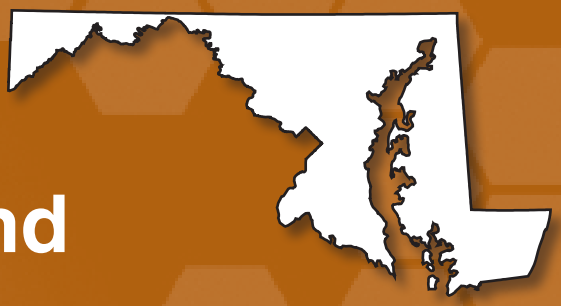
Maryland's Forests, 2008: Statistics, Methods, and Quality Assurance



USDA United States Department of Agriculture

Forest Service

Northern Research Station

Forest Inventory Methods

Strategic Model

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

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

To ensure that these objectives are achieved, 10 strategic approaches have been prescribed:

- A national set of prescribed core variables with a national field manual that prescribes measurement procedures and protocols for each variable
- A nationally consistent plot configuration
- A nationally consistent sampling design
- Estimation using standardized formulas 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 the detection monitoring by the U.S. Forest Service's Forest Health Monitoring (FHM) program.

Plot Configuration

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

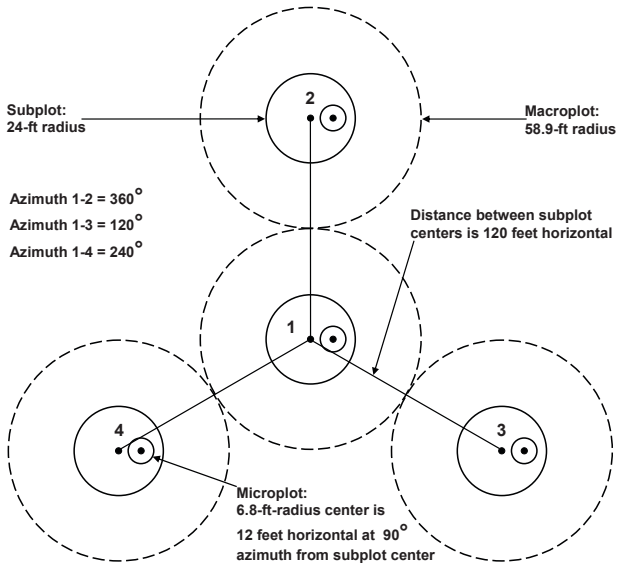


Figure 85.—National FIA plot design (adapted from Bechtold and Patterson 2005).

Sample Design

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

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

Three-phase Inventory

FIA conducts inventories in three phases. In Phase 1 (P1), remotely sensed data are used to obtain initial plot land cover observations and to stratify land area in the population of interest to increase the precision of estimates. In Phase 2 (P2), field crews visit the physical locations of permanent field plots to measure traditional inventory variables such as tree species, diameter, and height. In Phase 3 (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 are discussed in greater detail in the following sections.

Phase 1

Aerial photographs, digital orthoquads (DOQs: digitally scanned aerial photographs), 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. 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 feet with continuous canopy. Forest land excludes wooded strips, idle farmland with trees, and narrow windbreaks. All plot locations that could possibly contain accessible forest land are selected for further measurement during P2.

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 to 100) within every 30-m pixel over the United States. The method used to map canopy density for NLCD 2001 is described in Huang et al. (2001).

The current strata categorization was optimized for the entire NRS-FIA region. Using plot location information (center of the center subplot), we assigned a percent canopy density value to each plot. Plots were then

aggregated into one of the five strata based on the center of the center subplot. The percent canopy cover stratification scheme consists of five groupings: (1) 0 to 5, (2) 6 to 50, (3) 51 to 65, (4) 66 to 80, and (5) 81 to 100. These groupings were based on observed natural clumping of pixel values. If there were not enough plots in each of these classes to create strata, then collapsing rules were used to combine classes until sufficient sample sizes were obtained.

In addition, being classified into one of the five canopy strata, every pixel was assigned to an ownership stratum. In Maryland, ownership layers, derived from the Protected Areas Database (http://www.databasin.org/protected-center/features/PAD-US-CBI) were used to classify pixels into three ownership classes: (1) inland census water, (2) public, and (3) private. Every pixel was also assigned to a unit based on pixel center location.

Stratified estimation requires two tasks. First, each plot must be assigned to a single stratum. Next, the proportion of each detailed stratum must be calculated (TM land-cover classification, ownership, and county group delineation). The first task is done by assigning each plot to the stratum assigned to the pixel containing the center of the center subplot. The second task is done 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).

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. Field crews determine the location of the geographic center of the center subplot using GPS receivers. They record subplot-level observations that include land cover, forest type, stand origin, stand age, stand-size class, site productivity class, forest disturbance history, slope, aspect, physiographic class, and land use conditions. For each tree, field crews record a variety of observations and measurements including species, live/dead status, lean, diameter, height, crown ratio (percent of tree height represented by crown), crown class (e.g., dominant, co-dominant, suppressed), damage, and decay status. The 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 subplot, by species groups, and by live/dead status.

Phase 3

The third phase of the enhanced FIA program focuses on forest health. P3 is administered cooperatively by the FIA program, other Forest Service programs, other Federal agencies, State natural resource agencies, and universities, and it is partially integrated with the Forest Health Monitoring (FHM) program. The FHM program consists of four interrelated and complementary activities: detection monitoring, evaluation monitoring, intensive site ecosystem monitoring, and research on monitoring techniques. Detection monitoring consists of systematic aerial and ground surveys designed to collect baseline information on the current condition of forest ecosystems and to detect changes from those baselines over time. Evaluation monitoring studies examine the extent, severity, and probable causes of changes in forest health identified through the detection monitoring surveys. The intensive site ecosystem monitoring program examines regionally specific ecological processes at a network of sites located in representative forested ecosystems. Finally, research on monitoring techniques focuses on developing and refining indicator measurements to improve the efficiency and reliability of data collection and analysis at all levels of the program.

The ground survey portion of the FHM 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 approximately every 96,000 acres. P3 measurements are made 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 made on each P3 plot at the same time as the P3 measurements.

P3 variables were selected to address specific criteria outlined by the Montreal Process (Montreal Process 1999) working group for the conservation and sustainable management of temperate and boreal forests and are based on the concept of indicator variables. Observations of an indicator variable represent an index of ecosystem functions that can be monitored over time to assess trends. Indicator variables are used in conjunction with each other, 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 serve as the Nation's environmental report card and are a primary source of reporting data for the Montreal Process Criteria and Indicators (for more information, see Woodall et al. 2010).

Estimation

Most of the estimates and analysis presented in this report (including all the estimate tables) are based on averages observed on 1,108 plots located across Maryland. These plots are located within 90 unique strata (Table A) defined by combinations of the five P1 percent canopy cover classes, a land ownership classification created from the Protected Areas Database, and unit groups. Nationally consistent algorithms were used to assign forest type and stand-size class to each condition observed on a plot. For NRS-FIA, panels are measured on an annual basis so that five panel estimates are equivalent to 5-year moving average estimates. Field plot measurements are combined with P1 estimates in the compilation process and table production.

Procedures described in Bechtold and Patterson (2005) for stratified estimation with observed stratum areas were used in conjunction with the strata presented in Table A to produce all estimates. Table A shows the total area and number of plots within each stratum.

Integration with Previous Inventories

In 2008, NRS-FIA completed measurement of the fifth panel of inventory plots in Maryland. The 2008 panel, along with those surveyed in 2004, 2005, 2006, and 2007, completed data collection for the sixth inventory of Maryland's forests. Previous inventories of Maryland's forest resources were completed in 1950, 1964, 1976, 1986, and 1999 (Northeastern Forest Exp. Stn. 1955, Ferguson 1967, Powell and Kingsley 1980, Frieswyk and DiGiovanni 1988, Frieswyk 2001, respectively). Data from new inventories are often compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must be similar.

To improve the efficiency and reliability of the inventory, several changes in procedures and definitions have been made since the last Maryland inventory in 1999 (Frieswyk 2001). Although these changes will have little impact on statewide estimates of forest area, timber volume, and tree biomass, they may significantly impact plot classification variables such as forest type and stand-size class. For estimating growth, removals, and mortality, the 1999 inventory was processed using estimation/summary routines for the 2008 inventory. Additionally, growth, removals, and mortality estimates were generated using the limited number of plots measured in both the 1999 and 2008 inventories (987 plots). Although these changes allow limited comparison of inventory estimates among separate inventories in this report, it is inappropriate to directly compare all portions of the 2004-2008 data with those published for earlier inventories.

For further information about the sample protocols and estimation procedures for the first two phases of the FIA program, see Bechtold and Patterson (2005). For further information on P3 indicator sampling protocols, see USDA FS (2009).

Quality of the Estimates

The four primary sources of error common to all sample-based estimates are sampling, measurement, prediction, and nonresponse error. A section on each source of error defines the error within the context of the FIA inventory and discusses methods used to quantify and reduce this error.

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 was observed and included in the estimate. The 2008 FIA inventory of Maryland is based on a sample of 1,108 plots located randomly across the State (a total area of 6,248,971 acres), a sampling rate of about one plot for every 5,640 acres.

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 but that can also be expressed in the same units as the estimate or as a confidence interval (the estimated value plus or minus the sampling error). This sampling error is the primary measure of the reliability of an estimate. A sampling error can be interpreted to mean that had a 100-percent inventory been taken using these methods, the chances are two out of three that the results would have been within the limits indicated (i.e., 68 percent confidence interval).

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

Estimates for classifications smaller than the State totals presented in Table B will have larger sampling errors. For example, Table MD-65 shows that 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:

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

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 private forest land in the State, proceed as follows:

The total private forest land in Maryland (from Table MD-2) is estimated at 1,874,200 acres.

The total area of all forest land in Maryland (from Table MD-3) is 2,492,600 acres.

The State total error for forest land area (from Table B) is 3.14 percent.

Using formula (1):

$$\text{Sampling error} = \frac{(3.14)\sqrt{(2{,}492{,}600)}}{\sqrt{(1{,}874{,}200)}} = 3.62 \text{ percent.}$$

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

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

Measurement Error

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

To ensure that all FIA observations are made to the highest standards possible, a regular program of quality assurance and quality control 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 intensive crew training. To assess the quality of the data collected by these trained crews, a random sample of at least 4 percent of all plots are measured independently by a different expert crew. These independent measurements are referred to as blind checks, and their purpose is to assess the quality of field measurements. The second measurement on these blind check plots is done by a Quality Assurance (QA) crew. In all cases, QA crews have as much or more experience and training in FIA field measurements than standard FIA crews.

The quality of field measurements is assessed nationally through a set of measurement quality objectives (MQOs) established for every data item we collect. 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. The blind check measurements are used to observe how often individual field crews are meeting these objectives and to assess the overall compliance among all crews. Table C shows the compliance rates for various measurements used to compute the estimates included in this report and other NRS-FIA reports. The columns labeled Maryland come from blind check measurements of plots used in this report, and the columns labeled All NRS-FIA States come from all measurements made by FIA crews within the entire 24-state area where the Northern Research Station implemented the FIA program over 2008. 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 NRS region.

In addition to the 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 the standard field crew measurements to be higher or lower than those measurements taken by the QA crews. The estimated relative bias and limits of 95 percent confidence intervals (based on parametric bootstrap estimates) for the relative bias are presented in Table D.

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

Prediction Error

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

Estimates of model error associated with the volume models used in this report are presented by Scott (1979, 1981), along with the model forms, the methods used in model development, and the model parameter estimates. Biomass of individual trees is calculated using the procedures described by Heath et al. (2009). Numerous factors are involved in these computations, including tree volume models, wood and bark specific gravity, and various proportions of tree components (e.g., tops and limbs). Due to the complex methodology, errors associated with model-based predictions of biomass have not yet been quantified.

