	613	169,984
Poletimber size	45,628	1,013	44,614
All salvable dead trees	216,224	1,626	214,598
All classes	7,309,872	291,366	7,018,506

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that 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 and softwood/hardwood species, Illinois, 2001 - 2002

(In thousand cubic feet)

Forest type group	All species	Softwood species	Hardwood species
Softwood type groups			
White / red / jack pine	87,675	87,541	134
Loblolly / shortleaf pine	133,265	111,867	21,398
Pinyon / juniper	34,784	28,693	6,092
All softwood types	255,724	228,101	27,624
Hardwood type groups			
Oak / pine	31,640	22,885	8,755
Oak / hickory	3,861,829	7,480	3,854,350
Oak / gum / cypress	111,883	12,499	99,384
Elm / ash / cottonwood	1,347,291	--	1,347,291
Maple / beech / birch	706,905	1,269	705,636
Aspen / birch	5,101	--	5,101
All hardwood types	6,064,651	44,133	6,020,517
Nonstocked	--	--	--
All forest types	6,320,375	272,234	6,048,141

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that 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 and diameter class, Illinois, 2001 - 2002

(In thousand cubic feet)

Species group	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	113,404	6,245	16,391	30,332	30,218	19,016	5,001	--	--	6,200	--
Other yellow pines	454	--	454	--	--	--	--	--	--	--	--
Eastern white and red pines	109,972	2,292	8,581	10,787	17,052	18,573	24,625	10,243	8,506	9,314	--
Cypress	12,499	136	389	418	856	--	--	--	4,420	6,281	--
Other eastern softwoods	35,905	3,357	6,456	11,190	5,825	6,467	2,610	--	--	--	--
Total softwoods	272,234	12,030	32,272	52,727	53,950	44,056	32,236	10,243	12,925	21,795	--
Hardwoods											
Select white oaks	1,149,463	13,142	24,179	39,695	64,805	125,841	121,830	138,803	178,598	316,063	126,507
Select red oaks	435,005	9,015	8,123	14,866	36,311	35,491	52,443	73,786	56,847	128,199	19,924
Other white oaks	145,946	1,976	5,931	12,037	17,645	21,362	17,049	16,272	22,715	30,959	--
Other red oaks	734,718	17,770	26,410	40,134	65,582	109,684	101,488	118,462	63,303	163,689	28,195
Hickory	672,290	43,418	67,240	101,510	112,878	79,227	78,563	46,895	37,895	63,018	41,646
Hard maple	198,786	23,171	19,141	29,451	27,066	28,253	19,017	15,649	--	37,039	--
Soft maple	429,598	8,592	28,393	28,510	42,738	41,394	44,746	58,683	43,274	81,827	51,441
Beech	6,838	--	--	--	1,099	1,930	--	3,809	--	--	--
Sweetgum	107,900	9,605	14,202	20,811	13,545	17,284	16,497	8,136	--	7,821	--
Tupelo and blackgum	22,483	2,950	3,040	3,731	3,135	9,627	--	--	--	--	--
Ash	301,236	18,527	26,558	35,481	45,906	50,656	33,497	24,268	28,372	25,366	12,606
Cottonwood and aspen	319,775	1,051	3,944	6,268	9,875	14,431	16,742	18,504	16,890	42,852	189,219
Basswood	120,156	4,585	7,695	8,308	14,480	16,915	16,749	13,091	7,066	31,267	--
Yellow-poplar	80,747	4,039	3,239	4,922	4,558	11,520	--	4,323	10,083	38,065	--
Black walnut	185,929	7,130	16,370	14,354	30,593	25,446	38,814	17,894	21,586	13,741	--
Other eastern soft hardwoods	944,667	103,973	116,506	120,930	140,355	103,941	77,853	63,359	25,962	106,998	84,789
Other eastern hard hardwoods	192,602	14,518	25,126	23,567	31,407	26,875	21,231	11,849	13,602	24,427	--
Total hardwoods	6,048,141	283,462	396,098	504,575	661,978	719,878	656,519	633,780	526,194	1,111,330	554,328
All species	6,320,375	295,491	428,370	557,302	715,929	763,933	688,755	644,022	539,119	1,133,125	554,328

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that 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 and diameter class, Illinois, 2001 - 2002

