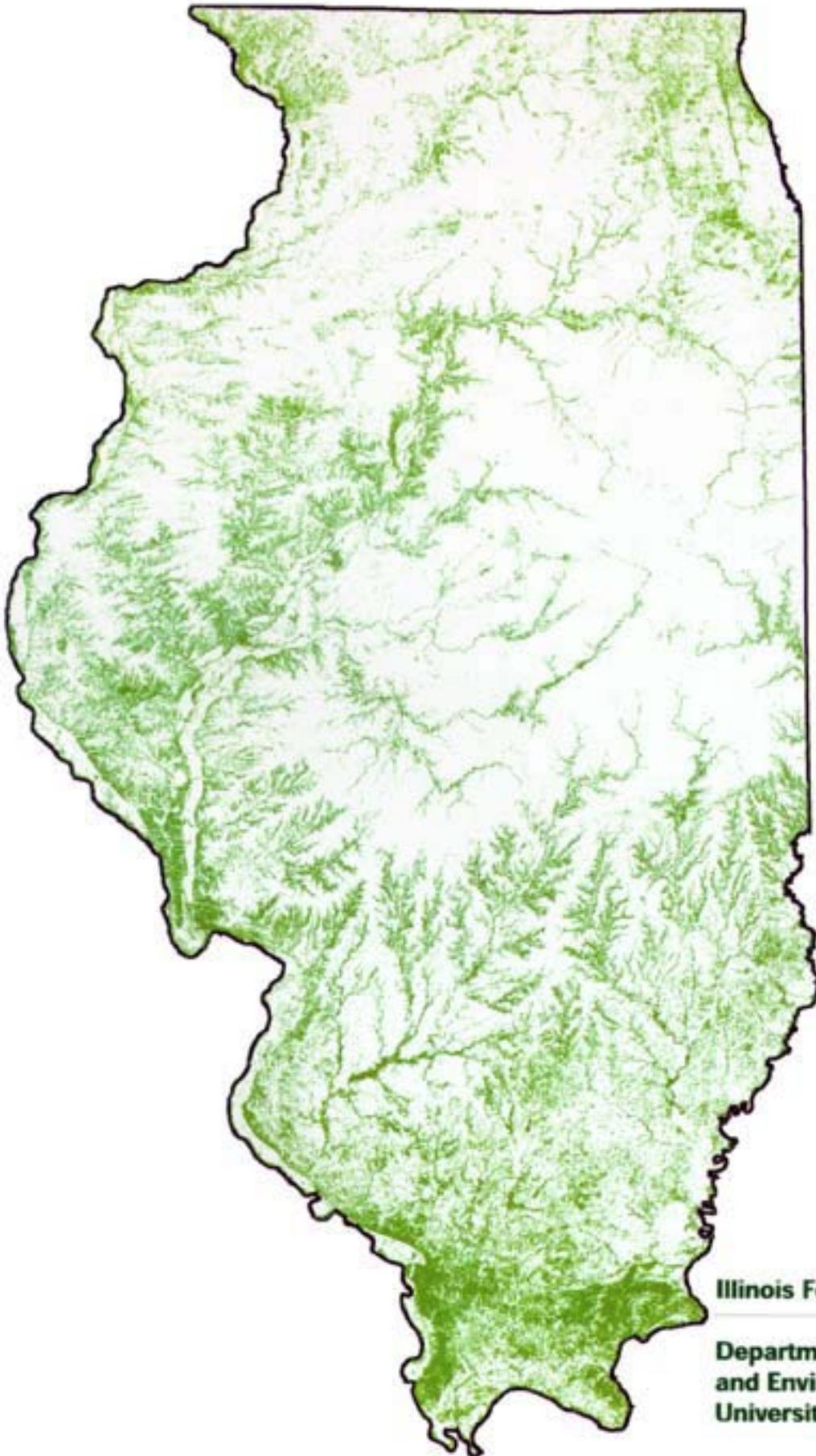


Forest Resources of Illinois

2002



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Funds for this publication were provided by the Illinois Forestry Development Council, Illinois Department of Natural Resources Division of Forestry and the Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign.

Design/Layout: Christy Uden

Graphics: Scott Bretthauer

Cover image: Updated from IDNR GIS Database; Luman et al., 1996

Back cover photograph: John Edgington

Editor: Ronald McDaniel

Printer: Crouse Printing, Champaign, IL

Printed by the authority of the State of Illinois.
TP89574-3.5M-6-02

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Department Report Series 2002-01

Citation: Bretthauer, S. M., and J. M. Edgington. 2002.
The forest resources of Illinois: 2002.
Department of Natural Resources and Environmental Sciences,
University of Illinois. 88 pages.



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Introduction



After its creation by the Forestry Development Act in 1983, the Illinois Forestry Development Council was charged with determining the magnitude, nature, and extent of the forest resources of Illinois. The objective was to provide information for the management, development, and preservation of Illinois forests. The first report to the Illinois Forestry Development Council, *Forest Resources of Illinois: An Atlas and Analysis of Spatial and Temporal Trends* (Iverson et al.), was published in 1989 as Illinois Natural History Survey Special Publication 11. This work has become an important reference for natural resource administrators and managers involved with Illinois forest resources. *Forest Resources of Illinois: 2002* is a second report, providing an update to reflect the current conditions of forest resources and forest benefits in Illinois.

Updated resource information is essential for resource planning and for evaluation of long-term management options that have been established. This report is intended to provide critical information to resource managers in Illinois so they may more effectively manage for the wise conservation of our state's forest resources. Significant changes have occurred in the forest resources of Illinois during the past decade. *Forest Resources of Illinois: 2002* describes those changes and presents an updated, comprehensive analysis of the spatial and temporal trends of Illinois forest resources and the benefits derived from Illinois forests. As this report details, Illinois has a substantial resource within its forests, and wise management is essential to guarantee the continuation of the benefits derived from the forests. Individuals with a passing interest in forestry will also find this report useful in gaining a more thorough understanding of the conditions of forests in Illinois.

The first section of this report is a chronological history of Illinois forests from pre-settlement conditions to more modern times. The next section describes the current conditions of Illinois forests in various ways. Forest types, stocking levels, stand-size classes, age distribution, net volume, number, and growth, mortality, and removal of trees

are all described. When relevant, comparisons are made between the most recent statewide inventory in 1998 and the previous one in 1985. These comparisons reveal recent, critical trends in the changing conditions of Illinois forests. A section detailing the distribution of Illinois forests among various types of owners follows. Understanding the ownership of Illinois forest resources is critical to applying sound policies to guide forest management in the state. Finally, the benefits received from Illinois forests are described. Included is information on the products generated from Illinois forests and the economic impact of forestry in Illinois.

Information in this report is displayed in a variety of ways, including bar graphs, pie charts, tables, and maps. The graphs and charts are used to visually summarize important points and aid in interpretation. More detailed information is contained within the tables. The maps allow a visual assessment of the spatial distribution of Illinois forest resources. A list of tables and figures is included to aid in searching for specific information. This report uses a large number of terms, and the reader is encouraged to consult the Glossary to avoid confusion. Most of the terms are from the USDA Forest Service and are taken directly from Schmidt et al. (2000).



Acknowledgments

Over the past two years, we have incurred an enormous debt to practitioners and colleagues for substantive research findings, technical assistance, help with data collection, data interpretation, and guidance. Many members of the Department of Natural Resources and Environmental Sciences (NRES) at the University of Illinois at Urbana-Champaign contributed to this publication by supplying critical information and assistance needed to update textual and tabular content. We would like to express our sincere thanks to our colleagues in NRES: Mark Bretthauer, Gene Campbell, Joyce Canaday, Jeff Dawson, George Gertner, Lyle Guyon, Mary Lowry, Anita Povich, and Steven Tondini. Our special thanks are extended to Ronald L. McDaniel for copy editing this publication and to Christy Uden for the design and layout.

We also owe a debt of gratitude to Gary J. Brand, Ronald J. Piva, Dennis M. May, Mark H. Hansen, Patrick D. Miles, Thomas L. Schmidt, Ronald L. Hackett, and Earl C. Leatherberry, of the USDA Forest Service; to Thomas Ward and Jeff White, of the USDA Natural Resource Conservation Service; to Dan Schmoker and Stewart Pequignot, of the Illinois Department of Natural Resources Division of Forestry, and Tara Gibbs, of the Illinois Department of Natural Resources Division of Natural Heritage; to Liane Suloway, Terri Weicherding, and Robert Gottfried, of the Illinois Natural History Survey; and to Richard Little and Gary Rolfe, of the Illinois Forestry Development Council.

For imparting a love of nature and education, Willis and Grace McCannon are fondly remembered. Finally, the support, patience, and understanding of Amy Bretthauer throughout the completion of this report are gratefully appreciated.

Scott M. Bretthauer

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Data and Terminology



Many sources of data were used for this book. The majority of the data came from the USDA Forest Service, but publications from other sources provided information as well. The wide variety of data and the terminology used can be unwieldy, so it is important to understand where each data set came from, how reliable it is, and how it describes the forest resources of Illinois. It is important also to note that the figures given in this report are estimates derived from sampling, and not actual known values.

USDA Forest Service

The USDA Forest Service (USDA FS) conducts surveys of the nation's forests to determine the conditions and extent of the forest resources within each state. The information from these surveys is valuable in planning and management decision making. The principal source of information for this report is the Forest Inventory and Analysis (FIA) section of the USDA FS. The FIA program is the result of mandates by the Renewable Resources Research Act of 1978, the Forest Ecosystems and Atmospheric Pollution Act of 1988, and Section 253(c) of the Agricultural Research, Extension, and Education Reform Act of 1998. The purpose of the FIA program is to provide information on the size, composition, and structure of each state's forests and to allow for changes and trends to be detected by comparing results with those of previous surveys. Nationwide inventories are completed at 10-year intervals. The most recent FIA for Illinois was completed in 1998 (Schmidt et al., 2000) and forms the basis for most of the information presented in this report. Previous FIAs were completed in 1985 (Hahn, 1987; Raile & Leatherberry, 1988), 1962 (Essex & Gansner, 1965), and 1948 (U.S. Forest Service, 1949). Additional data from the 1998 FIA were also used for this report to supplement Schmidt et al. (2000) and can be found at the USDA Forest Service Web site (USDA Forest Service, n.d.).

The sampling in the 1998 FIA involved two phases. The first phase estimated total acreage of the forests in Illinois and acreage by certain strata, such as forest type.

The second phase estimated values for various parameters within the strata, such as volume and growth. These two phases were also used in the 1985 inventory, but procedures were changed in 1998 to increase accuracy of the estimates. It was then necessary to adjust 1985 figures so that an accurate comparison could be made between 1985 and 1998.

For the phase 1 sampling in 1985, the USDA Forest Service used aerial photographs to estimate and stratify the area of forests. Points were systematically located on the photographs, and at each point the land cover was identified. In 1998, Landsat Thematic Mapper satellite imagery was used for the first phase to classify the extent and size of Illinois forests. The classification was determined by the Illinois Natural History Survey as part of the Critical Trends Assessment Project (CTAP) (Illinois Department of Natural Resources, 1996). The USDA Forest Service then used this classification to establish estimates for each forest stratum. This change from photographs to satellite imagery increased the intensity and consistency of phase 1 sampling and enhanced the accuracy of the estimates for each forest stratum, particularly at the county level.

Phase 2 sampling consisted of measurements taken at plots located in the forests of Illinois. In 1985 the phase 2 ground sampling was done at points located using aerial photographs. The points for plot establishment were located systematically over the entire state, regardless of land cover, but only plots located on forest land were actually sampled in the field. Each plot was divided into 10 subplots located over a 1-acre area. Tree measurements were recorded in these subplots. In 1998 these same plots were used when they could be resurrected, and new plots were established in the same general locations if the old plots could not be found. Once plots were located, they were examined using current aerial photographs to determine whether they had been disturbed by such activities as a timber harvest or a change in land use. All disturbed plots and one-third of the undisturbed plots were then sampled on the ground using 5 of the original 10 subplots.

All trees measured in 1985 were remeasured, any mortality was determined, and new in-growth was measured and recorded. From this information, changes between 1985 and 1998 were determined. A new plot design developed for the Forest Health Monitoring (FHM) program was also established at each sample point located in the field. The estimated current volumes and growth rates for the remaining two-thirds of the undisturbed plots were projected to their current status using the USDA FS STEMS computer simulation model.

The data from the ground plot measurements and computer projections of unmeasured plots were combined to generate estimates of important forest variables. Information from the two phases of sampling was then used to generate estimates of variables measured in plots for each stratum previously identified and measured in phase 1. Each variable for which an estimate was calculated had an associated sampling error that was generally low. The variables associated with removals had the highest sampling error. For further information on the FIA sampling errors, see Schmidt et al. (2000).

The new procedures developed for the 1998 FIA caused certain difficulties in comparing data with the 1985 FIA. Important changes in addition to those previously mentioned include a new volume estimation procedure and a new algorithm used to assign a forest type and a stand-size class to conditions observed at each plot. Because of these differences, the USDA FS released revised data from the 1985 FIA that would allow the two inventories to be more accurately compared and important changes to be noted. Therefore, some referenced materials based on the 1985 inventory will contain data that do not coincide with information in this publication. For more on the sampling methods, estimation procedures, accuracy of the data, and comparison of the 1998 and 1985 inventories, consult Schmidt et al. (2000).

In conjunction with the FIA, the USDA FS developed the Timber Product Output (TPO) survey to establish trends and conditions relating to the forest product industry in individual states. The study involved a survey of all businesses within a state to ascertain the amount, type,

origin, destination, and other attributes of all products relating to forest resources. The most recently completed survey for Illinois was summarized in 1996 (Hackett & Sester), with the previous report from 1987 (Blyth et al.).

The USDA FS study on forest land owners provided additional data on landowner attributes not covered by the FIA (Birch, 1996a, 1996b). This study involved determining the characteristics of a forest ownership unit, defined as “a person or combination of persons owning forest land.” Surveys were sent out to selected forest land owners whose land was located at an FIA sample plot. These surveys were then examined to determine important attributes of forest land owners to aid in resource management decisions. For Illinois, these data were available at the state level only.

Illinois Geographic Information System

The Illinois Geographic Information System (IGIS) is a compilation of GIS (geographic information system) data sets of important attributes of Illinois. These data sets are available on a CD-ROM or over the Internet. The various data sets have been produced by a number of different agencies. The county map of Illinois, used as the base map for all maps in this publication, was produced by the Illinois State Geological Survey (1984). The land cover database (Luman et al., 1996) was created as part of the Critical Trends Assessment Project at the Illinois Natural History Survey. The land cover themes were derived from Thematic Mapper (TM) satellite imagery from the Landsat 4. These data were collected during the period April 1991 to May 1995 (Illinois Department of Natural Resources, 1996). The forest coverage classes developed for the land cover database were the same ones the USDA FS used in phase 1 of the 1998 FIA. The USDA FS arrived at different acreages, however, because it verified the satellite data with the measurements taken on the ground. Currently the Illinois Gap Analysis Project (IL-GAP), also part of the Illinois Natural History Survey, is working on an even more detailed land cover database for Illinois. This database will include a more descriptive classification of the forest land cover, showing individual forest types (Illinois Natural History Survey, n.d.).

General Land Office Data

Anderson (1970) used maps from the original land survey records of Illinois to determine the distribution of forests, prairie, and water at the time of settlement. These maps were made in the 1850s using surveys completed before 1820. They show the distribution of prairie and forest within each township. Although this information provides the best estimates for the original vegetation in Illinois prior to settlement, small isolated vegetation communities are not shown on the survey maps. The map created by Anderson (1970) was placed in the Illinois Geographic Information System and used to estimate the forest, prairie, and water acreages of each Illinois county in the early 1800s (Iverson et al., 1989).

Tedford and Miller

Between 1921 and 1924, Clarence J. Telford conducted a survey to determine the distribution and conditions of Illinois forests (Telford, 1926). Approximately 66 percent of the state was surveyed. The remaining 34 percent consisted primarily of areas previously dominated by prairie and relatively void of forest cover. In these areas, estimates were used to determine the amount of forest land. Systematic surveying of the state's forests was carried out from automobiles, on horseback, and on foot. Forested areas were mapped, and estimates were made for yields. Occasional samples were tallied to check the accuracy of the estimates. The survey resulted in estimates of forested acreages and yields for the counties of Illinois and in a detailed description of the conditions of Illinois forests in the 1920s. R. B. Miller (1923) prepared an earlier report and focused on the conditions of the forests of southwestern Illinois.

Illinois Natural Areas Inventory

During the 1970s, the Illinois Department of Conservation (currently the Illinois Department of Natural Resources), the University of Illinois, and the Natural Land Institute cooperatively conducted the Illinois Natural Areas Inventory (INAI). The purpose of this work was to locate and describe high-quality natural areas remaining in

Illinois. A categorization and grading scheme was created to determine the type of community and quality of each natural area. An attempt was made to find at least one area of every natural community or habitat that remained relatively undisturbed (White, 1978). This inventory remains an ongoing process, and new natural areas are periodically added to the INAI. The information on all INAI areas is stored in the Illinois Natural Heritage Database, which is maintained by the Illinois Department of Natural Resources (IDNR) Division of Natural Heritage. For more information on the Illinois Natural Heritage Database, visit the IDNR Division of Natural Heritage Web site (Illinois Department of Natural Resources Division of Natural Heritage, n.d.). For this report, information on all natural areas with forest vegetation in Illinois was obtained from the Illinois Natural Heritage Database.

Additional Sources

Besides the previously listed sources of data, other sources provided important information. The IDNR Division of Forest Resources provided current figures for the Forest Development Act program from the administrative database used to monitor participation in the program. The information on the Conservation Reserve Program and the Conservation Reserve Enhancement Program came from the USDA Farm Service Agency (2000). Information on the Forestry Incentives Program (FIP), Stewardship Incentives Program (SIP), Agricultural Conservation Program (ACP), and Wetlands Reserve Program (WRP) came from the IDNR Division of Forest Resources and from the USDA National Agricultural Statistics Service (2001).

Information on the number and type of forest land owners at the county level was obtained from the Illinois Forestland Owners Network (IFLO), a database maintained at the University of Illinois Department of Natural Resources and Environmental Sciences (Lowry, 1996). Information on the owners of all forested tracts of land greater than 15 acres throughout Illinois was collected through a survey of offices of county supervisors of assessments throughout the state.

Information on the forestry-related businesses and industries in Illinois came from Dun & Bradstreet Information Services, a company of the Dun & Bradstreet Corporation. We contracted Dun & Bradstreet to provide detailed information on all businesses in Illinois identified by the Standard Industrial Classification (SIC) codes for the following business types: forestry (SIC 08), lumber and wood products (SIC 24), and paper and allied products (SIC 26). The database contained information for 2000.

allows for better examination of larger areas of the state for general trends than is possible by examining counties. Another motivation is the inaccuracy of some of the earlier inventories of Illinois forests, thus making applications at the county level difficult. Presenting the data at the regional level provides a more accurate assessment of the historical changes that have occurred within the state.

Notes on Comparison Between Years

The various data included in this publication are intended to present a general view of the current and historical trends of Illinois forest resources. It must be noted, however, that the procedures used by the various agencies and researchers throughout the years of inventories are quite different. For this reason, the reader is cautioned about drawing a strong conclusion based on differences between inventories, especially at the county level. The strongest comparisons can be made using the 1985 and 1998 FIA data. The data from the two previous FIAs, 1948 and 1962, have not been adjusted for the new methods used by the FIA group and, consequently, are less accurate. There were also differences between the classifications of forest type. The current USDA FS forest type is more detailed, and several forest types may be included in a single forest type used by earlier works.

Geographical Regions Used in This Publication

Information in this publication is presented at three geographical levels: state, regional, and county. While the reasons for using the state and the counties are obvious, the regions and why they are used require an explanation. Illinois has been divided into five forest resource regions: Northern, Grand Prairie, Western, South Central, and Southern Unglaciaded (*Figure 1*). These regions were developed by Iverson et al. (1989) using a combination of political boundaries and the natural divisions of Illinois (Schwegman, 1973). The natural divisions of Illinois are based on vegetation types, landscape features, climates, soils, and geology. The use of the regions

Figure 1.
 Forest resource regions and counties of Illinois.
 Adapted from: Iverson et al., 1989



Forest Types

The USDA FS uses a two-level system to describe and classify forests based on their species composition and structure. Forest type groups are used to describe forests of similar composition on a general national level. These forest type groups are subdivided into local forest types that are suitable for describing forests at the state level. The local forest types are based on the Society of American Foresters' classification system, as given in Eyre (1980). The names for both the forest type groups and the local forest types are based on the species that predominantly compose the particular forest types. This section lists the local forest types contained in each forest type group, followed by a brief description. The description of each forest type includes only the top five species based on their percentage of the total growing-stock volume for that forest type. Included with the species name is the percentage of the growing stock volume it composes in the local forest type. While it may seem unnecessary to list the most common species for a forest type that is named for the dominant species, there are a few cases where confusion can occur. The USDA FS uses an algorithm to assign a forest type to a plot. It is possible for a plot to be classified as a specific forest type, even if the species used to name the forest type is not present. This occurs when a combination of associated species is recognized as a specific forest type present on the plot. Following is a list of the USDA FS forest type groups and their local forest types found in Illinois.

USDA FS forest type group: White-red-jack pine

Local type: Eastern white pine

Eastern white pine is the only local forest type in Illinois from the white-red-jack pine forest type group. This type is usually dominated by eastern white pine, as its name implies. In Illinois this local forest type is predominantly composed of eastern white pine, 64 percent; red pine, 24 percent; jack pine, 4 percent; Scotch pine, 2 percent; and shortleaf pine, 2 percent.

USDA FS forest type group: Loblolly-shortleaf pine

Local type: Shortleaf pine

Similar to the first forest type group, the loblolly-shortleaf pine group is represented by a single local forest type, shortleaf pine. This type is typically dominated by shortleaf pine. In Illinois this type is predominantly composed of shortleaf pine, 79 percent; yellow-poplar, 9 percent; eastern cottonwood, 3 percent; sweetgum, 2 percent; and black cherry, 1 percent.

USDA FS forest type group: Oak-pine

Local type: Eastern redcedar

In this local forest type, eastern redcedar typically forms pure or nearly pure stands. In Illinois this type is predominantly composed of eastern redcedar, 37 percent; blackjack oak, 16 percent; pignut hickory, 13 percent; northern red oak, 11 percent; and white oak, 10 percent.

Local type: Eastern redcedar-hardwood

This local forest type is similar to eastern redcedar, except that the hardwoods share more of the dominance. In Illinois this type is predominantly composed of eastern redcedar, 35 percent; yellow-poplar, 12 percent; pignut hickory, 12 percent; black oak, 11 percent; and post oak, 8 percent.

Local type: Shortleaf pine-oak

This local forest type typically has a shared dominance between shortleaf pine and one or more oak species. In Illinois this type is predominantly composed of shortleaf pine, 35 percent; black oak, 18 percent; red maple, 9 percent; pignut hickory, 7 percent; and white oak, 6 percent.

Local type: Other pine–hardwood

This type has a variety of pines, other softwoods, and hardwoods sharing in dominance. In Illinois this type is predominantly composed of eastern white pine, 53 percent; Scotch pine, 25 percent; shortleaf pine, 7 percent; white spruce, 5 percent; and river birch, 3 percent.

USDA FS forest type group: Oak-hickory

Local type: Post oak–blackjack oak

This forest type is most commonly dominated by post oak and blackjack oak, associated with other oaks and hickories common to dry upland sites. In Illinois this type is predominantly composed of post oak, 57 percent; black oak, 8 percent; white oak, 5 percent; shagbark hickory, 5 percent; and blackjack oak, 4 percent.

Local type: Chestnut oak

Chestnut oak occurs in pure stands or makes up the majority of the composition. Other associates vary in this upland type. In Illinois this type is predominantly composed of black oak, 61 percent; white oak, 9 percent; northern red oak, 4 percent; white ash, 3 percent; and sugar maple, 2 percent. This is a case where the species for which the local forest type is named does not occur in the timberland classified as this type in Illinois. This type is mostly dominated in Illinois by black oak. Timberland in Illinois was classified as chestnut oak because the other associates commonly found in this forest type were present in the right proportions for classification.

Local type: White oak–red oak–hickory

White oak, northern red oak, various other oaks (such as black oak), and a variety of hickories make up the majority of the composition in this upland local forest type, with the oaks having the larger portion. There are also a wide variety of other associates that vary regionally. This type is also known as white oak–black oak–northern red

oak. In Illinois this type is predominantly composed of white oak, 15 percent; black oak, 14 percent; northern red oak, 14 percent; shagbark hickory, 8 percent; and pignut hickory, 6 percent. Many other species also have importance in this forest type.

Local type: White oak

White oak forms a pure stand or makes up the majority of the composition, with common associates being other oak species and hickories. Overall species composition is similar to the preceding type, except for the increase in the importance of white oak. In Illinois this type is predominantly composed of white oak, 62 percent; black oak, 6 percent; northern red oak, 5 percent; pignut hickory, 3 percent; and white ash, 3 percent.

Local type: Southern scrub oak

This local upland forest type typically has a composition of various scrub oak species that are commonly associated with dry, infertile sites. In Illinois this type is predominantly composed of sassafras, 19 percent; white oak, 9 percent; common persimmon, 7 percent; pignut hickory, 7 percent; and black oak, 6 percent. Neither white nor black oak is considered to be scrub oak, so this is a case where the combination of species found in the plots closely matched the southern scrub oak type, even though no scrub oaks were actually found in these plots.

Local type: Mixed upland hardwoods

This is an upland forest type represented by a diverse mixture of upland species, including, but not necessarily dominated by, the oaks and the hickories. In Illinois this type is predominantly composed of bur oak, 72 percent; white oak, 5 percent; shagbark hickory, 5 percent; black cherry, 4 percent; and eastern redcedar, 2 percent. Forests classified as this type in Illinois are heavily dominated by bur oak.

USDA FS forest type group: Oak-gum-cypress

Local type: Oak-gum-cypress

This is a bottomland forest type in which bottomland oaks, sweetgum, water tupelo, and baldcypress dominate the composition, either together or independently. In Illinois this type is predominantly composed of sweetgum, 38 percent; pin oak, 15 percent; sycamore, 6 percent; swamp chestnut oak, 5 percent; and yellow-poplar, 4 percent. Oak and sweetgum are present in plots categorized as this forest type in Illinois. Although it may appear baldcypress is missing, it makes up 3 percent of this forest type in Illinois, even though it is not one of the top five species. Usually when baldcypress is found, it occurs in almost pure stands or with water tupelo. Thus, this local forest type can be thought of as a combination of two separate ones, the pin oak-sweetgum and the baldcypress.

Local type: Swamp chestnut oak-cherrybark oak

This is a bottomland forest type. Swamp chestnut oak and cherrybark oak represent the majority of the stand or may be distributed less dominantly with other associates. In Illinois this type is predominantly composed of pin oak, 72 percent; cherrybark oak, 4 percent; red maple, 3 percent; shingle oak, 3 percent; and black cherry, 2 percent. The dominance of pin oak is obvious, but cherrybark oak is present. Swamp chestnut oak is present but is not one of the top five dominant species as it is in the oak-gum-cypress local type.

USDA FS forest type group: Elm-ash-cottonwood

Local type: Black ash-American elm-red maple

This is a bottomland forest type dominated by these three species in various proportions. In Illinois this type is predominantly composed of silver maple, 27 percent; sycamore, 9 percent; green ash, 7 percent; hackberry, 7 percent; and red maple, 7 percent. In Illinois silver maple is more dominant than red maple in this forest type.

Although not one of the top five species, American elm represents 3 percent of the growing-stock volume in this forest type in Illinois. Its importance may be underestimated because the percentages cited are based on total growing-stock volume. Due to a large number of small trees, the elms have low volumes but high tree numbers. Black ash is considered a key species for this type, but in Illinois it represents only 0.03 percent of the total growing-stock volume.

Local type: Cottonwood

This is typically a bottomland forest type that is dominated almost exclusively by cottonwood. In Illinois this type is predominantly composed of cottonwood, 84 percent; silver maple, 5 percent; American elm, 2 percent; black willow, 2 percent; and red maple, 2 percent.

Local type: Willow

This is also a bottomland forest type, almost always heavily composed of black willow. In Illinois this type is predominantly composed of black willow, 78 percent; cottonwood, 10 percent; silver maple, 7 percent; American elm, 1 percent; and sycamore, 1 percent.

USDA FS forest type group: Maple-beech-birch

Local type: Sugar maple-beech-yellow birch

This is an upland forest type most commonly associated with the northern region of the United States. Sugar maple, beech, and yellow birch usually form the largest part of the species composition, but there many associates that vary regionally. In Illinois this type is predominantly composed of sugar maple, 13 percent; American elm, 7 percent; black walnut, 6 percent; American basswood, 6 percent; and northern red oak, 5 percent. Yellow birch is not listed as being present in this forest type in Illinois, even though the species does rarely occur. Although it is not one of the top five species, beech is present and represents 2 percent

of the composition. It is the combination of sugar maple, beech, and their various associates that contributes to the large acreage of Illinois timberland classified as this forest type.

Local type: Black cherry

This upland forest type generally represents a successional stage and can be dominated by a mixture of black cherry, sugar maple, red maple, white ash, American beech, and other hardwood associates. These species may be present in a mixture, or there may be only one or two dominant species. In Illinois this type is predominantly composed of yellow-poplar, 32 percent; black walnut, 20 percent; black cherry, 11 percent; white ash, 7 percent; and bur oak, 4 percent.

Species Groups

Because of the large number of species present in the forests of Illinois, this report uses species groups instead of individual species for information concerning volumes, number of trees, growth, mortality, and removals. This has reduced the size of tables and figures. The species groups and the species contained within each group are given below. The percentage of growing-stock volume each individual species contributes to the total volume for the species group is based on the 1998 FIA.

Loblolly and shortleaf pine

Shortleaf pine (*Pinus echinata*), 95.4 percent
Loblolly pine (*Pinus taeda*), 4.6 percent

Eastern white and red pine

Eastern white pine (*Pinus strobus*), 74.6 percent
Red pine (*Pinus resinosa*), 25.4 percent

Jack pine

Jack pine (*Pinus banksiana*), 100 percent

Spruce and balsam fir

White spruce (*Picea glauca*), 100 percent

Cypress

Baldcypress (*Taxodium distichum*), 100 percent

Eastern redcedar

Eastern redcedar (*Juniperus virginiana*), 100 percent

Other eastern softwoods

Scotch pine (*Pinus sylvestris*), 95.4 percent
Blue spruce (*Picea pungens*), 4.6 percent

Select white oaks

White oak (*Quercus alba*), 80.5 percent
Swamp white oak (*Quercus bicolor*), 2.8 percent
Bur oak (*Quercus macrocarpa*), 12.9 percent
Swamp chestnut oak (*Quercus michauxii*), 0.6 percent
Chinkapin oak (*Quercus muehlenbergii*), 3.2 percent

Select red oaks

Cherrybark oak (*Quercus pagoda*), 3.0 percent
Northern red oak (*Quercus rubra*), 95.6 percent
Shumard oak (*Quercus shumardii*), 1.4 percent

Other white oaks

Overcup oak (*Quercus lyrata*), 9.0 percent
Chestnut oak (*Quercus montana*), 0.7 percent
Post oak (*Quercus stellata*), 90.3 percent

Other red oaks

Scarlet oak (*Quercus coccinea*), 0.7 percent
Northern pin oak (*Quercus ellipsoidalis*), 1.7 percent
Southern red oak (*Quercus falcata*), 2.7 percent
Shingle oak (*Quercus imbricaria*), 13.4 percent
Blackjack oak (*Quercus marilandica*), 0.7 percent
Pin oak (*Quercus stellata*), 18.4 percent
Willow oak (*Quercus phellos*), 0.1 percent
Black oak (*Quercus velutina*), 62.3 percent

Hickory

Water hickory (*Carya aquatica*), 0.2 percent
Bitternut hickory (*Carya cordiformis*), 12.2 percent
Pignut hickory (*Carya glabra*), 28.7 percent
Pecan (*Carya illinoensis*), 1.9 percent
Shellbark hickory (*Carya laciniosa*), 1.4 percent
Shagbark hickory (*Carya ovata*), 36.5 percent
Black hickory (*Carya texana*), 0.1 percent
Mockernut hickory (*Carya tomentosa*), 19.0 percent

Hard maple

Black maple (*Acer nigrum*), 0.4 percent
Sugar maple (*Acer saccharum*), 99.6 percent

Soft maple

- Red maple (*Acer rubrum*), 25.0 percent
- Silver maple (*Acer saccharinum*), 75.0 percent

Elm

- Winged elm (*Ulmus alata*), 1.8 percent
- American elm (*Ulmus americana*), 69.1 percent
- Siberian elm (*Ulmus pumila*), 0.2 percent
- Slippery elm (*Ulmus rubra*), 28.8 percent
- Rock elm (*Ulmus thomasi*), 0.1 percent

Hackberry

- Hackberry (*Celtis occidentalis*), 100 percent

Sycamore

- Sycamore (*Platanus occidentalis*), 100 percent

Black cherry

- Black cherry (*Prunus serotina*), 100 percent

Beech

- American beech (*Fagus grandifolia*), 100 percent

Sweetgum

- Sweetgum (*Liquidambar styraciflua*), 100 percent

Tupelo and blackgum

- Water tupelo (*Nyssa aquatica*), 42.2 percent
- Blackgum (*Nyssa sylvatica*), 57.8 percent

Ash

- White ash (*Fraxinus americana*), 52.5 percent
- Black ash (*Fraxinus nigra*), 0.5 percent
- Green ash (*Fraxinus pennsylvanica*), 46.1 percent
- Pumpkin ash (*Fraxinus profunda*), 0.5 percent
- Blue ash (*Fraxinus quadrangulata*), 0.4 percent

Cottonwood and aspen

- Eastern cottonwood (*Populus deltoides*), 98.1 percent
- Bigtooth aspen (*Populus grandidentata*), 1.0 percent
- Swamp cottonwood (*Populus heterophylla*), 0.2 percent
- Quaking aspen (*Populus tremuloides*), 0.7 percent

Basswood

- American basswood (*Tilia americana*), 100 percent

Yellow-poplar

- Yellow-poplar (*Liriodendron tulipifera*), 100 percent

Black walnut

- Black walnut (*Juglans nigra*), 100 percent

Other hardwoods

- Boxelder (*Acer negundo*), 13.6 percent
- Ohio buckeye (*Aesculus glabra*), 0.1 percent
- River birch (*Betula nigra*), 9.6 percent
- Paper birch (*Betula papyrifera*), 0.0 percent
- Northern catalpa (*Catalpa speciosa*), 0.2 percent
- Sugarberry (*Celtis laevigata*), 1.3 percent
- Butternut (*Juglans cinerea*), 1.2 percent
- Cucumbertree (*Magnolia acuminata*), 0.1 percent
- Black willow (*Salix nigra*), 21.8 percent
- Sassafras (*Sassafras albidum*), 9.6 percent
- American chestnut (*Castanea dentata*), 0.0 percent
- Flowering dogwood (*Cornus florida*), 0.5 percent
- Common persimmon (*Diospyros virginiana*), 4.6 percent
- Honeylocust (*Gleditsia triacanthos*), 23.7 percent
- Kentucky coffeetree (*Gymnocladus dioica*), 0.3 percent
- White mulberry (*Morus alba*), 0.5 percent
- Red mulberry (*Morus rubra*), 1.7 percent
- Black locust (*Robinia pseudoacacia*), 11.3 percent

Early Illinois Forest Resources



The first settlers arriving in Illinois found a land of both forests and prairie. Forests accounted for approximately 39 percent of the state and dominated the southern third. The uplands in the southern Ozark region, extending over the bluffs of the Mississippi, Ohio, and Wabash Rivers, were quite diverse with a mixture of hardwood species. While the prairie accounted for the majority of land area in the remainder of the state, forests were present along the northern and western parts of the state, as well as along stream valleys throughout the prairie region. The upland forests in these areas were predominantly composed of oaks and hickories. The bottomlands and the streamside forests along major and secondary streams were characterized by a diverse mixture of hardwood species. There was significant regional variation in the forests of Illinois, with a general increase in diversity for both upland and bottomland forests in the southern portion of the state.

