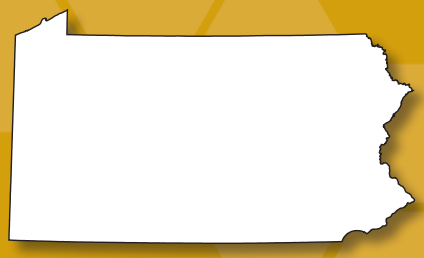
Pennsylvania's Forests, 2009: Statistics, Methods, and Quality Assurance



USDA United States Department of Agriculture

Forest Service

Forest Inventory Methods

Strategic Model

The Forest Inventory and Analysis (FIA) program of the Northern Research Station (NRS-FIA) is part of the national enhanced FIA program that focuses on 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 that these 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 with estimates of prescribed core variables
- Publication of statewide tables with 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 detection monitoring by the U.S. Forest Service's Forest Health Monitoring (FHM) program.

Plot Configuration

The national FIA plot design (Fig. 41) consists of four circular 24-ft-radius subplots (1/24th acre) configured as a central subplot and three peripheral subplots. Centers of the peripheral subplots are located 120 ft from the central subplot and at azimuths of 360°, 120°, and 240° from the center of the central subplot. Trees with diameter at breast height (d.b.h.) 5 inches or greater are measured on these subplots. Each subplot contains a circular 6.8-ft-radius microplot (1/300th acre) with center located 12 ft east of the subplot center on which each tree with d.b.h. between 1 and 5 inches are measured. Forest conditions that occur on any of the four subplots are identified and recorded; if the area of the condition is 1 acre or greater, the condition is

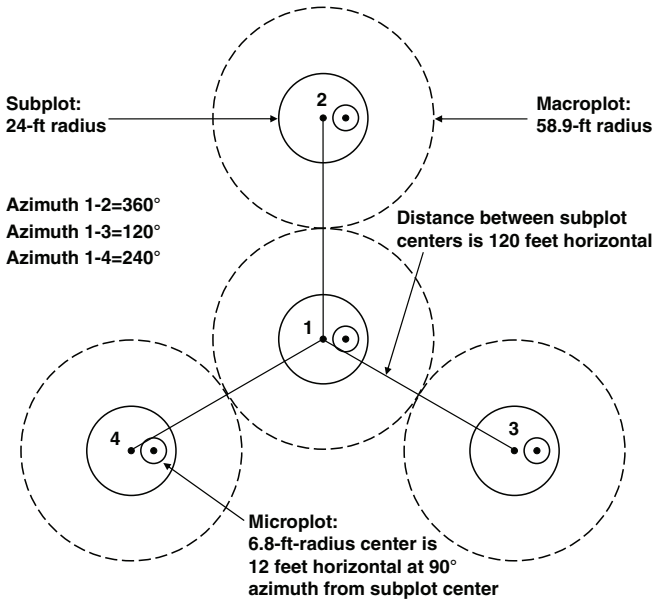


Figure 41.—FIA plot design (adapted from Bechtold and Patterson 2005).

mapped on the subplot. Factors that differentiate forest conditions include forest type, stand-size class, stand origin, land use, ownership, and density. Macroplots are not used by the Northern Research Station, but are currently used by the Rocky Mountain and Pacific Northwest FIA programs to sample large trees.

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 area of the United States into nonoverlapping, 5,937-acre hexagons and has established a sample plot location in each hexagon. 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 is divided into five interpenetrating, nonoverlapping panels or subsamples, each of which provides complete, systematic coverage of a state. Each year, plots in a single panel are measured and panels are selected on a 5-year, rotating basis (McRoberts 1999) that is the plots measured in 2003 were measured again in 2008 and the plots measured in 2004 were measured again in 2009. For estimation purposes, the measurement of each panel of plots is considered an independent, equal probability sample of all lands in a state and the remeasurement of a panel is considered an equal probability sample of change occurring on all lands in a state. Due to the small number of base plots in Pennsylvania, the sampling intensity of the grid has been doubled in this State.

Three-phase Inventory

FIA conducts inventories in three phases. Remotely sensed data is used in Phase 1 (P1) to obtain initial plot land-cover observations to determine if a field visit is required. P1 data is also used to classify total area in the population of interest, for latter use in the post-stratification process, to increase the precision of estimates. In Phase 2 (P2), field crews visit the physical locations of permanent field plots to measure traditional inventory variables such as tree species, diameter, and height. All trees measured in the previous measurement of the plot are remeasured or otherwise accounted for and any new trees that have grown onto the plot are measured. In Phase 3 (P3), field crews visit a subset of P2 plots to obtain measurements for an additional suite of variables associated with forest and ecosystem health. The three phases of the enhanced FIA program as implemented in this inventory are discussed in greater detail in the sections that follow.

Phase 1

Aerial photographs, digital orthoquads (DOQs: digitally scanned aerial photograph), and satellite imagery are used for initial plot measurement via remotely sensed data and stratification. P1 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 a land cover/use with primary focus on identifying forest land.[1] All plot locations that could possibly contain forest land, plus any additional plots that contained forest land at the previous measurement are selected for further measurement via field-crew visits in P2.

1 Forest land - lands satisfying FIA's definition of forest land include commercial timberland, some pastured land with trees, forest plantations, unproductive forested land, and reserved, noncommercial forested land. In addition, forest land requires minimum stocking levels, a 1-acre minimum area, and a minimum bole-to-bole width of 120 ft with continuous canopy. Forest land excludes wooded strips and windbreaks less than 120 feet wide and idle farmland or other previously nonforest land that currently is below minimum stocking levels.

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 stratified by using remotely sensed data to facilitate stratified estimation.

NRS-FIA uses canopy density classes to derive strata. Canopy density information was obtained from the 2001 National Land Cover Database (NLCD). The NLCD 2001 canopy density layer for the United States was produced through a cooperative project conducted by the Multi-Resolution Land Characteristics (MRLC) Consortium (http://www.mrlc.gov/). The layer characterizes subtle variations of forest canopy density as a percentage estimate of forest canopy cover (0–100) within every 30-m pixel over the United States. The method employed to map canopy density for NLCD 2001 is described in detail in Homer et al. (2007).

Strata Construction

The strata construction methods used by Northern FIA were developed to work well across the entire 24-state region. Using plot location information (center of the center subplot), a percent canopy density value was assigned to each plot. Plots were then aggregated into one of the five canopy cover classes based on the center of the center subplot. The percent canopy cover classification scheme consists of five groupings: (1) 0 to 5 percent, (2) 6 to 50 percent, (3) 51 to 65 percent, (4) 66 to 80 percent, and (5) 81 to 100 percent. These groupings were based on observed natural clumping of pixel values.

In addition to the classification of every pixel into one of the five canopy cover classes, every pixel was also assigned to an ownership class. The Protected Areas Database (CBI 2010) was initially used and then state-specific data were added. In Pennsylvania, supplemental information came from the Department of Environmental Protection. The largest ownership class, based on pixel counts, was private ownership at over 7.4 million acres. Every pixel was also assigned to a county based on the location of the pixel center.

If there were not a sufficient number of plots within a canopy cover class/ownership class/county for valid estimation purposes then specific collapsing rules were used to combine classes until sufficient sample sizes were obtained. These collapsed classes defined the strata used in the estimation. NRS-FIA required a minimum of 4 plots per stratum.

Stratified estimation requires that two tasks be accomplished. First, each plot must be assigned to a stratum. Next, the proportion of the total area 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 P1) and the variable's estimated mean per unit area for the stratum (from P2). Details of the stratum assignments used are presented in the estimation section of this report that follows the P2 and P3 descriptions.

Phase 2

In P2, field crews record a variety of data for plot locations determined in P1 to include accessible forest land. 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. At the plot field crews determine the location of the geographic center of the center subplot using global 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, history of forest disturbance, and land use for every condition (major land use of forest stand at least 1 acre in size) that occurs

on the plot. They also record information on condition boundaries 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, lean, diameter, height, crown ratio (percent of tree height represented by crown), crown class (dominant, codominant, suppressed), damage, and decay status. All trees measured in the previous measurement of the plot are remeasured or otherwise accounted for and any new trees that have grown onto the plot are measured. 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, condition, species group, and live/dead status. The remeasurement of every tree enables the calculation of components of change including growth, mortality, and removals. Details of the data collection procedures used in P2 are available at http://www.nrs.fs.fed.us/fia/data-collection/.

Phase 3

The third phase of the enhanced FIA program focuses on forest health. P3 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, evaluation, 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. Intensive site-ecosystem monitoring studies regionally specific ecological processes at a network of sites located in representative forested ecosystems. Research on monitoring techniques focuses on developing and refining indicator measurements to improve the efficiency and reliability of data collection and analysis at all levels of the program.

The ground-survey portion of the detection monitoring program was integrated into the FIA program as P3 in 1999. The P3 sample consists of a 1:16 subset of the P2 plots with one P3 plot for about every 95,000 acres. P3 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 P2 measurements are collected on each P3 plot at the same time as the P3 measurements. Additional information on the collection procedures used in P3 is available at http://www.nrs.fs.fed.us/fia/topics/.

P3 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 (Montreal Process 1995) 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, P2 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 P2 and P3 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 Core Tables 1-32, 54-61a, and 65 are based on data observed on the 531 P2 plots in Pennsylvania. The analysis of forest health issues that relate to down woody materials, soils, ozone damage, and crown condition are based on data observed on the 95 P3 plots (52 were forested at plot center).

Approximately 20 percent of the P2 observations were acquired between 2005 and 2009. These observations, collectively called the 2009 inventory, are located within 94 estimation strata defined by five P1 canopy cover classes (Canopy cover 0-5, Canopy cover 6-50, Canopy cover 51-65, Canopy cover 66-80, Canopy cover 81-100) or collapsed canopy cover classes, as well as a broad land-ownership classification, and FIA survey units containing county groups. Procedures described in Bechtold and Patterson (2005) for stratified estimation with observed stratum areas were used in conjunction with the strata in Table A to produce all estimates. Table A shows the total area and number of plots within each stratum.

Integration with Previous Inventories

In 2009, FIA completed the second full annual inventory of plots within Pennsylvania. The 2009 panel, along with those surveyed in 2005, 2006, 2007, 2008, comprise the dataset for this second annual inventory referred to as the 2009 annual inventory of Pennsylvania. Previous forest resource inventories were completed in 2004 (1st annual inventory, McWilliams et al. 2007), and the periodic inventories of 1955, 1965, 1978, and 1989 (Alerich 1993, Considine and Powell 1980, Ferguson 1968, Ferguson 1955).

Data from new inventories often are compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must be similar. Identical classification procedures were used for the 2003 and 2008 inventories therefore comparisons made between these inventories is relatively uncomplicated.

Comparisons with the earlier inventories (1955, 1965, 1978, 1989) are more problematic as there were changes in plot design, measurements taken, and classification methods between each of these inventories.

For the sake of consistency, a new, national plot design was implemented by all five regional FIA units in 1999. The new design uses fixed-radius subplots exclusively. In Southern New England, this design was used in the 1998 inventories. Prior to this new plot design, fixed and variable-radius subplots were used. Both designs have strong points but they often produce different classifications for individual plot characteristics. Procedures for assigning condition attributes such as forest type, stand-age, and stocking, for example, changed significantly with the introduction of the new annual plot design. Unpublished FIA research comparing these plot designs, however, showed no noticeable difference in volume and tree-count estimates.

For additional information on the sample protocols and estimation procedures for the first two phases of the FIA program, see Bechtold and Patterson (2005). For additional information on P3 indicator sampling protocols, see USDA For. Serv. (2003) and Woodall and Monleon (2008).

Quality of the Estimates

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 refers to the difference between the estimate and the "true value" in the absence of this random variability and refers to the overestimation or underestimation inherent in the entire estimation process.

Errors in the estimates presented in this report (both random variability and estimation bias) 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 section is a definition of the source of error in the context of the FIA inventory as well as a discussion of methods used to quantify and/or 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 (e.g., every tree in the State) had been observed and included in the sample. The 2005-2009 FIA inventory of Pennsylvania is based on a sample of 3687 plots located randomly across the State.

The procedures for statistical estimation outlined in the previous section and described in detail 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 error which means the chances are two in 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. Core Table 65 presents sampling errors for these estimates at the FIA inventory unit and county group levels.

Estimates for classifications smaller than the State totals in Table B will have larger sampling errors. For example, Core 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

For example, to compute the error on the area of State owned forest land in Pennsylvania, proceed as follows:

The total estimated State owned forest land in Pennsylvania from Table 2 is 3,778,000 acres.

The total area of all forest land in the Pennsylvania from Table 2 is 16,740,000 acres.

The sampling error for total forest land area from Table B is 0.7 percent.

Using formula (1):

$$\text{Sampling Error} = \frac{(0.7)\sqrt{(16{,}740{,}000)}}{\sqrt{(3{,}778{,}000)}} = 1.5 \text{ percent.}$$

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 the estimation tools 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 non-response 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, and other attributes such

as species and crown class are observed without the aid of an instrument. On a typical FIA plot, 15 to 50 trees are observed with 15 to 20 attributes recorded on each tree. Also, 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) 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 is measured independently by a different qualified crew. These independent measurements are referred to as blind checks, the purpose of which is to assess the quality of field measurements. A second measurement on blind check plots is made by a quality assurance (QA) crew. QA crews have as much or more experience and training in FIA field measurements as that of 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 percent of measurements within tolerance. 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. Columns labeled "Southern New England" are based on blind check measurements of plots used in this report. The columns labeled "All NRS States" come from all measurements made by FIA crews within the entire 24-state area (Connecticut, Delaware, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, West Virginia, and Wisconsin) where the Northern Research Station implemented the FIA program from 2003 through 2007. 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 the Northern States.

Across Pennsylvania, many variables such as diameter at breast height have a low tolerance (± 0.1 in.) and a high percentage of data within the tolerance (95.0 percent). Measurements for determining tree size class are precise. In contrast, a few variables such as total tree length have a larger tolerance (± 10 percent) and less data within the tolerance (70.2 percent). The estimate of stand age is based on the composition of all age classes within a stand. Often, stands are heterogeneous by age but a single value must be assigned to them. Sometimes this confounds analysis of stand age over time.

In addition to percent compliance to MQOs, 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 standard field-crew measurements to be higher or lower than 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. Relative bias is only reported for variables that are measurements of continuous attributes (e.g. diameter and height) and a few coded variables that are ordinal in nature (e.g. crown position). For most coded variables relative bias is not appropriate.

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 measurements. These methods have been identified as the best available and selected for nationwide use by FIA, and are commonly used by similar natural-resource inventories. A basic assumption is that when applied correctly these methods 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 mathematical models (such as volume models) aimed at providing observations of the attributes of interest based on sample attributes are called prediction errors. Area, number of trees, volume, biomass, growth, removals, and mortality are the primary attributes of interest presented in this report. Estimates of area and number of trees are based on direct observation and do not rely on prediction models. Models are used to predict volume and biomass estimates for individual trees. 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.

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, the prediction bias of one estimate should cancel out that of the other estimate. If the estimates are based on different prediction models, 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 falls into the following three classes:

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

Hazardous/inaccessible – Entire plots or portions of plots where conditions prevent a crew from safely accessing the plot or measuring trees on the plot.

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

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 2009 Pennsylvania inventory, 4043 sample plots were selected for observation. Ninety one percent of these are included in the sample used to estimate current resources. On 356 plots, crews were unable to obtain owner permission to measure the plot or part of the plot; hazardous conditions on nine plots prevented the crew from measuring all or part of the plot.

Even an overall nonresponse rate of 6 percent can cause considerable bias if not properly accounted for. The major source of nonresponse is denied access to plots, which occurs primarily on lands in private ownership. Also, observations for plots on nonforest land and water classes rarely require crews to physically enter the area. Nor is permission needed because the observation can be obtained from aerial photos or other sources of remotely sensed information.

The stratified estimation process used by FIA with strata defined by ownership classes and canopy cover class 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 only from 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-canopy-cover class) 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 by ownership is presented in Table E. Response rates by ownership and strata are presented in Table A.

In Table 1 of this report we acknowledge denied access and hazardous as two land classes within which we are unable to provide estimates for variables such as forest area and timber volume. However, we do report the total estimated area in each of these classes. In all other tables of this report, we do not acknowledge either of these classes, and in the estimation process we treat the sample where we do 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, hazardous conditions may have changed, and other circumstances that caused us to drop plots from a specific inventory cycle may well be different.

Pennsylvania Regeneration Study (PRS)

The Pennsylvania Regeneration Study (PRS) began to address regeneration uncertainties across the State. From 1950 to 1970, only anecdotal evidence supported the hypothesis that deer were negatively impacting forest regeneration. During the 1970s, scientists from the U.S. Forest Service laboratory in Warren, PA, installed experiments to determine the relationship between deer density and levels of advance tree seedling and sapling regeneration (ATSSR). Since implementation in 2000, the PRS has remeasured a set of baseline samples from that original study; these results now provide information on the character and abundance of regeneration for the State, as well as subregions. The Pennsylvania Game Commission's draft management plan uses the PRS as the principal quantitative measure of deer habitat health (Pennsylvania Game Commission 2012).

Some features of the PRS are as follows:

- Protocols have been developed from baseline needs and well-vetted literature
- Utilization of the best available science
- Able to adapt to new developments
- Provides for platform for a temporal and spatial database
- Allows for analyses of broad classifications, e.g., owner group, forest-type group, subregional analyses for large areas, north-central eco-political region.

The PRS has provided information on understory and ATSSR for the 11 years of the annual inventory. Since the pilot study began in 2000, the PRS has been funded by the Pennsylvania Department of Conservation and Natural Resources, Bureau of Forestry and implemented NRS-FIA. It is the only study in the country that includes measurements of ungulate pressure, competing vegetation, exotic and invasive plants, and ATSSR at the landscape level. After 11 years of study, a full baseline sample and remeasurement sample are included in this report.

PRS measurements are conducted on NRS-FIA sample plots during the leaf-on season. PRS measurements include a detailed tally of all tree seedlings down to a height of 2-inches and a survey percentage cover for non-tree life forms. Results are analyzed using silvicultural guidelines for Pennsylvania (Brose et al. 2008, Marquis 1994). Sample plots are evaluated to gauge the stand regeneration capacity under existing conditions. Measurements of associated understory vegetation provide information on understory character and health.

PRS results are divided into five species groups. The high-canopy dominants species group comprises all species that currently contribute at least 2 percent of the total tree biomass in the State and that typically form a high canopy. The all high-canopy group includes all species with the ability to form high canopy. The commercially desirable group consists of species that are the most preferred in timber management. The all commercial group includes all commercial species that could provide a merchantable crop. The all-tree species group comprises all tree species, including those that do not form a high-canopy forest, e.g. striped maple and dogwood.

The only difference between the commercially desirable and high-canopy dominants groups is that black birch and beech are included in the latter group. The impact of these two species on the understory is noticeable in the results; see opposite, but complimentary changes discussed below for the south-western and south-central regions.

All results are analyzed using sample plots with sufficient sunlight for the establishment and development of advance regeneration (40 to75 percent stocked). Detecting change in advance tree regeneration using forest inventory data has implications on precision when evaluating type II errors (Westfall and McWilliams 2011).

Glossary

Average annual mortality: The average annual change in mortality of trees during the period between inventories. This estimate can be provided in cubic feet for live and growing-stock trees that died or in board feet for sawtimber trees that died.

Average annual net growth: The average annual change in the volume of trees during the period between inventories. Components include the change in volume of trees that have met the minimum size requirements over the inventory period, plus the volume of trees reaching the minimum size during the period (ingrowth), minus the volume of trees that died during the period, minus the volume of cull during the period. Mortality removals (trees killed in the harvesting process and left on site) and diversion removals (trees removed from the forest-land base due to a change from forest to nonforest land) are not included. This estimate can be provided in cubic feet for live and growing-stock trees or in board feet for sawtimber trees.

Average annual removals: The average annual change in removals of trees during the period between inventories. The estimate includes harvest removals, mortality removals (trees killed in the harvesting process and left on site), and diversion removals (trees removed from the forest-land base due to a change from forest to nonforest land). This estimate can be provided in cubic feet for live and growing-stock trees or in board feet for sawtimber trees.

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 usually is expressed as square feet of basal area per acre.

Bioindicator species: A tree, woody shrub, or 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 (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. It is 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 visually transferred to fill holes in the upper portions of the crown, until a full, even crown is created.

Corporate: An ownership class of private lands owned by corporations.

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. Also known as local government.

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 (5 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 ½ 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. A "diameter at root collar" or d.r.c. measurement is acquired for multi-stemmed woodland species (e.g., Rocky Mountain juniper). Woodland species are generally found in the arid west. To date no woodland species have been tallied in Pennsylvania.

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) no longer can be identified.

Effective cation exchange capacity (ECEC): The sum of cations that a soil can adsorb in its natural pH. It is 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.

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 land: Land at least 10-percent stocked by 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 trees and forest areas adjacent to urban and builtup 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 and 120 feet wide measured stem-to-stem from the outer-most edge. 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. If softwoods predominate (50 percent or more), then the forest type will be one of the softwood types and vice versa for hardwoods. For the Eastern United States, there are mixed hardwood-pine forest types when the pine and/or redcedar (either eastern or southern) component is between 25 and 49 percent of the stocking. If the pine/redcedar component is less than 25 percent of the stocking, then one of the hardwood forest types is assigned.

Forest-type group: Combinations of forest types that share closely associated species or site requirements and are generally combined for brevity of reporting. See forest type for examples of forest-type group members.

Growing stock: A classification of timber inventory that includes live trees of commercial species meeting specified standards of quality or vigor. Rough and rotten cull trees are excluded. When associated with volume, this 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 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 include sugar maple, yellow birch, black walnut, and 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.

Local government: 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. Also known as county and municipal.

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

Merchantable: Refers to a pulpwood or saw log section that meets pulpwood or saw log 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 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.

Noncorporate private: Nongovernmental conservation and natural resource organizations; unincorporated local partnerships, associations, and clubs; and Native American communities.

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 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.)

Nonstocked areas: Timberland less than 10-percent stocked with live trees.

Other red oaks: A group of species in the genus *Quercus* that includes northern pin oak and black oak.

Other white oaks: A group of species in the genus *Quercus* that includes chestnut oak and overcup 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: 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 as follows:

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 (small sheltered bays) and bottomlands (low land) 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 include 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 d.b.h.

Sawtimber volume: Net volume of the saw-log portion of live sawtimber in board feet, International ¼-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 northern red oak.

Select white oaks: A group of species in the genus *Quercus* that includes bur oak, white oak, and swamp white 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 may 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.

Soil Order: The broadest category or class of soil based largely on the processes that formed the soil as indicated by the presence or absence of diagnostic horizons or layers. Several dominant soil orders in Pennsylvania are as follows:

> ***Alfisols:*** Moist mineral soils that form mostly in cool to hot humid areas. These soils usually form under deciduous forests and are usually quite productive. These soils are more weathered than Inceptisols but less than Spodosols.

Entisols: Mineral soils with no horizons or only the beginning of horizons. These soils are basically unaltered from their parent material. Soils of this order vary widely in productivity.

Histisols: Organic soils that form in saturated wet conditions. These can occur in any wet area and can be very productive when drained.

Inceptisols: Soils with few diagnostic features that have formed quickly from the parent material. They form under a wide variety of climates. These soils are more advanced than Entisols but less than other orders. They vary widely in productivity.

Mollisols: Organic soils that form in semiarid to semihumid areas mostly under prairie vegetation. These are some of the most productive soils.

Spodosols: Mineral soils that form in humid climates usually where it is cold and temperate. Most of these soils develop naturally under forests. They are not naturally very fertile but can be productive with fertilizer.

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 are as follows:

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. Also a general reference to one of the political and geographic subdivisions of the United States.

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 3.0 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. This 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).

Table of Quality Assurance

Table A.—Area and number of plots in each stratum, Pennsylvania, 2009

Table B.—State-level estimates of major forest resource attributes and their sampling errors, Pennsylvania, 2009

Table C.—Measurement quality objective (MQO) tolerance compliance based on blind check plots, Pennsylvania, 2009

Table D.—Observed relative bias values (Average [field crew - QA crew]) for measurement variables on blind check plots, Pennsylvania, 2009

Table E.—FIA nonresponse by ownership, Pennsylvania, 2009

Tables of Estimates

Gaps in the enumeration of tables are placeholders for future reports.