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

Nonresponse Error

Nonresponse error refers to the error caused by not being able to observe some of the elements in the sample. In FIA, nonresponse 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 and is therefore unable to measure the trees on the plot.

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

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

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

In FIA, unlike many survey samples, nonresponse rates are relatively low. In the 2008 Maryland inventory, a total of 1,108 sample plots were selected to be observed. Of the total sample plots selected for observation, 1,020 are in the sample used for the estimation of current resources. There were 87 plots where crews were unable to obtain owner permission to measure the plot, and two plots where hazardous conditions prevented the crew from measuring all or part of the plot; no plots were lost from the sample due to additional problems.

Even though an overall response rate of 98 percent is quite high, it can cause considerable bias if not properly accounted for. The major source of nonresponse is denied access to plots. Denied access plots primarily

occur on lands in private ownership. Also, the observations needed for plots on nonforest and water land classes do not usually require crews to physically enter the land and permission is not needed to obtain the observation because it can be obtained from aerial photos or other remotely sensed information sources.

The stratified estimation process used by FIA with strata defined by three ownership classes (Inland census water, public, and private) and five canopy cover classes reduces the possible effects of bias caused by nonresponse. Under the stratified estimation process used by FIA, nonresponses are removed from the sample, and stratum estimates (means, totals, and sampling errors) are obtained from only those plots with valid observations. The net effect in the estimates of means and totals is that the average of the observed plots within the stratum (ownership class-forest 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 within each stratum is presented in Table E for the Maryland 2008 inventory and for all FIA inventories conducted by the Northern Research Station over the same period.

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

Glossary

Average annual mortality of growing stock: The average annual change in the cubic-foot volume of sound wood in growing-stock trees that died over a defined measurement cycle.

Average annual mortality of sawtimber: The average annual change in the board-foot volume of sound wood in sawtimber trees that died over a defined measurement cycle.

Average annual net growth of growing stock: The average annual change in the cubic-foot volume of sound wood in live sawtimber and poletimber trees, and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes. Natural causes include mortality except that due to logging damage, timber stand improvement, or conversion to a nonforest land use.

Average annual net growth of sawtimber: The average annual change in the board-foot volume of live sawtimber trees, and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes. Natural causes include mortality except that due to logging damage, timber stand improvement, or conversion to a nonforest land use.

Average annual removals from growing stock: The average annual net growing-stock volume change in growing-stock trees removed annually for roundwood forest products, in addition to the volume of logging residues and the volume of other removals.

Average annual removals from sawtimber: The average annual net board-foot sawtimber volume of live sawtimber trees removed annually for roundwood forest products, in addition to the volume of logging residues and the volume of other removals.

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

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

Biomass: The aboveground volume of live trees (including bark but excluding foliage) reported in dry tons (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 4.9-inch trees: Total aboveground biomass of a tree from 1.0 to 4.9 inches in d.b.h.

Stump: Biomass of a tree 5 inches d.b.h. and larger from the ground to a height of 1 foot.

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

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

Commercial species: Tree species suitable for industrial wood products.

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

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

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

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

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

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

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

Diameter class: A classification of trees based on diameter outside bark measured at breast height (4-¼ feet above ground). D.b.h. is the common abbreviation for "diameter at breast height." With 2-inch diameter classes, the 6-inch class, for example, includes trees 5.0 through 6.9 inches d.b.h.

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

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

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

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

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

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

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

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

Forest land: Land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated. Forest land includes transition zones, such as areas between heavily forested and nonforested lands that are at least 10 percent stocked with forest trees and forest areas adjacent to urban and 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. Roadside, streamside, and shelterbelt strips of trees must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if less than 120 feet wide.

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

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

Major eastern forest-type groups:

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

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

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

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

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

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

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

Growing stock: A classification of timber inventory that includes live trees of commercial species meeting specified standards of quality or vigor. Cull trees are excluded. When associated with volume, 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.

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.

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

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

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

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

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

Ownership: The property owned by one ownership unit.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Snag: A standing dead tree. In the current inventory, a snag must be 5.0 inches d.b.h./d.r.c. and 4.5 feet tall, and have a lean angle less than 45 degrees from vertical. A snag 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.

Sound dead: The net volume in salvable dead trees.

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

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

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

Sapling-seedling: Forest land stocked with at least 10 percent of full stocking with live trees with half or more of such stocking in seedlings or saplings or both.

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

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

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

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

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

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

Tree: A woody plant usually having one or more erect perennial stems, a stem diameter at breast height of at least 3 inches, a more or less definitely formed crown of foliage, and a height of at least 15 feet at maturity.

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

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

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

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

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

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

Tables of Quality Assurance

Table A.—Area and number of plots in each stratum, Maryland, 2008

Table B.—State-level estimates of major forest resource attributes and their sampling errors, Maryland, 2008

Table C.—Measurement quality objective (MQO) tolerance compliance based on blind check plots, Maryland, 2008

Table D.—Observed relative bias values (Average [field crew - QA crew]) for measurement variables on blind check plots, Maryland, 2008

Table E.—FIA nonresponse by ownership, Maryland, 2008

Tables of Estimates

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

Area

Table MD-1.—Percentage of area by land status, Maryland, 2008

Table MD-2.—Area of forest land, in thousand acres, by owner class and forest-land status, Maryland, 2008

Table MD-3.—Area of forest land, in thousand acres, by forest-type group and productivity class, Maryland, 2008

Table MD-4.—Area of forest land, in thousand acres, by forest-type group, ownership group, and forest-land status, Maryland, 2008

Table MD-5.—Area of forest land, in thousand acres, by forest-type group and stand-size class, Maryland, 2008

Table MD-6.—Area of forest land, in thousand acres, by forest-type group and stand-age class, Maryland, 2008

Table MD-7.—Area of forest land, in thousand acres, by forest-type group and stand origin, Maryland, 2008

Table MD-8.—Area of forest land, in thousand acres, by forest-type group and primary disturbance class, Maryland, 2008

Table MD-9.—Area of timberland, in thousand acres, by forest-type group and stand-size class, Maryland, 2008

Number

Table MD-10.—Number of live trees (at least 1 inch d.b.h.), in thousand trees, on forest land by species group and diameter class, Maryland, 2008

Table MD-11.—Number of growing-stock trees (at least 5 inches d.b.h.) , in thousand trees, on timberland by species group and diameter class, Maryland, 2008

Volume

Table MD-12.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 2008

Table MD-13.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 2008

Table MD-14.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 2008

Table MD-15.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and diameter class, Maryland, 2008

Table MD-16.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand origin, Maryland, 2008

Table MD-17.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and diameter class, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-19.—Net volume of sawtimber trees (International ¼-inch rule), in million board feet, on timberland by species group and diameter class, Maryland, 2008

Table MD-19a.—Net volume of sawtimber trees (Doyle rule), in million board feet, on timberland by species group and diameter class, Maryland, 2008

Table MD-20.—Net volume of sawtimber trees, in million cubic feet, on timberland by species group and ownership group, Maryland, 2008

Growth, Mortality, and Removals

Table MD-21.—Average annual net growth of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 1999 to 2008

Table MD-22.—Average annual net growth of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 1999 to 2008

Table MD-23.—Average annual net growth of all live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

Table MD-24.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Maryland, 1999 to 2008

Table MD-25.—Average annual mortality of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 1999 to 2008

Table MD-26.—Average annual mortality of trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 1999 to 2008

Table MD-27.—Average annual mortality of trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

Table MD-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, Maryland, 1999 to 2008

Table MD-29.—Average annual removals of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

Table MD-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, Maryland, 1999 to 2008

Weight

Table MD-31.—Aboveground dry weight of live trees (at least 1 inch d.b.h.), in thousand dry short tons, by owner class and forest-land status, Maryland, 2008

Table MD-32.—Aboveground dry weight of live trees (at least 1 inch d.b.h., computed using "component ratio method" - CRM), in thousand dry short tons, on forest land by species group and dMDmeter class, Maryland, 2008

County-Level

Table MD-54.—Area of forest land, in thousand acres, by inventory unit, county, and forest-land status, Maryland, 2008

Table MD-55.—Area of forest land, in thousand acres, by inventory unit, county, ownership group and forest-land status, Maryland, 2008

Table MD-57.—Area of timberland, in thousand acres, by inventory unit, county, and stand-size class, Maryland, 2008

Table MD-58.—Area of timberland, in thousand acres, by inventory unit, county, and stocking class, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

Table MD-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, Maryland, 2008

*All tables contain forest attribute estimates for Maryland for measurements taken from 2004 to 2008, except where indicated.

**Gaps in enumeration of tables are placeholders for future tables such as forest health indicator population estimates (e.g., downed woody material).

Table A.—Area and number of plots in each stratum, Maryland, 2008

Unit code	Estimation unit description[a]	Canopy cover stratum[b]	Acres	Selected[c]	Office selected[d]	Field selected[e]	Field sampled[f]	Field sampled forested[g]	Total plots sampled for change[h]	Field sampled plots for change[i]	Not measured[j]
2	Inland Census Water Public Cnty. Grp. 13, 21	Canopy cover 0 - 66	30,000	4	1	3	3	1	0	0	0
2	Inland Census Water Public Cnty. Grp. 13, 21	Canopy cover 81 - 100	25,000	7	0	7	5	5	0	0	2
2	Inland Census Water Public Cnty. Grp. 43	Canopy cover 0 - 81	45,000	6	0	6	5	5	0	0	1
2	Inland Census Water Public Cnty. Grp. 901	Canopy cover 0 - 5	40,000	8	4	4	4	2	0	0	0
2	Inland Census Water Public Cnty. Grp. 901	Canopy cover 6 - 81	33,000	4	0	4	4	4	0	0	0
2	Inland Census Water Public Cnty. Grp. 903	Canopy cover 0 - 81	49,000	5	4	1	1	0	0	0	0
2	Inland Census Water Public Cnty. Grp. 904	Canopy cover 0 - 5	57,000	5	5	0	0	0	0	0	0
2	Inland Census Water Public Cnty. Grp. 904	Canopy cover 6 - 81	43,000	4	0	4	4	3	0	0	0
2	Inland Census Water Public Cnty. Grp. 906	Canopy cover 0 - 81	47,000	8	5	3	3	2	0	0	0
2	Inland Census Water Public Cnty. Grp. 907	Canopy cover 0 - 5	53,000	13	6	7	7	5	0	0	0
2	Inland Census Water Public Cnty. Grp. 907	Canopy cover 6 - 66	28,000	5	0	5	5	5	0	0	0
2	Inland Census Water Public Cnty. Grp. 907	Canopy cover 81 - 100	53,000	11	0	11	10	10	0	0	1
2	Inland Census Water Public Cnty. Grp. 908	Canopy cover 0 - 66	50,000	8	6	2	2	1	0	0	0
2	Inland Census Water Public Cnty. Grp. 908	Canopy cover 81 - 100	30,000	8	0	8	8	8	0	0	0
2	Private Cnty. Grp. 13	Canopy cover 0 - 5	209,000	35	14	21	20	4	0	0	1
2	Private Cnty. Grp. 13	Canopy cover 6 - 66	15,000	4	0	4	4	2	0	0	0
2	Private Cnty. Grp. 13	Canopy cover 81 - 100	48,000	9	0	9	9	8	0	0	0
2	Private Cnty. Grp. 21	Canopy cover 0 - 5	269,000	46	16	30	30	6	0	0	0
2	Private Cnty. Grp. 21	Canopy cover 6 - 66	58,000	9	1	8	8	6	0	0	0
2	Private Cnty. Grp. 21	Canopy cover 81 - 100	62,000	7	0	7	7	7	0	0	0
2	Private Cnty. Grp. 43	Canopy cover 0 - 5	159,000	27	7	20	19	4	0	0	1
2	Private Cnty. Grp. 43	Canopy cover 6 - 66	60,000	8	0	8	7	6	0	0	1
2	Private Cnty. Grp. 43	Canopy cover 81 - 100	36,000	6	0	6	4	4	0	0	2
2	Private Cnty. Grp. 901	Canopy cover 0 - 5	188,000	34	12	22	19	5	0	0	3
2	Private Cnty. Grp. 901	Canopy cover 6 - 66	106,000	13	3	10	8	3	0	0	2
2	Private Cnty. Grp. 901	Canopy cover 81 - 100	85,000	13	1	12	12	11	0	0	0
2	Private Cnty. Grp. 903	Canopy cover 0 - 5	260,000	50	19	31	31	8	0	0	0
2	Private Cnty. Grp. 903	Canopy cover 6 - 66	76,000	9	0	9	8	8	0	0	1
2	Private Cnty. Grp. 903	Canopy cover 81 - 100	33,000	7	0	7	5	4	0	0	2
2	Private Cnty. Grp. 904	Canopy cover 0 - 5	264,000	49	18	31	30	3	0	0	1
2	Private Cnty. Grp. 904	Canopy cover 6 - 51	41,000	6	0	6	4	3	0	0	2
2	Private Cnty. Grp. 904	Canopy cover 66 - 80	32,000	5	0	5	5	5	0	0	0
2	Private Cnty. Grp. 904	Canopy cover 81 - 100	103,000	21	2	19	17	14	0	0	2
2	Private Cnty. Grp. 906	Canopy cover 0 - 5	296,000	42	12	30	30	7	0	0	0
2	Private Cnty. Grp. 906	Canopy cover 6 - 51	35,000	8	0	8	6	5	0	0	2

