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Wisconsin's Forests, 2004: Statistics and Quality Assurance

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Abstract

The first full, annualized inventory of Wisconsin's forests was completed in 2004 after 6,478 forested plots were measured. An earlier publication summarized the results and presented issue-driven analyses (Perry at al. 2008). This report includes detailed information on forest inventory methods, the quality of the estimates, and core tables.

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FOREST INVENTORY METHODS

Strategic Model

The Forest Inventory and Analysis (FIA) program of the Northern Research Station is part of the national enhanced FIA program that focuses on a set of six strategic objectives (McRoberts 2005):

- A standard set of variables with nationally consistent meanings and measurements
- Field inventories of all forested lands
- Nationally consistent estimation
- Adherence to national precision standards
- Consistent reporting and data distribution
- Credibility with users and stakeholders

To ensure the six strategic objectives are achieved, 10 strategic approaches have been prescribed:

- A national set of prescribed core variables with a national field manual that describes measurement procedures and protocols for each variable
- A national plot configuration
- A nationally consistent sampling design
- Estimation using standardized formulae for sample-based estimators
- A national database of FIA data with core standards and user-friendly public access
- A national information management system
- A nationally consistent set of tables of estimates of prescribed core variables
- Publication of statewide tables of estimates of prescribed core variables at 5-year intervals
- Documentation of the technical aspects of the FIA program, including procedures, protocols, and techniques
- Peer review and publication of the technical documentation for general access

The result of the strategic objectives and approaches is an inventory program with identifiably new features and a nationally consistent plot configuration, a nationally consistent sampling design for all lands, annual measurement of a proportion of plots in each state, nationally consistent estimation techniques and algorithms, and integration of the ground sampling components of the FIA inventory and the detection monitoring activity of the U.S. Forest Service's Forest Health Monitoring (FHM) program.

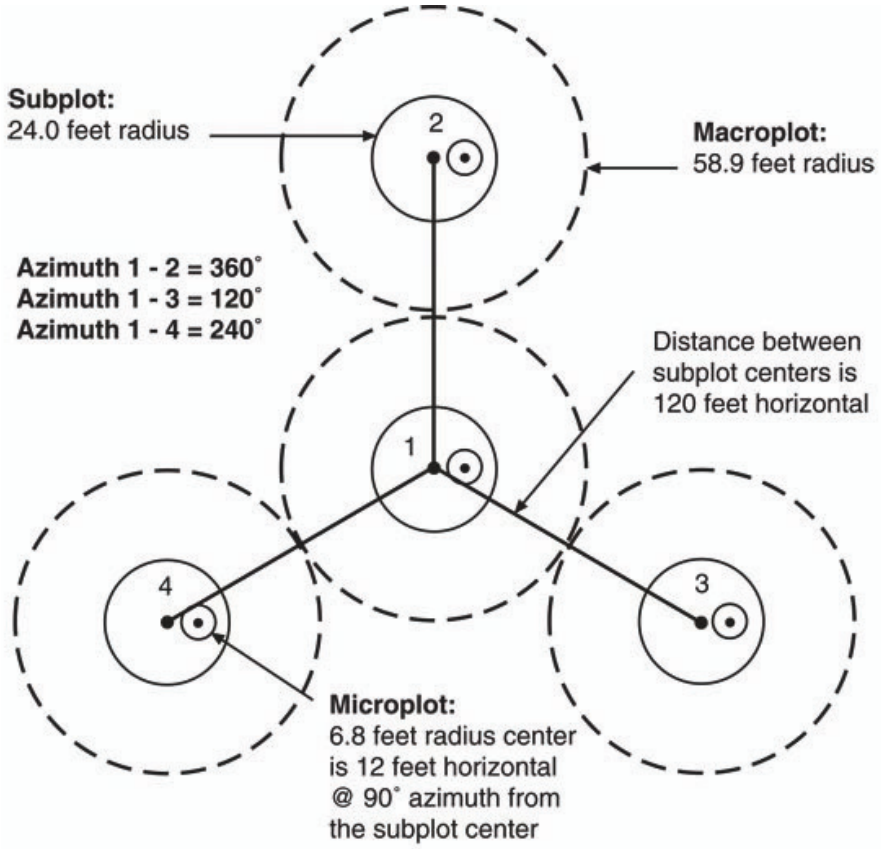

Figure 1.—National FIA plot design (Adapted from Bechtold and Patterson 2005).

Plot Configuration

The national FIA plot design (Fig. 1) consists of four 24-ft-radius subplots configured with a central subplot and three peripheral subplots. Centers of the peripheral subplots are located 120 feet from the central subplot and at azimuths of 0°, 120°, and 240° from the center of the central subplot. Each tree, with a diameter at breast height (d.b.h.) of 5 inches or greater is measured on these subplots. Each subplot contains a 6.8-ft-radius microplot with its center located 12 ft east of the subplot center, on which each tree with a d.b.h. between 1 inch and 5 inches is measured. Factors that differentiate forest conditions include forest type, stand-size class, stand origin, land use, ownership, and density. Forest conditions that occur on any of the four subplots are identified and recorded and if the area of the condition is 1 acre or greater, the condition is mapped on the subplot.

Sample design

Based on historic sampling errors, a sampling intensity of approximately one plot per 6,000 acres is necessary to satisfy national FIA precision guidelines. Therefore, FIA divided the United States into nonoverlapping, 5,937-acre hexagons and established a plot in each hexagon as follows: 1) if an existing FHM plot was located in a hexagon, it was selected; 2) if no FHM plot existed in the hexagon, the existing FIA plot from the previous periodic inventory nearest the hexagon center was selected; and 3) if neither an FHM nor FIA plot was located in the hexagon, a new FIA plot was established at a random location in the hexagon (Brand et al. 2000, McRoberts 1999). This array of field plots is designated the Federal base sample and is considered an equal probability sample; its measurement is funded by the Federal government.

The Federal base sample was systematically divided into five interpenetrating, nonoverlapping panels or subsamples, each of which provides complete, systematic coverage of a state. Each year the plots in a single panel are measured, and panels are selected on a 5-year, rotating basis (McRoberts 1999). For estimation purposes, the measurement of each panel of plots is considered an independent, equal probability sample of all lands in a state.

Three-phase inventory

FIA conducts inventories in three phases. Phase 1 uses remote sensing to obtain initial plot land cover observations and to stratify land area in the population of interest to increase the precision of estimates. In phase 2, field crews visit the physical locations of permanent field plots to measure traditional inventory variables, such as tree species, diameter, and height. In phase 3, field crews visit a subset of phase 2 plots to obtain measurements for an additional suite of variables associated with forest and ecosystem health. The three phases of the enhanced FIA program are discussed in greater detail in the following sections.

Phase 1

Aerial photographs, digital orthophotoquads (DOQs: digitally scanned aerial photographs), and satellite imagery are used for initial plot measurement via remotely sensed data and stratification. Phase 1 plot measurement consists of observations of conditions at the plot locations using aerial photographs or DOQs. Analysts determine a digitized geographic location for each field plot and a human interpreter assigns the plot to a land cover and land use category. Lands satisfying FIA's definition of forest-land use include commercial timberland, some pastured land with trees, forest plantations, unproductive forested land, and reserved, noncommercial forested land. In addition, forest-land use requires minimum stocking levels, a 1-acre area, and a minimum stem-to-stem width of 120 ft with continuous canopy. Forest land excludes wooded strips and wind breaks less than 120 feet wide, and idle farmland or other previously nonforest land that currently is below minimum stocking levels. All plot locations that could possibly contain accessible forest land are selected for further measurement in phase 2.

The combination of natural variability among plots and budgetary constraints prohibits measurement of a sufficient number of plots to satisfy national precision standards for most inventory variables, unless the estimation process is enhanced using ancillary data. Thus, the land area is classified with remotely sensed data to facilitate stratified estimation.

A stratification scheme based on satellite imagery as proposed by Hansen and Wendt (2000) is applied to the National Land Cover Data (NLCD) as suggested by McRoberts et al. (2002). The NLCD is a digital land cover map of the conterminous United States assigning 30-meter x 30-meter pixels to 21 land-cover classes. The land-cover classification was produced by the U.S. Geological Survey and was based on nominal 1992 Landsat 5 Thematic Mapper (TM) satellite imagery and a variety of ancillary data (Vogelmann et al. 2001). Four strata are created using a three-step process: 1) aggregate the NLCD classes with trees into a forest stratum with remaining classes in a nonforest stratum; 2) reclassify isolated groups of three or fewer pixels into their surrounding forest or nonforest class to comply with the FIA criterion that forest land must be at least 1 acre; and 3) create two additional classes (forest edge and nonforest edge) that includes all pixels within two pixels of the forest/nonforest boundary.

In addition to the classification of every pixel into one of the four strata, every pixel also is assigned to an ownership strata based on the Protected Areas Database (PAD) described by DellaSala et al. (2001). In Wisconsin, the PAD was used to classify pixels into three owners
hip classes: 1) national forest; 2) other public owners; and 3) private owners. Also, every pixel was assigned to a county based on the location of the pixel center.

Stratified estimation requires that two tasks be accomplished. First, each plot must be assigned to a single stratum. Second, the proportion of the estimation unit in each stratum must be calculated. The first task is accomplished by assigning each plot to the stratum assigned for the pixel containing the center of the center subplot. The second task is accomplished by calculating the proportion of pixels in each stratum. The population estimate for a variable is calculated as the sum across all strata of the product of each stratum's observed proportion (from phase 1) and the variable's estimated mean per unit area for the stratum (from phase 2). Details of the stratum assignments used in Wisconsin are presented in the estimation section of this report that follows the phase 2 and phase 3 descriptions.

Phase 2

In phase 2, field crews record a variety of data for plot locations determined in phase 1 to include accessible forest land use. Before visiting plot locations, field crews consult county land records to determine the ownership of plots and then seek permission from private landowners to measure plots on their lands. The field crews determine the location of the geographic center of the center subplot using geographic positioning system (GPS) receivers. They record condition-level observations that include land cover, forest type, stand origin, stand age, stand-size class, site productivity class, forest disturbance history, and land use for every condition (major land use or forest stand at least 1 acre in size) that occurs on the plot and also they record condition boundary information when multiple conditions are found on a plot. For each tree, field crews record a variety of observations and measurements including condition, species, live/dead status, diameter, height, crown ratio (percent of tree height represented by crown), crown class (e.g., dominant, codominant, suppressed), damage, and decay status. Office staff use statistical models based on field crew measurements to calculate values for additional variables, including individual tree volume, per unit area estimates of number of trees, volume, and biomass by plot, by condition, by species groups, and by live/dead status. Details of the data collection procedures used in phase 2 of this inventory are available at http://www.nrs.fs.fed.us/fia/data-collection/.

Phase 3

The third phase of the enhanced FIA program focuses on the measurement of indicators of forest health. Phase 3 is administered by the FIA program with consultation from other Forest Service programs, other Federal agencies, state natural resource agencies, universities, and the FHM program. The FHM program consists of four interrelated and complementary activities: detection monitoring, evaluation monitoring, intensive site ecosystem monitoring, and research on monitoring techniques. Detection monitoring consists of systematic aerial and ground surveys designed to collect baseline information on the current condition of forest ecosystems and to detect changes from those baselines over time. Evaluation monitoring studies examine the extent, severity, and probable causes of changes in forest health identified through the detection monitoring surveys. The intensive site ecosystem monitoring program conducts research into regionally specific ecological processes at a network of sites located in representative forested ecosystems. Finally, research on monitoring techniques focuses

on developing and refining indicator measurements to improve the efficiency and reliability of data collection and analysis for the complete program.

The ground survey portion of the FHM detection monitoring program was integrated into the FIA program as phase 3 in 1999. The phase 3 sample consists of a subset of the phase 2 plots with one phase 3 plot for approximately every 95,000 acres. Phase 3 measurements are obtained by field crews during the growing season and include an extended suite of ecological data: lichen diversity and abundance, soil quality (erosion, compaction, and chemistry), vegetation diversity and structure, and down woody material. The incidence and severity of ozone injury for selected bioindicator species also are monitored as part of an associated sampling scheme. All phase 2 measurements are collected on each phase 3 plot at the same time as the phase 3 measurements. Details of the data collection procedures used in phase 3 of this inventory are available at http://www.nrs.fs.fed.us/fia/topics/.

Phase 3 variables are selected to address specific criteria outlined by the Montreal Process working group for the conservation and sustainable management of temperate and boreal forests and are based on the concept of indicator variables. Observations of an indicator variable represent an index of ecosystem functions that can be monitored over time to assess trends. Indicator variables are used in conjunction with each other, phase 2 data, data from FHM evaluation monitoring studies, and ancillary data to address ecological issues such as vegetation diversity, fuel loading, regional air quality gradients, and carbon storage. The phase 2 and phase 3 data of the enhanced FIA program are a primary source of reporting data for the Montreal Process Criteria.

Estimation

Most of the estimates and analysis of forest resources presented in this report, including all of the estimates in Tables 1 through 61, are based on data observed on the 13,337 forest land and nonforest phase 2 plots located across Wisconsin (Fig. 2). The analysis of forest health issues that relate to down woody material, soils, ozone, and crown conditions are based on data observed on the 367 phase 3 plots (Fig. 3).

The phase 2 observations are distributed evenly across the 5-year period when plots were measured (October 1, 1999 through September 30, 2004). These plots are located within 47 estimation strata (Table A) defined by combinations of the four phase 1 classes (nonforest, nonforest edge, forest edge, and forest), a land ownership classification created from the PAD, and county groups. The procedures described in Bechtold and Patterson (2005) for stratified estimation with observed stratum areas were used in conjunction with the strata presented in Table A to produce all estimates. Table A provides the total area and number of plots within each of these strata.

Integration with previous inventories

In 2004, FIA completed measurement of the fifth panel of inventory plots in Wisconsin. The 2004 panel, along with those surveyed in 2000, 2001, 2002 and 2003, completed the data collection for the fifth inventory of Wisconsin's forests (Perry et al. 2008). For simplicity, the information from the 2000 through 2004 panels is referred to as "2004." Previous inventories of Wisconsin's forest resources were completed in 1936 (Cunningham and Moser 1938), 1956 (Stone and Thorne 1961), 1968 (Spencer and Thorne 1972), 1983 (Spencer et al. 1988), and 1996 (Schmidt 1998). Data from new inventories are often compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must

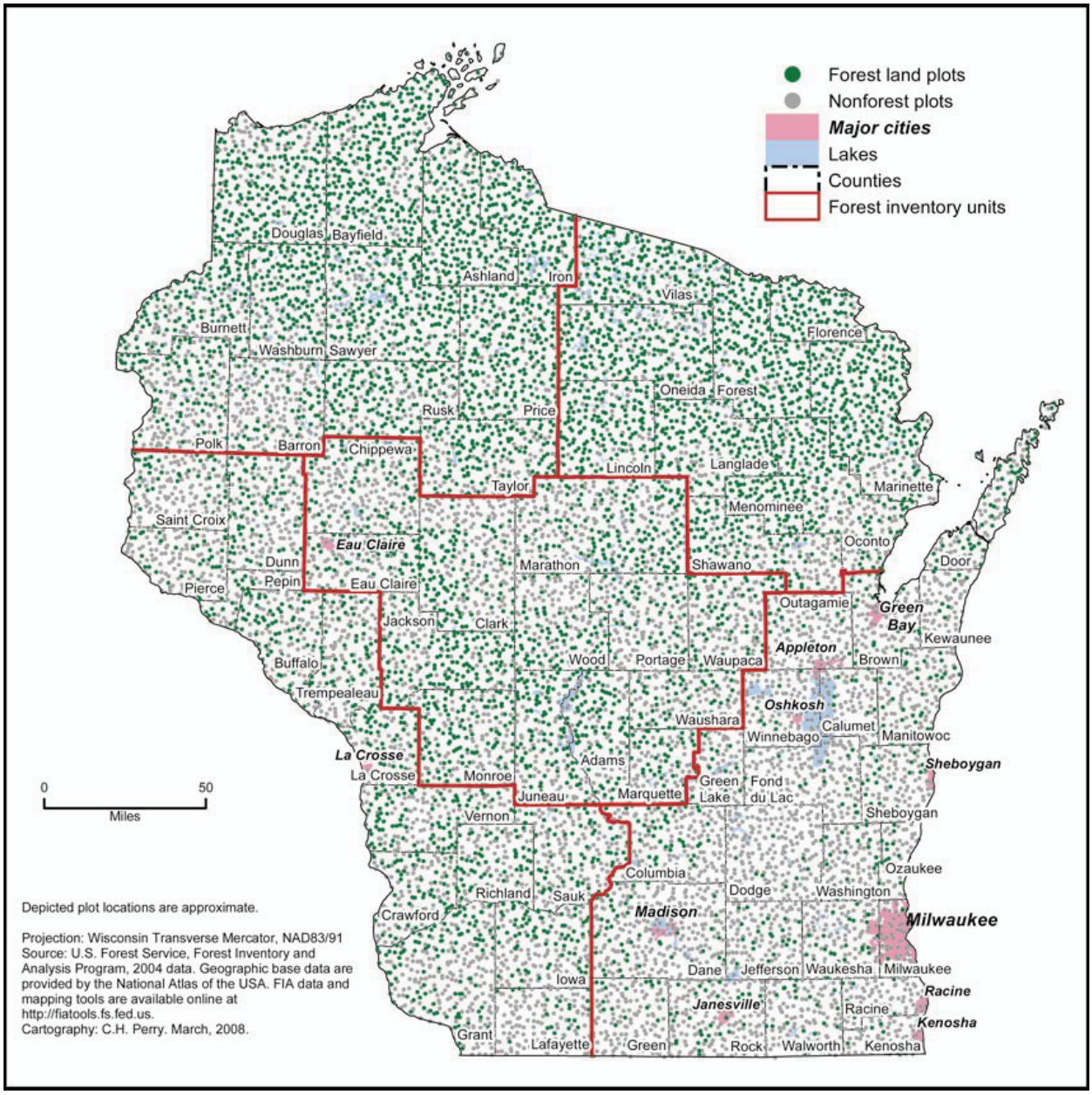

Figure 2.—Approximate locations of the 13,337 forest land and nonforest phase 2 plots in the 2004 Wisconsin forest inventory.

be similar. As a result of our ongoing efforts to improve the efficiency and reliability of the inventory, several changes in procedures and definitions have been made since the last Wisconsin inventory in 1996. Although these changes will have little impact on statewide estimates of forest area, timber volume, and tree biomass, they may significantly impact plot classification variables such as forest type and stand-size class. For estimating growth, removals, and mortality, the 2004 inventory was processed using national estimation/summary routines that differ from the regional methods used in 1996. Although these changes allow limited comparison of inventory estimates among separate inventories in this report, it is inappropriate to directly compare all portions of the 2004 data with those published for earlier inventories.

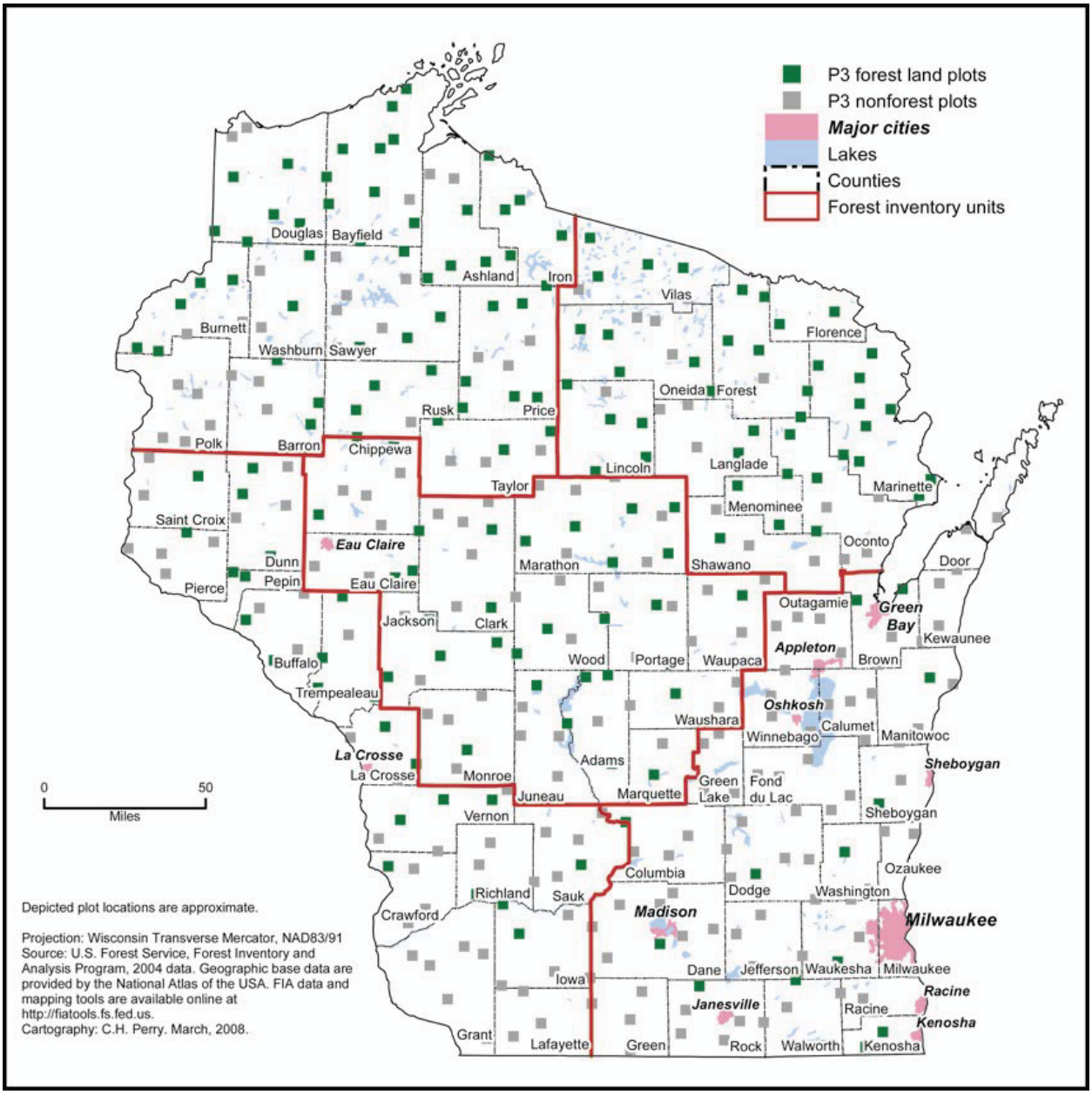

Figure 3.—Approximate locations of the 367 phase 3 plots in the 2004 Wisconsin forest inventory.

For further information about the sample protocols and estimation procedures for phase 1 and 2 of the FIA program, refer to Bechtold and Patterson (2005). For further information on phase 3 indicator sampling and estimation protocols, refer to O'Neill et al. (2005), Schomaker et al. (2007), USDA FS (2003), and Woodall and Monleon (2008).

Quality of the Estimates

The quality of this report's estimates is addressed by quantifying associated errors. Two general types of error—random variability (precision) and estimation bias (accuracy)—are of general interest to all users. Random variability refers to the precision of the estimate, which would occur if the entire sampling and estimation process were to be repeated many times. Estimation bias, on the other hand, refers to the difference between the estimate and the "true value" in the absence of this random variability, and refers to the over-estimation or under-estimation inherent in the entire estimation process.

Errors in the estimates presented in this report (both estimation bias and random variability) are affected by various sources. The four primary sources of error common to all sample-based estimates are sampling, measurement, prediction, and nonresponse error. A section is devoted to each of these sources of error. Included in each of these sections is a definition of the source of error in the context of the FIA inventory and a discussion of methods used to quantify and reduce that source of error. Measures of sampling, measurement, and prediction errors associated with various attributes are presented. Issues of possible bias related to nonresponse also are addressed.

Sampling Error

The process of sampling (selecting a random subset of a population and calculating estimates from this subset) causes estimates to contain error they would not have if every member of the population had been observed and included in the sample. The 2004 FIA inventory of Wisconsin is based on a sample of 13,337 forest land and nonforest plots located randomly across the State (a total area of 35.9 million acres), at a sampling rate of approximately one plot for every 2,700 acres.

The statistical estimation procedures outlined in the previous section and detailed in Bechtold and Patterson (2005) provide the estimates of the population totals and means presented in this report. Along with every estimate is an associated sampling error that is typically expressed as a percentage of the estimated value (the estimated value plus or minus the sampling error). This sampling error is the primary measure of the reliability of an estimate. This report utilizes a sampling error based on one standard deviation which means the chances are two out of three that had a 100 percent inventory been taken using these methods, the results would have been within the limits indicated.

The sampling errors for State-level estimates of the major attributes presented in this report are presented in Table B. Table 65 presents sampling errors for these estimates at the Forest Inventory Unit and county or county group level.

Estimates for classifications smaller than the State totals presented in Table B will have larger sampling errors. For example, Table 65 shows the sampling error for timberland area in any county is higher than that for total timberland area in the State. To compute an approximate sampling error for an estimate that is smaller than a state total, use the following formula:

$$E = \frac{(SE)\sqrt{(\text{State total estimate})}}{\sqrt{(\text{Smaller estimate})}} \qquad (1)$$

where:

E = approximate sampling error for smaller estimate

SE = sampling error for state total estimate (percent)

For example, to compute the error on the area of forest land in the oak-hickory forest-type group for the State, proceed as follows:

The total area of the oak-hickory forest-type group in the State from Table 3 is 3,428,600 acres.
The total area of all forest land in the state from Table 3 is 16,037,200 acres.
The State total error for forest land area from Table B is 0.55 percent.

Using formula (1):

$$\text{Sampling error} = E = \frac{0.55\sqrt{(16{,}037{,}200)}}{\sqrt{(3{,}428{,}600\ )}} = 1.19 \text{ percent.}$$

This approximation works well for estimates of area, volume, number of trees, and biomass. It is less effective for estimates of growth, removals, or mortality. Individuals seeking more accurate sampling errors should use Forest Inventory Data Online (FIDO), available at http://fiatools.fs.fed.us.

The estimators used by FIA are unbiased under the assumptions that the sample plots are a random sample of the total population and the observed value for any plot is the true value for that plot. Deviations from these basic assumptions are not reflected in the computation of sampling errors. The following sections on measurement, prediction, and nonresponse error address possible departures from these basic assumptions.

Measurement Error

Errors associated with the methods and instruments used to observe and record the sample attributes are called measurement errors. On FIA plots, attributes, such as the diameter and height of a tree, are measured with different instruments. Other attributes such as species and crown class are observed without the aid of an instrument. On a typical FIA plot, 30 to 70 trees are observed with 15 to 20 attributes recorded on each tree. In addition, many attributes that describe the plot and conditions on the plot are observed. Errors in any of these observations affect the quality of the estimates. If a measurement is biased (such as tree diameter consistently taken at an incorrect place on the tree), then the estimates that use this observation (such as volume) will reflect this bias. Even if measurements are unbiased, high levels of random error in the measurements will add to the total random error of the estimation process.