Anderson (1970) used the original land survey records of Illinois to create a detailed map showing the original land cover in the early 1800s, when the state was settled. The Illinois Geographic Information System software was used to digitize this map (Figure 2) and calculate acreages of forest, prairie, and water for individual counties (Table 1). The state totals show that prairie covered the largest area, with 21.6 million acres. Forests accounted for 13.8 million acres, and water for 0.2 million acres. The original forests of Illinois had an estimated volume of 16.3 billion cubic feet. Using the map and information generated from it, estimates for the regions and the counties can be made to show the general distribution of the forests in Illinois prior to settlement.

The Northern Region was split, with approximately 60 percent prairie and 40 percent forest (Table 1). Three counties having more forest than prairie were Jo Daviess County, with the highest percentage of forest at 78.8 percent, Lake County with 63.2 percent, and Carroll County with 51.7 percent. The remaining counties had more prairie than forest. Figure 2 shows the distribution of forest being dominant in these counties, with another large area of for-

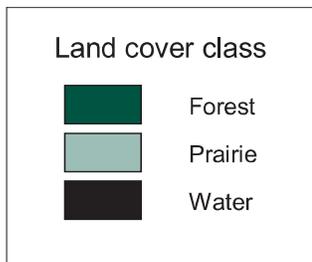
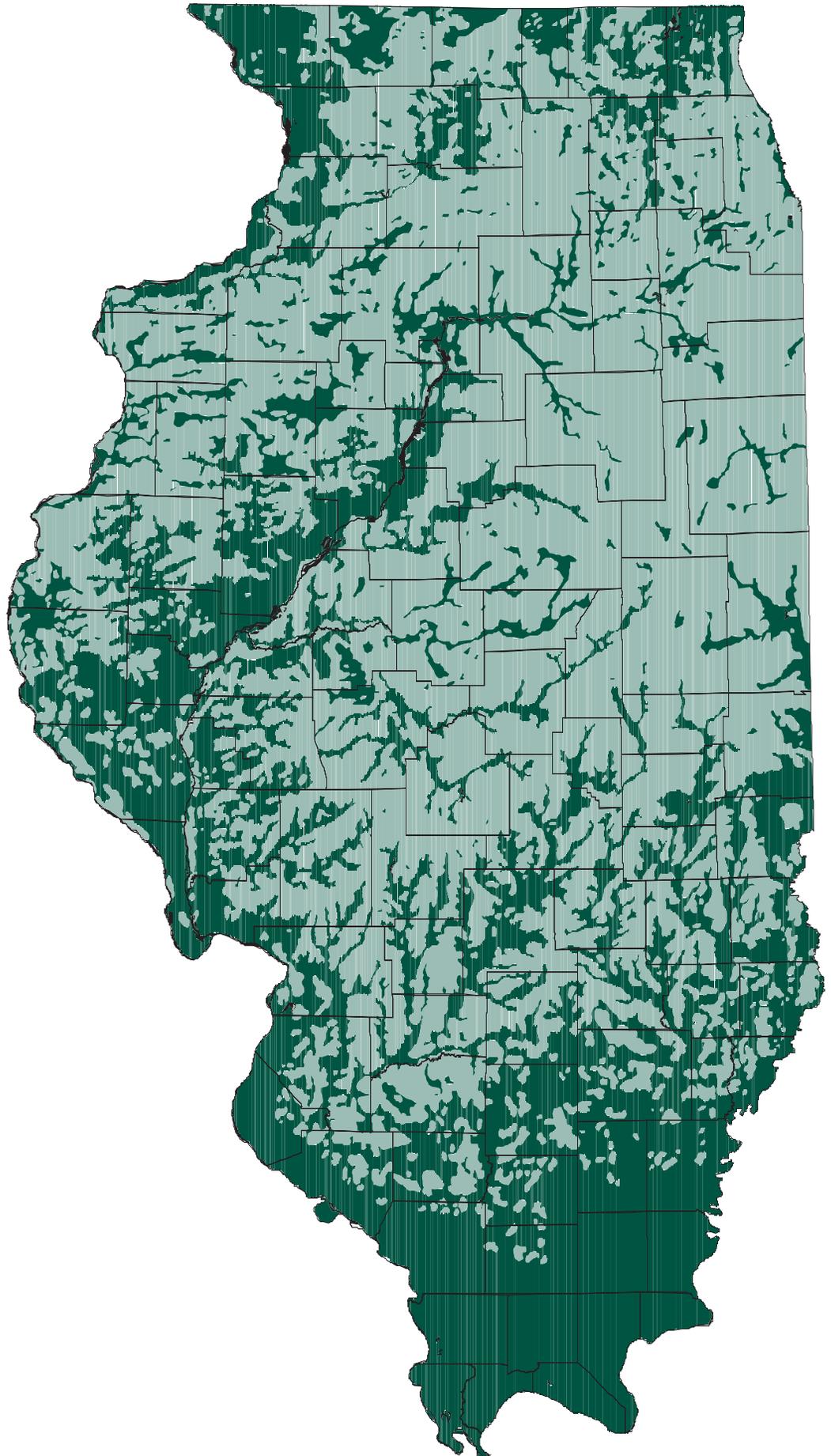
est occurring primarily in Ogle County. Along with mixed hardwood bottomland and upland forests, white pine stands, tamarack swamps, and jack pine stands around Lake Michigan could be found in this region (Telford, 1926).

The Grand Prairie Region was dominated, not surprisingly, by prairie. Forests accounted for only 15.7 percent of the original land cover (Table 1). Putnam County was the most forest-dominated county at 38.6 percent, with Ford County being the least forest dominated in the state at 3.6 percent. Tazewell County had the largest actual acreage of forest, with 129,400 acres, followed by Sangamon County, with 124,400 acres. The forests in this region were generally restricted to the stream valleys and were often grove-like as they thinned out at the borders of the prairie (Telford, 1926). Figure 2 clearly shows the dominance of the prairie in this region and the forest occurring in belts along the streams.

The Western Region of the state was 44.0 percent forested (Table 1). Figure 2 shows that a majority of this forest was located around the Illinois River and its tributaries. Calhoun County was 85.6 percent forested, being located in the extensive bottomlands where the Mississippi and Illinois Rivers join. Brown County at 80.3 percent and Schuyler County at 71.7 percent were also heavily dominated by forests. Pike County had the largest actual amount of forest, with 364,200 acres, closely followed by Fulton County, with 353,200 acres. Counties farther away from the Illinois River had a larger percentage of prairie than forest.

In the South Central Region of Illinois, forest acreage slightly exceeded prairie acreage, with 56.8 percent of the land in forest cover (Table 1). The counties in the northern part of this region had a higher percentage of prairie, as this area formed the transition zone between the prairie in the northern part of the state and the forest in the southern part. Forests in this area still occupied regions along streams. Along the eastern and southern parts of this region, the forest became the dominant land class (Figure 2).

Figure 2.
Land cover of Illinois, about 1820.
Adapted from: Anderson, 1970



Saline and Gallatin Counties were covered exclusively by forest at 100 percent. Hamilton, Jackson, White, and Williamson Counties were almost entirely made up of forests. Jackson County had the largest acreage of forest, with 360,900 acres. The forests in this region were generally of poorer quality and had fewer tree species. Open park-like savannas often merged with both the forest and the prairie. Post oak forests were found on the most unproductive sites, with black oak and hickories on the better soils (Telford, 1926).

The Southern Unglaciaded Region was heavily dominated by forests, with more than 98 percent coverage. All counties in this region were greater than 90 percent forest covered, with Johnson County 100 percent forested. Union County had the largest amount of forest, with 263,400 acres. In the Southern Unglaciaded Region, bottomland forests dominated by baldcypress and mixed hardwoods delineated the southern border of Illinois, forming a band along the Wabash, Ohio, and Mississippi Rivers. In certain areas, such as along the Cache River, the baldcypress extended away from the main streams into other bottomland areas. Where baldcypress dropped out, the mixed hardwoods took over composition of these forests. The upland forests in this region were composed of a variety of oaks, hickories, and a mix of other upland tree species, with shortleaf pine occurring in isolated locations on bluffs (Telford, 1926).

The first people to arrive in Illinois were primarily hunters who were well adapted to life in the woods. They chose to inhabit the southern forested portion of Illinois and stay clear of the great unknown prairie (Anderson, 1970). Between 1800 and 1830 there was a rapid clearing of secondary stream bottoms in this area. As the settlers proceeded north, they chose to do so along the wooded streams. Around this time the means to till the prairie soil was discovered, along with the realization of the production potential of this valuable resource. Between 1820 and 1870 the population of Illinois grew 46 times, and settlers moved in to clear the prairie and convert it to agricultural lands. The demand for the timber resources of Illinois also grew during the beginning of this period because the

demand for wood had to be met primarily through local forests. Forested land was often more valuable than prairie because of the need for wood in building and heating homes.

With the advent of the railroad, timber and coal from other regions of the country could be more easily shipped to Illinois. This dropped the value of timber in the state, and land previously forested was often considered a nuisance and was cleared for agriculture. In the 1860s the railroad again changed the demand on Illinois forests. A market for timber from Illinois was established, and extensive cutting began. Illinois became an important wood-producing state, and timber from other states was imported for processing at Illinois mills. By 1870 manufacturing involving wood products accounted for 20 percent of the value for all manufacturing in the state. By about 1920 the forests of Illinois were almost completely cut over. Only around 22,000 acres of virgin forest remained, and these were located primarily in the floodplains of large rivers (Telford, 1926).

It was at this time in the history of Illinois forests that Telford (1926) completed his survey. The changes in Illinois forests since settlement began were dramatic. Total area of Illinois forests had been reduced from the original estimate of 13.8 million acres to 3.0 million acres (Table 2). This reduction was prominent in all regions, with the South Central losing the most—from 5.5 million acres to 1.2 million acres. Of the total forest land remaining in Illinois, only 12.3 percent was well stocked with sawtimber-size trees, and the total volume for sawtimber was only 5.4 percent of the original sawtimber volume. Telford estimated the original bottomland forests to have a total volume of 6,431.4 million cubic feet on 2,898 thousand acres. In 1926 the bottomland forests of Illinois were estimated to have only 257.5 million cubic feet on 739 thousand acres, with the majority of forests being understocked.

The baldcypress and mixed hardwood bottomland forests of southern Illinois had been reduced from 251.4 thousand acres to 21.1 thousand acres. Much of this forest type was lost to land being cleared for agricultural produc-

tion. The mixed hardwood forests along the main streams totaled an estimated 718.3 thousand acres from an original 2,283.7 thousand acres. The majority of the volume loss in bottomland forests occurred along the major streams. Upland mixed hardwood forests totaled 594.4 thousand acres, and oak-hickory forests had 1,209.7 thousand acres, but the majority of these forests were understocked. The average annual growth in the mixed upland hardwoods was more than twice as much as in the post oak forests found on the poor soils of the south central portion of the state. Thus, there was an indication of improving conditions of Illinois forests.

Shortly before Telford's report, R. B. Miller (1923) reported on the western portion of the Southern Unglaciaded Region and the southwestern portion of the South Central Region. This study included all of Jackson County and parts of Union, Alexander, Pulaski, and Randolph Counties. The area was 31 percent forested, consisting of 175,036 acres of forest land, of which 90 percent was upland and 10 percent was bottomland. The forests were poorly stocked. All merchantable timber had been removed from 8 percent of the area of the upland forests, and the more desirable species and best trees had been removed from another 75 percent. Only 2 percent of the upland forests had volumes comparable to those of the original forests, and a mere 0.01 percent were classified as exceptionally good. Seventy percent of the bottomland forest acreage had the best species and trees removed, and there was no acreage of bottomland forest comparable to original forest cover or of exceptional quality.

The first FIA sampling of Illinois forests by the U.S. Forest Service was completed in 1948 (U.S. Forest Service, 1949). Illinois forests showed an increase in area throughout the state, with only a few counties decreasing in total forested acres. This general increase in forest area was a trend that would continue to the present.

Current Conditions and Trends of Illinois Forest Resources



Forest Land

Since 1926 the extent of forests in Illinois has gradually increased (Table 2). This increase has generally been the trend in all five regions, with exceptions during certain periods in certain regions. Slight decreases occurred in the Grand Prairie and Western Regions between 1985 and 1998. Illinois currently has an estimated 4,331.3 thousand acres of forest land, of which 4,087.0 thousand acres are timberland and 244.2 thousand acres are reserved forest land (Table 3). This is an increase from 1985, when there were 4,265.5 thousand acres of forest land, with 4,029.9 thousand acres of timberland and 235.6 thousand acres of reserved forest land. Illinois currently has slightly less than 1 percent of its total land area in reserved forest land, while the average for the eastern United States is 3 percent (USDA Forest Service, 2001). Between 1985 and 1998, 441 thousand acres of timberland were converted to nonforest land, and 507 thousand acres of nonforest land were converted to timberland (Table 4). Table 4 can be interpreted by following rows to see changes in land-use classification and forest type groups between 1985 and 1998. Use the columns to determine the origin of 1998 land-use classifications and forest type groups. Currently, only about 12 percent of Illinois is forested, as compared with 39 percent in 1820.

The dominant land-use class in Illinois is cropland, accounting for the vast majority of area in the state (Figure 3). In Figure 3 some of the land-use classes have been combined to ease interpretation (see Table 3 for acreages of individual land-use classes). Nonforest land with trees accounts for 1,025.8 thousand acres (Table 3). This land-use class has grown since 1985, primarily because of large increases in urban land with trees. Data shown in Table 4 indicate that a substantial portion of the 1998 nonforest land with trees, of which urban land with trees is a part, was previously timberland. The increase in agricultural nonforest land with trees has occurred in cropland, improved pastureland, and idle farm ground. Wooded

strips decreased between 1985 and 1998 and are one of the sources of the increase in the timberland during that period. These wooded strips expanded in width to subsequently become wide enough to qualify as timberland (Schmidt et al., 2000). Wooded pasture acreage also decreased between 1985 and 1998, corresponding with an overall decrease of grazing in Illinois. This could also be a possible source of the increase in timberland, as areas previously classified as wooded pasture acreage increased to stocking levels that met the requirements for timberland. Urban land without trees is also an important land-use class, having total acreage slightly more than half that of forest land acreage. This class has decreased since 1985. This decrease may have been another source for the increase in urban land with trees, suggesting that existing urban areas are increasing in tree cover. The total of both urban land-use classes (with and without trees) increased 12.2 thousand acres between 1985 and 1998.

According to the 1998 FIA, the South Central Region has the largest area of forest land, with 1,684.4 thousand acres (Table 2), and is 17 percent covered by forest. The Western Region is second, with 1,145.1 thousand acres and 15 percent forest coverage. The Grand Prairie Region has 602.9 thousand acres of forest land but is only 5 percent forested. The Southern Unglaciaded Region has the second lowest total forest land acreage at 570.5 thousand acres but is 45 percent forested. Its lower total forest land acreage compared with the total forest land acreage of other regions is deceiving because of the region's small size. The Northern Region has the lowest acreage of forest land, with 328.3 thousand acres, which represents 8 percent forest coverage.

Pope County, in the Southern Unglaciaded Region, has the largest forest land acreage of all the counties in Illinois, with 158.4 thousand acres of forest land. Jackson County, in the South Central Region, is second, with 141.3

thousand acres of forest land. Ford County, in the Grand Prairie Region, has no acres of forest land and is therefore the lowest reported for Illinois.

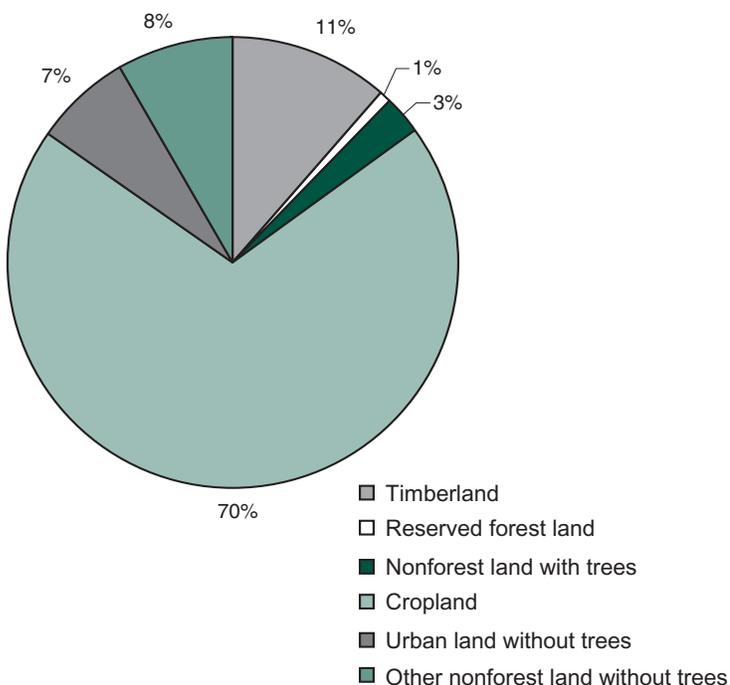
Figure 4 shows the forest coverage for Illinois based on the four classes of forests used by the Illinois Geographic Information System (IGIS), which are closed-canopy deciduous forests, open-canopy deciduous forests, coniferous forests, and forested wetlands (Luman et al., 1996). The forests of Illinois are still primarily located in the southern and western portions of the state and along waterways extending into the agricultural regions where the tall-grass prairie once dominated. The forest acreage derived for each county from this coverage is shown in the column denoted “1996 INHS” in Table 2. When comparing the acreage of forest land from the 1998 FIA with the acreage from the 1996 land cover database, discrepancies are evident for certain counties and four of the regions. Only the estimates for the Southern Region are relatively close. The discrepancies are due to the difference in classification systems used by the two agencies. The USDA FS

used the same land cover data for its first phase of sampling but adjusted acreage estimates based on the percentage of ground plots that showed forest cover, as defined by the agency’s requirements.

Timberland

Nationally, two-thirds of forest land is timberland (USDA Forest Service, 2001). By comparison, Illinois has a much higher proportion of its forest land in timberland. In Illinois, timberland accounts for 94 percent of the forest land, which is 11 percent of the total land area. Timberland is the type of forest land used in quantifying the forests of Illinois. Most data available are for timberland rather than forest land. Acreages for forest land are less relevant regarding volume information because the other portion of forest land, reserved forest land, is not available for wood production. The majority of the timberland in Illinois is natural in growth, with plantations accounting for less than 3 percent of total timberland. Three-quarters of these plantations are classified as forest type groups dominated by softwood tree species (Schmidt et al., 2000).

Figure 3.
Percentage of land in Illinois by selected land-use class, 1998.



See table 3 for land-use classes and subclasses
Adapted from: Schmidt et al. 2000

A comparison of the distribution of current timberland, forest land, and original forest land shows that the forests of Illinois still occur in the same general areas where they occurred in 1820. The distribution among the counties of the 4,087.0 thousand acres of Illinois timberland can be seen in Figure 5. The current acreage of timberland in Illinois has increased only 1 percent from the 4,029.9 thousand acres in 1985. Timberland is most prevalent in the southern and western portions of the state. The distribution of timberland is very similar to that of forest land, as can be seen by comparing Figures 4 and 5. The highest acreage of timberland occurs in Pope County at 150.9 thousand acres, followed by Jackson County at 137.7 thousand acres. These two counties were also the two highest counties for forest land. Five counties—DuPage, Woodford, Ford, Piatt, and Champaign—are estimated to have zero acres of timberland. Four of the counties having zero acres of timberland do have forest land (Ford County does not), but the forest was reserved forest land and not timberland.

Figure 4.
Distribution of forest cover in Illinois, 1996.
Adapted from: IDNR GIS database; Luman et al., 1996.

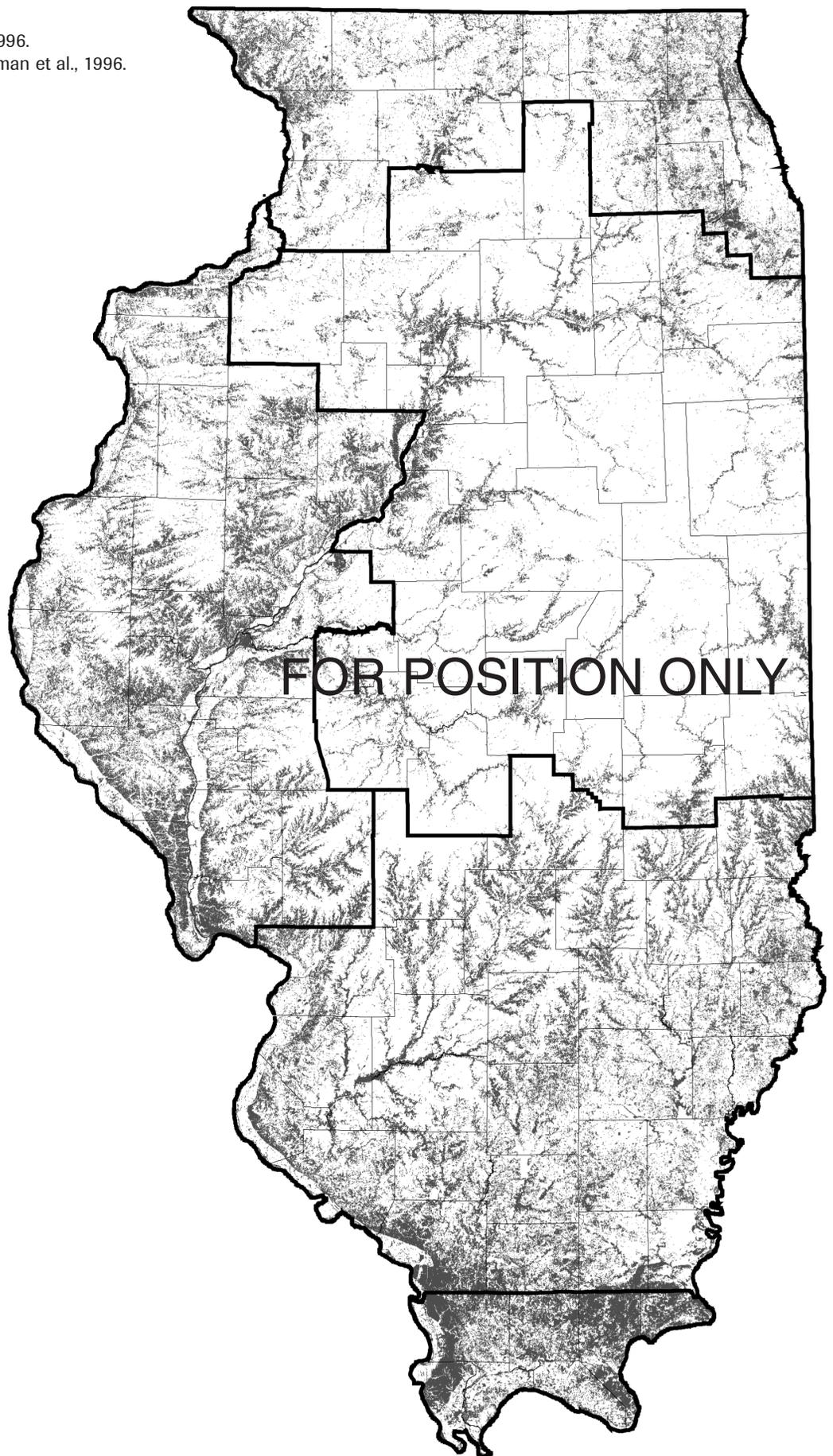
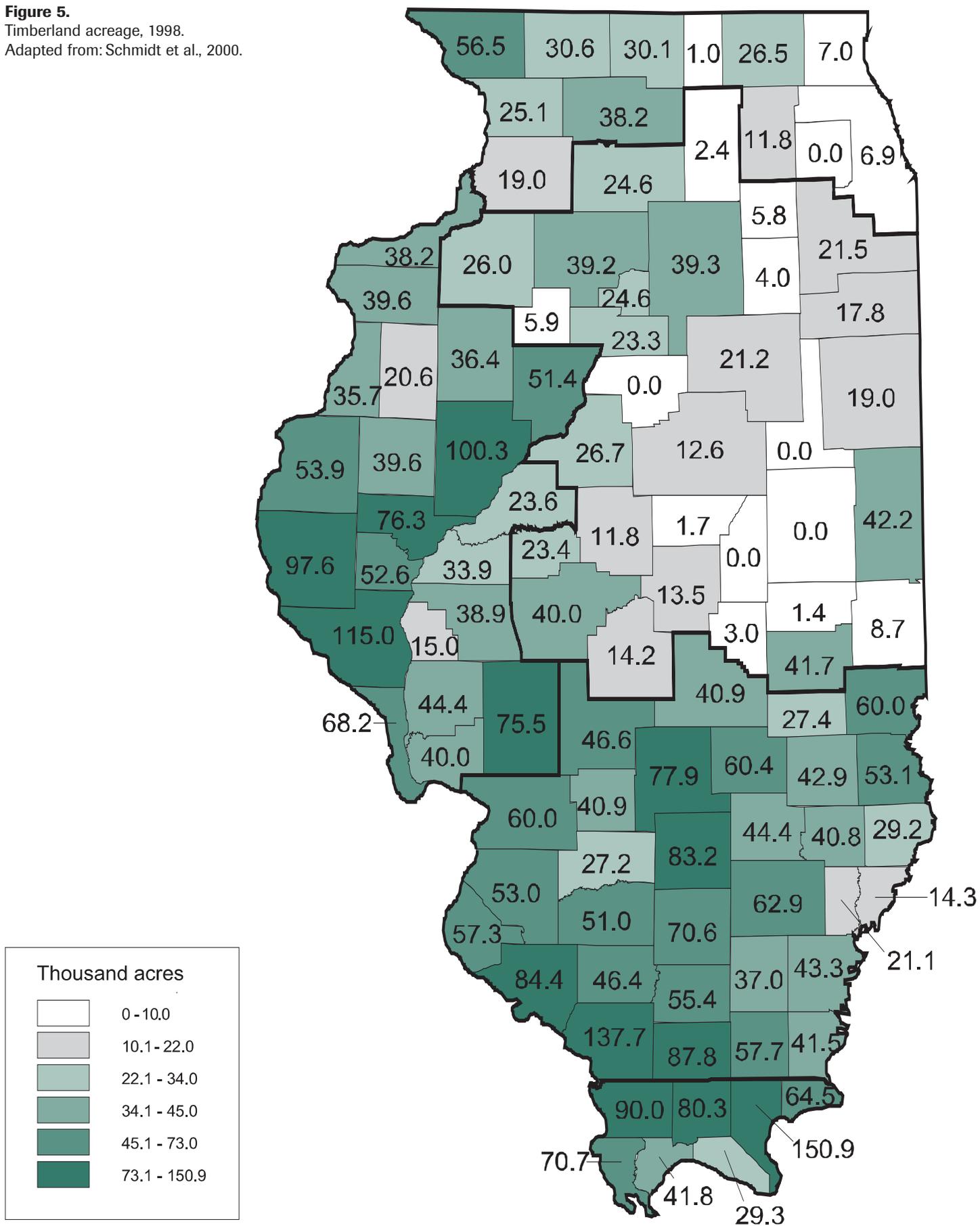


Figure 5.
 Timberland acreage, 1998.
 Adapted from: Schmidt et al., 2000.



Timberland Forest Types

Information in this section is based on the two-level system of forest type classification used by the FIA, as described earlier. The 1985 FIA used only the forest type groups, whereas the 1998 used both the forest type groups and the more specific local forest types. Table 5 shows the forest type groups and their respective local forest types used, as well as their acreages for 1985 and 1998. Changes between 1985 and 1998 are examined using the forest type groups (see also Table 4). The local forest types are used to describe in greater detail the current acreages of timberland in Illinois. Two forest type groups, white-red-jack pine and loblolly-shortleaf pine, include only one local forest type each that occurs in Illinois.

The total area of timberland for most forest type groups changed little between 1985 and 1998 (Figure 6). Table 4, however, shows significant shifts in acreage among the forest type groups from 1985 to 1998. These shifts of timberland acreage among forest type groups are due to changes in the species composition and structure through natural processes, such as succession, and anthropogenic influences, such as timber harvesting. Timberland classified as one forest type group in 1985 may have had an increase in a particular species or group of species that caused it to shift to another forest type group in 1998. By matching a forest type group in the rows with the same group in the columns of Table 4, the acreage of a specific forest type group that remained unchanged can be determined.

The largest forest type group, oak-hickory, had a minor increase in total acreage (Table 5). Eighty-one percent of the 1985 oak-hickory timberland acreage remained as oak-hickory timberland in 1998 (Table 4). The remaining 1998 acreage changed to oak-hickory from other forest type groups, primarily maple-beech-birch. The second and third most dominant forest type groups, the elm-ash-cottonwood and the maple-beech-birch, increased and decreased respectively in total area between 1985 and 1998 (Table 5). The increase in elm-ash-cottonwood acreage came partially from land that did not meet the 120-foot-width specification in 1985 but has increased in width since then and was classified as timberland in 1998 (Table 4).

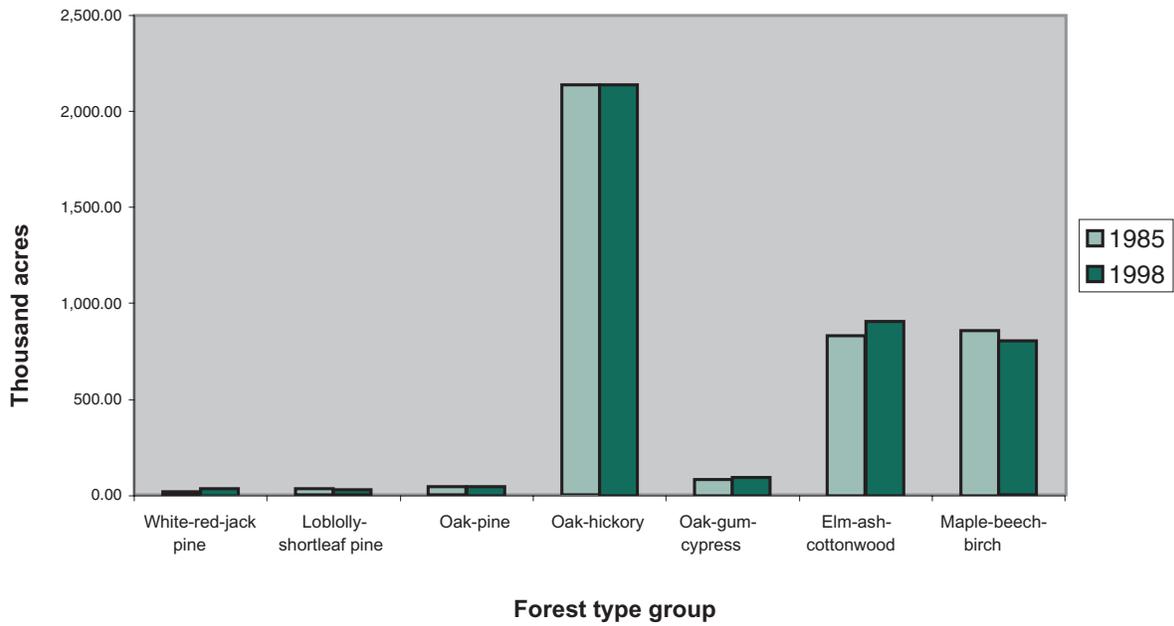
Maple-beech-birch gained a large portion of its 1998 acreage from oak-hickory but also lost a slightly larger portion of its 1985 acreage to oak-hickory.

Two of the three forest type groups dominated by softwoods, oak-pine and white-red-jack pine, increased in overall acreage, while the third one, loblolly-shortleaf pine, decreased in overall acreage. One of the reasons for the increase in the oak-pine forest type group was an increase in one of its local types, eastern redcedar. Much of the current acreage of eastern redcedar had been classified as nonforest land with trees in 1985. Since then, it increased in number and size of trees and met stocking conditions necessary for classification as timberland in 1998 (Schmidt et al., 2000). The increase in the white-red-jack pine forest type group came from land classified as nonforest land without trees in 1985 (Table 4.) This acreage is primarily all plantations. A large acreage of timberland classified as loblolly-shortleaf pine in 1985 shifted to nonforest land without trees in 1998. The oak-gum-cypress forest type group increased slightly in total acreage between 1985 and 1998.

Oak-hickory is the most dominant forest type group found in Illinois (Figure 7), accounting for more than half the total timberland area. Figure 8 shows the acreage distribution by county for oak-hickory forests. The general pattern is similar to that of timberland (Figure 5), primarily because the oak-hickory forest type group is the major component of total timberland. The white oak-red oak-hickory local forest type accounts for 1,444.6 thousand acres of the 2,140.1 thousand acres of oak-hickory forest (Table 5). The white oak local forest type is the second highest, with 349.1 thousand acres. The remaining local forest types are less dominant and make up smaller portions of the total oak-hickory acreage.