Area

Table PA-1.—Percentage of area by land status, Pennsylvania, 2009

Table PA-2.—Area of forest land, in thousand acres, by owner class and forest-land status, Pennsylvania, 2009

Table PA-3.—Area of forest land, in thousand acres, by forest-type group and productivity class, Pennsylvania, 2009

Table PA-4.—Area of forest land, in thousand acres, by forest-type group, ownership group, and forest-land status, Pennsylvania, 2009

Table PA-5.—Area of forest land, in thousand acres, by forest-type group and stand-size class, Pennsylvania, 2009

Table PA-6.—Area of forest land, in thousand acres, by forest-type group and stand-age class, Pennsylvania, 2009

Table PA-7.—Area of forest land, in thousand acres, by forest-type group and stand origin, Pennsylvania, 2009

Table PA-8.—Area of forest land, in thousand acres, by forest-type group and primary disturbance class, Pennsylvania, 2009

Table PA-9.—Area of timberland, in thousand acres, by forest-type group and stand-size class, Pennsylvania, 2009

Number

Table PA-10.—Number of live trees (at least 1 inch d.b.h./d.r.c.), in thousands, on forest land by species group and diameter class, Pennsylvania, 2009

Table PA-11.—Number of growing-stock trees (at least 5 inches d.b.h.), in thousands, on timberland by species group and diameter class, Pennsylvania, 2009

Volume

Table PA-12.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2009

Table PA-13.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2009

Table PA-14.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2009

Table PA-15.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and diameter class, Pennsylvania, 2009

Table PA-16.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand origin, Pennsylvania, 2009

Table PA-17.—Net volume of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and diameter class, Pennsylvania, 2005 to 2009

Table PA-18.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2009

Table PA-19.—Net volume of sawtimber trees (International ¼-inch rule), in million board feet, on timberland by species group and diameter class, Pennsylvania, 2009

Table PA-19a.—Net volume of sawtimber trees (Doyle rule), in million board feet, on timberland by species group and diameter class, Pennsylvania, 2009

Table PA-20.—Net volume of saw-log portion of sawtimber trees, in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2009

Growth, Mortality, and Removals

Table PA-21.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2004 to 2009

Table PA-22.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2004 to 2009

Table PA-23.—Average annual net growth of all live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

Table PA-24.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

Table PA-25.—Average annual mortality of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2004 to 2009

Table PA-26.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2004 to 2009

Table PA-27.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

Table PA-28.—Average annual mortality of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

Table PA-29.—Average annual removals of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

Table PA-30.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

Weight

Table PA-31.—Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.), in thousand dry short tons, by owner class and forest-land status, Pennsylvania, 2009

Table PA-32.—Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.), in thousand dry short tons, on forest land by species group and diameter class, Pennsylvania, 2009

County-Level

Table PA-54.—Area of forest land, in thousand acres, by inventory unit, county, and forest-land status, Pennsylvania, 2009

Table PA-55.—Area of forest land, in thousand acres, by inventory unit, county, ownership group and forest-land status, Pennsylvania, 2009

Table PA-57.—Area of timberland, in thousand acres, by inventory unit, county, and stand-size class, Pennsylvania, 2009

Table PA-58.—Area of timberland, in thousand acres, by inventory unit, county, and stocking class, Pennsylvania, 2009

Table PA-59.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), on timberland by inventory unit, county, and major species group, Pennsylvania, 2009

Table PA-59a.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), on timberland by inventory unit, county, and major species group, Pennsylvania, 2009

Table PA-60.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Table PA-60a.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Table PA-61.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Table PA-61a.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Table PA-65.—Sampling errors, in percent, for net volume, average annual net growth, average annual removals, and average annual mortality on timberland, and forest and timberland area by inventory unit and county, Pennsylvania, 2009

Table A.—Area and number of plots in each stratum, Pennsylvania, 2009

Unit	Estimation unit[a]	Strata[b]	Acres (acres)	Selected plots[c]	Nonforest office plots[d]	Field checked plots[e]	Field checked plots measured[f]	Forested plots measured[g]	Forested plots measured for change[h]	Field checked plots for change[i]	Field plots not measured[j]
6	PA BOF Unit 6	Canopy cover 0 - 5	56,000	19	1	18	18	16	15	17	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	PA BOF Unit 6	Canopy cover 0 - 5	56,000	19	1	18	18	16	15	17	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	Private Unit 7	Canopy cover 51 - 65	196,000	25	4	21	20	21	16	25	1
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
0	Public Unit 0	Canopy cover 81 - 100	74,000	17	0	17	17	17	17	17	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	Inland Census Water Unit 9	Canopy cover 0 - 100	59,000	8	4	4	4	4	3	8	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	PA BOF Unit 9	Canopy cover 0 - 100	68,000	11	0	11	10	10	10	10	1
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
8	Private Unit 8	Canopy cover 0 - 5	1,272,000	215	81	134	126	129	43	209	8
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	Public Unit 9	Canopy cover 81 - 100	97,000	13	0	13	13	13	13	13	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
0	PA BOF Unit 0	Canopy cover 81 - 100	215,000	31	0	31	31	31	31	31	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
8	Private Unit 8	Canopy cover 51 - 65	248,000	34	4	30	24	30	21	33	6
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
5	Public Unit 5	Canopy cover 81 - 100	145,000	22	0	22	22	22	22	22	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
8	Inland Census Water Unit 8	Canopy cover 0 - 100	85,000	14	10	4	4	4	1	14	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
5	Private Unit 5	Canopy cover 81 - 100	1,959,000	319	5	314	279	302	274	307	35
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	Private Unit 7	Canopy cover 6 - 50	234,000	47	4	43	38	42	28	46	5
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	Private Unit 9	Canopy cover 51 - 65	131,000	23	2	21	17	20	8	22	4
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
0	Inland Census Water Unit 0	Canopy cover 0 - 100	36,000	6	6	0	0	0	0	6	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
5	Private Unit 5	Canopy cover 6 - 50	484,000	73	18	55	49	52	35	69	6
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	Private Unit 6	Canopy cover 81 - 100	2,448,000	394	1	393	357	372	355	373	36
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6

(Table A continued on next page)

(Table A continued)

Unit	Estimation unit[a]	Strata[b]	Acres (acres)	Selected plots[c]	Nonforest office plots[d]	Field checked plots[e]	Field checked plots measured[f]	Forested plots measured[g]	Forested plots measured for change[h]	Field checked plots for change[i]	Field plots not measured[j]
8	Public Unit 8	Canopy cover 66 - 80	75,000	12	0	12	12	12	12	12	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	Inland Census Water Unit 7	Canopy cover 0 - 100	15,000	4	2	2	2	2	1	4	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
0	Private Unit 0	Canopy cover 66 - 80	462,000	65	0	65	57	64	54	64	8
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	Private Unit 6	Canopy cover 6 - 50	537,000	90	8	82	72	80	58	88	10
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	Public Unit 6	Canopy cover 81 - 100	343,000	49	0	49	49	49	49	49	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	Public Unit 7	Canopy cover 0 - 80	114,000	16	0	16	16	16	15	16	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
5	Private Unit 5	Canopy cover 51 - 65	290,000	51	8	43	39	41	32	49	4
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	Private Unit 9	Canopy cover 66 - 80	259,000	46	5	41	35	38	30	43	6
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
9	Public Unit 9	Canopy cover 0 - 80	88,000	16	3	13	13	13	10	16	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	PA BOF Unit 6	Canopy cover 6 - 50	142,000	21	0	21	21	21	21	21	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	PA BOF Unit 7	Canopy cover 0 - 100	100,000	17	0	17	17	17	17	17	0
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
6	Private Unit 6	Canopy cover 0 - 5	1,353,000	224	78	146	137	141	69	217	9
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
7	Private Unit 7	Canopy cover 66 - 80	568,000	89	0	89	67	87	65	87	22
0	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6
8	Public Unit 8	Canopy cover 0 - 65	61,000	14	0	14	13	14	12	14	1
TOTALS	Private Unit 0	Canopy cover 0 - 5	1,012,000	171	89	82	76	80	17	168	6

(Table A continued on next page)

Table A.—Footnote

[a]The following table lisits the counties in each group used to define the estimation strata.

Unit Group Code	Unit 0	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
County Group Name	**South-Central**	**Western**	**North-Central**	**Southwestern**	**Northeastern**	**Southeastern**
County Name	Dauphin	Allegheny	Cameron	Bedford	Bradford	Adams
	Franklin	Armstrong	Centre	Blair	Carbon	Berks
	Fulton	Beaver	Clarion	Cambria	Columbia	Bucks
	Huntingdon	Butler	Clearfield	Fayette	Lackawanna	Chester
	Junniata	Crawford	Clintron	Somerset	Luzerne	Cumberland
	Mifflin	Erie	Elk		Monroe	Delaware
	Perry	Greene	Forest		Northumberland	Lancaster
	Snyder	Indiana	Jefferson		Pike	Lebanon
	Union	Lawrence	Lycoming		Schuykill	Lehigh
		Mercer	McKean		Susquehanna	Montgomery
		Washington	Potter		Wayne	Northhampton
		Westmoreland	Sullivan		Wyoming	Philadelphia
			Tioga			York
			Venango			
			Warren			
			National Forest			

[b]Ownership layer - Classification based on Protected Areas Database

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

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

[e]Selected - Total number of plots selected to be sampled.

[f]Nonforest Office Plots - Selected plots who's observed classification as nonforest is based upon examination of aerial photos or digital orthoquads.

[g]Field Check Plots - Selected plots that required field measurement.

[h]Field Checked Plots Measured - Field check plots where the measurement was successful.Excludes field plots that were hazardous or denied access.

[i]Forest Plots Measured - Field checked plots where the forest condition was found to be present on the plot and the measurement was completed in the 2004-2008 inventory.

[j]Forest Plots Measured for Change - Field checked plots measured in both the 2003 inventory and the 2008 inventory where forest condition was found to be present on the plot and the measurement was completed Components of change are assessed on these plot.

[k]Plots Not Measured - Plots selected for field measurement, but not measured due to hazardous conditions or denied access.

Table B.—State-level estimates of major forest resource attributes and their sampling errors, Pennsylvania, 2009

Item	State total	Sampling error
Growing stock on timberland:	*million cubic feet*	*percent*
Volume	32,280	1.2
Average annual net growth	766	2.7
Average annual removals	391	6.9
Average annual mortality	234	4.5
Sawtimber:	*million board feet*[a]	
Volume	104,794	1.7
All live on forest land	*million cubic feet*	*percent*
Volume	35,796	1.1
Average annual net growth	864	2.8
Average annual removals	424	6.7
Average annual mortality	323	4.0
Area:	*thousand acres*	
Forest land	16,740	1.0
Timberland	16,202	1.0
Biomass (aboveground live trees):	*million dry tons*	
Forest land	1,023	0.7
Timberland	988	1.0

[a]International ¼-inch rule.

Table C.—Measurement quality objective (MQO) tolerance compliance based on blind check plots, Pennsylvania, 2009

Variable	Tolerance	Objective (%)	Pennsylvania		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Plot Level						
National Variables						
Distance to Road	No Tolerance	90.0	75.3	85	83.6	1,948
Water on Plot	No Tolerance	90.0	97.6	85	86.6	1,948
Regional Variables						
Elevation	±50 feet	99.0	87.0	54	86.9	1,833
Latitude - decimal degrees	±0.0001 degree	99.0	88.7	53	92.0	1,749
Longitude - decimal degrees	±0.0001 degree	99.0	94.3	53	89.9	1,749
Latitude - distance	±140 feet		.	.	.	.
Longitude - distance	±140 feet		.	.	.	.
Number of plots				87		2,029
Condition Level						
National Variables						
Condition Status	No Tolerance	99.0	100.0	185	98.9	4,524
Reserve Status	No Tolerance	99.0	100.0	185	99.6	4,524
Owner Group	No Tolerance	99.0	99.0	96	98.0	2,246
Forest Type (Type)	No Tolerance	95.0	88.5	96	85.8	2,246
Forest Type (Group)	No Tolerance	99.0	95.8	96	92.1	2,246
Stand Size	No Tolerance	99.0	94.8	96	89.2	2,246
Regeneration Status	No Tolerance	99.0	97.9	96	98.0	2,246
Tree Density	No Tolerance	99.0	100.0	96	96.9	2,246
Owner Class	No Tolerance	99.0	96.9	96	94.3	2,246
Owner Status	No Tolerance	99.0	97.9	96	96.6	2,246
Regeneration Species	No Tolerance	99.0	97.9	96	98.1	2,246
Stand Age	±10 percent	95.0	94.8	96	81.5	2,246
Disturbance 1	No Tolerance	99.0	83.3	96	87.1	2,219
Disturbance Year 1	±1 year	99.0	100.0	1	75.0	60
Disturbance 2	No Tolerance	99.0	94.1	17	89.4	330
Disturbance Year 2	±1 year	99.0	.	.	75.0	4
Disturbance 3	No Tolerance	99.0	100.0	1	100.0	37

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Pennsylvania		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Disturbance Year 3	±1 year	99.0	.	.	.	.
Treatment 1	No Tolerance	99.0	96.9	96	97.0	2,219
Treatment Year 1	±1 year	99.0	77.8	9	94.3	141
Treatment 2	No Tolerance	99.0	83.3	12	84.8	204
Treatment Year 2	±1 year	99.0	100.0	1	100.0	12
Treatment 3	No Tolerance	99.0	100.0	3	95.2	42
Treatment Year 3	±1 year	99.0	.	.	.	.
Physiographic Class	No Tolerance	80.0	87.5	96	81.1	2,246
Present Nonforest Use	No Tolerance	99.0	91.4	185	89.8	2,246
Regional Variables						
NC Land Use	No Tolerance	99.0	100.0	185	95.2	4,524
Number of conditions				185		4,524
Boundary Level						
National Variables						
Boundary Change	No Tolerance	99.0	89.5	57	78.5	641
Constrasting Condition	No Tolerance	99.0	94.7	57	92.0	641
Left Azimuth	±10 degrees	90.0	93.0	57	83.8	641
Corner Mapped	No Tolerance	90.0	98.2	57	96.7	641
Corner Azimuth	±10 degrees	90.0	100.0	8	92.9	56
Corner Distance	±1 foot	90.0	100.0	8	89.3	56
Right Azimuth	±10 degrees	90.0	91.2	57	84.6	641
Number of boundaries				57		641
Subplot Level						
National Variables						
Subplot Center Condition	No Tolerance	99.0	98.3	232	97.5	6,447
Microplot Center Condition	No Tolerance	99.0	98.3	232	97.3	6,447
Slope	±10 percent	90.0	99.0	208	98.2	5,987
Aspect	±10 degrees	90.0	90.2	205	90.0	5,671
Snow/Water Depth	±0.5 foot		88.8	232	69.0	6,447
Number of subplots				232		6,447

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Pennsylvania		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Tree Level						
National Variables						
DBH	±0.1 inch per 20 inches	95.0	94.8	1,272	94.3	31,679
DRC	±0.1 inch per 20 inches	95.0	.	.	60.0	30
Azimuth	±10 degrees	90.0	99.6	1,429	99.2	33,891
Horizontal Distance	±0.2 foot per 1.0 foot	90.0	99.1	1,429	98.7	33,891
Species	No Tolerance	95.0	98.6	1,450	97.7	34,103
Tree Genus	No Tolerance	99.0	99.9	1,444	99.5	34,058
Tree Status	No Tolerance	95.0	98.1	1,450	98.8	34,103
Rotten/Missing Cull	±10 percent	90.0	96.8	1,064	98.4	21,787
Total Length	±10 percent	90.0	70.2	1,045	79.6	21,417
Actual Length	±10 percent	90.0	60.4	134	74.7	2,516
Compacted Crown Ratio	±10 percent	80.0	79.5	1,175	83.7	27,591
Uncompacted Crown Ratio (P3)	±10 percent	90.0	.	.	79.2	948
Crown Class	No Tolerance	85.0	85.4	1,175	81.6	27,591
Decay Class	±1 class	90.0	95.8	238	95.2	4,723
Cause of Death	No Tolerance	80.0	87.4	238	84.8	4,723
Condition	No Tolerance	99.0	98.6	1,450	98.1	34,103
Mortality Year	±1 year	70.0	.	.	95.5	1,168
Crown Position	No Tolerance		.	.	87.5	795
Crown Light Exposure	±1 class	85.0	.	.	91.7	948
Sapling Crown Vigor Class	No Tolerance	85.0	.	.	81.7	153
Crown Density	±10 percent	90.0	.	.	80.5	795
Crown Dieback	±10 percent	90.0	.	.	97.2	795
Transparency	±10 percent	90.0	.	.	92.8	795
Regional Variables						
NC Tree Class	No Tolerance	90.0	91.1	1,275	90.8	30,570
NC Damage Agent 1	No Tolerance	90.0	83.1	1,175	89.6	27,591
NC Damage Agent 2	No Tolerance	90.0	90.8	360	84.5	5,526
Missouri Damage Code	No Tolerance		.	.	.	.
Utilization	No Tolerance	99.0	100.0	50	100.0	1,038

(Table C continued on next page)

(Table C continued)

Variable	Tolerance	Objective (%)	Pennsylvania		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
NC Tree Grade	No Tolerance	90.0	.	.	69.4	1,795
DBH-Live & Trees with Decay Code 1 or 2	±0.1 inch per 20 inches	95.0	94.7	1,202	94.4	29,029
DBH-Trees with Decay Codes 3, 4 or 5	±1 inch per 20 inches	95.0	97.1	70		1,354
Total Length-trees 40 feet and greater	±10 percent	90.0	72.4	906	81.3	17,314
Total Length-trees less than 40 feet	±10 percent	90.0	56.1	139	72.1	4,103
Total Length-trees less than 5 inches DBH	±10 percent	90.0	28.6	7	59.2	262
Number of trees				1,450		34,103
Seedling Level						
National Variables						
Species	No Tolerance	85.0	91.3	196	91.4	6,153
Genus	No Tolerance	90.0	95.4	196	96.7	6,153
Seedling Count	±20 percent	90.0	71.9	196	66.9	6,153
Seedling Count (coded)	No Tolerance	90.0	77.0	196	71.3	6,153
Number of microplots				87		2,697
Site Tree Level						
National Variables						
Condition List	No Tolerance	99.0	87.5	40	93.0	2,957
Diameter	±0.1 inch per 20 inches	95.0	97.5	40	93.2	2,924
Species	No Tolerance	95.0	100.0	40	98.4	2,957
Genus	No Tolerance	99.0	100.0	40	99.8	2,957
Azimuth	±10 degrees	90.0	100.0	40	98.6	2,924
Distance	±5 feet	90.0	100.0	40	99.1	2,924
Total Length	±10 percent	90.0	97.5	40	94.2	2,924
Diameter Age	±5 years	95.0	97.5	40	95.9	2,924
Regional Variables						
Site Index Method	No Tolerance	99.0	100.0	40	99.9	2,957
Field Site Index	No Tolerance	99.0	100.0	40	100.0	2,957
Number of site trees				40		2,957

Table D.—Observed relative bias values (Average [field crew - QA crew]) for measurement variables on blind check plots, Pennsylvania, 2009

Variable	Unit of measure	Pennsylvania				All NRS States			
			95% CI limits				95% CI limits		
		Relative bias	Lower	Upper	Number of observations	Relative bias	Lower	Upper	Number of observations
Plot Level									
National Variables									
Distance to Road	code	0.04	(0.11)	0.19	85	(0.04)	(0.07)	(0.01)	1,948
Water on Plot	code	0.01	(0.07)	0.08	85	0.13	0.06	0.21	1,948
Regional Variables									
Elevation	foot	10.69	(4.70)	37.95	54	167.15	6.17	410.81	1,833
Latitude - decimal degrees	degree	(0.00)	(0.00)	0.00	53	0.02	(0.05)	0.12	1,749
Longitude - decimal degrees	degree	(0.00)	(0.00)	0.00	53	(0.00)	(0.25)	0.25	1,749
Latitude - distance	foot								.
Longitude - distance	foot								.
Number of plots					87				2,029
Condition Level									
National Variables									
Condition Status	code	-	-	-	185	(0.01)	(0.01)	(0.00)	4,524
Reserve Status	code	-	-	-	185	(0.00)	(0.00)	(0.00)	4,524
Owner Group	code	(0.10)	(0.31)	-	96	0.24	0.04	0.41	2,246
Forest Type (Type)	code	(5.24)	(14.02)	0.66	96	7.42	3.41	11.92	2,246
Forest Type (Group)	code	(5.21)	(14.06)	1.04	96	7.61	3.63	12.02	2,246
Stand Size	code	-	(0.06)	0.05	96	0.00	(0.01)	0.02	2,246
Regeneration Status	code	(0.02)	(0.05)	-	96	-	(0.01)	0.01	2,246
Tree Density	code	-	-	-	96	0.00	(0.00)	0.01	2,246
Owner Class	code	(0.20)	(0.52)	-	96	0.25	0.02	0.42	2,246
Owner Status	code	-	(0.03)	0.03	96	0.02	0.01	0.03	2,246
Regeneration Species	code	(2.71)	(6.77)	-	96	(0.12)	(1.79)	1.66	2,246
Stand Age	year	(9.34)	(28.19)	0.34	96	(0.58)	(1.64)	0.11	2,246
Disturbance 1	code	(1.20)	(3.32)	1.08	96	1.51	0.95	1.96	2,219
Disturbance Year 1	year	-	-	-	1	1,599.03	799.46	2,531.67	60
Disturbance 2	code	(2.35)	(7.06)	-	17	(1.77)	(3.22)	(0.58)	330

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Pennsylvania				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Disturbance Year 2	year					1,998.25	-	5,994.25	4
Disturbance 3	code	-	-	-	1	-	-	-	37
Disturbance Year 3	year								.
Treatment 1	code	(0.31)	(0.68)	-	96	0.09	(0.05)	0.23	2,219
Treatment Year 1	year	0.56	(0.22)	1.33	9	0.08	(0.04)	0.20	141
Treatment 2	code	-	(10.00)	10.00	12	2.45	0.54	4.34	204
Treatment Year 2	year	1.00	1.00	1.00	1	0.33	0.08	0.58	12
Treatment 3	code	-	-	-	3	(0.71)	(2.86)	0.48	42
Treatment Year 3	year								.
Physiographic Class	code	0.31	0.01	0.66	96	0.15	0.00	0.31	2,246
Present Nonforest Use	code	0.03	(0.35)	0.46	185	0.12	0.02	0.25	2,246
Regional Variables									
NC Land Use	code	-	-	-	185	(0.08)	(0.16)	0.02	4,524
Number of conditions					185				4,524
Boundary Level									
National Variables									
Boundary Change	code	0.04	(0.11)	0.19	57	0.10	0.05	0.15	641
Constrasting Condition	cond	0.12	-	0.32	57	0.03	0.00	0.05	641
Left Azimuth	degree	0.93	(0.61)	3.05	57	2.83	(0.32)	6.32	641
Corner Mapped	code	(0.02)	(0.05)	-	57	(0.00)	(0.02)	0.01	641
Corner Azimuth	degree	(0.50)	(1.50)	-	8	(6.02)	(19.96)	0.68	56
Corner Distance	foot	0.13	-	0.38	8	(0.20)	(0.87)	0.31	56
Right Azimuth	degree	0.33	(1.02)	1.46	57	(1.76)	(5.44)	2.12	641
Number of boundaries					57				641