To ensure that all FIA observations are made to the highest standards possible, a regular program of quality control and quality assurance is an integral part of all FIA data collection efforts. This program begins with the documentation of protocols and procedures used in the inventory followed by extensive crew training. To assess the quality of the data collected by these trained crews, a random sample of at least 4 percent of all plots are measured independently by a qualified crew. These independent measurements are referred to as blind checks. A second measurement on these blind check plots is done by a quality assurance (QA) crew. QA crews have as much or more experience and training in FIA field measurements than the standard FIA crews.

The quality of field measurements is assessed nationally through a set of measurement quality objectives (MQOs) that are set for every data item collected. Each MQO consists of two parts: a tolerance or acceptable level of measurement error, and an objective in terms of the percentage

of measurements within tolerance. The blind check measurements are used to observe how often individual field crews are meeting these objectives and to assess the overall compliance among all crews. Table C shows the compliance rates for various measurements used to compute the estimates included in this report and in other FIA reports. The columns labeled "Wisconsin" come from blind-check measurements of plots used in this report, and the columns labeled "Midwestern States" come from all measurements made by FIA crews within the 11-state area surrounding Wisconsin (North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Michigan, and Indiana) where the Northern Research Station implemented the FIA program during 2000 to 2004. Training and supervision of crews is a regional effort and crews often work in more than one state. Regional data quality observations reflect the overall measurement quality of all data collected by FIA in a larger area.

In addition to the percentage compliance to measurement quality objectives, the blind-check observations were used to test for relative bias in the field crew measurements. Relative bias is defined here as a tendency for the standard field crew measurements to be higher or lower than those measurements taken by the QA crews. The estimated relative bias and limits of 95 percent confidence intervals (based on parametric bootstrap estimates) for the relative bias are presented in Table D.

The blind-check measurements do not provide direct observations of true bias in field measurements (average difference between field measurements and true values) because they are paired observations of two field measurements. The QA crew in these blind checks typically has more training and experience with FIA field measurements than the first crew, but both crews use the same methods and instruments to obtain the measurements. These methods have been selected to be the best available and were selected for use nationwide by FIA; they are commonly used by other similar natural resource inventories. A basic assumption is that the methods, when correctly applied, provide unbiased observations of the attribute they are designed to measure. Under this assumption, relative bias observations in Table D provide observations of bias due to the difference in experience and training between the field and QA crews. In most cases there is no significant bias.

Prediction Error

Errors associated with using mathematical models (such as volume models) to provide observations of the attributes of interest based on sample attributes are referred to as prediction error. Area, number of trees, volume, biomass, growth, removals, and mortality are the primary attributes of interest presented in this report. Area and number of trees estimates are based on direct observation and do not involve the use of prediction models. However, FIA estimates of volume, biomass, growth, removals, and mortality are model-based predictions in the estimation process. Change estimates, such as growth, mortality, and removals, are based on these model-based predictions of volume from both the current plot measurements and the measurements taken in the previous inventory.

Estimates of prediction errors associated with the volume models used in this report are presented by Hahn (1984), along with the model forms, the methods used in model development, and the model parameter estimates. The estimated prediction errors are based on observations of 101,642 trees measured in the forest inventories of Wisconsin (1968), Minnesota (1977), and Michigan (1981). For gross cubic-foot volume in live trees, standard errors ranged from 1.47 to 28.13 cubic feet. For board-foot estimates, standard errors ranged from 14.49 to 189.95 board feet.

In comparing FIA estimates to other data sources, users need to be aware of the prediction models used in both estimates. If both estimates are based on the same prediction models with matching fitted parameter values, then the prediction bias of one estimate should cancel out that of the other estimate. If the estimates are based on different prediction models, then the prediction error of both models must be considered.

Nonresponse Error

Nonresponse error occurs when crews are unable to measure a plot (or a portion of a plot) at a selected location. Nonresponse errors fall into three classes:

Denied access—Entire plots or portions of plots where the field crew is unable to obtain permission from the landowner and is therefore unable to measure the trees on the plot.

Hazardous/inaccessible—Entire plots or portions of plots where the conditions present prevent a crew from safely getting to the plot or measuring the trees on the plot.

Other—Plots where the field crew is unable to obtain a valid measurement for a variety of reasons other than those stated above.

Nonresponse has two effects on the sample. First, it reduces the sample size. The reduced sample size is reflected in the sampling errors. Second, nonresponse can bias the estimates if the portion of the population not being sampled differs from the portion being sampled.

In FIA, nonresponse rates are relatively low. In the 2004 Wisconsin inventory, a total of 13,337 sample plots were selected to be observed. Of the total sample plots selected for observation, more than 96 percent were used for the estimation of current resources. Only on 472 plots were crews unable to obtain owner permission to measure the plot or part of the plot, and only on eight plots were hazardous conditions encountered.

Even though a nonresponse rate of only 1 percent is low, it can cause considerable bias if not properly accounted for. The major source of nonresponse is denied access to plots. Denied access plots occur primarily on lands in private ownership. Also, the observations needed for plots on nonforest and water land classes do not usually require crews to physically enter the land and permission is not needed to obtain the observation because it can be obtained from aerial photos or other remotely sensed information sources.

The stratified estimation process used by FIA with strata defined by three ownership classes (national forest, other public, and private) and four Landsat TM forest-cover classes (nonforest, nonforest edge, forest edge and forest) reduces the possible effects of bias caused by nonresponse. Under the stratified estimation process used by FIA, nonresponses are removed from the sample, and stratum estimates (means, totals, and sampling errors) are obtained from only those plots with valid observations. The net effect in the estimates of means and totals is that the average of the observed plots within the stratum (ownership class and forest cover classes) becomes the estimate for all nonresponses within that stratum. The nonresponse rate in one stratum does not affect the estimate in other strata. The response rate within each stratum is presented in Table E for the Wisconsin 2004 inventory and for all FIA inventories conducted in the Midwest by the Northern Research Station over the same period.

In Table 1 of this report, we acknowledge denied access and hazardous plots as two land classes that exist in Wisconsin from which we are unable to provide estimates of conditions, such as forest area or timber volume; however, we do report the total estimated area in each of these classes. In all other tables of the report, we do not acknowledge either of these classes and in the estimation process we treat the sample where we have observations as a random sample of the entire State.

The nonresponse plots in this inventory were not permanently removed from the FIA system of plots. In future inventories we will again attempt to measure these plots. At that time we may be able to obtain permission to access these plots, the hazardous conditions may have changed, or a change in circumstances that caused us to drop plots from a specific inventory cycle.

GLOSSARY

Average annual mortality of growing stock—The average cubic-foot volume of sound wood in growing-stock trees that died in 1 year.

Average annual mortality of sawtimber—The average board-foot volume of sound wood in sawtimber trees that died in 1 year.

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 ingrowth, less volume losses resulting from natural causes. Natural causes include mortality except that which is due to logging damage, timber stand improvement, or conversion to a nonforest land use.

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. Natural causes include mortality except that which is due to logging damage, timber stand improvement, or conversion to a nonforest land use.

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 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.

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.

Bioindicator species—A tree, woody shrub, or nonwoody herb species that responds to ambient levels of ozone pollution with distinct visible foliar symptoms that are easy to diagnose.

Biomass—The aboveground volume of live trees (including bark but excluding foliage) reported in dry tons (i.e., dry weight). Biomass has four components:

> ***Bole—***Biomass of a tree from 1 foot above the ground to a 4-inch top outside bark or to a point where the central stem breaks into limbs.
>
> ***Tops and limbs—***Total biomass of a tree from a 1-foot stump minus the bole.
>
> ***1-to 5-inch trees—***Total aboveground biomass of a tree from 1 to 5 inches in d.b.h.
>
> ***Stump—***Biomass of a tree 5 inches d.b.h. and larger from the ground to a height of 1 foot.

Bulk density—The mass of soil per unit volume. A measure of the ratio of pore space to solid materials in a given soil. Expressed in units of grams per cubic centimeter of oven dry soil.

Coarse woody debris (CWD)—Dead branches, twigs, and wood splinters 3.0 inches in diameter and larger measured at the smallest end.

Commercial species—Tree species suitable for industrial wood products.

Compacted live crown ratio—The percent of the total length of the tree that supports a full, live crown. To determine compacted live crown ratio for trees that have uneven length crowns, lower branches are ocularly transferred to fill holes in the upper portions of the crown, until a full, even crown is created.

County and municipal—An ownership class of public lands owned by counties or local public agencies, or lands leased by these governmental units for more than 50 years.

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.

Crown—The part of a tree or woody plant bearing live branches or foliage.

Crown dieback—Recent mortality of branches with fine twigs, which begins at the terminal portion of a branch and proceeds toward the trunk. Dieback is considered only when it occurs in the upper and outer portions of the tree. When whole branches are dead in the upper crown, without obvious signs of damage such as breaks or animal injury, it is assumed the branches died from the terminal portion of the branch. Dead branches in the lower portion of the live crown are assumed to have died from competition and shading.

Cull tree—A live tree, 5.0 inches in d.b.h. or larger, that is unmerchantable for saw logs now or prospectively because of rot, roughness, or species. (See definitions for rotten and rough trees.)

Decay class—Qualitative assessment of stage of decay (five classes) of coarse woody debris based on visual assessments of color of wood, presence/absence of twigs and branches, texture of rotten portions, and structural integrity.

Diameter class—A classification of trees based on diameter outside bark measured at breast height (4-1/2 feet above ground). D.b.h. is the common abbreviation for "diameter at breast height." With 2-inch diameter classes, the 6-inch class, for example, includes trees 5.0 through 6.9 inches d.b.h.

Down woody material (DWM)—Woody pieces of trees and shrubs that have been uprooted (no longer supporting growth) or severed from their root system, not self-supporting, and lying on the ground.

Duff—A soil layer dominated by organic material derived from the decomposition of plant and animal litter and deposited on either an organic or a mineral surface. This layer is distinguished from the litter layer in that the original organic material has undergone sufficient decomposition that the source of this material (e.g., individual plant parts) can no longer be identified.

Effective cation exchange capacity (ECEC)—The sum of cations that a soil can adsorb in its natural pH. Expressed in units of centimoles of positive charge per kilogram of soil.

Federal—An ownership class of public lands owned by the U.S. Government.

Fiber products—Products derived from wood and bark residues, such as pulp, composition board products, and wood chips for export.

Fine materials—Wood residues not suitable for chipping, such as planer shavings and sawdust.

Fine woody debris (FWD)—Dead branches, twigs, and wood splinters 0.1 to 2.9 inches in diameter.

Forest industry—An ownership class of private lands owned by companies or individuals operating wood-using plants.

Forest land—Land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10 percent stocked with forest trees and forest areas adjacent to urban and built-up lands. Also included are pinyon-juniper and chaparral areas in the West and afforested areas. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of trees must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide.

Forest type—A classification of forest land based on the species presently forming a plurality of the live-tree stocking.

Forest type group—A combination of forest types that share closely associated species or site requirements and are generally combined for brevity of reporting.

Major eastern forest-type groups—

White-red-jack pine—Forests in which eastern white pine, red pine, or jack pine, singly or in combination, comprise a plurality of the stocking. Common associates include hemlock, aspen, birch, and maple.

Oak-pine—Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking, but in which pine or eastern redcedar comprises 25-50 percent of the stocking. Common associates include gum, hickory, and yellow-poplar.

Oak-hickory—Forests in which upland oaks or hickory, singly or in combination, comprise a plurality of the stocking except where pines comprise 25-50 percent, in which case the stand is classified as oak-pine. Common associates include yellow-poplar, elm, maple, and black walnut.

Oak-gum-cypress—Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking except where pines comprise 25-50 percent, in which case the stand is classified as oak-pine. Common associates include cottonwood, willow, ash, elm, hackberry, and maple.

***Elm-ash-cottonwood*—**Forests in which elm, ash, or cottonwood, singly or in combination, comprise a plurality of the stocking. Common associates include willow, sycamore, beech, and maple.

***Maple-beech-birch*—**Forests in which maple, beech, or yellow birch, singly or in combination, comprise a plurality of the stocking. Common associates include hemlock, elm, basswood, and white pine.

***Aspen-birch*—**Forests in which aspen, balsam poplar, paper birch, or gray birch, singly or in combination, comprise a plurality of the stocking. Common associates include maple and balsam fir.

Growing stock—A classification of timber inventory that includes live trees of commercial species meeting specified standards of quality or vigor. Cull trees are excluded. When associated with volume, includes only trees 5.0 inches d.b.h. and larger.

Hardwood—A dicotyledonous tree, usually broad-leaved and deciduous.

***Soft hardwoods*—**A category of hardwood species with wood generally of low specific gravity (less than 0.5). Notable examples of soft hardwoods include red maple, paper birch, quaking aspen, and American elm.

***Hard hardwoods*—**A category of hardwood species with wood generally of high specific gravity (greater than 0.5). Notable examples of hard hardwoods include sugar maple, yellow birch, black walnut, and the oaks.

Industrial wood—All commercial roundwood products except fuelwood.

Land area—The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, estuaries, and canals less than 200 feet wide; and lakes, reservoirs, and ponds less than 4.5 acres in area.

Litter—Undecomposed or only partially decomposed organic material that can be readily identified (e.g., plant leaves, twigs).

Live cull—A classification that includes live, cull trees. When associated with volume, it is the net volume in live, cull trees that are 5.0 inches d.b.h. and larger.

Logging residues—The unused portions of growing-stock and non-growing stock trees cut or killed by logging and left in the woods.

Merchantable—Refers to a pulpwood or sawlog section that meets pulpwood or sawlog specifications, respectively.

National forest—An ownership class of Federal lands, designated by Executive order or statute as National Forests or purchase units, and other lands under the administration of the Forest Service including experimental areas.

Net annual growth—The average annual net increase in the volume of trees during the period between inventories. Components include the increment in net volume of trees at the beginning of the specific year surviving to its end, plus the net volume of trees reaching the minimum size class during the year, minus the volume of trees that died during the year.

Net volume in cubic feet—The gross volume in cubic feet less deductions for rot, roughness, and poor form. Volume is computed for the central stem from a 1-foot stump to a minimum 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs.

Noncommercial species—Tree species of typically small size, poor form, or inferior quality, which normally do not develop into trees suitable for industrial wood products.

Nonforest land—Land that has never supported forests and lands formerly forested where use of timber management is precluded by development for other uses. (Note: Includes area used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 4.5-acre areas of water classified by the U.S. Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide, and clearings, etc., must be more than 1 acre in area, to qualify as nonforest land.)

Nonindustrial private—An ownership class of private lands where the owner does not operate wood-using plants.

Nonstocked areas—Timberland less than 10 percent stocked with all live trees.

Other red oaks—A group of species in the genus Quercus that includes scarlet oak, northern pin oak, southern red oak, bear oak, shingle oak, laurel oak, blackjack oak, water oak, pin oak, willow oak, and black oak.

Other white oaks—A group of species in the genus Quercus that includes overcup oak, chestnut oak, and post oak.

Ownership—The property owned by one ownership unit.

Ownership unit—A classification of ownership encompassing all types of legal entities having an ownership interest in land, regardless of the number of people involved. A unit may be an individual; a combination of persons; a legal entity such as a corporation, partnership, club, or trust; or a public agency. An ownership unit has control of a parcel or group of parcels of land.

Ozone—O_3. A regional, gaseous air pollutant produced primarily through sunlight-driven chemical reactions of nitrogen dioxide and hydrocarbons in the atmosphere and causing foliar injury to deciduous trees, conifers, shrubs, and herbaceous species.

Ozone bioindicator site—An open area used for ozone injury evaluations on ozone-sensitive species. The area must meet certain site selection guidelines on size, condition, and plant counts to be used for ozone injury evaluations in FIA.

Physiographic class—A measure of soil and water conditions that affect tree growth on a site. The physiographic classes are:

Xeric—Very dry soils where excessive drainage seriously limits both growth and species occurrence. These sites are usually on upland and upper half slopes.

Xeromesic—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. These sites are usually on the lower half slopes.

Mesic—Deep, well drained soils. Growth and species occurrence are limited only by climate. These include all cove sites and bottomlands along intermittent streams.

Hydromesic—Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent.

Hydric—Very wet sites where excess water seriously limits both growth and species occurrence.

Poletimber trees—Live trees at least 5.0 inches in d.b.h., but smaller than sawtimber trees.

Primary wood-using mill—A mill that converts roundwood products into other wood products. Common examples are sawmills that convert saw logs into lumber and pulpmills that convert pulpwood into wood pulp.

Productivity class—A classification of forest land in terms of potential annual cubic-foot volume growth per acre at culmination of mean annual increment in fully stocked natural stands.

Pulpwood—Roundwood, whole-tree chips, or wood residues used for the production of wood pulp.

Reserved forest land—Forest land withdrawn from timber utilization through statute, administrative regulation, or designation without regard to productive status.

Residues—Bark and woody materials that are generated in primary wood-using mills when roundwood products are converted to other products. Examples are slabs, edgings, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and pulp screenings. Includes bark residues and wood residues (both coarse and fine materials) but excludes logging residues.

Rotten tree—A live tree of commercial species that does not contain a saw log now or prospectively primarily because of rot (that is, when rot accounts for more than 50 percent of the total cull volume).

Rough tree—(a) A live tree of commercial species that does not contain a saw log now or prospectively primarily because of roughness (that is, when sound cull due to such factors as poor form, splits, or cracks accounts for more than 50 percent of the total cull volume); or (b) a live tree of noncommercial species.

Roundwood products—Logs, bolts, and other round timber generated from harvesting trees for industrial or consumer use.

Salvable dead tree—A downed or standing dead tree considered currently or potentially merchantable by regional standards.

Saplings—Live trees 1.0 inch through 4.9 inches d.b.h.

Saw log—A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with a minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods, or meeting other combinations of size and defect specified by regional standards.

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 diameter outside bark (d.o.b.).

Sawtimber volume—Net volume of the saw-log portion of live sawtimber in board feet, International 1/4-inch rule (unless specified otherwise), from stump to a minimum 7.0 inches top d.o.b. for softwoods and a minimum 9.0 inches top d.o.b. for hardwoods.

Seedlings—Live trees less than 1.0 inch d.b.h. and at least 1 foot in height.

Select red oaks—A group of species in the genus Quercus that includes cherrybark oak, northern red oak, and Shumard oak.

Select white oaks—A group of species in the genus Quercus that includes white oak, swamp white oak, bur oak, swamp chestnut oak, and chinkapin oak.

Site index—An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Snag—A standing dead tree. In the current inventory, a snag must be 5.0 inches d.b.h./d.r.c. and 4.5 feet tall, and have a lean angle less than 45 degrees from vertical. A snag my be either self-supported by its roots, or supported by another tree or snag.

Softwood—A coniferous tree, usually evergreen, having needles or scale-like leaves.

Sound dead—The net volume in salvable dead trees.

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

Stand-size class—A classification of forest land based on the size class of live trees in the area. The classes include

> ***Nonstocked*—**Forest land stocked with less than 10 percent of full stocking with live trees. Examples are recently cutover areas or recently reverted agricultural fields.

***Seedling-sapling*—**Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in seedlings or saplings or both.

***Poletimber*—**Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in poletimber or sawtimber trees or both, and in which the stocking of poletimber exceeds that of sawtimber.

***Sawtimber*—**Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in poletimber or sawtimber trees or both, and in which the stocking of sawtimber is at least equal to that of poletimber.

State—An ownership class of public lands owned by states or lands leased by states for more than 50 years.

Stocking—The degree of occupancy of land by trees, measured by basal area or number of trees by size and spacing, or both, compared to a stocking standard; that is, the basal area or number of trees, or both, required to fully utilize the growth potential of the land.

Timberland—Forest land that is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. (Note—Areas qualifying as timberland are capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands. Currently inaccessible and inoperable areas are included.)

Timber products output—All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

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 15 feet at maturity.

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

Tops—The wood of a tree above the merchantable height (or above the point on the stem 4.0 inches diameter outside bark (d.o.b.) or to the point where the central stem breaks into limbs). It includes the usable material in the uppermost stem.

Urban forest land—Land that would otherwise meet the criteria for timberland but is in an urban-suburban area surrounded by commercial, industrial, or residential development and not likely to be managed for the production of industrial wood products on a continuing basis. Wood removed would be for land clearing, fuelwood, or esthetic purposes. Such forest land may be associated with industrial, commercial, residential subdivision, industrial parks, golf course perimeters, airport buffer strips, and public urban parks that qualify as forest land.

Unreserved forest land—Forest land not withdrawn from harvest by statute or administrative regulation. Includes forest lands that are not capable of producing in excess of 20 cubic feet per acre per year of industrial wood in natural stands.

Veneer log—A roundwood product from which veneer is sliced or sawn and that usually meets certain standards of minimum diameter and length and maximum defect.

Weight—The weight of wood and bark, oven-dry basis (approximately 12 percent moisture content).

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Unit[1]	Ownership layer[2]	Classified NLCD layer[3]	Area	Selected[5]	Nonforest office plots[6]	Field check plots[7]	Field check plots measured[8]	Forest plots measured[9]	Forest plots measured for change[10]	Plots not measured[11]
				number of plots						
			----acres[4]----				------			
1	Nicolet NF	Nonforest–nonforest edge	33,000	13	2	11	11	11	4	0
		Forest	534,000	219	0	219	219	217	93	0
		Forest edge	90,000	30	1	29	29	28	13	0
		All	657,000	262	3	259	259	256	110	0
1 & 2	Chequamegon NF	Nonforest	10,000	8	4	4	4	3	2	0
		Nonforest edge	51,000	25	4	21	21	21	13	0
		Forest	651,000	261	4	257	257	257	107	0
		Forest edge	141,000	50	3	47	47	44	17	0
		All	853,000	344	15	329	329	325	139	0
1	Other public	Nonforest	41,000	17	16	1	1	0	0	0
		Nonforest edge	45,000	16	8	8	8	6	2	0
		Forest	209,000	76	1	75	75	75	24	0
		Forest edge	71,000	25	5	20	20	20	6	0
		All	366,000	134	30	104	104	101	32	0
2	Other public	Nonforest	23,000	10	8	2	2	0	0	0
		Nonforest edge	59,000	14	8	6	6	6	3	0
		Forest	251,000	97	3	94	92	88	27	2
		Forest edge	101,000	38	5	33	33	27	13	0
		All	434,000	159	24	135	133	121	43	2
3	Other public	Nonforest	33,000	11	10	1	1	1	1	0
		Nonforest edge	73,000	21	13	8	8	7	5	0
		Forest	200,000	67	4	63	63	58	22	0
		Forest edge	119,000	54	8	46	46	42	19	0
		All	425,000	153	35	118	118	108	47	0
4	Other public	Nonforest	60,000	18	16	2	2	2	1	0
		Nonforest edge	57,000	23	9	14	14	10	2	0
		Forest	56,000	18	2	16	15	14	6	1
		Forest edge	65,000	30	6	24	24	22	7	0
		All	238,000	89	33	56	55	48	16	1

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Unit[1]	Ownership layer[2]	Classified NLCD layer[3]	Area	Selected[5]	Nonforest office plots[6]	Field check plots[7]	Field check plots measured[8]	Forest plots measured[9]	Forest plots measured for change[10]	Plots not measured[11]
5	Other public	Nonforest	77,000	43	38	5	5	4	1	0
		Nonforest edge	96,000	35	18	17	17	10	4	0
		Forest	54,000	11	1	10	10	10	4	0
		Forest edge	80,000	34	11	23	22	21	10	1
		All	307,000	123	68	55	54	45	19	1
All public lands			3,280,000	1,264	208	1,056	1,052	1,004	406	4
1	Private	Nonforest	716,000	265	245	20	20	9	5	0
		Nonforest edge	721,000	249	113	136	132	113	36	4
		Forest	2,480,000	922	18	904	870	867	251	34
		Forest edge	1,015,000	393	42	351	337	322	89	14
		All	4,932,000	1,829	418	1,411	1,359	1,311	381	52
2	Private	Nonforest	1,142,000	425	389	36	32	27	9	4
		Nonforest edge	1,078,000	392	164	228	213	182	61	15
		Forest	3,290,000	1,193	33	1,160	1,090	1,079	330	70
		Forest edge	1,422,000	529	52	477	437	410	132	40
		All	6,932,000	2,539	638	1,901	1,772	1,698	532	129
3	Private	Nonforest	2,295,000	853	779	74	70	40	16	4
		Nonforest edge	1,575,000	565	274	291	270	225	89	21
		Forest	1,603,000	597	20	577	520	514	208	57
		Forest edge	1,387,000	522	76	446	399	376	142	47
		All	6,860,000	2,537	1,149	1,388	1,259	1,155	455	129
4	Private	Nonforest	2,538,000	953	876	77	70	49	21	7
		Nonforest edge	1,552,000	555	291	264	243	204	77	21
		Forest	788,000	294	6	288	263	262	114	25
		Forest edge	1,164,000	447	57	390	352	333	119	38
		All	6,042,000	2,249	1,230	1,019	928	848	331	91
5	Private	Nonforest	5,090,000	1,891	1,784	107	100	54	29	7
		Nonforest edge	1,677,000	612	417	195	172	134	50	23
		Forest	274,000	109	8	101	98	95	29	3
		Forest edge	826,000	307	93	214	200	179	67	14
		All	7,867,000	2,919	2,302	617	570	462	175	47
All private lands			32,633,000	12,073	5,737	6,336	5,888	5,474	1,874	448
All lands			35,913,000	13,337	5,945	7,392	6,940	6,478	2,280	452

Table A.— Footnote

[1]The following table lists the counties in each group used to define the estimation strata used here.

Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	
Florence	Ashland	Adams	Buffalo	Brown	Kewaunee
Forest	Barron	Chippewa	Crawford	Calumet	Manitowoc
Langlade	Bayfield	Clark	Dunn	Columbia	Milwaukee
Lincoln	Burnett	Eau Claire	Grant	Dane	Outagamie
Marinette	Douglas	Jackson	Iowa	Dodge	Ozaukee
Menominee	Iron	Juneau	La Crosse	Door	Racine
Oconto	Polk	Marathon	Lafayette	Fond du Lac	Rock
Oneida	Price	Marquette	Pepin	Green	Sheboygan
Shawano	Rusk	Monroe	Pierce	Green Lake	Walworth
Vilas	Sawyer	Portage	Richland	Jefferson	Washington
	Taylor	Waupaca	St. Croix	Kenosha	Waukesha
	Washburn	Waushara	Sauk		Winnebago
		Wood	Trempealeau		
			Vernon		

[2]Ownership layer – Classification based on Protected Areas Database

[3]Classified NLCD layer – Classification based on the 1992 NLCD classification and 2-pixel edge zones.

[4]Area (Acres) – Total area defined by the intersection of the ownership and classified NLCD layers within the group of counties specified.

[5]Selected – Total number of plots selected to be sampled.

[6]Nonforest office plots – Selected plots whose observed classification as nonforest is based on examination of aerial photographs and/or digital orthoquads.

[7]Field check plots – Selected plots that required field measurement.