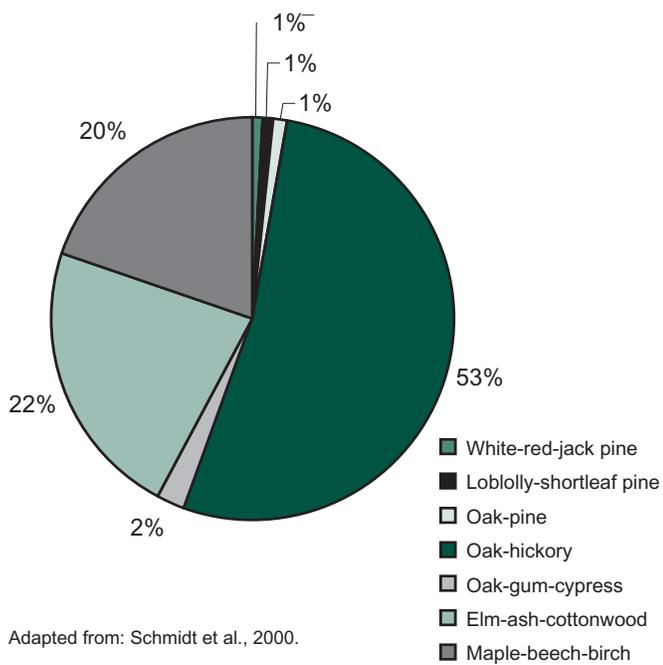
The next two important forest type groups in Illinois are the elm-ash-cottonwood and the maple-beech-birch. When combined, these account for the majority of the remaining timberland (Figure 7). The local forest types within each forest type group and their respective acreages are shown in Table 5. Elm-ash-cottonwood is primarily composed of the local forest type black ash-American

Figure 6.
Area of timberland in Illinois by forest group type, 1985 and 1998.



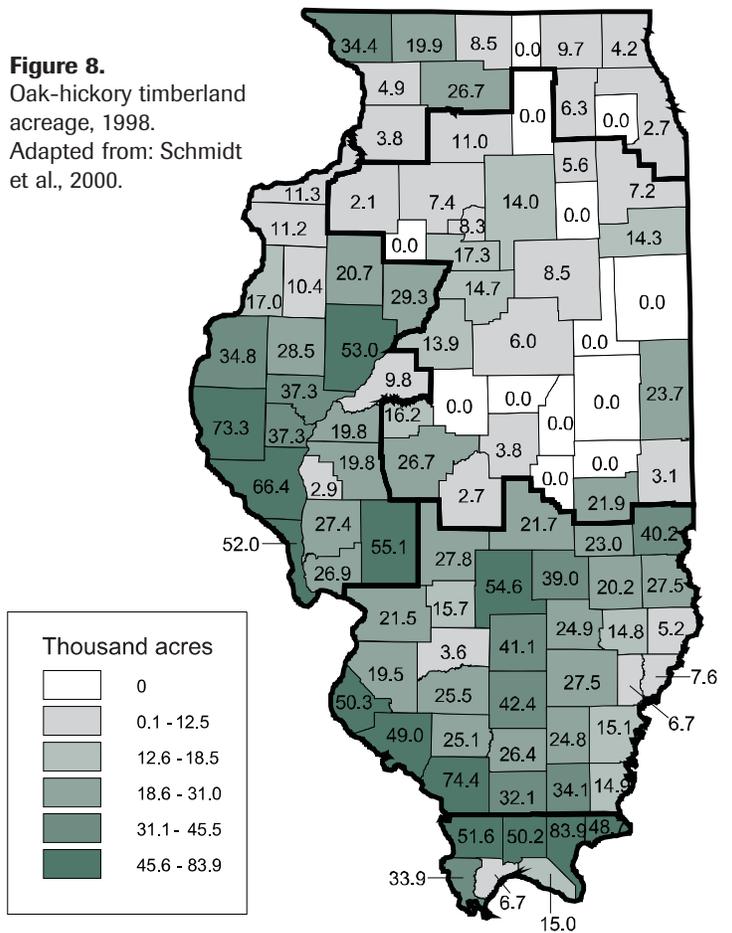
Adapted from: ¹ Hahn, 1987.
² Schmidt et al., 2000.

Figure 7.
Percentage of timberland in Illinois by forest groups, 1998.



Adapted from: Schmidt et al., 2000.

Figure 8.
Oak-hickory timberland acreage, 1998.
Adapted from: Schmidt et al., 2000.



elm-red maple, with 822.8 thousand acres in Illinois. The cottonwood and willow local forest types account for little of the total elm-ash-cottonwood acreage. The maple-beech-birch forest type group is dominated in Illinois by the sugar maple-American beech-yellow birch local forest type at 696.2 thousand acres, with the black cherry local forest type also being fairly important. The distribution of these forest type groups can be seen in Figures 9 and 10. Elm-ash-cottonwood follows the general pattern of timberland distribution because this forest type is found in the majority of bottomlands throughout Illinois. Maple-beech-birch attains its highest acreages in the Southern Unglaciated Region and several counties in each of the other regions. Its distribution is less than that of oak-hickory because it is a less common upland forest type, occurring on more mesic areas.

The remaining forest type groups make up very little of the total timberland acreage in Illinois (Figure 7), but they are still important. Their local forest types and

acreages can be seen in Table 5. The oak-gum-cypress is an important bottomland forest type found predominantly in the South Central and Southern Unglaciated Regions (Figure 11). The forest type groups dominated by softwoods account for a very small portion—only 3 percent—of the total timberland in Illinois, indicating that Illinois’ timberland is predominantly hardwood species and forests (Figure 7). Oak-pine forests are scattered throughout the state, with the highest acreages occurring in counties in the southern and western portions of the state (Figure 12). The oak-pine forest type group is composed of about 60 percent plantations. The oak-pine forest type group is predominantly represented by the local forest type eastern red-cedar-hardwood. The white-red-jack pine forest type group occurs sporadically in Illinois, with highest acreages in counties of the Northern Region (Figure 13). Northern Illinois is the southern extent of the native range for eastern white pine (Wendel & Smith, 1990), although all estimated acreages of the white-red-jack pine forest type group given for Illinois represent plantations. Plantations

Figure 9.

Elm-ash-cottonwood timberland acreage, 1998.

Adapted from: Schmidt et al., 2000.

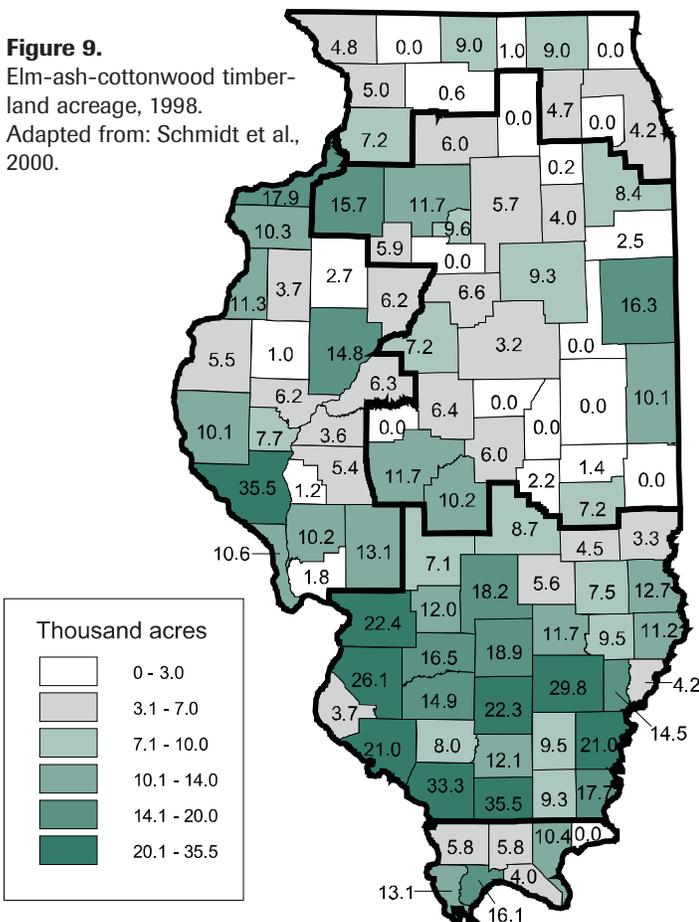
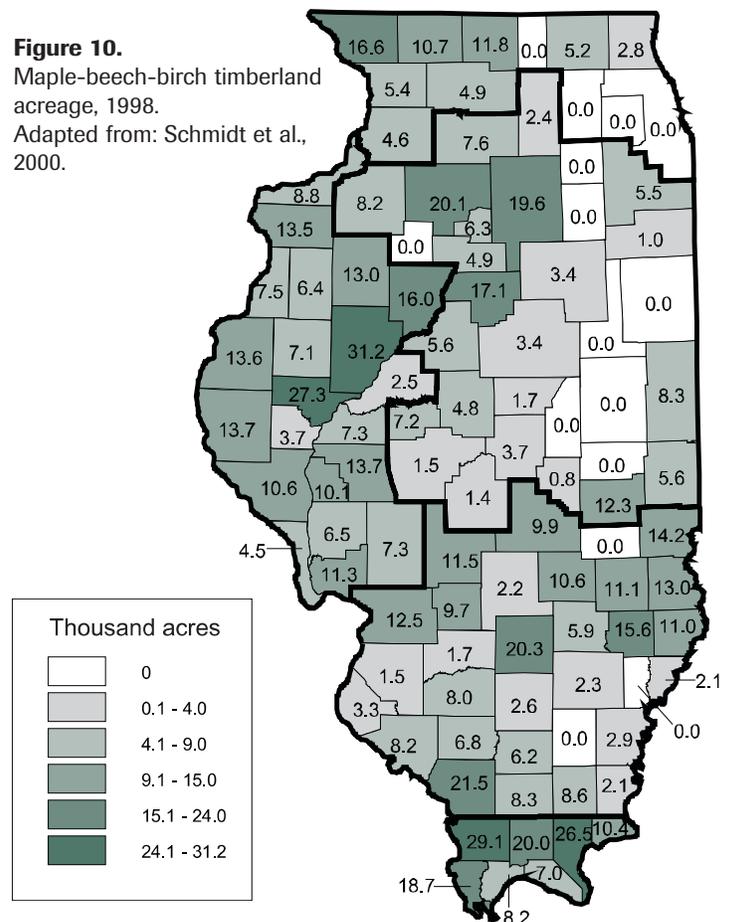


Figure 10.

Maple-beech-birch timberland acreage, 1998.

Adapted from: Schmidt et al., 2000.



accounted for 90 percent of the acreage of the loblolly-shortleaf pine forest type group. Shortleaf pine occurs naturally in Illinois only in isolated locations along the Mississippi River (Lawson, 1990). The distribution for the loblolly-shortleaf pine forest type group is exclusively in the southern portion of the South Central Region and in the Southern Unglaciaded Region (Figure 14).

Timberland Stocking

The majority of the timberland in Illinois is fully stocked (Figure 15). Fully stocked conditions represent the best use of timberland, with trees occupying the amount of space in a forest that creates conditions for the best growth and form. Medium and poorly stocked timberland acreages are about the same, with medium stocked acreages being slightly higher. There has been considerable change in the acreage of timberland in the various stocking classes of growing stock trees since 1985 (Figure 16 and Table 6). All stocking classes of growing stock trees showed an increase in acreage, with the exception of medium stocked, which

decreased dramatically. In reference to Table 6, the difference in acreage between 1985 and 1998 for all stocking classes of growing stock trees is greater than the change in overall timberland for this period. The decrease in medium stocked timberland can partially be explained as resulting from timberland that has grown into fully stocked and overstocked classes, but the increases in these two classes make up only about half the decrease in the medium stocked class. Still, it is clear that Illinois timberland has increased in stocking since 1985. The increase in poorly stocked and nonstocked timberland has likely resulted from land that was not considered timberland in 1985 but has since increased enough in stocking densities to meet the minimal requirements necessary to be called timberland and, therefore, is classified as poorly stocked or nonstocked timberland.

Table 7 shows the acreages of stocking classes of growing stock trees for the local forest types found in Illinois. Most of the local forest types follow the general

Figure 11. Oak-gum-cypress timberland acreage, 1998. Adapted from: Schmidt et al., 2000.

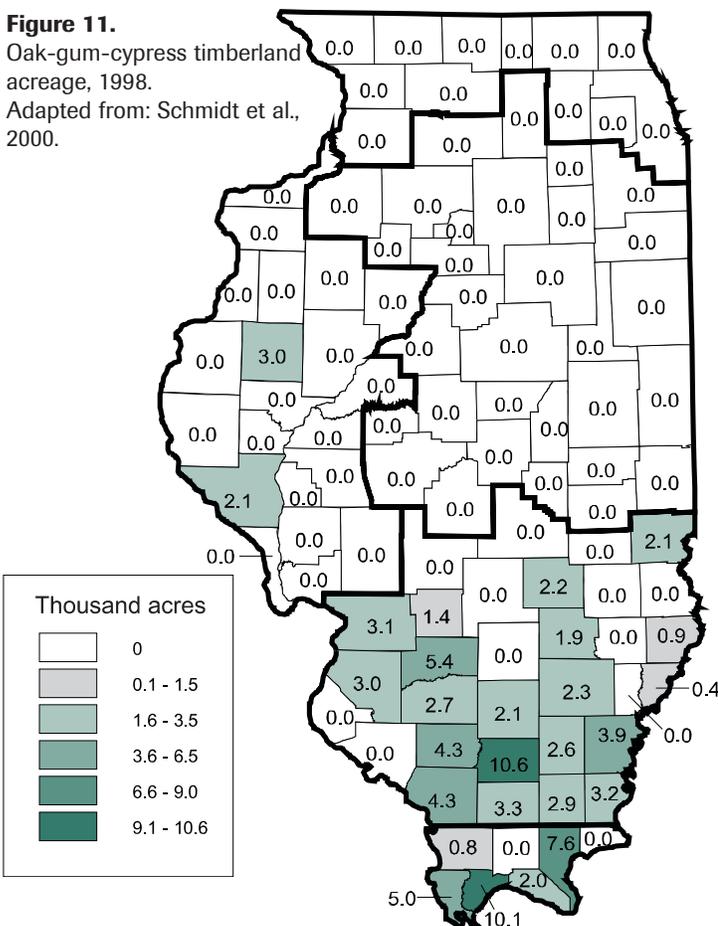


Figure 12. Oak-pine timberland acreage, 1998. Adapted from: Schmidt et al., 2000.

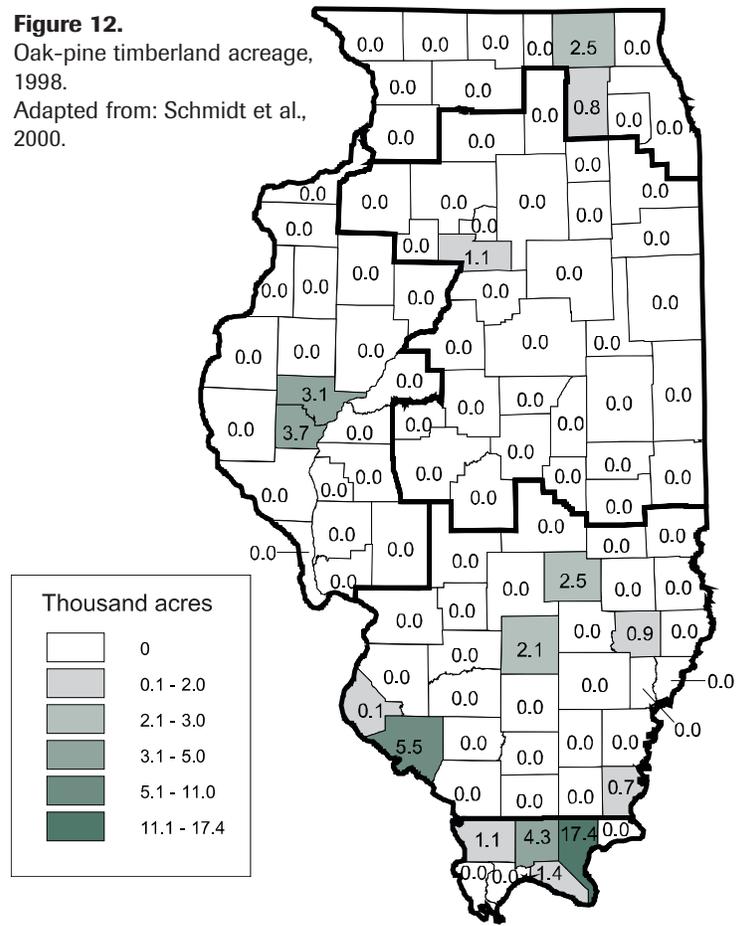
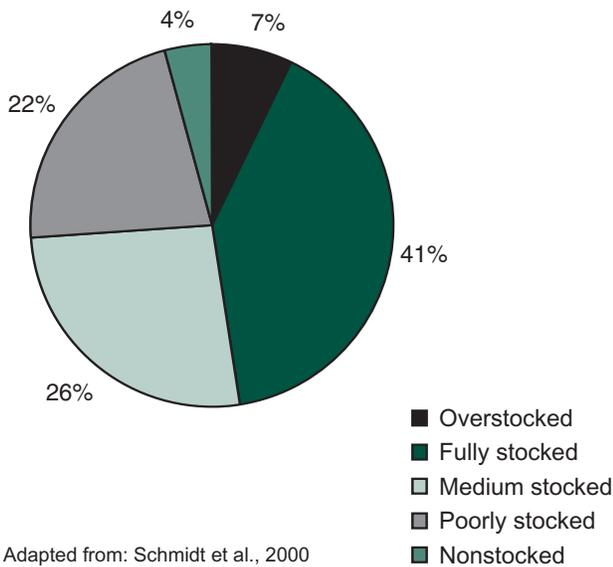


Figure 15.

Percentage of timberland in Illinois by stocking class of growing stock trees, 1998.



Adapted from: Schmidt et al., 2000

Timberland Stand-Size Classes

Figure 18 shows that the majority of timberland (72 percent) in Illinois is in the sawtimber stand-size class. Acreage in the poletimber stand-size class accounts for 24 percent of total timberland acreage. The seedling-sapling stand-size class accounts for only 3 percent of timberland. This distribution of timberland stand-size classes in Illinois differs from that of the eastern United States as a whole, where sawtimber is 46 percent, poletimber 29 percent, and seedling-sapling 25 percent (USDA Forest Service, 2001). The low acreage of timberland in the seedling-sapling stand-size class, however, does not necessarily reflect a low number of seedlings and saplings overall in timberland. Trees of small size classes are present in stands classified as sawtimber or poletimber.

The acreage of timberland in the seedling-sapling stand-size class declined dramatically between 1985 and 1998 (Figure 19). A corresponding increase in the acreage of timberland in the poletimber and sawtimber stand-size classes occurred as the trees in all size classes grew. It can

be assumed that a majority of the acreage increase in poletimber came from timberland classified as seedling-sapling in 1985 and that some of the 1998 sawtimber acreage probably came from timberland classified as poletimber in 1985. A large portion of the land reclassified from nonforest land in 1985 to forest land in 1998 was placed in the sawtimber stand-size class. This also contributed to the increase in sawtimber between inventories. Illinois forests are maturing into timberland dominated by large trees, and this trend can be expected to continue as the trees increase in diameter. Disturbances such as harvesting and reforestation through planting will be required to create timberland in the seedling-sapling stand-size class and to increase the acreage of this stand-size class.

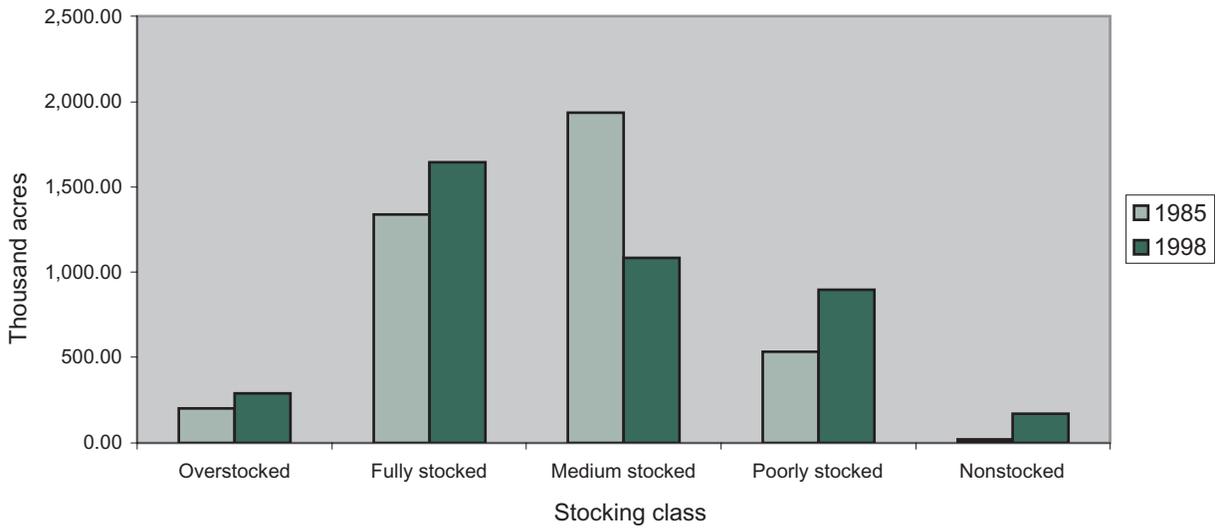
The distributions of stand-size class acreages by county are shown in Figures 20, 21, and 22. As would be expected, sawtimber area follows the general pattern of timberland acreages. Fewer counties, however, have high acreages for the poletimber and seedling-sapling stand-size classes. Poletimber acreage is higher in the Southern Unglaciaded Region, in the southern and central portions of the South Central Region, and in the Western Region. The seedling-sapling stand-size class is even more restricted, having its highest acreages in the northern part of the South Central Region.

The highest acreages for most local forest types are in the sawtimber stand-size class (Table 8). Figure 23 shows the percentage of acreage in the stand-size classes for the three most common forest type groups and a combination of the remaining forest type groups. Sawtimber is the dominant stand-size class for these forest type groups. Oak-hickory has the highest percentage of acreage in the sawtimber stand-size class when compared with the other forest type groups. Maple-beech-birch has the highest percentage of acreage in the poletimber and seedling-sapling stand-size classes when compared with the other forest type groups.

A few of the local forest types—eastern redcedar-hardwood, other pine-hardwood, and willow—have their greatest area in poletimber stand-size timberland (Table 8). This is probably due to the successional nature

Figure 16.

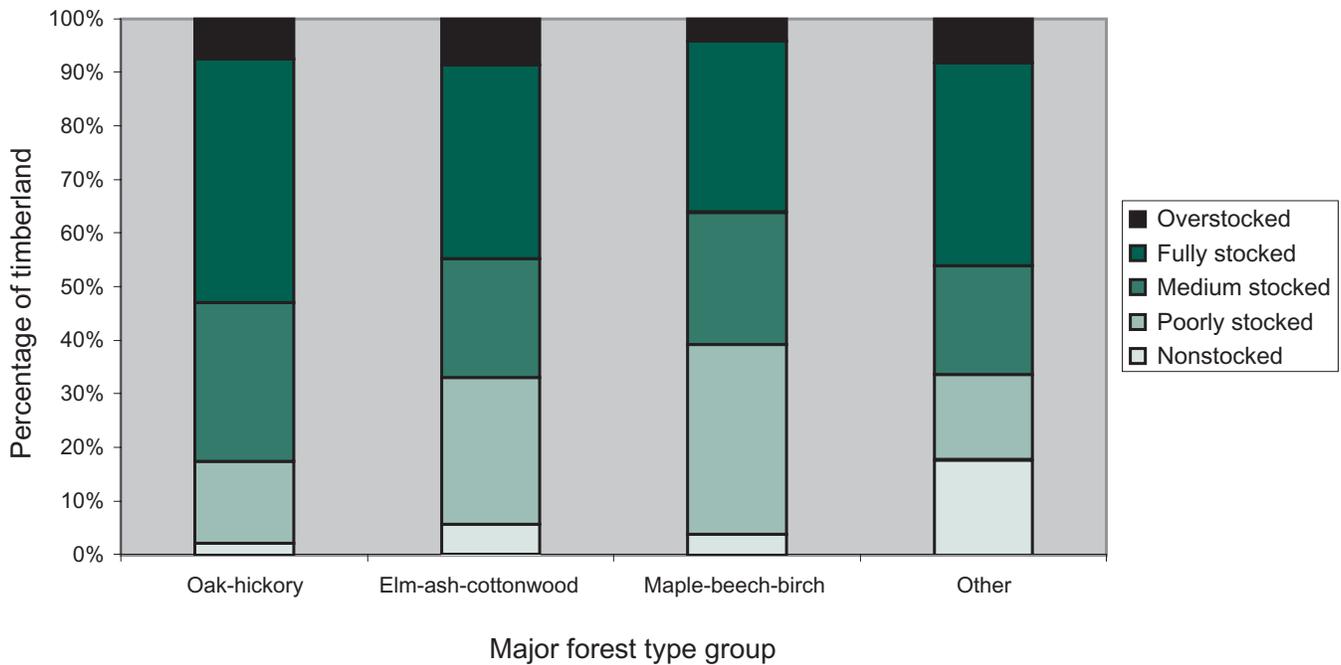
Percentage of timberland in Illinois by stocking class of growing stock trees, 1985¹ and 1998².



Adapted from: ¹ Hahn, 1987.
² Schmidt et al., 2000.

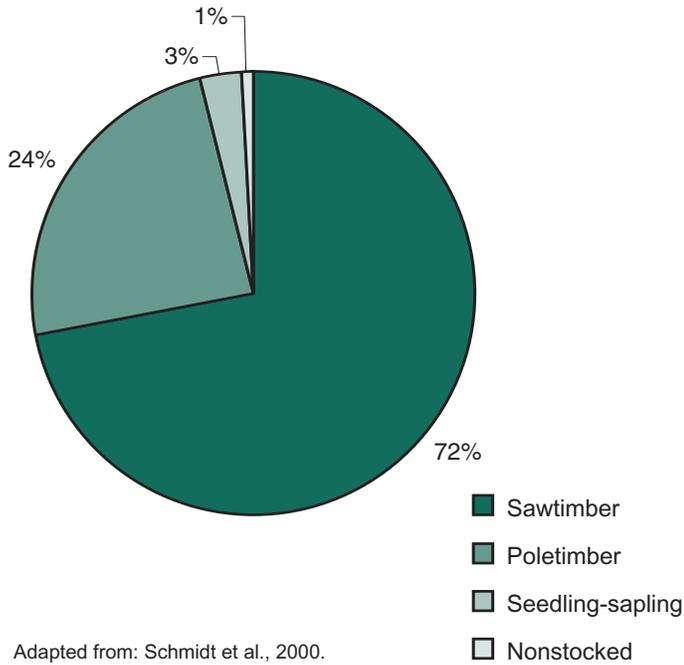
Figure 17.

Percentage of timberland in Illinois in stocking classes of growing stock trees by major forest type group, 1998.



Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Figure 18.
Percentage of timberland in Illinois by stand classes, 1998.



Adapted from: Schmidt et al., 2000.

Figure 20.
Sawtimber timberland acreage, 1998.
Adapted from: Schmidt et al., 2000.

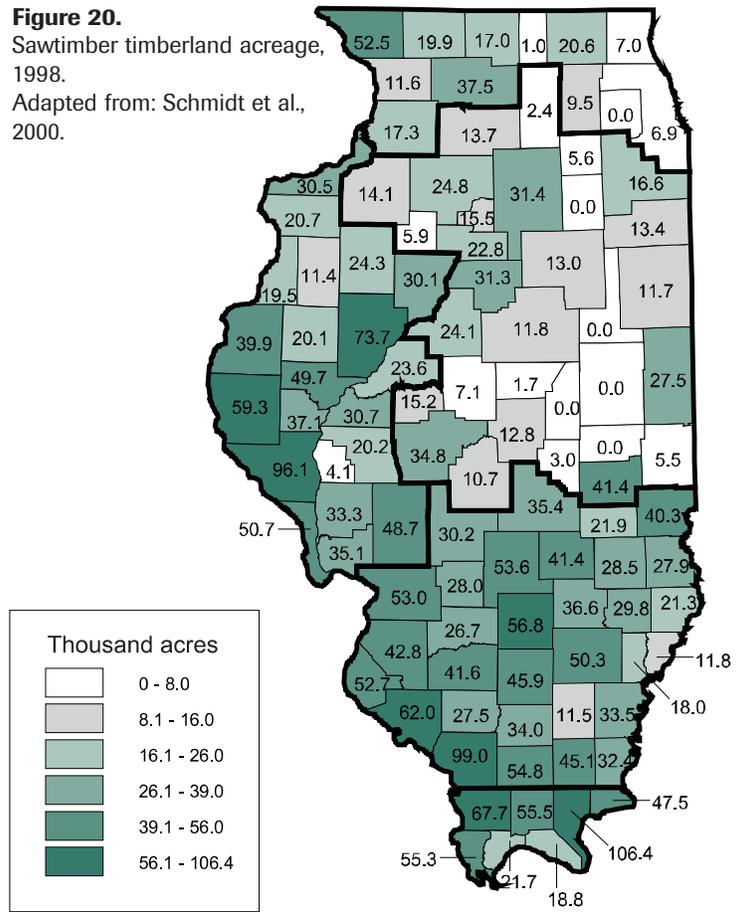
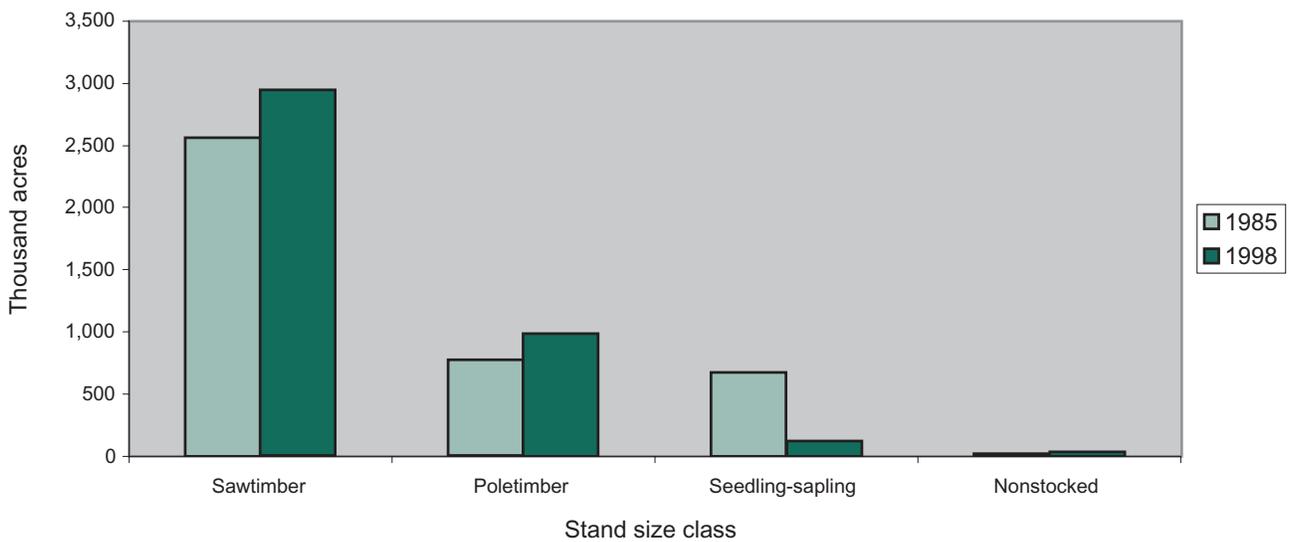


Figure 19.
Area of timberland in Illinois by stand-size class, 1985¹ and 1998².



Adapted from: ¹ Hahn, 1987.
² Schmidt et al., 2000.

Figure 21.
Poletimber timberland
acreage, 1998.
Adapted from: Schmidt et al.,
2000.