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Pennsylvania				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Subplot Level									
National Variables									
Subplot Center Condition	code	0.01	(0.01)	0.04	232	0.00	(0.00)	0.00	6,447
Microplot Center Condition	code	0.01	(0.00)	0.04	232	0.00	(0.00)	0.00	6,447
Slope	percent	(0.77)	(1.25)	(0.32)	208	0.04	(0.09)	0.16	5,987
Aspect	degree	(1.35)	(3.70)	0.32	205	1.00	(0.03)	2.06	5,671
Snow/Water Depth	foot	0.10	0.01	0.18	232	(0.22)	(0.35)	(0.09)	6,447
Number of subplots					232				6,447
Tree Level									
National Variables									
DBH	inch	0.02	0.01	0.03	1,272	(0.06)	(0.08)	(0.05)	31,679
DRC	inch					0.06	(0.29)	0.39	30
Azimuth	degree	(0.09)	(0.37)	0.12	1,429	0.03	(0.05)	0.11	33,891
Horizontal Distance	foot	0.01	(0.02)		1,429	-	(0.01)	0.01	33,891
Species	code	0.07	(0.28)	0.51	1,450	0.09	(0.13)	0.35	34,103
Tree Genus	code	0.15	(0.21)	0.64	1,444	0.08	(0.19)	0.32	34,058
Tree Status	code	0.00	(0.00)	0.01	1,450	(0.00)	(0.00)	0.00	34,103
Rotten/Missing Cull	percent	(0.59)	(0.95)	(0.25)	1,064	(0.06)	(0.12)	(0.01)	21,787
Total Length	foot	(0.70)	(1.48)	0.04	1,045	0.24	0.02	0.43	21,417
Actual Length	foot	(10.48)	(28.00)	2.36	134	(2.53)	(4.17)	(1.21)	2,516
Compacted Crown Ratio	percent	(0.33)	(0.95)	0.28	1,175	(0.08)	(0.21)	0.05	27,591
Uncompacted Crown Ratio (P3)	percent					0.06	(0.80)	1.03	948
Crown Class	code	(0.01)	(0.05)	0.02	1,175	(0.03)	(0.04)	(0.03)	27,591
Decay Class	code	0.03	(0.05)	0.11	238	(0.00)	(0.03)	0.02	4,723
Cause of Death	code	2.94	0.46	5.08	238	2.48	2.06	2.91	4,723
Condition	code	0.00	(0.00)	0.01	1,450	(0.01)	(0.01)	(0.01)	34,103
Mortality Year	year					0.06	0.02	0.09	1,168
Crown Position	code					(0.07)	(0.10)	(0.05)	795
Crown Light Exposure	code					(0.00)	(0.06)	0.05	948

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Pennsylvania				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Sapling Crown Vigor Class	code					(0.08)	(0.18)	-	153
Crown Density	percent					0.23	(0.45)	0.94	795
Crown Dieback	percent					0.23	(1.06)	(0.03)	795
Transparency	percent					(0.26)	(0.85)	0.29	795
Regional Variables									
NC Tree Class	code	0.01	(0.01)	0.04	1,275	(0.07)	(0.09)	(0.04)	30,570
NC Damage Agent 1	code	8.88	1.99	15.76	1,175	5.08	3.86	6.24	27,591
NC Damage Agent 2	code	10.52	(2.12)	24.55	360	16.70	12.70	20.81	5,526
Missouri Damage Code	code								.
Utilization	code	-	-	-	50	-	-	-	1,038
NC Tree Grade	code					(1.62)	(7.59)	4.19	1,795
DBH-Live & Trees with Decay Code 1 or 2	inch	0.01	0.00	0.03	1,202	(0.06)	(0.07)	(0.05)	29,029
DBH-Trees with Decay Codes 3, 4 or 5	inch	0.04	(0.01)	0.10	70	(0.03)	(0.04)	(0.02)	1,354
Total Length-trees 40 feet and greater	foot	(0.46)	(1.17)	0.23	906	0.75	0.62	0.89	17,314
Total Length-trees less than 40 feet	foot	(2.24)	(5.41)	0.44	139	(1.95)	(3.02)	(1.06)	4,103
Total Length-trees less than 5 inches DBH	foot	(4.05)	(11.85)	6.32	7	1.07	(0.26)	2.50	262
Number of trees					1,450				34,103
Seedling Level									
National Variables									
Species	code	0.06	0.02	0.10	196	(0.00)	(0.01)	0.01	6,153
Genus	code	0.03	-	0.05	196	(0.00)	(0.01)	0.00	6,153
Seedling Count	number	(19.68)	(32.91)	(9.09)	196	(16.36)	(23.20)	(11.54)	6,153
Seedling Count (coded)	number	(0.16)	(0.29)	(0.05)	196	(0.01)	(0.04)	0.01	6,153
Number of microplots					87				2,697

(Table D continued on next page)

(Table D continued)

Variable	Unit of measure	Pennsylvania				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Site Tree Level									
National Variables									
Condition List	code	(250.20)	(875.41)	0.84	40	(5.29)	(12.45)	0.55	2,957
Diameter	inch	(0.01)	(0.03)	0.01	40	(0.01)	(0.02)	(0.00)	2,924
Species	code	-	-	-	40	(0.10)	(0.23)	0.00	2,957
Genus	code	-	-	-	40	(0.09)	(0.21)	(0.00)	2,957
Azimuth	degree	-	-	-	40	0.19	(0.28)	0.61	2,924
Distance	foot	(0.00)	(0.01)	-	40	(0.00)	(0.04)	0.04	2,924
Total Length	foot	0.14	(0.55)	0.78	40	(0.24)	(0.49)	(0.04)	2,924
Diameter Age	year	(0.18)	(0.51)	0.08	40	0.14	0.04	0.25	2,924
Regional Variables									
Site Index Method	code	-	-	-	40	(0.00)	(0.00)	(0.00)	2,957
Field Site Index	feet	-	-	-	40	-	-	-	2,957
Number of site trees					40				2,957

Table E.—FIA nonresponse by ownership, Pennsylvania, 2009

Owner	Strata (um)	Number of plots selected	Sampled	Denied access	Hazardous	Other	Response Rate (%)
				number of plots			
Private Unit 7	2	47	41.8	5	0.2	0	89
Private Unit 6	2	90	79.8	10.3	0	0	88.6
PA BOF Unit 7	12345	17	17	0	0	0	100
PA BOF Unit 8	12345	18	18	0	0	0	100
Public Unit 8	4	12	12	0	0	0	100
PA BOF Unit 0	5	31	31	0	0	0	100
Allegheny NF	5	85	85	0	0	0	100
PA BOF Unit 6	5	152	151	1	0	0	99.3
Private Unit 6	1	224	215	9	0	0	96
Private Unit 0	4	65	57	8	0	0	87.7
Private Unit 0	1	171	165	6	0	0	96.5
Private Unit 8	3	34	28	6	0	0	82.4
Private Unit 9	4	46	40	5	1	0	87
Private Unit 6	4	115	103.5	11.5	0	0	90
Private Unit 5	5	319	283.2	35.5	0.3	0	88.8
Public Unit 5	5	22	22	0	0	0	100
Private Unit 8	5	321	262	59	0	0	81.6
Private Unit 8	1	215	205.2	9.8	0	0	95.5
PA BOF Unit 0	1234	31	31	0	0	0	100
Public Unit 7	5	24	23.8	0	0.3	0	99
Inland Census Water Unit 8	12345	14	14	0	0	0	100
Private Unit 5	1	356	336.3	17.3	2.4	0	94.5
Private Unit 5	2	73	66.8	5	1.3	0	91.4
Private Unit 0	3	31	28.2	2.5	0.3	0	91
Inland Census Water Unit 9	12345	8	8	0	0	0	100
Private Unit 9	1	473	466	7	0	0	98.5
Private Unit 7	1	96	93	3	0	0	96.9
Private Unit 0	2	37	32	5	0	0	86.5
Private Unit 7	3	25	24	1	0	0	96
PA BOF Unit 6	1	19	19	0	0	0	100

(Table E continued on next page)

(Table E continued)

Owner	Strata (um)	Number of plots selected	Sampled	Denied access	Hazardous	Other	Response Rate (%)
				number of plots			
Private Unit 6	3	68	63	5	0	0	92.6
Private Unit 0	5	104	92.8	11.3	0	0	89.2
PA BOF Unit 5	12345	4	4	0	0	0	100
Public Unit 5	1234	15	15	0	0	0	100
Public Unit 0	5	17	17	0	0	0	100
PA BOF Unit 6	3	34	34	0	0	0	100
PA BOF Unit 6	2	21	21	0	0	0	100
Private Unit 6	5	394	355.1	38.9	0	0	90.1
Private Unit 9	3	23	19	4	0	0	82.6
Public Unit 8	123	14	12.8	0.3	1	0	91.1
Private Unit 5	4	109	90.5	17	1.3	0.3	83
Public Unit 8	5	57	56	1	0	0	98.2
Public Unit 9	5	13	13	0	0	0	100
Private Unit 7	5	118	98	20	0	0	83.1
Public Unit 6	123	15	15	0	0	0	100
PA BOF Unit 9	12345	11	10	1	0	0	90.9
Public Unit 9	1234	16	16	0	0	0	100
Allegheny NF	1234	20	20	0	0	0	100
Private Unit 8	2	81	70.2	10.5	0.3	0	86.7
Private Unit 7	4	89	67	22	0	0	75.3
Private Unit 9	2	64	61	3	0	0	95.3
Private Unit 9	5	109	97.6	11.4	0	0	89.5
Public Unit 6	5	49	49	0	0	0	100
Public Unit 7	1234	16	16	0	0	0	100
Inland Census Water Unit 5	12345	8	6.5	1	0.5	0	81.3
Inland Census Water Unit 6	12345	5	5	0	0	0	100
PA BOF Unit 6	4	36	35.7	0.3	0	0	99.1
Private Unit 8	4	95	81.5	13.3	0.3	0	85.8
Inland Census Water Unit 7	12345	4	4	0	0	0	100
Private Unit 5	3	51	47	4	0	0	92.2
Public Unit 6	4	19	19	0	0	0	100

(Table E continued on next page)

(Table E continued)

Owner	Strata (um)	Number of plots selected	Sampled	Denied access	Hazardous	Other	Response Rate (%)
				number of plots			
Inland Census Water Unit 0	12345	6	6	0	0	0	100
Public Unit 0	1234	11	11	0	0	0	100
TOTALS		4,867	4,487	370.9	9.2	0.3	94.3

Table PA-1.—Percentage of area by land status, Pennsylvania, 2009

Land status	Percentage of area
Accessible forest land	
Unreserved forest land	
Timberland	50.5
Unproductive	0.3
Total unreserved forest land	50.8
Reserved forest land	
Productive	1.5
Unproductive	- -
Total reserved forest land	1.5
All accessible forest land	52.3
Nonforest and other land	
Nonforest land	38.6
Water	
Census	0.8
Non-Census	0.4
All nonforest and other land	39.8
Nonsampled land	
Access denied	7.7
Hazardous conditions	0.2
Other	0.0
All land	100.0
Total area (thousands of acres)	28,996

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 PA-2.—Area of forest land, in thousand acres, by owner class and forest-land status, Pennsylvania, 2009

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	481.0	5.9	486.8	13.8	- -	13.8	500.6
Other national forest	5.9	- -	5.9	- -	- -	- -	5.9
Other Federal							
National Park Service	- -	- -	- -	39.9	- -	39.9	39.9
Department of Defense or Energy	35.3	- -	35.3	- -	- -	- -	35.3
Other Federal	52.4	- -	52.4	- -	- -	- -	52.4
State and local government							
State	3,398.1	10.7	3,408.8	367.9	- -	367.9	3,776.7
Local (county, municipal, etc.)	462.6	3.1	465.7	28.9	- -	28.9	494.6
Other non-Federal lands	0.7	- -	0.7	- -	- -	- -	0.7
Private							
Undifferentiated private	11,765.8	61.0	11,826.8	6.9	- -	6.9	11,833.7
All owners	16,201.8	80.7	16,282.5	457.4	- -	457.4	16,739.8

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 PA-3.—Area of forest land, in thousand acres, by forest-type group and productivity class, Pennsylvania, 2009

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	- -	87.2	179.6	57.1	13.4	- -	- -	337.2
Spruce / fir group	- -	12.6	11.9	13.0	2.6	- -	- -	40.1
Loblolly / shortleaf pine group	- -	53.6	31.3	8.8	5.0	- -	- -	98.8
Other eastern softwoods group	- -	1.5	- -	- -	- -	- -	- -	1.5
Douglas-fir group	- -	1.6	1.7	- -	- -	- -	- -	3.3
Fir / spruce / mountain hemlock grou	- -	3.7	- -	- -	- -	- -	- -	3.7
Exotic softwoods group	- -	49.7	30.3	8.4	- -	- -	- -	88.3
Other softwoods group	- -	6.3	- -	- -	- -	- -	- -	6.3
Oak / pine group	- -	142.2	68.6	52.7	11.4	- -	- -	274.8
Oak / hickory group	21.9	5,743.5	2,316.7	869.1	118.6	- -	- -	9,069.8
Oak / gum / cypress group	- -	32.7	6.2	6.9	- -	- -	- -	45.8
Elm / ash / cottonwood group	6.3	174.9	94.9	7.9	17.6	- -	- -	301.7
Maple / beech / birch group	- -	3,335.9	1,733.0	291.9	49.8	- -	- -	5,410.6
Aspen / birch group	10.0	232.5	75.1	37.0	4.6	- -	- -	359.2
Other hardwoods group	17.0	429.6	70.5	30.7	5.0	- -	- -	552.9
Exotic hardwoods group	- -	6.6	9.8	- -	- -	- -	- -	16.4
Nonstocked	25.5	79.0	21.8	1.5	1.8	- -	- -	129.5
All forest-type groups	80.7	10,393.2	4,651.3	1,385.0	229.7	- -	- -	16,739.8

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 PA-4.—Area of forest land, in thousand acres, by forest-type group, ownership group, and forest-land status, Pennsylvania, 2009

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	10.2	--	--	--	36.4	0.8	289.8	--	337.2
Spruce / fir group	5.5	--	--	--	14.1	6.1	14.4	--	40.1
Loblolly / shortleaf pine group	--	--	5.1	--	22.1	6.8	64.8	--	98.8
Other eastern softwoods group	--	--	--	--	--	--	1.5	--	1.5
Douglas-fir group	--	--	--	--	--	--	3.3	--	3.3
Fir / spruce / mountain hemlock group	--	--	--	--	--	--	3.7	--	3.7
Exotic softwoods group	--	--	--	--	3.6	5.3	79.4	--	88.3
Other softwoods group	--	--	--	--	--	--	6.3	--	6.3
Oak / pine group	--	--	--	--	48.2	10.2	216.4	--	274.8
Oak / hickory group	105.0	4.6	61.7	39.9	2,352.5	218.6	6,268.0	19.6	9,069.8
Oak / gum / cypress group	5.9	--	--	--	12.5	--	27.5	--	45.8
Elm / ash / cottonwood group	--	--	--	--	57.3	1.7	236.3	6.3	301.7
Maple / beech / birch group	343.5	4.6	13.3	--	1,069.4	106.2	3,873.5	--	5,410.6
Aspen / birch group	--	--	--	--	40.8	3.1	308.4	6.8	359.2
Other hardwoods group	16.7	10.5	7.7	--	196.4	50.1	260.4	11.1	552.9
Exotic hardwoods group	--	--	--	--	--	--	16.4	--	16.4
Nonstocked	--	--	--	--	8.2	1.5	95.9	24.0	129.5
All forest-type groups	486.8	19.7	87.8	39.9	3,861.4	410.6	11,765.8	67.9	16,739.8

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 PA-5.—Area of forest land, in thousand acres, by forest-type group and stand-size class, Pennsylvania, 2009

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	280.1	55.7	1.4	- -	- -	337.2
Spruce / fir group	15.4	18.7	5.9	- -	- -	40.1
Loblolly / shortleaf pine group	83.4	3.4	11.9	- -	- -	98.8
Other eastern softwoods group	- -	1.5	- -	- -	- -	1.5
Douglas-fir group	- -	1.6	1.7	- -	- -	3.3
Fir / spruce / mountain hemlock grou	- -	3.7	- -	- -	- -	3.7
Exotic softwoods group	39.8	24.4	24.2	- -	- -	88.3
Other softwoods group	- -	- -	6.3	- -	- -	6.3
Oak / pine group	193.3	50.1	31.5	- -	- -	274.8
Oak / hickory group	5,963.0	2,366.0	740.7	- -	- -	9,069.8
Oak / gum / cypress group	13.6	26.3	5.9	- -	- -	45.8
Elm / ash / cottonwood group	186.9	49.3	65.4	- -	- -	301.7
Maple / beech / birch group	3,871.2	1,006.5	532.9	- -	- -	5,410.6
Aspen / birch group	53.0	155.0	151.2	- -	- -	359.2
Other hardwoods group	161.4	222.2	169.2	- -	- -	552.9
Exotic hardwoods group	11.3	- -	5.1	- -	- -	16.4
Nonstocked	- -	- -	- -	- -	129.5	129.5
All forest-type groups	10,872.4	3,984.5	1,753.3	- -	129.5	16,739.8

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 PA-6.—Area of forest land, in thousand acres, by forest-type group and stand-age class, Pennsylvania, 2009

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	--	1.4	59.5	63.4	89.7	69.3	42.2	11.8	--	--	--	--	337.2
Spruce / fir group	--	--	7.5	13.1	19.5	--	--	--	--	--	--	--	40.1
Loblolly / shortleaf pine group	--	--	22.4	34.2	38.6	3.6	--	--	--	--	--	--	98.8
Other eastern softwoods group	--	--	1.5	--	--	--	--	--	--	--	--	--	1.5
Douglas-fir group	--	3.3	--	--	--	--	--	--	--	--	--	--	3.3
Fir / spruce / mountain hemlock group	--	--	3.7	--	--	--	--	--	--	--	--	--	3.7
Exotic softwoods group	--	13.5	34.5	31.8	8.6	--	--	--	--	--	--	--	88.3
Other softwoods group	--	6.3	--	--	--	--	--	--	--	--	--	--	6.3
Oak / pine group	--	26.1	60.7	76.5	59.9	34.8	10.7	--	6.1	--	--	--	274.8
Oak / hickory group	--	455.8	798.9	1,648.7	2,897.6	2,509.7	615.0	100.7	13.7	2.2	--	--	9,069.8
Oak / gum / cypress group	--	--	12.8	14.7	12.0	6.3	--	--	--	--	--	--	45.8
Elm / ash / cottonwood group	--	31.4	47.4	88.4	72.1	57.0	5.3	--	--	--	--	--	301.7
Maple / beech / birch group	--	320.1	426.7	940.2	1,754.6	1,540.8	387.5	31.9	--	--	--	--	5,410.6
Aspen / birch group	--	103.8	106.9	83.4	56.4	6.9	--	--	--	--	--	--	359.2
Other hardwoods group	--	115.6	110.4	69.5	142.4	106.9	8.2	--	--	--	--	--	552.9
Exotic hardwoods group	--	--	--	10.7	5.7	--	--	--	--	--	--	--	16.4
Nonstocked	129.5	--	--	--	--	--	--	--	--	--	--	--	129.5
All forest-type groups	129.5	1,077.3	1,692.9	3,074.7	5,157.0	4,335.2	1,068.9	144.3	19.8	2.2	--	--	16,739.8

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 PA-7.—Area of forest land, in thousand acres, by forest-type group and stand origin, Pennsylvania, 2009

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	270.6	66.7	337.2
Spruce / fir group	24.5	15.6	40.1
Loblolly / shortleaf pine group	85.2	13.6	98.8
Other eastern softwoods group	1.5	- -	1.5
Douglas-fir group	- -	3.3	3.3
Fir / spruce / mountain hemlock grou	- -	3.7	3.7
Exotic softwoods group	15.6	72.7	88.3
Other softwoods group	- -	6.3	6.3
Oak / pine group	193.4	81.4	274.8
Oak / hickory group	8,930.0	139.7	9,069.8
Oak / gum / cypress group	45.8	- -	45.8
Elm / ash / cottonwood group	301.7	- -	301.7
Maple / beech / birch group	5,319.2	91.4	5,410.6
Aspen / birch group	304.3	54.9	359.2
Other hardwoods group	546.8	6.1	552.9
Exotic hardwoods group	10.7	5.6	16.4
Nonstocked	124.7	4.8	129.5
All forest-type groups	16,174.0	565.8	16,739.8

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 PA-8.—Area of forest land, in thousand acres, by forest-type group and primary disturbance class, Pennsylvania, 2009

Forest-type group	Disturbance class									All forest land
	None	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other	
White / red / jack pine group	319.3	- -	6.1	7.5	- -	- -	4.3	- -	- -	337.2
Spruce / fir group	40.1	- -	- -	- -	- -	- -	- -	- -	- -	40.1
Loblolly / shortleaf pine group	98.8	- -	- -	- -	- -	- -	- -	- -	- -	98.8
Other eastern softwoods group	1.5	- -	- -	- -	- -	- -	- -	- -	- -	1.5
Douglas-fir group	1.7	- -	- -	- -	- -	- -	- -	- -	1.6	3.3
Fir / spruce / mountain hemlock group	3.7	- -	- -	- -	- -	- -	- -	- -	- -	3.7
Exotic softwoods group	88.3	- -	- -	- -	- -	- -	- -	- -	- -	88.3
Other softwoods group	6.3	- -	- -	- -	- -	- -	- -	- -	- -	6.3
Oak / pine group	260.5	- -	- -	4.0	- -	3.4	- -	- -	6.9	274.8
Oak / hickory group	8,290.3	317.1	26.1	115.0	32.8	17.8	13.4	33.6	223.6	9,069.8
Oak / gum / cypress group	45.8	- -	- -	- -	- -	- -	- -	- -	- -	45.8
Elm / ash / cottonwood group	231.6	- -	- -	56.9	- -	- -	- -	- -	13.2	301.7
Maple / beech / birch group	5,062.1	28.8	27.8	56.5	- -	48.0	7.4	47.0	133.0	5,410.6
Aspen / birch group	340.4	- -	- -	18.8	- -	- -	- -	- -	- -	359.2
Other hardwoods group	530.0	6.2	- -	8.8	- -	- -	5.9	- -	2.1	552.9
Exotic hardwoods group	11.3	- -	- -	- -	- -	- -	- -	5.1	- -	16.4
Nonstocked	90.9	- -	- -	27.8	- -	4.9	- -	1.9	4.0	129.5
All forest-type groups	15,422.6	352.1	60.0	295.3	32.8	74.1	31.0	87.6	384.3	16,739.8

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 PA-9.—Area of timberland, in thousand acres, by forest-type group and stand-size class, Pennsylvania, 2009

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	279.3	55.7	1.4	- -	- -	336.4
Spruce / fir group	9.3	18.7	5.9	- -	- -	34.0
Loblolly / shortleaf pine group	76.6	3.4	11.9	- -	- -	92.0
Other eastern softwoods group	- -	1.5	- -	- -	- -	1.5
Douglas-fir group	- -	1.6	1.7	- -	- -	3.3
Fir / spruce / mountain hemlock grou	- -	3.7	- -	- -	- -	3.7
Exotic softwoods group	34.4	24.4	24.2	- -	- -	83.0
Other softwoods group	- -	- -	6.3	- -	- -	6.3
Oak / pine group	183.0	50.1	31.5	- -	- -	264.6
Oak / hickory group	5,754.2	2,309.5	723.4	- -	- -	8,787.1
Oak / gum / cypress group	13.6	26.3	5.9	- -	- -	45.8
Elm / ash / cottonwood group	186.9	42.4	64.3	- -	- -	293.6
Maple / beech / birch group	3,772.7	994.2	532.9	- -	- -	5,299.8
Aspen / birch group	53.0	148.2	148.0	- -	- -	349.2
Other hardwoods group	131.6	203.7	145.8	- -	- -	481.2
Exotic hardwoods group	11.3	- -	5.1	- -	- -	16.4
Nonstocked	- -	- -	- -	- -	104.0	104.0
All forest-type groups	10,506.0	3,883.4	1,708.3	- -	104.0	16,201.8

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 PA-10.—Number of live trees (at least 1 inch d.b.h./d.r.c.), in thousands, on forest land by species group and diameter class, Pennsylvania, 2009