[8]Field check plots measured– Field check plots where the measurement was successfully completed. Excludes plots that were denied access, hazardous, or lost and a measurement was not possible.

[9]Forest plots measured – Field check plots where a forest condition was found to be present on the plot and the measurement was completed in the 2000-2004 inventory. These plots are used to estimate the current conditions such as area, volume, number of trees and biomass.

[10]Forest plots measured for change– Field check plots measured in both the 1996 inventory and the 2000-2004 inventory where a forest condition was found to be present on the plot and the measurement was completed. These plots are used to estimate change between inventories such as growth, removals, mortality, and area change.

[11]Plots not measured – Plots selected for field measurement; but not measured due to denied access, hazardous condition, or other complications.

Table B.—State-level estimates of major forest resource attributes and their sampling errors

Item	State total	Sampling error
Growing Stock	million cubic feet	percent
Volume	19666.5	1.10
Average annual net growth	653.1	3.88
Average annual removals	346.3	7.33
Average annual mortality	179.7	5.24
Sawtimber	million board feet	percent
Volume	54847.0	1.59
Average annual net growth	2253.9	4.38
Average annual removals	970.1	9.73
Average annual mortality	416.8	0.97
Area	thousand acres	percent
Forest land	16037.2	0.55
Timberland	15762.0	0.57
Biomass (aboveground dry weight of all live trees)	million dry tons	percent
Forest land	602.6	0.95
Timberland	593.5	0.97

Table C.— Percent compliance to measurement quality objectives (MQO) tolerances of variables for blind check plots, 2004

Variable	Measurement quality objective		Wisconsin		Midwestern States	
	Tolerance	Objective	% of data within tolerance	Number of observations	% of data within tolerance	Number of observations
		Tree-level variables				
Diameter at breast height	±0.1 /20 in.	95	94.8	6,598	92.7	23,933
Diameter at root collar	±0.1 /20 in.	95	--	0	60.7	28
Azimuth	±10 º	90	98.9	6,598	98.4	23,961
Horizontal distance	±0.2 /1.0 ft	90	98.3	6,598	97.1	23,961
Species	No Tolerance	95	96.5	6,598	96.2	23,961
Tree genus	No Tolerance	99	99.1	6,598	99.2	23,951
Tree status	No Tolerance	95	99.5	6,598	99.1	23,961
Rotten/missing cull	±10 percent	90	99.2	4,638	98.6	16,444
Total length	±10 percent	90	88.3	4,349	82.3	15,512
Actual length	±10 percent	90	86.9	512	79.8	1,745
Compacted crown ratio	±10 percent	90	90.9	6,020	87.6	21,490
Uncompacted crown ratio	±10 percent	90	93.2	161	79.4	878
Crown class	No Tolerance	85	87.4	6,020	83.1	21,490
Decay class	±1 class	90	97.7	564	95.0	2,199
Cause of death	No Tolerance	80	96.8	564	93.5	2,199
Condition	No Tolerance	99	98.3	6,598	97.4	23,961
Crown position	No Tolerance		94.0	133	80.8	714
Crown light exposure	±1 class	85	94.4	161	91.0	878
Sapling crown vigor class	No Tolerance	85	60.7	28	66.1	165
Crown density	±10 percent	90	88.0	133	70.3	714
Crown dieback	±10 percent	90	98.5	133	96.8	714
Transparency	±10 percent	90	94.7	133	85.7	714
NC tree class	No Tolerance	90	94.3	6,561	92.4	23,610
NC damage agent 1	No Tolerance	90	93.0	6,020	92.0	21,490
NC damage agent 2	No Tolerance	90	87.0	995	87.0	3,420
Utilization	No Tolerance	99	85.0	40	88.7	326
NC tree grade	No Tolerance	90	76.8	955	68.2	3,826
Dbh of live and sound dead trees	±0.1 /20 in.	95	94.5	6,167	92.5	21,972
Dbh of dead rotten trees	±1 /20 in.	95	100.0	271	98.5	997
Total length trees 40 ft. plus	±10 percent	90	88.8	3,730	83.7	12,763
Total length trees less than 40 ft.	±10 percent	90	84.8	619	76.1	2,749
Total length trees less than 5 in. dbh	±10 percent	90	96.4	28	71.7	180
		Seedling-level variables				
Species	No Tolerance	85	90.6	1,449	91.3	5,031
Genus	No Tolerance	90	97.0	1,449	97.2	5,031
Seedling count	±20 percent	90	69.1	1,449	66.6	5,031
Seedling count coded	No Tolerance	90	75.8	1,449	73.2	5,031
		Condition-level variables				
Condition status	No Tolerance	99	99.5	561	99.1	2,011
Reserve status	No Tolerance	99	99.8	561	99.4	2,011

Continued

Table C.— continued

Variable	Measurement quality objective		Wisconsin		Midwestern States	
	Tolerance	Objective	% of data within tolerance	Number of observations	% of data within tolerance	Number of observations
Owner group	No Tolerance	99	99.3	457	98.4	1,598
Forest type (type)	No Tolerance	95	77.7	457	80.9	1,598
Forest type (group)	No Tolerance	99	89.5	457	89.9	1,598
Stand size	No Tolerance	99	88.4	457	87.9	1,598
Regeneration status	No Tolerance	99	99.3	457	99.1	1,598
Tree density	No Tolerance	99	91.2	457	93.6	1,598
Owner class	No Tolerance	99	95.0	457	95.7	1,598
Owner status	No Tolerance	99	99.6	457	98.9	1,598
Regeneration species	No Tolerance	99	99.3	457	98.9	1,598
Stand Age	±10 yrs	95	60.0	457	63.9	1,598
Disturbance 1	No Tolerance	99	92.7	454	93.1	1,586
Disturbance Year 1	±1 yr	99	100.0	12	80.3	66
Disturbance 2	No Tolerance	99	97.5	40	94.5	163
Disturbance Year 2	±1 yr	99	--	0	50.0	4
Disturbance 3	No Tolerance	99	100.0	1	91.7	12
Disturbance Year 3	±1 yr	99	--	0	--	0
Treatment 1	No Tolerance	99	94.5	454	94.8	1,586
Treatment Year 1	±1 yr	99	91.7	36	91.7	96
Treatment 2	No Tolerance	99	95.0	60	87.1	178
Treatment Year 2	±1 yr	99	100.0	8	100.0	13
Treatment 3	No Tolerance	99	100.0	10	97.1	35
Treatment Year 3	±1 yr	99	100.0	2	100.0	5
Physiographic Class	No Tolerance	80	74.2	457	75.9	1,598
Present Nonforest Use	No Tolerance	90	100.0	185	99.9	758
NC Land Use	No Tolerance	99	95.0	561	93.2	2,011
		Sublot-Level Variables				
Subplot Center Condition	No Tolerance	99	97.9	1,406	97.1	5,507
Microplot Center Condition	No Tolerance	99	97.4	1,406	96.8	5,507
Slope	±10 percent	90	99.0	1,406	97.5	5,507
Aspect	±10 º	90	88.1	1,307	88.0	5,082
Snow/Water Depth	±0.5 ft		56.3	1,406	66.8	5,507
		Plot-Level Variables				
Distance to Road	No Tolerance	90	86.4	354	80.4	1,400
Water on Plot	No Tolerance	90	87.9	354	87.4	1,400
Road type code	No Tolerance	90	84.0	282	76.0	1,028
Recreational use restrictions	No Tolerance	90	92.6	282	90.4	1,028
Recreational use 1	No Tolerance	90	94.7	282	94.3	1,028
Recreational use 2	No Tolerance	90	100.0	2	100.0	16
Recreational use 3	No Tolerance	90	--	0	90.9	11
Road access	No Tolerance	90	95.8	354	93.9	1,400
Elevation	±50 ft		81.9	349	82.0	1,258

Continued

Table C.— contnued

Variable	Measurement quality objective		Wisconsin		Midwestern States	
	Tolerance	Objective	% of data within tolerance	Number of observations	% of data within tolerance	Number of observations
Latitude - decimal degrees	±0.0001 dg	99	92.3	351	91.6	1,268
Longitude - decimal degrees	±0.0001 dg	99	87.5	351	90.8	1,268
Latitude – feet	±140 ft		99.4	351	98.3	1,268
Longitude – feet	±140 ft		99.4	351	97.6	1,268
		Boundary-Level Variables				
Boundary Change	No Tolerance	99	100.0	94	95.3	301
Contrasting Condition	No Tolerance	99	92.6	94	93.0	301
Left Azimuth	±10 degrees	90	83.0	94	85.0	301
Corner Mapped	No Tolerance	90	95.7	94	97.3	301
Corner Azimuth	±10 degrees	90	80.0	5	63.6	11
Corner Distance	±1 ft	90	60.0	5	54.5	11
Right Azimuth	±10 degrees	90	81.9	94	85.0	301
		Site Index Tree-Level Variables				
Condition List	No Tolerance	99	96.0	803	90.9	2,811
Diameter	±0.1 /20 in.	95	93.1	627	90.2	2,203
Species	No Tolerance	95	93.9	803	95.9	2,811
Genus	No Tolerance	99	99.6	803	99.7	2,811
Azimuth	±10 degrees	90	98.6	627	98.1	2,203
Distance	±5 feet	90	100.0	627	99.5	2,203
Total Length	±10 percent	90	93.9	627	90.8	2,203
Diameter Age	±5 years	95	74.0	627	78.2	2,203
Site Index Method	No Tolerance	99	100.0	803	99.9	2,811
Field Site Index	No Tolerance	99	88.4	803	93.6	2,811

Table D.— Observed relative bias values (Average [Field crew - QA crew]) for measurement variables, blind check plots, 2004

Variable	Unit of measure	Wisconsin Rel. bias	Wisconsin 95 % CI lower limit	Wisconsin 95 % CI upper limit	Wisconsin No. of obs.	Midwestern States Rel. bias	Midwestern States 95 % CI lower limit	Midwestern States 95 % CI upper limit	Midwestern States No. of obs.
			Tree-level variables						
Diameter at breast height	inches	-0.01	-0.02	-0.01	6,598	-0.01	-0.02	0.00	23,933
Diameter at root collar	inches	--	--	--	0	0.11	-0.12	0.43	28
Azimuth	degrees	0.60	0.46	0.78	6,598	0.29	0.18	0.39	23,961
Horizontal distance	feet	0.00	-0.01	0.03	6,598	0.00	-0.01	0.01	23,961
Species	code	0.28	-0.60	1.20	6,598	0.07	-0.29	0.44	23,961
Tree genus	code	0.29	-0.60	1.23	6,598	0.08	-0.38	0.47	23,951
Tree status	code	0.00	0.00	0.00	6,598	0.00	0.00	0.00	23,961
Rotten/missing cull	%	-0.02	-0.14	0.09	4,638	0.03	-0.03	0.11	16,444
Total length	feet	1.01	0.43	1.41	4,349	0.24	-0.05	0.45	15,512
Actual length	feet	-0.75	-2.12	0.45	512	-1.82	-3.61	-0.41	1,745
Compacted crown ratio	%	-0.09	-0.30	0.10	6,020	0.41	0.27	0.53	21,490
Uncompacted crown ratio	%	1.29	0.07	2.39	161	-5.86	-7.27	-4.57	878
Crown class	code	0.02	0.00	0.03	6,020	0.02	0.01	0.02	21,490
Decay class	code	0.02	-0.05	0.09	564	0.06	0.03	0.08	2,199
Cause of death	code	0.62	-0.06	1.37	564	1.44	0.88	2.02	2,199
Condition	code	0.01	0.01	0.01	6,598	0.00	0.00	0.01	23,961
Crown position	code	-0.03	-0.07	0.02	133	-0.23	-0.28	-0.18	714
Crown light exposure	code	-0.02	-0.15	0.11	161	-0.18	-0.24	-0.11	878
Sapling crown vigor class	code	-0.32	-0.50	-0.11	28	-0.21	-0.30	-0.13	165
Crown density	%	0.75	-0.81	2.09	133	-5.47	-6.89	-4.19	714
Crown dieback	%	-0.38	-1.07	0.49	133	-0.37	-0.89	0.16	714
Transparency	%	-2.33	-3.46	-1.18	133	-3.69	-4.50	-2.86	714
NC tree class	code	0.07	0.01	0.12	6,561	0.10	0.05	0.15	23,610
NC damage agent 1	code	4.96	3.17	6.81	6,020	5.24	4.14	6.36	21,490
NC damage agent 2	code	9.17	1.66	16.29	995	5.80	2.22	9.74	3,420
Utilization	code	-0.10	-0.23	0.03	40	-0.02	-0.06	0.03	326
NC tree grade	code	-1.74	-8.04	4.21	955	0.26	-3.07	4.43	3,826
D.b.h. of live and sound dead trees	inches	-0.01	-0.02	-0.01	6,167	-0.02	-0.03	-0.01	21,972
D.b.h. of dead rotten trees	inches	-0.01	-0.03	0.00	271	-0.04	-0.06	-0.01	997
Total length trees 40 ft. plus	feet	1.49	1.28	1.69	3,730	0.84	0.69	1.00	12,763
Total length trees less than 40 ft.	feet	-1.94	-6.65	0.25	619	-2.54	-4.04	-1.49	2,749
Total length trees less than 5 in. dbh	feet	1.11	-0.61	3.14	28	2.77	0.70	4.88	180
			Seedling-level variables						
Species	code	0.00	-0.01	0.02	1,449	0.00	-0.01	0.01	5,031
Genus	code	0.00	-0.01	0.01	1,449	0.00	0.00	0.01	5,031
Seedling count	percent	-11.10	-18.10	-5.50	1,449	-10.90	-13.50	-8.30	5,031
Seedling count coded	percent	0.04	0.00	0.10	1,449	0.04	0.02	0.07	5,031
			Condition-level variables						
Condition status	code	0.00	0.00	0.01	561	0.00	-0.02	0.01	2,011
Reserve status	code	0.00	0.00	0.01	561	0.00	0.00	0.01	2,011
Owner group	code	-0.02	-0.27	0.24	457	-0.04	-0.20	0.10	1,598
Forest type (type)	code	7.78	-4.12	18.05	457	14.58	8.89	19.97	1,598

Continued

Table D.— continued

Variable	Unit of measure	Wisconsin Rel. bias	Wisconsin 95 % CI lower limit	Wisconsin 95 % CI upper limit	Wisconsin No. of obs.	Midwestern States Rel. bias	Midwestern States 95 % CI lower limit	Midwestern States 95 % CI upper limit	Midwestern States No. of obs.
Forest type (group)	code	8.10	-3.94	18.38	457	14.58	8.85	19.90	1,598
Stand size	code	0.04	0.00	0.07	457	-0.01	-0.03	0.01	1,598
Regeneration Status	code	0.00	0.00	0.01	457	0.00	0.00	0.01	1,598
Tree density	code	-0.01	-0.04	0.02	457	0.00	-0.01	0.01	1,598
Owner class	code	-0.05	-0.32	0.23	457	-0.05	-0.22	0.12	1,598
Owner status	code	0.01	0.00	0.02	457	0.00	-0.01	0.02	1,598
Regeneration species	code	0.32	-0.42	1.09	457	0.10	-0.46	0.62	1,598
Stand age	years	0.46	-0.82	1.49	457	-0.72	-1.32	-0.11	1,598
Disturbance 1	code	0.28	-0.70	1.20	454	-1.65	-2.33	-0.90	1,586
Disturbance year 1	year	0.00	0.00	0.00	12		484.55	2181.05	66
Disturbance 2	code	-0.25	-0.75	0.00	40	-1.50	-3.02	-0.12	163
Disturbance year 2	year	--	--	--	0		0.25	5998.00	4
Disturbance 3	code	0.00	0.00	0.00	1	-6.67	-20.00	0.00	12
Disturbance year 3	year	--	--	--	0	--	--	--	0
Treatment 1	code	0.11	-0.28	0.42	454	0.13	-0.03	0.28	1,586
Treatment year 1	year	0.17	-0.15	0.44	36	0.11	-0.07	0.30	96
Treatment 2	code	0.50	-1.50	2.50	60	3.71	1.88	5.84	178
Treatment year 2	year	0.00	-0.38	0.38	8	0.08	-0.23	0.35	13
Treatment 3	code	0.00	0.00	0.00	10	-1.14	-3.43	0.00	35
Treatment year 3	year	0.00	0.00	0.00	2	0.00	0.00	0.00	5
Physiographic class	code	0.14	-0.28	0.52	457	0.05	-0.14	0.25	1,598
Present nonforest use	code	0.00	0.00	0.00	185	0.05	0.00	0.16	758
NC land use	code	0.06	-0.22	0.34	561	0.03	-0.24	0.26	2,011
Sublot-level variables									
Subplot center condition	code	0.00	0.00	0.01	1,406	0.00	0.00	0.01	5,507
Microplot center condition	code	0.00	0.00	0.01	1,406	0.00	0.00	0.01	5,507
Slope	%	-0.57	-2.62	0.23	1,406	0.69	-0.34	1.78	5,507
Aspect	degrees	1.04	-0.87	3.33	1,307	0.09	-1.54	1.53	5,082
Snow/water depth	feet	-1.40	-2.87	-0.23	1,406	-0.44	-0.84	-0.16	5,507
Plot-Level Variables									
Distance to Road	code	-0.02	-0.07	0.04	354	0.00	-0.05	0.04	1,400
Water on Plot	code	0.10	-0.10	0.28	354	0.12	0.01	0.21	1,400
Road type code	code	0.00	-0.09	0.09	282	0.07	0.01	0.13	1,028
Recreational use restrictions	code	0.41	0.16	0.74	282	0.14	-0.11	0.39	1,028
Recreational use 1	code	-0.11	-0.22	0.00	282	-0.09	-0.15	-0.04	1,028
Recreational use 2	code	0.00	0.00	0.00	2	0.00	0.00	0.00	16
Recreational use 3	code	--	--	--	0	-0.09	-0.36	0.00	11
Road access	code	-0.03	-0.09	0.03	354	-0.04	-0.07	-0.02	1,400
Elevation	feet	-71.60	-187.40	2.80	349	-34.20	-74.30	-6.50	1,258
Latitude - decimal degrees	degrees	0.00	0.00	0.00	351	-0.01	-0.02	0.00	1,268
Longitude - decimal degrees	degrees	0.00	0.00	0.00	351	0.66	0.00	1.99	1,268
Latitude – feet	feet	5.10	-1.70	19.10	351			-47.50	1,268
Longitude – feet	feet	-6.00	-18.90	0.90	351		171.70	30354.30	1,268

Continued

Table D.— continued

Variable	Unit of measure	Wisconsin Rel. bias	Wisconsin 95 % CI lower limit	Wisconsin 95 % CI upper limit	Wisconsin No. of obs.	Midwestern States Rel. bias	Midwestern States 95 % CI lower limit	Midwestern States 95 % CI upper limit	Midwestern States No. of obs.
			Boundary-Level Variables						
Boundary Change	code	0.00	0.00	0.00	94	0.07	0.03	0.12	301
Contrasting Condition	code	0.01	-0.04	0.07	94	0.00	-0.03	0.04	301
Left Azimuth	degrees	0.84	-10.85	11.02	94	-4.43	-11.22	0.84	301
Corner Mapped	code	-0.04	-0.09	-0.01	94	-0.01	-0.03	0.01	301
Corner Azimuth	degrees	-3.40	-9.00	0.80	5	1.00	-5.05	7.86	11
Corner Distance	feet	0.80	-0.90	3.20	5	-1.55	-8.50	2.59	11
Right Azimuth	degrees	-2.12	-11.62	5.84	94	2.19	-2.44	7.10	301
			Site Index Tree-Level Variables						
Condition List	code	0.24	0.11	0.37	803	0.21	-0.06	0.41	2,811
Diameter	inches	0.01	-0.03	0.06	627	-0.01	-0.03	0.01	2,203
Species	code	0.06	-0.31	0.56	803	-0.04	-0.25	0.17	2,811
Genus	code	0.20	-0.15	0.65	803	-0.03	-0.24	0.18	2,811
Azimuth	degrees	0.13	-0.72	1.20	627	-0.11	-0.53	0.34	2,203
Distance	feet	0.00	-0.03	0.04	627	0.04	0.00	0.08	2,203
Total Length	feet	1.22	0.78	1.65	627	0.22	-0.04	0.49	2,203
Diameter Age	years	1.15	0.62	1.72	627	0.13	-0.14	0.42	2,203
Site Index Method	code	0.00	0.00	0.00	803	0.00	0.00	0.00	2,811
Field Site Index	feet	1.66	0.98	2.29	803	0.45	0.24	0.68	2,811

Table E.— FIA nonresponse by strata for selected inventories, 2004

Owner-Strata	Total number of plots selected	Observed	Denied access	Hazardous	Other	Response rate %
		----------sum of plot portions----------				
		Wisconsin				
National Forest						
Nonforest	10	10.0	0.0	0.0	0.0	100.0
Nonforest edge	36	36.0	0.0	0.0	0.0	100.0
Forest edge	480	479.8	0.3	0.0	0.0	99.9
Forest	80	80.0	0.0	0.0	0.0	100.0
Total	606	605.8	0.3	0.0	0.0	100.0
Other Public						
Nonforest	99	99.0	0.0	0.0	0.0	100.0
Nonforest edge	109	109.0	0.0	0.0	0.0	100.0
Forest edge	269	266.0	3.0	0.0	0.0	98.9
Forest	181	180.0	1.0	0.0	0.0	99.4
Total	658	654.0	4.0	0.0	0.0	99.4
Private						
Nonforest	4,387	4365.0	22.0	0.0	0.0	99.5
Nonforest edge	2,373	2283.8	88.2	0.9	0.0	96.2
Forest edge	3,115	2917.1	196.1	1.8	0.0	93.6
Forest	2,198	2036.3	156.9	4.8	0.0	92.6
Total	12,073	11602.2	463.3	7.5	0.0	96.1
Total	13,337	12862.0	467.5	7.5	0.0	96.4
		Midwestern States				
National Forest						
Nonforest	147	147.0	0.0	0.0	0.0	100.0
Nonforest edge	190	189.0	0.0	0.0	1.0	99.5
Forest edge	3,080	3037.5	5.3	33.3	4.0	98.6
Forest	386	379.0	0.0	5.0	2.0	98.2
Total	3,803	3752.5	5.3	38.3	7.0	98.7
Other Public						
Nonforest	1,271	1268.0	2.0	1.0	0.0	99.8
Nonforest edge	800	795.0	2.0	3.0	0.0	99.4
Forest edge	4,399	4350.8	10.0	32.3	6.0	98.9
Forest	1,118	1103.5	4.0	10.5	0.0	98.7
Total	7,588	7517.3	18.0	46.8	6.0	99.1
Private						
Nonforest	56,599	56477.2	119.0	2.8	0.0	99.8
Nonforest edge	12,030	11610.9	409.2	9.9	0.0	96.5
Forest edge	12,089	11305.4	759.9	23.7	0.0	93.5
Forest	9,254	8590.2	651.2	12.7	0.0	92.8
Total	89,972	87983.7	1939.3	49.0	0.0	97.8
Total	101,363	99253.4	1962.5	134.0	13.0	97.9

Table 1.—Percentage of area by land status, Wisconsin, 2004

Land status	Percentage of area
Accessible forest land	
Unreserved forest land	
Timberland	41.6
Unproductive	0.4
Total unreserved forest land	42.0
Reserved forest land	
Productive	0.3
Unproductive	- -
Total reserved forest land	0.3
All accessible forest land	42.3
Nonforest and other land	
Nonforest land	50.6
Water	
Census	3.0
Non-Census	0.5
All nonforest and other land	54.1
Nonsampled land	
Access denied	3.5
Hazardous conditions	0.1
Other	- -
All land	100.0
Total area (thousands of acres)	35,912

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

Table 2.—Area of forest land by owner class and forest-land status, Wisconsin, 2004

(In thousand acres)

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	1,390.8	11.9	1,402.7	27.1	- -	27.1	1,429.8
Other Federal							
National Park Service	6.6	- -	6.6	28.8	- -	28.8	35.4
Fish and Wildlife Service	81.5	- -	81.5	3.3	- -	3.3	84.8
Department of Defense or Energy	47.4	- -	47.4	- -	- -	- -	47.4
Other Federal	20.6	- -	20.6	1.3	- -	1.3	22.0
State and local government							
State	1,012.3	15.8	1,028.1	39.0	- -	39.0	1,067.2
Local (county, municipal, etc.)	2,369.9	22.1	2,392.1	3.9	- -	3.9	2,396.0
Other non-Federal lands	5.4	- -	5.4	- -	- -	- -	5.4
Private							
Undifferentiated private	10,827.3	115.5	10,942.8	6.5	- -	6.5	10,949.3
All owners	15,762.0	165.3	15,927.3	109.9	- -	109.9	16,037.2

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

Table 3.—Area of forest land by forest-type group and productivity class, Wisconsin, 2004

(In thousand acres)

Forest type group	Site productivity class (cubic feet/acre/year)							All classes
	0-19	20-49	50-84	85-119	120-164	165-224	225+	
White / red / jack pine group	11.2	275.2	376.9	535.7	254.5	1.5	6.7	1,461.6
Spruce / fir group	35.0	804.5	346.8	125.3	30.6	- -	- -	1,342.1
Pinyon / juniper group	1.2	15.2	2.0	- -	- -	- -	- -	18.3
Exotic softwoods group	2.2	5.1	5.8	7.7	1.5	- -	- -	22.2
Oak / pine group	3.4	109.8	204.3	170.9	50.4	2.9	2.2	543.8
Oak / hickory group	47.1	853.5	1,642.1	751.7	117.0	17.2	- -	3,428.6
Oak / gum / cypress group	- -	- -	1.1	- -	- -	- -	- -	1.1
Elm / ash / cottonwood group	31.3	629.7	425.8	240.4	19.5	0.7	- -	1,347.5
Maple / beech / birch group	9.8	1,408.8	2,056.8	867.8	90.9	13.6	0.9	4,448.6
Aspen / birch group	19.2	459.0	1,297.9	1,274.4	191.6	21.9	1.6	3,265.6
Exotic hardwoods group	- -	4.6	- -	- -	- -	- -	- -	4.6
Nonstocked	5.0	58.6	53.9	24.6	11.1	- -	- -	153.1
All forest type groups	165.3	4,624.0	6,413.4	3,998.4	767.0	57.8	11.4	16,037.2

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

Table 4.—Area of forest land by forest-type group, ownership group, and land status, Wisconsin, 2004

(In thousand acres)