(Table A continued on next page)

(Table A continued)

Unit code	Estimation unit description[a]	Canopy cover stratum[b]	Acres	Selected[c]	Office selected[d]	Field selected[e]	Field sampled[f]	Field sampled forested[g]	Total plots sampled for change[h]	Field sampled plots for change[i]	Not measured[j]
2	Private Cnty. Grp. 906	Canopy cover 66 - 81	72,000	14	0	14	11	11	0	0	3
2	Private Cnty. Grp. 907	Canopy cover 0 - 5	268,000	44	19	25	23	6	0	0	2
2	Private Cnty. Grp. 907	Canopy cover 51 - 66	52,000	6	2	4	3	3	0	0	1
2	Private Cnty. Grp. 907	Canopy cover 6 - 50	82,000	11	5	6	6	3	0	0	0
2	Private Cnty. Grp. 907	Canopy cover 81 - 100	108,000	16	0	16	12	11	0	0	4
2	Private Cnty. Grp. 908	Canopy cover 0 - 5	226,000	30	11	19	19	6	0	0	0
2	Private Cnty. Grp. 908	Canopy cover 6 - 66	71,000	14	4	10	9	4	0	0	1
2	Private Cnty. Grp. 908	Canopy cover 81 - 100	86,000	17	2	15	14	11	0	0	1
3	Inland Census Water Public Cnty. Grp. 17	Canopy cover 0 - 81	42,000	5	1	4	4	4	0	0	0
3	Inland Census Water Public Cnty. Grp. 37	Canopy cover 0 - 5	39,000	10	9	1	1	0	0	0	0
3	Inland Census Water Public Cnty. Grp. 37	Canopy cover 6 - 81	8,000	4	0	4	4	4	0	0	0
3	Inland Census Water Public Cnty. Grp. 9	Canopy cover 0 - 81	23,000	5	4	1	1	1	0	0	0
3	Private Cnty. Grp. 17	Canopy cover 0 - 5	93,000	14	3	11	10	3	0	0	1
3	Private Cnty. Grp. 17	Canopy cover 6 - 66	64,000	12	1	11	9	8	0	0	2
3	Private Cnty. Grp. 17	Canopy cover 81 - 100	114,000	19	0	19	17	17	0	0	2
3	Private Cnty. Grp. 37	Canopy cover 0 - 5	91,000	13	4	9	8	3	0	0	1
3	Private Cnty. Grp. 37	Canopy cover 6 - 66	46,000	6	0	6	4	4	0	0	2
3	Private Cnty. Grp. 37	Canopy cover 81 - 100	80,000	12	0	12	11	11	0	0	1
3	Private Cnty. Grp. 9	Canopy cover 0 - 5	44,000	6	1	5	5	3	0	0	0
3	Private Cnty. Grp. 9	Canopy cover 6 - 66	35,000	6	1	5	3	3	0	0	2
3	Private Cnty. Grp. 9	Canopy cover 81 - 100	51,000	8	0	8	6	6	0	0	2
4	Inland Census Water Public Cnty. Grp. 19	Canopy cover 0 - 5	105,000	15	10	5	5	0	0	0	0
4	Inland Census Water Public Cnty. Grp. 19	Canopy cover 6 - 81	25,000	5	0	5	4	4	0	0	1
4	Inland Census Water Public Cnty. Grp. 39	Canopy cover 0 - 5	62,000	8	4	4	4	1	0	0	0
4	Inland Census Water Public Cnty. Grp. 39	Canopy cover 6 - 81	17,000	4	0	4	4	4	0	0	0
4	Inland Census Water Public Cnty. Grp. 45	Canopy cover 0 - 81	34,000	6	1	5	5	5	0	0	0
4	Inland Census Water Public Cnty. Grp. 47	Canopy cover 0 - 5	85,000	14	14	0	0	0	0	0	0
4	Inland Census Water Public Cnty. Grp. 47	Canopy cover 6 - 81	31,000	4	0	4	4	4	0	0	0
4	Private Cnty. Grp. 19	Canopy cover 0 - 5	187,000	24	12	12	12	7	0	0	0
4	Private Cnty. Grp. 19	Canopy cover 51 - 65	14,000	5	0	5	4	3	0	0	1
4	Private Cnty. Grp. 19	Canopy cover 6 - 50	18,000	5	0	5	4	4	0	0	1
4	Private Cnty. Grp. 19	Canopy cover 66 - 80	34,000	7	0	7	6	6	0	0	1
4	Private Cnty. Grp. 19	Canopy cover 81 - 100	36,000	6	0	6	6	6	0	0	0
4	Private Cnty. Grp. 39	Canopy cover 0 - 5	90,000	13	2	11	10	5	0	0	1
4	Private Cnty. Grp. 39	Canopy cover 6 - 81	69,000	12	0	12	9	9	0	0	3

(Table A continued on next page)

(Table A continued)

Unit code	Estimation unit description[a]	Canopy cover stratum[b]	Acres	Selected[c]	Office selected[d]	Field selected[e]	Field sampled[f]	Field sampled forested[g]	Total plots sampled for change[h]	Field sampled plots for change[i]	Not measured[j]
4	Private Cnty. Grp. 45	Canopy cover 0 - 5	127,000	13	4	9	8	1	0	0	1
4	Private Cnty. Grp. 45	Canopy cover 6 - 51	23,000	5	1	4	4	3	0	0	0
4	Private Cnty. Grp. 45	Canopy cover 66 - 80	24,000	5	0	5	4	4	0	0	1
4	Private Cnty. Grp. 45	Canopy cover 81 - 100	45,000	13	0	13	13	13	0	0	0
4	Private Cnty. Grp. 47	Canopy cover 0 - 5	139,000	21	8	13	12	3	0	0	1
4	Private Cnty. Grp. 47	Canopy cover 6 - 66	54,000	8	0	8	8	7	0	0	0
4	Private Cnty. Grp. 47	Canopy cover 81 - 100	66,000	17	0	17	14	14	0	0	3
5	Inland Census Water Public Cnty. Grp. 1	Canopy cover 0 - 6	10,000	5	1	4	4	4	0	0	0
5	Inland Census Water Public Cnty. Grp. 1	Canopy cover 51 - 66	35,000	4	0	4	4	4	0	0	0
5	Inland Census Water Public Cnty. Grp. 1	Canopy cover 81 - 100	32,000	7	0	7	7	7	0	0	0
5	Inland Census Water Public Cnty. Grp. 23	Canopy cover 0 - 66	44,000	10	0	10	9	9	0	0	1
5	Inland Census Water Public Cnty. Grp. 23	Canopy cover 81 - 100	46,000	7	0	7	7	7	0	0	0
5	Private Cnty. Grp. 1	Canopy cover 0 - 5	41,000	6	1	5	4	1	0	0	1
5	Private Cnty. Grp. 1	Canopy cover 6 - 51	40,000	8	0	8	6	3	0	0	2
5	Private Cnty. Grp. 1	Canopy cover 66 - 80	59,000	13	1	12	9	9	0	0	3
5	Private Cnty. Grp. 1	Canopy cover 81 - 100	57,000	7	0	7	5	5	0	0	2
5	Private Cnty. Grp. 23	Canopy cover 0 - 5	69,000	16	4	12	12	2	0	0	0
5	Private Cnty. Grp. 23	Canopy cover 6 - 51	55,000	7	2	5	3	2	0	0	2
5	Private Cnty. Grp. 23	Canopy cover 66 - 80	98,000	22	0	22	12	11	0	0	10
5	Private Cnty. Grp. 23	Canopy cover 81 - 100	107,000	10	0	10	9	9	0	0	1

[a]Estimation unit description: Description of the sub-population undergoing post-stratification. County groups are defined by one or more contiguous counties used for population estimation.

[b]Canopy cover stratum: A stratum within each estimation unit defined by partitioning the full range of percent canopy (0 - 100%) into 5 strata.

[c]Selected: The number of plots selected when the sample was drawn.

[d]Office selected: The number of plots determined to have no chance of being forested during a prefield interpretation procedure. These plots are withheld from field sampling and considered remotely sampled.

[e]Field selected: The number of plots determined to have some chance of being forested, or that were forested or non-sampled on a previous visit.

[f]Field sampled: The number of field selected plots that were successfully sampled in the field.

[g]Field sampled forested: The number of field selected plots that were successfully sampled in the field and found to intersect forest land.

[h]Total plots sampled for change: The number of plots included in the sample that were successfully sampled in the previous cycle.

[i]Field sampled plots for change: The number of plots included in the sample that were successfully sampled in the previous cycle and that were sent to the field for sampling.

[j]Not measured: The number of plots that were selected as part of the sample, but were completely non-sampled.

Table B.—State-level estimates of major forest resource attributes and their sampling errors, Maryland, 2008

Item	State total	Sampling error
Growing stock on timberland	*million cubic feet*	*percent*
Volume	5,925.7	3.68
Average annual net growth	177.8	7.6
Average annual removals	67.3	17.6
Average annual mortality	43.8	10.68
Sawtimber on timberland	*million board feet*[a]	
Volume	22,609.3	4.61
Average annual net growth	982.4	6.66
Average annual removals	226.4	19.84
Average annual mortality	154.4	14.98
Area	*thousand acres*	
Forest land	2,492.6	2.32
Timberland	2,368.8	2.56
Biomass (above-ground live trees and saplings)	*million dry tons*	
Forest land	176.3	3.14
Timberland	167.6	3.39

[a]International ¼-inch rule.