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																
Loblolly and shortleaf pines	--	1,906	613	--	--	--	--	--	--	--	--	--	--	--	--	2,519
Other yellow pines	17,678	10,129	7,698	8,161	6,997	5,049	2,767	878	413	174	83	--	--	--	--	60,026
Eastern white and red pines	81,746	43,161	24,404	19,472	12,373	7,571	5,766	3,198	1,666	1,376	1,779	296	317	--	--	203,125
Jack pine	517	517	83	83	--	--	--	--	--	--	--	--	--	--	--	1,199
Spruce and balsam fir	5,455	5,988	4,203	1,984	747	359	156	42	28	--	--	--	--	--	--	18,962
Eastern hemlock	75,713	58,171	45,147	35,194	24,754	17,677	11,081	7,218	5,411	2,325	1,426	544	271	--	--	284,931
Other eastern softwoods	13,485	9,367	9,480	5,631	3,153	2,005	1,108	206	254	162	35	--	--	--	--	44,886
All softwoods	194,593	129,238	91,628	70,526	48,023	32,660	20,878	11,541	7,772	4,037	3,323	840	588	--	--	615,649
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	37,765	16,898	17,680	20,852	20,696	15,438	10,313	6,581	4,326	2,162	1,668	474	129	42	130	155,154
Select red oaks	81,246	36,177	22,448	19,602	20,887	19,590	18,396	13,707	8,712	6,924	5,210	2,299	467	411	65	256,141
Other white oaks	45,570	29,175	33,004	40,871	38,664	28,494	20,074	11,196	5,817	2,323	2,109	560	185	42	--	258,084
Other red oaks	44,875	17,875	13,012	11,376	11,730	10,679	8,426	6,030	4,000	2,207	2,557	467	62	110	82	133,488
Hickory	67,306	29,219	16,668	13,266	8,563	6,706	5,040	2,699	1,465	867	498	87	--	--	--	152,384
Yellow birch	28,429	12,502	10,624	9,373	6,005	3,863	1,638	871	170	163	23	41	--	--	--	73,702
Hard maple	229,835	91,114	56,572	38,885	30,398	24,255	15,011	8,524	4,527	2,317	2,175	564	334	41	46	504,599
Soft maple	686,616	334,069	205,233	142,416	99,208	63,626	36,966	21,857	11,124	6,168	4,175	1,048	120	136	--	1,612,761
Beech	395,762	84,249	36,128	21,701	14,077	8,811	4,994	3,716	2,281	1,247	1,007	327	--	41	--	574,342
Sweetgum	--	--	184	--	44	92	92	138	46	--	46	--	--	--	--	641
Tupelo and blackgum	115,564	68,462	26,942	11,137	5,537	2,504	902	329	209	186	84	118	--	--	--	231,973
Ash	152,746	49,355	30,521	21,619	15,163	13,027	8,459	6,112	3,648	1,969	1,439	614	168	53	83	304,977
Cottonwood and aspen	47,435	21,203	14,001	11,524	10,571	6,973	3,900	1,781	973	251	122	45	--	--	--	118,779
Basswood	9,952	4,052	3,577	4,279	4,134	3,470	2,635	2,015	980	243	307	37	206	--	--	35,885
Yellow-poplar	37,817	16,766	9,840	8,586	6,786	6,785	5,519	4,807	3,326	2,303	2,396	1,338	86	215	--	106,569
Black walnut	8,642	2,792	4,796	3,726	2,884	2,168	1,366	596	574	297	254	35	83	--	--	28,212
Other eastern soft hardwoods	544,899	231,836	109,612	70,480	46,227	32,534	22,389	13,761	9,690	5,300	4,227	1,015	325	127	42	1,092,463
Other eastern hard hardwoods	615,598	164,454	67,992	45,483	33,247	18,087	10,193	4,973	2,189	924	476	85	--	--	--	963,700
Eastern noncommercial hardwoods	832,314	162,742	48,055	15,043	5,730	1,974	934	393	165	--	49	36	--	77	--	1,067,512
All hardwoods	3,982,370	1,372,940	726,887	510,219	380,551	269,076	177,246	110,085	64,221	35,851	28,821	9,189	2,166	1,295	447	7,671,365
All species groups	4,176,963	1,502,178	818,515	580,745	428,575	301,736	198,124	121,626	71,993	39,889	32,144	10,029	2,753	1,295	447	8,287,013

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 PA-11.—Number of growing-stock trees (at least 5 inches d.b.h.), in thousands, on timberland by species group and diameter class, Pennsylvania, 2009

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														
Loblolly and shortleaf pines	613	--	--	--	--	--	--	--	--	--	--	--	--	613
Other yellow pines	6,546	7,425	5,740	4,636	1,999	709	327	136	83	--	--	--	--	27,602
Eastern white and red pines	21,896	18,140	11,015	7,061	5,191	2,703	1,547	1,290	1,618	256	317	--	--	71,035
Jack pine	83	83	--	--	--	--	--	--	--	--	--	--	--	166
Spruce and balsam fir	3,951	1,862	372	198	90	--	--	--	--	--	--	--	--	6,473
Eastern hemlock	40,257	32,464	20,220	14,991	8,813	6,660	4,684	1,969	1,254	466	271	--	--	132,049
Other eastern softwoods	7,465	4,660	2,190	1,684	1,028	206	254	162	35	--	--	--	--	17,684
All softwoods	80,811	64,634	39,537	28,571	17,120	10,280	6,812	3,557	2,991	722	588	--	--	255,622
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	16,032	19,730	19,844	14,205	9,747	6,098	3,964	1,886	1,533	357	49	--	130	93,575
Select red oaks	19,536	17,981	19,476	18,319	17,197	12,502	8,344	6,580	4,703	2,183	444	371	42	127,677
Other white oaks	26,838	36,849	34,726	25,713	18,085	9,508	5,051	2,049	1,832	364	119	42	--	161,176
Other red oaks	10,996	10,642	11,178	9,951	7,776	5,732	3,787	2,207	2,366	467	62	110	82	65,357
Hickory	14,155	12,256	7,849	6,132	4,831	2,576	1,465	867	498	87	--	--	--	50,717
Yellow birch	9,430	8,475	5,261	3,045	1,302	703	51	41	23	--	--	--	--	28,332
Hard maple	49,634	35,016	28,217	22,270	14,138	7,955	3,945	2,092	1,883	432	247	--	--	165,830
Soft maple	174,187	123,157	86,728	54,032	32,279	19,501	9,502	5,413	3,384	826	80	85	--	509,174
Beech	28,429	17,881	11,525	6,727	3,783	2,909	1,741	1,038	610	205	--	--	--	74,848
Sweetgum	--	--	44	--	--	--	--	--	--	--	--	--	--	44
Tupelo and blackgum	20,219	9,481	4,885	2,237	823	329	129	186	42	118	--	--	--	38,450
Ash	26,236	19,069	13,803	11,358	7,509	5,436	3,408	1,759	1,163	381	168	--	--	90,290
Cottonwood and aspen	13,362	11,279	10,212	6,806	3,822	1,711	932	212	81	45	--	--	--	48,462
Basswood	2,545	3,663	3,839	2,857	2,139	1,744	819	243	268	--	206	--	--	18,323
Yellow-poplar	8,866	7,753	6,296	6,230	5,434	4,768	3,213	2,088	2,312	1,085	86	215	--	48,344
Black walnut	3,515	2,818	2,535	1,644	1,282	560	454	297	212	35	--	--	--	13,353
Other eastern soft hardwoods	81,526	56,727	38,490	26,488	18,992	12,171	8,457	4,510	3,573	951	325	44	42	252,296
Other eastern hard hardwoods	56,282	39,694	28,898	14,676	8,391	4,174	1,631	741	320	85	--	--	--	154,893
All hardwoods	561,790	432,472	333,806	232,691	157,530	98,379	56,892	32,209	24,804	7,621	1,786	865	295	1,941,140
All species groups	642,601	497,107	373,343	261,261	174,650	108,659	63,704	35,766	27,794	8,343	2,373	865	295	2,196,762

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 PA-12.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2009

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	1,343.7	0.3	1,344.0	40.7	- -	40.7	1,384.7
Other national forest	5.9	- -	5.9	- -	- -	- -	5.9
Other Federal							
National Park Service	- -	- -	- -	120.1	- -	120.1	120.1
Department of Defense or Energy	98.5	- -	98.5	- -	- -	- -	98.5
Other Federal	127.6	- -	127.6	- -	- -	- -	127.6
State and local government							
State	7,854.0	16.9	7,870.9	955.6	- -	955.6	8,826.5
Local (county, municipal, etc.)	973.8	- -	973.8	73.7	- -	73.7	1,047.5
Private							
Undifferentiated private	24,159.4	15.9	24,175.3	10.2	- -	10.2	24,185.5
All owners	34,562.9	33.0	34,596.0	1,200.3	- -	1,200.3	35,796.3

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 PA-13.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2009

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	846.1	99.0	- -	- -	- -	945.1
Spruce / fir group	27.6	20.9	0.2	- -	- -	48.7
Loblolly / shortleaf pine group	160.9	3.0	3.6	- -	- -	167.6
Other eastern softwoods group	- -	0.9	- -	- -	- -	0.9
Douglas-fir group	- -	1.3	0.1	- -	- -	1.3
Fir / spruce / mountain hemlock grou	- -	1.0	- -	- -	- -	1.0
Exotic softwoods group	117.3	29.8	9.7	- -	- -	156.8
Other softwoods group	- -	- -	0.5	- -	- -	0.5
Oak / pine group	510.9	71.0	6.4	- -	- -	588.3
Oak / hickory group	15,170.6	3,779.3	229.7	- -	- -	19,179.7
Oak / gum / cypress group	44.9	29.4	0.8	- -	- -	75.1
Elm / ash / cottonwood group	438.2	67.8	15.3	- -	- -	521.2
Maple / beech / birch group	11,077.9	1,639.4	191.3	- -	- -	12,908.6
Aspen / birch group	122.1	214.6	25.7	- -	- -	362.4
Other hardwoods group	358.6	377.1	54.0	- -	- -	789.7
Exotic hardwoods group	36.1	- -	4.9	- -	- -	41.0
Nonstocked	- -	- -	- -	- -	8.3	8.3
All forest-type groups	28,911.3	6,334.5	542.1	- -	8.3	35,796.3

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 PA-14.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2009

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	--	--	--	1.2	1.2
Other yellow pines	--	3.1	85.5	250.5	339.1
Eastern white and red pines	5.4	2.7	257.4	816.1	1,081.6
Jack pine	--	--	--	0.7	0.7
Spruce and balsam fir	7.5	--	10.6	26.5	44.5
Eastern hemlock	92.1	0.6	345.5	1,339.1	1,777.3
Other eastern softwoods	--	0.8	29.6	134.2	164.6
All softwoods	105.0	7.1	728.5	2,568.2	3,409.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	36.6	30.2	487.6	1,149.7	1,704.1
Select red oaks	92.7	20.4	1,413.1	1,881.9	3,408.2
Other white oaks	4.8	29.7	1,147.5	1,408.8	2,590.8
Other red oaks	16.3	12.1	354.7	1,105.9	1,489.0
Hickory	1.7	22.6	98.6	729.2	852.1
Yellow birch	22.4	--	86.8	205.0	314.2
Hard maple	99.9	25.4	614.6	1,893.8	2,633.7
Soft maple	393.8	15.5	1,820.3	4,443.6	6,673.2
Beech	90.9	1.9	259.3	756.1	1,108.3
Sweetgum	--	--	14.9	0.5	15.4
Tupelo and blackgum	2.1	2.7	99.2	185.7	289.7
Ash	29.1	22.4	370.5	1,313.2	1,735.2
Cottonwood and aspen	12.9	0.5	57.1	608.4	678.9
Basswood	15.6	10.1	169.7	278.8	474.2
Yellow-poplar	25.3	98.3	325.5	1,225.6	1,674.7
Black walnut	--	6.1	11.2	203.0	220.3
Other eastern soft hardwoods	392.7	29.6	1,115.7	2,993.2	4,531.2
Other eastern hard hardwoods	41.0	11.4	658.2	1,051.8	1,762.4
Eastern noncommercial hardwoods	7.8	0.1	40.9	183.1	231.9
All hardwoods	1,285.5	339.1	9,145.4	21,617.3	32,387.3
All species groups	1,390.5	346.2	9,874.0	24,185.5	35,796.3

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 PA-15.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and diameter class, Pennsylvania, 2009

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														
Loblolly and shortleaf pines	1	--	--	--	--	--	--	--	--	--	--	--	--	1
Other yellow pines	19	48	72	80	61	29	17	8	5	--	--	--	--	339
Eastern white and red pines	63	117	137	138	145	107	77	77	140	33	48	--	--	1,082
Jack pine	0	0	--	--	--	--	--	--	--	--	--	--	--	1
Spruce and balsam fir	12	12	8	6	4	1	1	--	--	--	--	--	--	45
Eastern hemlock	105	186	232	263	243	225	221	118	98	51	37	--	--	1,777
Other eastern softwoods	19	32	31	31	25	7	11	7	2	--	--	--	--	165
All softwoods	220	395	480	518	478	368	326	210	245	84	85	--	--	3,409
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	44	125	223	266	259	229	196	128	126	49	16	6	39	1,704
Select red oaks	54	120	241	359	485	498	408	416	403	253	76	82	14	3,408
Other white oaks	77	231	397	462	477	356	247	121	141	52	24	7	--	2,591
Other red oaks	31	71	134	194	218	219	188	131	199	52	9	24	21	1,489
Hickory	40	91	113	140	154	112	81	63	46	11	--	--	--	852
Yellow birch	28	60	70	69	40	29	6	7	2	2	--	--	--	314
Hard maple	147	252	370	469	421	326	222	143	162	59	47	6	9	2,634
Soft maple	451	845	1,121	1,170	973	793	514	354	304	106	17	26	--	6,673
Beech	76	130	164	166	132	139	113	74	74	33	--	7	--	1,108
Sweetgum	0	--	0	2	2	5	2	--	3	--	--	--	--	15
Tupelo and blackgum	56	61	58	43	24	12	8	10	4	14	--	--	--	290
Ash	84	146	199	264	246	244	188	126	115	65	30	9	19	1,735
Cottonwood and aspen	40	83	142	144	116	71	51	17	9	5	--	--	--	679
Basswood	9	30	56	76	82	86	53	17	28	3	35	--	--	474
Yellow-poplar	26	62	93	152	189	223	205	183	259	205	16	59	--	1,675
Black walnut	11	20	29	34	33	21	25	17	17	4	9	--	--	220
Other eastern soft hardwoods	268	439	554	629	646	545	504	349	364	137	59	23	12	4,531
Other eastern hard hardwoods	169	281	375	323	256	175	92	49	32	9	--	--	--	1,762
Eastern noncommercial hardwoods	72	55	39	22	16	8	5	--	2	3	--	9	--	232
All hardwoods	1,684	3,101	4,378	4,984	4,771	4,091	3,109	2,205	2,291	1,064	337	259	114	32,387
All species groups	1,903	3,496	4,859	5,502	5,249	4,459	3,435	2,415	2,536	1,147	423	259	114	35,796

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 PA-16.—Net volume of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand origin, Pennsylvania, 2009

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	789.1	156.0	945.1
Spruce / fir group	23.9	24.8	48.7
Loblolly / shortleaf pine group	149.8	17.7	167.6
Other eastern softwoods group	0.9	- -	0.9
Douglas-fir group	- -	1.3	1.3
Fir / spruce / mountain hemlock grou	- -	1.0	1.0
Exotic softwoods group	12.9	143.9	156.8
Other softwoods group	- -	0.5	0.5
Oak / pine group	410.7	177.7	588.3
Oak / hickory group	19,006.3	173.3	19,179.7
Oak / gum / cypress group	75.1	- -	75.1
Elm / ash / cottonwood group	521.2	- -	521.2
Maple / beech / birch group	12,779.2	129.4	12,908.6
Aspen / birch group	314.6	47.8	362.4
Other hardwoods group	787.2	2.5	789.7
Exotic hardwoods group	15.6	25.4	41.0
Nonstocked	8.0	0.4	8.3
All forest-type groups	34,894.5	901.7	35,796.3

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 PA-17.—Net volume of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and diameter class, Pennsylvania, 2005 to 2009

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														
Loblolly and shortleaf pines	1	--	--	--	--	--	--	--	--	--	--	--	--	1
Other yellow pines	17	45	62	75	46	24	13	6	5	--	--	--	--	293
Eastern white and red pines	59	111	125	131	135	94	72	74	128	29	48	--	--	1,007
Jack pine	0	0	--	--	--	--	--	--	--	--	--	--	--	1
Spruce and balsam fir	11	12	4	3	2	--	--	--	--	--	--	--	--	33
Eastern hemlock	97	176	198	230	200	210	196	103	88	45	37	--	--	1,580
Other eastern softwoods	15	26	22	27	24	7	11	7	2	--	--	--	--	141
All softwoods	201	369	412	466	406	335	293	190	224	74	85	--	--	3,056
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	41	120	214	248	246	213	183	113	119	40	8	--	39	1,584
Select red oaks	48	112	227	339	458	456	395	395	366	246	72	73	12	3,198
Other white oaks	67	214	363	425	439	314	220	110	125	38	17	7	--	2,339
Other red oaks	28	68	129	182	205	209	179	131	188	52	9	24	21	1,423
Hickory	36	85	106	131	149	109	81	63	46	11	--	--	--	818
Yellow birch	26	56	63	56	34	25	2	2	2	--	--	--	--	268
Hard maple	135	234	351	441	404	309	199	135	149	49	39	--	--	2,446
Soft maple	404	760	1,017	1,034	877	732	458	321	264	92	13	19	--	5,990
Beech	65	113	144	138	110	117	93	68	56	25	--	--	--	928
Sweetgum	--	--	0	--	--	--	--	--	--	--	--	--	--	0
Tupelo and blackgum	46	54	53	40	23	12	6	10	3	14	--	--	--	260
Ash	76	134	184	237	224	222	177	116	101	48	30	--	--	1,550
Cottonwood and aspen	39	82	138	141	113	69	49	14	7	5	--	--	--	659
Basswood	7	27	53	64	70	78	46	17	25	--	35	--	--	421
Yellow-poplar	25	58	89	144	187	223	199	168	251	166	16	59	--	1,584
Black walnut	8	16	27	28	32	20	20	17	16	4	--	--	--	189
Other eastern soft hardwoods	226	383	491	547	574	498	457	314	326	129	59	10	12	4,026
Other eastern hard hardwoods	147	254	338	274	222	153	77	43	25	9	--	--	--	1,542
All hardwoods	1,426	2,769	3,986	4,470	4,369	3,757	2,843	2,037	2,068	926	298	193	83	29,225
All species groups	1,627	3,138	4,398	4,936	4,775	4,092	3,135	2,227	2,292	1,000	383	193	83	32,280

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 PA-18.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2009

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	--	--	--	1.2	1.2
Other yellow pines	--	1.9	59.8	231.1	292.8
Eastern white and red pines	4.9	1.6	229.2	771.4	1,007.1
Jack pine	--	--	--	0.7	0.7
Spruce and balsam fir	2.8	--	5.6	24.3	32.7
Eastern hemlock	65.6	0.3	304.8	1,209.3	1,579.9
Other eastern softwoods	--	--	13.5	127.6	141.1
All softwoods	73.4	3.8	612.9	2,365.5	3,055.6
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	35.6	21.7	424.8	1,102.2	1,584.3
Select red oaks	89.3	14.1	1,238.8	1,856.2	3,198.4
Other white oaks	4.4	9.1	991.6	1,333.7	2,338.8
Other red oaks	6.9	5.2	322.2	1,088.6	1,422.9
Hickory	1.7	16.1	85.0	714.8	817.6
Yellow birch	20.4	--	72.3	175.0	267.7
Hard maple	92.4	25.0	559.6	1,768.9	2,446.0
Soft maple	380.6	6.6	1,540.8	4,061.9	5,989.8
Beech	80.8	0.2	188.1	659.3	928.5
Sweetgum	--	--	--	0.5	0.5
Tupelo and blackgum	2.1	0.2	87.0	170.8	260.1
Ash	29.1	11.6	293.3	1,216.2	1,550.2
Cottonwood and aspen	12.2	--	47.2	599.2	658.5
Basswood	14.9	10.0	129.9	266.1	420.9
Yellow-poplar	25.3	55.2	292.2	1,211.0	1,583.6
Black walnut	--	4.3	7.7	176.7	188.8
Other eastern soft hardwoods	368.4	23.3	958.3	2,676.0	4,026.1
Other eastern hard hardwoods	40.0	8.0	535.7	958.3	1,542.1
All hardwoods	1,204.0	210.8	7,774.5	20,035.3	29,224.7
All species groups	1,277.4	214.6	8,387.4	22,400.8	32,280.3

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 PA-19.—Net volume of sawtimber trees (International ¼-inch rule), in million board feet, on timberland by species group and diameter class, Pennsylvania, 2009

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	195	289	195	109	58	33	26	--	--	--	--	904
Eastern white and red pines	404	533	609	448	356	383	668	158	268	--	--	3,828
Spruce and balsam fir	14	13	9	--	--	--	--	--	--	--	--	37
Eastern hemlock	596	816	764	841	817	427	385	203	175	--	--	5,023
Other eastern softwoods	70	103	101	30	50	36	12	--	--	--	--	401
All softwoods	1,279	1,755	1,677	1,428	1,281	878	1,091	360	443	--	--	10,193
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	880	1,042	999	900	585	654	234	49	--	263	5,606
Select red oaks	--	1,145	1,872	2,040	1,897	1,986	1,929	1,395	437	461	78	13,241
Other white oaks	--	1,457	1,694	1,311	995	506	619	204	95	44	--	6,925
Other red oaks	--	617	837	934	857	655	998	296	51	157	138	5,540
Hickory	--	450	614	507	399	322	254	63	--	--	--	2,609
Yellow birch	--	202	145	117	12	12	10	--	--	--	--	498
Hard maple	--	1,581	1,680	1,423	975	685	819	287	246	--	--	7,694
Soft maple	--	3,364	3,470	3,217	2,190	1,625	1,375	513	78	118	--	15,951
Beech	--	495	474	556	477	362	313	146	--	--	--	2,824
Tupelo and blackgum	--	135	94	53	29	52	15	80	--	--	--	457
Ash	--	817	942	1,043	874	608	562	285	187	--	--	5,318
Cottonwood and aspen	--	479	474	321	244	76	40	30	--	--	--	1,664
Basswood	--	231	298	367	225	89	132	--	216	--	--	1,557
Yellow-poplar	--	493	778	1,039	992	867	1,398	997	102	399	--	7,065
Black walnut	--	100	134	95	97	88	86	22	--	--	--	622
Other eastern soft hardwoods	--	1,886	2,434	2,329	2,306	1,631	1,762	752	360	66	84	13,610
Other eastern hard hardwoods	--	990	942	700	386	221	130	53	--	--	--	3,421
All hardwoods	--	15,321	17,924	17,051	13,855	10,368	11,094	5,357	1,822	1,246	562	94,601
All species groups	1,279	17,076	19,601	18,479	15,136	11,247	12,186	5,718	2,265	1,246	562	104,794

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.

Table PA-19a.—Net volume of sawtimber trees (Doyle rule), in million board feet, on timberland by species group and diameter class, Pennsylvania, 2009

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	67	138	117	75	44	28	23	--	--	--	--	493
Eastern white and red pines	140	255	365	309	274	328	595	151	296	--	--	2,713
Spruce and balsam fir	5	6	6	--	--	--	--	--	--	--	--	17
Eastern hemlock	206	390	458	581	628	366	344	193	194	--	--	3,359
Other eastern softwoods	24	49	60	21	38	31	10	--	--	--	--	234
All softwoods	442	839	1,005	987	985	753	972	344	490	--	--	6,816
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	367	534	587	591	420	523	211	56	--	298	3,588
Select red oaks	--	478	958	1,200	1,246	1,426	1,546	1,252	496	524	88	9,213
Other white oaks	--	608	867	771	653	363	495	186	108	50	--	4,102
Other red oaks	--	257	428	550	563	470	806	266	58	178	157	3,733
Hickory	--	188	314	298	262	231	203	55	--	--	--	1,551
Yellow birch	--	84	74	69	8	9	9	--	--	--	--	252
Hard maple	--	659	860	837	640	492	657	256	279	--	--	4,679
Soft maple	--	1,404	1,776	1,892	1,439	1,167	1,102	458	89	134	--	9,460
Beech	--	207	243	327	313	260	250	128	--	--	--	1,728
Tupelo and blackgum	--	56	48	31	19	37	11	74	--	--	--	277
Ash	--	341	482	613	574	437	451	259	213	--	--	3,370
Cottonwood and aspen	--	200	243	189	160	55	32	27	--	--	--	905
Basswood	--	96	152	216	148	64	108	--	245	--	--	1,029
Yellow-poplar	--	206	398	611	652	622	1,133	905	116	452	--	5,095
Black walnut	--	42	69	56	64	63	68	19	--	--	--	380
Other eastern soft hardwoods	--	787	1,246	1,370	1,515	1,171	1,412	684	409	75	95	8,764
Other eastern hard hardwoods	--	413	482	412	253	159	103	48	--	--	--	1,870
All hardwoods	--	6,392	9,173	10,029	9,101	7,444	8,908	4,827	2,068	1,414	638	59,996
All species groups	442	7,231	10,178	11,016	10,086	8,198	9,880	5,172	2,558	1,414	638	66,812

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.