Forest type group	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
White / red / jack pine group	125.9	2.4	31.8	5.3	410.5	2.5	874.2	9.0	1,461.6
Spruce / fir group	207.6	10.5	1.6	- -	351.3	5.3	742.3	23.4	1,342.1
Pinyon / juniper group	- -	- -	- -	- -	- -	2.0	15.2	1.2	18.3
Exotic softwoods group	- -	- -	- -	- -	2.9	- -	17.2	2.2	22.2
Oak / pine group	34.8	2.5	19.3	1.3	143.5	4.7	337.5	- -	543.8
Oak / hickory group	41.7	2.5	47.5	2.6	481.1	16.2	2,796.8	40.2	3,428.6
Oak / gum / cypress group	- -	- -	- -	- -	- -	- -	1.1	- -	1.1
Elm / ash / cottonwood group	53.0	5.0	27.8	3.3	255.0	11.8	973.5	18.3	1,347.5
Maple / beech / birch group	548.2	14.7	13.4	15.9	771.6	25.9	3,048.2	10.7	4,448.6
Aspen / birch group	375.9	1.2	11.7	5.0	939.1	11.8	1,908.0	12.8	3,265.6
Exotic hardwoods group	- -	- -	- -	- -	- -	- -	4.6	- -	4.6
Nonstocked	3.7	- -	3.0	- -	32.7	0.7	108.7	4.3	153.1
All forest type groups	1,390.8	38.9	156.1	33.4	3,387.7	80.9	10,827.3	122.0	16,037.2

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

Table 5.—Area of forest land by forest-type group and stand-size class, Wisconsin, 2004

(In thousand acres)

Forest type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	793.6	424.1	243.9	- -	- -	1,461.6
Spruce / fir group	247.8	528.4	565.9	- -	- -	1,342.1
Pinyon / juniper group	1.2	7.5	9.6	- -	- -	18.3
Exotic softwoods group	5.9	9.2	7.1	- -	- -	22.2
Oak / pine group	220.0	172.0	151.8	- -	- -	543.8
Oak / hickory group	1,978.3	1,042.4	407.9	- -	- -	3,428.6
Oak / gum / cypress group	1.1	- -	- -	- -	- -	1.1
Elm / ash / cottonwood group	349.9	705.3	292.3	- -	- -	1,347.5
Maple / beech / birch group	2,011.2	2,038.5	398.9	- -	- -	4,448.6
Aspen / birch group	439.0	1,510.2	1,316.4	- -	- -	3,265.6
Exotic hardwoods group	- -	- -	4.6	- -	- -	4.6
Nonstocked	- -	- -	- -	- -	153.1	153.1
All forest type groups	6,048.1	6,437.6	3,398.4	- -	153.1	16,037.2

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

Table 6.—Area of forest land by forest-type group and stand-age class, Wisconsin, 2004

(In thousand acres)

Forest type group	Non stocked	Stand-age class (years)											All classes
		1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161-180	181-200	201+	
White / red / jack pine group	- -	226.6	481.3	421.6	184.3	80.3	33.6	9.9	8.4	3.5	4.2	5.0	1,461.6
Spruce / fir group	- -	63.4	229.8	434.1	395.6	154.8	31.4	17.4	8.5	7.1	- -	- -	1,342.1
Pinyon / juniper group	- -	- -	11.9	5.7	0.7	- -	- -	- -	- -	- -	- -	- -	18.3
Exotic softwoods group	- -	7.1	7.8	7.3	- -	- -	- -	- -	- -	- -	- -	- -	22.2
Oak / pine group	- -	104.8	122.0	217.0	81.5	15.0	3.4	- -	- -	- -	- -	- -	543.8
Oak / hickory group	- -	214.6	383.2	1,055.2	1,195.7	444.2	87.7	37.8	10.2	- -	- -	- -	3,428.6
Oak / gum / cypress group	- -	- -	- -	1.1	- -	- -	- -	- -	- -	- -	- -	- -	1.1
Elm / ash / cottonwood group	- -	75.3	283.3	471.0	357.0	126.2	26.1	5.7	- -	- -	- -	- -	1,347.5
Maple / beech / birch group	- -	207.1	531.9	1,527.8	1,597.5	499.5	63.6	18.5	2.8	- -	- -	- -	4,448.6
Aspen / birch group	- -	883.7	1,103.9	883.3	360.8	32.5	1.4	- -	- -	- -	- -	- -	3,265.6
Exotic hardwoods group	- -	4.6	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	4.6
Nonstocked	153.1	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	153.1
All forest type groups	153.1	1,787.3	3,155.2	5,024.1	4,173.1	1,352.6	247.1	89.3	29.9	10.6	4.2	5.0	16,037.2

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

Table 7.—Area of forest land by forest-type group and stand-origin, Wisconsin, 2004

(In thousand acres)

Forest type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	800.8	660.9	1,461.6
Spruce / fir group	1,296.1	46.0	1,342.1
Pinyon / juniper group	18.3	- -	18.3
Exotic softwoods group	8.7	13.5	22.2
Oak / pine group	457.0	86.8	543.8
Oak / hickory group	3,384.4	44.2	3,428.6
Oak / gum / cypress group	1.1	- -	1.1
Elm / ash / cottonwood group	1,346.8	0.7	1,347.5
Maple / beech / birch group	4,433.2	15.4	4,448.6
Aspen / birch group	3,242.1	23.5	3,265.6
Exotic hardwoods group	4.6	- -	4.6
Nonstocked	141.6	11.6	153.1
All forest type groups	15,134.7	902.6	16,037.2

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

Table 8.—Area of forest land by forest-type group and primary disturbance class, Wisconsin, 2004

(In thousand acres)

	Disturbance class									
Forest type group	None	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other	All forest land
White / red / jack pine group	1,439.4	0.8	2.9	13.2	2.9	- -	- -	0.7	1.7	1,461.6
Spruce / fir group	1,335.7	- -	2.9	3.4	0.1	- -	- -	- -	- -	1,342.1
Pinyon / juniper group	15.6	- -	- -	- -	- -	2.7	- -	- -	- -	18.3
Exotic softwoods group	20.0	- -	- -	- -	- -	2.2	- -	- -	- -	22.2
Oak / pine group	524.4	2.8	2.9	12.4	1.3	- -	- -	- -	- -	543.8
Oak / hickory group	3,257.2	8.8	13.4	65.6	15.3	59.3	- -	9.0	- -	3,428.6
Oak / gum / cypress group	- -	- -	- -	1.1	- -	- -	- -	- -	- -	1.1
Elm / ash / cottonwood group	1,280.5	2.3	3.1	32.6	- -	8.5	18.5	2.0	- -	1,347.5
Maple / beech / birch group	4,338.8	6.7	- -	51.6	3.0	26.9	14.4	4.4	2.9	4,448.6
Aspen / birch group	3,153.9	18.4	3.7	30.8	- -	22.3	9.8	23.8	2.8	3,265.6
Exotic hardwoods group	4.6	- -	- -	- -	- -	- -	- -	- -	- -	4.6
Nonstocked	149.4	- -	- -	- -	- -	0.8	- -	2.9	- -	153.1
All forest type groups	15,519.6	39.8	29.0	210.8	22.5	122.7	42.7	42.8	7.4	16,037.2

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

Table 9.—Area of timberland by forest-type group and stand-size class, Wisconsin, 2004

(In thousand acres)

Forest type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	785.9	421.6	234.9	- -	- -	1,442.4
Spruce / fir group	238.4	519.2	545.3	- -	- -	1,302.9
Pinyon / juniper group	1.2	7.5	6.5	- -	- -	15.2
Exotic softwoods group	5.9	7.0	7.1	- -	- -	20.0
Oak / pine group	216.1	171.6	147.5	- -	- -	535.2
Oak / hickory group	1,949.5	1,023.2	394.4	- -	- -	3,367.1
Oak / gum / cypress group	1.1	- -	- -	- -	- -	1.1
Elm / ash / cottonwood group	344.3	692.6	272.3	- -	- -	1,309.2
Maple / beech / birch group	1,977.4	2,009.4	394.7	- -	- -	4,381.5
Aspen / birch group	435.6	1,500.5	1,298.7	- -	- -	3,234.8
Exotic hardwoods group	- -	- -	4.6	- -	- -	4.6
Nonstocked	- -	- -	- -	- -	148.1	148.1
All forest type groups	5,955.4	6,352.6	3,305.9	- -	148.1	15,762.0

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

Table 10.—Number of live trees on forest land by species group and diameter class, Wisconsin, 2004

(In thousand trees)

Species group	Diameter class (inches)															All classes
	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	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups																
Eastern softwood species groups																
Other yellow pines	2,150	2,558	1,239	497	242	122	105	70	18	18	--	--	--	--	--	7,018
Eastern white and red pines	157,314	87,516	71,500	56,007	40,324	24,246	12,576	7,362	4,208	2,574	2,906	900	274	51	34	467,792
Jack pine	89,239	44,526	25,498	17,970	8,882	3,540	895	272	51	--	--	--	--	--	--	190,872
Spruce and balsam fir	917,024	274,831	103,422	42,196	14,378	4,381	2,384	1,042	337	200	129	--	--	--	--	1,360,324
Eastern hemlock	23,862	11,227	10,067	7,622	5,064	4,483	2,718	2,135	1,801	897	966	255	81	--	--	71,178
Other eastern softwoods	199,759	122,157	85,673	51,124	25,441	11,903	4,478	1,949	573	305	136	15	--	--	--	503,512
Western softwood species groups																
True fir	--	--	--	18	--	--	--	--	--	--	--	--	--	--	--	18
All softwoods	1,389,348	542,816	297,399	175,432	94,332	48,676	23,155	12,830	6,987	3,993	4,137	1,170	355	51	34	2,600,714
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	70,785	29,788	20,044	16,796	13,575	11,732	8,538	5,257	3,684	2,000	2,084	773	256	85	35	185,431
Select red oaks	109,311	26,898	18,490	18,265	17,814	16,726	13,325	8,171	4,561	2,913	2,251	844	240	122	101	240,029
Other red oaks	108,208	31,586	25,233	21,901	17,169	12,435	7,653	5,054	2,589	1,346	1,109	408	88	35	--	234,816
Hickory	86,228	25,113	15,327	9,300	6,480	3,135	1,650	599	243	138	52	--	--	--	--	148,266
Yellow birch	60,285	23,757	15,753	8,886	6,030	3,838	2,308	1,008	499	289	287	69	18	--	--	123,027
Hard maple	483,168	167,174	91,148	65,175	44,245	24,508	11,456	6,017	3,618	1,961	1,722	523	51	16	--	900,780
Soft maple	630,507	226,578	131,121	83,117	47,616	24,574	12,589	5,542	2,971	1,448	1,361	465	95	74	68	1,168,125
Beech	10,064	2,865	1,239	712	331	184	247	67	31	65	97	--	--	17	--	15,920
Ash	429,325	144,684	74,626	42,472	23,523	12,351	6,003	2,845	1,217	658	547	86	--	--	--	738,335
Cottonwood and aspen	1,396,525	356,608	139,360	73,149	46,670	28,467	15,965	6,921	2,541	994	640	107	76	13	17	2,068,053
Basswood	140,643	45,562	25,553	21,863	18,812	13,073	7,546	3,555	2,072	763	649	167	17	--	--	280,276
Black walnut	6,883	2,786	1,970	1,461	1,028	705	558	382	311	87	52	35	--	--	--	16,259
Other eastern soft hardwoods	698,325	208,440	109,717	67,836	36,113	16,053	6,887	2,969	1,473	428	500	187	34	--	17	1,148,980
Other eastern hard hardwoods	17,894	7,297	3,341	1,600	947	343	220	110	47	--	--	--	--	--	--	31,799
Eastern noncommercial hardwoods	693,795	92,892	17,457	3,466	892	134	17	50	--	--	--	17	--	--	--	808,719
All hardwoods	4,941,947	1,392,030	690,380	436,000	281,244	168,258	94,960	48,546	25,857	13,088	11,351	3,681	875	362	238	8,108,817
All species groups	6,331,294	1,934,846	987,779	611,432	375,576	216,934	118,115	61,376	32,843	17,081	15,488	4,851	1,230	413	272	10,709,531

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

Table 11.—Number of growing-stock trees on timberland by species group and diameter class, Wisconsin, 2004

(In thousand trees)

Species group	Diameter class (inches)													All classes
	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	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups														
Eastern softwood species groups														
Other yellow pines	856	377	189	87	105	52	18	18	--	--	--	--	--	1,703
Eastern white and red pines	69,586	54,480	39,633	23,785	12,308	7,118	4,113	2,492	2,763	885	256	34	34	217,487
Jack pine	23,981	17,088	8,438	3,263	861	255	33	--	--	--	--	--	--	53,919
Spruce and balsam fir	100,600	41,005	13,873	4,267	2,266	1,042	337	185	129	--	--	--	--	163,705
Eastern hemlock	9,181	6,925	4,682	4,197	2,506	1,996	1,628	850	882	220	81	--	--	33,149
Other eastern softwoods	77,302	45,360	21,227	9,682	3,664	1,533	428	271	67	15	--	--	--	159,549
Western softwood species groups														
True fir	--	18	--	--	--	--	--	--	--	--	--	--	--	18
All softwoods	281,507	165,253	88,042	45,282	21,710	11,997	6,556	3,816	3,842	1,120	337	34	34	629,529
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	17,377	14,381	11,869	9,613	7,265	4,337	2,868	1,433	1,537	434	153	33	--	71,298
Select red oaks	16,988	16,893	16,834	15,449	12,376	7,556	4,255	2,621	1,914	651	101	69	51	95,757
Other red oaks	19,783	18,253	14,344	9,475	5,986	3,841	2,030	970	681	221	17	--	--	75,600
Hickory	14,048	8,442	5,871	2,683	1,512	495	191	138	52	--	--	--	--	33,432
Yellow birch	12,533	6,900	4,494	2,637	1,626	776	383	172	203	51	18	--	--	29,793
Hard maple	83,627	59,598	39,475	21,035	9,398	4,928	2,821	1,606	1,320	424	51	--	--	224,284
Soft maple	118,167	74,801	41,643	19,915	10,179	4,225	2,176	1,073	935	383	77	54	50	273,677
Beech	1,127	663	314	149	215	67	15	51	68	--	--	17	--	2,686
Ash	67,313	38,948	21,876	11,229	5,397	2,587	1,008	590	374	52	--	--	--	149,375
Cottonwood and aspen	133,485	69,040	43,329	24,780	13,477	6,044	2,048	667	510	82	59	13	--	293,534
Basswood	23,251	20,488	17,728	12,210	7,066	3,189	1,722	598	445	99	--	--	--	86,795
Black walnut	1,674	1,254	854	653	506	348	293	87	52	35	--	--	--	5,758
Other eastern soft hardwoods	88,146	55,591	29,964	11,735	4,828	2,111	922	360	240	67	--	--	--	193,966
Other eastern hard hardwoods	2,482	1,348	746	170	135	64	47	--	--	--	--	--	--	4,992
All hardwoods	600,000	386,600	249,342	141,734	79,967	40,568	20,778	10,365	8,330	2,498	476	186	101	1,540,946
All species groups	881,507	551,853	337,384	187,015	101,677	52,565	27,334	14,181	12,172	3,619	814	220	135	2,170,475

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

Table 12.—Net volume of live trees by owner class and forest land status, Wisconsin, 2004

(In million cubic feet)

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	2,262.8	4.5	2,267.3	66.4	- -	66.4	2,333.7
Other Federal							
National Park Service	7.4	- -	7.4	69.6	- -	69.6	77.0
Fish and Wildlife Service	174.5	- -	174.5	7.1	- -	7.1	181.6
Department of Defense or Energy	49.8	- -	49.8	- -	- -	- -	49.8
Other Federal	30.7	- -	30.7	1.8	- -	1.8	32.5
State and local government							
State	1,351.4	5.8	1,357.3	86.0	- -	86.0	1,443.2
Local (county, municipal, etc.)	2,815.9	6.8	2,822.7	5.9	- -	5.9	2,828.5
Other non-Federal lands	6.8	- -	6.8	- -	- -	- -	6.8
Private							
Undifferentiated private	15,106.8	66.3	15,173.1	11.4	- -	11.4	15,184.6
All owners	21,806.0	83.5	21,889.5	248.2	- -	248.2	22,137.6

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

Table 13.—Net volume of live trees on forest land by forest-type group and stand-size class, Wisconsin, 2004

(In million cubic feet)

Forest type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	2,109.8	585.7	44.6	- -	- -	2,740.1
Spruce / fir group	507.6	711.5	127.4	- -	- -	1,346.5
Pinyon / juniper group	2.8	3.4	2.5	- -	- -	8.8
Exotic softwoods group	10.9	8.1	0.6	- -	- -	19.6
Oak / pine group	444.0	242.3	39.0	- -	- -	725.4
Oak / hickory group	3,791.0	1,260.3	91.9	- -	- -	5,143.1
Oak / gum / cypress group	3.0	- -	- -	- -	- -	3.0
Elm / ash / cottonwood group	740.6	766.0	78.3	- -	- -	1,584.9
Maple / beech / birch group	4,354.0	2,916.3	90.0	- -	- -	7,360.3
Aspen / birch group	936.8	1,972.0	284.1	- -	- -	3,192.9
Exotic hardwoods group	- -	- -	- -	- -	- -	- -
Nonstocked	- -	- -	- -	- -	12.9	12.9
All forest type groups	12,900.5	8,465.8	758.4	- -	12.9	22,137.6

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

Table 14.—Net volume of live trees on forest land by species group and ownership group, Wisconsin, 2004

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other yellow pines	- -	- -	1.7	13.9	15.7
Eastern white and red pines	274.9	46.8	707.2	1,679.6	2,708.5
Jack pine	17.3	16.9	90.6	193.9	318.7
Spruce and balsam fir	176.5	6.3	229.2	448.9	861.0
Eastern hemlock	76.6	0.4	80.3	290.2	447.6
Other eastern softwoods	161.0	4.3	212.5	679.7	1,057.5
Western softwood species groups					
True fir	- -	- -	- -	0.1	0.1
All softwoods	706.4	74.8	1,321.6	3,306.4	5,409.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	3.7	15.9	103.8	1,116.4	1,239.8
Select red oaks	86.9	21.1	328.4	1,395.2	1,831.6
Other red oaks	4.9	34.5	157.0	855.8	1,052.1
Hickory	1.0	0.2	14.5	250.6	266.4
Yellow birch	60.5	5.3	62.8	206.9	335.5
Hard maple	499.0	14.0	423.0	1,541.5	2,477.5
Soft maple	235.3	126.7	561.3	1,668.2	2,591.4
Beech	5.6	- -	0.7	30.0	36.4
Ash	96.5	7.4	238.6	892.9	1,235.4
Cottonwood and aspen	348.9	19.2	617.6	1,675.3	2,661.1
Basswood	160.4	3.6	202.5	752.6	1,119.1
Black walnut	- -	0.4	7.6	83.5	91.5
Other eastern soft hardwoods	121.6	17.7	230.8	1,326.6	1,696.8
Other eastern hard hardwoods	0.4	0.2	4.6	30.0	35.2
Eastern noncommercial hardwoods	2.6	0.1	3.6	52.6	58.8
All hardwoods	1,627.3	266.1	2,957.0	11,878.2	16,728.5
All species groups	2,333.7	340.9	4,278.5	15,184.6	22,137.6

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

Table 15.—Net volume of live trees on forest land by species group and diameter class, Wisconsin, 2004

(In million cubic feet)

Species group	Diameter class (inches)													All classes
	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	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups														
Eastern softwood species groups														
Other yellow pines	3	2	2	2	3	2	1	1	--	--	--	--	--	16
Eastern white and red pines	180	317	409	392	309	258	203	164	267	126	56	14	15	2,709
Jack pine	57	94	84	53	20	9	2	--	--	--	--	--	--	319
Spruce and balsam fir	263	241	150	74	59	37	16	12	10	--	--	--	--	861
Eastern hemlock	16	29	37	57	50	58	64	43	60	23	11	--	--	448
Other eastern softwoods	212	271	231	164	88	51	20	13	6	1	--	--	--	1,057
Western softwood species groups														
True fir	--	0	--	--	--	--	--	--	--	--	--	--	--	0
All softwoods	730	955	913	741	528	414	306	233	343	151	66	14	15	5,409
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	46	86	123	163	177	147	136	94	137	74	32	16	9	1,240
Select red oaks	44	100	173	258	304	260	192	156	166	90	36	25	28	1,832
Other red oaks	55	108	152	171	154	139	95	61	67	37	8	4	--	1,052
Hickory	32	48	61	48	38	19	9	8	3	--	--	--	--	266
Yellow birch	39	49	58	56	48	28	19	12	17	5	2	--	--	336
Hard maple	250	402	483	412	279	200	155	106	124	57	7	3	--	2,478
Soft maple	345	490	493	399	295	176	124	78	97	50	14	14	19	2,591
Beech	3	5	4	3	6	2	1	3	7	--	--	3	--	36
Ash	187	243	239	197	143	93	52	37	37	8	--	--	--	1,235
Cottonwood and aspen	372	442	504	481	393	234	108	54	46	11	10	3	2	2,661
Basswood	69	136	205	221	185	118	87	37	45	15	1	--	--	1,119
Black walnut	6	9	12	13	14	13	14	5	3	4	--	--	--	92
Other eastern soft hardwoods	283	397	374	256	156	92	57	23	30	17	2	--	10	1,697
Other eastern hard hardwoods	7	8	8	4	4	2	1	--	--	--	--	--	--	35
Eastern noncommercial hardwoods	33	15	7	2	0	1	--	--	--	1	--	--	--	59
All hardwoods	1,771	2,537	2,897	2,683	2,196	1,525	1,052	673	781	370	112	67	67	16,729
All species groups	2,500	3,492	3,810	3,424	2,724	1,939	1,358	907	1,123	521	178	81	81	22,138

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

Table 16.—Net volume of live trees on forest land by forest-type group and stand origin, Wisconsin, 2004

(In million cubic feet)

Forest type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	1,488.0	1,252.1	2,740.1
Spruce / fir group	1,295.8	50.7	1,346.5
Pinyon / juniper group	8.8	- -	8.8
Exotic softwoods group	10.9	8.8	19.6
Oak / pine group	664.3	61.1	725.4
Oak / hickory group	5,127.3	15.8	5,143.1
Oak / gum / cypress group	3.0	- -	3.0
Elm / ash / cottonwood group	1,584.4	0.6	1,584.9
Maple / beech / birch group	7,358.4	1.9	7,360.3
Aspen / birch group	3,170.6	22.3	3,192.9
Exotic hardwoods group	- -	- -	- -
Nonstocked	12.7	0.2	12.9
All forest type groups	20,724.2	1,413.5	22,137.6

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

Table 17.—Net volume of growing-stock trees on timberland by species group and diameter class, Wisconsin, 2004

(In million cubic feet)

Species group	Diameter class (inches)													All classes
	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	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups														
Eastern softwood species groups														
Other yellow pines	2	2	2	1	3	2	1	1	--	--	--	--	--	13
Eastern white and red pines	175	309	403	386	303	250	199	159	254	124	52	11	15	2,640
Jack pine	54	90	80	49	20	8	1	--	--	--	--	--	--	303
Spruce and balsam fir	257	235	145	72	57	37	16	11	10	--	--	--	--	839
Eastern hemlock	15	27	35	54	47	55	59	41	56	21	11	--	--	420
Other eastern softwoods	196	248	201	141	76	43	16	13	4	1	--	--	--	939
Western softwood species groups														
True fir	--	0	--	--	--	--	--	--	--	--	--	--	--	0
All softwoods	699	911	866	703	505	394	292	225	323	147	63	11	15	5,155
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	41	75	109	137	154	124	109	71	104	44	21	7	--	996
Select red oaks	41	94	165	240	285	241	181	143	147	75	17	16	14	1,658
Other red oaks	45	92	130	134	123	108	76	46	43	22	2	--	--	821
Hickory	30	44	56	42	35	16	8	8	3	--	--	--	--	242
Yellow birch	32	39	45	40	36	23	15	8	13	5	2	--	--	260
Hard maple	232	372	436	360	235	170	126	91	100	48	7	--	--	2,178
Soft maple	315	448	440	333	246	140	97	61	73	44	12	10	15	2,237
Beech	3	4	4	2	5	2	0	3	5	--	--	3	--	32
Ash	171	226	225	182	131	87	45	33	28	5	--	--	--	1,134
Cottonwood and aspen	360	425	479	436	350	214	94	40	38	8	10	3	--	2,457
Basswood	63	129	195	208	175	108	75	32	34	10	--	--	--	1,030
Black walnut	5	8	10	12	13	12	13	5	3	4	--	--	--	84
Other eastern soft hardwoods	235	336	320	198	115	70	40	20	16	7	--	--	--	1,357
Other eastern hard hardwoods	6	7	7	2	3	2	1	--	--	--	--	--	--	28
All hardwoods	1,578	2,299	2,621	2,328	1,907	1,317	882	561	610	271	70	38	29	14,512
All species groups	2,277	3,210	3,487	3,031	2,412	1,711	1,174	786	933	418	133	48	44	19,667

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

Table 18.—Net volume of growing-stock trees on timberland by species group and ownership group, Wisconsin, 2004

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other yellow pines	- -	- -	1.3	12.2	13.5
Eastern white and red pines	262.0	34.7	693.1	1,650.2	2,640.1
Jack pine	13.1	14.0	87.9	187.9	302.8
Spruce and balsam fir	172.8	1.8	224.6	439.6	838.9
Eastern hemlock	69.7	- -	71.0	279.8	420.5
Other eastern softwoods	134.9	- -	184.8	619.0	938.7
Western softwood species groups					
True fir	- -	- -	- -	0.1	0.1
All softwoods	652.5	50.5	1,262.8	3,188.8	5,154.5
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	3.3	6.4	83.9	902.0	995.6
Select red oaks	78.0	12.9	297.7	1,269.3	1,658.0
Other red oaks	4.6	23.6	125.1	667.9	821.3
Hickory	1.0	0.2	12.2	228.5	241.9
Yellow birch	46.5	- -	42.9	170.3	259.7
Hard maple	434.9	2.1	363.0	1,378.4	2,178.3
Soft maple	200.6	103.4	478.2	1,454.5	2,236.7
Beech	3.1	- -	0.5	28.4	31.9
Ash	91.4	4.0	213.8	824.4	1,133.6
Cottonwood and aspen	322.8	13.8	555.1	1,565.0	2,456.6
Basswood	151.4	1.3	182.5	694.6	1,029.8
Black walnut	- -	0.4	7.5	76.5	84.4
Other eastern soft hardwoods	107.0	4.9	195.6	1,049.2	1,356.6
Other eastern hard hardwoods	0.4	- -	3.9	23.3	27.6
All hardwoods	1,445.0	173.0	2,561.7	10,332.3	14,512.0
All species groups	2,097.5	223.5	3,824.5	13,521.1	19,666.5

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

Table 19.—Net volume of sawtimber trees (International ¼-inch rule) on timberland by species group and diameter class, Wisconsin, 2004

(In million board feet) [1]

Species group	Diameter class (inches)											All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups												
Eastern softwood species groups												
Other yellow pines	10	7	14	9	4	6	--	--	--	--	--	50
Eastern white and red pines	1,980	1,926	1,553	1,315	1,074	877	1,432	723	311	64	90	11,345
Jack pine	380	242	100	45	8	--	--	--	--	--	--	775
Spruce and balsam fir	715	369	304	203	92	64	58	--	--	--	--	1,805
Eastern hemlock	169	260	234	283	316	228	317	126	64	--	--	1,999
Other eastern softwoods	1,001	716	397	230	85	71	22	7	--	--	--	2,529
All softwoods	4,254	3,520	2,601	2,085	1,580	1,246	1,830	857	375	64	90	18,502
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	556	668	564	513	342	520	226	111	36	--	3,536
Select red oaks	--	971	1,239	1,100	855	695	733	387	90	85	76	6,232
Other red oaks	--	551	543	498	364	225	219	112	10	--	--	2,520
Hickory	--	156	142	71	35	39	16	--	--	--	--	460
Yellow birch	--	176	167	112	78	42	70	26	12	--	--	683
Hard maple	--	1,488	1,052	793	609	449	509	251	39	--	--	5,190
Soft maple	--	1,358	1,086	646	461	298	368	226	62	55	84	4,645
Beech	--	11	24	11	2	14	27	--	--	14	--	104
Ash	--	764	588	404	216	162	140	27	--	--	--	2,302
Cottonwood and aspen	--	1,850	1,591	1,008	455	197	193	42	50	14	--	5,399
Basswood	--	879	792	507	365	160	173	55	--	--	--	2,929
Black walnut	--	51	60	58	64	23	17	19	--	--	--	291
Other eastern soft hardwoods	--	799	503	316	188	95	81	34	--	--	--	2,016
Other eastern hard hardwoods	--	10	13	9	7	--	--	--	--	--	--	38
All hardwoods	--	9,617	8,467	6,097	4,213	2,741	3,066	1,404	374	205	161	36,345
All species groups	4,254	13,138	11,068	8,182	5,793	3,987	4,896	2,261	749	269	251	54,847

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

[1] International 1/4-inch rule.