(In thousand board feet)¹

Species group	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	460,618	149,864	152,322	98,585	26,184	--	--	33,662	--
Eastern white and red pines	503,443	51,552	83,940	93,563	127,221	52,835	45,059	49,274	--
Cypress	57,888	1,653	3,603	--	--	--	21,391	31,240	--
Other eastern softwoods	136,014	61,584	30,379	31,854	12,196	--	--	--	--
Total softwoods	1,157,963	264,654	270,245	224,002	165,601	52,835	66,450	114,176	--
Hardwoods									
Select white oaks	4,831,675	--	318,706	606,882	576,471	645,613	813,509	1,370,806	499,687
Select red oaks	1,962,422	--	179,741	177,167	262,408	367,255	280,772	614,738	80,340
Other white oaks	616,699	--	87,913	107,161	85,431	78,558	111,437	146,199	--
Other red oaks	3,144,478	--	324,171	544,295	501,841	582,255	308,900	761,637	121,378
Hickory	2,257,389	--	553,716	391,082	386,390	231,074	185,567	307,681	201,879
Hard maple	598,391	--	129,550	135,494	91,182	74,003	--	168,161	--
Soft maple	1,559,964	--	185,386	181,215	196,580	257,455	189,102	349,011	201,216
Beech	34,125	--	5,564	9,717	--	18,844	--	--	--
Sweetgum	285,072	--	61,887	78,623	74,957	36,393	--	33,212	--
Tupelo and blackgum	58,665	--	14,548	44,116	--	--	--	--	--
Ash	1,025,078	--	207,574	234,645	157,768	115,251	135,408	119,023	55,409
Cottonwood and aspen	1,261,700	--	46,141	70,227	83,076	92,529	86,003	216,079	667,646
Basswood	492,696	--	73,235	85,159	83,751	65,037	34,522	150,991	--
Yellow-poplar	350,121	--	22,518	58,285	--	22,154	51,366	195,797	--
Black walnut	703,311	--	147,054	121,880	186,590	84,686	100,783	62,318	--
Other eastern soft hardwoods	2,675,632	--	651,921	478,034	355,194	288,306	113,843	459,621	328,712
Other eastern hard hardwoods	581,401	--	144,383	122,938	97,329	53,646	60,477	102,628	--
Total hardwoods	22,438,819	--	3,154,008	3,446,921	3,138,971	3,013,059	2,471,691	5,057,903	2,156,267
All species	23,596,782	264,654	3,424,253	3,670,923	3,304,572	3,065,893	2,538,141	5,172,079	2,156,267

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

¹International 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 - 2002

(In dry tons)

Owner category and softwood/hardwood category	Tree biomass component							
	All components	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	3,117,073	8,534	3,108,539	2,626,172	482,367	--	--	--
Hardwoods	29,309,340	1,823,418	26,197,318	19,440,554	6,756,764	1,288,604	904,619	383,984
Total	32,426,413	1,831,952	29,305,858	22,066,726	7,239,132	1,288,604	904,619	383,984
Private								
Softwoods	2,328,494	38,806	1,886,813	1,486,283	400,530	402,874	302,057	100,817
Hardwoods	161,969,204	9,692,170	130,318,765	96,166,693	34,152,072	21,958,269	16,170,476	5,787,793
Total	164,297,698	9,730,977	132,205,578	97,652,975	34,552,603	22,361,143	16,472,533	5,888,610
All ownerships								
Softwoods	5,445,567	47,340	4,995,353	4,112,455	882,898	402,874	302,057	100,817
Hardwoods	191,278,544	11,515,588	156,516,083	115,607,246	40,908,836	23,246,873	17,075,095	6,171,777
Total	196,724,111	11,562,928	161,511,435	119,719,701	41,791,734	23,649,747	17,377,152	6,272,595

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 dry ton. Columns and rows may not add to their totals due to rounding.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410, or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Leatherberry, Earl C.; Brand, Gary J.; Little, Dick C.

2004. **Illinois's forest resources in 2002.** Resour. Bull. NC-236. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 22 p.

Results of the 2002 annual inventory of Illinois shows an estimated 4.3 million acres of forest land. The estimate of total volume of all live trees on forest land is 7.5 billion cubic feet. Nearly 4.1 million acres of forest land are classified as timberland. The estimate of growing-stock volume on timberland is 6.3 billion cubic feet. All live aboveground tree biomass on timberland is estimated at 196.7 million dry tons. Forest health concerns in Illinois include leaf tatters, bagworms, forest tent caterpillar, Asian longhorned beetle.

KEY WORDS: Annual inventory, forest land, timberland, forest type, growing-stock volume, Illinois.

MISSION STATEMENT

We believe the good life has its roots in clean air, sparkling water, rich soil, healthy economies and a diverse living landscape. Maintaining the good life for generations to come begins with everyday choices about natural resources. The North Central Research Station provides the knowledge and the tools to help people make informed choices. That's how the science we do enhances the quality of people's lives.

For further information contact:



North Central
Research Station
USDA Forest Service

1992 Folwell Ave., St. Paul, MN 55108

Or visit our web site:

www.ncrs.fs.fed.us

The Forest inventory and Analysis web site is:
www.fia.fs.fed.us