Table C.—Measurement quality objective (MQO) tolerance compliance based on blind check plots, Maryland, 2008

Variable	Tolerance	Objective (%)	Maryland		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Plot Level						
National Variables						
Distance to Road	No Tolerance	90.0	92.3	13	83.3	1,903
Water on Plot	No Tolerance	90.0	84.6	13	87.1	1,903
Regional Variables						
Elevation	±50 feet	99.0	77.8	9	86.5	1,809
Latitude - decimal degrees	±0.0001 degree	99.0	100.0	10	92.4	1,811
Longitude - decimal degrees	±0.0001 degree	99.0	100.0	10	90.3	1,811
Latitude - distance	±140 feet		100.0	10	99.3	1,811
Longitude - distance	±140 feet		100.0	10	98.4	1,811
Number of plots				13		1,970
Condition Level						
National Variables						
Condition Status	No Tolerance	99.0	100.0	34	99.2	4,052
Reserve Status	No Tolerance	99.0	100.0	34	99.6	4,052
Owner Group	No Tolerance	99.0	100.0	16	98.4	2,158
Forest Type (Type)	No Tolerance	95.0	75.0	16	84.7	2,158
Forest Type (Group)	No Tolerance	99.0	75.0	16	91.3	2,158
Stand Size	No Tolerance	99.0	100.0	16	88.8	2,158
Regeneration Status	No Tolerance	99.0	100.0	16	98.1	2,158
Tree Density	No Tolerance	99.0	100.0	16	97.4	2,158
Owner Class	No Tolerance	99.0	100.0	16	95.2	2,158
Owner Status	No Tolerance	99.0	100.0	16	96.7	2,158
Regeneration Species	No Tolerance	99.0	100.0	16	98.2	2,158
Stand Age	±10 percent	95.0	81.3	16	78.5	2,158
Disturbance 1	No Tolerance	99.0	93.8	16	87.8	2,141
Disturbance Year 1	±1 year	99.0	.	.	44.8	29
Disturbance 2	No Tolerance	99.0	100.0	1	88.8	277
Disturbance Year 2	±1 year	99.0	.	.	.	.
Disturbance 3	No Tolerance	99.0	.	.	96.8	31

(Table C continued on next page)

(Table C Continued)

Variable	Tolerance	Objective (%)	Maryland		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	100.0	16	96.5	2,141
Treatment Year 1	±1 year	99.0	100.0	1	94.2	138
Treatment 2	No Tolerance	99.0	100.0	1	84.8	210
Treatment Year 2	±1 year	99.0	.	.	100.0	13
Treatment 3	No Tolerance	99.0	.	.	97.7	44
Treatment Year 3	±1 year	99.0	.	.	100.0	1
Physiographic Class	No Tolerance	80.0	81.3	16	80.4	2,158
Present Nonforest Use	No Tolerance	99.0	85.3	34	92.1	4,052
Regional Variables						
NC Land Use	No Tolerance	99.0	100.0	34	93.8	4,052
Number of conditions				34		4,052
Boundary Level						
National Variables						
Boundary Change	No Tolerance	99.0	100.0	2	79.5	606
Constrasting Condition	No Tolerance	99.0	100.0	2	92.7	606
Left Azimuth	±10 degrees	90.0	50.0	2	83.0	606
Corner Mapped	No Tolerance	90.0	100.0	2	96.5	606
Corner Azimuth	±10 degrees	90.0	.	.	92.5	40
Corner Distance	±1 foot	90.0	.	.	87.5	40
Right Azimuth	±10 degrees	90.0	50.0	2	84.2	606
Number of boundaries				2		606
Subplot Level						
National Variables						
Subplot Center Condition	No Tolerance	99.0	100.0	52	97.4	7,488
Microplot Center Condition	No Tolerance	99.0	100.0	52	97.2	7,488
Slope	±10 percent	90.0	100.0	48	98.1	7,067
Aspect	±10 degrees	90.0	95.7	47	89.4	6,659
Snow/Water Depth	±0.5 foot		92.3	52	69.1	7,488

(Table C continued on next page)

(Table C Continued)

Variable	Tolerance	Objective (%)	Maryland		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Number of subplots				52		7,488
Tree Level						
National Variables						
DBH	±0.1 inch per 20 inches	95.0	96.5	171	93.7	31,293
DRC	±0.1 inch per 20 inches	95.0	.	.	91.7	24
Azimuth	±10 degrees	90.0	100.0	197	99.1	32,900
Horizontal Distance	±0.2 foot per 1.0 foot	90.0	98.5	197	98.5	32,900
Species	No Tolerance	95.0	99.5	197	97.5	32,900
Tree Genus	No Tolerance	99.0	100.0	195	99.5	32,855
Tree Status	No Tolerance	95.0	99.5	197	98.9	32,900
Rotten/Missing Cull	±10 percent	90.0	97.1	138	98.6	21,153
Total Length	±10 percent	90.0	81.0	137	81.1	20,703
Actual Length	±10 percent	90.0	68.8	16	76.0	2,375
Compacted Crown Ratio	±10 percent	80.0	78.8	160	84.2	26,967
Uncompacted Crown Ratio (P3)	±10 percent	90.0	.	.	80.9	1,027
Crown Class	No Tolerance	85.0	81.9	160	82.1	26,967
Decay Class	±1 class	90.0	93.5	31	94.5	4,191
Cause of Death	No Tolerance	80.0	93.5	31	86.2	4,191
Condition	No Tolerance	99.0	100.0	197	97.7	32,900
Mortality Year	±1 year	70.0	.	.	95.5	1,372
Crown Position	No Tolerance		.	.	86.9	834
Crown Light Exposure	±1 class	85.0	.	.	91.3	1,027
Sapling Crown Vigor Class	No Tolerance	85.0	.	.	77.7	193
Crown Density	±10 percent	90.0	.	.	79.7	834
Crown Dieback	±10 percent	90.0	.	.	97.2	834
Transparency	±10 percent	90.0	.	.	91.7	834
Regional Variables						
NC Tree Class	No Tolerance	90.0	91.4	174	91.1	29,985
NC Damage Agent 1	No Tolerance	90.0	91.3	160	90.9	26,967
NC Damage Agent 2	No Tolerance	90.0	96.6	29	86.1	4,920

(Table C continued on next page)

(Table C Continued)

Variable	Tolerance	Objective (%)	Maryland		All NRS States	
			% of data within tolerance	Observations	% of data within tolerance	Observations
Missouri Damage Code	No Tolerance		.	.	.	.
Utilization	No Tolerance	99.0	100.0	7	100.0	1,003
NC Tree Grade	No Tolerance	90.0	.	.	68.5	2,747
DBH-Live & Trees with Decay Code 1 or 2	±0.1 inch per 20 inches	95.0	96.3	163	93.8	28,413
DBH-Trees with Decay Codes 3, 4 or 5	±1 inch per 20 inches	95.0	100.0	8	99.2	1,300
Total Length-trees 40 feet and greater	±10 percent	90.0	84.1	113	82.5	16,832
Total Length-trees less than 40 feet	±10 percent	90.0	66.7	24	74.8	3,871
Total Length-trees less than 5 inches DBH	±10 percent	90.0	.	.	64.3	277
Number of trees				197		32,900
Seedling Level						
National Variables						
Species	No Tolerance	85.0	84.2	19	91.3	5,997
Genus	No Tolerance	90.0	94.7	19	96.8	5,997
Seedling Count	±20 percent	90.0	68.4	19	68.1	5,997
Seedling Count (coded)	No Tolerance	90.0	73.7	19	73.0	5,997
Number of microplots				13		2,644
Site Tree Level						
National Variables						
Condition List	No Tolerance	99.0	88.9	9	92.9	3,124
Diameter	±0.1 inch per 20 inches	95.0	100.0	9	91.8	3,083
Species	No Tolerance	95.0	100.0	9	98.1	3,124
Genus	No Tolerance	99.0	100.0	9	99.8	3,124
Azimuth	±10 degrees	90.0	100.0	9	98.5	3,083
Distance	±5 feet	90.0	100.0	9	99.3	3,083
Total Length	±10 percent	90.0	100.0	9	92.9	3,083
Diameter Age	±5 years	95.0	88.9	9	92.3	3,083
Regional Variables						
Site Index Method	No Tolerance	99.0	100.0	9	99.9	3,124
Field Site Index	No Tolerance	99.0	100.0	9	99.8	3,124
Number of site trees				9		3,124

Table D.—Observed relative bias values (Average [field crew - QA crew]) for measurement variables on blind check plots, Maryland, 2008

Variable	Unit of measure	Maryland				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	-0.08	-0.31	0.00	13	-0.04	-0.07	-0.01	1,903
Water on Plot	code	1.08	0.00	2.85	13	0.12	0.05	0.20	1,903
Regional Variables									
Elevation	foot	-3.00	-28.06	21.94	9	60.26	1.35	196.53	1,809
Latitude - decimal degrees	degree	0.00	0.00	0.00	10	0.00	0.00	0.00	1,811
Longitude - decimal degrees	degree	0.00	0.00	0.00	10	0.00	0.00	0.00	1,811
Latitude - distance	foot	5.57	0.81	11.19	10	-77.01	-225.30	-1.00	1,811
Longitude - distance	foot	-6.48	-14.21	-1.03	10	54.04	4.26	152.43	1,811
Number of plots					13				1,970
Condition Level									
National Variables									
Condition Status	code	0.00	0.00	0.00	34	-0.01	-0.01	0.00	4,052
Reserve Status	code	0.00	0.00	0.00	34	0.00	0.00	0.00	4,052
Owner Group	code	0.00	0.00	0.00	16	0.23	0.08	0.39	2,158
Forest Type (Type)	code	-33.44	-76.28	2.03	16	10.10	6.40	14.51	2,158
Forest Type (Group)	code	-31.25	-68.75	3.13	16	10.29	6.51	14.69	2,158
Stand Size	code	0.00	0.00	0.00	16	0.00	-0.01	0.02	2,158
Regeneration Status	code	0.00	0.00	0.00	16	0.00	0.00	0.01	2,158
Tree Density	code	0.00	0.00	0.00	16	0.00	0.00	0.01	2,158
Owner Class	code	0.00	0.00	0.00	16	0.22	0.06	0.40	2,158
Owner Status	code	0.00	0.00	0.00	16	0.02	0.02	0.03	2,158
Regeneration Species	code	0.00	0.00	0.00	16	0.17	-1.65	1.87	2,158
Stand Age	year	0.19	-1.47	1.94	16	-0.53	-1.62	0.12	2,158
Disturbance 1	code	-0.63	-1.88	0.00	16	1.37	0.90	1.87	2,141
Disturbance Year 1	year					3,584.07	1,791.83	4,962.72	29
Disturbance 2	code	0.00	0.00	0.00	1	-2.27	-3.80	-0.90	277
Disturbance Year 2	year								

(Table D continued on next page)

(Table D Continued)

Variable	Unit of measure	Maryland				All NRS States			
		Relative bias	95% CI limits		Number of observations	Relative bias	95% CI limits		Number of observations
			Lower	Upper			Lower	Upper	
Disturbance 3	code					-2.58	-9.03	0.00	31
Disturbance Year 3	year								
Treatment 1	code	0.00	0.00	0.00	16	0.12	-0.02	0.25	2,141
Treatment Year 1	year	0.00	0.00	0.00	1	0.06	-0.08	0.18	138
Treatment 2	code	0.00	0.00	0.00	1	2.05	0.19	4.19	210
Treatment Year 2	year					0.23	0.04	0.46	13
Treatment 3	code					0.23	0.00	0.68	44
Treatment Year 3	year					0.00	0.00	0.00	1
Physiographic Class	code	-0.75	-1.66	0.00	16	0.13	-0.01	0.27	2,158
Present Nonforest Use	code	-0.32	-1.56	0.35	34	0.16	0.04	0.28	4,052
Regional Variables									
NC Land Use	code	0.00	0.00	0.00	34	-0.11	-0.23	0.00	4,052
Number of conditions					34				4,052
Boundary Level									
National Variables									
Boundary Change	code	0.00	0.00	0.00	2	0.14	0.09	0.20	606
Constrasting Condition	cond	0.00	0.00	0.00	2	0.01	-0.01	0.03	606
Left Azimuth	degree	-36.00	-72.00	0.00	2	1.05	-2.34	4.54	606
Corner Mapped	code	0.00	0.00	0.00	2	0.00	-0.02	0.01	606
Corner Azimuth	degree					-9.20	-26.91	0.23	40
Corner Distance	foot					-0.18	-1.14	0.55	40
Right Azimuth	degree	-6.00	-12.00	0.00	2	-1.36	-4.28	1.96	606
Number of boundaries					2				606

(Table D continued on next page)

(Table D Continued)