Table 19a.—Net volume of sawtimber trees (Doyle rule) on timberland by species group and diameter class, Wisconsin, 2004

(In million board feet) [1]

Species group	Diameter class (inches)											All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-24.9	25.0-28.9	29.0-32.9	33.0-36.9	37.0+	
Softwood species groups												
Eastern softwood species groups												
Other yellow pines	3	3	8	6	3	5	--	--	--	--	--	30
Eastern white and red pines	684	920	930	908	825	752	1,277	693	344	71	100	7,506
Jack pine	131	116	60	31	6	--	--	--	--	--	--	344
Spruce and balsam fir	247	177	182	140	71	54	51	--	--	--	--	922
Eastern hemlock	58	124	140	196	243	196	280	121	71	--	--	1,429
Other eastern softwoods	346	342	238	159	65	61	20	7	--	--	--	1,237
All softwoods	1,470	1,683	1,558	1,440	1,214	1,068	1,628	821	415	71	100	11,467
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	232	342	332	337	245	419	205	126	41	--	2,279
Select red oaks	--	405	634	647	562	499	590	348	103	97	87	3,970
Other red oaks	--	230	278	293	239	161	176	101	11	--	--	1,488
Hickory	--	65	73	42	23	28	13	--	--	--	--	244
Yellow birch	--	73	86	66	51	30	56	23	13	--	--	399
Hard maple	--	621	538	466	400	322	408	228	44	--	--	3,029
Soft maple	--	566	556	380	303	214	296	205	71	63	96	2,750
Beech	--	4	12	6	2	10	22	--	--	16	--	73
Ash	--	319	301	238	142	116	112	24	--	--	--	1,252
Cottonwood and aspen	--	772	814	593	299	141	154	37	57	15	--	2,883
Basswood	--	367	405	298	239	115	140	49	--	--	--	1,613
Black walnut	--	21	31	34	42	16	13	17	--	--	--	175
Other eastern soft hardwoods	--	333	257	186	123	68	64	30	--	--	--	1,063
Other eastern hard hardwoods	--	4	6	5	4	--	--	--	--	--	--	20
All hardwoods	--	4,012	4,333	3,586	2,767	1,968	2,463	1,266	424	232	183	21,236
All species groups	1,470	5,695	5,892	5,026	3,981	3,036	4,090	2,087	839	304	282	32,703

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

[1] Doyle rule.

Table 20.—Net volume of sawtimber trees on timberland by species group and ownership group, Wisconsin, 2004

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other yellow pines	- -	- -	0.8	7.7	8.5
Eastern white and red pines	211.5	22.3	516.2	1,153.4	1,903.4
Jack pine	8.1	7.0	35.0	83.8	133.9
Spruce and balsam fir	77.7	0.8	82.0	145.5	306.0
Eastern hemlock	58.0	- -	57.6	216.1	331.8
Other eastern softwoods	76.6	- -	87.7	260.0	424.3
All softwoods	431.9	30.0	779.4	1,866.5	3,107.7
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	2.0	3.0	39.0	518.0	562.0
Select red oaks	41.2	5.7	162.8	782.3	992.0
Other red oaks	2.6	9.4	47.4	343.0	402.4
Hickory	0.4	- -	4.7	68.2	73.3
Yellow birch	20.4	- -	19.0	67.9	107.4
Hard maple	156.2	0.9	106.1	553.8	817.0
Soft maple	62.9	66.2	138.7	460.6	728.3
Beech	1.1	- -	- -	15.0	16.1
Ash	31.1	1.9	65.6	272.4	371.0
Cottonwood and aspen	120.3	5.2	160.2	583.6	869.2
Basswood	72.4	0.4	82.8	313.5	469.1
Black walnut	- -	0.2	4.8	41.2	46.3
Other eastern soft hardwoods	21.8	0.3	38.6	259.2	319.9
Other eastern hard hardwoods	- -	- -	0.7	5.4	6.1
All hardwoods	532.4	93.2	870.4	4,284.1	5,780.1
All species groups	964.3	123.2	1,649.8	6,150.6	8,887.8

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

Table 24.—Average annual net growth of growing-stock trees on timberland by species group and ownership group, Wisconsin, 1996 to 2000-04

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Other yellow pines	- -	- -	0.1	0.1	0.2
Eastern white and red pines	7.5	2.4	16.6	61.3	87.8
Jack pine	0.3	0.7	1.9	3.6	6.6
Spruce and balsam fir	2.9	-0.1	4.0	14.2	20.9
Eastern hemlock	1.2	- -	0.7	7.9	9.7
Other eastern softwoods	3.6	- -	8.8	23.9	36.3
All softwoods	15.4	3.0	32.1	111.0	161.5
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.0	0.2	1.8	29.1	31.2
Select red oaks	2.0	0.4	7.4	36.5	46.2
Other red oaks	0.1	0.6	5.2	16.9	22.7
Hickory	0.0	- -	0.4	9.9	10.4
Yellow birch	0.6	- -	1.5	3.4	5.5
Hard maple	9.5	- -	10.2	36.3	56.1
Soft maple	6.7	0.5	25.3	53.8	86.2
Beech	- -	- -	0.1	0.9	1.0
Ash	2.1	0.5	5.7	30.9	39.2
Cottonwood and aspen	18.7	0.2	25.4	73.4	117.6
Basswood	2.6	- -	3.3	17.2	23.1
Black walnut	- -	- -	- -	4.1	4.1
Other eastern soft hardwoods	3.3	-0.3	2.9	40.9	46.7
Other eastern hard hardwoods	- -	-0.2	0.0	1.8	1.6
All hardwoods	45.6	1.7	89.1	355.1	491.6
All species groups	61.1	4.7	121.2	466.2	653.1

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

Table 28.—Average annual mortality of growing-stock trees on timberland by species group and ownership group, Wisconsin, 1996 to 2000-04

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Eastern white and red pines	3.3	- -	0.6	5.8	9.7
Jack pine	0.1	0.2	1.5	7.6	9.4
Spruce and balsam fir	5.9	0.2	6.4	8.8	21.3
Eastern hemlock	0.8	- -	0.1	1.1	2.0
Other eastern softwoods	0.4	- -	0.5	1.7	2.6
All softwoods	10.6	0.4	9.0	24.9	45.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	- -	0.6	2.1	2.8
Select red oaks	0.5	- -	2.0	7.0	9.6
Other red oaks	- -	0.5	1.3	7.9	9.8
Hickory	- -	- -	- -	1.9	1.9
Yellow birch	0.2	- -	0.5	0.3	1.0
Hard maple	2.0	- -	0.5	6.3	8.9
Soft maple	1.5	- -	1.1	9.0	11.6
Ash	0.3	- -	1.4	6.0	7.7
Cottonwood and aspen	4.7	0.2	6.9	31.4	43.1
Basswood	1.0	- -	1.0	3.8	5.8
Black walnut	- -	- -	- -	1.2	1.2
Other eastern soft hardwoods	1.6	0.5	2.6	26.7	31.3
Other eastern hard hardwoods	- -	0.1	- -	- -	0.1
All hardwoods	11.8	1.3	18.0	103.7	134.7
All species groups	22.3	1.7	27.0	128.6	179.7

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

Table 30.—Average annual removals of growing-stock trees on timberland by species group and ownership group, Wisconsin, 1996 to 2000-04

(In million cubic feet)

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Eastern white and red pines	5.5	1.5	3.8	29.4	40.2
Jack pine	1.6	- -	5.7	6.8	14.2
Spruce and balsam fir	0.9	- -	1.8	4.1	6.8
Eastern hemlock	- -	- -	0.2	4.8	5.1
Other eastern softwoods	- -	- -	0.3	5.6	5.9
All softwoods	8.0	1.5	11.8	50.8	72.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	2.0	0.9	13.0	15.9
Select red oaks	1.5	- -	1.3	24.1	26.9
Other red oaks	- -	- -	3.4	6.1	9.5
Hickory	0.1	- -	- -	2.5	2.7
Yellow birch	- -	- -	0.6	3.0	3.6
Hard maple	3.8	- -	3.0	23.8	30.6
Soft maple	0.8	- -	8.7	22.5	32.0
Beech	- -	- -	- -	0.2	0.2
Ash	1.8	- -	4.5	8.2	14.5
Cottonwood and aspen	4.8	- -	17.8	72.2	94.8
Basswood	1.8	- -	0.7	9.6	12.0
Black walnut	- -	- -	- -	0.4	0.4
Other eastern soft hardwoods	1.0	- -	2.1	27.8	30.9
Other eastern hard hardwoods	- -	- -	- -	0.1	0.1
All hardwoods	15.5	2.0	43.0	213.7	274.2
All species groups	23.5	3.5	54.8	264.4	346.3

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

Table 31.—Aboveground dry weight of live trees by owner class and forest-land status, Wisconsin, 2004

(In thousand dry tons)

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	58,648	179	58,828	1,665	- -	1,665	60,493
Other Federal							
National Park Service	206	- -	206	1,749	- -	1,749	1,956
Fish and Wildlife Service	4,425	- -	4,425	172	- -	172	4,597
Department of Defense or Energy	1,359	- -	1,359	- -	- -	- -	1,359
Other Federal	864	- -	864	45	- -	45	909
State and local government							
State	35,267	169	35,436	2,263	- -	2,263	37,699
Local (county, municipal, etc.)	77,498	275	77,773	185	- -	185	77,958
Other non-Federal lands	169	- -	169	- -	- -	- -	169
Private							
Undifferentiated private	415,058	2,074	417,132	304	- -	304	417,436
All owners	593,495	2,697	596,191	6,384	- -	6,384	602,575

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

Table 32.—Aboveground dry weight of live trees on forest land by species group and diameter class, Wisconsin, 2004

(In thousand dry tons)

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	58,648	179	58,828	1,665	- -	1,665	60,493
Other Federal							
National Park Service	206	- -	206	1,749	- -	1,749	1,956
Fish and Wildlife Service	4,425	- -	4,425	172	- -	172	4,597
Department of Defense or Energy	1,359	- -	1,359	- -	- -	- -	1,359
Other Federal	864	- -	864	45	- -	45	909
State and local government							
State	35,267	169	35,436	2,263	- -	2,263	37,699
Local (county, municipal, etc.)	77,498	275	77,773	185	- -	185	77,958
Other non-Federal lands	169	- -	169	- -	- -	- -	169
Private							
Undifferentiated private	415,058	2,074	417,132	304	- -	304	417,436
All owners	593,495	2,697	596,191	6,384	- -	6,384	602,575

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

Table 54.—Area of forest land by Forest Inventory Unit, county and forest land status, Wisconsin, 2004

(In thousand acres)

Forest Survey Unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Northeastern							
Florence	283.2	0.7	283.9	2.4	- -	2.4	286.3
Forest	548.1	2.4	550.6	9.8	- -	9.8	560.3
Langlade	396.0	8.4	404.4	- -	- -	- -	404.4
Lincoln	398.6	2.7	401.3	- -	- -	- -	401.3
Marinette	692.5	7.9	700.4	2.5	- -	2.5	703.0
Menominee	220.4	2.1	222.5	- -	- -	- -	222.5
Oconto	356.3	- -	356.3	- -	- -	- -	356.3
Oneida	556.5	7.8	564.3	- -	- -	- -	564.3
Shawano	248.1	0.7	248.8	- -	- -	- -	248.8
Vilas	491.9	1.5	493.4	4.9	- -	4.9	498.3
Total	4,191.7	34.3	4,226.0	19.6	- -	19.6	4,245.6
Northwestern							
Ashland	480.2	6.8	487.0	21.0	- -	21.0	508.0
Barron	146.2	- -	146.2	- -	- -	- -	146.2
Bayfield	775.3	2.9	778.2	10.1	- -	10.1	788.4
Burnett	319.7	5.9	325.6	6.7	- -	6.7	332.2
Douglas	626.4	16.7	643.1	5.3	- -	5.3	648.4
Iron	468.7	- -	468.7	- -	- -	- -	468.7
Polk	240.2	5.6	245.7	- -	- -	- -	245.7
Price	583.0	8.1	591.1	2.5	- -	2.5	593.6
Rusk	409.6	2.7	412.3	5.3	- -	5.3	417.6
Sawyer	606.3	5.6	611.9	15.6	- -	15.6	627.5
Taylor	361.7	8.7	370.4	- -	- -	- -	370.4
Washburn	380.2	2.9	383.1	2.7	- -	2.7	385.8
Total	5,397.4	65.9	5,463.3	69.2	- -	69.2	5,532.5

(Table 54 continued on next page)

(Table 54 continued)

Forest Survey Unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Central							
Adams	248.3	- -	248.3	1.6	- -	1.6	249.8
Chippewa	224.2	2.2	226.4	1.9	- -	1.9	228.3
Clark	312.1	3.0	315.1	- -	- -	- -	315.1
Eau Claire	145.6	2.9	148.5	- -	- -	- -	148.5
Jackson	368.3	5.2	373.5	- -	- -	- -	373.5
Juneau	268.1	- -	268.1	- -	- -	- -	268.1
Marathon	412.4	6.0	418.4	- -	- -	- -	418.4
Marquette	110.7	2.3	113.0	- -	- -	- -	113.0
Monroe	295.2	3.7	298.9	- -	- -	- -	298.9
Portage	149.8	- -	149.8	- -	- -	- -	149.8
Waupaca	190.2	2.9	193.1	- -	- -	- -	193.1
Waushara	149.1	2.9	152.0	- -	- -	- -	152.0
Wood	210.1	- -	210.1	- -	- -	- -	210.1
Total	3,084.1	31.1	3,115.1	3.4	- -	3.4	3,118.6
Southwestern							
Buffalo	179.1	2.9	181.9	3.3	- -	3.3	185.2
Crawford	146.9	- -	146.9	- -	- -	- -	146.9
Dunn	167.6	5.8	173.4	- -	- -	- -	173.4
Grant	209.6	- -	209.6	- -	- -	- -	209.6
Iowa	174.1	5.7	179.9	- -	- -	- -	179.9
La Crosse	130.1	1.4	131.5	- -	- -	- -	131.5
Lafayette	54.4	0.7	55.1	- -	- -	- -	55.1
Pepin	49.1	- -	49.1	- -	- -	- -	49.1
Pierce	91.5	- -	91.5	2.9	- -	2.9	94.5
Richland	145.2	- -	145.2	- -	- -	- -	145.2
St. Croix	101.4	- -	101.4	2.5	- -	2.5	103.9
Sauk	170.6	2.9	173.5	7.7	- -	7.7	181.2
Trempealeau	155.9	0.7	156.6	- -	- -	- -	156.6
Vernon	227.6	5.9	233.5	- -	- -	- -	233.5
Total	2,003.2	25.9	2,029.1	16.3	- -	16.3	2,045.5

(Table 54 continued on next page)

(Table 54 continued)

Forest Survey Unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Southeastern							
Brown	52.9	--	52.9	--	--	--	52.9
Calumet	27.8	--	27.8	--	--	--	27.8
Columbia	93.9	--	93.9	--	--	--	93.9
Dane	91.8	1.2	92.9	--	--	--	92.9
Dodge	22.9	--	22.9	--	--	--	22.9
Door	130.5	1.8	132.3	--	--	--	132.3
Fond du Lac	29.7	--	29.7	--	--	--	29.7
Green	32.3	1.8	34.1	--	--	--	34.1
Green Lake	36.3	--	36.3	--	--	--	36.3
Jefferson	46.1	--	46.1	--	--	--	46.1
Kenosha	18.8	--	18.8	--	--	--	18.8
Kewaunee	20.3	--	20.3	--	--	--	20.3
Manitowoc	88.8	--	88.8	--	--	--	88.8
Milwaukee	3.4	--	3.4	1.4	--	1.4	4.8
Outagamie	54.0	--	54.0	--	--	--	54.0
Ozaukee	23.8	2.6	26.4	--	--	--	26.4
Racine	15.2	--	15.2	--	--	--	15.2
Rock	58.6	--	58.6	--	--	--	58.6
Sheboygan	59.0	--	59.0	--	--	--	59.0
Walworth	45.1	0.7	45.8	--	--	--	45.8
Washington	47.4	--	47.4	--	--	--	47.4
Waukesha	65.5	--	65.5	--	--	--	65.5
Winnebago	21.4	--	21.4	--	--	--	21.4
Total	1,085.6	8.1	1,093.7	1.4	--	1.4	1,095.1
All counties	15,762.0	165.3	15,927.3	109.9	--	109.9	16,037.2

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

Table 55.—Area of accessible forest land by Forest Inventory Unit, county, ownership group, and forest land status, Wisconsin, 2004

(In thousand acres)

Forest Survey Unit and county	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
Northeastern									
Florence	80.5	2.4	- -	- -	37.3	0.7	165.4	- -	286.3
Forest	323.9	12.2	- -	- -	20.2	- -	204.1	- -	560.3
Langlade	34.8	- -	- -	- -	145.4	2.8	215.9	5.6	404.4
Lincoln	- -	- -	- -	- -	115.4	- -	283.2	2.7	401.3
Marinette	0.7	- -	- -	- -	252.4	8.3	439.4	2.1	703.0
Menominee	- -	- -	- -	- -	- -	- -	220.4	2.1	222.5
Oconto	129.3	- -	- -	- -	40.7	- -	186.3	- -	356.3
Oneida	10.3	- -	2.8	- -	165.4	0.7	378.0	7.1	564.3
Shawano	- -	- -	- -	- -	11.4	- -	236.7	0.7	248.8
Vilas	48.3	5.5	- -	- -	202.0	- -	241.7	0.9	498.3
Total	627.7	20.1	2.8	- -	990.1	12.5	2,571.1	21.3	4,245.6
Northwestern									
Ashland	157.6	1.7	- -	18.2	64.0	2.8	258.7	5.1	508.0
Barron	- -	- -	- -	- -	10.9	- -	135.4	- -	146.2
Bayfield	256.7	7.5	1.6	2.6	184.6	2.9	332.3	- -	788.4
Burnett	- -	- -	- -	4.0	122.3	5.3	197.4	3.2	332.2
Douglas	- -	- -	- -	- -	291.6	9.0	334.8	13.0	648.4
Iron	- -	- -	- -	- -	259.4	- -	209.3	- -	468.7
Polk	- -	- -	- -	- -	37.0	2.6	203.2	2.9	245.7
Price	112.9	7.7	- -	- -	84.7	- -	385.4	2.9	593.6
Rusk	- -	- -	- -	2.6	104.9	5.4	304.7	- -	417.6
Sawyer	117.3	1.9	8.1	- -	151.7	15.6	329.2	3.6	627.5
Taylor	118.6	- -	- -	- -	14.0	- -	229.1	8.7	370.4
Washburn	- -	- -	- -	2.7	147.6	- -	232.6	2.9	385.8
Total	763.1	18.8	9.8	30.2	1,472.5	43.7	3,152.0	42.4	5,532.5

(Table 55 continued on next page)

(Table 55 continued)

Forest Survey Unit and county	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
Central									
Adams	- -	- -	0.7	- -	13.0	- -	234.5	1.6	249.8
Chippewa	- -	- -	- -	- -	35.1	1.9	189.2	2.2	228.3
Clark	- -	- -	- -	- -	141.7	- -	170.4	3.0	315.1
Eau Claire	- -	- -	- -	- -	56.6	2.9	89.1	- -	148.5
Jackson	- -	- -	- -	- -	173.4	2.2	194.9	3.0	373.5
Juneau	- -	- -	51.8	- -	34.9	- -	181.4	- -	268.1
Marathon	- -	- -	- -	- -	52.9	- -	359.5	6.0	418.4
Marquette	- -	- -	2.2	- -	8.0	- -	100.5	2.3	113.0
Monroe	- -	- -	49.1	- -	23.8	- -	222.3	3.7	298.9
Portage	- -	- -	- -	- -	11.1	- -	138.6	- -	149.8
Waupaca	- -	- -	- -	- -	13.4	- -	176.8	2.9	193.1
Waushara	- -	- -	- -	- -	9.7	- -	139.4	2.9	152.0
Wood	- -	- -	0.9	- -	58.8	- -	150.4	- -	210.1
Total	- -	- -	104.6	- -	632.4	7.0	2,347.1	27.5	3,118.6
Southwestern									
Buffalo	- -	- -	4.0	3.3	8.4	- -	166.7	2.9	185.2
Crawford	- -	- -	5.5	- -	10.8	- -	130.7	- -	146.9
Dunn	- -	- -	- -	- -	10.4	- -	157.2	5.8	173.4
Grant	- -	- -	7.6	- -	14.7	- -	187.4	- -	209.6
Iowa	- -	- -	- -	- -	14.8	- -	159.4	5.7	179.9
La Crosse	- -	- -	2.2	- -	10.4	- -	117.5	1.4	131.5
Lafayette	- -	- -	- -	- -	2.9	- -	51.6	0.7	55.1
Pepin	- -	- -	- -	- -	8.4	- -	40.7	- -	49.1
Pierce	- -	- -	- -	- -	1.9	2.9	89.7	- -	94.5
Richland	- -	- -	- -	- -	9.4	- -	135.8	- -	145.2
St. Croix	- -	- -	4.6	- -	11.0	2.5	85.8	- -	103.9
Sauk	- -	- -	2.7	- -	12.7	4.7	155.3	5.8	181.2
Trempealeau	- -	- -	- -	- -	4.9	- -	151.0	0.7	156.6
Vernon	- -	- -	12.4	- -	11.1	- -	204.1	5.9	233.5
Total	- -	- -	38.9	3.3	131.5	10.1	1,832.8	28.9	2,045.5

(Table 55 continued on next page)

(Table 55 continued)

Forest Survey Unit and county	Forest Service		Other Federal		State and local government		Undifferentiated private		All forest land
	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	Timber-land	Other forest land	
Southeastern									
Brown	- -	- -	- -	- -	11.8	- -	41.1	- -	52.9
Calumet	- -	- -	- -	- -	- -	- -	27.8	- -	27.8
Columbia	- -	- -	- -	- -	12.0	- -	81.9	- -	93.9
Dane	- -	- -	- -	- -	13.6	- -	78.2	1.2	92.9
Dodge	- -	- -	- -	- -	2.1	- -	20.8	- -	22.9
Door	- -	- -	- -	- -	18.9	1.8	111.6	- -	132.3
Fond du Lac	- -	- -	- -	- -	9.7	- -	20.0	- -	29.7
Green	- -	- -	- -	- -	- -	1.8	32.3	- -	34.1
Green Lake	- -	- -	- -	- -	0.0	- -	36.3	- -	36.3
Jefferson	- -	- -	- -	- -	11.0	- -	35.1	- -	46.1
Kenosha	- -	- -	- -	- -	3.8	- -	14.9	- -	18.8
Kewaunee	- -	- -	- -	- -	- -	- -	20.3	- -	20.3
Manitowoc	- -	- -	- -	- -	13.9	- -	75.0	- -	88.8
Milwaukee	- -	- -	- -	- -	3.4	1.4	- -	- -	4.8
Outagamie	- -	- -	- -	- -	2.4	- -	51.6	- -	54.0
Ozaukee	- -	- -	- -	- -	2.9	2.6	21.0	- -	26.4
Racine	- -	- -	- -	- -	- -	- -	15.2	- -	15.2
Rock	- -	- -	- -	- -	3.4	- -	55.2	- -	58.6
Sheboygan	- -	- -	- -	- -	9.3	- -	49.7	- -	59.0
Walworth	- -	- -	- -	- -	19.3	- -	25.8	0.7	45.8
Washington	- -	- -	- -	- -	7.6	- -	39.8	- -	47.4
Waukesha	- -	- -	- -	- -	16.3	- -	49.3	- -	65.5
Winnebago	- -	- -	- -	- -	- -	- -	21.4	- -	21.4
Total	- -	- -	- -	- -	161.2	7.6	924.4	1.8	1,095.1
All counties	1,390.8	38.9	156.1	33.4	3,387.7	80.9	10,827.3	122.0	16,037.2

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

Table 56.—Area of forest land by Forest Inventory Unit, county/county group, and forest type group, Wisconsin, 2004

(In thousand acres)