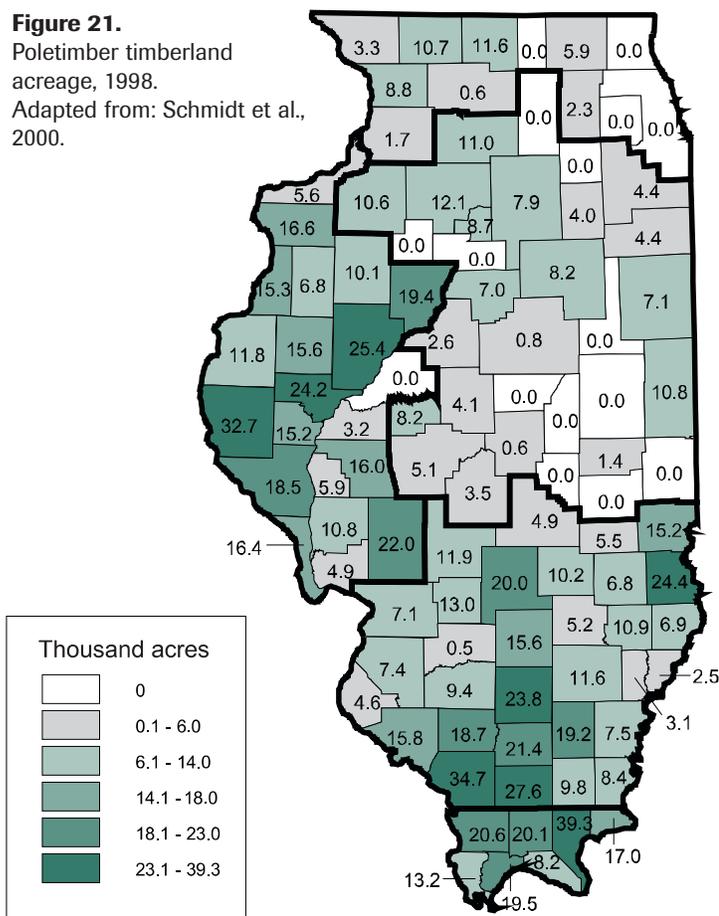
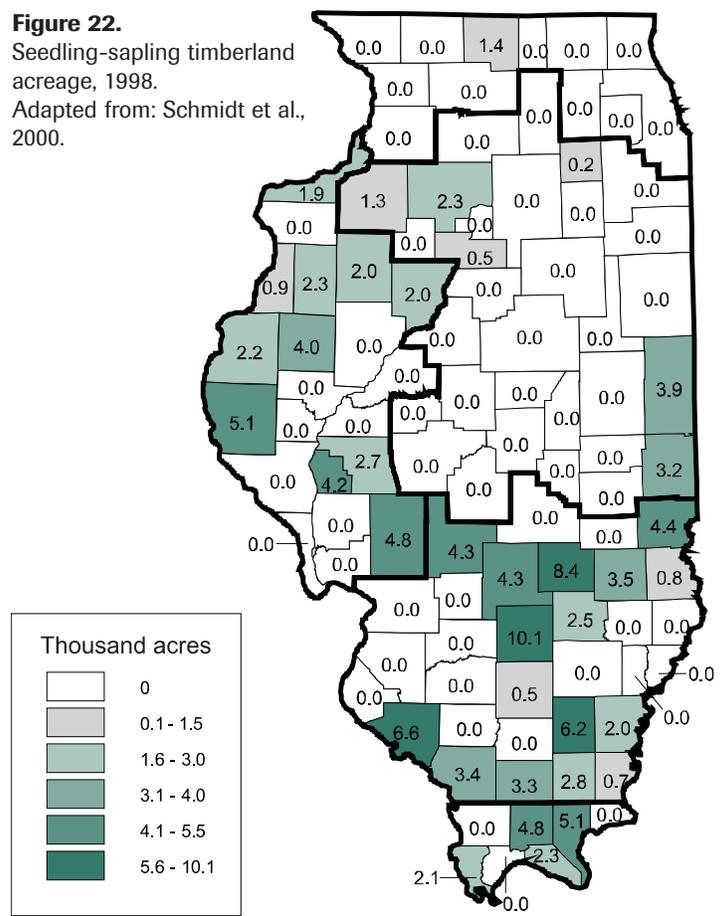


Figure 22.
Seedling-sapling timberland
acreage, 1998.
Adapted from: Schmidt et al.,
2000.



of the dominant species in these forest types (Bazzaz, 1968; Pitcher & McKnight, 1990), their younger ages, and the likelihood the other pine-hardwood forests are predominantly plantations (Schmidt et al., 2000). The only local forest type with its highest acreage in the seedling-sapling stand-size class is eastern redcedar, again due to its dominance in early seral stages. Eastern redcedar-hardwood and willow also had their highest acreages in poorly stocked conditions (Table 7), so their high representation in the poletimber stand-size class is likely due to their recent classification as timberland. The highest acreage for an individual local forest type of seedling-sapling stand-size class timberland is that of white oak-red oak-hickory, but it is only a fraction of the total acreage for this local forest type.

The relationship between stocking class and stand-size class is shown in Table 9. Out of the 2,944.8 thousand acres of sawtimber, 1,256.0 thousand acres are fully stocked. Poletimber acreage is fairly evenly distributed

among fully, medium, and poorly stocked. Roughly one-third of the acreage in the seedling-sapling stand-size class is fully stocked, with another one-third poorly stocked. The majority of overstocked timberland (83 percent) is in the sawtimber stand-size class.

Timberland Age Distribution

By determining the general ages of stands of timberland, the stands can be classified into stand-age class groups that allow for a further examination of trends in Illinois timberland. The method used by the USDA Forest Service for classifying stand-age class allows for differences in which size class is used to classify stand-size class and stand-age class. The stand-size class is determined upon analysis of the data taken by the field crew. The size class that makes up the majority of the plot, based on basal area and/or number of trees, is used to classify the timberland represented by that plot. To determine the age of the stand, selected trees are measured for age using an increment borer. The trees to be bored are selected from the size class

that the field crew observes to be the most dominant in the stand.

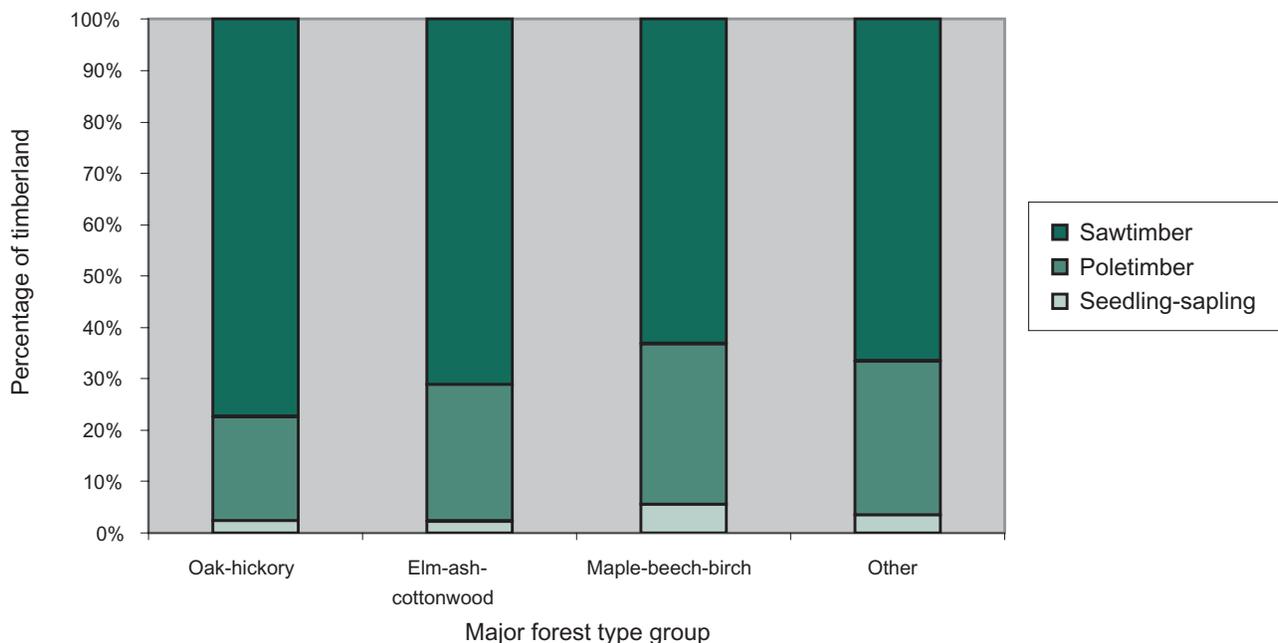
Caution must be used, however, when drawing conclusions from the data. In certain circumstances, the dominant size class assigned in the field (from which age measurements were taken) may be different from the stand-size class assigned to the plot after data analysis. For instance, in a stand with a few large trees and many small ones, the field crew may have selected the smaller size class as the dominant one, whereas data analysis calculated that the larger trees actually made up the dominant size class. In this case, the reported stand-age class would be based on the small trees, and the reported stand-size class would be based on the large trees.

Much of the timberland acreage in Illinois is in younger stand-age classes (Figure 24). The stand-age class with the highest acreage is 41 to 60 years, with 1,124.5 thousand acres (Table 10). Second in area is the 21 to 40 years stand-age class. Only 446.6 thousand acres of timberland are in the 100+ years stand-age class, and 78 per-

cent of that acreage is in the oak-hickory forest type group (Figure 25). The younger stand-age classes have a lower percentage of oak-hickory forest acreage than the older stand-age classes. It is evident from Figures 24 and 25 that although the oak-hickory forest type group comprises a substantial portion of the acreage in the younger stand-age classes, it does not dominate these younger stand-age classes as it does the older stand-age classes. The local forest types that make up the oak-hickory forest type group are fairly well distributed throughout the stand-age classes. An exception is the southern scrub oak type, which is not represented in the 61 to 80 or higher stand-age classes.

The maple-beech-birch forest type group has its highest portion of acreage in the younger stand-age classes (Figures 24 and 25). Its most important local forest type, sugar maple-beech-yellow birch, has more than half its acreage in the 21 to 40 and 41 to 60 years stand-age classes (Table 10). The elm-ash-cottonwood forest type group also has the largest portion of its acreage in the younger stand-age classes. Together, the maple-beech-birch and

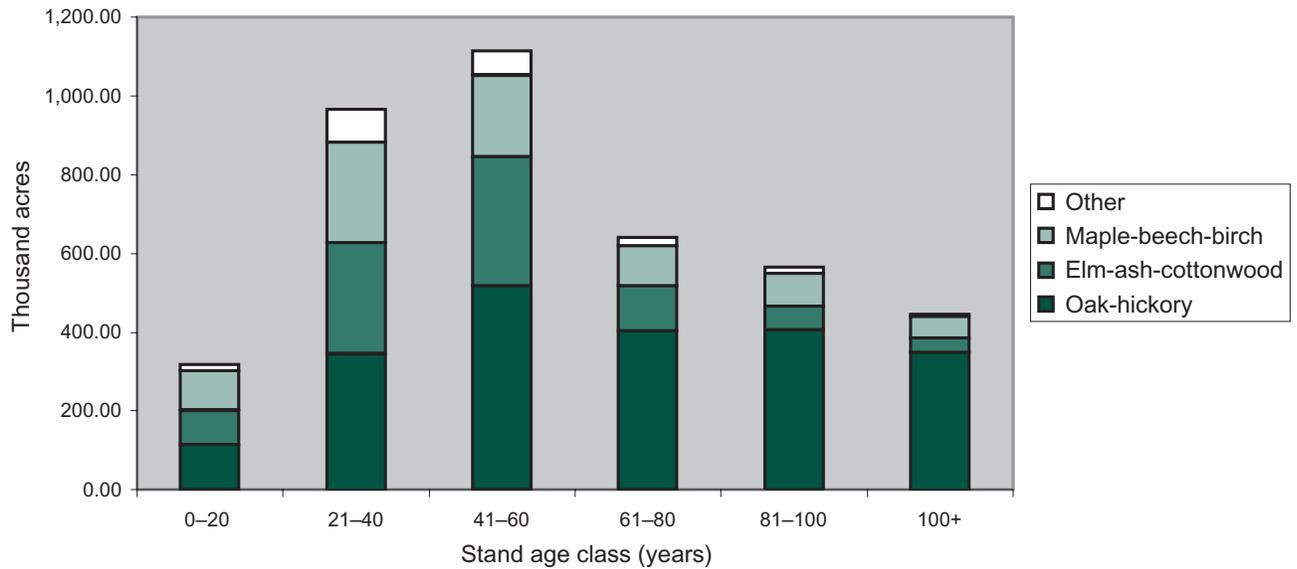
Figure 23. Percentage of timberland in Illinois in stand-size classes by major forest type groups, 1998.



Adapted from: Schmidt et al., 2000.

Figure 24.

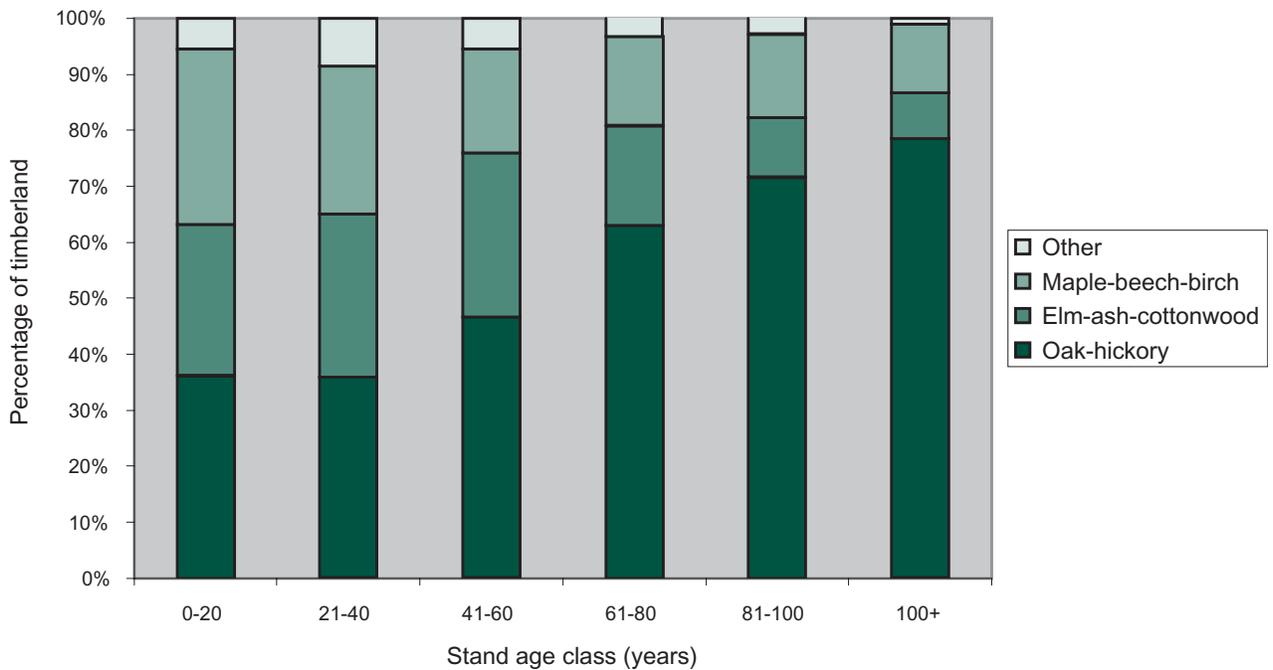
Area of timberland in Illinois in major forest type groups by stand-age class, 1998.



Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Figure 25.

Percentage of timberland in Illinois in major forest type groups by stand-age class, 1998.



Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

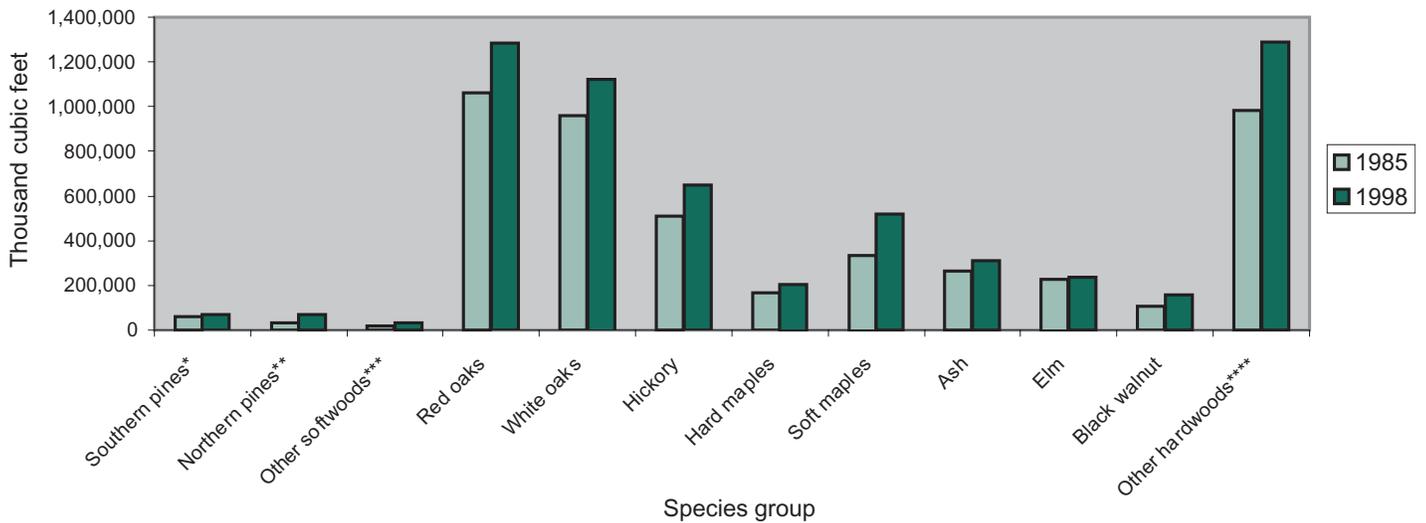
elm-ash-cottonwood forest type groups account for a larger portion of the acreage in the younger stand-age classes than does the oak-hickory forest type group. This accentuates the trend of the forests of Illinois slowly changing from oak-hickory forests to forest types composed of more shade-tolerant species, primarily maple (Ebinger, 1986; Edgington, 1991; Henderson et al., 1993; Shotola et al., 1992). The two pine-dominated local forest types, eastern white pine and shortleaf pine, are primarily in the younger stand-age classes. The only acreage for these two local forest types with a stand-age class greater than 60 years is the 3.3 thousand acres of shortleaf pine type in the 81 to 100 years stand-age class.

Tables 11 and 12 show the relationships between stocking classes of growing stock trees, stand-size classes, and stand-age classes. Most of the acreage of the 0 to 20 stand-age class is in the poorly stocked stocking class of growing stock trees (Table 11). For the 21 to 40 and 41 to 60 stand-age classes, the majority of the timberland

acreage is distributed among the poorly, medium, and fully stocked stocking classes of growing stock trees. Medium stocking and fully stocking make up the largest proportion of the three remaining older stand-age classes. This does not mean, however, that older timberland is necessary to achieve fully stocked conditions. It is possible, as seen in Table 11, to have fully stocked conditions in all stand-age classes.

With regards to stand-size class, the older the stand-age class, the more dominant the sawtimber stand-size class becomes (Table 12). The 100+ years stand-age class has 96 percent of its acreage in the sawtimber stand-size class, and the 81 to 100 years stand-age class has 92 percent. Only the 21 to 40 years stand-age class has a majority of acreage in the poletimber stand-size class, with the amount in the sawtimber stand-size class almost as high. A discrepancy due to sampling methods previously discussed resulted in the 0 to 20 stand-age class having the vast majority of its acreage in the sawtimber stand-size

Figure 26. Net volume of growing stock on timberland in Illinois by species group, 1985¹ and 1998².



* includes loblolly and shortleaf pines.

** includes eastern white, red, and jack pines.

*** includes spruce, fir, cypress, eastern red cedar, and other softwoods.

**** includes hackberry, sycamore, black cherry, beech, sweetgum, tupelo and blackgum, cottonwood and aspen, basswood, yellow poplar, and other hardwoods.

Adapted from: ¹ Hahn, 1987.

² Schmidt et al., 2000; USDA Forest Service, n.d.

class. It is unlikely in natural conditions that sawtimber-sized trees would develop in less than 20 years. We assume that the field crew measured the young trees in these stands to determine stand-age class and regarded the larger sawtimber-sized trees as minor components of the plot.

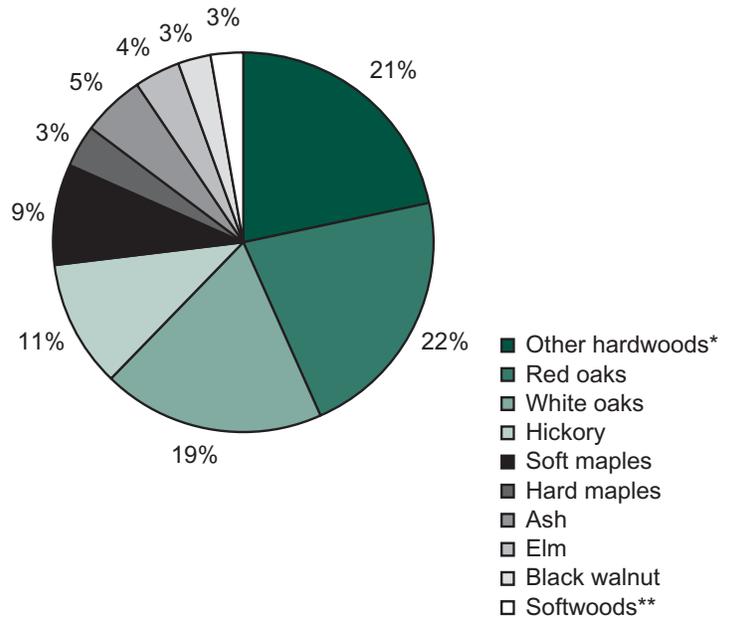
Volume of Growing-Stock Trees

The net volume of growing stock on Illinois timberland increased 26 percent, from 4.7 billion cubic feet in 1985 to 5.9 billion cubic feet in 1998 (Table 13). This increase in net volume occurred in all species groups except the tupelo and blackgum species group, which decreased in net volume. This species group accounted for a relatively small portion of the total volume. Most of the increases in net volume of the other species groups were substantial. The elms increased very little from 1985 to 1998. The softwoods substantially increased in volume, with eastern white and red pine and eastern redcedar more than doubling and jack pine more than tripling. The largest total increase in volume occurred for the soft maples. Figure 26 graphically represents the change in volume of growing stock by species group between 1985 and 1998.

As previously mentioned, the net volume of growing stock on Illinois timberland increased 26 percent between 1985 and 1998. However, the area of timberland increased by only 1 percent. This implies the increase in growing stock volume occurred primarily from the growth of trees rather than an increase of timberland acreage with additional growing stock trees. This is reflected in the increase of sawtimber and poletimber acreage between 1985 and 1998 (Figure 19).

The species group with the highest volume is select white oaks, closely followed by other red oaks (Table 13). When all oaks are combined, they account for about 40 percent of the total volume of growing stock (Figure 27). Other than a combination of miscellaneous hardwoods, the oaks and the hickories together dominate the total volume of growing stock on the timberland of Illinois. Although this grouping of hardwoods may seem to be the most dominant, it is important to bear in mind that the grouping is composed of many species, none of which accounts for a high portion of its total volume. Hard

Figure 27. Percentage of growing stock volume on timberland in Illinois by species groups, 1998.



* includes hackberry, sycamore, black cherry, beech, sweetgum, tupelo and blackgum, cottonwood and aspen, basswood, yellow-poplar, and other hardwoods.

** includes loblolly and shortleaf pines, eastern white and red pines, jack pine, spruce and balsam fir, cypress, eastern redcedar, and other softwoods

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

maples, primarily sugar maple, account for only 3 percent of the total growing-stock volume. Soft maples, ash, and cottonwood and aspen have relatively high volumes, showing their importance in Illinois timberland. Elm accounts for only 4 percent of the total growing-stock volume. All softwoods combined amount to 3 percent of the total growing-stock volume. This percentage reflects the percentage of total timberland classified as softwood forest types, which is also 3 percent. The distribution of volume among the counties and regions of Illinois follows the same pattern as timberland area (Figure 28). Pope County has the largest volume, with 245.5 million cubic feet.

The volume in board feet (International 1/4) for sawtimber on timberland, by the same species groups, is given in Table 14. Although sawtimber is included in growing stock, it represents the portion of growing stock that has reached sizes suitable and available for harvesting. The volume of sawtimber increased by 35 percent compared with the 26 percent overall increase in growing-stock volume between 1985 and 1998. This is a reflection of the

increase in timberland classified as sawtimber due to the continuing growth and maturity of Illinois timberland. The general trends seen in growing-stock volume can also be seen in sawtimber volume. Every species showed an increase, with the exception of tupelo and blackgum. The oaks had the highest sawtimber volume, as they did with growing-stock volume.

Number of Growing Stock Trees

When the total number of growing-stock trees on timberland (Table 15) is compared with the total growing-stock volume, the rank order of the species changes. One species group that has changed in importance with regards to total number of stems is the elms. Elm accounts for 22 percent of the total number of growing-stock stems (Figure 29), while it accounts for only 4 percent of the total growing-stock volume. There are more than twice as many elms as the species group with the next highest number of stems, the hickories. This indicates that the majority of the elms are represented by small trees. Elm species have been found to be abundant

in the smaller size classes of several Illinois forests (Bell, 1997; Davis et al., 1998; Shafer & Edgington, in press) and will likely fail to reach larger size classes because of Dutch elm disease. Oaks show less dominance in their number of growing-stock stems than they do in volume, being represented by fewer but larger trees. Hard maples have more stems than the white oak group but fewer than the red oak group. They represent 7 percent of the total number of growing-stock stems. The softwoods represent only around 2 percent of the total number of stems, again showing the importance of hardwoods in the timberland of Illinois.

To understand better the structure and composition of Illinois timberland, it is necessary to examine the number of growing-stock trees by diameter at breast height (d.b.h.) size classes (Table 15). Nearly 75 percent of the elms are in the smallest diameter class, 1.0 to 2.9. This is why elm has a lower total volume than most of the other species groups despite its high number of trees. Figure 30 shows the percentage of total trees by diameter size class-

Figure 28. Net volume of growing stock on timberland, 1998. Adapted from: Schmidt et al., 2000.

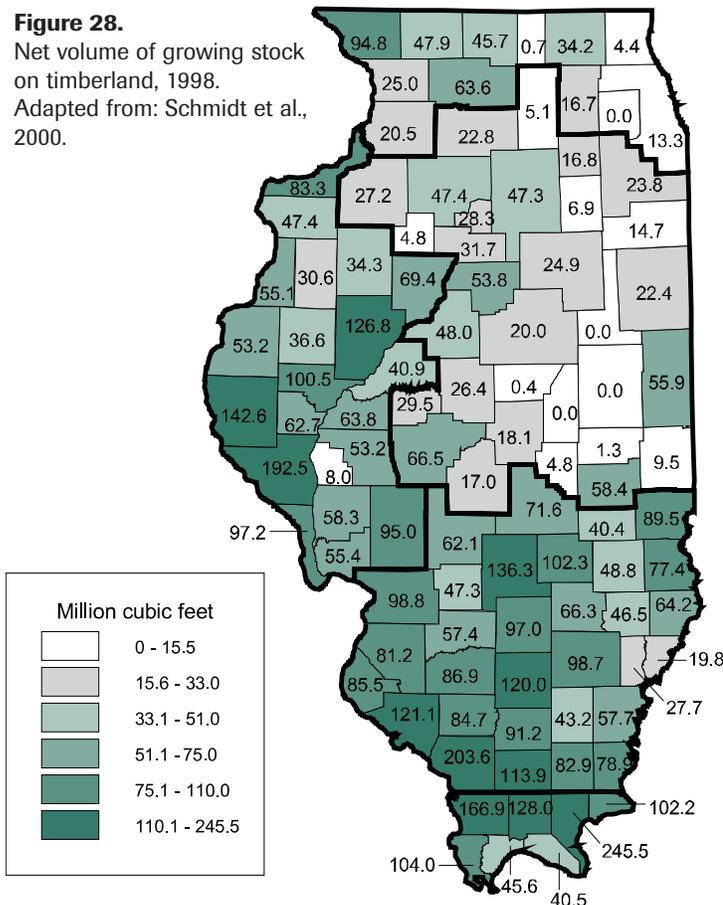
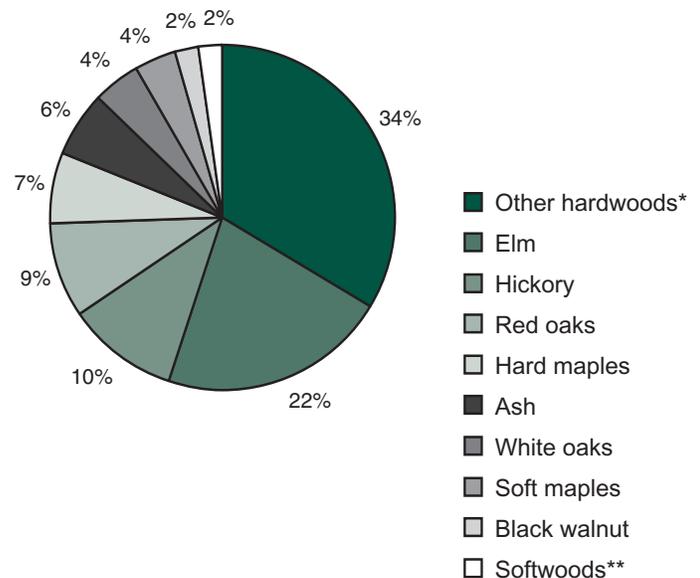


Figure 29. Percentage of number of growing stock trees on timberland in Illinois by species group, 1998.



* includes hackberry, sycamore, black cherry, beech, sweetgum, tupelo and blackgum, cottonwood and aspen, basswood, yellow-poplar, and other hardwoods

** includes loblolly and shortleaf pines, eastern white and red pines, jack pine, spruce and balsam fir, cypress, eastern redcedar, and other softwoods

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

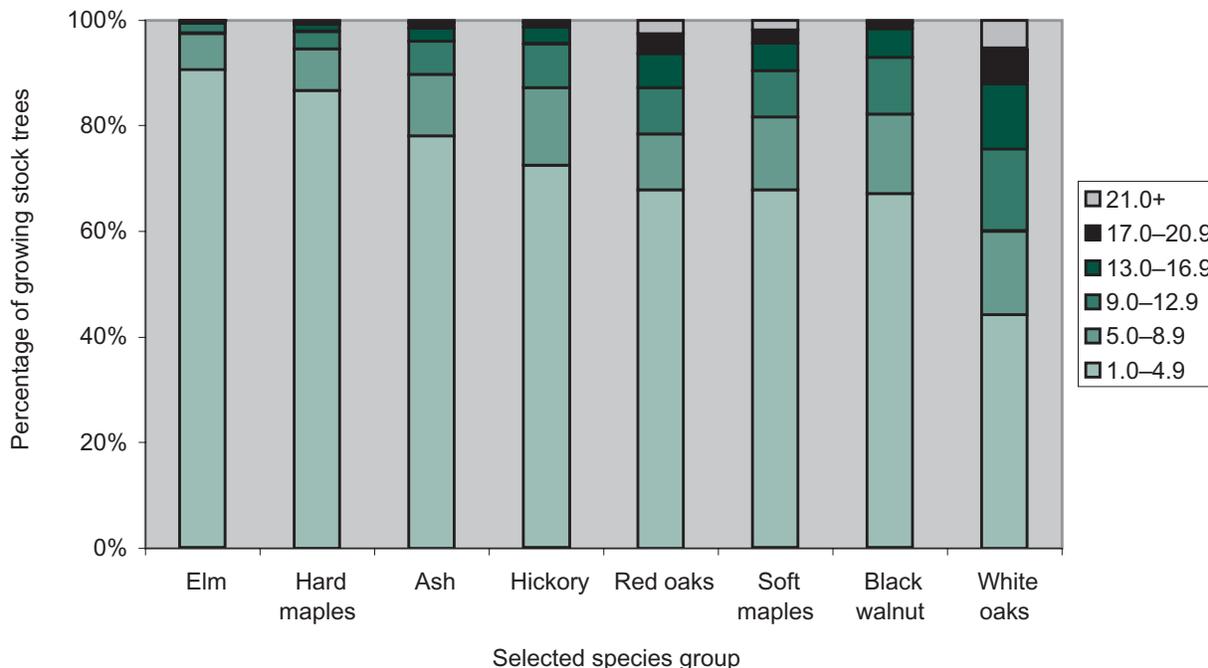
es (condensed size classes from Table 15) for selected species groups. The hard maples also have a large percentage of their trees in the smaller diameter classes. The white oak species group has a higher percentage of total trees in the largest diameter class than any other species group. The red oak and soft maple species groups also have a substantial portion of their trees in the larger diameter classes. Of the 2,400 thousand trees in the 29.0+ inch size class, 1,248 thousand are oaks (Table 15). The trees in the smaller diameter classes represent the future overstory composition of forests. The oaks and the hickories combined have slightly less than 75 percent the total number that elms have in the smaller diameter classes. It is apparent that Illinois timberland has the potential to change from being dominated by oaks and hickories to a composition dominated by more shade-tolerant species, like the elms and the hard maples. However, Dutch elm disease and mortality could keep many of the small elm trees from reaching larger size classes and occupying the canopy.

Growth, Mortality, and Removals

Data on growth, mortality, and removals of growing stock on timberland are presented in terms of average annual changes in volume from 1985 to 1997. It is important to note that mortality has been removed from net average annual growth as reported here. Annual growth on the timberland of Illinois far exceeds annual losses from mortality and removals (Figure 31). The average annual growth on timberland is more than 2.5 times the average annual removals. This is the major reason the volume of growing stock on timberland increased dramatically between 1985 and 1998. The fact that average annual mortality is greater than average annual removals suggests that Illinois forest resources are being underutilized.

Oaks are responsible for about 33 percent of the total volume growth in growing stock (Table 13). Oaks are well represented in the larger size classes and already accounted for a high portion of the total growing-stock volume. Hickory, soft maple, and elm also have large net average annual growth. Elm has the highest average annual

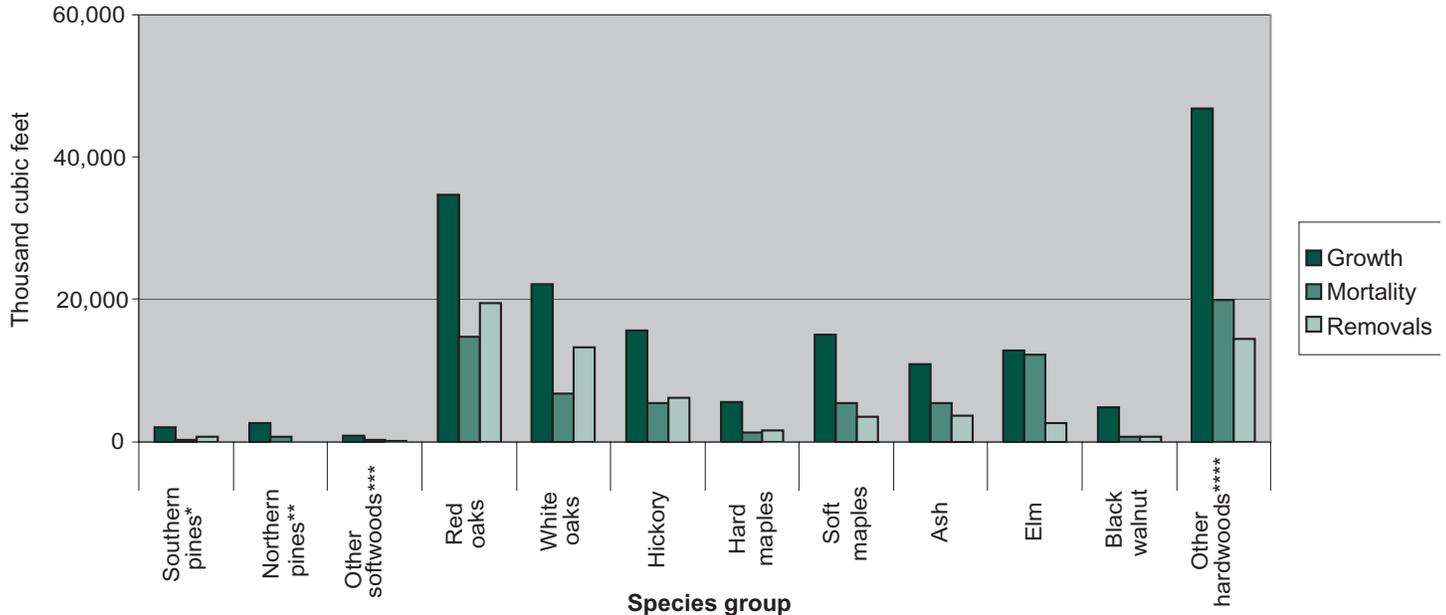
Figure 30. Percentage of number of growing stock trees on timberland in Illinois in diameter classes by selected species group, 1998.



Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Figure 31.

Average annual net growth, average annual mortality, and average annual removals of growingstock on timberland in Illinois from 1985 to 1997 by species group.



* includes loblolly and shortleaf pines

** includes eastern white, red, and jack pines

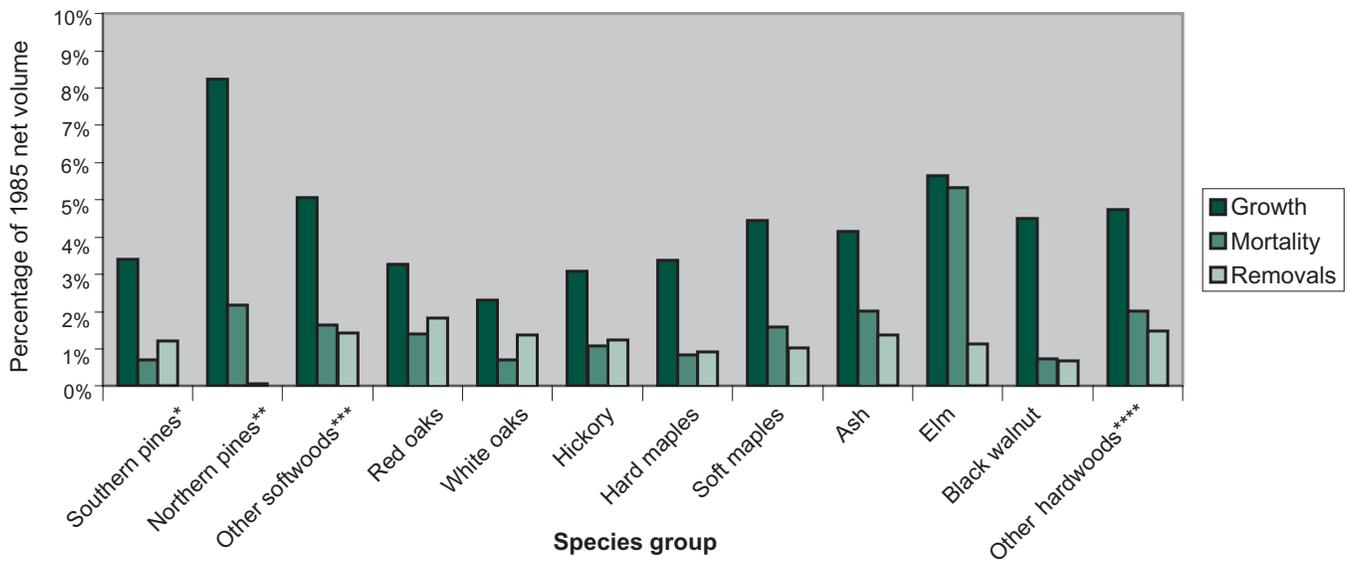
*** includes spruce, fir, cypress, eastern redcedar, and other softwoods

**** includes hackberry, sycamore, black cherry, beech, sweetgum, tupelo and blackgum, cottonwood and aspen, basswood, yellow-poplar, and other hardwoods

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Figure 32.

Average annual net growth, average annual mortality, and average annual removals of growingstock on timberland in Illinois from 1985 to 1997 as a percentage of 1985 net volume by species group.



* includes loblolly and shortleaf pines

** includes eastern white, red, and jack pines

*** includes spruce, fir, cypress, eastern redcedar, and other softwoods

**** includes hackberry, sycamore, black cherry, beech, sweetgum, tupelo and blackgum, cottonwood and aspen, basswood, yellow-poplar, and other hardwoods

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

mortality, likely due to the effects of Dutch elm disease. The volume lost by elm mortality each year is almost equal to the net volume added through annual growth. Although baldcypress has a higher average annual mortality than annual growth, it is important to keep in mind that the growth is net annual growth; therefore, this species group is increasing in total volume. The relatively high mortality for baldcypress could be due to changes in the hydrology in the southern swamps where baldcypress grows (Mitsch et al., 1979; Muir et al., 1995). The highest average annual removals are the oaks, because they represent the majority of the total volume on Illinois timberland and because they have high commercial value.

Although the values for average annual growth, mortality, and removals in Figure 31 are important, it is also critical to examine these variables in a manner that accurately reflects rates of change for the species groups. The 1985 net volume has a strong influence on these variables because it is the source from which volume was

gained or lost from 1985 to 1997. Those species groups with large net volume in 1985 also have large average annual growth (Table 13), because they had more initial volume from which to grow additional volume. Figure 32 shows the net average annual growth, average annual mortality, and average annual removals from 1985 to 1997 as a percentage of the species groups' 1985 net volume. The influence of the 1985 net volume on growth has been removed.

The oaks have a lower average annual growth as a percentage of their 1985 net volume than most of the other species groups. Although the oaks have a large 1998 volume and show a large average annual growth from 1985 to 1997, they are actually growing less volume per existing volume than the other species groups. They have some of the highest average annual removals per net volume because of their commercial importance. The northern pines species group (Figure 32) has the largest percentage of average annual growth per 1985 net volume. This is pri-

Figure 33.

Average annual net growth of growing stock on timberland, 1998.
Adapted from: Schmidt et al., 2000.

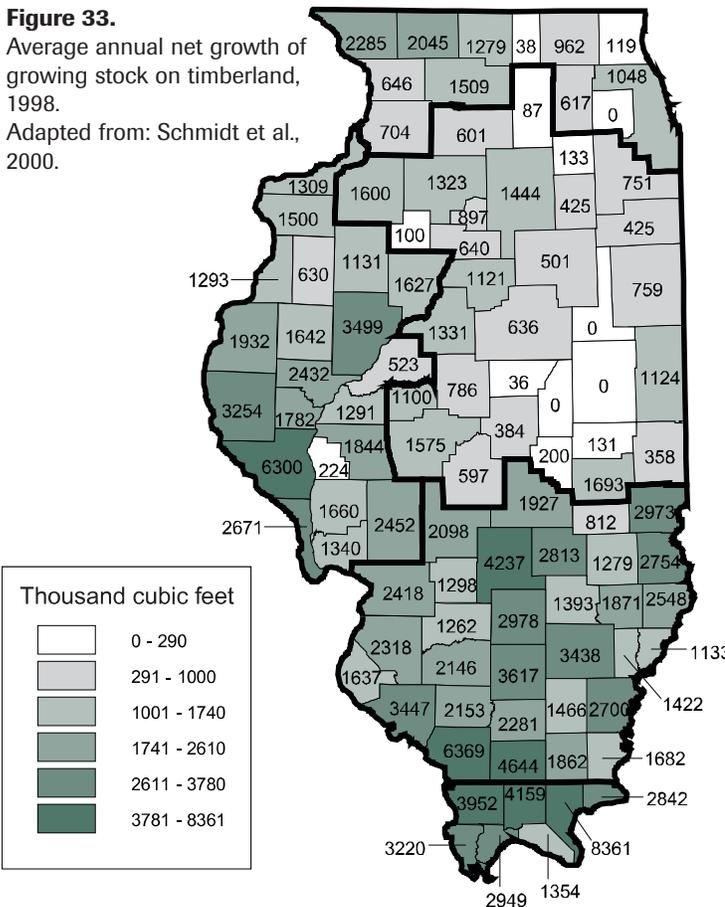
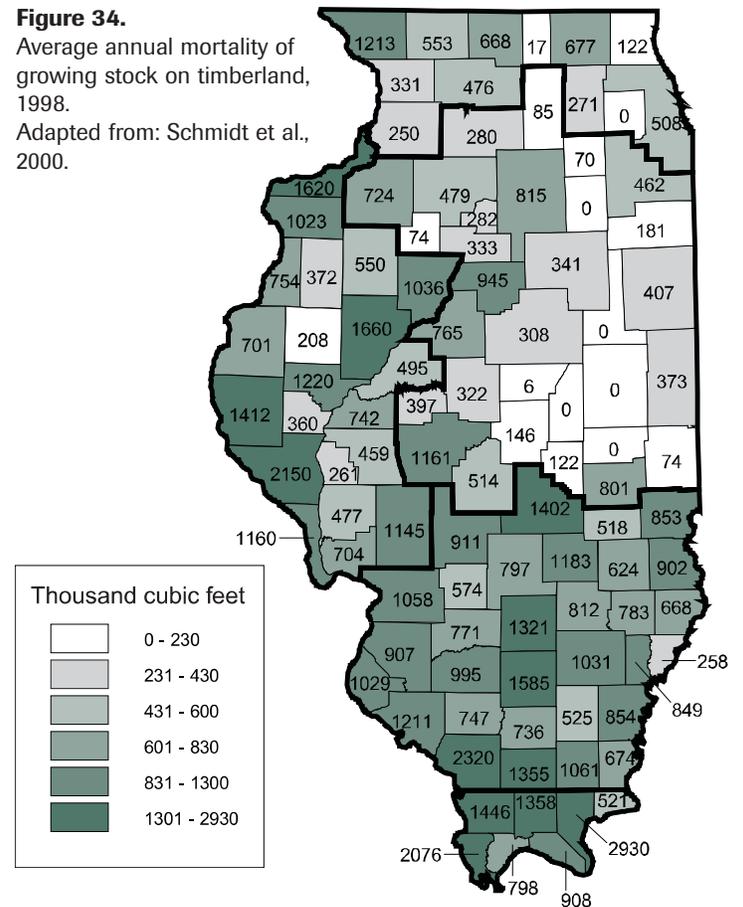


Figure 34.

Average annual mortality of growing stock on timberland, 1998.
Adapted from: Schmidt et al., 2000.



Ownership of Illinois Forest Resources



Private individual ownership accounts for 82 percent of the total timberland acreage in Illinois (Figure 36). Corporate and National Forest ownership accounts for 7 percent and 6 percent, respectively. The remaining ownership classes hold smaller percentages of the total timberland acreage. For this reason, the largest responsibility is placed on the private landowner for helping ensure the continued existence of quality timberland and the societal benefits received from that timberland. This emphasizes the importance of landowner assistance programs, such as those administered by the Illinois Department of Natural Resources Division of Forest Resources, in guiding private timberland owners to manage their forests for sustainability. At the national level, 54 percent of the timberland is privately owned, with federal ownership and corporate ownership having a higher percentage of timberland than in Illinois (USDA Forest Service, 2001).

The county distribution of timberland acreage by ownership classes is shown in Figures 37 through 42. The distribution of privately owned timberland (Figure 37) follows the basic distribution of timberland. Corporate owned timberland, shown by Figure 38, is dispersed throughout the state, with highest acreages in the southern and western parts of the state, as well as in the northern portion of the Grand Prairie Region. As indicated in Figure 39, National Forest timberland ownership is located exclusively in the southern portion of the state. This federal ownership of timberland is the Shawnee National Forest. Acreage of federally owned timberland other than that in a National Forest is scattered throughout the state (Figure 40). State ownership of timberland acreage is shown in Figure 41. Timberland owned by counties and municipalities (Figure 42) is also variously located throughout the state, with the highest acreage in Vermilion County. It should be noted that reserved forest land, such as state, county, and local parks, is excluded from Figures 41 and 42.

The local forest type acreages as owned by the various ownership classes are given in Table 16. The private individual landowner class holds the majority of acres for most of the local forest types. Exceptions to this are the shortleaf pine and eastern redcedar local forest types, which are primarily located in the Shawnee National Forest in the Southern Unglaciaded Region. Acreage of the shortleaf pine-oak local forest type is roughly split in half between the National Forest and private individual ownership classes. The National Forest and private individual ownership classes both have their largest acreages in the white oak-red oak-hickory local forest type, which is the dominant local forest type of the oak-hickory forest type group (Table 5). The remaining ownership classes have their dominant amount of timberland in the black ash-American elm-red maple local forest type, which is the greatest local forest type of the elm-ash-cottonwood forest type group (Table 5).

The majority of timberland in all ownership classes is in the sawtimber stand-size class (Table 17). The private individual ownership class owns the highest acreage of all stand-size classes. A similar relationship can be seen with stand stocking classes of growing stock trees (Table 18). All ownership classes have their highest timberland acreages in fully stocked timberland, but the private individual ownership class owns the most timberland of all stocking classes of growing stock trees. The state has a higher percentage of its timberland in the overstocked class than all the other ownership classes, slightly more than 20 percent (Figure 43). The National Forest has about 15 percent of its timberland in the overstocked class. Private individual and corporate ownerships have the second lowest and lowest percentages of their timberland in the overstocked class, respectively. For timberland in the poorly stocked class (Figure 44), the situation is reversed. The corporate ownership class has a higher percentage of its tim-

Figure 36.
Percentage of timberland in Illinois by ownership class, 1998..

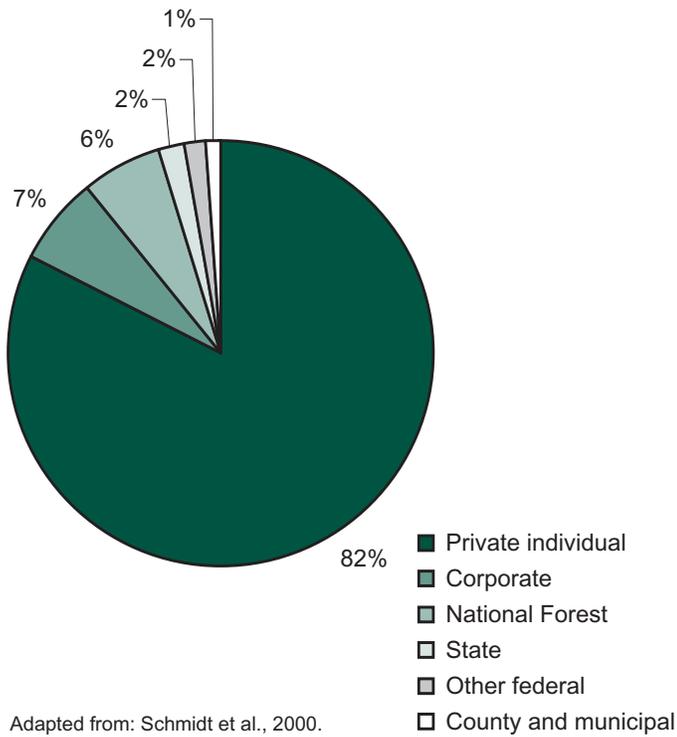


Figure 37.
Area of timberland owned by private individual, 1998.
Adapted from: Schmidt et al., 2000.

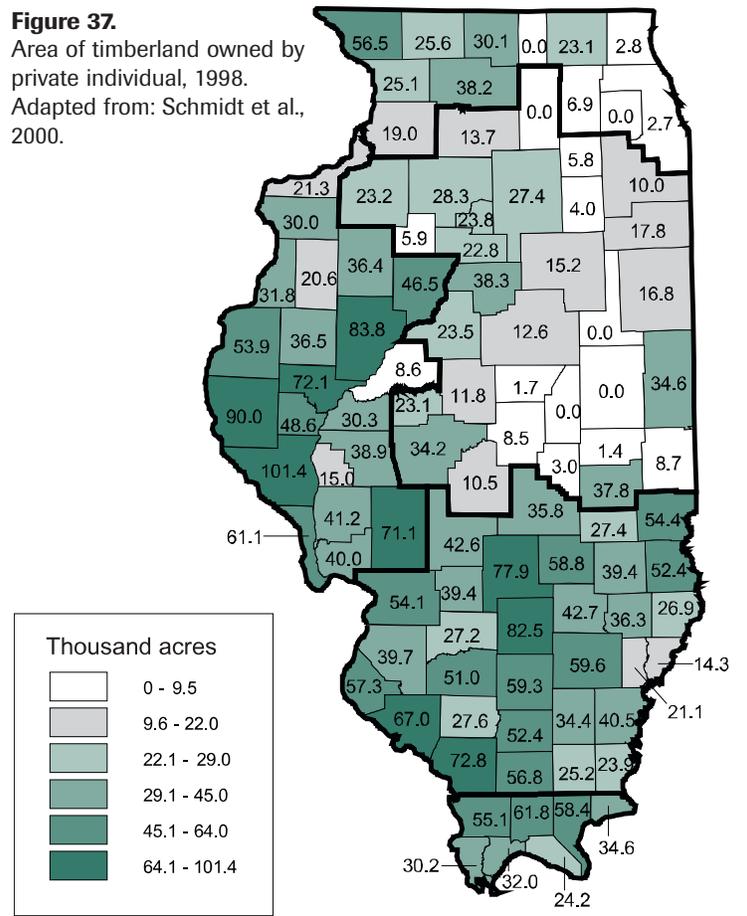


Figure 38.
Area of timberland owned by corporations, 1998.
Adapted from: Schmidt et al., 2000.

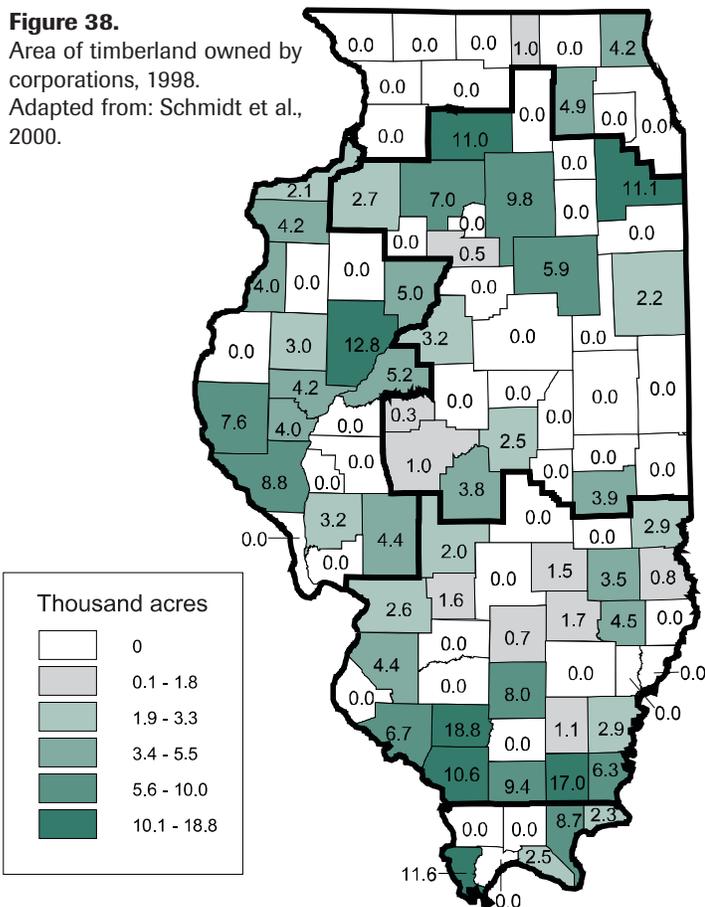


Figure 39.
Area of timberland owned as the Shawnee National Forest, 1998.
Adapted from: Schmidt et al., 2000.

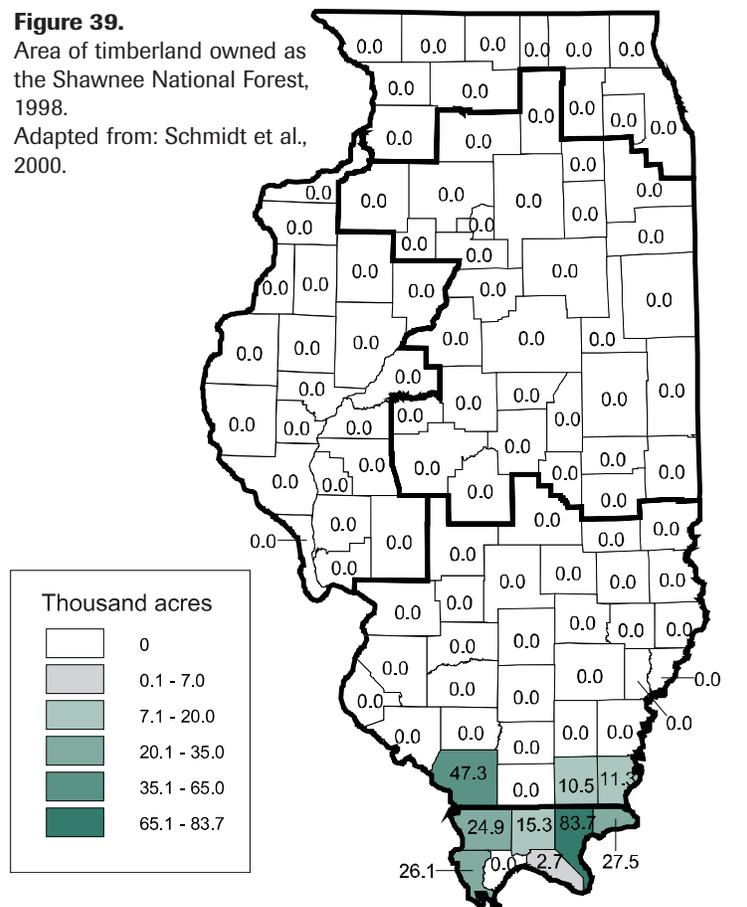


Figure 40.
Area of timberland in other federal ownerships, 1998.
Adapted from: Schmidt et al., 2000.

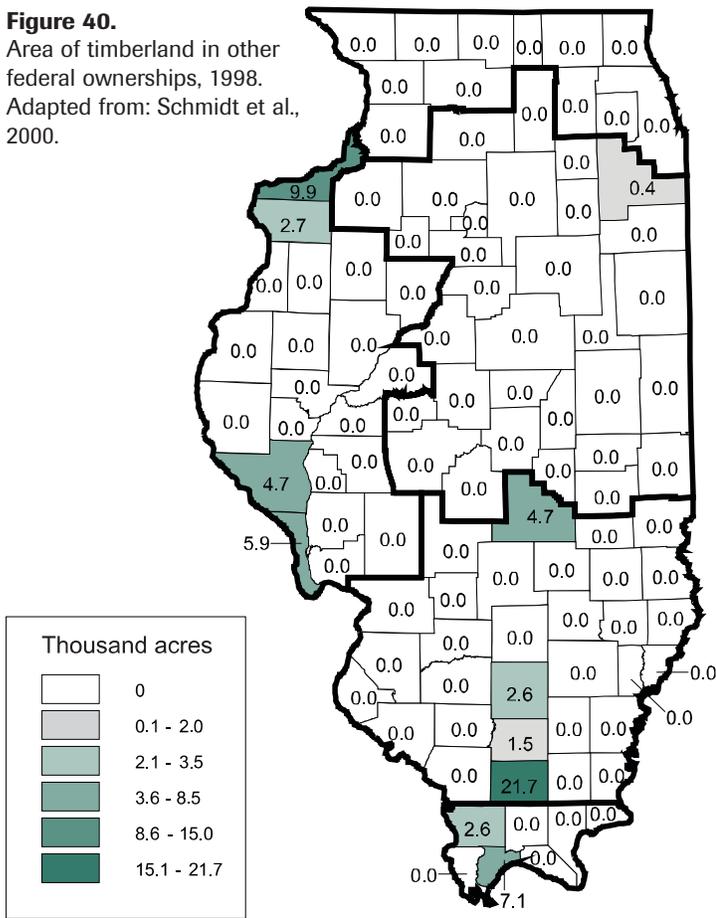


Figure 41.
Area of timberland owned by the State of Illinois, 1998.
Adapted from: Schmidt et al., 2000.

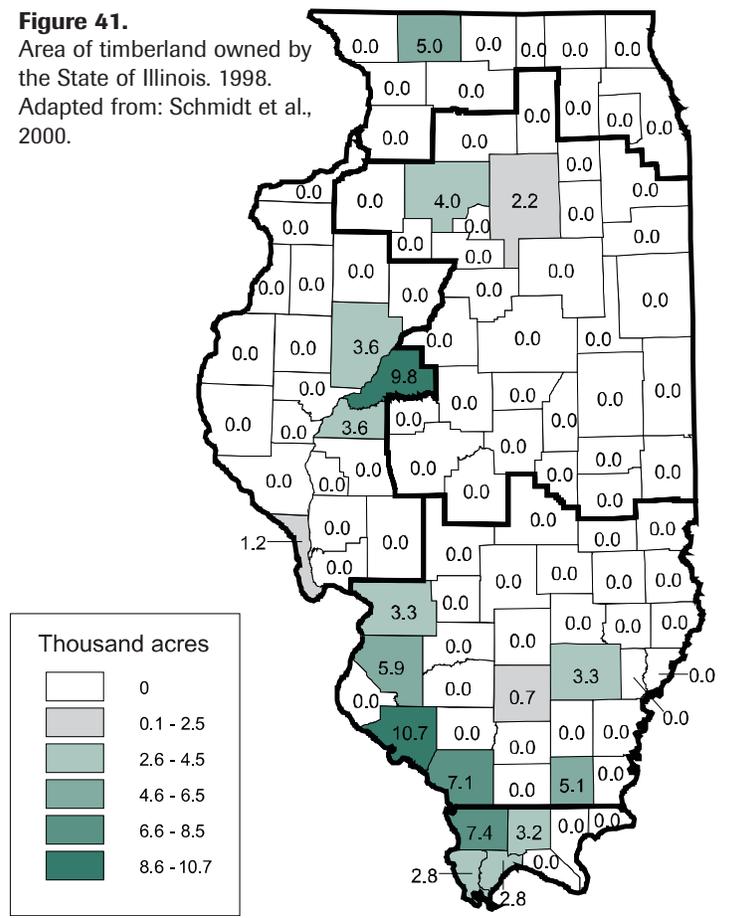


Figure 42.
Area of timberland owned by counties and municipalities, 1998.
Adapted from: Schmidt et al., 2000.

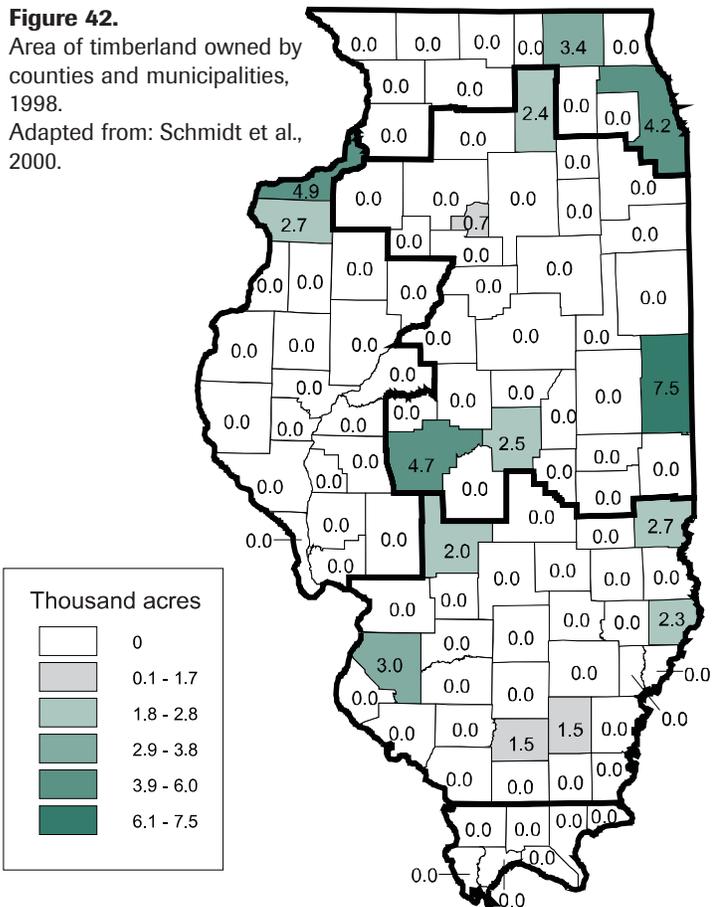
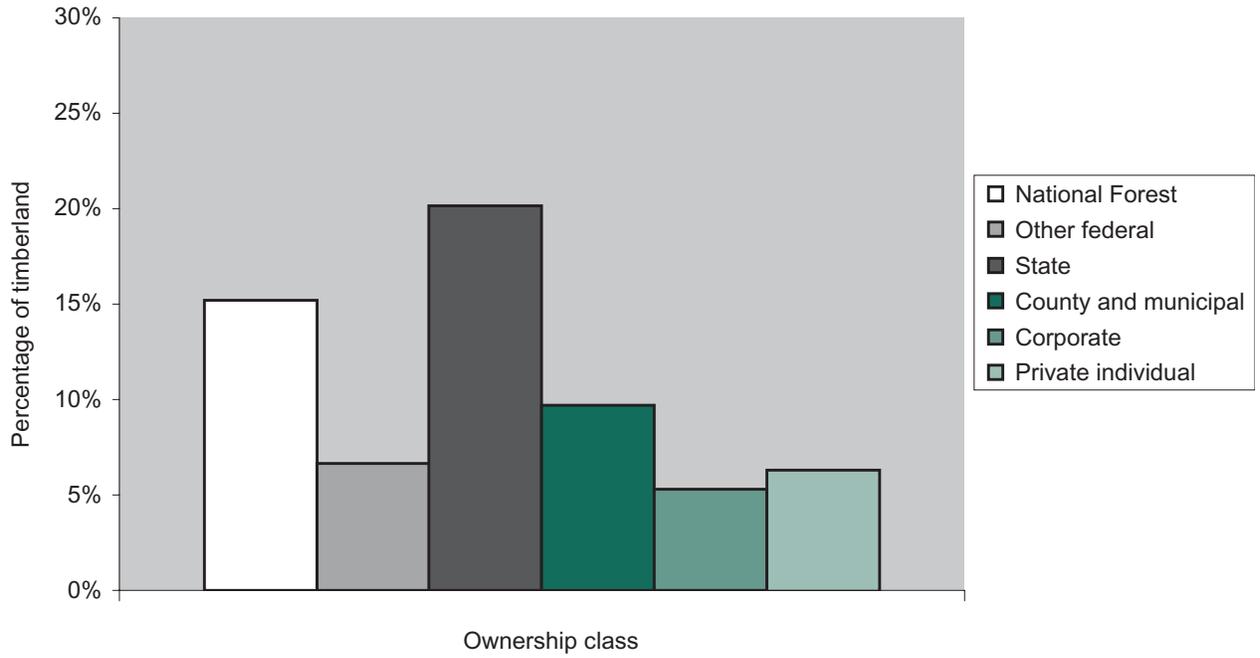
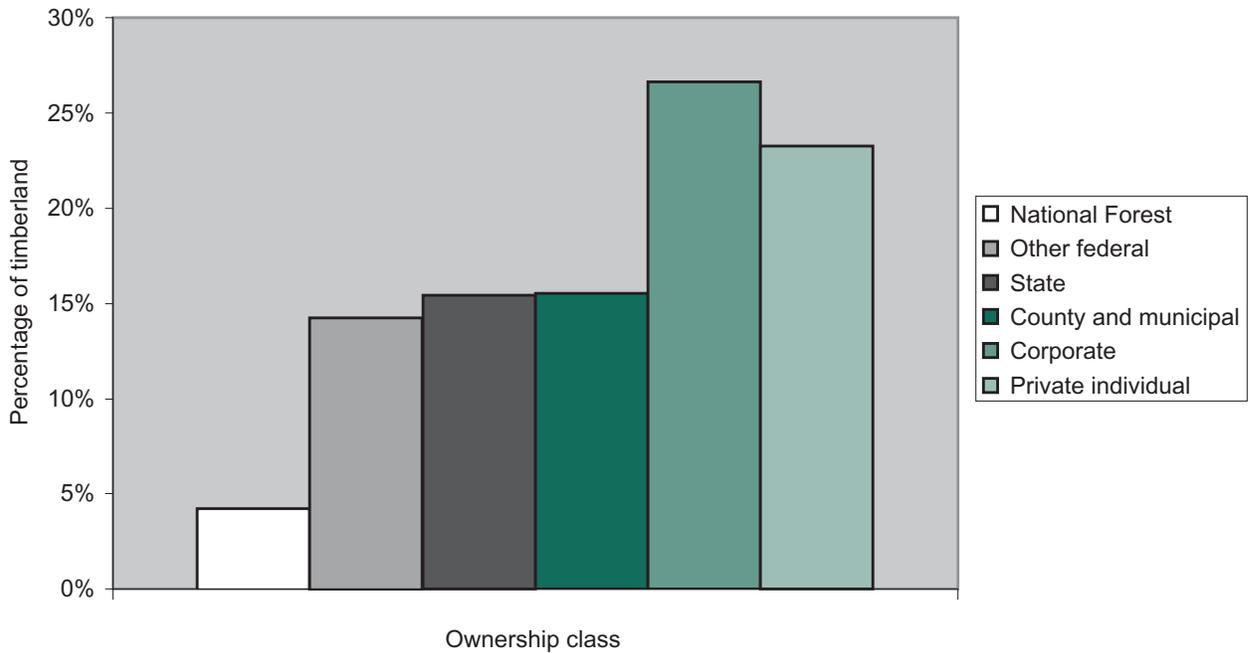


Figure 43.
Percentage of timberland in Illinois that is overstocked by ownership class, 1998.



Adapted from: Schmidt et al., 2000.

Figure 44.
Percentage of timberland in Illinois that is poorly stocked by ownership class, 1998.



Adapted from: Schmidt et al., 2000.

berland in the poorly stocked class than all other ownership classes, followed by private individuals. The other federal ownership class has the second lowest percentage, and National Forest the lowest.