Variable	Unit of measure	Maryland				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	0.00	0.00	0.00	52	0.00	0.00	0.01	7,488
Microplot Center Condition	code	0.00	0.00	0.00	52	0.00	0.00	0.01	7,488
Slope	percent	-0.25	-0.75	0.20	48	0.06	-0.08	0.17	7,067
Aspect	degree	-1.40	-3.89	0.23	47	0.42	-0.62	1.47	6,659
Snow/Water Depth	foot	-0.35	-1.03	0.18	52	-0.11	-0.22	0.01	7,488
Number of subplots					52				7,488
Tree Level									
National Variables									
DBH	inch	0.02	0.00	0.05	171	-0.07	-0.08	-0.06	31,293
DRC	inch					-0.04	-0.16	0.04	24
Azimuth	degree	-0.07	-0.18	0.05	197	0.10	0.02	0.17	32,900
Horizontal Distance	foot	0.01	-0.01	0.03	197	0.00	-0.01	0.01	32,900
Species	code	0.13	0.00	0.51	197	0.11	-0.22	0.39	32,900
Tree Genus	code	0.00	0.00	0.00	195	0.09	-0.17	0.37	32,855
Tree Status	code	0.01	0.00	0.02	197	0.00	0.00	0.00	32,900
Rotten/Missing Cull	percent	-0.94	-2.05	-0.27	138	-0.06	-0.10	-0.01	21,153
Total Length	foot	-2.31	-4.03	-0.77	137	0.16	-0.07	0.38	20,703
Actual Length	foot	-2.49	-8.94	4.57	16	-2.55	-3.87	-1.26	2,375
Compacted Crown Ratio	percent	-2.74	-4.41	-1.21	160	-0.13	-0.25	-0.01	26,967
Uncompacted Crown Ratio (P3)	percent					-0.15	-1.01	0.61	1,027
Crown Class	code	-0.02	-0.12	0.06	160	-0.04	-0.04	-0.03	26,967
Decay Class	code	-0.13	-0.44	0.13	31	0.01	-0.02	0.03	4,191
Cause of Death	code	1.61	-1.94	8.06	31	2.38	1.89	2.80	4,191
Condition	code	0.00	0.00	0.00	197	-0.01	-0.01	-0.01	32,900
Mortality Year	year					0.08	0.04	0.12	1,372
Crown Position	code					-0.09	-0.11	-0.06	834
Crown Light Exposure	code					0.02	-0.04	0.06	1,027

(Table D continued on next page)

(Table D Continued)

Variable	Unit of measure	Maryland				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					-0.10	-0.18	-0.02	193
Crown Density	percent					0.91	0.30	1.68	834
Crown Dieback	percent					-0.57	-0.97	-0.11	834
Transparency	percent					-1.09	-1.65	-0.52	834
Regional Variables									
NC Tree Class	code	-0.12	-0.23	-0.02	174	-0.09	-0.12	-0.05	29,985
NC Damage Agent 1	code	4.38	-7.16	16.09	160	4.42	3.24	5.68	26,967
NC Damage Agent 2	code	8.97	0.00	26.90	29	11.34	7.57	15.56	4,920
Missouri Damage Code	code								
Utilization	code	0.00	0.00	0.00	7	0.00	0.00	0.00	1,003
NC Tree Grade	code					3.49	-1.67	7.90	2,747
DBH-Live & Trees with Decay Code 1 or 2	inch	0.02	0.00	0.05	163	-0.06	-0.08	-0.06	28,413
DBH-Trees with Decay Codes 3, 4 or 5	inch	0.00	-0.05	0.06	8	-0.03	-0.06	-0.02	1,300
Total Length-trees 40 feet and greater	foot	-3.15	-4.76	-1.76	113	0.71	0.58	0.86	16,832
Total Length-trees less than 40 feet	foot	1.61	-2.64	6.47	24	-2.22	-3.32	-1.12	3,871
Total Length-trees less than 5 inches DBH	foot					2.44	0.65	4.14	277
Number of trees					197				32,900
Seedling Level									
National Variables									
Species	code	-0.05	-0.26	0.11	19	0.00	-0.01	0.01	5,997
Genus	code	-0.05	-0.18	0.00	19	0.00	-0.01	0.00	5,997
Seedling Count	number	3.18	-7.90	14.45	19	-15.25		-10.65	5,997
Seedling Count (coded)	number	0.11	-0.18	0.37	19	-0.01	-0.03	0.02	5,997
Number of microplots					13				2,644

(Table D continued on next page)

(Table D Continued)

Variable	Unit of measure	Maryland				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	1.11	0.00	4.44	9	-8.08	-17.06	-2.80	3,124
Diameter	inch	0.00	0.00	0.00	9	-0.01	-0.01	0.00	3,083
Species	code	0.00	0.00	0.00	9	-0.15	-0.32	-0.03	3,124
Genus	code	0.00	0.00	0.00	9	-0.15	-0.30	-0.03	3,124
Azimuth	degree	0.00	0.00	0.00	9	0.14	-0.24	0.59	3,083
Distance	foot	0.00	0.00	0.00	9	0.00	-0.05	0.04	3,083
Total Length	foot	-0.99	-2.37	0.00	9	-0.14	-0.42	0.10	3,083
Diameter Age	year	-0.78	-2.06	0.00	9	0.09	-0.04	0.23	3,083
Regional Variables									
Site Index Method	code	0.00	0.00	0.00	9	0.00	0.00	0.00	3,124
Field Site Index	feet	0.00	0.00	0.00	9	0.07	0.01	0.14	3,124
Number of site trees					9				3,124

Table E.—FIA nonresponse by ownership, Maryland, 2008

Owner and strata (um)	Number of plots selected	Sampled	Denied access	Hazardous	Other	Response Rate (%)
	number of plots					
Private:						
1	483	467.5	15.5	0	0	96.8
2	16	15	1	0	0	93.8
3	5	4	1	0	0	80
4	52	37	14	1	0	71.1
5	188	165	23	0	0	87.8
2,3	34	26	8	0	0	76.5
3,4	6	5	1	0	0	83.3
4,5	14	11	3	0	0	78.6
2,3,4	89	77.8	11.3	0	0	87.4
2,3,4,5	12	9	3	0	0	75
Inland Census Water Public:						
1	73	73	0	0	0	100
5	40	37	3	0	0	92.5
1,2	5	5	0	0	0	100
3,4	4	4	0	0	0	100
2,3,4	5	5	0	0	0	100
1,2,3,4	22	21	1	0	0	95.5
2,3,4,5	25	24	1	0	0	96
1,2,3,4,5	35	33.5	1	0.5	0	95.7
Total	1,108	1,020	87	2	0	98.4

Strata codes:

1: Canopy cover 0 - 5

2: Canopy cover 6 - 50

3: Canopy cover 51 - 65

4: Canopy cover 66 - 80

5: Canopy cover 81 - 100

Table MD-1.—Percentage of area by land status, Maryland, 2008

Land status	Percentage of area
Accessible forest land	
Unreserved forest land	
Timberland	31.0
Unproductive	0.1
Total unreserved forest land	31.1
Reserved forest land	
Productive	1.7
Unproductive	- -
Total reserved forest land	1.7
All accessible forest land	32.8
Nonforest and other land	
Nonforest land	53.1
Water	
Census	6.3
Non-Census	0.2
All nonforest and other land	59.6
Nonsampled land	
Access denied	7.5
Hazardous conditions	0.1
Other	- -
All land	100.0
Total area (thousands of acres)	6,691

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 MD-2.—Area of forest land, in thousand acres, by owner class and forest-land status, Maryland, 2008

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
National Park Service	- -	- -	- -	15.9	- -	15.9	15.9
Fish and Wildlife Service	19.8	- -	19.8	- -	- -	- -	19.8
Department of Defense or Energy	24.5	- -	24.5	- -	- -	- -	24.5
Other Federal	2.0	- -	2.0	- -	- -	- -	2.0
State and local government							
State	365.2	- -	365.2	92.1	- -	92.1	457.3
Local (county, municipal, etc.)	87.4	- -	87.4	11.4	- -	11.4	98.8
Private							
Undifferentiated private	1,869.8	4.4	1,874.2	- -	- -	- -	1,874.2
All owners	2,368.8	4.4	2,373.2	119.4	- -	119.4	2,492.6

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 MD-3.—Area of forest land, in thousand acres, by forest-type group and productivity class, Maryland, 2008

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	- -	2.7	15.5	- -	- -	- -	- -	18.2
Loblolly / shortleaf pine group	4.4	126.0	107.8	97.3	11.1	- -	- -	346.6
Other eastern softwoods group	- -	- -	11.5	- -	- -	- -	- -	11.5
Exotic softwoods group	- -	5.9	- -	- -	- -	- -	- -	5.9
Oak / pine group	- -	99.1	56.1	23.9	4.7	- -	- -	183.7
Oak / hickory group	- -	639.2	566.5	277.3	72.5	- -	- -	1,555.5
Oak / gum / cypress group	- -	99.3	32.1	6.1	- -	- -	- -	137.6
Elm / ash / cottonwood group	- -	33.4	19.5	14.8	- -	- -	- -	67.8
Maple / beech / birch group	- -	54.2	39.3	15.2	- -	- -	- -	108.7
Aspen / birch group	- -	1.9	- -	- -	- -	- -	- -	1.9
Other hardwoods group	- -	15.6	5.3	- -	4.2	- -	- -	25.2
Exotic hardwoods group	- -	2.7	- -	- -	- -	- -	- -	2.7
Nonstocked	- -	17.3	6.9	3.1	- -	- -	- -	27.3
All forest-type groups	4.4	1,097.4	860.6	437.8	92.4	- -	- -	2,492.6

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 MD-4.—Area of forest land, in thousand acres, by forest-type group, ownership group, and forest-land status, Maryland, 2008

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	--	--	--	--	3.6	--	14.7	--	18.2
Loblolly / shortleaf pine group	--	--	--	--	73.2	2.0	266.9	4.4	346.6
Other eastern softwoods group	--	--	--	--	--	--	11.5	--	11.5
Exotic softwoods group	--	--	--	--	5.9	--	--	--	5.9
Oak / pine group	--	--	--	--	24.0	8.6	151.0	--	183.7
Oak / hickory group	--	--	34.5	10.6	288.6	68.8	1,152.9	--	1,555.5
Oak / gum / cypress group	--	--	11.8	--	16.1	--	109.6	--	137.6
Elm / ash / cottonwood group	--	--	--	5.3	15.9	6.6	40.0	--	67.8
Maple / beech / birch group	--	--	--	--	19.5	6.6	82.6	--	108.7
Aspen / birch group	--	--	--	--	--	--	1.9	--	1.9
Other hardwoods group	--	--	--	--	--	9.4	15.7	--	25.2
Exotic hardwoods group	--	--	--	--	--	--	2.7	--	2.7
Nonstocked	--	--	--	--	5.9	1.4	20.1	--	27.3
All forest-type groups	--	--	46.3	15.9	452.6	103.5	1,869.8	4.4	2,492.6

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 MD-5.—Area of forest land, in thousand acres, by forest-type group and stand-size class, Maryland, 2008

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	3.6	14.7	- -	- -	- -	18.2
Loblolly / shortleaf pine group	194.3	106.2	46.1	- -	- -	346.6
Other eastern softwoods group	11.5	- -	- -	- -	- -	11.5
Exotic softwoods group	5.9	- -	- -	- -	- -	5.9
Oak / pine group	140.3	7.0	36.3	- -	- -	183.7
Oak / hickory group	1,295.3	169.0	91.1	- -	- -	1,555.5
Oak / gum / cypress group	98.8	16.8	22.0	- -	- -	137.6
Elm / ash / cottonwood group	47.1	12.8	7.9	- -	- -	67.8
Maple / beech / birch group	85.3	19.8	3.6	- -	- -	108.7
Aspen / birch group	1.9	- -	- -	- -	- -	1.9
Other hardwoods group	19.6	1.4	4.2	- -	- -	25.2
Exotic hardwoods group	2.7	- -	- -	- -	- -	2.7
Nonstocked	- -	- -	- -	- -	27.3	27.3
All forest-type groups	1,906.3	347.8	211.2	- -	27.3	2,492.6