Forest Survey Unit and county	Forest type group												
	White-red-jack pine	Spruce-fir	Pinyon-juniper	Exotic softwoods	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Aspen-birch	Exotic hardwoods	Non-stocked	All groups
Northeastern													
Florence	33.6	29.0	- -	- -	3.0	7.1	- -	4.8	133.2	74.8	- -	0.7	286.3
Forest	25.1	91.2	- -	- -	4.9	- -	- -	20.2	297.5	118.1	- -	3.3	560.3
Langlade	7.5	63.7	- -	1.4	5.2	4.0	- -	17.1	211.7	92.5	- -	1.3	404.4
Lincoln	27.8	62.8	- -	0.5	0.7	13.1	- -	16.4	153.4	121.9	- -	4.8	401.3
Marinette	63.1	81.1	- -	- -	37.3	105.3	- -	73.6	168.1	173.1	- -	1.4	703.0
Menominee	38.8	11.3	- -	- -	5.6	35.8	1.1	4.0	89.8	36.1	- -	- -	222.5
Oconto	51.2	40.2	- -	- -	8.3	36.2	- -	35.3	93.8	89.8	- -	1.5	356.3
Oneida	57.4	139.6	- -	- -	33.4	18.5	- -	12.4	76.8	219.1	- -	7.1	564.3
Shawano	26.9	42.1	- -	1.5	7.3	18.7	- -	29.3	88.8	27.5	- -	6.7	248.8
Vilas	104.5	65.3	- -	- -	42.2	24.7	- -	3.8	111.2	139.1	- -	7.5	498.3
Total	435.9	626.5	- -	3.4	147.8	263.4	1.1	216.9	1,424.3	1,092.0	- -	34.4	4,245.6
Northwestern													
Ashland	17.4	85.3	- -	- -	4.8	6.6	- -	15.6	225.9	150.7	- -	1.8	508.0
Barron	3.9	- -	- -	- -	5.1	57.4	- -	4.9	47.7	26.5	- -	0.7	146.2
Bayfield	106.7	40.9	- -	- -	33.9	71.6	- -	43.9	180.5	309.4	- -	1.6	788.4
Burnett	58.0	14.9	- -	- -	23.7	107.5	- -	28.9	36.3	60.0	- -	3.0	332.2
Douglas	70.4	43.4	- -	- -	22.0	95.4	- -	64.6	93.1	255.1	- -	4.3	648.4
Iron	15.6	85.3	- -	- -	- -	3.7	- -	37.7	239.6	85.2	- -	1.6	468.7
Polk	8.2	3.9	- -	- -	15.3	93.6	- -	19.7	50.8	54.2	- -	- -	245.7
Price	20.4	92.9	- -	- -	- -	5.9	- -	62.2	220.8	179.9	- -	11.6	593.6
Rusk	5.6	21.4	- -	- -	2.9	50.8	- -	38.8	178.9	110.4	- -	8.6	417.6
Sawyer	37.5	90.6	- -	- -	8.0	34.9	- -	36.2	272.6	147.0	- -	0.7	627.5
Taylor	17.2	21.8	- -	- -	- -	16.5	- -	36.5	183.9	88.1	- -	6.4	370.4
Washburn	45.7	19.7	- -	- -	24.3	80.6	- -	18.1	75.1	121.5	- -	0.7	385.8
Total	406.7	520.1	- -	- -	140.1	624.5	- -	407.1	1,805.1	1,587.8	- -	41.2	5,532.5
Central													
Adams	80.4	- -	- -	0.7	37.3	106.0	- -	9.2	5.4	10.2	- -	0.7	249.8
Chippewa	11.9	7.9	- -	- -	5.8	74.1	- -	26.5	58.5	41.2	- -	2.3	228.3
Clark	26.4	5.8	- -	2.9	18.0	108.0	- -	30.3	48.7	73.2	- -	1.6	315.1
Eau Claire	13.3	- -	- -	- -	23.4	85.5	- -	5.0	9.9	10.2	- -	1.2	148.5
Jackson	111.5	16.1	- -	- -	28.1	150.5	- -	19.2	8.4	34.8	- -	4.9	373.5
Juneau	49.2	- -	- -	- -	49.5	104.5	- -	25.5	16.5	22.2	- -	0.7	268.1
Marathon	23.1	21.7	- -	2.2	3.6	31.8	- -	61.5	202.1	68.2	- -	4.2	418.4
Marquette	19.9	8.8	2.9	- -	2.2	57.1	- -	10.5	1.3	10.2	- -	- -	113.0
Monroe	32.0	- -	- -	- -	25.4	156.8	- -	15.5	32.4	28.9	- -	7.8	298.9
Portage	39.4	4.8	- -	2.2	6.4	50.8	- -	14.8	11.1	18.1	- -	2.2	149.8
Waupaca	25.5	22.8	- -	2.2	- -	43.9	- -	50.5	34.2	11.1	- -	2.9	193.1
Waushara	32.3	17.7	- -	5.0	0.7	51.8	- -	12.5	4.4	21.5	- -	5.9	152.0
Wood	34.9	5.2	- -	- -	18.3	64.3	- -	13.4	27.1	40.6	- -	6.4	210.1
Total	499.9	110.9	2.9	15.2	218.7	1,085.1	- -	294.4	460.1	390.4	- -	41.0	3,118.6

(Table 56 continued)

Forest Survey Unit and county	Forest type group												All groups
	White-red-jack pine	Spruce-fir	Pinyon-juniper	Exotic softwoods	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch	Aspen-birch	Exotic hardwoods	Non-stocked	
Southwestern													
Buffalo	2.2	2.8	--	--	2.9	117.1	--	31.3	10.0	17.5	--	1.4	185.2
Crawford	--	--	0.7	--	2.2	92.0	--	10.3	35.9	4.5	--	1.5	146.9
Dunn	10.3	--	--	--	6.0	86.5	--	19.4	40.3	9.4	--	1.3	173.4
Grant	6.3	--	--	--	--	130.8	--	19.8	48.8	--	--	3.9	209.6
Iowa	8.3	1.7	--	--	5.6	127.8	--	16.2	11.8	7.9	--	0.5	179.9
La Crosse	2.9	--	--	--	--	77.7	--	8.4	20.9	21.5	--	--	131.5
Lafayette	--	--	--	--	--	30.8	--	4.2	20.2	--	--	--	55.1
Pepin	0.7	--	--	--	--	16.7	--	14.7	12.9	4.1	--	--	49.1
Pierce	0.5	0.8	--	--	--	29.6	--	6.9	49.9	6.1	--	0.7	94.5
Richland	2.4	--	--	--	3.6	67.6	--	9.5	54.9	6.3	--	0.9	145.2
St. Croix	13.5	0.7	2.8	--	--	31.5	--	7.9	29.5	17.2	--	0.7	103.9
Sauk	5.8	0.7	1.2	--	3.1	99.6	--	18.8	43.9	4.3	--	3.7	181.2
Trempealeau	8.7	--	--	--	--	98.3	--	21.0	13.1	10.7	2.7	2.2	156.6
Vernon	4.5	--	0.8	2.2	2.9	112.7	--	26.9	71.7	11.2	--	0.7	233.5
Total	66.1	6.7	5.6	2.2	26.3	1,118.6	--	215.4	463.7	120.8	2.7	17.4	2,045.5
Southeastern													
Brown	0.7	0.7	2.6	--	--	14.3	--	8.4	23.2	2.8	--	--	52.9
Calumet	--	2.6	--	--	--	7.2	--	8.1	7.0	2.8	--	--	27.8
Columbia	8.3	--	--	--	0.7	61.1	--	14.4	5.7	2.8	--	0.9	93.9
Dane	--	--	1.9	--	1.4	61.3	--	10.8	11.4	5.5	--	0.7	92.9
Dodge	2.0	--	--	--	0.7	3.7	--	11.6	4.8	--	--	--	22.9
Door	13.3	43.3	--	--	0.6	4.1	--	5.0	41.0	25.1	--	--	132.3
Fond du Lac	1.2	2.4	--	--	--	7.2	--	6.8	7.0	0.7	--	4.4	29.7
Green	--	--	--	--	--	17.6	--	5.0	8.9	--	2.0	0.7	34.1
Green Lake	4.2	--	2.7	--	--	19.4	--	2.9	2.4	2.6	--	2.1	36.3
Jefferson	--	--	--	--	--	5.5	--	22.9	14.5	0.7	--	2.4	46.1
Kenosha	--	--	--	--	--	9.9	--	1.2	4.8	2.8	--	--	18.8
Kewaunee	--	4.8	--	--	--	--	--	8.3	7.3	--	--	--	20.3
Manitowoc	4.7	12.2	--	--	1.4	5.2	--	22.7	26.9	13.3	--	2.5	88.8
Milwaukee	--	--	--	--	--	--	--	1.3	3.5	--	--	--	4.8
Outagamie	--	2.4	--	--	1.4	6.8	--	19.5	23.8	0.1	--	--	54.0
Ozaukee	--	2.6	--	--	--	8.4	--	5.7	4.3	5.5	--	--	26.4
Racine	--	--	2.6	--	--	8.2	--	3.1	1.3	--	--	--	15.2
Rock	6.6	--	--	--	--	40.1	--	2.4	7.1	2.4	--	--	58.6
Sheboygan	0.7	5.3	--	1.4	1.8	6.6	--	12.8	28.4	2.0	--	--	59.0
Walworth	4.6	--	--	--	--	28.3	--	2.2	10.7	--	--	--	45.8
Washington	0.8	1.4	--	--	--	2.8	--	22.6	19.3	0.4	--	--	47.4
Waukesha	6.0	--	--	--	--	11.3	--	13.9	23.9	5.0	--	5.5	65.5
Winnebago	0.0	0.2	--	--	2.8	7.9	--	2.1	8.4	--	--	--	21.4
Total	53.1	78.0	9.8	1.4	10.8	337.0	--	213.7	295.5	74.6	2.0	19.1	1,095.1
All counties	1,461.6	1,342.1	18.3	22.2	543.8	3,428.6	1.1	1,347.5	4,448.6	3,265.6	4.6	153.1	16,037.2

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

Table 57.—Area of timberland by Forest Inventory Unit, county, and stand-size class, Wisconsin, 2004

(In thousand acres)

Forest Survey Unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Northeastern						
Florence	107.3	118.0	57.9	- -	- -	283.2
Forest	208.6	234.7	101.6	- -	3.3	548.1
Langlade	131.6	185.6	77.5	- -	1.3	396.0
Lincoln	77.2	201.5	115.1	- -	4.8	398.6
Marinette	173.6	354.5	163.0	- -	1.4	692.5
Menominee	144.4	39.8	36.3	- -	- -	220.4
Oconto	128.9	174.9	51.0	- -	1.5	356.3
Oneida	120.1	216.4	213.0	- -	7.1	556.5
Shawano	88.5	118.2	34.6	- -	6.7	248.1
Vilas	226.3	169.9	88.2	- -	7.5	491.9
Total	1,406.4	1,813.5	938.1	- -	33.7	4,191.7
Northwestern						
Ashland	160.4	188.5	130.3	- -	1.1	480.2
Barron	72.9	56.8	15.8	- -	0.7	146.2
Bayfield	224.9	314.1	234.7	- -	1.6	775.3
Burnett	108.9	121.7	86.0	- -	3.0	319.7
Douglas	106.5	281.5	234.1	- -	4.3	626.4
Iron	128.3	231.5	107.2	- -	1.6	468.7
Polk	122.5	91.4	26.4	- -	- -	240.2
Price	112.9	311.9	146.6	- -	11.6	583.0
Rusk	141.5	164.6	94.8	- -	8.6	409.6
Sawyer	222.1	255.7	127.7	- -	0.7	606.3
Taylor	95.0	187.9	75.2	- -	3.5	361.7
Washburn	101.9	180.3	97.3	- -	0.7	380.2
Total	1,597.9	2,385.9	1,376.1	- -	37.6	5,397.4

(Table 57 continued on next page)

(Table 57 continued)

Forest Survey Unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Central						
Adams	114.8	79.3	53.4	- -	0.7	248.3
Chippewa	72.3	108.5	41.2	- -	2.3	224.2
Clark	107.0	96.0	107.5	- -	1.6	312.1
Eau Claire	57.5	60.6	26.4	- -	1.2	145.6
Jackson	113.1	137.7	112.6	- -	4.9	368.3
Juneau	115.2	110.4	41.9	- -	0.7	268.1
Marathon	128.8	190.2	89.3	- -	4.2	412.4
Marquette	57.4	32.8	20.4	- -	- -	110.7
Monroe	116.6	109.9	60.8	- -	7.8	295.2
Portage	70.7	43.0	33.9	- -	2.2	149.8
Waupaca	96.6	69.3	21.3	- -	2.9	190.2
Waushara	66.3	49.2	27.7	- -	5.9	149.1
Wood	86.1	63.6	54.0	- -	6.4	210.1
Total	1,202.1	1,150.5	690.5	- -	41.0	3,084.1
Southwestern						
Buffalo	120.2	41.1	17.1	- -	0.7	179.1
Crawford	100.1	43.2	2.2	- -	1.5	146.9
Dunn	79.9	53.8	32.6	- -	1.3	167.6
Grant	137.2	56.1	12.5	- -	3.9	209.6
Iowa	117.6	49.2	6.8	- -	0.5	174.1
La Crosse	88.9	38.2	2.9	- -	- -	130.1
Lafayette	40.5	3.3	10.6	- -	- -	54.4
Pepin	34.8	14.3	- -	- -	- -	49.1
Pierce	46.2	33.0	11.5	- -	0.7	91.5
Richland	79.0	54.4	10.9	- -	0.9	145.2
St. Croix	50.7	35.6	14.4	- -	0.7	101.4
Sauk	100.4	52.8	13.8	- -	3.7	170.6
Trempealeau	82.4	46.0	25.4	- -	2.2	155.9
Vernon	134.3	72.4	20.2	- -	0.7	227.6
Total	1,212.2	593.5	180.9	- -	16.7	2,003.2

(Table 57 continued on next page)

(Table 57 continued)

Forest Survey Unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Southeastern						
Brown	21.6	27.0	4.3	- -	- -	52.9
Calumet	20.7	7.1	- -	- -	- -	27.8
Columbia	66.5	24.6	2.0	- -	0.9	93.9
Dane	51.0	36.6	3.6	- -	0.7	91.8
Dodge	3.5	15.7	3.7	- -	- -	22.9
Door	47.3	66.8	16.5	- -	- -	130.5
Fond du Lac	12.1	8.1	5.1	- -	4.4	29.7
Green	16.6	8.3	6.8	- -	0.7	32.3
Green Lake	26.0	5.5	2.7	- -	2.1	36.3
Jefferson	17.8	18.8	7.0	- -	2.4	46.1
Kenosha	8.6	- -	10.2	- -	- -	18.8
Kewaunee	14.0	6.3	- -	- -	- -	20.3
Manitowoc	42.2	27.9	16.2	- -	2.5	88.8
Milwaukee	- -	3.4	- -	- -	- -	3.4
Outagamie	25.6	26.3	2.1	- -	- -	54.0
Ozaukee	4.7	11.5	7.7	- -	- -	23.8
Racine	5.3	8.6	1.3	- -	- -	15.2
Rock	42.4	12.6	3.6	- -	- -	58.6
Sheboygan	27.0	32.0	0.1	- -	- -	59.0
Walworth	29.7	2.6	12.8	- -	- -	45.1
Washington	17.4	24.8	5.2	- -	- -	47.4
Waukesha	31.8	24.3	4.0	- -	5.5	65.5
Winnebago	5.1	10.7	5.7	- -	- -	21.4
Total	536.8	409.3	120.3	- -	19.1	1,085.6
All counties	5,955.4	6,352.6	3,305.9	- -	148.1	15,762.0

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

Table 58.—Area of timberland by Forest Inventory Unit, county, and stocking class, Wisconsin, 2004

(In thousand acres)

Forest Survey Unit and county	Stocking class of growing-stock trees					
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	All classes
Northeastern						
Florence	2.8	22.8	97.6	131.0	29.0	283.2
Forest	3.8	22.6	184.0	271.7	66.0	548.1
Langlade	3.8	44.3	130.8	174.3	42.8	396.0
Lincoln	8.9	41.9	176.1	126.3	45.3	398.6
Marinette	3.6	89.7	262.0	295.2	42.0	692.5
Menominee	0.0	6.9	53.7	130.7	29.1	220.4
Oconto	3.3	36.6	135.2	163.5	17.7	356.3
Oneida	7.3	80.1	166.5	243.5	59.0	556.5
Shawano	9.2	30.5	84.3	97.9	26.2	248.1
Vilas	9.4	51.3	192.3	195.2	43.7	491.9
Total	52.1	426.7	1,482.6	1,829.4	400.9	4,191.7
Northwestern						
Ashland	1.3	73.3	162.6	206.9	36.1	480.2
Barron	2.8	26.3	57.3	55.4	4.4	146.2
Bayfield	3.4	86.4	213.1	356.8	115.6	775.3
Burnett	7.2	43.0	125.3	122.0	22.2	319.7
Douglas	7.4	99.8	224.0	230.4	64.8	626.4
Iron	2.4	44.1	161.8	215.6	44.9	468.7
Polk	10.4	59.1	77.6	87.2	5.9	240.2
Price	15.2	81.9	242.1	196.0	47.8	583.0
Rusk	10.4	75.3	133.6	156.6	33.6	409.6
Sawyer	1.8	64.1	210.9	277.7	51.8	606.3
Taylor	3.6	45.6	118.2	168.2	26.1	361.7
Washburn	1.6	42.6	161.7	127.8	46.6	380.2
Total	67.5	741.6	1,888.1	2,200.5	499.7	5,397.4

(Table 58 continued on next page)

(Table 58 continued)

Forest Survey Unit and county	Stocking class of growing-stock trees					All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	
Central						
Adams	1.6	40.4	115.5	78.5	12.3	248.3
Chippewa	7.2	55.8	78.5	64.3	18.5	224.2
Clark	2.2	44.3	117.1	106.8	41.6	312.1
Eau Claire	4.1	22.5	60.3	49.6	9.1	145.6
Jackson	6.4	87.6	136.5	111.3	26.5	368.3
Juneau	7.4	57.6	125.8	71.6	5.7	268.1
Marathon	8.1	53.4	156.8	171.8	22.2	412.4
Marquette	3.4	34.3	43.8	27.7	1.5	110.7
Monroe	9.8	63.6	136.9	74.5	10.4	295.2
Portage	5.1	18.3	66.2	57.0	3.2	149.8
Waupaca	5.6	37.9	68.1	68.5	10.0	190.2
Waushara	9.9	29.1	59.6	39.5	10.9	149.1
Wood	7.3	32.8	85.0	73.1	12.0	210.1
Total	78.2	577.6	1,250.1	994.2	184.0	3,084.1
Southwestern						
Buffalo	2.7	26.6	78.7	66.6	4.6	179.1
Crawford	2.9	43.2	59.6	40.5	0.7	146.9
Dunn	7.1	46.0	64.5	42.9	7.1	167.6
Grant	11.5	76.5	84.4	35.1	2.1	209.6
Iowa	8.0	57.3	62.3	46.0	0.6	174.1
La Crosse	3.0	50.0	34.3	42.0	0.7	130.1
Lafayette	- -	24.0	22.2	8.2	- -	54.4
Pepin	- -	15.2	21.7	12.2	- -	49.1
Pierce	3.6	24.5	42.8	20.0	0.7	91.5
Richland	5.0	33.8	72.2	32.7	1.5	145.2
St. Croix	4.7	26.0	28.9	38.2	3.5	101.4
Sauk	3.7	56.0	59.2	50.4	1.5	170.6
Trempealeau	9.8	67.3	48.9	25.6	4.3	155.9
Vernon	4.3	36.7	111.3	68.6	6.6	227.6
Total	66.3	583.0	791.0	529.0	33.9	2,003.2

(Table 58 continued on next page)

(Table 58 continued)

Forest Survey Unit and county	Stocking class of growing-stock trees					All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	
Southeastern						
Brown	- -	8.0	22.7	20.8	1.4	52.9
Calumet	- -	7.0	12.8	7.1	0.9	27.8
Columbia	2.9	14.3	45.0	30.3	1.5	93.9
Dane	7.5	25.7	38.0	20.5	- -	91.8
Dodge	- -	4.8	13.9	3.6	0.7	22.9
Door	- -	16.9	41.4	63.8	8.5	130.5
Fond du Lac	7.3	4.8	9.0	7.2	1.4	29.7
Green	1.1	3.8	17.7	6.4	3.3	32.3
Green Lake	3.5	13.2	2.4	14.7	2.5	36.3
Jefferson	2.4	22.1	17.4	2.7	1.4	46.1
Kenosha	2.1	2.7	3.8	10.2	- -	18.8
Kewaunee	2.1	1.8	5.0	11.3	- -	20.3
Manitowoc	3.2	16.0	33.2	29.6	6.9	88.8
Milwaukee	1.3	- -	- -	2.1	- -	3.4
Outagamie	3.0	12.1	20.3	18.6	- -	54.0
Ozaukee	2.1	2.6	8.6	10.4	- -	23.8
Racine	0.7	5.5	6.4	2.6	- -	15.2
Rock	6.0	20.1	14.2	17.4	0.9	58.6
Sheboygan	0.1	8.6	13.5	33.8	3.1	59.0
Walworth	1.7	17.0	20.7	5.7	- -	45.1
Washington	0.2	14.1	22.8	9.8	0.4	47.4
Waukesha	5.5	11.7	23.3	21.7	3.3	65.5
Winnebago	0.0	0.2	12.2	8.5	0.5	21.4
Total	52.7	232.9	404.3	359.0	36.8	1,085.6
All counties	316.7	2,561.9	5,816.0	5,912.2	1,155.2	15,762.0

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

Table 59.—Net volume of growing stock and sawtimber (International ¼-inch rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 2004

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	45.6	92.0	148.0	123.7	409.3	187.8	314.4	301.3	297.5	1,101.0
Forest	36.6	158.6	279.9	355.1	830.2	178.7	505.3	644.9	895.7	2,224.5
Langlade	19.9	77.3	220.5	215.6	533.4	82.2	184.3	448.5	567.0	1,281.9
Lincoln	61.4	66.0	187.5	107.8	422.7	269.5	154.5	300.9	237.8	962.7
Marinette	171.8	164.3	289.5	191.7	817.2	687.5	403.2	466.5	470.6	2,027.8
Menominee	143.5	87.6	95.0	191.0	517.1	773.4	393.7	239.9	725.9	2,132.9
Oconto	120.4	93.0	219.7	104.1	537.2	542.5	216.2	454.2	257.0	1,469.9
Oneida	139.9	99.5	238.3	87.7	565.4	645.4	207.1	328.9	240.9	1,422.4
Shawano	55.7	98.0	120.6	119.3	393.6	222.0	203.3	250.5	365.7	1,041.4
Vilas	269.1	125.9	204.6	198.3	798.0	1,241.3	411.0	418.5	551.8	2,622.6
Total	1,063.8	1,062.2	2,003.6	1,694.3	5,823.9	4,830.3	2,992.8	3,854.1	4,609.8	16,286.9
Northwestern										
Ashland	32.4	133.0	223.5	173.3	562.2	163.6	429.0	445.1	383.9	1,421.6
Barron	31.0	0.2	76.9	100.6	208.7	156.3	- -	142.6	330.8	629.7
Bayfield	201.0	105.1	456.0	219.8	981.9	878.1	328.5	843.6	461.4	2,511.7
Burnett	102.4	6.8	122.5	103.8	335.5	319.4	15.0	265.2	290.8	890.4
Douglas	83.7	107.1	317.0	73.6	581.5	314.6	262.5	523.5	150.6	1,251.2
Iron	27.9	158.7	208.9	190.0	585.5	136.5	510.2	399.8	374.0	1,420.4
Polk	19.2	- -	116.6	134.8	270.6	82.7	- -	240.8	431.5	755.0
Price	31.0	109.0	299.5	150.9	590.5	151.1	332.1	481.1	354.4	1,318.7
Rusk	24.4	21.4	238.9	166.7	451.4	100.0	60.7	458.9	474.6	1,094.2
Sawyer	129.5	98.8	342.5	285.9	856.6	636.1	299.9	698.6	807.3	2,441.9
Taylor	28.2	58.5	238.7	108.1	433.6	134.6	180.3	452.9	256.3	1,024.1
Washburn	68.3	19.8	194.9	124.2	407.3	228.1	50.9	320.0	310.9	909.9
Total	779.0	818.4	2,835.9	1,831.7	6,265.1	3,301.2	2,469.2	5,272.2	4,626.4	15,669.0

(Table 59 continued on next page)

(Table 59 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	103.2	1.1	38.8	111.7	254.8	243.3	2.8	78.4	341.7	666.2
Chippewa	28.6	13.0	106.7	92.5	240.8	124.0	44.7	157.3	270.9	597.0
Clark	51.8	2.7	134.4	137.3	326.1	224.7	7.2	243.1	474.9	949.9
Eau Claire	34.5	0.1	60.7	68.8	164.0	117.4	- -	99.4	207.3	424.1
Jackson	132.8	3.9	87.7	111.1	335.6	440.5	6.3	134.8	309.9	891.5
Juneau	98.6	0.1	73.4	113.4	285.5	368.8	- -	152.5	310.9	832.1
Marathon	29.4	46.0	269.7	171.1	516.2	100.8	125.2	556.6	472.6	1,255.2
Marquette	44.0	6.6	15.9	63.8	130.3	183.2	7.8	21.1	219.5	431.7
Monroe	64.6	0.3	83.9	149.1	297.8	225.9	- -	162.9	461.4	850.2
Portage	93.3	6.0	50.2	61.5	210.9	372.3	15.2	83.5	196.4	667.4
Waupaca	53.5	32.6	130.2	97.7	314.1	223.7	59.0	333.6	317.0	933.4
Waushara	72.7	21.1	41.4	52.9	188.2	309.5	56.5	82.0	157.5	605.4
Wood	60.2	1.7	110.3	93.4	265.6	222.4	1.3	294.8	330.9	849.4
Total	867.3	135.1	1,203.4	1,324.3	3,530.1	3,156.5	326.0	2,400.1	4,070.9	9,953.5
Southwestern										
Buffalo	2.2	6.0	126.8	135.2	270.3	8.3	11.9	376.1	509.6	905.9
Crawford	0.7	1.0	81.5	122.7	205.8	3.9	1.0	253.7	408.0	666.5
Dunn	22.8	0.8	73.5	92.5	189.6	84.4	4.1	164.3	321.7	574.5
Grant	10.0	1.9	91.0	157.7	260.6	21.7	5.8	299.6	569.2	896.4
Iowa	12.4	0.8	69.8	145.0	227.8	30.7	1.0	182.0	547.8	761.5
La Crosse	5.2	0.3	63.5	102.7	171.8	10.5	- -	148.6	413.2	572.3
Lafayette	0.4	0.1	35.5	39.2	75.2	1.5	- -	116.1	171.1	288.6
Pepin	2.0	0.9	38.1	33.4	74.4	2.7	1.9	125.0	118.3	247.8
Pierce	2.0	2.7	43.7	59.5	107.9	7.2	4.7	104.7	213.7	330.2
Richland	5.7	1.2	70.3	90.1	167.3	29.4	6.0	210.5	281.9	527.8
St. Croix	27.9	2.1	52.8	42.8	125.5	82.6	4.8	138.3	156.6	382.3
Sauk	11.1	4.9	95.5	125.9	237.4	43.9	23.4	261.6	464.5	793.4
Trempealeau	23.2	- -	51.5	78.5	153.2	95.2	- -	115.1	267.3	477.5
Vernon	24.6	0.8	104.2	179.9	309.6	120.5	1.1	273.6	616.1	1,011.3
Total	150.2	23.5	997.7	1,404.9	2,576.4	542.4	65.7	2,769.1	5,058.9	8,436.1

(Table 59 continued on next page)

(Table 59 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Southeastern										
Brown	2.4	3.8	50.0	28.4	84.7	10.5	11.6	107.4	86.1	215.6
Calumet	- -	3.1	27.3	18.0	48.4	- -	12.9	99.3	72.7	184.9
Columbia	17.7	1.3	49.1	72.4	140.5	70.1	1.7	148.2	244.5	464.5
Dane	0.9	4.3	35.9	70.0	111.1	3.9	4.7	73.5	271.2	353.2
Dodge	3.6	0.2	13.7	8.7	26.2	12.9	- -	36.8	15.7	65.5
Door	10.5	73.8	43.8	65.3	193.4	28.5	206.9	79.1	190.9	505.4
Fond du Lac	2.3	1.4	18.5	10.7	33.0	12.0	1.0	43.7	41.9	98.8
Green	0.1	- -	20.8	15.7	36.6	- -	- -	57.6	55.3	112.9
Green Lake	14.3	3.0	11.6	25.6	54.6	58.9	9.4	27.8	102.2	198.3
Jefferson	- -	0.3	23.1	16.5	40.0	- -	0.7	60.9	64.8	126.4
Kenosha	- -	0.1	5.5	14.0	19.6	- -	- -	21.8	65.5	87.3
Kewaunee	- -	9.5	18.7	8.0	36.2	- -	33.4	51.5	20.5	105.4
Manitowoc	5.6	33.3	43.8	38.4	121.1	24.9	135.0	97.3	121.2	378.4
Milwaukee	- -	- -	1.5	3.3	4.8	- -	- -	1.8	4.5	6.3
Outagamie	1.9	5.1	47.0	27.6	81.6	7.3	9.9	128.0	84.8	230.0
Ozaukee	0.0	0.4	11.1	14.3	25.8	- -	- -	22.1	47.9	70.0
Racine	0.6	0.8	4.0	12.9	18.3	0.6	- -	3.4	57.8	61.8
Rock	6.6	0.1	23.4	41.9	72.0	21.6	- -	52.1	172.1	245.8
Sheboygan	3.3	15.0	24.8	59.9	103.1	11.7	41.6	52.4	184.5	290.1
Walworth	10.6	0.3	9.8	25.1	45.8	43.6	0.8	28.3	96.2	168.8
Washington	2.2	1.0	22.2	32.8	58.3	7.0	1.2	51.8	144.4	204.5
Waukesha	13.0	1.9	29.8	44.5	89.1	24.9	8.0	60.8	162.4	256.1
Winnebago	0.3	0.1	5.4	21.1	26.8	0.6	- -	11.3	59.6	71.5
Total	95.9	159.0	540.9	675.3	1,471.0	339.1	478.8	1,316.7	2,366.8	4,501.5
All counties	2,956.3	2,198.2	7,581.6	6,930.4	19,666.5	12,169.5	6,332.5	15,612.1	20,732.9	54,847.0

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

[1] International 1/4-inch rule.