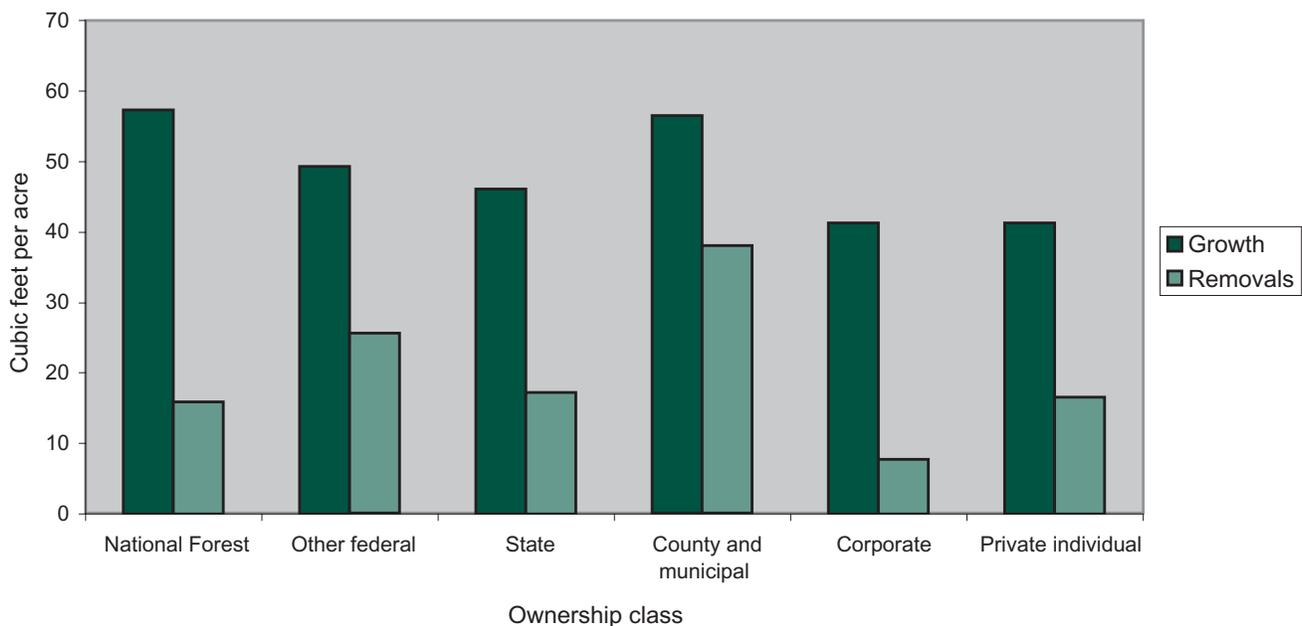
Figure 45 shows the cubic foot volume per acre of net average annual growth and average annual removals of growing stock on timberland by ownership classes. The National Forest has the highest net average annual growth rate, followed by county and municipal ownerships. Corporate and private individual ownerships have the lowest net average annual growth rates. The fact that the private individual ownership class owns the majority of the timberland but is showing the lowest growth indicates a need to assist private owners in managing their timberland. State and federal programs that provide this assistance will be covered in the section “Benefits from Illinois Forest Resources.”

The highest cubic feet per acre removals came on timberland owned by the county and municipal ownership

class. This is somewhat surprising and may be attributed to removals for land development. The lowest removals came from the corporate ownership class. This may seem unusual, but companies involved in the forest industry own only 4 percent of the total acreage in the corporate ownership class (Schmidt et al., 2000). The remaining acreage is owned by companies that do not depend on their timberland as a source of income.

A study of private ownership of forest land, including both timberland and reserved forest land (Birch, 1996a), found that a large portion of ownership units (people or groups of people that own forest land) own small acreages of forest land (Figure 46). Only 6 percent of all ownership units own parcels of forest land between 100 and 499 acres, and fewer than 1 percent own parcels of forest land greater than 500 acres. Individual private ownership units account for 84 percent of all ownership units (Table 19). Of the individual private ownership units, 34 percent own parcels of forest land less than 10 acres in size, and 59 percent own parcels of forest land between 10

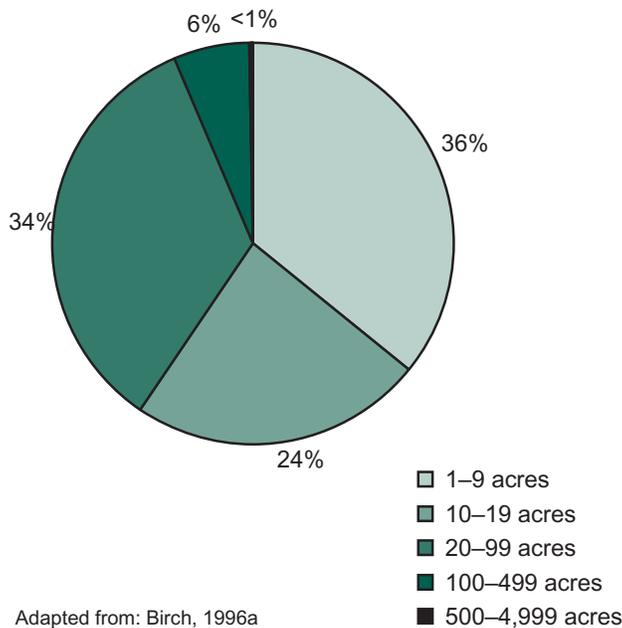
Figure 45. Average annual net growth and average annual removals per acre of growing stock on timberland in Illinois by ownership class, 1985-1997.



Adapted from: Schmidt et al., 2000.

Figure 46.

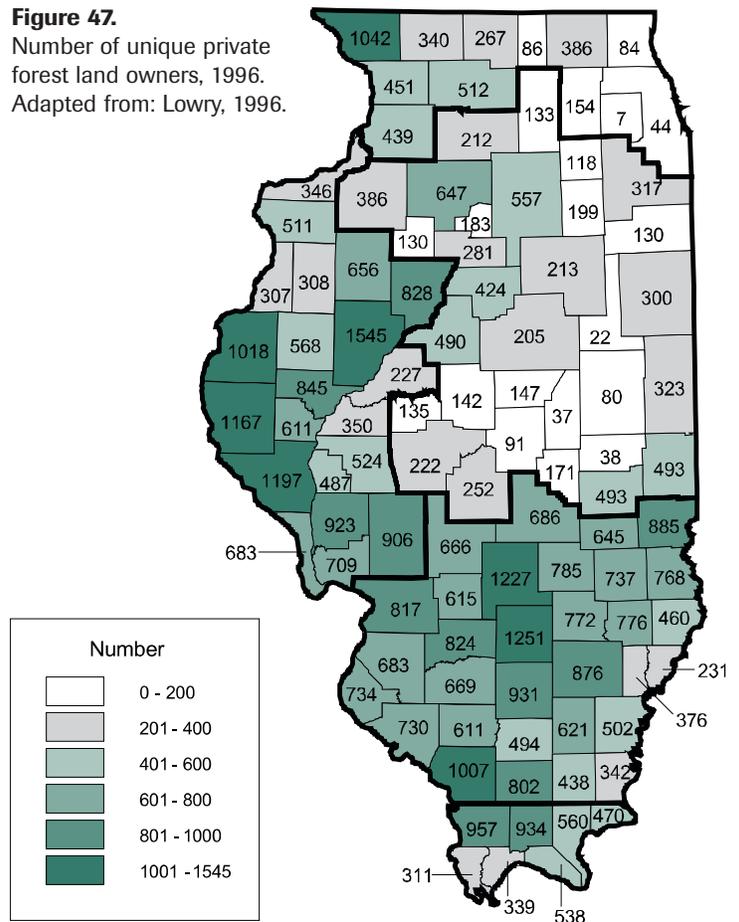
Percentage of private ownership units of forest land in Illinois by acreage owned, 1993.



Adapted from: Birch, 1996a

Figure 47.

Number of unique private forest land owners, 1996. Adapted from: Lowry, 1996.



and 99 acres in size. At the national level, individuals make up 94 percent of the ownership units, and 60 percent of these individual ownership units own parcels of forest land less than 10 acres in size (Birch, 1996b).

The actual acreage of forest land owned by ownership units for the area size classes can be seen in Table 20. Individual ownership units own 84 percent of the total privately owned forest land acreage. Individual ownership units that own forest land parcels less than 100 acres in size own 63 percent of the total individually owned forest land acreage. Together, Tables 19 and 20 show that 1,921 thousand acres of privately owned forest land are owned by 89,600 individual owners in parcels less than 100 acres in size. This means that agencies responsible for assisting private owners have a large number of people to serve in order to initiate the successful management of the forest resources of Illinois.

A study done at the University of Illinois (Lowry, 1996) to determine the characteristics of forest ownership within the state focused on all tracts of privately owned forest land greater than 15 acres. This accounted for approximately half the forest land owners in Illinois. The study included reserved forest land as well as timberland. Similar to the results of Birch (1996a), by far the largest number of owners are private individuals (Table 21). These are unique owners, so owners with multiple tracts within Illinois are counted only once. The number of total private individual owners in Table 21 is significantly less than the total shown in Table 19, because Birch (1996a) sampled all private ownership units regardless of parcel size owned. Figures 47 through 49 show the statewide county distribution of the number of these owners. Data for these figures were derived from Table 21. For these three figures, the number of owners is given as unique for each county, not the entire state. This means that if an individual or a company owns more than one parcel of forest land in a single

county, that owner will be counted only once. If, however, the owner has parcels in two or more counties, the owner will be counted once in each county in which the owner has forest land. Figure 47 shows unique private owners, which includes private individuals, trusts or estates, multiple owners, and farm businesses. The distribution of unique private owners is similar to the distribution of privately owned timberland acreage (Figure 37). Figure 48 indicates unique corporate landowners, including companies or corporations and railroads. The greatest concentration of these landowners is in the southern and western portions of the state. Unique organization owners, which include school districts, youth camps, religious organizations, conservation groups, and recreational clubs, are concentrated more in the northern portion of the state (Figure 49).

Figure 48.
Number of unique corporate forest land owners, 1996.
Adapted from: Lowry, 1996.

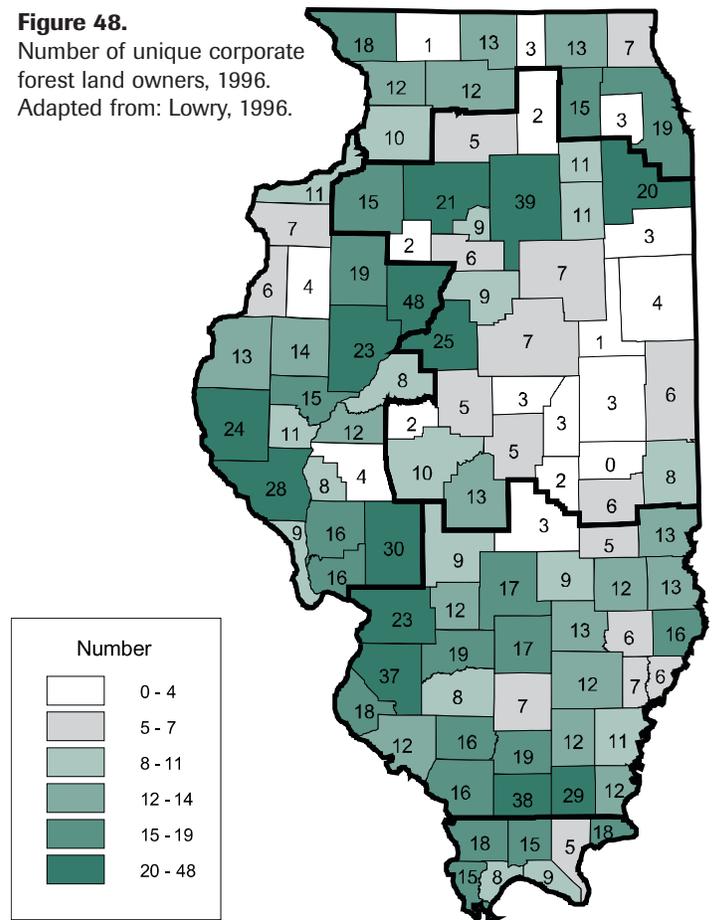
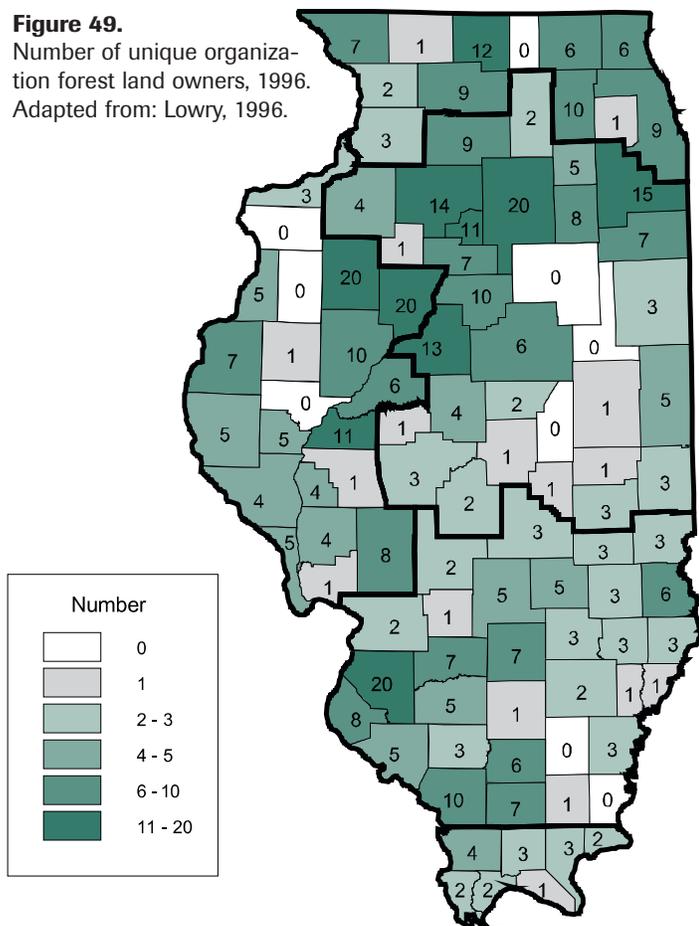


Figure 49.
Number of unique organization forest land owners, 1996.
Adapted from: Lowry, 1996.



Benefits from Illinois Forest Resources



Many benefits are received from the forest resources of Illinois, ranging from lumber to natural areas for public enjoyment and relaxation. In addition, the forest resources of Illinois contribute financially to the state through jobs and income generated by forestry-related businesses and industries.

The wood harvested from Illinois timberland is used for a variety of goods and products. Forty-six percent of the current (1997) annual growing-stock removals were used for saw logs (Figure 50). Veneer logs, pulpwood, fuelwood, and miscellaneous products combined represent only 12 percent of the current volume of growing-stock removals, while logging residue accounts for 13 percent. Many industries make use of logging residue and convert it into usable products. Logging residue in the form of branches and other woody material left at the logging site eventually decomposes and returns valuable nutrients to the soil.

Other removals accounted for 29 percent of the growing-stock removals in 1997. Other removals include wood removed in timber-stand improvement cuttings (where undesirable trees are removed), trees removed during land clearing, and growing-stock trees on land removed from timberland classification between 1985 and 1998.

Table 22 shows the annual removals of growing stock from timberland for 1997, by species group and removal/product type. The latter is a class indicating what the removed volume of wood was used for. It should be noted that the difference in the volume of removals by species groups reported in Table 22 and Table 13 is due to the fact that in Table 13, the removal volume is an annual average based on the period between 1985 and 1998, whereas Table 22 is limited to the annual removals for 1997. Other red oaks had the highest volume of growing stock removed, followed by select white oaks. These two species groups also accounted for the highest average annual removals (Table 13).

Of the 75,198 thousand cubic feet of growing-stock volume removed in 1997, 42,995 thousand cubic feet were used for products (Table 22). The remaining volume removed was in logging residue and other removals. For the majority of species groups, the largest portion of growing-stock volume removed was used for products. The highest volume removed for a product was saw logs. Other red oaks and select white oaks were the two highest species groups used for saw logs. Select white oaks had the highest volume used for veneer logs, followed by black walnut. The remaining three oak species groups also represented a significant portion of the volume used for veneer logs but not nearly as much as the select white oaks and black walnut species groups. The loblolly and shortleaf pine species group and the cottonwood and aspen species group had the highest volumes of wood used for pulpwood. Soft maples and elms are also important for pulpwood production.

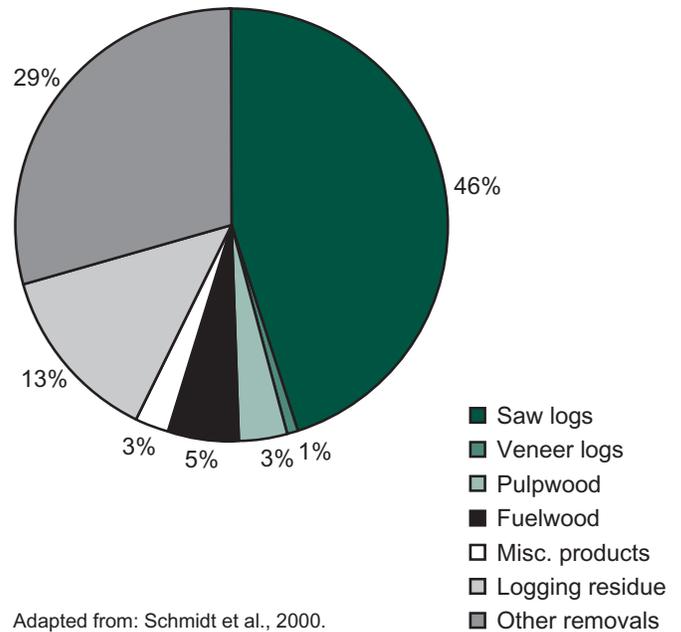
For fuelwood, the select white oaks species group was highest, followed by hickory and other red oaks. The volume of growing stock for logging residue by species group was similar to that of total removals, because logging residue is a by-product of removals and usage. The species most commonly removed for nonproduct uses (other removals) were the other red oaks and the select white oaks. Some species groups had a higher portion of their total removal volume in the other removals category than in the product removals category. These species groups included loblolly and shortleaf pine, eastern redcedar, other eastern softwoods, elm, black cherry, basswood, and other hardwoods.

The private individual was responsible for the greatest average annual volume of growing stock removed (Figure 51). This is to be expected, considering that the private individual ownership class owns the vast majority of Illinois timberland (Figure 36). The unavailable class in Figure 51 has the second-highest removal volumes, followed by the National Forest and corporate ownership

classes. In the unavailable class, wood volume was removed by undetermined sources. The National Forest had a higher removal volume than the corporate ownership class, even though the corporate ownership class owns more timberland (Figure 36). Corporations not related to the forest industry own 96 percent of the timberland acreage in the corporate ownership class. This may account for the lower volume of removals compared with that of the National Forest.

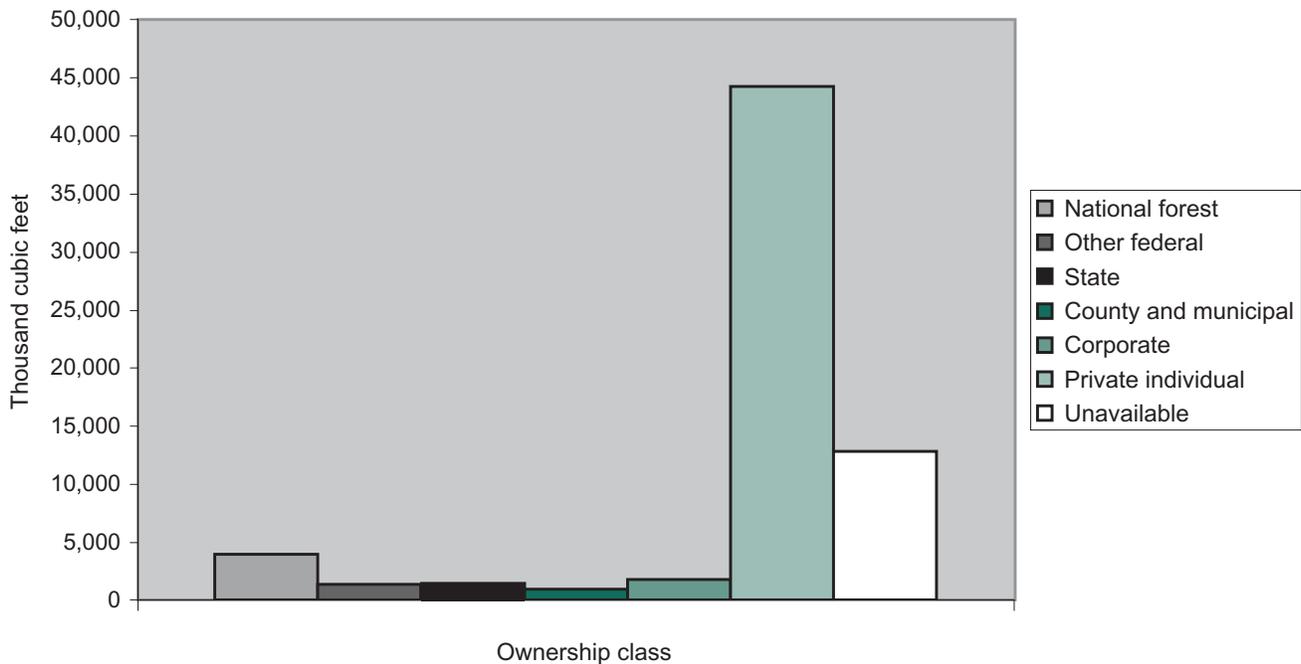
A total of 2,032 businesses in Illinois deal with forest resources (Table 23). The data for Table 23 are from information supplied by Dun & Bradstreet. Business establishments are categorized by a general business type and a specific business type. The general business types are forestry, lumber and wood products, and paper products. Forestry includes those businesses that deal directly with the forest resource itself, whereas lumber and wood products and paper products include businesses that convert the raw wood material into products used by consumers.

Figure 50. Percentage of current and annual growing stock removals on timberland in Illinois by product/removal type, 1997.



Adapted from: Schmidt et al., 2000.

Figure 51. Average annual removals of growing stock on timberland in Illinois from 1985 to 1997 by ownership class.



Adapted from: Schmidt et al., 2000.

The specific business type is a more detailed classification of the firms within each general business type. The majority of businesses in Illinois are in the lumber and wood products general type, but the paper products general type has both the highest sales volume (in 2000) and the greatest number of employees. Number of employees refers only to employees who work at a business's location in Illinois and does not include employees who work for a corporation at out-of-state locations.

The number of establishments in Table 23 is based on all businesses in Illinois that operate in any of the business types (general or specific) listed in the table. The primary business activity of some of the businesses summarized in this table is not forestry-related. Of the totals in the table, 12 thousand workers, \$8 billion, and 253 establishments are from businesses whose primary business activity is different from the forestry-related one under which they are summarized. For these businesses, the forestry-related business type they are summarized under is a sec-

ondary or indirect business activity type. They perform their forestry-related activities as a secondary part of their operations instead of as the primary part. Some of these are companies that manufacture their own packaging for materials created in their primary business activity.

There are few businesses in Illinois that deal directly with the forest resource (Table 23). The majority of these are tree farms and timber tracts, where trees are grown for commercial harvest, and forest services. Many of the tree farms are Christmas tree farms. The low number of forest nurseries is due to the exclusion of nurseries that grow trees only for ornamental purposes. Businesses providing forestry services are those that can assist timberland owners with the various aspects of managing timber. As the importance of private ownership of Illinois timberland becomes recognized, a new opportunity for businesses in this field may exist. Figure 52 shows the number of forestry businesses by county. The majority of these businesses are in the Chicago area.

Figure 52.
Forestry businesses, 2000.
Data from: Dun & Bradstreet, 2001.

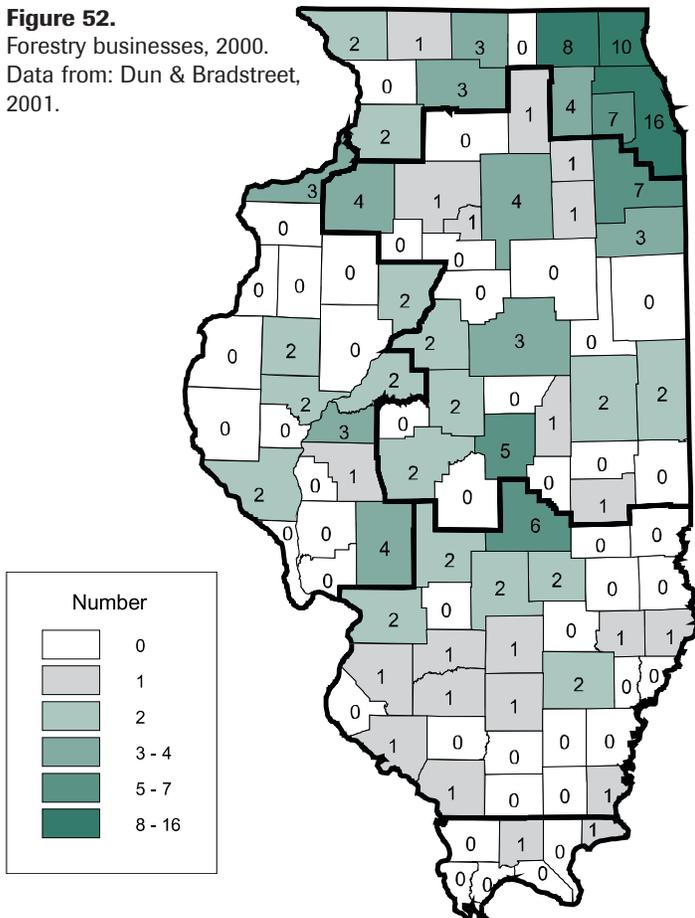
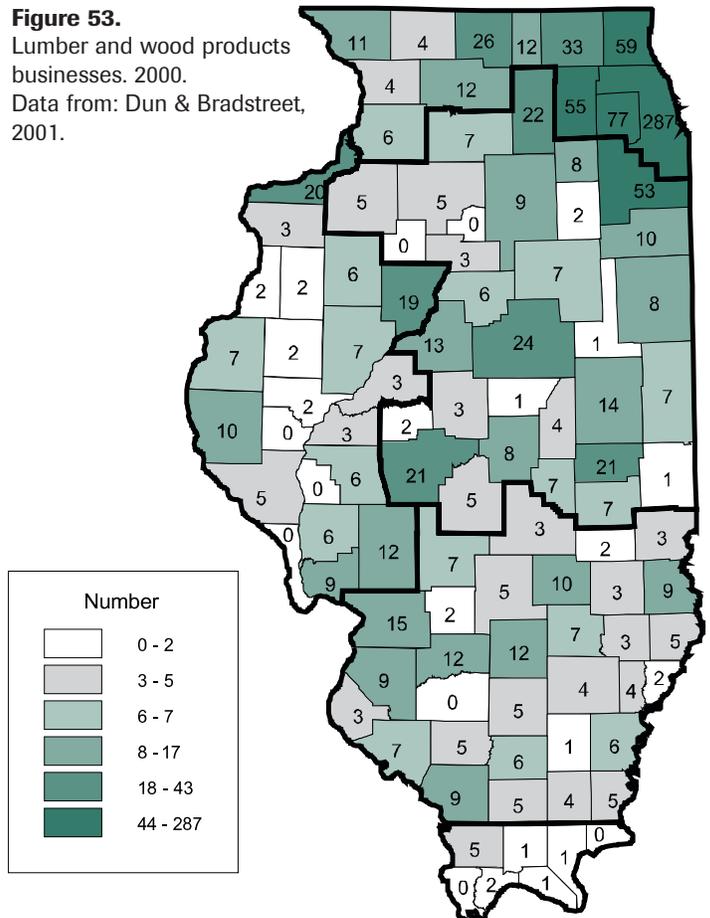


Figure 53.
Lumber and wood products businesses, 2000.
Data from: Dun & Bradstreet, 2001.



In the lumber and wood products general type, millwork has the most businesses, the highest annual sales volume, and the most employees (Table 23). Businesses that make wood kitchen cabinets and wood pallets and skids also have high numbers of employees in this general type. Structural wood members and reconstituted wood products also have large annual sales volumes. Figure 53 shows the number of lumber and wood products businesses by county for Illinois, and again the highest concentration is in the Chicago area.

Businesses involved in the manufacturing of paper products show a much higher annual sales volume than do the other two general types (Table 23). Companies that make miscellaneous paper products have the highest sales volume, followed by paperboard mills and paper mills. Manufacturers of corrugated and solid-fiber boxes employ the greatest number of people and have the highest number of establishments. Bag manufacturing and coated and laminated paper manufacturing businesses are also large employers. Many businesses manufacture paperboard

products, and these businesses also employ large numbers of people. Most businesses that manufacture paper products are found in and around Chicago (Figure 54).

The forest resources of Illinois provide the majority of the total volume of saw logs used for products within the state (Figure 55). Iowa, Missouri, and Wisconsin combined provide only 3 percent of the saw-log volume used in Illinois' wood-using industries. However, only 72 percent of the total saw-log volume harvested in Illinois stays within the state for manufacturing (Figure 56). Indiana and Missouri combined receive 21 percent of the Illinois saw-log volume. Iowa and Kentucky are also significant importers of Illinois' saw logs. In effect, 72 percent of the saw-log volume produced in Illinois provides 97 percent of the saw-log volume used for manufacturing goods within the forest products industry in Illinois. The remaining percentage of saw-log volume produced is used by industries in other states. There is an opportunity for more wood-using industries in Illinois.

Figure 54. Paper product businesses, 2000. Data from: Dun & Bradstreet, 2001.

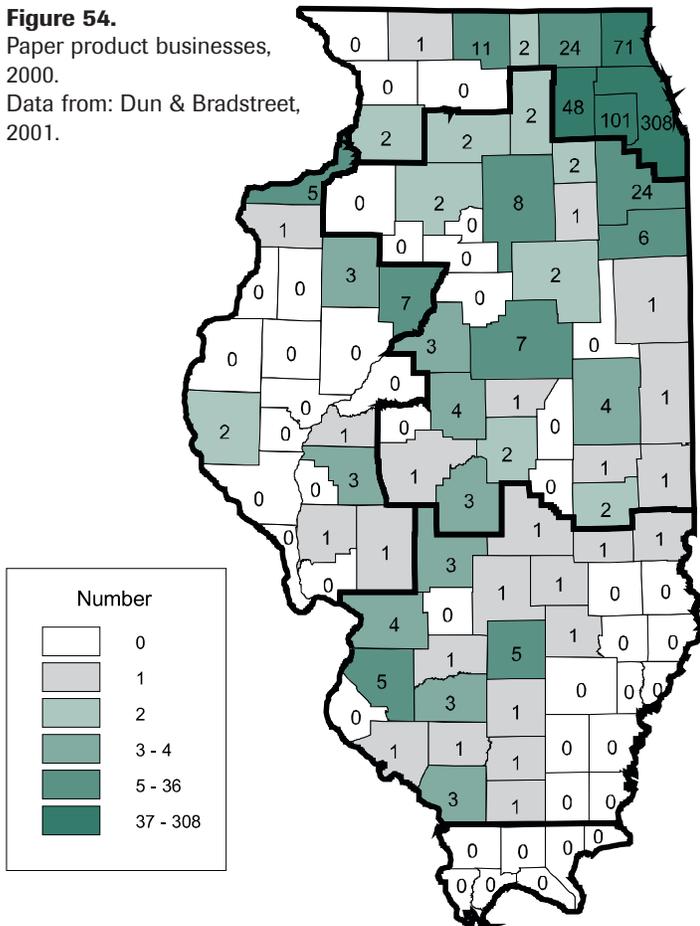
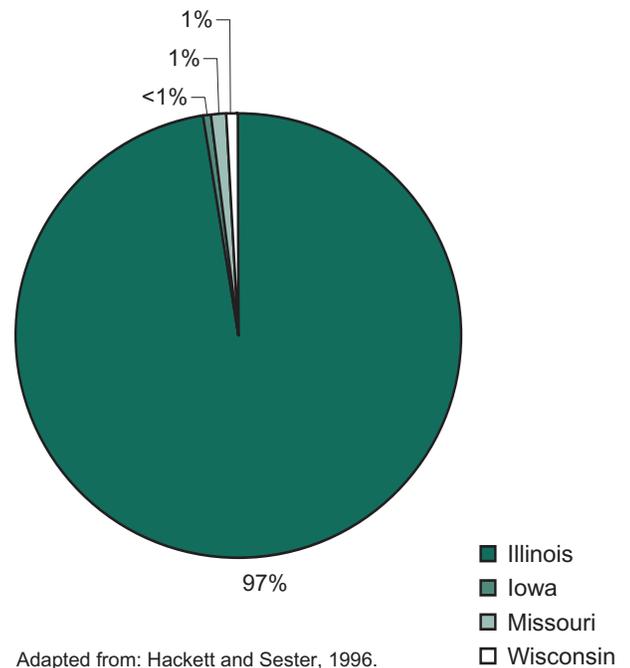


Figure 55. Percentage of saw-log volume processed in Illinois by state of origin, 1996.



Adapted from: Hackett and Sester, 1996.

upland forest, and wet-mesic upland forest. These areas represent very small remnants of original forest community types deserving protection. The total acreage of forested communities listed in the INAI is slightly less than 25 thousand acres. This is only 0.18 percent of the estimated 13.8 million acres of forest land in Illinois at the time of settlement. The acreage of INAI forest communities by county is shown in Figure 57, with the greatest number of acres in Johnson, Adams, and LaSalle Counties.

The importance of Illinois forest resources has not gone unnoticed. Many programs exist that help private landowners manage their timberland and plant trees to create future forest resources for Illinois. Many of these are cost-share programs, where the government pays part of the cost for activities related to proper forest management practices. The requirements of all programs, while differing in nature, specify certain management goals and objectives that must be met in order to receive cost-sharing benefits.

One of the most important programs is provided by the Forestry Development Act (FDA). This cost-share program is administered by the Illinois Department of Natural Resources Division of Forest Resources. Funds are obtained by collecting a harvest fee on all timber sales in Illinois. These funds then go to landowners who enroll in the program and can be used to help cover costs for a variety of forest management activities.

Another important cost-share program is the Conservation Reserve Program (CRP), which is a national program administered by the Commodity Credit Corporation (CCC) and the USDA Farm Service Agency (FSA). CRP provides cost sharing for a wide variety of resource conservation activities, many of which relate to forestry. In Illinois, the IDNR Division of Forest Resources administers management of forest land enrolled in CRP. An extension of CRP is the Conservation Reserve Enhancement Program (CREP), which focuses on geographic areas with specific environmental concerns. In

Illinois this is the Illinois River. The Forestry Incentives Program (FIP) provides funds for timber stand improvements, tree planting, and natural regeneration on privately owned timberland and is administered by the USDA Natural Resources Conservation Service (NRCS).