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 MD-6.—Area of forest land, in thousand acres, by forest-type group and stand-age class, Maryland, 2008

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	--	2.7	--	11.9	--	--	--	3.6	--	--	--	--	18.2
Loblolly / shortleaf pine group	--	58.4	115.6	78.1	65.9	28.6	--	--	--	--	--	--	346.6
Other eastern softwoods group	--	--	11.5	--	--	--	--	--	--	--	--	--	11.5
Exotic softwoods group	--	--	--	5.9	--	--	--	--	--	--	--	--	5.9
Oak / pine group	--	23.8	25.4	37.2	50.9	29.7	16.7	--	--	--	--	--	183.7
Oak / hickory group	--	82.1	152.9	279.9	475.3	378.4	158.7	11.2	11.5	5.3	--	--	1,555.5
Oak / gum / cypress group	--	11.2	16.9	26.2	42.7	18.6	21.9	--	--	--	--	--	137.6
Elm / ash / cottonwood group	--	5.0	20.9	11.4	17.4	10.1	3.1	--	--	--	--	--	67.8
Maple / beech / birch group	--	5.2	36.0	19.9	41.1	6.6	--	--	--	--	--	--	108.7
Aspen / birch group	--	--	--	--	--	1.9	--	--	--	--	--	--	1.9
Other hardwoods group	--	--	1.4	--	13.6	4.8	5.3	--	--	--	--	--	25.2
Exotic hardwoods group	--	2.7	--	--	--	--	--	--	--	--	--	--	2.7
Nonstocked	27.3	--	--	--	--	--	--	--	--	--	--	--	27.3
All forest-type groups	27.3	191.2	380.5	470.6	706.9	478.7	205.7	14.8	11.5	5.3	--	--	2,492.6

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 MD-7.—Area of forest land, in thousand acres, by forest-type group and stand origin, Maryland, 2008

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	3.6	14.7	18.2
Loblolly / shortleaf pine group	247.9	98.6	346.6
Other eastern softwoods group	11.5	- -	11.5
Exotic softwoods group	- -	5.9	5.9
Oak / pine group	173.8	9.8	183.7
Oak / hickory group	1,532.0	23.4	1,555.5
Oak / gum / cypress group	137.6	- -	137.6
Elm / ash / cottonwood group	67.8	- -	67.8
Maple / beech / birch group	98.8	10.0	108.7
Aspen / birch group	1.9	- -	1.9
Other hardwoods group	25.2	- -	25.2
Exotic hardwoods group	- -	2.7	2.7
Nonstocked	27.3	- -	27.3
All forest-type groups	2,327.5	165.1	2,492.6

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 MD-8.—Area of forest land, in thousand acres, by forest-type group and primary disturbance class, Maryland, 2008

Forest-type group	Disturbance class									All forest land
	None	Insects	Disease	Weather	Fire	Domestic animals	Wild animals	Human	Other	
White / red / jack pine group	18.2	--	--	--	--	--	--	--	--	18.2
Loblolly / shortleaf pine group	333.4	--	--	13.2	--	--	--	--	--	346.6
Other eastern softwoods group	11.5	--	--	--	--	--	--	--	--	11.5
Exotic softwoods group	5.9	--	--	--	--	--	--	--	--	5.9
Oak / pine group	178.0	--	--	1.9	--	--	--	3.8	--	183.7
Oak / hickory group	1,479.3	4.6	--	22.2	--	14.6	--	7.3	27.5	1,555.5
Oak / gum / cypress group	137.6	--	--	--	--	--	--	--	--	137.6
Elm / ash / cottonwood group	67.8	--	--	--	--	--	--	--	--	67.8
Maple / beech / birch group	108.7	--	--	--	--	--	--	--	--	108.7
Aspen / birch group	1.9	--	--	--	--	--	--	--	--	1.9
Other hardwoods group	25.2	--	--	--	--	--	--	--	--	25.2
Exotic hardwoods group	2.7	--	--	--	--	--	--	--	--	2.7
Nonstocked	26.3	--	--	--	--	--	--	1.1	--	27.3
All forest-type groups	2,396.5	4.6	--	37.2	--	14.6	--	12.1	27.5	2,492.6

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 MD-9.—Area of timberland, in thousand acres, by forest-type group and stand-size class, Maryland, 2008

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	3.6	14.7	--	--	--	18.2
Loblolly / shortleaf pine group	192.3	101.8	46.1	--	--	340.1
Other eastern softwoods group	11.5	--	--	--	--	11.5
Exotic softwoods group	5.9	--	--	--	--	5.9
Oak / pine group	131.7	7.0	36.3	--	--	175.0
Oak / hickory group	1,226.3	158.6	91.1	--	--	1,476.0
Oak / gum / cypress group	98.8	16.8	22.0	--	--	137.6
Elm / ash / cottonwood group	40.8	7.3	7.9	--	--	56.0
Maple / beech / birch group	78.7	19.8	3.6	--	--	102.1
Aspen / birch group	1.9	--	--	--	--	1.9
Other hardwoods group	10.1	1.4	4.2	--	--	15.7
Exotic hardwoods group	2.7	--	--	--	--	2.7
Nonstocked	--	--	--	--	26.0	26.0
All forest-type groups	1,804.2	327.4	211.2	--	26.0	2,368.8

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 MD-10.—Number of live trees (at least 1 inch d.b.h.), in thousand trees, on forest land by species group and diameter class, Maryland, 2008

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	27,202	25,278	20,107	14,321	8,581	5,753	4,293	1,967	1,280	784	310	74	--	--	--	109,951
Other yellow pines	2,517	1,552	3,128	2,669	2,794	1,841	1,312	873	118	--	--	--	--	--	--	16,803
Eastern white and red pines	1,713	1,792	1,922	3,024	1,938	547	326	53	107	22	--	--	--	--	--	11,444
Eastern hemlock	895	--	645	546	364	57	30	195	--	--	57	--	40	--	--	2,828
Cypress	--	--	--	--	47	--	--	28	28	28	75	28	--	--	--	234
Other eastern softwoods	5,612	3,759	1,656	913	820	564	282	212	118	--	--	--	--	--	--	13,937
All softwoods	37,939	32,382	27,459	21,473	14,544	8,763	6,243	3,327	1,651	835	442	102	40	--	--	155,198
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	8,457	2,657	4,051	4,608	4,763	3,837	3,048	1,610	1,265	1,156	680	371	63	--	--	36,566
Select red oaks	25,047	1,396	1,355	1,316	934	865	836	787	736	636	594	356	50	--	--	34,907
Other white oaks	9,894	5,856	3,945	2,772	2,852	2,137	1,562	1,318	662	1,279	284	--	--	--	--	32,561
Other red oaks	20,552	6,165	5,054	3,392	3,478	2,888	2,994	2,456	1,381	1,274	1,202	435	146	80	32	51,531
Hickory	17,302	7,353	3,555	2,366	1,687	1,666	750	648	237	287	472	--	--	--	--	36,325
Yellow birch	--	895	359	287	101	72	80	--	--	--	--	--	--	--	--	1,795
Hard maple	10,123	7,748	2,035	1,652	753	751	291	230	93	36	40	30	36	--	--	23,817
Soft maple	170,537	42,980	21,818	12,180	8,308	5,658	3,576	2,392	1,318	1,202	1,038	301	178	68	--	271,553
Beech	37,695	10,297	4,028	3,033	1,670	777	1,025	546	580	111	335	63	--	--	--	60,160
Sweetgum	100,176	28,508	12,567	7,888	5,584	4,307	2,693	1,920	759	458	448	113	74	--	--	165,493
Tupelo and blackgum	56,024	18,938	8,155	3,776	2,543	1,332	1,004	468	413	52	168	21	--	--	--	92,894
Ash	5,076	2,871	1,540	1,568	720	803	738	158	228	148	276	133	--	--	--	14,259
Cottonwood and aspen	1,741	--	108	350	72	136	45	--	--	25	49	25	25	--	--	2,574
Basswood	370	370	141	158	239	243	319	144	30	--	--	36	--	--	--	2,048
Yellow-poplar	27,963	3,744	3,833	3,122	2,662	2,872	2,567	2,451	2,181	1,952	2,426	1,046	412	54	177	57,461
Black walnut	--	1,307	531	373	368	299	113	39	39	--	32	--	--	--	--	3,103
Other eastern soft hardwoods	35,495	25,294	10,764	6,789	4,967	2,332	1,881	972	668	298	317	140	240	40	32	90,229
Other eastern hard hardwoods	139,626	44,724	12,753	5,702	2,758	1,443	1,004	326	238	197	179	--	--	--	--	208,950
Eastern noncommercial hardwoods	115,766	18,403	2,920	1,716	450	237	269	66	54	--	--	--	--	--	--	139,883
All hardwoods	781,843	229,506	99,512	63,049	44,910	32,657	24,794	16,530	10,881	9,111	8,541	3,069	1,223	241	241	1,326,109
All species groups	819,782	261,888	126,971	84,521	59,454	41,419	31,036	19,858	12,532	9,946	8,983	3,172	1,263	241	241	1,481,307

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 MD-11.—Number of growing-stock trees (at least 5 inches d.b.h.) , in thousand trees, on timberland by species group and diameter class, Maryland, 2008

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	17,550	13,423	8,331	5,526	4,272	1,935	1,233	784	310	27	--	--	--	53,392
Other yellow pines	2,813	2,463	2,498	1,606	1,223	873	118	--	--	--	--	--	--	11,593
Eastern white and red pines	1,922	3,024	1,682	507	326	53	107	22	--	--	--	--	--	7,644
Eastern hemlock	556	506	256	57	30	155	--	--	57	--	--	--	--	1,616
Cypress	--	--	47	--	--	28	28	28	75	28	--	--	--	234
Other eastern softwoods	1,445	855	725	564	214	212	118	--	--	--	--	--	--	4,134
All softwoods	24,286	20,272	13,538	8,260	6,065	3,256	1,604	835	442	55	--	--	--	78,613
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	3,733	4,135	4,550	3,794	2,985	1,588	1,242	1,133	680	326	63	--	--	24,229
Select red oaks	1,184	1,185	901	696	813	573	673	462	498	245	50	--	--	7,280
Other white oaks	3,301	2,456	2,592	2,012	1,435	1,206	594	1,133	120	--	--	--	--	14,849
Other red oaks	4,617	2,939	3,206	2,754	2,654	2,361	1,303	1,199	1,163	412	146	80	32	22,866
Hickory	3,019	2,241	1,522	1,548	705	626	192	265	472	--	--	--	--	10,588
Yellow birch	287	216	101	72	--	--	--	--	--	--	--	--	--	676
Hard maple	1,838	1,612	753	751	291	200	93	36	--	30	36	--	--	5,640
Soft maple	17,565	9,620	7,008	4,727	2,916	2,067	1,182	1,057	881	232	111	68	--	47,435
Beech	3,509	2,618	1,479	608	920	507	473	111	312	--	--	--	--	10,537
Sweetgum	11,211	7,561	5,282	3,930	2,646	1,920	759	420	402	113	74	--	--	34,316
Tupelo and blackgum	6,551	3,335	2,368	1,259	883	468	413	52	141	21	--	--	--	15,492
Ash	1,172	1,318	662	765	686	158	228	148	222	133	--	--	--	5,492
Cottonwood and aspen	108	350	72	136	45	--	--	--	--	--	--	--	--	710
Basswood	72	129	209	243	319	144	30	--	--	36	--	--	--	1,181
Yellow-poplar	3,259	2,879	2,404	2,581	2,544	2,249	2,006	1,854	2,263	1,023	412	54	177	23,706
Black walnut	404	373	262	249	113	39	39	--	32	--	--	--	--	1,513
Other eastern soft hardwoods	8,190	4,998	3,963	1,729	1,247	815	541	234	209	140	208	40	--	22,313
Other eastern hard hardwoods	9,569	4,449	2,137	979	722	191	93	95	104	--	--	--	--	18,340
All hardwoods	79,588	52,414	39,473	28,833	21,924	15,111	9,860	8,201	7,499	2,712	1,099	241	209	267,164
All species groups	103,874	72,686	53,011	37,093	27,989	18,367	11,464	9,036	7,940	2,768	1,099	241	209	345,777