Table 59a.—Net volume of growing stock and sawtimber (Doyle rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 2004

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	45.6	92.0	148.0	123.7	409.3	111.8	205.1	152.1	168.9	637.9
Forest	36.6	158.6	279.9	355.1	830.2	110.8	280.6	340.4	512.3	1,244.2
Langlade	19.9	77.3	220.5	215.6	533.4	48.2	102.5	227.1	322.1	699.9
Lincoln	61.4	66.0	187.5	107.8	422.7	144.2	81.5	153.9	131.4	511.0
Marinette	171.8	164.3	289.5	191.7	817.2	441.3	203.3	236.8	273.5	1,154.9
Menominee	143.5	87.6	95.0	191.0	517.1	709.0	301.0	135.3	506.1	1,651.5
Oconto	120.4	93.0	219.7	104.1	537.2	324.2	105.5	236.6	150.9	817.2
Oneida	139.9	99.5	238.3	87.7	565.4	441.5	105.4	165.8	131.5	844.3
Shawano	55.7	98.0	120.6	119.3	393.6	120.4	98.0	129.1	214.6	562.1
Vilas	269.1	125.9	204.6	198.3	798.0	904.5	261.6	217.1	328.6	1,711.7
Total	1,063.8	1,062.2	2,003.6	1,694.3	5,823.9	3,355.9	1,744.6	1,994.2	2,739.9	9,834.7
Northwestern										
Ashland	32.4	133.0	223.5	173.3	562.2	110.0	242.5	230.4	215.9	798.8
Barron	31.0	0.2	76.9	100.6	208.7	128.8	- -	71.9	195.7	396.5
Bayfield	201.0	105.1	456.0	219.8	981.9	534.4	185.2	427.7	244.4	1,391.7
Burnett	102.4	6.8	122.5	103.8	335.5	186.4	7.0	146.4	166.1	506.0
Douglas	83.7	107.1	317.0	73.6	581.5	200.4	126.1	266.3	78.4	671.2
Iron	27.9	158.7	208.9	190.0	585.5	102.5	288.5	208.4	215.7	815.1
Polk	19.2	- -	116.6	134.8	270.6	54.1	- -	124.8	258.1	437.0
Price	31.0	109.0	299.5	150.9	590.5	97.9	209.6	246.6	200.1	754.2
Rusk	24.4	21.4	238.9	166.7	451.4	80.6	40.0	236.7	270.1	627.4
Sawyer	129.5	98.8	342.5	285.9	856.6	472.1	171.8	371.6	448.0	1,463.4
Taylor	28.2	58.5	238.7	108.1	433.6	91.0	98.7	232.1	137.1	558.9
Washburn	68.3	19.8	194.9	124.2	407.3	138.6	25.4	162.2	164.0	490.2
Total	779.0	818.4	2,835.9	1,831.7	6,265.1	2,196.9	1,394.7	2,725.1	2,593.7	8,910.4

(Table 59a continued on next page)

(Table 59a continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	103.2	1.1	38.8	111.7	254.8	116.8	1.0	41.7	191.3	350.8
Chippewa	28.6	13.0	106.7	92.5	240.8	69.7	24.2	86.5	151.7	332.1
Clark	51.8	2.7	134.4	137.3	326.1	156.8	2.9	124.9	297.7	582.4
Eau Claire	34.5	0.1	60.7	68.8	164.0	61.2	- -	50.1	115.6	227.0
Jackson	132.8	3.9	87.7	111.1	335.6	256.8	2.4	70.0	177.0	506.2
Juneau	98.6	0.1	73.4	113.4	285.5	228.8	- -	83.0	176.2	488.0
Marathon	29.4	46.0	269.7	171.1	516.2	50.0	76.8	310.4	285.1	722.3
Marquette	44.0	6.6	15.9	63.8	130.3	103.2	3.3	10.5	134.9	252.0
Monroe	64.6	0.3	83.9	149.1	297.8	157.1	- -	81.4	282.7	521.1
Portage	93.3	6.0	50.2	61.5	210.9	194.5	8.0	42.5	111.9	356.9
Waupaca	53.5	32.6	130.2	97.7	314.1	140.6	28.5	201.0	184.8	555.0
Waushara	72.7	21.1	41.4	52.9	188.2	167.7	25.0	42.7	90.6	325.9
Wood	60.2	1.7	110.3	93.4	265.6	129.2	0.4	188.8	207.8	526.3
Total	867.3	135.1	1,203.4	1,324.3	3,530.1	1,832.5	172.5	1,333.5	2,407.4	5,745.9
Southwestern										
Buffalo	2.2	6.0	126.8	135.2	270.3	3.4	5.0	219.1	339.9	567.4
Crawford	0.7	1.0	81.5	122.7	205.8	3.0	0.4	174.7	256.4	434.4
Dunn	22.8	0.8	73.5	92.5	189.6	45.7	2.2	91.2	202.5	341.5
Grant	10.0	1.9	91.0	157.7	260.6	9.4	2.6	221.3	350.1	583.4
Iowa	12.4	0.8	69.8	145.0	227.8	14.9	0.3	111.3	371.7	498.2
La Crosse	5.2	0.3	63.5	102.7	171.8	7.1	- -	87.6	275.2	370.0
Lafayette	0.4	0.1	35.5	39.2	75.2	0.7	- -	74.4	126.1	201.1
Pepin	2.0	0.9	38.1	33.4	74.4	1.1	0.6	92.8	71.0	165.5
Pierce	2.0	2.7	43.7	59.5	107.9	3.4	1.8	58.0	142.4	205.5
Richland	5.7	1.2	70.3	90.1	167.3	23.5	2.6	137.4	173.6	337.0
St. Croix	27.9	2.1	52.8	42.8	125.5	43.5	1.8	82.0	96.0	223.3
Sauk	11.1	4.9	95.5	125.9	237.4	19.4	13.5	176.7	296.4	506.1
Trempealeau	23.2	- -	51.5	78.5	153.2	47.2	- -	74.6	159.3	281.0
Vernon	24.6	0.8	104.2	179.9	309.6	95.4	0.4	172.8	387.4	655.9
Total	150.2	23.5	997.7	1,404.9	2,576.4	317.6	31.3	1,773.8	3,247.8	5,370.6

(Table 59a continued on next page)

(Table 59a continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Southeastern										
Brown	2.4	3.8	50.0	28.4	84.7	5.7	4.6	64.3	47.6	122.2
Calumet	- -	3.1	27.3	18.0	48.4	- -	6.3	69.7	54.7	130.7
Columbia	17.7	1.3	49.1	72.4	140.5	31.2	0.6	84.3	147.5	263.5
Dane	0.9	4.3	35.9	70.0	111.1	2.0	1.6	41.1	178.5	223.2
Dodge	3.6	0.2	13.7	8.7	26.2	6.4	- -	28.7	7.9	43.0
Door	10.5	73.8	43.8	65.3	193.4	16.1	101.8	38.9	108.0	264.8
Fond du Lac	2.3	1.4	18.5	10.7	33.0	6.3	0.5	25.3	31.3	63.4
Green	0.1	- -	20.8	15.7	36.6	- -	- -	31.0	36.2	67.2
Green Lake	14.3	3.0	11.6	25.6	54.6	35.6	4.9	14.7	70.4	125.6
Jefferson	- -	0.3	23.1	16.5	40.0	- -	0.2	36.2	50.6	87.0
Kenosha	- -	0.1	5.5	14.0	19.6	- -	- -	15.3	53.4	68.6
Kewaunee	- -	9.5	18.7	8.0	36.2	- -	19.9	29.7	10.7	60.2
Manitowoc	5.6	33.3	43.8	38.4	121.1	15.8	78.6	59.3	70.9	224.6
Milwaukee	- -	- -	1.5	3.3	4.8	- -	- -	0.9	2.3	3.2
Outagamie	1.9	5.1	47.0	27.6	81.6	4.1	4.3	80.4	57.2	146.0
Ozaukee	0.0	0.4	11.1	14.3	25.8	- -	- -	13.6	42.4	56.0
Racine	0.6	0.8	4.0	12.9	18.3	0.2	- -	1.6	51.3	53.0
Rock	6.6	0.1	23.4	41.9	72.0	11.1	- -	30.3	137.9	179.3
Sheboygan	3.3	15.0	24.8	59.9	103.1	4.9	18.1	29.6	120.6	173.1
Walworth	10.6	0.3	9.8	25.1	45.8	24.1	0.3	17.2	68.9	110.5
Washington	2.2	1.0	22.2	32.8	58.3	3.6	0.4	35.0	120.7	159.7
Waukesha	13.0	1.9	29.8	44.5	89.1	9.1	3.0	38.2	121.5	171.7
Winnebago	0.3	0.1	5.4	21.1	26.8	0.2	- -	5.6	39.2	45.1
Total	95.9	159.0	540.9	675.3	1,471.0	176.3	245.0	790.7	1,629.6	2,841.5
All counties	2,956.3	2,198.2	7,581.6	6,930.4	19,666.5	7,879.2	3,588.1	8,617.4	12,618.5	32,703.1

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

[1] Doyle rule.

Table 60.—Average annual net growth of growing stock and sawtimber (International ¼-inch rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 1996 to 2000-04

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	0.9	0.6	2.4	3.2	7.0	5.0	3.4	9.8	7.5	25.7
Forest	0.3	3.3	15.2	8.0	26.7	1.5	10.8	37.1	30.9	80.3
Langlade	0.5	4.1	6.9	6.4	18.0	4.0	11.0	18.2	19.5	52.6
Lincoln	0.3	1.3	6.4	2.5	10.4	1.6	5.7	9.7	8.0	24.9
Marinette	3.4	4.8	14.4	3.9	26.4	11.9	7.4	32.0	17.5	68.7
Menominee	1.6	1.4	4.4	1.7	9.2	12.6	6.5	5.2	5.1	29.3
Oconto	7.1	4.3	8.1	3.6	23.0	43.2	20.9	16.3	13.9	94.2
Oneida	5.9	1.3	12.8	3.3	23.3	29.8	8.0	14.1	10.0	62.0
Shawano	0.1	3.2	1.8	2.3	7.4	1.6	9.4	4.0	7.9	22.9
Vilas	4.7	1.1	-1.0	4.1	9.0	25.9	-3.5	5.2	12.7	40.3
Total	24.8	25.4	71.3	38.9	160.4	137.0	79.5	151.7	132.9	501.0
Northwestern										
Ashland	0.4	2.1	8.1	0.5	11.2	2.3	10.7	23.0	11.6	47.7
Barron	0.8	0.0	4.6	2.0	7.5	3.9	0.1	14.4	6.8	25.2
Bayfield	7.8	4.8	17.4	7.3	37.3	34.4	18.8	37.1	16.8	107.1
Burnett	3.6	0.2	6.2	3.8	13.9	18.3	0.9	8.0	17.9	45.1
Douglas	3.2	5.3	16.4	3.4	28.2	21.0	10.0	44.2	3.4	78.6
Iron	0.4	1.3	7.6	1.3	10.6	1.6	-6.5	20.6	-1.0	14.8
Polk	0.5	- -	5.5	1.5	7.6	2.1	- -	6.1	8.7	16.8
Price	0.9	3.1	15.5	4.1	23.6	4.4	2.0	15.0	15.0	36.4
Rusk	1.4	1.8	3.6	3.2	10.0	0.4	11.9	8.1	9.6	30.0
Sawyer	3.3	4.6	9.8	9.2	27.0	13.9	26.4	23.4	28.3	91.9
Taylor	0.2	0.9	5.1	2.2	8.4	1.1	7.8	13.2	13.2	35.3
Washburn	3.8	1.0	6.9	3.9	15.7	16.8	5.5	16.4	29.4	68.1
Total	26.5	25.2	106.8	42.5	201.0	120.4	87.6	229.6	159.4	597.0

(Table 60 continued on next page)

(Table 60 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	5.4	- -	1.5	5.0	11.9	27.9	- -	7.6	16.8	52.2
Chippewa	- -	2.1	3.1	1.7	7.0	- -	17.3	3.4	9.3	30.0
Clark	1.2	0.1	10.8	4.6	16.7	5.9	0.0	22.2	18.6	46.8
Eau Claire	1.2	- -	1.2	2.7	5.1	5.3	- -	5.5	9.4	20.2
Jackson	2.1	0.1	-0.3	3.5	5.3	9.4	- -	-0.8	16.0	24.6
Juneau	4.0	- -	6.2	1.6	11.8	17.2	- -	19.9	12.1	49.2
Marathon	2.5	1.8	10.6	4.3	19.3	10.1	6.2	33.3	21.2	70.8
Marquette	- -	0.1	2.0	1.0	3.2	- -	0.7	2.8	4.7	8.2
Monroe	1.7	- -	0.8	3.3	5.8	4.7	- -	4.4	13.2	22.3
Portage	3.8	0.4	1.2	1.6	7.0	25.0	0.1	7.2	8.2	40.5
Waupaca	1.9	0.7	11.6	6.0	20.3	12.5	2.5	37.4	21.9	74.3
Waushara	4.2	0.3	-1.1	1.2	4.6	25.6	2.6	-1.0	9.4	36.7
Wood	1.2	0.1	2.8	4.3	8.3	6.2	- -	14.4	17.7	38.4
Total	29.1	5.8	50.6	40.9	126.4	149.8	29.5	156.3	178.5	514.1
Southwestern										
Buffalo	0.0	- -	5.8	5.1	10.9	1.3	- -	20.4	18.4	40.1
Crawford	- -	- -	1.0	3.4	4.4	- -	- -	2.8	14.3	17.1
Dunn	0.8	- -	2.9	2.2	5.8	4.1	- -	8.4	7.6	20.1
Grant	3.0	0.5	0.3	4.2	8.1	4.8	1.5	1.0	20.7	27.9
Iowa	0.8	0.0	3.3	7.1	11.2	5.5	- -	16.3	34.7	56.5
La Crosse	1.0	- -	-1.0	0.7	0.7	4.0	- -	3.9	3.2	11.2
Lafayette	0.1	0.0	1.1	6.0	7.2	- -	- -	4.0	28.2	32.2
Pepin	0.6	0.3	5.3	3.9	10.0	- -	0.8	27.3	16.6	44.6
Pierce	- -	0.2	6.6	0.8	7.6	- -	- -	25.9	6.6	32.4
Richland	- -	- -	2.9	4.3	7.2	- -	- -	14.2	14.2	28.4
St. Croix	0.0	- -	1.5	2.0	3.5	0.2	- -	6.3	4.5	11.0
Sauk	0.4	- -	5.7	7.7	13.8	1.4	- -	27.7	39.1	68.2
Trempealeau	2.1	- -	-0.2	-0.1	1.8	17.9	- -	-1.8	-2.4	13.6
Vernon	0.4	0.3	2.9	6.7	10.3	2.4	0.9	8.6	31.2	43.1
Total	9.1	1.3	38.1	54.0	102.5	41.5	3.1	165.0	237.0	446.6

(Table 60 continued on next page)

(Table 60 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Southeastern										
Brown	- -	0.2	-0.1	-0.2	0.0	- -	- -	0.1	-0.9	-0.8
Calumet	- -	- -	0.3	0.9	1.3	- -	- -	2.1	3.8	5.9
Columbia	0.8	- -	1.8	2.4	5.0	8.7	- -	3.4	9.8	21.8
Dane	- -	- -	4.4	2.6	7.0	- -	- -	13.4	7.9	21.3
Dodge	0.5	- -	1.0	- -	1.5	- -	- -	- -	- -	- -
Door	1.4	1.2	3.2	0.9	6.7	- -	5.4	10.3	1.9	17.6
Fond du Lac	- -	0.1	1.6	0.3	2.0	- -	0.8	1.1	0.3	2.2
Green	- -	- -	1.0	1.6	2.6	- -	- -	5.0	3.1	8.1
Green Lake	0.5	0.3	0.4	1.0	2.3	2.1	1.6	1.3	5.7	10.7
Jefferson	- -	- -	0.8	0.2	1.0	- -	- -	1.3	-0.2	1.1
Kenosha	- -	0.5	0.5	1.0	2.0	- -	- -	1.2	5.5	6.7
Kewaunee	- -	1.0	1.5	1.0	3.5	- -	5.2	5.1	0.3	10.6
Manitowoc	- -	0.0	2.9	0.5	3.4	- -	1.0	2.6	2.5	6.2
Milwaukee	- -	- -	0.5	0.3	0.8	- -	- -	- -	2.9	2.9
Outagamie	- -	0.3	2.4	0.3	3.0	- -	1.6	12.4	1.5	15.5
Ozaukee	- -	- -	0.4	0.6	0.9	- -	- -	1.7	0.9	2.7
Racine	0.1	- -	- -	0.2	0.3	1.3	- -	- -	0.5	1.8
Rock	0.5	0.4	1.1	0.1	2.1	3.1	3.0	2.6	-0.3	8.4
Sheboygan	0.8	4.2	0.1	1.5	6.6	3.6	7.1	0.2	4.8	15.7
Walworth	0.4	- -	0.0	0.4	0.8	2.0	- -	-0.4	2.3	4.0
Washington	- -	1.0	1.7	2.1	4.7	- -	- -	4.0	9.3	13.4
Waukesha	- -	- -	1.5	3.2	4.7	- -	- -	9.4	7.2	16.6
Winnebago	0.1	- -	- -	0.4	0.5	- -	- -	- -	2.8	2.8
Total	5.1	9.3	27.1	21.3	62.8	20.7	25.8	76.9	71.7	195.2
All counties	94.5	67.0	294.0	197.6	653.1	469.5	225.5	779.4	779.5	2,253.9

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

[1] International 1/4-inch rule.

Table 60a.—Average annual net growth of growing stock and sawtimber (Doyle rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 1996 to 2000-04

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	0.9	0.6	2.4	3.2	7.0	2.3	1.8	3.7	3.8	11.6
Forest	0.3	3.3	15.2	8.0	26.7	1.0	4.8	17.0	13.8	36.5
Langlade	0.5	4.1	6.9	6.4	18.0	1.5	4.2	8.3	8.7	22.6
Lincoln	0.3	1.3	6.4	2.5	10.4	1.1	2.5	4.0	3.3	10.9
Marinette	3.4	4.8	14.4	3.9	26.4	7.9	3.5	14.5	8.4	34.3
Menominee	1.6	1.4	4.4	1.7	9.2	6.7	3.6	2.4	2.6	15.2
Oconto	7.1	4.3	8.1	3.6	23.0	28.1	8.8	7.3	7.0	51.2
Oneida	5.9	1.3	12.8	3.3	23.3	20.7	3.4	5.7	5.7	35.4
Shawano	0.1	3.2	1.8	2.3	7.4	1.7	4.7	1.9	4.3	12.6
Vilas	4.7	1.1	-1.0	4.1	9.0	17.1	-2.4	1.5	6.2	22.4
Total	24.8	25.4	71.3	38.9	160.4	88.0	34.8	66.2	63.7	252.7
Northwestern										
Ashland	0.4	2.1	8.1	0.5	11.2	1.4	4.8	11.2	4.8	22.2
Barron	0.8	0.0	4.6	2.0	7.5	2.3	0.1	7.0	4.3	13.7
Bayfield	7.8	4.8	17.4	7.3	37.3	18.9	10.2	16.8	7.4	53.3
Burnett	3.6	0.2	6.2	3.8	13.9	10.6	0.6	4.2	9.5	24.8
Douglas	3.2	5.3	16.4	3.4	28.2	10.5	3.7	19.6	1.4	35.2
Iron	0.4	1.3	7.6	1.3	10.6	0.7	-3.2	10.3	-1.6	6.2
Polk	0.5	- -	5.5	1.5	7.6	1.2	- -	3.5	3.6	8.2
Price	0.9	3.1	15.5	4.1	23.6	2.7	0.2	7.4	7.2	17.4
Rusk	1.4	1.8	3.6	3.2	10.0	0.2	4.4	3.7	3.5	11.9
Sawyer	3.3	4.6	9.8	9.2	27.0	9.0	11.0	6.8	14.9	41.7
Taylor	0.2	0.9	5.1	2.2	8.4	0.5	1.9	6.0	6.7	15.1
Washburn	3.8	1.0	6.9	3.9	15.7	7.3	2.0	6.8	12.7	28.8
Total	26.5	25.2	106.8	42.5	201.0	65.3	35.5	103.3	74.4	278.6

(Table 60a continued on next page)

(Table 60a continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	5.4	- -	1.5	5.0	11.9	12.6	- -	4.1	8.4	25.1
Chippewa	- -	2.1	3.1	1.7	7.0	- -	7.4	0.8	3.4	11.7
Clark	1.2	0.1	10.8	4.6	16.7	4.0	0.0	11.5	10.7	26.3
Eau Claire	1.2	- -	1.2	2.7	5.1	2.1	- -	2.1	4.9	9.1
Jackson	2.1	0.1	-0.3	3.5	5.3	4.1	- -	-1.8	9.2	11.5
Juneau	4.0	- -	6.2	1.6	11.8	7.3	- -	11.5	5.7	24.5
Marathon	2.5	1.8	10.6	4.3	19.3	4.4	2.9	16.1	11.2	34.6
Marquette	- -	0.1	2.0	1.0	3.2	- -	0.2	1.5	2.5	4.2
Monroe	1.7	- -	0.8	3.3	5.8	2.6	- -	1.0	5.9	9.4
Portage	3.8	0.4	1.2	1.6	7.0	10.2	0.1	3.2	3.4	16.9
Waupaca	1.9	0.7	11.6	6.0	20.3	6.6	1.0	20.9	12.4	40.9
Waushara	4.2	0.3	-1.1	1.2	4.6	9.1	0.9	-0.5	4.7	14.2
Wood	1.2	0.1	2.8	4.3	8.3	3.6	- -	5.4	9.1	18.2
Total	29.1	5.8	50.6	40.9	126.4	66.7	12.6	75.9	91.4	246.7
Southwestern										
Buffalo	0.0	- -	5.8	5.1	10.9	0.4	- -	9.4	10.2	20.0
Crawford	- -	- -	1.0	3.4	4.4	- -	- -	1.5	7.8	9.3
Dunn	0.8	- -	2.9	2.2	5.8	1.7	- -	5.0	3.7	10.4
Grant	3.0	0.5	0.3	4.2	8.1	1.6	0.8	0.7	12.4	15.6
Iowa	0.8	0.0	3.3	7.1	11.2	2.5	- -	8.0	24.7	35.2
La Crosse	1.0	- -	-1.0	0.7	0.7	1.4	- -	2.0	0.3	3.7
Lafayette	0.1	0.0	1.1	6.0	7.2	- -	- -	2.4	22.6	24.9
Pepin	0.6	0.3	5.3	3.9	10.0	- -	0.3	22.5	10.1	32.8
Pierce	- -	0.2	6.6	0.8	7.6	- -	- -	14.2	2.9	17.1
Richland	- -	- -	2.9	4.3	7.2	- -	- -	6.9	8.3	15.2
St. Croix	0.0	- -	1.5	2.0	3.5	0.1	- -	3.1	2.7	5.9
Sauk	0.4	- -	5.7	7.7	13.8	0.5	- -	13.7	21.0	35.3
Trempealeau	2.1	- -	-0.2	-0.1	1.8	7.2	- -	-1.1	-1.3	4.7
Vernon	0.4	0.3	2.9	6.7	10.3	1.6	0.3	4.0	18.2	24.0
Total	9.1	1.3	38.1	54.0	102.5	17.0	1.4	92.2	143.5	254.2

(Table 60a continued on next page)

(Table 60a continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Southeastern										
Brown	- -	0.2	-0.1	-0.2	0.0	- -	- -	0.3	-0.5	-0.2
Calumet	- -	- -	0.3	0.9	1.3	- -	- -	1.3	2.7	4.0
Columbia	0.8	- -	1.8	2.4	5.0	3.2	- -	1.7	5.5	10.4
Dane	- -	- -	4.4	2.6	7.0	- -	- -	8.1	4.7	12.7
Dodge	0.5	- -	1.0	- -	1.5	- -	- -	- -	- -	- -
Door	1.4	1.2	3.2	0.9	6.7	- -	3.0	5.5	0.6	9.0
Fond du Lac	- -	0.1	1.6	0.3	2.0	- -	0.3	1.0	0.2	1.4
Green	- -	- -	1.0	1.6	2.6	- -	- -	2.6	1.6	4.2
Green Lake	0.5	0.3	0.4	1.0	2.3	1.5	1.0	0.7	3.4	6.6
Jefferson	- -	- -	0.8	0.2	1.0	- -	- -	1.0	-0.3	0.7
Kenosha	- -	0.5	0.5	1.0	2.0	- -	- -	0.9	4.8	5.7
Kewaunee	- -	1.0	1.5	1.0	3.5	- -	3.5	2.5	0.2	6.3
Manitowoc	- -	0.0	2.9	0.5	3.4	- -	0.4	1.4	1.5	3.3
Milwaukee	- -	- -	0.5	0.3	0.8	- -	- -	- -	1.3	1.3
Outagamie	- -	0.3	2.4	0.3	3.0	- -	0.8	6.5	0.8	8.0
Ozaukee	- -	- -	0.4	0.6	0.9	- -	- -	1.1	0.7	1.8
Racine	0.1	- -	- -	0.2	0.3	0.4	- -	- -	0.4	0.8
Rock	0.5	0.4	1.1	0.1	2.1	1.4	1.3	1.3	-1.1	2.8
Sheboygan	0.8	4.2	0.1	1.5	6.6	1.4	2.5	0.1	2.1	6.1
Walworth	0.4	- -	0.0	0.4	0.8	0.8	- -	0.1	0.8	1.6
Washington	- -	1.0	1.7	2.1	4.7	- -	- -	2.6	7.0	9.7
Waukesha	- -	- -	1.5	3.2	4.7	- -	- -	6.0	5.1	11.1
Winnebago	0.1	- -	- -	0.4	0.5	- -	- -	- -	1.2	1.2
Total	5.1	9.3	27.1	21.3	62.8	8.7	12.7	44.6	42.6	108.6
All counties	94.5	67.0	294.0	197.6	653.1	245.8	97.0	382.3	415.7	1,140.7

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

[1] Doyle rule.