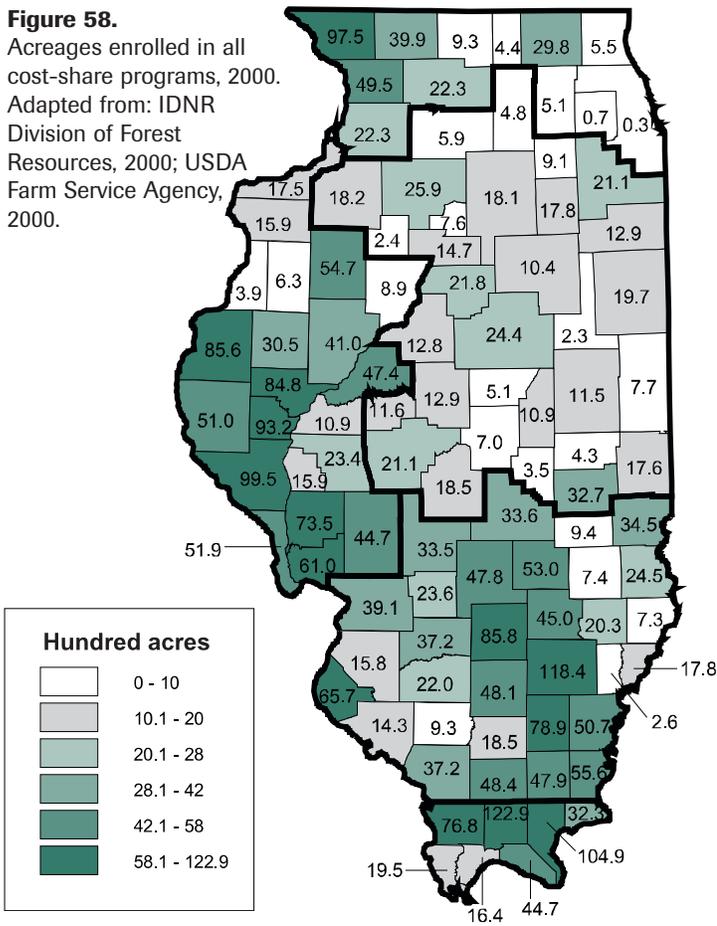
Table 25 shows the acreage of lands in Illinois by various management activities and the cost-share program under which the lands are enrolled. Caution should be used when interpreting Table 25, because lands enrolled in forestry-related practices under CRP or CREP are also often enrolled in the FDA program in Illinois. Those acreages cited under “FDA” are enrolled only in that program, while the majority of acres included under the headings “CRP,” “CREP,” “FIP,” and “Other” are also enrolled in the FDA program. The IDNR Division of Forest Resources oversees the management of all forestry-related activities for these programs in Illinois. The category “Other” includes the following cost-share programs: Agricultural Conservation Program (ACP), Stewardship Incentives Program (SIP), and Wetlands Reserve Program (WRP). ACP and SIP are no longer being funded. The acreage listed represents the total number of acres enrolled in each program from the time of that program’s inception to 2000.

The management activity under which the most acreage has been enrolled is tree planting. This will help provide future forest resources for Illinois. Timber stand improvement is also important, and all these acres are enrolled in the FDA and FIP programs. While not creating new forests for Illinois, this management activity is just as important because it improves the conditions of current forest resources in the state. The acres enrolled in riparian buffer zone protection help guard Illinois residents from the negative effects of soil erosion. The acreage enrolled in the combined cost-share programs for each county can be seen in Figure 58. The Southern Unglaciaded, Western, and South Central Regions all have counties with large acreages enrolled. Johnson County has the highest enrollment, followed by Wayne and Pope Counties.

Figure 58.

Acreages enrolled in all cost-share programs, 2000.

Adapted from: IDNR Division of Forest Resources, 2000; USDA Farm Service Agency, 2000.



Summary



The current forest resources of Illinois are approximately 30 percent of what they were during the time of settlement. These forest resources are distributed throughout Illinois, with the highest concentration in the western and southern portions of the state. Forest land makes up 12 percent of the state's land-use cover. Ninety-four percent of the forest land is timberland, which is used to supply the state with timber products. The oak-hickory forest type group is the dominant type group in Illinois, and the white oak-red oak-hickory local forest type is the dominant local type within this type group. Two-thirds of Illinois timberland is fully or medium stocked. Almost three-quarters of the timberland in Illinois is in the sawtimber stand-size class, while only 3 percent is in the seedling-sapling stand-size class. The low acreage of seedling-sapling timberland and the relative shade intolerance of most of the commercially desirable and currently dominant trees of Illinois imply a need for increasing the acreage of the seedling-sapling stand-size class. This will ensure a continuous supply of high-quality growing stock composed of desirable species. The majority of the timberland in Illinois is in stand-age classes 60 years and younger. The timberland in the older stand-age classes is primarily composed of the oak-hickory forest type group, while the maple-beech-birch and elm-ash-cottonwood forest type groups combined make up the majority of the younger stand-age classes.

There is a net 5.9 billion cubic feet of growing stock on Illinois timberland. This represents a 26 percent increase in net growing-stock volume between 1985 and 1998. When compared with the 1 percent increase in timberland during the same period, it is clear the growing stock on the timberland of Illinois is growing well. This is reflected in the increase in the sawtimber stand-size class and in fully stocked acreage between 1985 and 1998. The species groups with the highest growing-stock volume are the oak species groups and the hickories. The majority of

species groups grew well between 1985 and 1997, contributing to the increase in net volume since 1985. Net average annual growth of growing stock on timberland is higher than average annual mortality and removals combined. The oak species groups had the highest net average annual growth overall, while the elms had the second-highest net average annual growth per existing net 1985 volume. Elms have the highest number of growing-stock trees on timberland. Elms and maples have a much higher percentage of their stems in the smaller diameter classes than do the oaks, which have a higher percentage of their stems in the larger diameter classes than all other species groups.

The private individual owns the majority of timberland in Illinois, and nearly two-thirds of that acreage is owned in parcels of less than 100 acres in size by almost 90 thousand owners. A large responsibility rests on private landowners for ensuring the continued existence of quality timberland and its associated benefits. An emphasis should also be placed on the importance of government agencies, specifically the Illinois Department of Natural Resources Division of Forest Resources, in assisting private timberland owners with sustainable forest management. Saw logs are the main product of growing-stock removals from timberland in Illinois. The oak species groups have the highest volume removed from timberland and contributed more than half the volume removed for products in 1997. The volume of other removals of growing stock from timberland was almost a third of total growing-stock removals in 1997 and represents a loss of wood not used for products. The forest resources of Illinois contributed almost \$30 billion to the state's economy in 2000.

Tables



Table 1. Area of forest, prairie and water in Illinois by region and county, early 1800's, based on original land surveys.

Region and county	Forest		Prairie		Water	
	Acres	Percent	Acres	Percent	Acres	Percent
Northern Region						
Boone	82,600	46.1	96,400	53.9	0	0.0
Carroll	152,300	51.7	130,500	44.3	11,800	4.0
Cook	82,200	13.6	521,900	86.2	1,400	0.2
DuPage	28,800	13.5	184,700	86.5	0	0.0
Jo Daviess	307,200	78.8	74,800	19.2	7,700	2.0
Kane	116,500	35.0	216,100	65.0	0	0.0
Lake	189,500	63.2	102,400	34.1	8,100	2.7
McHenry	165,700	42.7	220,900	57.0	1,200	0.3
Ogle	177,600	36.6	307,200	63.4	0	0.0
Stephenson	140,800	39.2	218,200	60.8	0	0.0
Whiteside	154,700	35.0	284,400	64.3	3,100	0.7
Winnebago	94,100	28.5	235,600	71.5	0	0.0
Region total	1,692,000	39.2	2,593,100	60.0	33,300	0.8
Grand Prairie Region						
Bureau	116,100	21.0	435,600	78.7	2,100	0.4
Champaign	39,800	6.3	592,300	93.7	0	0.0
Christian	52,800	11.7	398,300	88.0	1,400	0.3
Coles	104,000	32.2	218,800	67.7	400	0.1
DeKalb	29,600	7.4	373,000	92.6	0	0.0
DeWitt	49,800	19.4	206,900	80.6	0	0.0
Douglas	41,000	15.5	223,100	84.5	0	0.0
Edgar	135,900	34.5	257,600	65.5	0	0.0
Ford	11,000	3.6	297,100	96.4	0	0.0
Grundy	23,500	8.6	248,700	91.1	800	0.3
Henry	94,400	18.0	428,700	82.0	0	0.0
Iroquois	56,100	7.9	651,000	92.1	0	0.0
Kankakee	24,300	5.6	406,700	94.4	0	0.0
Kendall	22,000	10.8	182,500	89.2	0	0.0
LaSalle	111,300	15.3	612,800	84.3	3,200	0.4
Lee	46,600	10.1	415,300	89.8	569	0.1
Livingston	29,800	4.5	633,400	95.5	0	0.0
Logan	54,000	13.8	336,500	86.2	0	0.0
McLean	81,800	10.9	669,800	89.1	0	0.0
Macon	48,300	13.0	322,700	87.0	0	0.0
Marshall	66,500	26.3	178,200	70.5	8,200	3.2
Menard	69,000	33.5	136,700	66.5	0	0.0
Moultrie	51,400	23.6	166,300	76.4	0	0.0
Piatt	24,000	8.6	254,000	91.4	0	0.0
Putnam	42,400	38.6	58,900	53.6	8,500	7.7
Sangamon	124,400	22.4	431,400	77.6	0	0.0
Stark	42,900	23.5	140,000	76.5	0	0.0
Tazewell	129,400	31.0	281,900	67.6	5,500	1.3
Vermilion	118,200	20.8	449,500	79.1	710	0.1

Table 1 continued.

Region and county	Forest		Prairie		Water	
	Acres	Percent	Acres	Percent	Acres	Percent
Will	67,400	12.5	469,500	87.2	1,500	0.3
Woodford	93,300	27.2	240,000	69.9	10,218	3.0
Region total	2,001,000	15.7	10,717,200	84.0	43,097	0.3
Western Region						
Adams	292,200	53.2	249,100	45.3	8,300	1.5
Brown	156,500	80.3	37,700	19.3	800	0.4
Calhoun	141,100	85.6	18,900	11.5	4,800	2.9
Cass	90,900	37.4	149,500	61.4	2,900	1.2
Fulton	353,200	63.2	201,100	36.0	4,900	0.9
Greene	173,100	50.1	170,700	49.4	2,000	0.6
Hancock	151,000	29.5	349,000	68.2	11,600	2.3
Henderson	64,400	25.9	174,200	70.1	9,800	3.9
Jersey	142,400	59.6	91,200	38.2	5,200	2.2
Knox	137,500	30.2	317,900	69.8	0	0.0
McDonough	111,800	29.9	262,100	70.1	0	0.0
Macoupin	148,300	27.0	401,300	73.0	0	0.0
Mason	78,100	22.3	260,500	74.2	12,300	3.5
Mercer	72,000	20.0	282,900	78.7	4,500	1.3
Morgan	126,300	34.8	235,100	64.8	1,400	0.4
Peoria	187,000	46.8	208,700	52.2	4,000	1.0
Pike	364,200	69.1	162,200	30.8	500	0.1
Rock Island	147,400	52.1	126,600	44.8	8,900	3.1
Schuyler	200,400	71.7	78,400	28.0	800	0.3
Scott	98,800	61.5	61,000	38.0	800	0.5
Warren	66,800	19.4	277,400	80.6	0	0.0
Region total	3,303,400	44.0	4,115,500	54.9	83,500	1.1
South Central Region						
Bond	75,800	31.2	166,800	68.8	0	0.0
Clark	175,400	55.2	142,200	44.8	0	0.0
Clay	111,900	37.4	186,900	62.6	0	0.0
Clinton	96,600	30.3	222,500	69.7	0	0.0
Crawford	155,600	55.4	125,200	44.6	0	0.0
Cumberland	81,600	37.2	137,900	62.8	0	0.0
Edwards	76,900	54.5	64,200	45.5	0	0.0
Effingham	87,000	28.6	216,900	71.4	0	0.0
Fayette	218,300	47.5	240,900	52.5	0	0.0
Franklin	214,400	78.5	58,600	21.5	0	0.0
Gallatin	207,200	100.0	0	0.0	0	0.0
Hamilton	253,500	91.9	22,200	8.1	0	0.0
Jackson	360,900	94.2	19,900	5.2	2,300	0.6
Jasper	124,200	39.4	190,900	60.6	0	0.0
Jefferson	270,100	73.1	99,600	26.9	0	0.0
Lawrence	144,600	61.2	91,600	38.8	0	0.0
Madison	188,200	40.2	270,600	57.8	9,000	1.9
Marion	150,000	41.2	214,300	58.8	0	0.0
Monroe	218,000	87.1	26,100	10.4	6,300	2.5
Montgomery	96,500	21.5	350,700	78.1	1,700	0.4
Perry	178,100	63.1	104,300	36.9	0	0.0
Randolph	277,700	73.8	93,500	24.9	5,000	1.3

Table 1 continued.

Region and county	Forest		Prairie		Water	
	Acres	Percent	Acres	Percent	Acres	Percent
Richland	119,600	52.1	110,100	47.9	0	0.0
St. Clair	210,700	49.4	214,700	50.3	1,400	0.3
Saline	245,100	100.0	0	0.0	0	0.0
Shelby	142,900	29.4	343,600	70.6	0	0.0
Wabash	100,200	70.0	42,900	30.0	0	0.0
Washington	120,400	33.8	236,000	66.2	0	0.0
Wayne	290,900	64.5	160,100	35.5	0	0.0
White	295,100	93.4	20,900	6.6	0	0.0
Williamson	257,500	91.4	24,100	8.6	0	0.0
Region total	5,544,900	56.8	4,198,200	43.0	25,700	0.3
Southern Unglaciaded Region						
Alexander	147,900	92.4	0	0.0	12,100	7.6
Hardin	112,400	99.4	0	0.0	700	0.6
Johnson	220,800	100.0	0	0.0	0	0.0
Massac	153,800	99.5	0	0.0	800	0.5
Pope	236,300	99.8	0	0.0	500	0.2
Pulaski	128,500	99.8	0	0.0	300	0.2
Union	263,400	98.5	0	0.0	3,900	1.5
Region total	1,263,100	98.6	0	0.0	18,300	1.4
State total	13,804,400	38.7	21,624,000	60.7	203,897	0.6

Column totals may differ due to rounding.
Adapted from: Anderson, 1970.

Table 2. Area of forest land in Illinois by region and county, as estimated by different organizations between 1820 and 1998.

Region and county	1998 USDA FS ¹	1996 INHS ²	1985 USDA FS ³	1962 USDA FS ⁴	1948 USFS ⁵	1924 Telford ⁶	1820 GLO ⁷
thousand acres							
Northern Region							
Boone	1.0	8.8	0.0	3.4	6.0	5.3	82.6
Carroll	27.1	37.1	15.8	23.1	22.0	24.9	152.3
Cook	49.8	90.7	34.3	31.2	30.0	23.9	82.2
DuPage	5.1	35.8	4.0	11.5	11.0	9.8	28.8
Jo Daviess	61.0	84.2	56.1	65.6	60.0	60.0	307.2
Kane	12.7	27.2	19.9	9.8	10.0	8.7	116.5
Lake	22.7	64.6	0.0	15.3	20.0	19.3	189.5
McHenry	26.5	44.1	32.4	15.3	16.0	6.7	165.7
Ogle	38.2	39.0	35.9	25.3	29.0	27.8	177.6
Stephenson	30.6	21.3	28.8	12.8	16.0	12.0	140.8
Whiteside	19.0	25.4	14.5	15.7	16.0	16.7	154.7
Winnebago	34.8	35.8	35.1	17.0	22.0	17.9	94.1
Region total	328.3	513.9	276.8	246.0	258.0	233.0	1,692.0
Grand Prairie Region							
Bureau	39.2	43.6	50.4	28.1	35.0	34.0	116.1
Champaign	2.5	10.5	3.8	5.6	7.0	6.4	39.8
Christian	16.7	17.8	17.7	15.9	13.0	4.3	52.8
Coles	41.7	33.5	26.1	23.3	23.0	32.6	104.0
DeKalb	2.4	9.7	4.0	6.3	5.0	5.6	29.6
DeWitt	5.7	15.6	6.4	10.1	11.0	2.5	49.8
Douglas	6.5	6.2	7.8	5.2	5.0	2.6	41.0
Edgar	8.7	32.1	8.5	20.7	23.0	38.7	135.9
Ford	0.0	1.6	0.0	1.3	1.0	3.1	11.0
Grundy	4.0	17.2	3.6	12.3	10.0	8.8	23.5
Henry	28.7	23.0	40.8	17.3	17.0	14.2	94.4
Iroquois	19.0	17.6	34.2	15.0	13.0	6.9	56.1
Kankakee	17.8	17.5	25.9	14.4	16.0	4.1	24.3
Kendall	5.8	10.6	9.7	4.9	8.0	8.8	22.0
LaSalle	42.3	48.5	45.5	34.8	26.0	28.9	111.3
Lee	24.6	19.6	20.7	11.0	9.0	11.0	46.6
Livingston	21.2	10.0	22.8	5.8	9.0	6.4	29.8
Logan	11.8	12.0	20.8	10.3	11.0	3.8	54.0
McLean	12.6	22.2	10.9	9.6	18.0	7.3	81.8
Macon	17.7	20.1	14.0	11.8	12.0	3.6	48.3
Marshall	23.3	29.8	20.6	25.7	28.0	26.6	66.5
Menard	28.3	20.6	25.0	15.8	15.0	22.0	69.0
Moultrie	5.6	11.4	6.1	11.1	8.0	2.1	51.4
Piatt	2.5	7.9	3.1	5.4	7.0	2.8	24.0
Putnam	24.6	20.6	11.2	14.1	18.0	19.2	42.4
Sangamon	40.0	38.2	46.7	25.5	24.0	60.9	124.4
Stark	5.9	6.4	4.0	5.5	6.0	6.7	42.9
Tazewell	26.7	48.4	28.4	25.7	38.0	45.0	129.4
Vermilion	42.2	42.8	45.5	28.0	29.0	5.7	118.2
Will	32.9	50.0	26.1	22.3	23.0	19.9	67.4
Woodford	42.4	36.0	43.9	22.6	30.0	36.7	93.3
Region total	602.9	701.0	634.2	465.4	498.0	481.2	2,001.0

Table 2 continued.

Region and county	1998 USDA FS ¹	1996 INHS ²	1985 USDA FS ³	1962 USDA FS ⁴	1948 USFS ⁵	1924 Telford ⁶	1820 GLO ⁷
Western Region							
Adams	101.3	104.8	71.5	75.7	93.0	37.9	292.2
Brown	56.3	61.6	54.8	42.0	42.0	15.0	156.5
Calhoun	69.3	80.5	76.1	66.7	72.0	39.4	141.1
Cass	37.8	47.7	42.7	35.2	46.0	32.7	90.9
Fulton	100.3	138.9	118.3	97.4	96.0	70.4	353.2
Greene	44.4	59.9	41.9	55.9	54.0	33.9	173.1
Hancock	53.9	73.9	51.7	54.3	46.0	34.0	151.0
Henderson	41.9	41.2	55.2	31.4	35.0	23.3	64.4
Jersey	46.4	72.6	44.0	56.8	66.0	47.1	142.4
Knox	36.8	68.1	36.4	51.1	44.0	36.3	137.5
McDonough	41.8	43.8	54.6	28.8	40.0	22.5	111.8
Macoupin	75.5	101.0	87.1	84.8	95.0	60.9	148.3
Mason	26.7	47.6	18.8	38.5	44.0	38.6	78.1
Mercer	39.6	36.9	32.7	26.7	28.0	27.1	72.0
Morgan	38.9	39.2	40.1	28.7	30.0	14.7	126.3
Peoria	65.7	86.6	52.6	43.1	52.0	50.1	187.0
Pike	115.0	127.1	161.8	80.0	97.0	33.5	364.2
Rock Island	41.6	46.4	27.8	32.4	34.0	35.5	147.4
Schuyler	76.3	86.9	83.6	64.4	69.0	37.6	200.4
Scott	15.0	25.2	13.9	21.0	21.0	10.8	98.8
Warren	20.6	25.4	28.6	21.5	25.0	17.3	66.8
Region total	1,145.1	1,415.5	1,194.2	1,036.4	1,129.0	718.6	3,303.4
South Central Region							
Bond	40.9	37.1	36.1	36.4	37.0	18.8	75.8
Clark	60.0	70.9	72.3	69.9	58.0		175.4
Clay	44.4	48.1	44.2	48.1	46.0	33.5	111.9
Clinton	27.2	41.1	23.7	53.2	62.0	56.0	96.6
Crawford	53.1	59.6	59.7	48.4	40.0	27.1	155.6
Cumberland	27.4	33.9	16.0	38.6	30.0	21.9	81.6
Edwards	21.1	20.7	12.0	20.1	20.0	13.9	76.9
Effingham	60.4	46.8	63.4	55.6	47.0	29.7	87.0
Fayette	82.1	83.8	109.6	96.5	84.0	48.3	218.3
Franklin	55.4	56.2	67.2	55.0	62.0	40.8	214.4
Gallatin	41.5	44.3	22.4	54.9	55.0	52.8	207.2
Hamilton	37.1	42.2	36.0	54.4	53.0	34.8	253.5
Jackson	141.3	165.9	129.2	134.7	123.0	92.1	360.9
Jasper	42.9	41.7	23.0	45.0	36.0	29.8	124.2
Jefferson	70.6	73.1	73.0	67.0	61.0	37.5	270.1
Lawrence	30.9	42.9	38.1	44.4	34.0	24.5	144.6
Madison	60.0	82.6	50.8	55.3	57.0	29.5	188.2
Marion	88.2	69.5	73.2	74.2	62.0	42.3	150.0
Monroe	57.3	63.7	49.0	53.1	58.0	57.9	218.0
Montgomery	46.6	42.6	55.0	49.1	46.0	46.5	96.5
Perry	48.6	62.2	58.6	61.1	61.0	60.8	178.1
Randolph	84.4	86.4	92.2	74.6	85.0	80.2	277.7
Richland	40.8	35.4	33.8	38.4	30.0	22.5	119.6
St. Clair	53.0	72.1	39.8	59.5	55.0	47.9	210.7
Saline	61.7	59.0	59.3	51.0	43.0	34.5	245.1
Shelby	40.9	49.6	43.5	64.1	55.0	47.9	142.9
Wabash	14.3	20.7	19.3	19.6	14.0	10.1	100.2
Washington	53.7	45.9	57.6	52.8	63.0	51.2	120.4

Table 2 continued.

Region and county	1998 USDA FS ¹	1996 INHS ²	1985 USDA FS ³	1962 USDA FS ⁴	1948 USFS ⁵	1924 Telford ⁶	1820 GLO ⁷
Wayne	62.9	61.0	56.2	73.0	74.0	69.9	290.9
White	43.3	42.0	48.7	36.7	30.0	19.2	295.1
Williamson	92.5	95.8	73.6	82.9	60.0	39.9	257.5
Region total	1,684.4	1,796.9	1,636.5	1,767.6	1,641.0	1,252.4	5,544.9
Southern Unglaciaded Region							
Alexander	70.7	69.2	55.2	67.6	67.0	43.8	147.9
Hardin	64.5	65.5	58.1	55.3	45.0	35.1	112.4
Johnson	87.7	95.6	108.7	84.0	79.0	64.8	220.8
Massac	31.8	38.0	40.9	42.1	44.0	31.6	153.8
Pope	158.4	149.3	124.3	146.5	100.0	65.3	236.3
Pulaski	41.8	29.5	36.5	30.6	34.0	23.5	128.5
Union	115.6	125.0	100.1	97.2	101.0	72.7	263.4
Region total	570.5	572.1	523.8	523.3	470.0	336.8	1,263.1
State total	4,331.3	4,999.4	4,265.5	4,038.7	3,996.0	3,022.0	13,804.4

Column totals may differ due to rounding.

Adapted from: ¹ USDA Forest Service. Schmidt et al., 2000.

² Illinois Natural History Survey. Luman et al., 1996.

³ United States Forest Service, Hahn, 1987

⁴ USDA Forest Service. Essex and Gansner, 1965.

⁵ U. S. Forest Service. U. S. Forest Service, 1949.

⁶ Telford's 1924 inventory. Telford, 1926.

⁷ General Land Office (original survey maps). Anderson, 1970.

Table 3. Area of land in Illinois by land-use class and land-use subclass, 1985 and 1998.

Land-use class	Land-use subclass	1985 ¹	1998 ²
		thousand acres	
Forest land subtotal		4,265.5	4,331.3
	Timberland	4,029.9	4,087.0
	Reserved forest land	235.6	244.2
Nonforest land with trees subtotal		900.8	1,025.8
	Cropland with trees	53.5	113.4
	Improved pastureland with trees	103.6	127.1
	Wooded strips	178.5	136.4
	Idle farmland with trees	8.1	13.6
	Marsh with trees	19.3	26.1
	Urban with trees	242.3	424.5
	Windbreaks	133.1	96.4
	Wooded pasture	162.4	88.3
Nonforest land without trees subtotal		30,463.7	30,223.0
	Cropland	24,701.5	24,793.3
	Improved pastureland	2,400.8	2,036.6
	Idle farmland	22.4	158.8
	Marsh	60.1	38.7
	Other farm-farmstead	574.7	539.7
	Urban	2,621.6	2,451.6
	Noncensus water	82.6	204.2
Total land		35,630.0	35,580.0

Column totals may differ due to rounding.

Adapted from: ¹ Hahn, 1987.

² Schmidt et al., 2000; USDA Forest Service, n.d.

Table 4. Land-use classification and forest type group changes in Illinois from 1985 to 1998.

1985 forest type group and land class	1985 total area	1998 forest type group and land class										
		Forest land								Nonforest land		
		Timberland-forest type group								Reserved forest land	Nonforest with trees	Nonforest without trees
		White-red-jack pine	Loblolly-shortleaf pine	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Nonstocked			
thousand acres												
White-red-jack pine	17.1	17.1	~~	~~	~~	~~	~~	~~	~~	~~	~~	~~
Loblolly-shortleaf pine	33.6	~~	21.9	0.7	~~	~~	~~	~~	~~	~~	~~	11.0
Oak-pine	43.3	~~	2.8	9.9	11.6	~~	~~	2.4	~~	~~	10.5	6.1
Oak-hickory	2,138.8	~~	~~	16.4	1,735.4	7.7	57.4	154.3	9.6	8.6	95.6	53.8
Oak-gum-cypress	83.1	~~	~~	~~	~~	52.5	14.4	~~	~~	~~	6.8	9.4
Elm-ash-cottonwood	832.5	~~	2.3	~~	20.9	7.5	603.6	56.0	~~	~~	73.6	68.6
Maple-beech-birch	860.4	~~	~~	12.3	225.8	9.5	58.1	456.1	~~	~~	67.9	30.7
Nonstocked	21.1	~~	~~	~~	3.7	2.1	2.9	5.0	~~	~~	7.4	~~
Reserved forest	235.6	~~	~~	~~	~~	~~	~~	~~	~~	235.6	~~	~~
Nonforest with trees	900.8	~~	~~	3.9	43.6	~~	32.3	13.3	6.2	~~	655.7	145.8
Nonforest without trees	30,463.7	19.0	~~	4.0	96.1	13.9	137.2	119.7	18.2	~~	108.7	29,896.7
Total	35,630.0	36.1	27.0	47.1	2,140.1	93.2	905.9	806.8	34.1	244.2	1,026.2	30,222.1

Row and column totals may differ due to rounding.

Note: Rows denote changes from 1985 to 1998 in land-use classes and forest type groups. Columns denote origin of 1998 land-use classes and forest type groups from 1985.

Adapted from: Schmidt et al., 2000.

Table 5. Area of timberland in Illinois by forest type group and local forest type, 1985 and 1998.

Forest type group	Local forest type	1985 ¹	1998 ²	Percent change
		thousand acres		
White-red-jack pine subtotal		17.1	36.1	111
	Eastern white pine		36.1	
Loblolly-shortleaf pine subtotal		33.6	27.0	-20
	Shortleaf pine		27.0	
Oak-pine subtotal		43.3	47.1	9
	Eastern redcedar		3.7	
	Eastern redcedar-hardwood		25.9	
	Shortleaf pine-oak		8.9	
	Other pine-hardwood		8.7	
Oak-hickory subtotal		2,138.8	2,140.1	0
	Post oak-blackjack oak		57.4	
	Chestnut oak		164.5	
	White oak-red oak-hickory		1,444.6	
	White oak		349.1	
	Southern scrub oak		62.1	
	Mixed upland hardwoods		62.4	
Oak-gum-cypress subtotal		83.1	93.2	12
	Oak-gum-cypress		61.1	
	Swamp chestnut oak-cherrybark oak		32.1	
Elm-ash-cottonwood subtotal		832.5	906.0	9
	Black ash-American elm-red maple		822.8	
	Cottonwood		46.1	
	Willow		37.2	
Maple-beech-birch subtotal		860.4	803.3	-7
	Sugar maple-beech-yellow birch		696.2	
	Black cherry		107.1	
Nonstocked subtotal		21.1	34.1	62
	Total	4,029.9	4,087.1	1

Column totals may differ due to rounding.

Adapted from: ¹ Hahn, 1987.

² Schmidt et al., 2000; USDA Forest Service, n.d.

Table 6. Area of timberland in Illinois by stocking class of growing stock trees, 1985 and 1998.

	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked ¹
	thousand acres					
1985 ²	4,029.9	203.0	1,338.6	1,935.3	536.0	17.0
1998 ³	4,087.1	290.8	1,646.4	1,083.0	897.5	169.4
Difference	57.2	87.8	307.8	-852.3	361.5	152.4

¹ The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees.

See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row totals may differ due to rounding.

Adapted from: ² Hahn, 1987.

³ Schmidt et al., 2000.

Table 7. Area of timberland in Illinois by local forest type and stocking class of growing stock trees, 1998.

Local forest type	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked ¹
Eastern white pine	36.1	0.0	23.1	8.4	2.1	2.6
Shortleaf pine	27.0	6.0	14.2	6.1	0.7	0.0
Eastern redcedar	3.7	0.0	2.5	0.1	1.1	0.0
Eastern redcedar–hardwood	25.9	0.0	3.8	5.5	13.9	2.7
Shortleaf pine–oak	8.9	3.9	5.0	0.0	0.0	0.0
Other pine–hardwood	8.7	0.0	3.2	3.4	2.1	0.0
Post oak–blackjack oak	57.4	1.5	10.9	21.8	7.0	16.2
Chestnut oak	164.5	21.5	68.6	46.8	25.6	2.0
White oak–red oak–hickory	1,444.6	98.0	665.0	448.9	209.0	23.6
White oak	349.1	33.4	177.2	83.5	52.8	2.1
Southern scrub oak	62.1	3.5	26.7	15.6	16.3	0.0
Mixed upland hardwoods	62.4	1.7	24.1	18.8	15.6	2.2
Oak–gum–cypress	61.1	6.1	25.7	16.4	10.5	2.4
Swamp chestnut oak–cherrybark oak	32.1	3.7	12.2	8.6	7.5	0.0
Black ash–American elm–red maple	822.8	65.2	295.9	191.7	222.2	47.8
Cottonwood	46.1	12.5	17.9	8.6	7.1	0.0
Willow	37.2	0.0	13.9	0.7	19.6	3.0
Sugar maple–beech–yellow birch	696.2	30.4	228.6	184.2	235.0	18.1
Black cherry	107.1	3.3	28.1	13.8	49.3	12.6
Nonstocked	34.1	0.0	0.0	0.0	0.0	34.1
Total	4,087.1	290.8	1,646.4	1,083.0	897.5	169.4

¹ The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees. See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 8. Area of timberland in Illinois by local forest type and stand-size class, 1998.

Local forest type	Total	Sawtimber	Poletimber	Seedling-sapling	Nonstocked
Eastern white pine	36.1	18.9	17.3	0.0	0.0
Shortleaf pine	27.0	24.7	2.3	0.0	0.0
Eastern redcedar	3.7	1.2	0.0	2.5	0.0
Eastern redcedar–hardwood	25.9	9.6	11.7	4.6	0.0
Shortleaf pine–oak	8.9	8.5	0.4	0.0	0.0
Other pine–hardwood	8.7	3.7	5.0	0.0	0.0
Post oak–blackjack oak	57.4	54.5	2.9	0.0	0.0
Chestnut oak	164.5	133.1	29.4	2.0	0.0
White oak–red oak–hickory	1,444.6	1,069.4	337.6	37.6	0.0
White oak	349.1	311.3	35.0	2.7	0.0
Southern scrub oak	62.1	28.8	24.3	9.1	0.0
Mixed upland hardwoods	62.4	59.3	3.1	0.0	0.0
Oak–gum–cypress	61.1	36.9	24.3	0.0	0.0
Swamp chestnut oak–cherrybark oak	32.1	32.1	0.0	0.0	0.0
Black ash–American elm–red maple	822.8	595.3	207.1	20.4	0.0
Cottonwood	46.1	40.7	5.4	0.0	0.0
Willow	37.2	8.9	28.3	0.0	0.0
Sugar maple–beech–yellow birch	696.2	437.6	227.6	31.0	0.0
Black cherry	107.1	70.5	23.4	13.3	0.0
Nonstocked	34.1	0.0	0.0	0.0	34.1
Total	4,087.1	2,944.8	985.0	123.2	34.1

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 9. Area of timberland in Illinois by stocking class of growing stock trees and stand-size class, 1998.

Stocking class	Total	Sawtimber	Poletimber	Seedling-sapling	Nonstocked ¹
Overstocked	290.8	241.8	40.7	8.3	0.0
Fully stocked	1,646.4	1,256.0	350.0	40.3	0.0
Medium stocked	1,083.0	769.7	290.0	23.3	0.0
Poorly stocked	897.5	572.7	284.4	40.5	0.0
Nonstocked ¹	169.4	104.5	19.9	10.9	34.1
Total	4,087.1	2,944.8	985.0	123.2	34.1

¹ The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees.

See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 10. Area of timberland in Illinois by local forest type and stand-age class, 1998.