Table PA-20.—Net volume of saw-log portion of sawtimber trees, in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2009

Species group	Ownership group				
	Forest Service	Other Federal	State and local government	Undifferentiated private	All owners
Softwood species groups					
Eastern softwood species groups					
Other yellow pines	- -	0.9	41.2	160.6	202.8
Eastern white and red pines	4.1	1.5	164.5	583.2	753.3
Spruce and balsam fir	0.6	- -	2.2	5.6	8.4
Eastern hemlock	46.4	0.2	232.6	893.1	1,172.3
Other eastern softwoods	- -	- -	10.0	78.1	88.1
All softwoods	51.1	2.6	450.6	1,720.6	2,225.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	26.6	18.4	268.3	674.3	987.6
Select red oaks	72.1	10.5	916.1	1,328.8	2,327.6
Other white oaks	3.2	7.0	559.3	802.2	1,371.7
Other red oaks	5.0	4.3	213.9	764.5	987.7
Hickory	0.8	10.6	48.0	420.1	479.4
Yellow birch	8.1	- -	30.9	57.3	96.2
Hard maple	52.4	15.2	320.7	1,009.1	1,397.5
Soft maple	262.1	2.3	738.1	2,074.7	3,077.2
Beech	37.1	- -	84.3	373.1	494.4
Tupelo and blackgum	0.3	- -	18.2	66.9	85.5
Ash	22.3	7.3	212.9	701.6	944.1
Cottonwood and aspen	8.2	- -	23.8	286.0	318.0
Basswood	12.1	7.5	85.5	168.3	273.3
Yellow-poplar	21.4	45.6	216.8	890.7	1,174.5
Black walnut	- -	3.3	5.0	103.4	111.8
Other eastern soft hardwoods	266.9	16.5	657.4	1,456.6	2,397.5
Other eastern hard hardwoods	16.5	2.8	212.1	409.7	641.2
All hardwoods	815.3	151.4	4,611.4	11,587.2	17,165.3
All species groups	866.4	154.0	5,062.0	13,307.8	19,390.3

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 PA-21.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2004 to 2009

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	15.2	- -	15.2	0.2	- -	0.2	15.4
Other Federal							
National Park Service	- -	- -	- -	1.4	- -	1.4	1.4
Department of Defense or Energy	1.5	- -	1.5	-0.7	- -	-0.7	0.9
Other Federal	3.2	- -	3.2	0.1	- -	0.1	3.3
State and local government							
State	127.0	0.0	127.0	13.0	- -	13.0	140.0
Local (county, municipal, etc.)	18.4	- -	18.4	0.3	- -	0.3	18.7
Private							
Undifferentiated private	686.3	0.3	686.6	- -	- -	- -	686.6
All owners	851.7	0.3	851.9	14.2	- -	14.2	866.2

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 PA-22.—Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2004 to 2009

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	15.0	3.3	1.7	- -	- -	20.0
Spruce / fir group	0.7	0.7	0.0	- -	- -	1.5
Loblolly / shortleaf pine group	1.1	1.1	0.6	- -	- -	2.7
Other eastern softwoods group	- -	0.2	0.0	- -	- -	0.2
Douglas-fir group	- -	0.2	0.0	- -	- -	0.2
Fir / spruce / mountain hemlock grou	- -	- -	0.2	- -	- -	0.2
Exotic softwoods group	0.5	2.1	1.2	- -	- -	3.9
Oak / pine group	7.1	2.9	1.5	- -	- -	11.6
Oak / hickory group	303.2	165.9	25.3	- -	- -	494.4
Oak / gum / cypress group	-0.1	1.0	0.1	- -	- -	1.0
Elm / ash / cottonwood group	9.5	1.7	1.2	- -	- -	12.4
Maple / beech / birch group	185.6	79.6	17.6	- -	- -	282.8
Aspen / birch group	0.5	9.3	3.6	- -	- -	13.5
Other hardwoods group	6.4	8.2	6.0	- -	- -	20.6
Exotic hardwoods group	- -	0.2	- -	- -	- -	0.2
Nonstocked	- -	- -	- -	- -	1.0	1.0
All forest-type groups	529.6	276.5	59.1	- -	1.0	866.2

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 PA-23.—Average annual net growth of all live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

Species group	Ownership group				
	Forest Service	Other Federal	State and local government	Undifferentiated private	All owners
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	- -	- -	0.1	0.1
Other yellow pines	- -	0.2	-0.2	-0.1	-0.1
Eastern white and red pines	0.1	0.0	8.6	16.6	25.3
Jack pine	- -	- -	- -	-0.1	-0.1
Spruce and balsam fir	0.3	- -	0.2	0.0	0.5
Eastern hemlock	0.5	0.0	5.1	25.0	30.6
Other eastern softwoods	- -	0.0	1.1	4.8	5.9
All softwoods	0.9	0.2	14.7	46.2	62.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.6	0.8	7.2	33.0	41.7
Select red oaks	2.4	0.4	31.5	66.3	100.7
Other white oaks	-0.3	0.7	12.7	29.2	42.2
Other red oaks	0.4	0.4	6.2	43.5	50.4
Hickory	0.1	0.4	2.4	19.3	22.2
Yellow birch	0.2	- -	0.0	1.9	2.2
Hard maple	0.6	0.8	12.6	48.7	62.7
Soft maple	5.6	0.0	27.8	129.7	163.0
Beech	-2.7	0.0	-2.1	14.0	9.3
Sweetgum	- -	- -	0.2	0.0	0.2
Tupelo and blackgum	0.1	0.0	3.4	6.0	9.5
Ash	0.8	-0.8	5.3	44.2	49.5
Cottonwood and aspen	-0.3	-0.1	-1.4	9.7	7.9
Basswood	0.3	-0.3	0.9	3.0	3.9
Yellow-poplar	0.7	1.9	10.1	60.0	72.7
Black walnut	- -	0.3	0.0	12.9	13.3
Other eastern soft hardwoods	4.9	0.4	17.6	98.5	121.5
Other eastern hard hardwoods	0.9	0.1	8.1	12.6	21.7
Eastern noncommercial hardwoods	0.0	0.0	1.6	7.7	9.4
All hardwoods	14.5	5.3	144.0	640.4	804.1
All species groups	15.4	5.5	158.7	686.6	866.2

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 PA-24.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

Species group	Ownership group				All owners
	Forest Service	Other Federal	State and local government	Undifferentiated private	
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	- -	- -	- -	0.1	0.1
Other yellow pines	- -	0.3	0.1	-0.2	0.2
Eastern white and red pines	0.1	- -	7.3	13.7	21.1
Jack pine	- -	- -	- -	-0.1	-0.1
Spruce and balsam fir	0.1	- -	0.2	0.1	0.4
Eastern hemlock	1.2	0.1	4.1	24.4	29.8
Other eastern softwoods	- -	- -	0.5	4.2	4.6
All softwoods	1.4	0.3	12.1	42.3	56.2
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.5	0.8	8.4	27.1	36.9
Select red oaks	2.0	0.6	30.3	57.8	90.6
Other white oaks	-0.3	0.4	11.5	26.2	37.8
Other red oaks	0.2	0.6	5.5	37.2	43.5
Hickory	0.0	1.4	2.5	17.4	21.4
Yellow birch	0.2	- -	-0.2	2.3	2.2
Hard maple	1.0	1.2	10.3	42.2	54.7
Soft maple	5.6	0.3	27.0	111.9	144.8
Beech	-0.9	- -	1.2	15.0	15.3
Sweetgum	- -	- -	- -	0.0	0.0
Tupelo and blackgum	0.1	0.0	2.8	5.1	8.0
Ash	0.6	1.6	3.6	36.3	42.1
Cottonwood and aspen	-0.2	0.0	-1.3	8.7	7.3
Basswood	0.3	2.0	1.3	4.0	7.6
Yellow-poplar	0.6	0.9	9.5	53.8	64.9
Black walnut	- -	0.8	0.0	9.1	9.9
Other eastern soft hardwoods	4.8	1.3	15.1	79.8	101.0
Other eastern hard hardwoods	1.0	0.6	7.3	14.7	23.6
All hardwoods	15.6	12.4	134.9	548.6	711.5
All species groups	17.0	12.7	147.0	590.9	767.7

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 PA-25.—Average annual mortality of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, by owner class and forest-land status, Pennsylvania, 2004 to 2009

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	14.5	- -	14.5	0.1	- -	0.1	14.6
Other Federal							
National Park Service	- -	- -	- -	0.8	- -	0.8	0.8
Department of Defense or Energy	0.6	- -	0.6	1.8	- -	1.8	2.5
Other Federal	0.4	- -	0.4	0.3	- -	0.3	0.7
State and local government							
State	65.7	- -	65.7	7.4	- -	7.4	73.1
Local (county, municipal, etc.)	9.8	- -	9.8	0.0	- -	0.0	9.8
Private							
Undifferentiated private	219.3	0.5	219.8	- -	- -	- -	219.8
All owners	310.2	0.5	310.7	10.4	- -	10.4	321.2

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 PA-26.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by forest-type group and stand-size class, Pennsylvania, 2004 to 2009

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	5.7	0.8	0.0	- -	- -	6.5
Spruce / fir group	0.2	0.0	- -	- -	- -	0.3
Loblolly / shortleaf pine group	2.5	0.8	- -	- -	- -	3.3
Douglas-fir group	- -	- -	0.0	- -	- -	0.0
Exotic softwoods group	1.2	0.9	0.1	- -	- -	2.2
Oak / pine group	7.0	0.7	0.2	- -	- -	8.0
Oak / hickory group	115.1	33.0	2.2	- -	- -	150.2
Oak / gum / cypress group	0.4	0.2	0.3	- -	- -	0.9
Elm / ash / cottonwood group	7.7	1.2	0.1	- -	- -	9.0
Maple / beech / birch group	100.5	23.9	3.0	- -	- -	127.4
Aspen / birch group	1.3	4.3	1.6	- -	- -	7.2
Other hardwoods group	3.0	2.5	0.5	- -	- -	5.9
Nonstocked	- -	- -	- -	- -	0.3	0.3
All forest-type groups	244.5	68.3	8.0	- -	0.3	321.2

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 PA-27.—Average annual mortality of trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

Species group	Ownership group				
	Forest Service	Other Federal	State and local government	Undifferentiated private	All owners
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	--	--	--	0.2	0.2
Other yellow pines	--	0.2	1.2	6.3	7.8
Eastern white and red pines	--	--	0.8	9.4	10.2
Jack pine	--	--	--	0.1	0.1
Spruce and balsam fir	0.0	--	0.1	0.5	0.7
Eastern hemlock	2.0	--	2.0	8.7	12.7
Other eastern softwoods	--	--	--	0.8	0.8
All softwoods	2.1	0.2	4.1	26.1	32.5
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.0	0.3	2.5	5.6	8.4
Select red oaks	0.1	0.4	6.5	13.8	20.7
Other white oaks	0.4	0.1	11.8	9.6	21.9
Other red oaks	--	--	3.4	3.6	7.1
Hickory	--	--	0.2	5.6	5.8
Yellow birch	0.3	--	1.9	3.2	5.4
Hard maple	1.0	--	3.6	16.1	20.7
Soft maple	1.9	0.5	12.5	26.2	41.1
Beech	4.8	--	7.9	9.4	22.1
Tupelo and blackgum	--	--	0.0	1.0	1.1
Ash	0.0	1.4	3.3	11.0	15.7
Cottonwood and aspen	0.5	0.1	2.9	18.6	22.2
Basswood	--	0.4	1.4	2.3	4.2
Yellow-poplar	--	0.0	0.5	4.0	4.6
Black walnut	--	--	0.6	0.7	1.3
Other eastern soft hardwoods	2.8	0.3	10.8	40.0	53.8
Other eastern hard hardwoods	0.4	0.3	7.7	18.6	27.0
Eastern noncommercial hardwoods	0.3	--	1.1	4.2	5.6
All hardwoods	12.5	3.7	78.7	193.7	288.6
All species groups	14.6	3.9	82.8	219.8	321.2

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 PA-28.—Average annual mortality of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

Species group	Ownership group				
	Forest Service	Other Federal	State and local government	Undifferentiated private	All owners
Softwood species groups					
Eastern softwood species groups					
Loblolly and shortleaf pines	--	--	--	0.2	0.2
Other yellow pines	--	0.0	0.7	5.8	6.5
Eastern white and red pines	--	--	0.3	8.1	8.4
Jack pine	--	--	--	0.1	0.1
Spruce and balsam fir	0.0	--	--	0.4	0.5
Eastern hemlock	0.4	--	1.8	6.2	8.4
Other eastern softwoods	--	--	--	0.7	0.7
All softwoods	0.5	0.0	2.9	21.4	24.7
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.0	--	2.1	4.3	6.4
Select red oaks	0.0	0.3	5.5	10.8	16.6
Other white oaks	0.4	--	9.1	8.3	17.8
Other red oaks	--	--	2.7	2.8	5.5
Hickory	--	--	0.2	4.5	4.7
Yellow birch	0.2	--	1.3	2.4	3.9
Hard maple	0.8	--	2.9	12.0	15.8
Soft maple	1.2	--	7.9	18.6	27.6
Beech	3.2	--	4.3	5.7	13.3
Tupelo and blackgum	--	--	0.0	0.7	0.7
Ash	0.0	--	2.7	9.1	11.9
Cottonwood and aspen	0.4	--	2.4	16.4	19.3
Basswood	--	--	0.6	1.7	2.3
Yellow-poplar	--	0.0	0.5	3.3	3.9
Black walnut	--	--	0.4	0.2	0.7
Other eastern soft hardwoods	2.0	0.0	6.9	30.5	39.5
Other eastern hard hardwoods	0.1	0.2	4.8	13.2	18.3
All hardwoods	8.5	0.6	54.4	144.8	208.2
All species groups	8.9	0.6	57.2	166.2	232.9

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

Table PA-29.—Average annual removals of live trees (at least 5 inches d.b.h./d.r.c.), in million cubic feet, on forest land by species group and ownership group, Pennsylvania, 2004 to 2009

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	2.8	2.9
Eastern white and red pines	--	--	1.8	7.9	9.8
Spruce and balsam fir	--	--	0.0	--	0.0
Eastern hemlock	--	--	--	14.9	14.9
Other eastern softwoods	--	--	--	2.2	2.2
All softwoods	--	--	2.0	27.9	29.8
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	--	3.0	16.8	19.8
Select red oaks	--	--	4.4	40.7	45.1
Other white oaks	--	1.6	5.7	14.9	22.2
Other red oaks	--	0.4	0.9	15.3	16.6
Hickory	--	--	0.3	10.7	11.1
Yellow birch	0.1	--	--	1.4	1.5
Hard maple	0.5	--	4.0	33.6	38.1
Soft maple	2.6	--	4.4	57.4	64.4
Beech	0.6	--	0.7	10.0	11.3
Tupelo and blackgum	--	--	0.9	1.0	1.9
Ash	0.1	--	0.6	30.9	31.5
Cottonwood and aspen	--	--	--	5.3	5.3
Basswood	--	--	--	2.1	2.1
Yellow-poplar	1.4	--	0.9	27.0	29.3
Black walnut	--	--	--	0.4	0.4
Other eastern soft hardwoods	2.5	--	5.6	74.4	82.5
Other eastern hard hardwoods	0.2	0.0	0.5	8.8	9.4
Eastern noncommercial hardwoods	--	--	0.1	2.3	2.3
All hardwoods	8.0	2.0	32.1	352.9	395.0
All species groups	8.0	2.0	34.1	380.8	424.9

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

Table PA-30.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Pennsylvania, 2004 to 2009

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	--	--	0.9	2.8	3.8
Eastern white and red pines	0.0	--	1.8	7.1	8.9
Spruce and balsam fir	--	--	0.0	--	0.0
Eastern hemlock	0.2	--	0.6	13.5	14.3
Other eastern softwoods	--	--	--	2.1	2.1
All softwoods	0.3	--	3.3	25.5	29.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	0.2	--	3.2	14.4	17.8
Select red oaks	0.6	--	8.7	36.1	45.4
Other white oaks	0.1	1.4	6.3	13.7	21.5
Other red oaks	1.8	0.4	2.1	13.2	17.4
Hickory	--	--	0.4	9.6	9.9
Yellow birch	0.1	--	--	1.1	1.2
Hard maple	0.5	--	4.0	28.0	32.4
Soft maple	2.8	--	8.1	47.7	58.6
Beech	0.6	--	0.4	8.2	9.2
Tupelo and blackgum	--	--	0.5	0.9	1.4
Ash	0.1	--	1.4	26.5	28.0
Cottonwood and aspen	0.0	--	--	4.7	4.7
Basswood	--	--	3.5	1.9	5.4
Yellow-poplar	1.2	--	0.9	24.7	26.8
Black walnut	--	--	--	0.4	0.4
Other eastern soft hardwoods	2.1	--	9.3	61.5	72.9
Other eastern hard hardwoods	0.2	0.0	1.1	8.1	9.4
All hardwoods	10.2	1.8	49.8	300.7	362.4
All species groups	10.4	1.8	53.1	326.1	391.5

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 PA-31.—Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.), in thousand dry short tons, by owner class and forest-land status, Pennsylvania, 2009

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Forest Service							
National forest	36,268	6	36,273	1,186	- -	1,186	37,459
Other national forest	159	- -	159	- -	- -	- -	159
Other Federal							
National Park Service	- -	- -	- -	3,182	- -	3,182	3,182
Department of Defense or Energy	2,709	- -	2,709	- -	- -	- -	2,709
Other Federal	3,465	- -	3,465	- -	- -	- -	3,465
State and local government							
State	230,106	555	230,661	27,240	- -	27,240	257,900
Local (county, municipal, etc.)	28,257	- -	28,257	1,961	- -	1,961	30,218
Private							
Undifferentiated private	687,395	495	687,889	311	- -	311	688,200
All owners	988,358	1,055	989,413	33,879	- -	33,879	1,023,292

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 PA-32.—Aboveground dry weight of live trees (at least 1 inch d.b.h./d.r.c.), in thousand dry short tons, on forest land by species group and diameter class, Pennsylvania, 2009

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	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
Softwood species groups																
Eastern softwood species groups																
Loblolly and shortleaf pines	--	43	26	--	--	--	--	--	--	--	--	--	--	--	--	69
Other yellow pines	65	220	404	1,000	1,507	1,673	1,302	608	345	185	110	--	--	--	--	7,418
Eastern white and red pines	226	627	1,097	2,014	2,345	2,370	2,498	1,857	1,312	1,348	1,421	1,016	385	183	824	19,522
Jack pine	1	4	3	9	--	--	--	--	--	--	--	--	--	--	--	17
Spruce and balsam fir	13	112	204	206	142	95	60	20	22	--	--	--	--	--	--	874
Eastern hemlock	214	919	1,947	3,421	4,280	4,840	4,446	4,119	4,027	2,202	990	862	818	143	692	33,920
Other eastern softwoods	44	154	355	576	567	562	452	125	217	143	49	--	--	--	--	3,244
All softwoods	562	2,079	4,036	7,225	8,841	9,540	8,757	6,729	5,923	3,879	2,570	1,877	1,204	326	1,516	65,064
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	155	504	1,509	4,076	7,113	8,449	8,219	7,233	6,260	4,016	2,677	1,500	1,060	587	2,028	55,387
Select red oaks	390	1,108	1,853	3,911	7,682	11,316	15,167	15,487	12,835	13,074	7,965	4,892	5,555	2,421	5,323	108,980
Other white oaks	203	810	2,666	7,583	12,793	14,780	15,137	11,316	7,816	3,879	2,966	1,607	875	827	986	84,246
Other red oaks	177	517	1,107	2,373	4,355	6,186	6,894	6,843	5,924	4,070	3,427	2,888	1,115	499	1,608	47,983
Hickory	311	848	1,479	3,136	3,820	4,750	5,172	3,709	2,720	2,021	1,116	435	367	--	--	29,883
Yellow birch	136	381	859	1,745	1,979	1,963	1,156	834	196	218	--	55	80	--	--	9,600
Hard maple	1,246	2,812	4,699	7,735	11,042	13,906	12,489	9,527	6,580	4,191	3,075	1,921	1,220	579	2,000	83,023
Soft maple	3,326	8,892	12,276	22,076	28,604	29,359	24,398	19,830	13,015	9,207	4,565	3,356	1,963	784	1,141	182,792
Beech	1,330	1,996	2,299	3,739	4,671	4,727	3,793	3,995	3,246	2,166	1,705	501	835	133	257	35,392
Sweetgum	--	--	12	--	12	42	56	119	47	--	78	--	--	--	--	366
Tupelo and blackgum	519	1,519	1,463	1,504	1,395	1,015	571	278	206	238	102	--	103	225	--	9,136
Ash	594	1,241	2,642	4,365	5,685	7,518	7,022	6,907	5,342	3,615	2,245	1,077	999	895	1,863	52,013
Cottonwood and aspen	180	406	862	1,687	2,787	2,820	2,294	1,390	1,028	344	134	69	105	--	--	14,106
Basswood	34	79	157	521	950	1,267	1,365	1,425	887	284	221	251	68	--	575	8,083
Yellow-poplar	120	394	610	1,319	1,967	3,142	3,844	4,565	4,139	3,672	2,506	2,715	2,132	1,961	1,484	34,569
Black walnut	36	68	308	545	760	895	865	543	652	432	317	146	97	--	286	5,950
Other eastern soft hardwoods	1,982	5,181	7,187	11,142	13,742	15,361	15,735	13,183	12,264	8,514	5,795	3,087	1,678	1,617	2,281	118,749
Other eastern hard hardwoods	3,233	5,258	5,615	8,854	11,638	9,968	7,944	5,371	2,960	1,592	714	320	129	150	--	63,747
Eastern noncommercial hardwoods	2,762	3,474	2,546	1,892	1,363	780	517	266	153	--	52	--	--	84	336	14,225
All hardwoods	16,732	35,487	50,150	88,202	122,357	138,244	132,638	112,820	86,271	61,534	39,661	24,820	18,382	10,764	20,167	958,228
All species groups	17,295	37,567	54,186	95,427	131,197	147,784	141,395	119,549	92,194	65,413	42,231	26,697	19,585	11,089	21,683	1,023,292

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 PA-54.—Area of forest land, in thousand acres, by inventory unit, county, and forest-land status, Pennsylvania, 2009

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
South Central							
Dauphin	128.1	- -	128.1	7.0	- -	7.0	135.1
Franklin	220.5	- -	220.5	- -	- -	- -	220.5
Fulton	183.7	- -	183.7	- -	- -	- -	183.7
Huntingdon	412.2	- -	412.2	6.9	- -	6.9	419.2
Juniata	131.1	- -	131.1	- -	- -	- -	131.1
Mifflin	146.1	- -	146.1	- -	- -	- -	146.1
Perry	222.9	- -	222.9	5.5	- -	5.5	228.4
Snyder	112.3	- -	112.3	- -	- -	- -	112.3
Union	99.9	- -	99.9	13.9	- -	13.9	113.8
Total	1,657.0	- -	1,657.0	33.3	- -	33.3	1,690.2
Western							
Allegheny	153.9	4.6	158.5	6.9	- -	6.9	165.4
Armstrong	244.7	- -	244.7	- -	- -	- -	244.7
Butler	250.6	- -	250.6	14.8	- -	14.8	265.3
Crawford	308.2	- -	308.2	- -	- -	- -	308.2
Erie	228.4	6.6	235.0	- -	- -	- -	235.0
Greene	225.4	- -	225.4	- -	- -	- -	225.4
Indiana	321.6	- -	321.6	6.6	- -	6.6	328.2
Mercer	167.6	5.8	173.4	1.7	- -	1.7	175.0
Washington	265.4	- -	265.4	- -	- -	- -	265.4
Westmoreland	365.6	4.3	370.0	14.9	- -	14.9	384.9
Beaver/Lawrence	218.6	- -	218.6	17.4	- -	17.4	236.0
Total	2,750.1	21.3	2,771.4	62.2	- -	62.2	2,833.7

(Table PA-54 continued on next page)

(Table PA-54 continued)

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
North Central/Allegheny							
Cameron	191.2	- -	191.2	25.8	- -	25.8	217.0
Centre	550.6	- -	550.6	9.2	- -	9.2	559.8
Clarion	271.1	6.8	277.9	- -	- -	- -	277.9
Clearfield	505.3	3.1	508.4	6.7	- -	6.7	515.1
Clinton	406.7	- -	406.7	35.7	- -	35.7	442.4
Jefferson	287.0	- -	287.0	6.4	- -	6.4	293.4
Lycoming	603.5	- -	603.5	42.8	- -	42.8	646.3
Potter	519.9	- -	519.9	20.6	- -	20.6	540.5
Sullivan	256.4	- -	256.4	- -	- -	- -	256.4
Tioga	504.1	- -	504.1	10.3	- -	10.3	514.5
Venango	341.7	- -	341.7	12.4	- -	12.4	354.2
Elk -- nonANF	456.3	- -	456.3	6.4	- -	6.4	462.7
Forest -- nonANF	232.6	5.9	238.5	5.4	- -	5.4	243.9
McKean -- nonANF	533.4	- -	533.4	- -	- -	- -	533.4
Warren -- nonANF	441.6	- -	441.6	9.2	- -	9.2	450.8
Total	6,101.3	15.8	6,117.2	191.0	- -	191.0	6,308.1
Southwestern							
Bedford	371.1	- -	371.1	17.6	- -	17.6	388.8
Blair	235.1	- -	235.1	6.5	- -	6.5	241.6
Cambria	239.4	4.2	243.6	10.7	- -	10.7	254.3
Fayette	285.4	- -	285.4	18.3	- -	18.3	303.7
Somerset	400.8	13.9	414.7	11.8	- -	11.8	426.5
Total	1,531.8	18.1	1,549.9	64.9	- -	64.9	1,614.8
Northeastern/Pocono							
Bradford	450.8	4.8	455.5	5.9	- -	5.9	461.4
Carbon	141.3	- -	141.3	14.2	- -	14.2	155.4
Columbia	112.1	- -	112.1	- -	- -	- -	112.1
Lackawanna	147.9	- -	147.9	- -	- -	- -	147.9
Luzerne	373.7	4.4	378.1	12.2	- -	12.2	390.3
Monroe	271.8	- -	271.8	17.7	- -	17.7	289.5
Pike	289.2	1.7	291.0	19.8	- -	19.8	310.8
Schuylkill	326.1	0.8	326.9	5.9	- -	5.9	332.8
Susquehanna	299.4	5.2	304.5	- -	- -	- -	304.5
Wayne	330.8	1.5	332.4	- -	- -	- -	332.4
Wyoming	166.5	1.5	168.0	- -	- -	- -	168.0
Montour/Northumberland	188.2	5.5	193.8	- -	- -	- -	193.8
Total	3,097.8	25.4	3,123.2	75.7	- -	75.7	3,198.9

(Table PA-54 continued on next page)

(Table PA-54 continued)

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Southeastern							
Adams	120.7	- -	120.7	- -	- -	- -	120.7
Berks	200.8	- -	200.8	7.5	- -	7.5	208.3
Cumberland	92.5	- -	92.5	- -	- -	- -	92.5
York	126.3	- -	126.3	- -	- -	- -	126.3
Bucks/Lehigh/Northampton	213.4	- -	213.4	10.9	- -	10.9	224.3
Chester/Delaware/Montgomery	128.3	- -	128.3	5.5	- -	5.5	133.8
Lancaster/Lebanon	181.8	- -	181.8	6.5	- -	6.5	188.3
Total	1,063.8	- -	1,063.8	30.3	- -	30.3	1,094.2
All counties	16,201.8	80.7	16,282.5	457.4	- -	457.4	16,739.8

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.

Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties

Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-55.—Area of forest land, in thousand acres, by inventory unit, county, ownership group and forest-land status, Pennsylvania, 2009

Inventory 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	
South Central									
Dauphin	--	--	--	--	50.1	7.0	78.1	--	135.1
Franklin	--	--	16.2	--	57.8	--	146.5	--	220.5
Fulton	--	--	--	--	61.6	--	122.1	--	183.7
Huntingdon	--	--	31.6	--	102.6	6.9	278.1	--	419.2
Juniata	--	--	--	--	17.9	--	113.2	--	131.1
Mifflin	--	--	--	--	96.3	--	49.8	--	146.1
Perry	--	--	--	--	68.1	5.5	154.8	--	228.4
Snyder	--	--	--	--	34.2	--	78.1	--	112.3
Union	--	--	--	--	48.2	13.9	51.8	--	113.8
Total	--	--	47.8	--	536.7	33.3	1,072.5	--	1,690.2
Western									
Allegheny	--	--	--	--	16.0	6.9	137.9	4.6	165.4
Armstrong	--	--	6.2	--	12.8	--	225.7	--	244.7
Butler	--	--	--	--	6.1	14.8	244.5	--	265.3
Crawford	--	--	--	--	10.4	--	297.8	--	308.2
Erie	--	--	--	--	26.3	--	202.1	6.6	235.0
Greene	--	--	--	--	6.1	--	219.3	--	225.4
Indiana	--	--	19.4	--	19.8	6.6	282.4	--	328.2
Mercer	--	--	--	--	--	1.7	167.6	5.8	175.0
Washington	--	--	--	--	25.1	--	240.3	--	265.4
Westmoreland	--	--	--	--	42.5	14.9	323.1	4.3	384.9
Beaver/Lawrence	--	--	--	--	24.2	10.4	194.5	6.9	236.0
Total	--	--	25.6	--	189.4	55.3	2,535.1	28.3	2,833.7

(Table PA-55 continued on next page)

(Table PA-55 continued)

Inventory 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	
North Central/Allegheny									
Cameron	--	--	--	--	112.4	25.8	78.8	--	217.0
Centre	--	--	--	--	277.1	9.2	273.5	--	559.8
Clarion	--	--	--	--	33.0	--	238.2	6.8	277.9
Clearfield	--	--	--	--	128.4	9.8	376.9	--	515.1
Clinton	--	--	--	--	257.5	35.7	149.2	--	442.4
Jefferson	--	--	--	--	58.5	6.4	228.5	--	293.4
Lycoming	--	--	--	--	246.0	42.8	357.5	--	646.3
Potter	--	--	--	--	270.0	20.6	249.8	--	540.5
Sullivan	--	--	--	--	98.0	--	158.3	--	256.4
Tioga	--	--	--	--	170.9	10.3	333.3	--	514.5
Venango	--	--	--	--	45.7	12.4	296.1	--	354.2
Elk -- nonANF	116.2	--	--	--	164.8	6.4	175.2	--	462.7
Forest -- nonANF	110.3	10.5	--	--	13.4	0.8	108.9	--	243.9
McKean -- nonANF	138.7	--	--	--	52.4	--	342.2	--	533.4
Warren -- nonANF	121.6	9.2	--	--	27.9	--	292.1	--	450.8
Total	486.8	19.7	--	--	1,956.0	180.3	3,658.5	6.8	6,308.1
Southwestern									
Bedford	--	--	--	--	67.9	17.6	303.2	--	388.8
Blair	--	--	--	--	80.1	6.5	155.0	--	241.6
Cambria	--	--	--	--	68.8	10.7	170.6	4.2	254.3
Fayette	--	--	--	7.1	39.9	11.2	245.5	--	303.7
Somerset	--	--	--	--	88.1	11.8	312.8	13.9	426.5
Total	--	--	--	7.1	344.7	57.8	1,187.1	18.1	1,614.8

(Table PA-55 continued on next page)

(Table PA-55 continued)

Inventory 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/Pocono									
Bradford	--	--	--	--	60.4	10.7	390.4	--	461.4
Carbon	--	--	2.4	--	78.1	14.2	60.7	--	155.4
Columbia	--	--	--	--	6.9	--	105.2	--	112.1
Lackawanna	--	--	--	--	32.4	--	115.5	--	147.9
Luzerne	--	--	--	--	61.0	16.6	312.6	--	390.3
Monroe	--	--	--	5.9	77.1	11.8	194.7	--	289.5
Pike	--	--	--	12.9	80.4	6.9	208.8	1.7	310.8
Schuylkill	--	--	--	--	95.1	5.9	230.9	0.8	332.8
Susquehanna	--	--	--	--	13.6	--	285.8	5.2	304.5
Wayne	--	--	--	--	31.1	--	299.7	1.5	332.4
Wyoming	--	--	--	--	44.6	1.5	121.9	--	168.0
Montour/Northumberland	--	--	--	--	31.7	--	156.6	5.5	193.8
Total	--	--	2.4	18.8	612.4	67.6	2,483.0	14.7	3,198.9
Southeastern									
Adams	--	--	--	--	38.9	--	81.8	--	120.7
Berks	--	--	9.8	7.5	43.9	--	147.2	--	208.3
Cumberland	--	--	--	--	28.9	--	63.5	--	92.5
York	--	--	--	--	5.5	--	120.8	--	126.3
Bucks/Lehigh/Northampton	--	--	2.2	--	27.4	10.9	183.7	--	224.3
Chester/Delaware/Montgomery	--	--	--	--	12.7	5.5	115.6	--	133.8
Lancaster/Lebanon	--	--	--	6.5	64.8	--	116.9	--	188.3
Total	--	--	12.0	13.9	222.2	16.4	829.6	--	1,094.2
All counties	486.8	19.7	87.8	39.9	3,861.4	410.6	11,765.8	67.9	16,739.8

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.

Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties

Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-57.—Area of timberland, in thousand acres, by inventory unit, county, and stand-size class, Pennsylvania, 2009

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
South Central						
Dauphin	76.0	40.7	9.7	- -	1.7	128.1
Franklin	139.2	50.3	29.6	- -	1.5	220.5
Fulton	109.5	45.1	29.1	- -	- -	183.7
Huntingdon	282.1	101.7	28.4	- -	- -	412.2
Juniata	95.4	25.4	10.3	- -	- -	131.1
Mifflin	115.3	21.4	2.4	- -	7.0	146.1
Perry	188.2	23.2	11.6	- -	- -	222.9
Snyder	73.6	26.7	12.0	- -	- -	112.3
Union	84.1	15.9	- -	- -	- -	99.9
Total	1,163.2	350.4	133.0	- -	10.3	1,657.0
Western						
Allegheny	111.9	29.7	6.1	- -	6.1	153.9
Armstrong	146.2	77.6	19.1	- -	1.8	244.7
Butler	164.2	51.0	35.3	- -	- -	250.6
Crawford	175.8	96.4	33.0	- -	2.9	308.2
Erie	128.9	42.9	56.7	- -	- -	228.4
Greene	160.4	49.5	15.5	- -	- -	225.4
Indiana	177.4	100.7	42.0	- -	1.4	321.6
Mercer	91.6	47.3	25.9	- -	2.9	167.6
Washington	129.7	66.3	69.4	- -	- -	265.4
Westmoreland	215.1	101.1	47.9	- -	1.4	365.6
Beaver/Lawrence	146.4	59.4	12.8	- -	- -	218.6
Total	1,647.7	721.9	363.8	- -	16.6	2,750.1

(Table PA-57 continued on next page)

(Table PA-57 continued)

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
North Central/Allegheny						
Cameron	137.7	31.2	22.3	- -	- -	191.2
Centre	340.1	148.4	62.1	- -	- -	550.6
Clarion	138.9	63.0	61.1	- -	8.2	271.1
Clearfield	279.7	131.8	90.5	- -	3.3	505.3
Clinton	296.7	93.3	16.7	- -	- -	406.7
Jefferson	209.2	40.5	28.8	- -	8.5	287.0
Lycoming	424.8	158.6	17.1	- -	3.0	603.5
Potter	371.3	86.5	57.3	- -	4.7	519.9
Sullivan	156.6	71.2	28.5	- -	- -	256.4
Tioga	329.2	133.1	38.2	- -	3.6	504.1
Venango	224.8	66.1	50.8	- -	- -	341.7
Elk -- nonANF	336.5	49.4	68.4	- -	1.9	456.3
Forest -- nonANF	157.6	22.7	47.8	- -	4.5	232.6
McKean -- nonANF	418.5	65.9	49.0	- -	- -	533.4
Warren -- nonANF	324.4	89.3	24.3	- -	3.6	441.6
Total	4,146.0	1,251.0	663.1	- -	41.2	6,101.3
Southwestern						
Bedford	225.8	106.9	38.4	- -	- -	371.1
Blair	145.5	69.3	20.4	- -	- -	235.1
Cambria	162.2	50.5	26.7	- -	- -	239.4
Fayette	165.6	76.5	43.3	- -	- -	285.4
Somerset	184.8	128.0	72.8	- -	15.2	400.8
Total	884.0	431.1	201.6	- -	15.2	1,531.8
Northeastern/Pocono						
Bradford	267.5	130.8	49.0	- -	3.4	450.8
Carbon	32.9	100.3	8.1	- -	- -	141.3
Columbia	96.3	9.3	6.4	- -	- -	112.1
Lackawanna	81.4	46.7	18.0	- -	1.9	147.9
Luzerne	205.0	145.2	23.4	- -	- -	373.7
Monroe	199.7	64.7	7.4	- -	- -	271.8
Pike	202.2	77.7	5.2	- -	4.2	289.2
Schuylkill	114.9	151.4	57.9	- -	1.9	326.1
Susquehanna	223.1	54.8	21.5	- -	- -	299.4
Wayne	223.6	80.4	24.4	- -	2.4	330.8
Wyoming	89.0	37.3	40.2	- -	- -	166.5
Montour/Northumberland	121.4	35.5	29.7	- -	1.6	188.2
Total	1,856.9	934.2	291.3	- -	15.3	3,097.8

(Table PA-57 continued on next page)

(Table PA-57 continued)

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
Southeastern						
Adams	94.1	19.5	7.1	--	--	120.7
Berks	123.2	54.1	23.6	--	--	200.8
Cumberland	61.9	30.5	--	--	--	92.5
York	100.4	25.9	--	--	--	126.3
Bucks/Lehigh/Northampton	169.0	35.6	3.4	--	5.4	213.4
Chester/Delaware/Montgomery	119.7	4.8	3.8	--	--	128.3
Lancaster/Lebanon	139.9	24.3	17.6	--	--	181.8
Total	808.1	194.8	55.5	--	5.4	1,063.8
All counties	10,506.0	3,883.4	1,708.3	--	104.0	16,201.8

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.
Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties
Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-58.—Area of timberland, in thousand acres, by inventory unit, county, and stocking class, Pennsylvania, 2009

Inventory unit and county	Stocking class of growing-stock trees					
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	All classes
South Central						
Dauphin	2.5	26.6	59.6	32.7	6.8	128.1
Franklin	8.9	48.6	113.2	46.4	3.4	220.5
Fulton	1.5	41.0	86.0	52.2	3.1	183.7
Huntingdon	0.3	56.8	168.3	183.2	3.6	412.2
Juniata	- -	32.3	66.8	32.0	- -	131.1
Mifflin	8.0	21.0	56.9	56.8	3.4	146.1
Perry	1.3	22.3	114.0	77.1	8.2	222.9
Snyder	- -	8.5	49.2	52.9	1.7	112.3
Union	- -	- -	27.2	67.3	5.5	99.9
Total	22.5	257.1	741.2	600.4	35.7	1,657.0
Western						
Allegheny	15.4	53.0	42.6	43.0	- -	153.9
Armstrong	6.2	79.4	109.9	47.0	2.3	244.7
Butler	5.8	54.4	119.4	60.3	10.8	250.6
Crawford	4.3	70.4	124.8	106.9	1.7	308.2
Erie	4.2	50.2	92.9	67.7	13.4	228.4
Greene	1.4	86.6	133.9	3.5	- -	225.4
Indiana	6.8	77.6	124.3	109.6	3.4	321.6
Mercer	3.4	51.1	68.1	45.0	- -	167.6
Washington	9.8	92.2	134.2	23.3	6.0	265.4
Westmoreland	4.9	112.7	135.3	102.8	9.9	365.6
Beaver/Lawrence	8.5	84.6	68.6	50.4	6.7	218.6
Total	70.6	812.1	1,154.0	659.2	54.2	2,750.1

(Table PA-58 continued on next page)

(Table PA-58 continued)

Inventory unit and county	Stocking class of growing-stock trees					
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	All classes
North Central/Allegheny						
Cameron	- -	8.5	36.0	122.2	24.5	191.2
Centre	5.7	59.0	200.0	273.9	12.1	550.6
Clarion	20.8	57.2	116.1	76.3	0.7	271.1
Clearfield	17.0	82.4	237.5	151.6	16.7	505.3
Clinton	- -	31.7	136.8	229.6	8.7	406.7
Jefferson	18.3	32.5	86.6	126.7	22.9	287.0
Lycoming	3.6	59.1	233.3	305.0	2.6	603.5
Potter	15.3	69.6	119.2	308.3	7.4	519.9
Sullivan	6.3	60.5	125.0	61.8	2.8	256.4
Tioga	10.2	32.4	228.7	227.0	5.8	504.1
Venango	16.3	43.7	185.4	93.6	2.7	341.7
Elk -- nonANF	2.3	52.7	177.3	220.6	3.3	456.3
Forest -- nonANF	4.5	12.9	63.2	144.6	7.4	232.6
McKean -- nonANF	2.9	88.1	203.2	221.1	18.0	533.4
Warren -- nonANF	5.6	56.1	173.5	189.3	17.0	441.6
Total	128.9	746.3	2,321.8	2,751.7	152.7	6,101.3
Southwestern						
Bedford	- -	49.7	185.4	123.4	12.5	371.1
Blair	0.8	52.2	89.3	91.4	1.3	235.1
Cambria	3.8	51.0	119.1	59.0	6.5	239.4
Fayette	11.2	58.3	114.2	89.6	12.1	285.4
Somerset	29.9	51.7	169.8	126.8	22.6	400.8
Total	45.7	262.9	677.7	490.4	55.1	1,531.8
Northeastern/Pocono						
Bradford	24.9	103.5	179.4	134.8	8.2	450.8
Carbon	- -	7.5	41.2	87.8	4.8	141.3
Columbia	2.6	15.9	51.7	40.9	1.1	112.1
Lackawanna	7.2	45.9	40.5	49.1	5.2	147.9
Luzerne	1.5	47.1	129.3	188.3	7.5	373.7
Monroe	- -	45.1	99.8	125.4	1.5	271.8
Pike	4.2	12.1	102.3	167.6	3.0	289.2
Schuylkill	3.9	29.6	118.6	148.5	25.5	326.1
Susquehanna	4.1	24.6	168.6	97.8	4.1	299.4
Wayne	2.8	22.0	115.2	181.5	9.3	330.8
Wyoming	1.8	23.5	76.3	63.6	1.4	166.5
Montour/Northumberland	6.8	45.1	53.1	68.9	14.3	188.2
Total	60.0	421.7	1,176.0	1,354.3	85.8	3,097.8

(Table PA-58 continued on next page)

(Table PA-58 continued)

Inventory unit and county	Stocking class of growing-stock trees					
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	All classes
Southeastern						
Adams	6.1	22.6	53.4	38.7	- -	120.7
Berks	3.6	70.9	39.1	74.6	12.6	200.8
Cumberland	0.2	- -	57.4	34.9	- -	92.5
York	6.1	34.0	59.3	25.7	1.2	126.3
Bucks/Lehigh/Northampton	7.5	53.1	52.9	87.8	12.0	213.4
Chester/Delaware/Montgomery	0.9	46.7	29.3	50.6	0.8	128.3
Lancaster/Lebanon	1.6	13.5	61.5	102.0	3.3	181.8
Total	26.0	240.8	352.8	414.2	29.9	1,063.8
All counties	353.7	2,741.0	6,423.5	6,270.2	413.3	16,201.8

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.
Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties
Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-59.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), on timberland by inventory unit, county, and major species group, Pennsylvania, 2009

Inventory 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)				
South Central										
Dauphin	3.3	3.4	69.5	157.2	233.4	10.5	13.1	245.6	544.6	813.7
Franklin	2.0	5.8	98.1	246.5	352.5	7.3	20.9	294.5	894.4	1,217.1
Fulton	29.5	6.2	47.6	183.1	266.4	93.3	22.1	93.2	619.5	828.0
Huntingdon	79.6	38.2	218.5	489.5	825.9	262.3	133.5	650.9	1,608.6	2,655.4
Juniata	6.9	5.3	73.1	127.6	212.9	21.0	17.1	252.6	442.5	733.2
Mifflin	7.2	2.1	34.1	229.9	273.3	27.7	3.5	52.4	804.7	888.3
Perry	19.3	24.9	87.3	332.6	464.1	51.0	94.0	231.7	1,215.2	1,592.0
Snyder	14.2	8.5	38.1	135.0	195.6	48.3	21.3	88.3	375.8	533.7
Union	7.3	42.2	65.2	166.7	281.4	22.2	131.9	213.0	540.4	907.5
Total	169.3	136.7	731.4	2,068.1	3,105.6	543.7	457.3	2,122.2	7,045.7	10,168.9
Western										
Allegheny	1.6	- -	144.3	103.9	249.8	7.1	- -	463.0	339.2	809.3
Armstrong	9.3	15.6	234.5	191.2	450.6	26.2	46.6	689.2	738.1	1,500.0
Butler	13.7	4.6	282.3	172.4	473.0	38.7	3.2	795.2	703.3	1,540.4
Crawford	12.2	43.9	342.3	234.2	632.5	59.3	122.8	962.4	808.2	1,952.8
Erie	8.6	41.8	281.7	175.2	507.3	35.4	148.3	1,004.7	581.6	1,770.0
Greene	7.7	- -	192.1	181.0	380.8	35.1	- -	612.4	573.1	1,220.5
Indiana	10.6	39.3	350.7	225.1	625.6	13.1	138.6	1,109.8	809.6	2,071.1
Mercer	9.3	8.7	153.7	92.1	263.9	37.1	25.8	461.6	310.8	835.3
Washington	0.5	0.0	203.8	159.0	363.3	- -	- -	571.2	533.4	1,104.7
Westmoreland	0.8	11.7	406.0	269.5	688.0	2.0	45.8	1,292.7	965.3	2,305.8
Beaver/Lawrence	21.2	1.5	222.0	165.3	410.0	74.7	1.5	769.9	670.2	1,516.4
Total	95.4	167.2	2,813.4	1,968.7	5,044.8	328.7	532.5	8,732.1	7,032.8	16,626.1

(Table PA-59 continued on next page)

(Table PA-59 continued)

Inventory 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)				
North Central/Allegheny										
Cameron	27.2	5.2	151.7	287.8	471.9	117.1	8.7	419.6	974.4	1,519.8
Centre	61.9	37.4	292.7	596.7	988.7	216.9	120.5	588.1	1,860.9	2,786.5
Clarion	26.4	64.1	167.0	185.5	443.0	94.5	203.8	464.5	711.5	1,474.3
Clearfield	53.2	46.8	362.7	353.8	816.5	208.1	140.4	1,000.7	1,145.7	2,494.8
Clinton	41.8	27.6	213.5	544.6	827.5	134.4	79.9	442.3	1,739.0	2,395.6
Jefferson	27.0	102.0	353.9	223.1	706.0	84.6	321.8	1,165.6	825.5	2,397.5
Lycoming	145.9	101.4	362.5	743.5	1,353.2	506.5	322.3	1,032.7	2,275.4	4,136.9
Potter	22.6	71.9	546.7	629.8	1,271.0	90.5	238.0	2,035.7	2,028.7	4,392.9
Sullivan	19.0	38.1	235.7	174.3	467.1	71.3	108.2	751.4	539.2	1,470.1
Tioga	78.1	77.3	323.1	599.2	1,077.7	257.2	251.0	808.1	1,922.0	3,238.2
Venango	31.1	16.1	330.4	280.5	658.0	112.3	53.9	1,027.3	1,106.9	2,300.3
Elk -- nonANF	6.2	79.4	607.5	359.1	1,052.1	22.8	243.5	2,248.1	1,224.0	3,738.4
Forest -- nonANF	17.6	55.7	305.1	202.3	580.7	86.6	167.7	1,150.4	746.0	2,150.7
McKean -- nonANF	0.1	60.9	805.6	481.2	1,347.8	- -	189.3	3,177.7	1,534.3	4,901.3
Warren -- nonANF	9.6	81.4	474.8	503.3	1,069.2	45.0	242.6	1,736.7	1,760.5	3,784.8
Total	567.7	865.2	5,532.8	6,164.7	13,130.4	2,047.8	2,691.7	18,048.8	20,393.9	43,182.1
Southwestern										
Bedford	56.0	10.8	175.1	401.8	643.8	192.1	43.9	477.2	1,326.9	2,040.2
Blair	20.6	3.6	142.3	257.1	423.6	80.6	12.5	370.8	842.2	1,306.1
Cambria	3.4	27.5	216.2	162.5	409.6	16.2	81.1	633.5	497.3	1,228.1
Fayette	5.3	5.0	289.2	205.6	505.1	23.3	18.4	803.8	614.1	1,459.6
Somerset	15.5	12.6	331.4	273.5	633.1	67.6	39.7	858.1	918.3	1,883.7
Total	100.9	59.5	1,154.2	1,300.5	2,615.1	379.6	195.7	3,143.5	4,198.8	7,917.7