Table 61.—Average annual removals of growing stock and sawtimber (International ¼-inch rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 1996 to 2000-04

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	1.1	0.4	3.9	1.1	6.5	3.7	2.1	13.2	3.5	22.6
Forest	- -	1.8	8.0	2.4	12.2	- -	7.2	14.3	5.6	27.1
Langlade	- -	0.7	2.7	7.6	10.9	- -	1.3	5.0	31.7	37.9
Lincoln	- -	0.1	10.6	0.4	11.2	- -	- -	20.9	0.9	21.8
Marinette	2.1	0.1	2.7	0.4	5.4	4.4	- -	5.4	- -	9.9
Menominee	9.7	1.8	4.6	1.8	17.9	54.9	9.1	16.8	4.3	85.1
Oconto	- -	4.6	1.5	- -	6.1	- -	11.6	1.7	- -	13.4
Oneida	2.0	- -	2.3	0.7	5.1	8.0	- -	0.6	3.7	12.3
Shawano	0.9	- -	0.7	0.7	2.3	0.9	- -	2.1	3.3	6.3
Vilas	2.2	- -	0.9	1.1	4.2	10.0	- -	0.5	4.5	15.1
Total	18.0	9.6	37.8	16.2	81.6	81.9	31.4	80.5	57.5	251.4
Northwestern										
Ashland	1.3	0.4	4.1	- -	5.8	6.9	1.0	1.0	- -	9.0
Barron	- -	0.4	0.2	1.1	1.6	- -	2.1	- -	5.7	7.8
Bayfield	6.3	1.7	7.1	2.1	17.2	23.1	4.2	13.3	0.5	41.2
Burnett	0.2	- -	1.0	3.2	4.5	- -	- -	2.3	14.6	16.9
Douglas	2.9	1.4	15.9	0.4	20.5	3.6	3.7	43.1	- -	50.4
Iron	0.7	1.3	3.7	2.5	8.2	2.7	3.0	2.6	10.8	19.1
Polk	- -	- -	2.5	1.3	3.8	- -	- -	- -	- -	- -
Price	- -	- -	5.7	4.5	10.2	- -	- -	10.6	9.7	20.3
Rusk	0.6	0.3	9.6	6.1	16.6	3.3	1.6	24.5	15.0	44.3
Sawyer	4.4	0.1	5.0	4.3	13.9	23.4	- -	9.2	6.1	38.6
Taylor	- -	- -	8.3	2.1	10.4	- -	- -	17.9	7.1	25.0
Washburn	1.1	- -	3.1	3.5	7.7	2.6	- -	7.8	5.5	15.8
Total	17.5	5.6	66.1	31.2	120.4	65.6	15.7	132.3	74.9	288.5

(Table 61 continued on next page)

(Table 61 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	2.1	- -	- -	1.1	3.3	1.5	- -	- -	5.4	6.9
Chippewa	- -	- -	2.6	1.6	4.2	- -	- -	5.5	5.7	11.1
Clark	- -	- -	7.9	2.2	10.1	- -	- -	7.3	4.0	11.3
Eau Claire	1.4	- -	1.3	2.0	4.8	4.0	- -	3.4	6.4	13.8
Jackson	0.8	- -	2.3	5.5	8.7	3.6	- -	1.0	22.9	27.4
Juneau	0.8	- -	3.8	1.0	5.6	1.2	- -	8.5	4.4	14.1
Marathon	- -	0.2	8.0	4.1	12.4	- -	1.2	31.6	17.8	50.6
Monroe	1.3	- -	0.7	1.5	3.5	1.5	- -	2.3	5.0	8.8
Portage	1.3	- -	0.5	2.0	3.7	1.0	- -	2.3	4.6	7.9
Waupaca	1.2	0.3	2.5	0.8	4.8	5.5	- -	6.0	3.0	14.4
Waushara	2.0	0.7	0.3	1.4	4.5	4.1	- -	1.5	3.1	8.6
Wood	0.4	- -	4.9	0.7	6.0	1.4	- -	16.3	1.8	19.4
Total	11.4	1.3	34.9	23.9	71.6	23.6	1.2	85.6	83.9	194.3
Southwestern										
Buffalo	- -	- -	3.8	4.0	7.8	- -	- -	6.7	11.6	18.3
Crawford	- -	- -	3.2	0.3	3.5	- -	- -	13.5	1.6	15.1
Dunn	2.1	- -	1.6	1.5	5.3	9.9	- -	1.1	3.5	14.5
Grant	- -	1.3	1.2	1.3	3.9	- -	6.8	0.9	6.1	13.8
Iowa	0.3	- -	0.4	2.0	2.7	- -	- -	1.0	9.6	10.6
La Crosse	0.9	- -	0.5	2.2	3.6	- -	- -	1.7	9.3	10.9
Lafayette	- -	- -	1.1	0.4	1.5	- -	- -	4.7	1.9	6.7
Pierce	- -	- -	8.7	1.8	10.5	- -	- -	29.2	8.3	37.5
Richland	- -	- -	1.5	1.9	3.3	- -	- -	6.2	8.4	14.6
St. Croix	- -	- -	1.0	1.4	2.4	- -	- -	- -	6.2	6.2
Sauk	1.3	- -	1.2	3.4	5.9	6.7	- -	3.3	15.4	25.5
Trempealeau	1.1	- -	3.4	0.6	5.0	3.3	- -	14.6	2.7	20.6
Vernon	0.9	- -	3.3	3.7	7.9	4.9	- -	9.2	6.4	20.5
Total	6.6	1.3	31.0	24.5	63.4	24.7	6.8	92.2	91.1	214.7

(Table 61 continued on next page)

(Table 61 continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Southeastern										
Brown	- -	- -	0.2	1.4	1.7	- -	- -	1.0	6.7	7.7
Calumet	- -	- -	0.3	- -	0.3	- -	- -	- -	- -	- -
Columbia	- -	- -	- -	0.4	0.4	- -	- -	- -	1.9	1.9
Dane	- -	- -	0.3	- -	0.3	- -	- -	1.4	- -	1.4
Fond du Lac	- -	- -	- -	0.6	0.6	- -	- -	- -	- -	- -
Green	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Manitowoc	- -	- -	1.1	0.3	1.4	- -	- -	1.5	1.5	3.1
Milwaukee	- -	- -	0.1	1.7	1.9	- -	- -	- -	5.3	5.3
Outagamie	- -	- -	0.9	- -	0.9	- -	- -	- -	- -	- -
Rock	0.7	- -	- -	- -	0.7	1.8	- -	- -	- -	1.8
Walworth	- -	- -	0.3	0.3	0.5	- -	- -	- -	- -	- -
Washington	- -	- -	0.3	- -	0.3	- -	- -	- -	- -	- -
Waukesha	- -	- -	0.2	- -	0.2	- -	- -	- -	- -	- -
Winnebago	0.1	- -	- -	- -	0.1	- -	- -	- -	- -	- -
Total	0.8	- -	3.8	4.7	9.3	1.8	- -	3.9	15.4	21.1
All counties	54.4	17.7	173.7	100.5	346.3	197.7	55.1	394.5	322.8	970.1

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the volume rounds to less than 0.1 million cubic or board feet. Columns and rows may not add to their totals due to rounding.

[1] International 1/4-inch rule.

Table 61a.—Average annual removals of growing stock and sawtimber (Doyle rule) on timberland by Forest Inventory Unit, county, and major species group, Wisconsin, 1996 to 2000-04

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	1.1	0.4	3.9	1.1	6.5	1.4	1.3	6.2	2.6	11.4
Forest	- -	1.8	8.0	2.4	12.2	- -	4.6	6.6	1.9	13.1
Langlade	- -	0.7	2.7	7.6	10.9	- -	0.4	2.7	17.9	21.1
Lincoln	- -	0.1	10.6	0.4	11.2	- -	- -	9.8	0.4	10.2
Marinette	2.1	0.1	2.7	0.4	5.4	3.2	- -	3.0	- -	6.3
Menominee	9.7	1.8	4.6	1.8	17.9	59.1	5.9	8.7	2.1	75.8
Oconto	- -	4.6	1.5	- -	6.1	- -	7.0	0.9	- -	7.9
Oneida	2.0	- -	2.3	0.7	5.1	2.8	- -	0.3	2.7	5.7
Shawano	0.9	- -	0.7	0.7	2.3	0.3	- -	1.0	2.2	3.5
Vilas	2.2	- -	0.9	1.1	4.2	6.9	- -	- -	2.3	9.3
Total	18.0	9.6	37.8	16.2	81.6	73.8	19.3	39.1	32.1	164.2
Northwestern										
Ashland	1.3	0.4	4.1	- -	5.8	4.8	0.7	0.4	- -	5.9
Barron	- -	0.4	0.2	1.1	1.6	- -	1.4	- -	5.1	6.6
Bayfield	6.3	1.7	7.1	2.1	17.2	11.9	2.6	4.9	- -	19.3
Burnett	0.2	- -	1.0	3.2	4.5	- -	- -	1.1	8.3	9.4
Douglas	2.9	1.4	15.9	0.4	20.5	1.7	1.6	20.0	- -	23.3
Iron	0.7	1.3	3.7	2.5	8.2	2.1	1.5	1.1	7.4	12.1
Polk	- -	- -	2.5	1.3	3.8	- -	- -	- -	- -	- -
Price	- -	- -	5.7	4.5	10.2	- -	- -	5.9	4.6	10.6
Rusk	0.6	0.3	9.6	6.1	16.6	1.9	0.9	12.5	8.3	23.6
Sawyer	4.4	0.1	5.0	4.3	13.9	19.4	- -	4.4	2.6	26.4
Taylor	- -	- -	8.3	2.1	10.4	- -	- -	8.7	4.0	12.7
Washburn	1.1	- -	3.1	3.5	7.7	1.4	- -	3.9	2.3	7.6
Total	17.5	5.6	66.1	31.2	120.4	43.1	8.8	62.9	42.6	157.5

(Table 61a continued on next page)

(Table 61a continued)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Central										
Adams	2.1	- -	- -	1.1	3.3	0.3	- -	- -	3.7	3.9
Chippewa	- -	- -	2.6	1.6	4.2	- -	- -	2.4	2.9	5.3
Clark	- -	- -	7.9	2.2	10.1	- -	- -	3.0	2.7	5.7
Eau Claire	1.4	- -	1.3	2.0	4.8	1.8	- -	1.4	3.3	6.5
Jackson	0.8	- -	2.3	5.5	8.7	2.2	- -	- -	13.9	16.1
Juneau	0.8	- -	3.8	1.0	5.6	0.6	- -	3.9	2.7	7.2
Marathon	- -	0.2	8.0	4.1	12.4	- -	0.7	16.1	11.7	28.6
Monroe	1.3	- -	0.7	1.5	3.5	0.4	- -	0.7	3.3	4.4
Portage	1.3	- -	0.5	2.0	3.7	0.7	- -	1.0	2.5	4.1
Waupaca	1.2	0.3	2.5	0.8	4.8	3.3	- -	3.0	1.7	7.9
Waushara	2.0	0.7	0.3	1.4	4.5	0.3	- -	0.8	2.1	3.2
Wood	0.4	- -	4.9	0.7	6.0	0.6	- -	6.9	0.9	8.4
Total	11.4	1.3	34.9	23.9	71.6	10.0	0.7	39.2	51.4	101.4
Southwestern										
Buffalo	- -	- -	3.8	4.0	7.8	- -	- -	3.2	7.2	10.4
Crawford	- -	- -	3.2	0.3	3.5	- -	- -	7.1	1.2	8.3
Dunn	2.1	- -	1.6	1.5	5.3	6.2	- -	0.9	2.9	9.9
Grant	- -	1.3	1.2	1.3	3.9	- -	3.2	0.6	3.5	7.3
Iowa	0.3	- -	0.4	2.0	2.7	- -	- -	0.5	6.5	7.0
La Crosse	0.9	- -	0.5	2.2	3.6	- -	- -	0.5	5.5	6.0
Lafayette	- -	- -	1.1	0.4	1.5	- -	- -	3.7	1.1	4.8
Pierce	- -	- -	8.7	1.8	10.5	- -	- -	16.8	5.0	21.8
Richland	- -	- -	1.5	1.9	3.3	- -	- -	3.2	5.7	8.9
St. Croix	- -	- -	1.0	1.4	2.4	- -	- -	- -	3.6	3.6
Sauk	1.3	- -	1.2	3.4	5.9	2.3	- -	1.8	10.2	14.3
Trempealeau	1.1	- -	3.4	0.6	5.0	1.1	- -	7.9	2.1	11.1
Vernon	0.9	- -	3.3	3.7	7.9	4.1	- -	6.2	3.6	13.9
Total	6.6	1.3	31.0	24.5	63.4	13.8	3.2	52.4	58.0	127.4

(Table 61a continued on next page)

Forest Survey Unit and county	Growing stock					Sawtimber				
	Major species group					Major species group				
	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species	Pine	Other softwoods	Soft hardwoods	Hard hardwoods	All species
	(In million cubic feet)					(In million board feet)[1]				
Northeastern										
Florence	1.1	0.4	3.9	1.1	6.5	1.4	1.3	6.2	2.6	11.4
Forest	- -	1.8	8.0	2.4	12.2	- -	4.6	6.6	1.9	13.1
Langlade	- -	0.7	2.7	7.6	10.9	- -	0.4	2.7	17.9	21.1
Lincoln	- -	0.1	10.6	0.4	11.2	- -	- -	9.8	0.4	10.2
Marinette	2.1	0.1	2.7	0.4	5.4	3.2	- -	3.0	- -	6.3
Menominee	9.7	1.8	4.6	1.8	17.9	59.1	5.9	8.7	2.1	75.8
Oconto	- -	4.6	1.5	- -	6.1	- -	7.0	0.9	- -	7.9
Oneida	2.0	- -	2.3	0.7	5.1	2.8	- -	0.3	2.7	5.7
Shawano	0.9	- -	0.7	0.7	2.3	0.3	- -	1.0	2.2	3.5
Vilas	2.2	- -	0.9	1.1	4.2	6.9	- -	- -	2.3	9.3
Total	18.0	9.6	37.8	16.2	81.6	73.8	19.3	39.1	32.1	164.2
Northwestern										
Ashland	1.3	0.4	4.1	- -	5.8	4.8	0.7	0.4	- -	5.9
Barron	- -	0.4	0.2	1.1	1.6	- -	1.4	- -	5.1	6.6
Bayfield	6.3	1.7	7.1	2.1	17.2	11.9	2.6	4.9	- -	19.3
Burnett	0.2	- -	1.0	3.2	4.5	- -	- -	1.1	8.3	9.4
Douglas	2.9	1.4	15.9	0.4	20.5	1.7	1.6	20.0	- -	23.3
Iron	0.7	1.3	3.7	2.5	8.2	2.1	1.5	1.1	7.4	12.1
Polk	- -	- -	2.5	1.3	3.8	- -	- -	- -	- -	- -
Price	- -	- -	5.7	4.5	10.2	- -	- -	5.9	4.6	10.6
Rusk	0.6	0.3	9.6	6.1	16.6	1.9	0.9	12.5	8.3	23.6
Sawyer	4.4	0.1	5.0	4.3	13.9	19.4	- -	4.4	2.6	26.4
Taylor	- -	- -	8.3	2.1	10.4	- -	- -	8.7	4.0	12.7
Washburn	1.1	- -	3.1	3.5	7.7	1.4	- -	3.9	2.3	7.6
Total	17.5	5.6	66.1	31.2	120.4	43.1	8.8	62.9	42.6	157.5

(Table 61a continued on next page)

Table 65.—Sampling errors by Forest Inventory Unit and county for area of timberland, volume, average annual net growth, average annual removals, and average annual mortality on timberland, Wisconsin, 2004

(Sampling error in percent)

Forest Survey Unit and county	Forest area	Timberland area	Growing stock				Sawtimber			
			Volume	Average annual net growth	Average annual removals	Average annual mortality	Volume	Average annual net growth	Average annual removals	Average annual mortality
Northeastern										
Florence	9.45	9.50	11.38	33.64	41.66	34.18	13.82	32.64	41.59	47.95
Forest	5.77	5.90	7.13	14.26	26.51	25.52	8.50	16.11	26.18	58.65
Langlade	7.85	7.94	9.43	20.84	41.27	32.81	11.12	21.67	49.65	53.31
Lincoln	7.74	7.76	10.17	25.69	34.99	39.02	13.16	30.04	42.05	66.68
Marinette	5.62	5.67	7.30	16.26	35.76	25.76	9.85	18.78	46.14	48.27
Menominee	10.71	10.75	13.77	26.22	54.78	73.19	15.67	30.00	64.42	71.22
Oconto	8.18	8.18	9.94	22.78	58.12	25.90	12.47	22.04	80.79	52.94
Oneida	6.38	6.42	8.72	23.69	45.11	20.79	11.37	35.15	48.60	38.34
Shawano	9.91	9.93	11.90	34.40	45.38	40.66	14.07	39.04	62.23	53.31
Vilas	6.30	6.32	7.78	45.13	44.12	31.00	9.01	38.17	55.88	38.02
Total	0.81	0.86	2.01	6.62	15.75	11.06	3.12	7.89	24.37	24.37
Northwestern										
Ashland	6.94	7.14	9.16	32.31	41.69	23.02	11.45	29.24	66.13	29.11
Barron	12.99	12.99	16.07	33.96	65.81	60.87	20.14	35.21	68.59	61.84
Bayfield	5.33	5.39	7.00	16.87	30.13	33.53	8.94	23.15	38.39	51.29
Burnett	8.48	8.68	10.75	28.56	54.99	32.64	12.83	29.54	62.84	37.09
Douglas	6.03	6.14	8.36	19.03	30.84	31.56	10.48	21.14	37.88	37.77
Iron	7.25	7.25	8.82	32.88	38.93	28.13	10.99	82.12	35.60	35.30
Polk	9.94	10.05	12.10	34.25	69.87	35.29	13.97	48.21	- -	53.19
Price	6.33	6.38	8.33	16.63	43.13	29.62	11.60	26.10	53.86	38.87
Rusk	7.74	7.81	9.93	40.89	34.12	31.51	12.38	56.60	37.26	41.85
Sawyer	6.21	6.33	7.86	22.94	46.08	35.68	9.86	26.58	70.00	52.26
Taylor	8.15	8.24	10.09	33.25	41.55	36.82	12.38	39.92	45.68	61.82
Washburn	7.91	7.97	9.85	23.22	37.30	24.06	12.14	23.18	41.52	46.45
Total	0.80	0.86	1.83	6.62	11.77	9.37	2.79	8.58	15.66	15.66

(Table 65 continued on next page)

(Table 65 continued)

Forest Survey Unit and county	Forest area	Timberland area	Growing stock				Sawtimber			
			Volume	Average annual net growth	Average annual removals	Average annual mortality	Volume	Average annual net growth	Average annual removals	Average annual mortality
Central										
Adams	9.89	9.94	11.89	29.81	46.74	40.01	13.77	30.86	70.91	55.28
Chippewa	10.27	10.37	13.48	31.71	56.04	64.56	16.88	44.69	61.29	100.00
Clark	8.63	8.67	11.37	22.18	39.08	46.25	13.66	24.49	47.14	60.29
Eau Claire	12.66	12.77	15.91	42.74	53.44	100.00	18.17	42.45	57.47	- -
Jackson	7.86	7.91	10.33	51.22	48.72	28.95	12.51	45.06	53.98	33.13
Juneau	9.46	9.46	11.97	38.16	42.77	38.45	14.18	35.32	51.90	43.56
Marathon	7.42	7.48	9.35	21.60	43.59	27.54	11.55	22.83	46.64	39.35
Marquette	14.82	15.00	19.44	48.40	- -	100.00	23.15	60.78	- -	- -
Monroe	8.97	9.04	11.47	45.22	51.15	33.50	14.59	40.24	62.99	39.36
Portage	12.86	12.86	16.01	33.94	57.57	51.99	18.07	36.03	84.41	100.00
Waupaca	11.31	11.39	14.17	46.21	39.77	49.00	16.67	45.03	44.31	58.31
Waushara	12.97	13.09	16.74	56.32	41.32	40.32	19.79	37.57	48.89	66.69
Wood	10.69	10.69	14.60	24.99	39.74	33.78	17.85	27.71	43.52	52.67
Total	1.41	1.44	2.61	10.38	13.66	11.34	3.61	10.05	17.40	17.40
Southwestern										
Buffalo	11.35	11.56	14.25	27.53	53.61	35.01	16.11	26.57	54.30	56.99
Crawford	12.69	12.69	15.78	33.40	62.47	- -	18.08	35.85	61.75	- -
Dunn	11.86	12.05	15.21	31.28	74.69	41.13	18.02	32.70	65.12	73.60
Grant	10.33	10.33	12.90	45.81	63.34	42.41	14.88	35.11	56.80	53.71
Iowa	11.69	11.92	14.26	29.22	54.02	55.20	15.74	29.44	62.62	72.43
La Crosse	13.45	13.56	16.54	100.00	48.60	40.20	18.64	74.63	59.03	49.43
Lafayette	21.03	21.25	26.41	48.54	71.77	64.66	27.37	45.47	79.16	58.40
Pepin	22.33	22.33	25.23	57.89	- -	100.00	28.74	57.74	- -	100.00
Pierce	16.11	16.34	19.84	43.23	86.47	72.04	22.64	41.02	82.10	100.00
Richland	12.85	12.85	15.46	29.48	52.11	44.20	17.35	33.10	53.14	54.41
St. Croix	14.94	15.07	19.05	42.71	97.91	66.93	22.02	46.11	97.91	100.00
Sauk	11.44	11.80	14.82	36.02	45.50	38.73	17.44	32.16	46.68	56.95
Trempealeau	12.20	12.24	17.11	100.00	62.46	38.54	21.11	100.00	65.99	47.24
Vernon	9.80	9.95	12.98	27.83	58.16	40.53	15.78	27.94	52.24	43.33
Total	1.83	1.90	3.09	11.07	20.82	12.63	3.97	10.85	20.18	20.18

(Table 65 continued on next page)

(Table 65 continued)

Forest Survey Unit and county	Forest area	Timberland area	Growing stock				Sawtimber			
			Volume	Average annual net growth	Average annual removals	Average annual mortality	Volume	Average annual net growth	Average annual removals	Average annual mortality
Southeastern										
Brown	21.70	21.70	24.97	100.00	97.91	88.00	29.21	100.00	97.91	89.68
Calumet	30.47	30.47	36.86	53.29	97.91	97.91	41.61	59.12	- -	- -
Columbia	15.75	15.75	17.65	42.67	100.00	48.09	19.22	48.01	100.00	100.00
Dane	15.61	15.76	19.21	41.56	100.00	67.65	22.41	50.88	100.00	74.09
Dodge	30.98	30.98	33.25	57.06	- -	- -	38.40	- -	- -	- -
Door	13.40	13.45	15.07	37.94	- -	47.56	17.47	49.50	- -	61.17
Fond du Lac	28.69	28.69	36.45	71.00	100.00	- -	41.74	58.62	- -	- -
Green	26.04	26.81	33.21	61.70	- -	97.91	35.94	62.45	- -	97.91
Green Lake	25.70	25.70	37.68	48.67	- -	- -	40.66	50.69	- -	- -
Jefferson	22.96	22.96	30.12	80.31	- -	- -	36.71	100.00	- -	- -
Kenosha	36.37	36.37	54.42	58.97	- -	100.00	58.86	78.81	- -	100.00
Kewaunee	34.97	34.97	40.84	46.35	- -	61.40	44.01	48.04	- -	- -
Manitowoc	16.74	16.74	20.72	42.49	74.27	57.83	24.50	47.45	79.16	71.46
Milwaukee	60.42	72.38	97.85	88.23	100.00	100.00	99.01	76.28	100.00	- -
Outagamie	21.20	21.20	25.38	55.60	100.00	75.02	29.10	58.10	- -	100.00
Ozaukee	29.80	31.06	46.34	65.80	- -	- -	52.31	87.08	- -	- -
Racine	40.61	40.61	57.01	100.00	- -	- -	73.45	100.00	- -	- -
Rock	19.58	19.58	27.01	67.34	100.00	58.36	34.11	58.41	100.00	69.10
Sheboygan	20.10	20.10	23.13	64.61	- -	97.91	27.28	48.43	- -	- -
Walworth	22.71	23.00	32.51	68.24	100.00	79.39	34.87	84.82	- -	81.20
Washington	23.48	23.48	34.57	50.61	100.00	100.00	45.75	65.43	- -	100.00
Waukesha	19.42	19.42	22.15	72.70	97.91	75.47	25.79	69.92	- -	- -
Winnebago	35.13	35.13	42.96	87.40	98.94	97.91	50.14	97.91	- -	- -
Total	3.29	3.32	4.56	13.50	34.06	19.74	5.84	14.69	47.72	47.72
All counties	0.55	0.57	1.09	3.87	7.33	5.24	1.59	4.38	9.73	8.04

Sampling errors that exceed 100% are reported as 100%. The sampling error is not calculated when the estimated value is equal to 0 and is indicated by --.

Hansen, Mark H.; Perry, Charles H.; Brand, Gary; McRoberts, Ronald E. 2008. **Wisconsin's forest, 2004: statistics and quality assurance.** Resour. Bull. NRS-24. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 98 p.

The first full, annualized inventory of Wisconsin's forests was completed in 2004 after 6,478 forested plots were visited. An earlier publication summarized the results and presented issue-driven analyses (Perry et al. 2008). This report includes detailed information on forest inventory methods, the quality of the estimates, and core tables.

KEY WORDS: inventory, forest statistics, timberland, forest land, volume, biomass, growth, removals, mortality

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