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 MD-12.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 2008

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
National Park Service	- -	- -	- -	36.8	- -	36.8	36.8
Fish and Wildlife Service	54.4	- -	54.4	- -	- -	- -	54.4
Department of Defense or Energy	62.8	- -	62.8	- -	- -	- -	62.8
State and local government							
State	902.7	- -	902.7	219.9	- -	219.9	1,122.5
Local (county, municipal, etc.)	217.8	- -	217.8	56.0	- -	56.0	273.8
Private							
Undifferentiated private	4,916.7	2.0	4,918.7	- -	- -	- -	4,918.7
All owners	6,154.4	2.0	6,156.4	312.7	- -	312.7	6,469.1

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

Table MD-13.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 2008

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
White / red / jack pine group	10.3	51.6	- -	- -	- -	61.9
Loblolly / shortleaf pine group	562.9	157.8	8.5	- -	- -	729.2
Other eastern softwoods group	5.0	- -	- -	- -	- -	5.0
Exotic softwoods group	21.4	- -	- -	- -	- -	21.4
Oak / pine group	423.9	8.4	10.1	- -	- -	442.3
Oak / hickory group	4,076.9	247.0	12.1	- -	- -	4,336.0
Oak / gum / cypress group	349.8	41.3	3.6	- -	- -	394.7
Elm / ash / cottonwood group	139.9	12.9	0.9	- -	- -	153.7
Maple / beech / birch group	209.6	51.4	3.7	- -	- -	264.8
Aspen / birch group	5.9	- -	- -	- -	- -	5.9
Other hardwoods group	39.7	1.5	4.6	- -	- -	45.8
Exotic hardwoods group	5.3	- -	- -	- -	- -	5.3
Nonstocked	- -	- -	- -	- -	3.1	3.1
All forest-type groups	5,850.6	571.9	43.5	- -	3.1	6,469.1

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

Table MD-14.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 2008

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	--	2.1	121.2	481.6	604.9
Other yellow pines	--	0.3	52.8	95.8	148.8
Eastern white and red pines	--	--	9.7	64.2	73.9
Eastern hemlock	--	--	15.6	9.8	25.4
Cypress	--	--	3.7	7.0	10.7
Other eastern softwoods	--	0.2	17.1	23.1	40.4
All softwoods	--	2.6	220.1	681.4	904.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	15.5	110.8	399.5	525.8
Select red oaks	--	7.1	96.6	152.9	256.6
Other white oaks	--	0.1	103.0	185.7	288.7
Other red oaks	--	14.1	159.6	443.7	617.4
Hickory	--	0.8	39.0	167.8	207.5
Yellow birch	--	--	2.3	5.4	7.8
Hard maple	--	--	29.3	48.2	77.5
Soft maple	--	19.7	167.3	559.6	746.6
Beech	--	5.3	30.5	151.2	187.0
Sweetgum	--	50.6	54.1	370.1	474.9
Tupelo and blackgum	--	7.4	42.3	118.0	167.7
Ash	--	0.9	41.1	88.5	130.5
Cottonwood and aspen	--	0.6	13.0	7.3	21.0
Basswood	--	--	3.7	29.8	33.6
Yellow-poplar	--	9.8	158.5	1,039.3	1,207.5
Black walnut	--	--	2.4	18.9	21.3
Other eastern soft hardwoods	--	19.1	71.2	306.8	397.1
Other eastern hard hardwoods	--	0.1	47.2	124.2	171.6
Eastern noncommercial hardwoods	--	0.5	4.3	20.3	25.1
All hardwoods	--	151.4	1,176.2	4,237.3	5,565.0
All species groups	--	154.0	1,396.3	4,918.7	6,469.1

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

Table MD-15.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and diameter class, Maryland, 2008

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	50	83	89	93	102	64	55	37	23	9	--	--	--	605
Other yellow pines	8	17	31	30	30	28	5	--	--	--	--	--	--	149
Eastern white and red pines	5	19	22	10	9	2	5	1	--	--	--	--	--	74
Eastern hemlock	1	3	3	1	1	6	--	--	4	--	6	--	--	25
Cypress	--	--	0	--	--	1	1	1	5	2	--	--	--	11
Other eastern softwoods	3	5	7	8	5	7	5	--	--	--	--	--	--	40
All softwoods	69	127	153	143	146	107	71	40	32	11	6	--	--	904
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	10	27	53	66	78	58	58	73	52	44	9	--	--	526
Select red oaks	3	8	10	15	22	28	36	39	46	40	9	--	--	257
Other white oaks	9	16	30	35	39	43	29	69	19	--	--	--	--	289
Other red oaks	12	20	39	53	76	88	65	73	93	49	24	17	9	617
Hickory	9	16	21	35	23	27	12	20	44	--	--	--	--	208
Yellow birch	1	2	1	2	2	--	--	--	--	--	--	--	--	8
Hard maple	5	12	9	16	8	9	5	2	3	4	5	--	--	77
Soft maple	47	69	90	101	92	85	60	67	76	27	20	13	--	747
Beech	9	18	20	15	29	22	31	6	30	8	--	--	--	187
Sweetgum	29	45	61	79	71	69	35	27	35	12	11	--	--	475
Tupelo and blackgum	17	20	27	24	25	16	18	3	13	3	--	--	--	168
Ash	4	10	9	17	21	6	12	10	23	18	--	--	--	130
Cottonwood and aspen	0	3	1	3	1	--	--	1	5	3	4	--	--	21
Basswood	0	1	3	6	11	6	2	--	--	4	--	--	--	34
Yellow-poplar	10	23	35	65	87	113	135	156	258	168	84	14	59	1,208
Black walnut	1	2	4	5	3	1	2	--	3	--	--	--	--	21
Other eastern soft hardwoods	26	40	57	44	49	37	34	19	25	17	36	8	5	397
Other eastern hard hardwoods	26	31	26	24	25	10	10	7	12	--	--	--	--	172
Eastern noncommercial hardwoods	4	6	3	3	5	2	2	--	--	--	--	--	--	25
All hardwoods	224	368	499	607	667	619	545	574	739	397	202	52	73	5,565
All species groups	292	495	651	749	813	726	617	614	771	408	208	52	73	6,469

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 MD-16.—Net volume of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand origin, Maryland, 2008

Forest-type group	Stand origin		All forest land
	Natural stands	Artificial regeneration	
White / red / jack pine group	10.3	51.6	61.9
Loblolly / shortleaf pine group	553.0	176.2	729.2
Other eastern softwoods group	5.0	- -	5.0
Exotic softwoods group	- -	21.4	21.4
Oak / pine group	437.6	4.7	442.3
Oak / hickory group	4,288.4	47.6	4,336.0
Oak / gum / cypress group	394.7	- -	394.7
Elm / ash / cottonwood group	153.7	- -	153.7
Maple / beech / birch group	244.4	20.4	264.8
Aspen / birch group	5.9	- -	5.9
Other hardwoods group	45.8	- -	45.8
Exotic hardwoods group	- -	5.3	5.3
Nonstocked	3.1	- -	3.1
All forest-type groups	6,141.9	327.2	6,469.1

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

Table MD-17.—Net volume of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and diameter class, Maryland, 2008

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	46	79	88	91	102	63	53	37	23	3	--	--	--	585
Other yellow pines	8	16	28	27	28	28	5	--	--	--	--	--	--	140
Eastern white and red pines	5	19	20	10	9	2	5	1	--	--	--	--	--	71
Eastern hemlock	1	3	3	1	1	4	--	--	4	--	--	--	--	17
Cypress	--	--	0	--	--	1	1	1	5	2	--	--	--	11
Other eastern softwoods	3	5	7	8	4	7	5	--	--	--	--	--	--	39
All softwoods	64	122	145	136	144	105	69	40	32	6	--	--	--	862
Hardwood species groups														
Eastern hardwood species groups														
Select white oaks	9	24	51	65	76	57	57	71	52	39	9	--	--	512
Select red oaks	3	7	10	12	21	21	32	29	39	29	9	--	--	213
Other white oaks	8	15	27	33	36	39	27	61	9	--	--	--	--	254
Other red oaks	12	19	37	51	69	85	61	72	91	46	24	17	9	591
Hickory	8	15	20	33	22	26	11	18	44	--	--	--	--	197
Yellow birch	1	1	1	2	--	--	--	--	--	--	--	--	--	5
Hard maple	5	12	9	16	8	8	5	2	--	4	5	--	--	73
Soft maple	40	58	79	88	79	76	56	62	70	23	17	13	--	661
Beech	8	16	18	12	27	20	26	6	28	--	--	--	--	161
Sweetgum	27	44	58	74	70	69	35	25	31	12	11	--	--	456
Tupelo and blackgum	15	18	26	23	23	16	18	3	12	3	--	--	--	158
Ash	4	9	9	16	19	6	12	10	20	18	--	--	--	122
Cottonwood and aspen	0	3	1	3	1	--	--	--	--	--	--	--	--	8
Basswood	0	1	3	6	11	6	2	--	--	4	--	--	--	33
Yellow-poplar	9	22	32	61	86	104	126	148	239	165	84	14	59	1,148
Black walnut	1	2	3	5	3	1	2	--	3	--	--	--	--	20
Other eastern soft hardwoods	21	33	48	35	35	32	29	15	17	17	31	8	--	322
Other eastern hard hardwoods	21	26	22	17	19	7	5	5	9	--	--	--	--	130
All hardwoods	192	324	452	550	607	574	503	527	663	359	190	52	69	5,063
All species groups	256	446	597	686	751	679	572	567	696	365	190	52	69	5,926

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 MD-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, Maryland, 2008

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	--	1.6	112.5	470.5	584.7
Other yellow pines	--	0.3	48.3	91.5	140.1
Eastern white and red pines	--	--	8.7	62.5	71.2
Eastern hemlock	--	--	7.5	9.3	16.8
Cypress	--	--	3.7	7.0	10.7
Other eastern softwoods	--	--	16.4	22.4	38.8
All softwoods	--	1.9	197.1	663.2	862.3
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	15.5	99.8	396.4	511.7
Select red oaks	--	5.3	54.6	152.9	212.8
Other white oaks	--	--	70.4	183.9	254.3
Other red oaks	--	13.6	139.7	437.8	591.1
Hickory	--	0.8	31.2	164.7	196.7
Yellow birch	--	--	0.3	4.8	5.1
Hard maple	--	--	25.0	48.0	73.0
Soft maple	--	15.5	134.0	511.3	660.8
Beech	--	5.0	12.1	144.4	161.4
Sweetgum	--	45.3	45.8	364.8	455.9
Tupelo and blackgum	--	6.9	37.3	113.5	157.7
Ash	--	--	38.1	83.6	121.7
Cottonwood and aspen	--	0.6	--	7.3	7.9
Basswood	--	--	3.3	29.6	32.9
Yellow-poplar	--	4.2	111.4	1,032.9	1,148.5
Black walnut	--	--	1.7	18.2	19.9
Other eastern soft hardwoods	--	--	44.1	278.0	322.1
Other eastern hard hardwoods	--	0.1	25.7	104.1	129.9
All hardwoods	--	112.7	874.6	4,076.1	5,063.4
All species groups	--	114.7	1,071.7	4,739.3	5,925.7