Local forest type	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	101+ years
Eastern white pine	36.1	2.1	26.0	8.1	0.0	0.0	0.0
Shortleaf pine	27.0	0.7	10.9	12.2	0.0	3.3	0.0
Eastern redcedar	3.7	0.0	0.0	3.6	0.1	0.0	0.0
Eastern redcedar-hardwood	25.9	5.1	13.7	4.6	2.5	0.0	0.0
Shortleaf pine-oak	8.9	0.0	4.3	4.6	0.0	0.0	0.0
Other pine-hardwood	8.7	3.7	5.0	0.0	0.0	0.0	0.0
Post oak-blackjack oak	57.4	12.3	5.6	0.7	10.6	11.2	17.0
Chestnut oak	164.5	7.4	27.2	53.4	32.7	15.0	28.8
White oak-red oak-hickory	1,444.6	77.4	242.5	371.9	293.8	270.2	188.8
White oak	349.1	2.9	32.3	60.2	62.6	102.5	88.6
Southern scrub oak	62.1	13.8	31.4	12.5	4.4	0.0	0.0
Mixed upland hardwoods	62.4	1.3	6.4	20.5	0.0	7.2	27.0
Oak-gum-cypress	61.1	4.9	17.9	18.7	12.7	2.5	4.5
Swamp chestnut oak-cherrybark oak	32.1	0.9	4.8	9.7	6.2	10.4	0.0
Black ash-American elm-red maple	822.8	73.2	230.1	310.3	112.1	60.3	36.7
Cottonwood	46.1	8.8	21.8	14.0	1.6	0.0	0.0
Willow	37.2	4.1	30.1	2.9	0.0	0.0	0.0
Sugar maple-beech-yellow birch	696.2	60.0	217.2	186.2	97.4	80.5	55.0
Black cherry	107.1	40.2	38.0	20.5	4.5	4.0	0.0
Nonstocked	34.1	11.9	5.5	10.1	2.9	3.5	0.2
Total	4,087.1	330.9	970.8	1,124.5	643.8	570.5	446.6

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 11. Area of timberland in Illinois by stocking class of growing stock trees and stand-age class, 1998.

Stocking class	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Overstocked	290.8	14.3	60.2	85.3	64.9	51.4	14.8
Fully stocked	1,646.4	38.9	339.9	493.3	290.9	296.2	187.3
Medium stocked	1,083.0	64.4	219.3	305.0	163.4	164.1	166.7
Poorly stocked	897.5	158.8	299.9	210.9	104.7	50.1	73.2
Nonstocked ¹	169.4	54.6	51.5	30.0	20.0	8.7	4.6
Total	4,087.1	330.9	970.8	1,124.5	643.8	570.5	446.6

¹The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees.

See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 12. Area of timberland in Illinois by stand-size class and stand-age class, 1998.

Stand-size class	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	101+ years
Sawtimber	2,944.8	235.2	450.5	758.5	544.8	527.4	428.3
Poletimber	985.0	53.9	458.9	339.1	88.7	32.6	11.8
Seedling-sapling	123.2	29.9	55.8	16.8	7.4	7.0	6.3
Nonstocked	34.1	11.9	5.5	10.1	2.9	3.5	0.2
Total	4,087.1	330.9	970.8	1,124.5	643.8	570.5	446.6

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 13. Net volume of growing stock on timberland in Illinois, 1985 and 1998; average annual net growth, average annual mortality, and average annual removals of growing stock on timberland in Illinois from 1985 to 1997, by species group.

Species Group	1985 Volume ¹	1998 Volume ²	1985–1997 Growth ²	1985–1997 Mortality ²	1985–1997 Removals ²
	thousand cubic feet				
Loblolly and shortleaf pine	61,445	68,492	2,089	432	746
Eastern white and red pine	30,977	67,508	2,531	682	17
Jack pine	726	2,444	78	5	*
Spruce and balsam fir	*	1,042	33	8	*
Cypress	7,528	8,284	74	104	*
Eastern redcedar	8,363	17,158	665	139	138
Other softwoods	2,043	3,930	136	41	120
Select white oaks	838,127	985,499	19,318	5,488	11,970
Select red oaks	327,952	374,761	9,230	4,317	5,573
Other white oaks	122,080	137,749	2,789	1,229	1,325
Other red oaks	732,839	908,262	25,544	10,556	13,930
Hickory	509,200	647,310	15,726	5,483	6,353
Hard maple	167,667	206,739	5,668	1,411	1,569
Soft maple	336,063	519,673	14,937	5,357	3,491
Elm	229,062	236,227	12,933	12,236	2,567
Hackberry	93,662	142,502	4,661	1,617	649
Sycamore	146,559	188,939	5,264	1,156	3,016
Black cherry	75,307	106,613	4,736	1,800	1,539
Beech	13,114	14,866	184	35	286
Sweetgum	45,511	74,733	2,609	626	352
Tupelo and blackgum	27,110	21,783	447	215	239
Ash	264,204	312,155	10,954	5,341	3,604
Cottonwood and aspen	171,754	233,596	9,373	4,786	2,309
Basswood	56,211	71,418	1,734	716	539
Yellow-poplar	61,503	81,709	3,993	440	1,646
Black walnut	106,808	158,392	4,818	776	740
Other hardwoods	292,126	352,587	13,744	8,434	3,841
Total	4,727,941	5,944,371	174,268	73,429	66,559

* no data available.

Row and column totals may differ due to rounding.

Adapted from: ¹Hahn, 1987.

²Schmidt, et. al., 2000; USDA Forest Service, n.d.

Table 14. Net volume of sawtimber (International 1/4 inch rule) on timberland in Illinois, 1985 and 1998; average annual net growth, average annual mortality, and average annual removals of sawtimber on timberland in Illinois from 1985 to 1997, by species group.

Species group	1985 Volume ¹	1998 Volume ²	1985–1997 Growth ²	1985–1997 Mortality ²	1985–1997 Removals ²
	thousand board feet				
Loblolly and shortleaf pine	162,854	274,722	10,107	1,199	2,354
Eastern white and red pine	77,369	220,644	8,560	1,854	*
Jack pine	*	1,188	79	*	*
Spruce and balsam fir	*	3,085	75	12	*
Cypress	37,568	41,845	378	525	*
Eastern redcedar	15,901	45,882	1,320	460	357
Other softwoods	2,426	3,006	194	2	214
Select white oaks	3,293,071	4,045,038	87,865	15,914	48,812
Select red oaks	1,391,268	1,681,751	44,406	14,725	24,351
Other white oaks	434,162	556,575	13,471	3,432	5,878
Other red oaks	2,898,983	3,771,686	110,813	32,057	61,715
Hickory	1,494,501	2,148,375	60,426	17,145	24,139
Hard maple	530,049	670,368	19,322	4,179	5,590
Soft maple	1,093,982	1,843,917	53,951	14,916	11,339
Elm	402,808	473,980	24,142	21,279	4,756
Hackberry	255,636	423,896	15,089	5,323	1,793
Sycamore	605,738	791,243	22,415	4,391	13,322
Black cherry	184,389	296,706	11,721	3,021	4,285
Beech	58,510	69,288	939	85	1,375
Sweetgum	141,554	250,450	10,209	1,700	1,254
Tupelo and blackgum	83,884	62,885	1,311	803	938
Ash	755,107	1,011,334	40,665	12,896	12,472
Cottonwood and aspen	760,053	1,063,197	41,150	16,282	11,119
Basswood	212,289	276,006	7,535	2,087	1,993
Yellow-poplar	267,935	370,247	18,972	1,102	8,397
Black walnut	322,049	534,595	17,794	1,627	2,578
Other hardwoods	732,111	949,005	39,551	17,542	8,994
Total	16,214,197	21,880,913	662,462	194,557	258,024

* no data available.

Row and column totals may differ due to rounding.

Adapted from: ¹ Hahn, 1987.

² Schmidt et al., 2000; USDA Forest Service, n.d.

Table 15. Number of growing stock trees on timberland in Illinois by species group and diameter class, 1998.

Species group	Total	Diameter at breast height (dbh) in inches											
		1.0–2.9	3.0–4.9	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+
		thousand trees											
Loblolly and shortleaf pine	8,647	607	1,317	1,438	2,042	1,721	770	450	197	28	49	28	0
Eastern white and red pine	11,037	1,110	1,819	1,664	3,111	2,103	685	292	199	27	19	8	0
Jack pine	535	0	0	114	383	38	0	0	0	0	0	0	0
Spruce and balsam fir	219	0	0	156	16	16	16	16	0	0	0	0	0
Cypress	109	0	0	27	0	0	0	0	17	15	7	34	9
Eastern redcedar	19,972	11,759	4,635	1,682	1,080	545	150	105	17	0	0	0	0
Other softwoods	1,346	0	241	638	385	83	0	0	0	0	0	0	0
Select white oaks	71,739	25,516	7,258	5,184	5,566	5,488	4,856	4,520	4,160	3,207	2,047	3,390	547
Select red oaks	22,807	8,050	2,134	1,526	1,832	1,171	1,842	1,729	1,140	1,006	950	1,257	170
Other white oaks	12,705	1,137	3,457	987	1,604	1,529	1,352	1,011	734	229	269	354	44
Other red oaks	146,937	81,740	23,315	7,744	6,767	6,317	5,748	4,662	3,469	2,550	1,807	2,329	487
Hickory	198,666	101,496	42,579	16,346	13,013	10,227	6,175	4,007	2,165	1,250	714	660	35
Hard maple	126,038	93,041	16,378	5,620	4,296	2,466	1,560	953	739	532	129	322	3
Soft maple	78,091	38,462	14,503	5,565	5,283	4,028	2,777	2,461	1,683	1,135	794	986	415
Elm	412,358	301,171	73,180	17,283	10,659	5,448	2,363	1,047	742	251	109	100	4
Hackberry	114,094	78,012	22,374	5,068	3,444	2,081	1,276	671	383	238	281	230	35
Sycamore	13,408	6,386	1,916	1,036	771	764	488	432	433	202	265	534	181
Black cherry	102,601	67,139	22,785	4,989	3,457	1,544	1,294	796	194	244	101	56	3
Beech	2,997	2,321	263	27	52	38	32	86	52	19	37	67	3
Sweetgum	15,182	4,479	4,114	2,417	1,579	685	632	548	358	201	95	72	2
Tupelo and blackgum	13,474	10,087	1,378	706	525	322	184	180	33	13	7	18	22
Ash	117,652	69,896	22,118	7,355	6,347	4,586	2,763	1,998	932	784	438	416	19
Cottonwood and aspen	9,772	276	3,851	595	724	844	739	733	411	321	371	615	292
Basswood	10,477	3,789	2,160	1,383	646	841	600	362	284	93	194	87	39
Yellow-poplar	11,972	6,342	2,319	780	585	455	419	300	163	323	133	120	34
Black walnut	40,856	21,570	5,870	3,044	3,127	2,669	1,705	1,504	744	313	142	139	30
Other hardwoods	347,321	244,800	61,140	17,281	10,192	6,150	3,319	2,125	968	680	387	255	25
Total	1,911,014	1,179,187	341,104	110,655	87,485	62,158	41,744	30,989	20,215	13,658	9,345	12,077	2,400

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 16. Area of timberland in Illinois by local forest type and ownership class, 1998.

Local forest type	Total	National Forest	Other federal	State	County and municipal	Corporate	Private individual
Eastern white pine	36.1	2.2	0.0	4.9	0.0	2.3	26.8
Shortleaf pine	27.0	12.6	3.3	0.0	0.0	5.0	6.1
Eastern redcedar	3.7	2.5	0.0	0.0	0.0	0.0	1.2
Eastern redcedar–hardwood	25.9	3.8	0.0	0.0	0.0	0.0	22.1
Shortleaf pine–oak	8.9	4.3	0.0	0.0	0.0	0.0	4.6
Other pine–hardwood	8.7	3.2	0.0	0.0	0.0	0.8	4.6
Post oak–blackjack oak	57.4	0.0	0.0	0.0	0.0	3.9	53.5
Chestnut oak	164.5	0.0	0.0	11.7	0.0	9.3	143.5
White oak–red oak–hickory	1,444.6	135.6	13.2	15.6	9.5	74.2	1,196.5
White oak	349.1	30.0	2.5	10.7	2.7	20.4	282.9
Southern scrub oak	62.1	4.6	1.3	0.0	1.5	5.5	49.1
Mixed upland hardwoods	62.4	0.0	0.0	0.0	0.0	5.7	56.8
Oak–gum–cypress	61.1	3.1	2.0	3.4	0.0	2.2	50.4
Swamp chestnut oak–cherrybark oak	32.1	0.0	0.0	0.0	0.0	2.9	29.1
Black ash–American elm–red maple	822.8	7.5	32.0	22.4	21.2	81.3	658.4
Cottonwood	46.1	0.0	0.0	4.9	0.0	5.5	35.7
Willow	37.2	0.0	4.6	0.0	2.7	7.2	22.8
Sugar maple–beech–yellow birch	696.2	32.4	2.9	0.0	8.3	42.0	610.6
Black cherry	107.1	7.5	1.5	6.8	0.0	6.9	84.4
Nonstocked	34.1	0.0	0.4	1.2	0.0	0.6	31.9
Total	4,087.1	249.3	63.7	81.6	45.9	275.7	3,370.9

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 17. Area of timberland in Illinois by ownership class and stand-size class, 1998.

Ownership class	Total	Sawtimber	Poletimber	Seedling–sapling	Nonstocked ¹
National Forest	249.3	178.1	63.7	7.5	0.0
Other federal	63.7	49.1	12.3	1.9	0.4
State	81.6	72.8	5.6	2.0	1.2
County and municipal	45.9	38.0	4.8	3.1	0.0
Corporate	275.7	198.9	75.1	1.0	0.6
Private individual	3,370.9	2,408.0	823.4	107.7	31.9
Total	4,087.1	2,944.8	985.0	123.2	34.1

¹ The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees. See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000.

Table 18. Area of timberland in Illinois by ownership class and stocking class of growing stock trees, 1998.

Ownership class	Total	Overstocked	Fully stocked	Medium stocked	Poorly stocked	Nonstocked ¹
National Forest	249.3	37.9	159.5	41.4	10.6	0.0
Other federal	63.7	4.2	32.4	15.4	9.1	2.6
State	81.6	16.4	30.0	21.3	12.6	1.2
County and municipal	45.9	4.4	28.3	6.0	7.1	0.0
Corporate	275.7	14.7	97.2	77.3	73.4	13.0
Private individual	3,370.9	213.1	1,298.9	921.5	784.7	152.6
Total	4,087.1	290.8	1,646.4	1,083.0	897.5	169.4

¹ The nonstocked stocking class of growing stock trees refers only to the stocking of growing stock trees; where used in conjunction with forest type groups, local forest types, and stand size classes, nonstocked refers to stocking of all live trees. See glossary for definitions of nonstocked and stocking class of growing stock trees.

Row and column totals may differ due to rounding.

Adapted from: Schmidt et al., 2000.

Table 19. Number and percentage of private ownership units of forest land in Illinois by acreage-size class and ownership type, 1993.

Acreage-size class	Individual		Corporation		Other		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1-9	32,500	34	0	0	8,500	51	41,000	36
10-19	22,200	23	0	0	4,600	28	26,900	23
20-49	22,900	24	1,100	65	1,800	10	25,700	22
50-99	12,000	12	300	19	1,200	7	13,500	12
100-199	4,600	5	0	0	600	3	5,100	4
200-499	1,700	2	100	7	100	*	1,900	2
500-999	*	*	100	7	*	*	200	*
1000-4999	*	*	*	2	0	0	100	*
5000+	0	0	*	*	0	0	*	*
Subtotal over 10	63,400	66	1,700	100	8,300	49	73,500	64
Total	96,600	100	1,700	100	16,800	100	114,500	100

* fewer than 50 owners of less than 0.5 percent.
 Row and column totals may differ due to rounding.
 Adapted from: Birch, 1996a.

Table 20. Area and percentage of forest land in Illinois by acreage-size class and ownership type, 1993.

Acreage-size class	Individual		Corporation		Other		Total	
	Acres x1000	Percent						
1-9	212	7	0	0	17	5	229	6
10-19	278	9	0	0	52	15	330	9
20-49	607	20	36	15	70	20	713	20
50-99	824	27	18	7	87	25	929	26
100-199	566	19	0	0	69	20	635	17
200-499	471	15	36	15	18	5	525	14
500-999	35	1	70	28	34	10	139	4
1000-4999	53	2	52	21	0	0	105	3
5000+	0	0	34	14	0	0	34	1
Subtotal over 10	2,833	93	247	100	331	95	3,412	94
Total	3,046	100	247	100	348	100	3,641	100

Row and column totals may differ due to rounding.
 Adapted from: Birch, 1996a.

Table 21. Number of unique owners of forest land in Illinois by ownership type, 1996.

Ownership type	Number of unique owners ¹
Private individuals	42,805
Companies or corporations	1,126
Trusts or estates	3,771
Multiple owners	4,289
School district or educational board of trustees	43
Farm businesses	661
Youth camps	48
Religious organizations	112
Foundation, conservation groups, or wildlife reserves	43
Recreational clubs	226
Unknown	9
Railroads	10
Miscellaneous groups	46
Total	53,189

¹ Landowners with multiple holdings within Illinois were counted only once.
Row and column totals may differ due to rounding.
Adapted from: Lowry, 1996.

Table 22. Current annual removals of growing stock on timberland in Illinois by species group and removal/product type, 1997.

Species group	Product removals							Nonproduct removals	
	All removals	All product removals	Saw logs	Veneer logs	Pulpwood	Fuelwood	Misc. products	Logging residue	Other removals
	thousand cubic feet								
Loblolly and shortleaf pine	932	306	0	0	306	0	0	4	623
Eastern white and red pine	132	108	52	0	52	4	0	7	17
Jack pine	0	0	0	0	0	0	0	0	0
Eastern redcedar	151	11	8	0	0	0	3	0	140
Other softwoods	120	0	0	0	0	0	0	0	120
Select white oaks	13,419	8,646	6,824	389	138	939	356	2,166	2,607
Select red oaks	4,975	3,124	2,707	18	50	229	121	827	1,025
Other white oaks	2,185	1,600	1,326	31	43	94	107	422	162
Other red oaks	16,482	10,552	9,429	36	158	524	404	2,874	3,056
Hickory	4,791	2,550	1,549	2	155	697	146	612	1,630
Hard maple	2,026	1,236	1,053	25	82	40	36	304	486
Soft maple	5,223	2,738	2,216	7	239	207	70	635	1,850
Elm	2,175	737	239	1	265	221	12	89	1,348
Hackberry	1,214	511	305	0	148	0	59	110	592
Sycamore	1,863	838	734	16	17	13	59	238	787
Black cherry	1,653	490	374	7	0	97	12	119	1,044
Beech	189	80	73	0	7	0	0	23	86
Sweetgum	326	169	157	8	5	0	0	50	106
Tupelo and blackgum	119	77	73	0	4	0	0	23	19
Ash	4,589	2,312	1,749	18	166	294	84	567	1,711
Cottonwood and aspen	5,145	3,384	2,644	0	430	67	243	435	1,326
Basswood	572	177	172	0	0	5	0	54	341
Yellow-poplar	1,529	1,081	890	31	87	0	71	294	155
Black walnut	1,322	893	705	124	0	88	25	80	349
Other hardwoods	4,066	1,375	508	1	233	546	87	167	2,524
Total	75,198	42,995	33,787	714	2,585	4,015	1,895	10,100	22,104

Row and column totals may differ due to rounding.
Adapted from: Schmidt et al., 2000; USDA Forest Service, n.d.

Table 23. Number of establishments, annual sales volume, and number of employees at establishments for forestry related businesses in Illinois by general and specific business type, 2000.

General and specific business type	Number of establishments	Annual sales volume	Number of employees
Forestry			
Forest nurseries	3	\$726,000	21
Forestry services	37	\$7,860,000	335
Miscellaneous forest products	5	\$344,000	8
Timber tracts	21	\$2,868,000	47
Tree farms	82	\$22,233,315	332
Subtotal	148	\$34,031,315	743
Lumber and Wood Products			
Hardwood dimensional lumber	36	\$51,585,590	415
Hardwood veneer and plywood	4	\$29,790,000	219
Logging	38	\$5,229,000	94
Manufactured homes	9	\$6,622,000	76
Millwork	268	\$1,417,520,740	4,166
Miscellaneous wood products	266	\$176,483,130	1,920
Reconstituted wood products	16	\$332,749,127	557
Sawmills and planing mills	100	\$36,692,876	733
Structural wood members	34	\$553,452,435	1,975
Wood containers	37	\$53,571,921	574
Wood kitchen cabinets	172	\$141,269,989	2,428
Wood pallets and skids	113	\$213,688,314	2,163
Wood prefabricated buildings	66	\$61,142,394	830
Wood preserving	18	\$25,688,800	280
Subtotal	1,177	\$3,105,486,316	16,430
Paper products			
Bag manufacturing	64	\$1,687,796,420	6,092
Coated and laminated paper	113	\$2,356,049,204	6,708
Corrugated and solid-fiber boxes	140	\$3,548,722,994	15,573
Envelopes and stationery	53	\$236,527,473	4,659
Miscellaneous paper products	98	\$7,718,981,482	4,797
Paper mills	74	\$3,960,599,718	4,262
Paperboard mills	44	\$6,322,355,849	3,597
Paperboard products	110	\$945,837,373	5,048
Pulp mills	11	\$18,722,603	138
Subtotal	707	\$26,795,593,116	50,874
Total	2,032	\$29,935,110,747	68,047

Note: This table includes all forestry related Illinois businesses regardless of whether the forestry related business type that they are summarized under is their primary business activity.

Column totals may differ due to rounding.

Data from: Dun and Bradstreet, 2001.

Table 24. Acres of INAI¹ forest in Illinois by forest community type, 2000.

Forest community type	Acres
Xeric upland forest	18
Dry sand forest	93
Dry upland forest	2,740
Dry-mesic sand forest	16
Dry-mesic upland forest	6,641
Mesic floodplain forest	642
Mesic upland forest	4,678
Wet-mesic floodplain forest	7,894
Wet-mesic upland forest	61
Wet floodplain forest	2,207
Total	24,990

¹ Illinois Natural Areas Inventory

Adapted from: Illinois Natural Heritage Database, 2000.

Table 25. Acres of land enrolled in government cost-share programs in Illinois by management activity and cost-share program, 2000.

Management activity	Total	FDA ¹	CRP ²	CREP ³	FIP ⁴	Other ⁵
	acres					
Tree planting	70,017	18,033	45,545	1,107	1,051	4,282
Direct seeding	639	580	*	*	*	60
Natural regeneration	2,478	1,358	*	*	939	182
Existing forest management	11,768	*	11,768	*	*	*
Timber stand improvement	79,421	38,453	*	*	40,968	*
Management plan writing	40,362	27,651	*	*	*	12,711
Riparian buffer zone	58,300	*	50,298	8,003	*	*
Other	78,146	76,683	1,463	*	*	*
Total	341,131	162,758	109,073	9,109	42,958	17,234

* not applicable.

¹ Forestry Development Act.

² Conservation Reserve Program.

³ Conservation Reserve Enhancement Program.

⁴ Forestry Incentives Program.

⁵ Agricultural Conservation Program, Stewardship Incentives Program and Wetlands Reserve Program.

Row and column totals may differ due to rounding.

Adapted from: IDNR Division of Forest Resources.

USDA Farm Service Agency, 2000.

USDA National Agricultural Statistics Service, 2001.

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Glossary



Most of the terms in this glossary are from the USDA Forest Service and are taken directly from Schmidt et al. (2000).



Average annual mortality of growing stock – The average cubic foot volume of sound wood in growing stock trees that died in one year. Average annual mortality is the average for the years between inventories (1985 to 1997 in this report).

Average annual mortality of sawtimber – The average board foot volume of sound wood in sawtimber trees that died in one year. Average annual mortality is the average for the years between inventories (1985 to 1997 in this report).

Average annual net growth of growing stock – The annual change in cubic foot volume of sound wood in live sawtimber and poletimber trees, and the total volume of trees entering these classes through in-growth, less volume losses resulting from natural causes. Average annual net growth of growing stock is the average for the years between inventories (1985 to 1997 in this report).

Average annual net growth of sawtimber – The annual change in the board foot volume of live sawtimber trees, and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes. Average annual net growth of sawtimber is the average of the years between inventories (1985 to 1997 in this report).

Average annual removals from growing stock – The average net growing stock volume in growing-stock trees removed annually for roundwood forest products, in addition to the volume of logging residues, and the volume of other removals. Average annual removals of growing stock are the average for the years between inventories (1985 to 1997 in this report) and are based on information obtained from remeasurement plots.

Average annual removals from sawtimber – The average net board foot sawtimber volume of live sawtimber trees removed annually for roundwood forest products, in addition to the volume of logging residues and, the volume of other removals. Average annual removals of sawtimber are the average for the years between inventories (1985 to 1997 in this report) and are based on information obtained from remeasurement plots.

Basal area – Tree area in square feet of the cross section at breast height of a single tree. When the basal areas of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Board foot – Unit of measure applied to roundwood. It relates to lumber that is 1 foot long, 1 foot wide, and 1 inch thick (or its equivalent).

Corporate land – Lands owned by a private corporation not in the business of operating primary wood-using plants.

County and municipal land – Land owned by counties and local public agencies or municipalities, or land leased to these governmental unites for 50 years or more.

Cropland – Land under cultivation within the last 24 months; including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, active Christmas tree plantations indicated by annual shearing, nurseries, and land in soil improvement crops, but excluding land cultivated in developing improved pasture.

Current annual removals from growing stock – The current net growing-stock volume in growing-stock trees removed annually for roundwood forest products, in addition to the volume of logging residues, and the volume of other removals. Current annual removals of growing stock are reported for a single year (1997 in this report); they are

based on a survey of primary wood processing mills to determine removals for products and on information from remeasurement plots to determine removals due to land-use change.

Diameter at breast height (d.b.h.) – The outside bark diameter at 4.5 feet (1.37 m) above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Diameter class – A classification of trees based on diameter outside bark, measured at breast height 4.5 feet above the ground. (Note: d.b.h. is the common abbreviation for diameter at breast height.) Two-inch diameter classes are commonly used in Forest Inventory and Analysis, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h.

Dry-mesic sand forest – A forest on well drained sand deposits with more moisture and soil humus than the dry sand forest. Trees are better developed than in the dry sand forest. Common tree species include white oak and black oak.

Dry-mesic upland forest – An upland forest on well drained soils. This forest is in an intermediate moisture class between dry and mesic upland forests. Trees grow well, but the canopy is more open than in a mesic upland forest. Common trees include white oak, northern red oak, and black oak.

Dry sand forest – A forest on dry, somewhat excessively drained sand deposits with little soil moisture. Trees are often scrubby. Common tree is black oak.

Dry upland forest – An upland forest on dry, somewhat excessively drained soils. Trees grow slow, but are not as stunted as in a xeric upland forest. Understory and ground layer vegetation present. Common trees include black oak, blackjack oak, post oak, and bur oak.

Forest land – Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing). The minimum area for classification of forest land is 1 acre. Roadside, streamside, and windbreak strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails or clearings in forest areas are classified as forest if less than 120 feet wide. Water bodies (rivers, streams, or lakes) less than 30 feet in width are classified as forest. Water bodies more than 30 feet in width are classified as water (*See also* Tree, Land, Timberland, Reserved forest land, Water, and Wooded strip).

Growing-stock removals – The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: This term includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock trees – Live trees of commercial species that meets specified standards of size, quality, and merchantability. (Note: This term excludes rough, rotten, and dead trees).

Growing-stock volume – Net volume in cubic feet of growing stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods – Dicotyledonous trees, usually broad-leaved and deciduous.

Improved pasture – Land currently improved for grazing by cultivating, seeding, irrigating, or clearing trees or brush and less than 10 percent stocked with trees.

International 1/4-inch rule – A log rule or formula for estimating the board foot volume of logs, allowing 1/2-inch of taper of each 4-foot length. The rule appears in a number of forms that allow for kerf. In the form used by FIA, a

1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Land – (a) *Bureau of the Census*. Dry land and land temporarily or partly covered by water such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, slough, estuaries, and canals less than one-eighth of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

(b) *Forest Inventory and Analysis*. The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc., is 1 acre.

Logging residue – The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Marsh – Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation, and that is intermittently covered with water.

Mesic floodplain forest – A floodplain forest on moderately well drained soil. Better drainage than the wet-mesic and wet floodplain forests due to higher elevation above stream or coarser soil structure. Common trees include sugar maple, white oak, American elm, slippery elm, bur oak, and American basswood.

Mesic upland forest – An upland forest on moderately well drained soil. Soil moisture is higher than in the dry-mesic forest, and ideal soil conditions contribute to a dense canopy with a well-developed understory. Common trees include sugar maple, American beech, northern red oak, and American basswood.

National Forest land – Federal land that has been legally designated as National Forest or purchase units, and other land administered by the USDA Forest Service.

Net volume – Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Nonforest land – Land that has never supported forests and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, active Christmas tree plantations as indicated by annual shearing, orchards, nurseries, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land.) If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in area to qualify as nonforest land.

Nonforest land without trees – Nonforest land with no live trees present.

Nonforest land with trees – Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land – Timberland less than 10 percent stocked with live trees.

Other Federal land – Federal land other than National Forest land and land administered by the Bureau of Land Management or Bureau of Indian Affairs.

Other removals – Growing stock trees removed but not utilized for products, or trees left standing but “removed” from the timberland classification by land use change. Examples are removals from cultural operations such as timber stand improvement work and land clearing, and the standing volume on land classified originally as timberland but later designed as reserved from timber harvesting (such as a newly established state park).

Ownership unit – Any type of legal entity having ownership interest in land, regardless of the number of people involved. It is the focus of decision making for each parcel, whether an individual (sole proprietor) group of individuals (partnerships, or undivided estates), or legal person (corporation, trust, or tribe).

Pasture – Land presently used for grazing or under cultivation to develop grazing.

Plantation – An artificially reforested area sufficiently productive to qualify as timberland. The planted species is not necessarily predominant. Christmas tree plantations, which are considered cropland, are not included.

Poletimber stand – *See* Stand-size class.

Poletimber tree – A live tree of commercial species at least 5.0 inches d.b.h., but smaller than sawtimber size.

Private individual land – Privately owned land not owned by forest industry. This class includes the formerly used Farmer and Miscellaneous private classes.

Reserved forest land – Forest land withdrawn from timber utilization through statute, administrative regulation, or designation. Note: Historically, Christmas tree plantations were classified as reserved forest land. However, Christmas tree plantations are now classified as cropland.

Sapling – A live tree 1.0 to 5.0 inches d.b.h.

Saw log – A log meeting minimum standards of diameter, length, and defect. Saw logs include logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) of 7.0 inches for softwoods (9.0 inches for hardwoods) or other combinations of size and defect specified by regional standards.

Saw-log portion – That portion of the central stem of sawtimber trees between the stump and the saw-log top.

Sawtimber stand – *See* Stand-size class.

Sawtimber tree – A live tree of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. Hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume – Net volume of the saw-log portion of live sawtimber in board feet. Specifications for International 2-inch rule are (unless specified otherwise), from stump to a minimum 7.0 inches top d.o.b. for soft-

woods and a minimum 9.0 inches top d.o.b. for hardwoods.

Seedling – A live tree less than 1.0 inch d.b.h. that is expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Seedling-sapling stand – *See* Stand-size class.

Softwoods – Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand – A group of trees on a minimum of 1 acre of forest land that is stocked by forest trees of any size.

Stand-age class – A classification based on age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-size class – A classification of stocked (see Stocking) forest land based on the size class of live trees on the area; that is, sawtimber, poletimber, or seedlings and saplings.

Sawtimber stands – Stands with half or more of live tree stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands – Stands with half or more of live tree stocking in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Seedling-sapling stands – Stands with more than half of the live tree stocking in seedlings and/or saplings.

State land – Land owned by the state of Illinois or leased to it for 50 years or more.

Stocking of growing stock trees – The degree of occupancy of land by growing stock trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the

land; that is, the stocking standard. A stocking percentage of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5.0 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percentage of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h. Stands are grouped into the following stocking classes:

Overstocked stands – Stands in which stocking of growing stock trees is 100 percent or more.

Fully stocked stands – Stands in which stocking of growing stock trees is from 61 to 99 percent.

Medium stocked stands – Stands in which stocking of growing stock trees is from 36 to 60 percent.

Poorly stocked stands – Stands in which stocking of growing stock trees is from 10 to 35 percent.

Nonstocked areas – Timberland on which stocking of growing stock trees is less than 10 percent.

Timberland – Forest land that is producing, or is capable of producing, more than 20 cubic feet per acre per year of industrial wood crops under natural conditions, that is not withdrawn from timber utilization, and that is not associated with urban or rural development. Currently inaccessible and inoperable areas are included. (Timberland was formerly called commercial forest land).

Tree – A woody plant usually having one or more erect perennial stems, a stem diameter at breast height of at least 3 inches, a more or less definitely formed crown of foliage, and a height of at least 13 feet at maturity.

Tree size class – A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unique landowners – A single landowning entity within a political boundary, counted once per political unit (county or state) regardless of the number of parcels that landowning entity owns within the political unit.

Urban and other areas – Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes; school yards; cemeteries; roads; railroads; airports; beaches; powerlines and other rights-of-way; or other nonforest land not included in any other specified land-use class.

Veneer log or bolt – A roundwood product, from which veneer is sliced or sawn, and which meets regional standards or minimum diameter, length, and freedom from defect.

Water – (a) *Bureau of the Census* – Permanent inland water surfaces, such as lakes, reservoirs, and ponds at least 40 acres in area; and streams, sloughs, estuaries, and canals at least one-eighth of a statute mile wide.

(b) *Noncensus* – Permanent inland water surfaces, such as lakes, reservoirs, and ponds from 1 to 39.9 acres in area; and streams, sloughs, estuaries, and canals from 120 feet to one-eighth of a statute mile wide.

Wet floodplain forest – A floodplain forest on poorly drained soils. It has the highest soil moisture of all the floodplain forests. Flooding is frequent and prolonged, and the understory is often open. Common trees include silver maple, red maple, eastern cottonwood, sycamore, river birch, and black willow.

Wet-mesic floodplain forest – A floodplain forest on somewhat poorly drained soil. This is the most common floodplain forest. Soil moisture conditions are between the mesic floodplain forest and the wet floodplain forest. Common trees include silver maple, hackberry, sweetgum, bur oak, pin oak, American elm, shellbark hickory, and green ash.

Wet-mesic upland forest – An upland forest on somewhat poorly drained soils. Higher soil moisture than the mesic upland forest. This is an unusual forest often caused by poor drainage on level areas. Common trees include American elm, slippery elm, hackberry, and bur oak.

Wooded pasture – Improved pasture with more than 10 percent stocking in live trees, but less than 25 percent stocking in growing-stock trees. This area is currently improved for grazing, or there is other evidence of grazing.

Wooded strip – An acre or more of natural continuous forest land that would otherwise meet survey standards for timberland except that it is less than 120 feet wide.

Xeric upland forest – An upland forest on dry, extremely shallow, excessively drained soil. Canopy trees are stunted, and there is little or no understory. Common trees include post oak and blackjack oak.



Illinois Forestry Development Council

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