(Table PA-59 continued on next page)

(Table PA-59 continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	53.9	69.3	227.0	407.0	757.2	191.0	191.7	590.9	1,206.4	2,179.9
Carbon	8.3	23.6	70.1	141.0	243.0	35.5	89.4	157.2	258.7	540.8
Columbia	22.8	8.2	33.5	164.3	228.7	80.1	14.9	63.4	552.8	711.2
Lackawanna	--	16.4	101.6	116.2	234.2	--	47.4	270.7	337.1	655.2
Luzerne	25.3	31.2	197.1	403.9	657.5	91.7	89.5	507.9	1,080.3	1,769.4
Monroe	23.4	42.2	245.3	236.4	547.4	100.0	124.0	681.2	696.6	1,601.8
Pike	74.8	28.4	116.5	387.7	607.4	328.5	88.9	258.4	1,194.5	1,870.2
Schuylkill	11.6	22.4	146.4	365.0	545.3	34.8	72.3	343.6	950.3	1,401.0
Susquehanna	28.7	76.1	246.3	289.5	640.6	129.2	224.7	794.1	902.5	2,050.6
Wayne	8.5	114.0	250.1	342.5	715.1	24.0	373.0	772.3	961.6	2,130.9
Wyoming	17.3	42.7	91.5	112.1	263.7	77.6	135.6	226.0	385.3	824.5
Montour/Northumberland	14.4	24.8	83.5	217.8	340.5	43.5	77.0	229.8	656.1	1,006.4
Total	289.2	499.2	1,808.9	3,183.5	5,780.8	1,136.0	1,528.5	4,895.4	9,182.0	16,741.8
Southeastern										
Adams	19.4	1.8	37.2	146.1	204.6	64.8	2.2	95.4	487.0	649.5
Berks	1.6	2.9	210.5	256.3	471.3	7.8	3.8	769.5	1,020.8	1,801.9
Cumberland	34.4	--	18.8	120.8	174.0	134.7	--	18.2	342.8	495.7
York	0.4	2.6	159.5	140.0	302.5	1.1	1.4	558.3	600.0	1,160.8
Bucks/Lehigh/Northampton	10.4	8.9	150.3	404.5	574.2	22.9	27.7	554.6	1,695.8	2,300.9
Chester/Delaware/Montgomery	7.6	0.9	187.8	209.1	405.3	38.4	3.6	878.2	992.4	1,912.6
Lancaster/Lebanon	6.4	8.0	134.2	323.2	471.8	26.7	16.9	484.0	1,308.6	1,836.2
Total	80.3	25.0	898.4	1,600.0	2,603.6	296.2	55.7	3,358.2	6,447.4	10,157.5
All counties	1,302.8	1,752.8	12,939.1	16,285.6	32,280.3	4,732.1	5,461.3	40,300.1	54,300.6	104,794.0

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.
Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties
Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-59a.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), on timberland by inventory unit, county, and major species group, Pennsylvania, 2009

Inventory 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)				
South Central										
Dauphin	3.3	3.4	69.5	157.2	233.4	9.0	10.5	162.2	343.6	525.2
Franklin	2.0	5.8	98.1	246.5	352.5	3.6	19.6	181.3	579.4	783.8
Fulton	29.5	6.2	47.6	183.1	266.4	50.0	14.9	49.1	380.4	494.4
Huntingdon	79.6	38.2	218.5	489.5	825.9	154.6	89.0	429.2	1,021.5	1,694.2
Juniata	6.9	5.3	73.1	127.6	212.9	11.8	10.8	169.0	315.7	507.3
Mifflin	7.2	2.1	34.1	229.9	273.3	20.7	1.7	25.2	558.3	605.9
Perry	19.3	24.9	87.3	332.6	464.1	29.1	73.0	138.7	709.7	950.6
Snyder	14.2	8.5	38.1	135.0	195.6	31.0	12.2	54.3	221.3	318.6
Union	7.3	42.2	65.2	166.7	281.4	14.2	91.5	139.6	317.1	562.4
Total	169.3	136.7	731.4	2,068.1	3,105.6	323.9	323.0	1,348.5	4,447.0	6,442.4
Western										
Allegheny	1.6	- -	144.3	103.9	249.8	5.4	- -	280.2	224.0	509.6
Armstrong	9.3	15.6	234.5	191.2	450.6	11.7	26.8	446.3	539.3	1,024.1
Butler	13.7	4.6	282.3	172.4	473.0	19.2	1.3	468.1	495.4	984.0
Crawford	12.2	43.9	342.3	234.2	632.5	56.5	70.5	584.4	561.8	1,273.2
Erie	8.6	41.8	281.7	175.2	507.3	22.5	106.1	712.6	353.0	1,194.2
Greene	7.7	- -	192.1	181.0	380.8	24.1	- -	390.7	379.6	794.4
Indiana	10.6	39.3	350.7	225.1	625.6	5.9	87.8	672.9	562.6	1,329.2
Mercer	9.3	8.7	153.7	92.1	263.9	25.7	16.0	282.3	195.7	519.7
Washington	0.5	0.0	203.8	159.0	363.3	- -	- -	365.8	381.8	747.6
Westmoreland	0.8	11.7	406.0	269.5	688.0	1.0	39.2	851.9	680.4	1,572.5
Beaver/Lawrence	21.2	1.5	222.0	165.3	410.0	38.3	0.5	556.0	496.6	1,091.4
Total	95.4	167.2	2,813.4	1,968.7	5,044.8	210.4	348.2	5,611.2	4,870.0	11,039.8

(Table PA-59a continued on next page)

(Table PA-59a continued)

Inventory 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)				
North Central/Allegheny										
Cameron	27.2	5.2	151.7	287.8	471.9	88.5	4.3	243.5	604.0	940.4
Centre	61.9	37.4	292.7	596.7	988.7	134.4	83.0	304.7	1,151.8	1,673.9
Clarion	26.4	64.1	167.0	185.5	443.0	59.7	116.8	264.5	450.8	891.8
Clearfield	53.2	46.8	362.7	353.8	816.5	152.6	93.9	613.3	716.0	1,575.8
Clinton	41.8	27.6	213.5	544.6	827.5	81.3	55.4	244.7	1,015.7	1,397.2
Jefferson	27.0	102.0	353.9	223.1	706.0	50.0	214.9	721.3	495.7	1,481.9
Lycoming	145.9	101.4	362.5	743.5	1,353.2	356.5	203.9	639.0	1,371.4	2,570.8
Potter	22.6	71.9	546.7	629.8	1,271.0	53.8	175.2	1,385.1	1,254.6	2,868.8
Sullivan	19.0	38.1	235.7	174.3	467.1	54.3	65.5	474.0	346.9	940.6
Tioga	78.1	77.3	323.1	599.2	1,077.7	154.7	173.9	457.9	1,123.1	1,909.5
Venango	31.1	16.1	330.4	280.5	658.0	72.2	37.1	623.9	771.6	1,504.8
Elk -- nonANF	6.2	79.4	607.5	359.1	1,052.1	19.2	187.2	1,403.8	781.3	2,391.5
Forest -- nonANF	17.6	55.7	305.1	202.3	580.7	72.1	107.9	740.3	466.4	1,386.8
McKean -- nonANF	0.1	60.9	805.6	481.2	1,347.8	- -	134.5	2,099.8	951.2	3,185.6
Warren -- nonANF	9.6	81.4	474.8	503.3	1,069.2	44.4	141.6	1,123.7	1,133.7	2,443.4
Total	567.7	865.2	5,532.8	6,164.7	13,130.4	1,393.8	1,795.2	11,339.5	12,634.3	27,162.8
Southwestern										
Bedford	56.0	10.8	175.1	401.8	643.8	123.1	35.3	305.4	834.6	1,298.4
Blair	20.6	3.6	142.3	257.1	423.6	56.4	5.6	200.8	520.0	782.7
Cambria	3.4	27.5	216.2	162.5	409.6	13.8	49.0	377.6	297.9	738.3
Fayette	5.3	5.0	289.2	205.6	505.1	15.9	13.3	484.3	356.3	869.7
Somerset	15.5	12.6	331.4	273.5	633.1	48.6	25.5	513.6	574.4	1,162.1
Total	100.9	59.5	1,154.2	1,300.5	2,615.1	257.7	128.6	1,881.8	2,583.1	4,851.2

(Table PA-59a continued on next page)

(Table PA-59a continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	53.9	69.3	227.0	407.0	757.2	119.8	105.8	318.7	720.1	1,264.5
Carbon	8.3	23.6	70.1	141.0	243.0	30.2	65.1	87.6	145.9	328.7
Columbia	22.8	8.2	33.5	164.3	228.7	48.1	7.1	34.7	330.3	420.3
Lackawanna	- -	16.4	101.6	116.2	234.2	- -	27.0	173.8	197.6	398.4
Luzerne	25.3	31.2	197.1	403.9	657.5	65.6	56.7	301.6	583.5	1,007.4
Monroe	23.4	42.2	245.3	236.4	547.4	68.7	83.4	394.4	408.7	955.1
Pike	74.8	28.4	116.5	387.7	607.4	264.2	58.7	143.7	715.8	1,182.4
Schuylkill	11.6	22.4	146.4	365.0	545.3	22.5	55.1	200.4	548.9	826.9
Susquehanna	28.7	76.1	246.3	289.5	640.6	114.4	145.3	540.8	528.6	1,329.1
Wayne	8.5	114.0	250.1	342.5	715.1	12.6	251.9	484.1	566.0	1,314.6
Wyoming	17.3	42.7	91.5	112.1	263.7	59.8	84.2	124.6	248.8	517.4
Montour/Northumberland	14.4	24.8	83.5	217.8	340.5	21.9	45.6	140.8	413.0	621.4
Total	289.2	499.2	1,808.9	3,183.5	5,780.8	828.0	985.9	2,945.2	5,407.1	10,166.2
Southeastern										
Adams	19.4	1.8	37.2	146.1	204.6	34.1	0.8	51.9	273.3	360.1
Berks	1.6	2.9	210.5	256.3	471.3	5.4	1.6	523.6	688.4	1,219.0
Cumberland	34.4	- -	18.8	120.8	174.0	87.1	- -	9.3	190.2	286.6
York	0.4	2.6	159.5	140.0	302.5	0.4	0.5	368.7	451.4	820.9
Bucks/Lehigh/Northampton	10.4	8.9	150.3	404.5	574.2	17.5	16.9	402.1	1,228.7	1,665.2
Chester/Delaware/Montgomery	7.6	0.9	187.8	209.1	405.3	31.6	1.7	727.8	778.2	1,539.3
Lancaster/Lebanon	6.4	8.0	134.2	323.2	471.8	16.3	7.6	318.3	916.4	1,258.6
Total	80.3	25.0	898.4	1,600.0	2,603.6	192.4	29.1	2,401.8	4,526.6	7,149.8
All counties	1,302.8	1,752.8	12,939.1	16,285.6	32,280.3	3,206.2	3,610.1	25,528.0	34,468.1	66,812.3

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 or board feet. Columns and rows may not add to their totals due to rounding.

Table PA-60.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Inventory 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)				
South Central										
Dauphin	0.0	-0.8	1.8	4.4	5.4	0.1	-3.3	8.2	19.2	24.2
Franklin	0.0	0.1	2.5	7.8	10.4	0.3	0.2	4.7	35.7	40.9
Fulton	-1.1	0.1	0.4	3.1	2.6	-5.4	0.4	-0.3	15.8	10.5
Huntingdon	0.7	0.5	8.2	11.3	20.7	5.5	2.3	39.8	48.6	96.3
Juniata	0.4	0.1	2.7	2.3	5.5	0.7	0.6	13.6	8.9	23.7
Mifflin	0.2	0.1	1.1	1.7	3.1	0.7	0.2	4.0	14.6	19.4
Perry	0.4	0.2	2.4	4.0	7.0	1.5	1.0	7.6	28.7	38.9
Snyder	0.1	0.3	0.8	2.1	3.3	0.7	1.2	2.6	10.0	14.5
Union	-0.2	0.7	0.5	2.6	3.7	-0.6	2.7	5.2	16.5	23.9
Total	0.6	1.4	20.4	39.4	61.7	3.5	5.4	85.4	198.1	292.4
Western										
Allegheny	0.0	- -	5.2	1.8	7.0	0.0	- -	22.0	2.7	24.7
Armstrong	0.4	0.6	6.1	7.0	14.1	1.6	2.0	23.1	29.9	56.5
Butler	0.2	0.2	10.4	9.0	19.9	1.2	0.2	43.4	44.7	89.5
Crawford	0.1	0.8	10.0	7.5	18.5	0.6	3.1	40.1	36.9	80.8
Erie	0.2	1.7	9.2	3.3	14.4	0.8	6.6	47.0	16.1	70.5
Greene	0.4	- -	7.8	8.5	16.8	2.4	- -	36.9	36.7	76.0
Indiana	0.0	0.8	12.5	6.6	19.9	-0.1	3.2	49.2	29.1	81.4
Mercer	-0.4	0.3	4.7	3.8	8.4	-1.2	1.4	23.2	16.7	40.1
Washington	0.1	0.0	3.0	3.9	6.9	- -	- -	8.6	9.8	18.4
Westmoreland	0.0	0.2	17.1	3.9	21.2	0.2	0.9	63.6	9.2	73.9
Beaver/Lawrence	0.0	0.0	6.2	4.6	10.9	0.7	0.1	31.0	21.7	53.5
Total	1.0	4.7	92.3	59.9	157.9	6.1	17.4	388.3	253.5	665.3

(Table PA-60 continued on next page)

(Table PA-60 continued)

Inventory 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)				
North Central/Allegheny										
Cameron	0.5	0.2	2.3	4.4	7.4	2.7	0.2	11.8	28.1	42.9
Centre	0.3	1.1	7.3	10.0	18.7	4.4	4.3	27.6	58.7	95.0
Clarion	1.1	0.8	5.2	3.8	10.8	5.9	3.9	20.1	19.6	49.4
Clearfield	1.6	1.7	11.2	10.8	25.3	7.8	5.3	36.9	50.1	100.2
Clinton	0.7	0.9	3.6	13.0	18.2	2.8	2.0	12.2	62.9	79.9
Jefferson	0.5	1.5	8.0	4.6	14.6	2.6	7.2	36.7	25.0	71.4
Lycoming	2.5	1.9	5.4	12.5	22.3	11.7	7.0	26.1	68.3	113.1
Potter	0.6	1.5	6.9	10.9	19.9	2.7	6.0	41.3	62.5	112.5
Sullivan	0.2	0.9	1.9	3.2	6.2	2.4	3.9	12.1	13.4	31.8
Tioga	3.4	1.8	4.4	12.5	22.1	10.1	6.7	22.6	65.0	104.4
Venango	0.5	0.4	10.2	9.1	20.2	3.6	2.0	44.6	45.3	95.5
Elk -- nonANF	0.2	1.5	9.9	6.3	17.9	0.6	5.9	54.1	38.3	98.9
Forest -- nonANF	0.1	0.5	3.9	3.6	8.1	0.7	2.4	20.1	18.0	41.2
McKean -- nonANF	0.0	0.9	12.3	6.7	20.0	- -	2.3	75.2	34.7	112.3
Warren -- nonANF	0.2	1.8	11.4	11.4	24.7	1.2	8.2	58.1	55.9	123.2
Total	12.5	17.3	103.8	122.8	256.4	59.2	67.4	499.3	646.0	1,271.8
Southwestern										
Bedford	-0.1	0.1	6.9	9.8	16.7	1.2	0.5	20.1	40.3	62.1
Blair	0.0	0.1	4.3	7.0	11.4	0.5	0.6	13.4	31.7	46.3
Cambria	0.1	1.4	9.3	7.2	18.0	0.4	4.5	39.3	29.3	73.6
Fayette	0.5	0.1	11.5	7.4	19.5	2.4	0.7	48.5	29.5	81.0
Somerset	0.3	0.5	11.2	7.3	19.3	2.1	1.7	36.4	30.2	70.4
Total	0.8	2.3	43.0	38.7	84.8	6.6	8.0	157.8	161.1	333.5

(Table PA-60 continued on next page)

(Table PA-60 continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	1.7	1.9	6.9	13.1	23.5	9.5	7.6	21.7	56.7	95.4
Carbon	0.1	0.4	1.3	5.3	7.2	0.7	1.7	6.8	15.5	24.7
Columbia	0.2	0.3	0.4	3.8	4.7	1.5	0.8	0.8	19.5	22.6
Lackawanna	- -	-0.4	2.9	-0.7	1.7	- -	0.1	10.4	-12.3	-1.8
Luzerne	0.7	0.9	5.1	8.6	15.2	3.8	2.5	21.8	48.8	76.9
Monroe	-1.4	1.6	3.7	3.9	7.8	-8.1	6.2	20.9	20.0	39.0
Pike	1.8	0.3	1.1	6.1	9.3	8.1	1.5	4.2	29.0	42.8
Schuylkill	0.3	-0.1	1.9	9.8	11.9	2.1	-0.4	6.1	41.5	49.3
Susquehanna	0.5	0.4	4.6	7.2	12.7	3.3	-0.6	22.8	34.3	59.9
Wayne	0.5	2.0	3.2	4.1	9.8	1.4	7.9	17.4	12.4	39.2
Wyoming	-0.1	0.7	1.1	2.9	4.5	-0.7	2.9	4.4	14.4	21.0
Montour/Northumberland	0.0	0.5	3.5	4.0	8.0	1.1	2.2	10.0	20.1	33.5
Total	4.2	8.6	35.7	68.0	116.5	22.8	32.5	147.3	300.0	502.6
Southeastern										
Adams	0.6	0.1	1.2	2.8	4.7	2.1	0.2	5.0	15.2	22.6
Berks	0.0	-0.2	6.8	6.5	13.1	0.0	-0.2	29.1	37.2	66.1
Cumberland	0.8	- -	1.2	2.2	4.1	4.3	- -	1.8	12.3	18.5
York	0.0	0.2	10.1	7.7	18.1	0.1	0.1	44.3	42.0	86.4
Bucks/Lehigh/Northampton	0.5	0.2	8.3	17.4	26.4	0.4	0.7	45.2	93.9	140.2
Chester/Delaware/Montgomery	0.3	0.0	7.0	5.0	12.3	1.9	0.1	39.7	30.3	71.9
Lancaster/Lebanon	0.2	0.3	3.7	7.6	11.7	0.8	0.9	22.7	47.7	72.1
Total	2.4	0.5	38.3	49.2	90.4	9.6	1.8	187.9	278.5	477.8
All counties	21.4	34.7	333.5	378.0	767.7	107.8	132.4	1,465.9	1,837.2	3,543.3

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 or board feet. Columns and rows may not add to their totals due to rounding.

Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties

Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-60a.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Inventory 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)				
South Central										
Dauphin	0.0	-0.8	1.8	4.4	5.4	0.1	-2.5	4.6	11.5	13.6
Franklin	0.0	0.1	2.5	7.8	10.4	0.1	0.1	2.9	21.4	24.4
Fulton	-1.1	0.1	0.4	3.1	2.6	-7.2	0.2	-0.9	8.2	0.3
Huntingdon	0.7	0.5	8.2	11.3	20.7	2.5	1.5	28.0	27.1	59.1
Juniata	0.4	0.1	2.7	2.3	5.5	0.3	0.4	8.0	3.9	12.5
Mifflin	0.2	0.1	1.1	1.7	3.1	0.4	0.1	1.7	7.6	9.9
Perry	0.4	0.2	2.4	4.0	7.0	0.7	0.5	4.2	12.9	18.3
Snyder	0.1	0.3	0.8	2.1	3.3	0.4	0.6	1.4	5.5	7.8
Union	-0.2	0.7	0.5	2.6	3.7	-0.7	1.7	2.8	8.9	12.6
Total	0.6	1.4	20.4	39.4	61.7	-3.5	2.5	52.6	106.9	158.5
Western										
Allegheny	0.0	- -	5.2	1.8	7.0	0.0	- -	11.1	-4.3	6.9
Armstrong	0.4	0.6	6.1	7.0	14.1	0.6	0.9	13.2	19.5	34.2
Butler	0.2	0.2	10.4	9.0	19.9	0.6	0.1	21.7	31.9	54.3
Crawford	0.1	0.8	10.0	7.5	18.5	0.6	1.6	19.5	21.5	43.1
Erie	0.2	1.7	9.2	3.3	14.4	0.5	5.5	31.6	8.7	46.2
Greene	0.4	- -	7.8	8.5	16.8	1.6	- -	21.4	21.3	44.4
Indiana	0.0	0.8	12.5	6.6	19.9	0.0	1.8	26.9	17.1	45.8
Mercer	-0.4	0.3	4.7	3.8	8.4	-1.5	0.8	12.0	9.5	20.8
Washington	0.1	0.0	3.0	3.9	6.9	- -	- -	2.4	4.5	6.9
Westmoreland	0.0	0.2	17.1	3.9	21.2	0.1	0.7	36.1	-5.7	31.2
Beaver/Lawrence	0.0	0.0	6.2	4.6	10.9	0.3	0.0	18.7	13.0	32.1
Total	1.0	4.7	92.3	59.9	157.9	2.8	11.3	214.6	137.1	365.8

(Table PA-60a continued on next page)

(Table PA-60a continued)

Inventory 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)				
North Central/Allegheny										
Cameron	0.5	0.2	2.3	4.4	7.4	1.6	0.1	6.6	15.7	24.0
Centre	0.3	1.1	7.3	10.0	18.7	2.5	2.6	13.4	30.9	49.4
Clarion	1.1	0.8	5.2	3.8	10.8	4.2	1.6	10.3	7.6	23.7
Clearfield	1.6	1.7	11.2	10.8	25.3	5.8	3.0	19.8	29.0	57.6
Clinton	0.7	0.9	3.6	13.0	18.2	1.3	1.2	6.3	34.0	42.8
Jefferson	0.5	1.5	8.0	4.6	14.6	1.4	4.1	19.3	13.6	38.4
Lycoming	2.5	1.9	5.4	12.5	22.3	7.6	3.9	14.2	37.1	62.9
Potter	0.6	1.5	6.9	10.9	19.9	1.6	3.5	24.3	35.4	64.8
Sullivan	0.2	0.9	1.9	3.2	6.2	1.6	2.0	5.9	7.0	16.5
Tioga	3.4	1.8	4.4	12.5	22.1	6.2	4.3	11.9	34.3	56.7
Venango	0.5	0.4	10.2	9.1	20.2	2.4	1.1	24.7	26.8	55.1
Elk -- nonANF	0.2	1.5	9.9	6.3	17.9	0.4	3.7	31.2	22.6	57.8
Forest -- nonANF	0.1	0.5	3.9	3.6	8.1	0.4	1.2	11.3	10.5	23.4
McKean -- nonANF	0.0	0.9	12.3	6.7	20.0	- -	0.4	44.7	16.9	62.0
Warren -- nonANF	0.2	1.8	11.4	11.4	24.7	1.0	4.3	34.5	31.9	71.6
Total	12.5	17.3	103.8	122.8	256.4	38.1	36.9	278.2	353.4	706.7
Southwestern										
Bedford	-0.1	0.1	6.9	9.8	16.7	0.5	0.4	11.1	22.4	34.5
Blair	0.0	0.1	4.3	7.0	11.4	0.7	0.3	5.9	17.8	24.6
Cambria	0.1	1.4	9.3	7.2	18.0	0.3	2.5	21.2	17.9	41.9
Fayette	0.5	0.1	11.5	7.4	19.5	1.6	0.4	25.9	16.1	44.0
Somerset	0.3	0.5	11.2	7.3	19.3	1.4	1.0	19.7	15.9	38.0
Total	0.8	2.3	43.0	38.7	84.8	4.5	4.5	83.8	90.2	183.0

(Table PA-60a continued on next page)

(Table PA-60a continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	1.7	1.9	6.9	13.1	23.5	6.0	3.8	10.8	29.9	50.5
Carbon	0.1	0.4	1.3	5.3	7.2	0.5	1.1	3.6	7.8	13.0
Columbia	0.2	0.3	0.4	3.8	4.7	0.9	0.4	0.2	10.5	12.0
Lackawanna	--	-0.4	2.9	-0.7	1.7	--	-0.2	5.5	-21.9	-16.5
Luzerne	0.7	0.9	5.1	8.6	15.2	2.4	1.4	11.2	24.8	39.8
Monroe	-1.4	1.6	3.7	3.9	7.8	-10.3	5.1	11.7	10.7	17.2
Pike	1.8	0.3	1.1	6.1	9.3	5.6	1.0	2.3	15.2	24.1
Schuylkill	0.3	-0.1	1.9	9.8	11.9	1.9	-0.4	3.4	21.3	26.2
Susquehanna	0.5	0.4	4.6	7.2	12.7	2.3	-1.1	13.2	18.6	33.1
Wayne	0.5	2.0	3.2	4.1	9.8	0.8	4.5	9.5	3.2	17.9
Wyoming	-0.1	0.7	1.1	2.9	4.5	-0.5	1.6	2.3	8.3	11.7
Montour/Northumberland	0.0	0.5	3.5	4.0	8.0	0.5	1.3	5.8	10.3	17.9
Total	4.2	8.6	35.7	68.0	116.5	10.0	18.4	79.6	138.9	246.9
Southeastern										
Adams	0.6	0.1	1.2	2.8	4.7	1.0	0.1	2.5	7.7	11.2
Berks	0.0	-0.2	6.8	6.5	13.1	0.0	0.0	19.0	23.3	42.3
Cumberland	0.8	--	1.2	2.2	4.1	2.6	--	0.9	6.7	10.2
York	0.0	0.2	10.1	7.7	18.1	0.0	0.0	25.5	31.5	57.0
Bucks/Lehigh/Northampton	0.5	0.2	8.3	17.4	26.4	0.3	0.4	37.5	75.4	113.6
Chester/Delaware/Montgomery	0.3	0.0	7.0	5.0	12.3	1.5	0.0	28.7	22.0	52.3
Lancaster/Lebanon	0.2	0.3	3.7	7.6	11.7	0.5	0.4	13.2	31.6	45.7
Total	2.4	0.5	38.3	49.2	90.4	6.1	0.9	127.2	198.2	332.4
All counties	21.4	34.7	333.5	378.0	767.7	58.1	74.5	836.0	1,024.7	1,993.3

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 or board feet. Columns and rows may not add to their totals due to rounding.

Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties

Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-61.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (International ¼-inch rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Inventory 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)				
South Central										
Dauphin	0.9	- -	2.6	4.3	7.7	3.0	- -	11.6	17.3	31.9
Franklin	0.1	- -	0.4	5.1	5.6	0.2	- -	- -	18.7	18.9
Fulton	0.8	- -	- -	2.0	2.9	3.9	- -	- -	8.5	12.4
Huntingdon	2.6	0.1	0.9	5.6	9.2	5.4	- -	4.7	25.3	35.4
Juniata	- -	0.4	2.9	1.6	4.9	- -	1.7	15.2	7.1	24.0
Mifflin	- -	- -	0.1	1.9	2.0	- -	- -	- -	5.8	5.8
Perry	- -	- -	- -	1.1	1.1	- -	- -	- -	3.7	3.7
Snyder	- -	- -	1.1	2.4	3.6	- -	- -	5.3	11.3	16.7
Union	- -	1.4	0.5	0.7	2.6	- -	5.4	2.2	3.4	11.1
Total	4.4	1.9	8.6	24.7	39.6	12.4	7.1	39.0	101.4	159.9
Western										
Allegheny	- -	- -	1.1	2.4	3.5	- -	- -	0.8	9.1	9.9
Armstrong	- -	0.2	3.2	5.8	9.1	- -	0.8	11.8	32.5	45.1
Butler	- -	- -	1.2	1.8	3.0	- -	- -	3.5	6.6	10.1
Crawford	- -	0.8	3.7	5.0	9.6	- -	3.2	15.3	22.1	40.5
Erie	- -	0.1	7.1	5.9	13.1	- -	- -	20.5	28.1	48.6
Greene	- -	- -	2.8	2.2	5.0	- -	- -	10.4	6.9	17.3
Indiana	- -	0.7	6.2	2.1	8.9	- -	2.0	28.1	9.9	40.0
Mercer	- -	- -	1.9	2.0	3.8	- -	- -	6.9	9.6	16.5
Washington	- -	- -	3.0	2.6	5.6	- -	- -	12.0	12.0	24.1
Westmoreland	- -	- -	6.0	1.6	7.6	- -	- -	21.0	5.7	26.8
Beaver/Lawrence	- -	- -	1.4	3.4	4.8	- -	- -	1.7	13.0	14.8
Total	- -	1.8	37.6	34.8	74.1	- -	5.9	132.1	155.5	293.6

(Table PA-61 continued on next page)

(Table PA-61 continued)

Inventory 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)				
North Central/Allegheny										
Cameron	- -	- -	1.9	3.4	5.3	- -	- -	9.5	9.4	18.9
Centre	0.2	0.6	3.5	8.8	13.2	0.7	1.3	14.0	38.3	54.3
Clarion	- -	0.0	3.7	1.6	5.3	- -	- -	13.3	5.7	19.0
Clearfield	1.7	1.3	2.0	5.7	10.7	5.8	1.9	8.2	22.1	38.0
Clinton	- -	- -	0.0	0.2	0.2	- -	- -	- -	0.5	0.5
Jefferson	- -	- -	8.7	3.4	12.1	- -	- -	33.2	14.3	47.4
Lycoming	0.5	- -	1.5	8.2	10.2	2.6	- -	5.6	34.3	42.5
Potter	1.6	- -	5.1	5.4	12.1	6.7	- -	21.8	21.1	49.6
Sullivan	- -	- -	0.5	0.7	1.2	- -	- -	2.1	1.7	3.8
Tioga	- -	- -	1.0	2.5	3.5	- -	- -	2.1	8.7	10.7
Venango	0.2	- -	5.3	1.8	7.3	0.7	- -	21.5	8.0	30.2
Elk -- nonANF	- -	0.0	3.9	2.4	6.3	- -	- -	18.2	9.6	27.8
Forest -- nonANF	0.4	0.2	1.8	2.8	5.2	0.3	0.9	6.1	10.3	17.6
McKean -- nonANF	- -	0.1	12.9	5.0	18.0	- -	0.5	58.1	19.5	78.1
Warren -- nonANF	- -	0.5	7.2	6.9	14.6	- -	1.9	34.0	26.6	62.5
Total	4.7	2.9	58.7	58.9	125.1	16.8	6.5	247.6	230.0	500.9
Southwestern										
Bedford	- -	- -	1.3	5.8	7.2	- -	- -	4.3	26.9	31.2
Blair	- -	- -	5.3	5.0	10.3	- -	- -	19.2	23.3	42.6
Cambria	- -	1.0	2.7	1.3	5.0	- -	3.7	11.2	4.0	18.8
Fayette	- -	0.7	14.8	3.1	18.7	- -	2.1	54.4	12.4	68.8
Somerset	- -	- -	9.3	6.6	15.9	- -	- -	39.0	26.7	65.6
Total	- -	1.7	33.5	21.8	57.0	- -	5.8	128.0	93.3	227.1

(Table PA-61 continued on next page)

(Table PA-61 continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	0.1	3.8	2.3	11.0	17.2	--	14.2	7.6	42.8	64.5
Carbon	--	0.6	3.0	0.6	4.2	--	2.6	10.1	2.3	15.0
Columbia	0.1	--	3.5	--	3.7	0.5	--	15.1	--	15.6
Lackawanna	--	--	1.6	0.7	2.2	--	--	6.8	1.9	8.7
Luzerne	2.3	0.9	5.8	3.6	12.5	12.7	2.9	25.1	14.2	55.0
Monroe	0.6	0.8	0.1	3.6	5.1	2.9	2.1	--	13.3	18.4
Pike	0.0	--	0.9	2.2	3.2	--	--	4.2	7.5	11.8
Schuylkill	0.1	0.6	0.6	3.2	4.4	--	2.2	--	11.9	14.1
Susquehanna	--	0.9	3.4	3.7	8.0	--	3.0	13.3	13.6	29.9
Wayne	--	0.6	0.8	2.9	4.3	--	2.4	1.8	12.6	16.7
Montour/Northumberland	0.1	--	0.0	3.6	3.8	0.2	--	--	13.5	13.6
Total	3.3	8.1	22.1	35.0	68.5	16.3	29.4	83.9	133.7	263.3
Southeastern										
Adams	--	--	0.0	0.3	0.3	--	--	--	0.4	0.4
Berks	0.3	0.0	1.5	3.0	4.8	0.6	--	4.4	7.0	12.0
Cumberland	--	--	0.1	3.4	3.5	--	--	--	13.9	13.9
York	--	--	0.6	1.8	2.3	--	--	0.6	6.7	7.4
Bucks/Lehigh/Northampton	--	--	0.6	5.1	5.7	--	--	2.4	22.2	24.6
Chester/Delaware/Montgomery	--	--	2.0	1.0	3.0	--	--	7.8	3.8	11.6
Lancaster/Lebanon	--	--	4.6	2.9	7.5	--	--	14.7	11.4	26.1
Total	0.3	0.0	9.4	17.5	27.1	0.6	--	29.9	65.5	96.0
All counties	12.6	16.4	169.8	192.6	391.5	46.2	54.7	660.6	779.4	1,540.8

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 or board feet. Columns and rows may not add to their totals due to rounding.
Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties
Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-61a.—Average annual removals of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, and sawtimber trees (Doyle rule), in million board feet, on timberland by inventory unit, county, and major species group, Pennsylvania, 2004 to 2009

Inventory 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)				
South Central										
Dauphin	0.9	--	2.6	4.3	7.7	1.6	--	7.8	12.1	21.4
Franklin	0.1	--	0.4	5.1	5.6	--	--	--	10.6	10.6
Fulton	0.8	--	--	2.0	2.9	2.8	--	--	5.7	8.5
Huntingdon	2.6	0.1	0.9	5.6	9.2	2.2	--	3.4	17.1	22.8
Juniata	--	0.4	2.9	1.6	4.9	--	1.4	10.9	4.7	17.1
Mifflin	--	--	0.1	1.9	2.0	--	--	--	2.7	2.7
Perry	--	--	--	1.1	1.1	--	--	--	1.9	1.9
Snyder	--	--	1.1	2.4	3.6	--	--	3.2	7.5	10.7
Union	--	1.4	0.5	0.7	2.6	--	3.4	1.3	2.0	6.7
Total	4.4	1.9	8.6	24.7	39.6	6.6	4.8	26.6	64.2	102.3
Western										
Allegheny	--	--	1.1	2.4	3.5	--	--	0.4	5.7	6.1
Armstrong	--	0.2	3.2	5.8	9.1	--	0.4	7.1	31.2	38.7
Butler	--	--	1.2	1.8	3.0	--	--	1.7	3.6	5.2
Crawford	--	0.8	3.7	5.0	9.6	--	1.6	9.6	13.8	25.0
Erie	--	0.1	7.1	5.9	13.1	--	--	10.9	20.8	31.7
Greene	--	--	2.8	2.2	5.0	--	--	7.0	3.8	10.8
Indiana	--	0.7	6.2	2.1	8.9	--	1.7	18.9	7.1	27.7
Mercer	--	--	1.9	2.0	3.8	--	--	4.3	8.1	12.4
Washington	--	--	3.0	2.6	5.6	--	--	7.1	8.2	15.3
Westmoreland	--	--	6.0	1.6	7.6	--	--	14.6	3.7	18.3
Beaver/Lawrence	--	--	1.4	3.4	4.8	--	--	0.8	7.9	8.7
Total	--	1.8	37.6	34.8	74.1	--	3.7	82.4	113.7	199.9

(Table PA-61a continued on next page)

(Table PA-61a continued)

Inventory 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)				
North Central/Allegheny										
Cameron	- -	- -	1.9	3.4	5.3	- -	- -	7.6	5.0	12.5
Centre	0.2	0.6	3.5	8.8	13.2	0.2	0.8	8.9	23.5	33.5
Clarion	- -	0.0	3.7	1.6	5.3	- -	- -	7.2	2.6	9.7
Clearfield	1.7	1.3	2.0	5.7	10.7	3.8	1.1	5.2	13.3	23.3
Clinton	- -	- -	0.0	0.2	0.2	- -	- -	- -	0.2	0.2
Jefferson	- -	- -	8.7	3.4	12.1	- -	- -	19.6	8.4	28.0
Lycoming	0.5	- -	1.5	8.2	10.2	2.2	- -	3.3	20.1	25.7
Potter	1.6	- -	5.1	5.4	12.1	3.9	- -	14.2	15.8	33.9
Sullivan	- -	- -	0.5	0.7	1.2	- -	- -	1.1	0.4	1.6
Tioga	- -	- -	1.0	2.5	3.5	- -	- -	0.9	4.8	5.7
Venango	0.2	- -	5.3	1.8	7.3	0.3	- -	11.4	5.0	16.7
Elk -- nonANF	- -	0.0	3.9	2.4	6.3	- -	- -	11.6	6.3	17.9
Forest -- nonANF	0.4	0.2	1.8	2.8	5.2	- -	0.5	3.9	6.9	11.3
McKean -- nonANF	- -	0.1	12.9	5.0	18.0	- -	0.2	39.7	11.3	51.3
Warren -- nonANF	- -	0.5	7.2	6.9	14.6	- -	1.1	25.3	17.1	43.5
Total	4.7	2.9	58.7	58.9	125.1	10.5	3.7	159.8	140.8	314.8
Southwestern										
Bedford	- -	- -	1.3	5.8	7.2	- -	- -	2.4	19.2	21.7
Blair	- -	- -	5.3	5.0	10.3	- -	- -	12.8	15.3	28.1
Cambria	- -	1.0	2.7	1.3	5.0	- -	2.5	6.4	2.0	10.8
Fayette	- -	0.7	14.8	3.1	18.7	- -	1.3	30.8	7.8	39.9
Somerset	- -	- -	9.3	6.6	15.9	- -	- -	23.7	16.3	40.0
Total	- -	1.7	33.5	21.8	57.0	- -	3.8	76.1	60.5	140.5

(Table PA-61a continued on next page)

(Table PA-61a continued)

Inventory 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)				
Northeastern/Pocono										
Bradford	0.1	3.8	2.3	11.0	17.2	--	10.1	4.4	26.4	40.9
Carbon	--	0.6	3.0	0.6	4.2	--	2.4	5.8	1.6	9.8
Columbia	0.1	--	3.5	--	3.7	0.2	--	8.9	--	9.2
Lackawanna	--	--	1.6	0.7	2.2	--	--	3.8	0.9	4.7
Luzerne	2.3	0.9	5.8	3.6	12.5	13.3	1.9	17.3	8.3	40.7
Monroe	0.6	0.8	0.1	3.6	5.1	2.0	1.4	--	8.4	11.8
Pike	0.0	--	0.9	2.2	3.2	--	--	2.4	4.0	6.3
Schuylkill	0.1	0.6	0.6	3.2	4.4	--	1.8	--	7.2	8.9
Susquehanna	--	0.9	3.4	3.7	8.0	--	2.0	8.2	8.7	18.9
Wayne	--	0.6	0.8	2.9	4.3	--	1.5	1.1	7.3	9.9
Montour/Northumberland	0.1	--	0.0	3.6	3.8	0.1	--	--	8.8	8.9
Total	3.3	8.1	22.1	35.0	68.5	15.6	21.1	52.0	81.5	170.2
Southeastern										
Adams	--	--	0.0	0.3	0.3	--	--	--	--	--
Berks	0.3	0.0	1.5	3.0	4.8	0.3	--	2.7	4.2	7.2
Cumberland	--	--	0.1	3.4	3.5	--	--	--	10.3	10.3
York	--	--	0.6	1.8	2.3	--	--	0.3	3.9	4.2
Bucks/Lehigh/Northampton	--	--	0.6	5.1	5.7	--	--	1.3	16.4	17.7
Chester/Delaware/Montgomery	--	--	2.0	1.0	3.0	--	--	4.6	2.0	6.6
Lancaster/Lebanon	--	--	4.6	2.9	7.5	--	--	8.3	6.8	15.1
Total	0.3	0.0	9.4	17.5	27.1	0.3	--	17.2	43.6	61.1
All counties	12.6	16.4	169.8	192.6	391.5	33.0	37.2	414.1	504.5	988.8

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 or board feet. Columns and rows may not add to their totals due to rounding.

Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties

Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Table PA-65.—Sampling errors, in percent, for net volume, average annual net growth, average annual removals, and average annual mortality on timberland, and forest and timberland area by inventory unit and county, Pennsylvania, 2009

Inventory 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
South Central										
Dauphin	20.03	20.46	25.79	34.44	45.41	54.39	28.95	34.34	46.20	69.07
Franklin	15.72	15.72	19.50	30.26	68.21	46.16	21.48	32.57	67.00	54.35
Fulton	17.40	17.40	21.10	84.72	70.33	38.66	23.07	100.00	73.71	50.50
Huntingdon	10.82	10.90	13.11	30.20	40.01	30.38	15.32	31.03	40.04	40.09
Juniata	20.76	20.76	24.21	28.34	68.80	49.75	27.03	31.91	68.66	67.65
Mifflin	19.56	19.56	22.20	42.56	98.81	37.65	24.12	37.70	98.81	45.08
Perry	15.26	15.47	17.88	42.92	73.94	35.40	18.49	32.84	73.61	40.28
Snyder	22.64	22.64	25.47	30.41	57.53	40.88	27.51	31.62	59.14	78.20
Union	22.14	23.77	25.66	29.63	76.25	48.17	27.68	28.98	74.80	69.84
Total	1.77	1.95	3.73	12.96	20.24	13.23	4.85	12.89	20.54	17.94
Western										
Allegheny	17.50	17.93	23.04	41.15	86.57	63.34	24.40	70.30	96.12	74.32
Armstrong	15.02	15.02	20.30	20.15	57.32	38.78	25.85	23.88	60.24	59.92
Butler	14.06	14.42	18.70	22.94	63.26	49.18	21.85	25.15	77.30	80.84
Crawford	13.29	13.29	16.77	16.31	37.31	30.64	20.20	17.00	39.55	42.06
Erie	15.65	15.85	21.06	24.97	46.12	32.07	22.92	28.84	50.78	42.19
Greene	15.17	15.17	18.57	19.25	50.46	31.35	21.08	20.93	62.04	69.83
Indiana	12.87	13.02	17.07	15.95	45.99	28.12	19.95	18.40	47.07	38.22
Mercer	17.49	17.77	24.10	23.72	50.13	39.24	27.39	24.33	58.14	66.86
Washington	13.80	13.80	20.05	30.69	41.36	26.05	24.51	40.97	45.18	32.09
Westmoreland	11.44	12.01	14.92	24.41	59.53	44.73	17.41	36.04	72.00	60.33
Beaver/Lawrence	14.64	15.20	20.66	26.37	62.35	29.71	24.13	27.64	52.95	39.99
Total	1.88	1.99	3.95	5.59	16.55	11.72	5.28	7.02	18.56	20.47

(Table PA-65 continued on next page)

(Table PA-65 continued)

Inventory 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
North Central/Allegheny										
Cameron	16.65	17.85	20.23	24.89	75.58	32.32	21.85	23.11	81.49	52.03
Centre	9.93	10.01	11.61	18.09	41.62	23.32	13.16	15.26	44.09	38.06
Clarion	14.38	14.54	20.23	25.37	50.68	39.60	22.25	29.93	48.96	60.80
Clearfield	10.43	10.50	14.10	14.72	36.01	32.15	16.67	15.98	34.65	52.81
Clinton	11.26	11.90	12.87	29.63	86.11	36.77	14.08	23.92	97.41	56.50
Jefferson	13.87	14.00	17.50	19.41	39.84	34.13	18.98	19.97	41.53	47.59
Lycoming	9.21	9.59	10.97	14.04	45.21	22.91	12.28	13.94	44.79	41.47
Potter	10.17	10.43	12.25	14.99	71.50	20.88	13.19	14.53	73.79	31.48
Sullivan	15.18	15.18	18.06	26.52	97.41	30.41	20.81	25.89	97.41	43.36
Tioga	10.59	10.70	12.22	14.21	54.34	23.61	13.39	14.28	57.54	46.07
Venango	12.77	13.02	15.51	19.16	45.84	37.92	17.38	19.56	47.38	61.76
Elk -- nonANF	11.14	11.22	13.23	14.32	44.71	20.94	13.98	14.42	47.18	34.67
Forest -- nonANF	15.15	15.65	19.02	23.47	94.26	37.73	19.78	22.70	98.28	56.85
McKean -- nonANF	10.17	10.17	12.03	17.49	41.62	21.19	12.91	16.08	46.97	26.01
Warren -- nonANF	10.92	11.08	12.79	13.52	35.64	31.46	13.58	14.03	39.60	59.12
Total	0.93	1.11	2.04	3.80	13.72	6.71	2.62	3.41	14.78	11.18
Southwestern										
Bedford	11.20	11.45	15.04	16.32	54.41	30.13	18.41	18.68	56.50	37.86
Blair	14.96	15.18	17.98	25.25	51.36	33.31	19.53	25.75	47.53	39.26
Cambria	14.24	14.68	17.69	18.94	60.69	30.68	19.78	19.18	65.17	70.03
Fayette	12.64	13.03	16.58	16.20	44.24	35.15	18.59	18.08	41.29	51.10
Somerset	10.60	10.98	14.12	15.06	38.52	29.06	16.75	16.68	38.64	52.30
Total	2.15	2.47	4.72	5.72	21.40	14.03	6.37	6.79	20.57	21.40

(Table PA-65 continued on next page)

(Table PA-65 continued)

Inventory 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/Pocono										
Bradford	10.69	10.83	14.14	14.63	37.06	20.77	16.18	14.50	33.72	53.57
Carbon	19.30	20.42	24.00	26.45	89.12	50.58	35.26	29.27	96.08	67.57
Columbia	22.90	22.90	26.70	27.73	92.63	39.43	28.47	27.32	94.05	71.79
Lackawanna	19.89	19.89	25.97	100.00	80.03	60.42	28.76	100.00	83.17	80.25
Luzerne	11.92	12.18	14.25	18.48	39.58	21.30	15.95	17.53	43.85	50.25
Monroe	14.03	14.52	17.34	24.36	62.74	28.64	20.19	22.30	68.32	59.10
Pike	13.20	13.70	15.80	18.89	69.09	30.75	17.70	19.33	77.82	43.53
Schuylkill	13.06	13.18	17.14	23.14	55.15	27.18	19.90	23.23	61.95	44.28
Susquehanna	13.31	13.45	15.90	23.66	46.52	32.74	17.44	21.88	51.06	45.61
Wayne	12.90	12.96	15.08	26.30	53.68	30.79	16.79	31.78	54.85	43.64
Wyoming	19.18	19.20	24.53	26.40	- -	37.63	27.55	27.30	- -	49.19
Montour/Northumberland	17.11	17.34	22.69	25.61	62.31	36.78	25.48	25.93	53.64	64.70
Total	1.63	1.80	3.15	6.46	17.18	11.58	4.24	7.94	17.78	27.36
Southeastern										
Adams	19.16	19.16	24.01	33.72	97.20	64.17	26.72	31.48	100.00	75.13
Berks	15.00	15.49	19.77	21.28	55.21	33.06	21.93	22.07	51.67	56.19
Cumberland	24.96	24.96	26.24	35.07	76.01	64.07	30.33	34.58	92.35	100.00
York	20.16	20.16	26.08	39.84	67.41	48.40	29.24	38.78	79.69	92.38
Bucks/Lehigh/Northampton	14.84	15.30	18.22	31.63	91.48	34.45	19.45	30.85	94.42	45.69
Chester/Delaware/Montgomery	18.68	18.93	23.66	23.71	75.60	52.71	24.67	23.56	76.55	92.38
Lancaster/Lebanon	16.07	16.29	18.90	24.80	50.52	30.03	20.46	22.92	55.91	42.05
Total	3.76	3.96	5.80	12.10	28.86	15.19	6.98	11.37	33.88	23.34
All counties	0.68	0.75	1.36	2.68	7.48	4.50	1.78	2.83	7.95	8.13

Sampling errors that exceed 100% are reported as 100%.
Bucks/Lehigh/Northampton = Bucks, Lehigh, and Northampton Counties
Chester/Delaware/Montgomery = Chester, Delaware, and Montgomery Counties

Northern Research Station
www.nrs.fs.fed.us