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 MD-19.—Net volume of sawtimber trees (International ¼-inch rule), in million board feet, on timberland by species group and diameter class, Maryland, 2008

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												
Loblolly and shortleaf pines	275	351	436	285	236	192	115	18	--	--	--	1,909
Other yellow pines	91	105	121	130	20	--	--	--	--	--	--	467
Eastern white and red pines	64	39	39	10	25	7	--	--	--	--	--	184
Eastern hemlock	8	3	3	17	--	--	19	--	--	--	--	49
Cypress	1	--	--	3	4	6	22	10	--	--	--	46
Other eastern softwoods	19	31	18	29	21	--	--	--	--	--	--	118
All softwoods	457	529	617	474	307	205	156	28	--	--	--	2,773
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	230	325	266	281	372	285	233	56	--	--	2,049
Select red oaks	--	41	86	96	156	146	207	164	55	--	--	951
Other white oaks	--	115	141	162	123	279	45	--	--	--	--	865
Other red oaks	--	173	282	381	293	360	484	262	144	106	61	2,545
Hickory	--	111	90	124	52	94	241	--	--	--	--	712
Yellow birch	--	6	--	--	--	--	--	--	--	--	--	6
Hard maple	--	59	30	36	23	13	--	21	34	--	--	216
Soft maple	--	288	312	332	268	315	366	127	98	81	--	2,188
Beech	--	43	119	98	133	38	157	--	--	--	--	588
Sweetgum	--	254	286	305	166	124	164	70	68	--	--	1,437
Tupelo and blackgum	--	78	95	72	88	16	62	15	--	--	--	426
Ash	--	57	80	27	59	49	109	106	--	--	--	488
Cottonwood and aspen	--	10	6	--	--	--	--	--	--	--	--	15
Basswood	--	20	47	29	9	--	--	24	--	--	--	128
Yellow-poplar	--	210	360	486	628	769	1,323	999	529	91	410	5,805
Black walnut	--	17	12	5	10	--	17	--	--	--	--	62
Other eastern soft hardwoods	--	119	150	149	149	79	92	98	192	53	--	1,081
Other eastern hard hardwoods	--	62	83	32	23	26	46	--	--	--	--	272
All hardwoods	--	1,894	2,504	2,601	2,462	2,680	3,598	2,119	1,177	331	471	19,836
All species groups	457	2,422	3,121	3,075	2,769	2,885	3,754	2,147	1,177	331	471	22,609

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 MD-19a.—Net volume of sawtimber trees (Doyle rule), in million board feet, on timberland by species group and diameter class, Maryland, 2008

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												
Loblolly and shortleaf pines	95	168	261	197	182	165	102	17	--	--	--	1,187
Other yellow pines	31	50	72	90	16	--	--	--	--	--	--	259
Eastern white and red pines	22	19	24	7	19	6	--	--	--	--	--	96
Eastern hemlock	3	1	2	12	--	--	18	--	--	--	--	35
Cypress	0	--	--	2	3	5	20	10	--	--	--	40
Other eastern softwoods	6	15	11	20	16	--	--	--	--	--	--	68
All softwoods	158	253	370	328	236	176	140	27	--	--	--	1,687
Hardwood species groups												
Eastern hardwood species groups												
Select white oaks	--	96	166	157	185	267	228	215	64	--	--	1,377
Select red oaks	--	17	44	57	103	105	167	149	62	--	--	703
Other white oaks	--	48	72	95	81	200	37	--	--	--	--	533
Other red oaks	--	72	144	224	192	258	386	234	164	120	69	1,864
Hickory	--	46	46	73	34	67	193	--	--	--	--	460
Yellow birch	--	2	--	--	--	--	--	--	--	--	--	2
Hard maple	--	25	15	21	15	9	--	20	39	--	--	144
Soft maple	--	120	160	195	176	226	294	111	111	92	--	1,487
Beech	--	18	61	57	88	27	126	--	--	--	--	378
Sweetgum	--	106	146	179	109	89	131	62	77	--	--	900
Tupelo and blackgum	--	33	48	42	58	12	50	14	--	--	--	258
Ash	--	24	41	16	39	35	87	96	--	--	--	338
Cottonwood and aspen	--	4	3	--	--	--	--	--	--	--	--	7
Basswood	--	8	24	17	6	--	--	21	--	--	--	76
Yellow-poplar	--	88	184	286	412	552	1,067	924	601	103	466	4,683
Black walnut	--	7	6	3	7	--	14	--	--	--	--	38
Other eastern soft hardwoods	--	50	77	88	98	57	73	88	218	60	--	808
Other eastern hard hardwoods	--	26	43	19	15	19	37	--	--	--	--	158
All hardwoods	--	790	1,281	1,530	1,617	1,924	2,892	1,935	1,336	376	535	14,216
All species groups	158	1,043	1,651	1,857	1,853	2,100	3,031	1,962	1,336	376	535	15,902

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 MD-20.—Net volume of sawtimber trees, in million cubic feet, on timberland by species group and ownership group, Maryland, 2008

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	- -	1.3	79.6	327.4	408.4
Other yellow pines	- -	- -	39.0	63.4	102.4
Eastern white and red pines	- -	- -	6.7	33.8	40.5
Eastern hemlock	- -	- -	6.7	4.8	11.5
Cypress	- -	- -	3.4	6.5	9.9
Other eastern softwoods	- -	- -	13.2	14.2	27.4
All softwoods	- -	1.3	148.6	450.1	600.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	10.6	64.2	277.3	352.1
Select red oaks	- -	4.5	40.4	116.4	161.4
Other white oaks	- -	- -	44.3	124.2	168.5
Other red oaks	- -	8.0	100.8	327.4	436.2
Hickory	- -	- -	16.2	109.6	125.8
Yellow birch	- -	- -	- -	1.1	1.1
Hard maple	- -	- -	12.3	25.9	38.2
Soft maple	- -	10.9	84.3	301.9	397.0
Beech	- -	3.4	6.1	90.0	99.6
Sweetgum	- -	28.1	21.6	216.2	265.9
Tupelo and blackgum	- -	2.6	21.6	55.4	79.6
Ash	- -	- -	24.5	58.2	82.7
Cottonwood and aspen	- -	- -	- -	3.2	3.2
Basswood	- -	- -	2.0	21.2	23.2
Yellow-poplar	- -	3.4	87.1	821.2	911.6
Black walnut	- -	- -	1.0	10.0	11.0
Other eastern soft hardwoods	- -	- -	27.3	154.1	181.5
Other eastern hard hardwoods	- -	- -	10.8	38.8	49.6
All hardwoods	- -	71.5	564.5	2,752.2	3,388.2
All species groups	- -	72.9	713.1	3,202.3	3,988.3

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 MD-21.—Average annual net growth of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 1999 to 2008

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
National Park Service	- -	- -	- -	1.0	- -	1.0	1.0
Fish and Wildlife Service	1.1	- -	1.1	- -	- -	- -	1.1
Department of Defense or Energy	1.3	- -	1.3	- -	- -	- -	1.3
State and local government							
State	25.0	- -	25.0	5.0	- -	5.0	30.0
Local (county, municipal, etc.)	4.5	- -	4.5	0.7	- -	0.7	5.1
Private							
Undifferentiated private	155.2	-0.1	155.1	- -	- -	- -	155.1
All owners	187.1	-0.1	187.0	6.7	- -	6.7	193.7

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 MD-22.—Average annual net growth of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 1999 to 2008

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	0.2	1.9	- -	- -	- -	2.2
Loblolly / shortleaf pine group	13.3	15.1	-1.1	- -	- -	27.3
Other eastern softwoods group	1.0	- -	- -	- -	- -	1.0
Exotic softwoods group	0.9	- -	- -	- -	- -	0.9
Oak / pine group	9.4	0.8	1.4	- -	- -	11.6
Oak / hickory group	112.6	11.4	1.1	- -	- -	125.1
Oak / gum / cypress group	4.3	4.0	0.6	- -	- -	8.9
Elm / ash / cottonwood group	5.0	1.5	0.1	- -	- -	6.6
Maple / beech / birch group	5.0	1.6	0.1	- -	- -	6.6
Aspen / birch group	0.3	- -	- -	- -	- -	0.3
Other hardwoods group	1.4	0.1	0.4	- -	- -	1.9
Exotic hardwoods group	1.5	- -	- -	- -	- -	1.5
Nonstocked	- -	- -	- -	- -	-0.1	-0.1
All forest-type groups	154.8	36.4	2.6	- -	-0.1	193.7

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 MD-23.—Average annual net growth of all live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

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	- -	0.3	5.0	20.0	25.2
Other yellow pines	- -	0.0	0.3	-1.9	-1.6
Eastern white and red pines	- -	- -	0.3	2.7	2.9
Eastern hemlock	- -	- -	0.0	-0.3	-0.2
Cypress	- -	- -	0.0	- -	0.0
Other eastern softwoods	- -	0.0	0.7	0.6	1.3
All softwoods	- -	0.3	6.3	21.1	27.7
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	0.1	2.7	7.9	9.4
Select red oaks	- -	0.3	3.2	4.8	8.1
Other white oaks	- -	0.0	1.8	5.2	7.1
Other red oaks	- -	0.5	3.7	9.8	14.1
Hickory	- -	0.0	1.1	2.9	4.1
Yellow birch	- -	- -	-0.3	0.2	0.0
Hard maple	- -	- -	-0.8	1.5	0.7
Soft maple	- -	0.7	4.5	15.0	20.4
Beech	- -	0.0	0.4	7.7	8.1
Sweetgum	- -	0.7	1.4	11.9	14.1
Tupelo and blackgum	- -	0.2	0.1	3.6	3.9
Ash	- -	-0.6	0.9	4.9	5.7
Cottonwood and aspen	- -	0.0	- -	0.4	0.4
Basswood	- -	- -	0.2	0.8	1.0
Yellow-poplar	- -	0.6	5.4	41.0	47.8
Black walnut	- -	- -	0.1	0.6	0.8
Other eastern soft hardwoods	- -	0.9	4.2	11.4	16.7
Other eastern hard hardwoods	- -	-0.2	0.0	3.2	3.1
Eastern noncommercial hardwoods	- -	0.0	0.3	1.3	1.6
All hardwoods	- -	3.1	28.9	134.0	167.1
All species groups	- -	3.4	35.2	155.1	194.8

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

Table MD-24.—Average annual net growth of growing-stock trees (at least 5 inches d.b.h.), in million cubic feet, on timberland by species group and ownership group, Maryland, 1999 to 2008

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	- -	0.3	3.8	17.4	21.5
Other yellow pines	- -	0.0	1.2	-1.9	-0.6
Eastern white and red pines	- -	- -	0.3	2.3	2.6
Eastern hemlock	- -	- -	0.5	-0.3	0.2
Cypress	- -	- -	-0.1	- -	-0.1
Other eastern softwoods	- -	0.0	0.6	0.6	1.2
All softwoods	- -	0.4	6.5	18.1	24.9
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	1.1	2.7	6.3	9.0
Select red oaks	- -	0.1	3.1	3.9	7.0
Other white oaks	- -	- -	2.8	4.3	7.1
Other red oaks	- -	1.5	5.9	8.3	15.9
Hickory	- -	0.1	2.9	2.9	5.9
Yellow birch	- -	- -	-0.3	0.2	0.0
Hard maple	- -	- -	-0.6	1.2	0.6
Soft maple	- -	1.0	3.4	12.9	17.4
Beech	- -	0.2	0.9	5.5	6.6
Sweetgum	- -	0.7	0.9	9.4	11.0
Tupelo and blackgum	- -	0.8	0.2	3.3	4.3
Ash	- -	- -	1.7	4.3	6.6
Cottonwood and aspen	- -	0.1	- -	0.3	0.5
Basswood	- -	- -	0.2	0.5	0.7
Yellow-poplar	- -	0.7	8.2	36.3	46.0
Black walnut	- -	- -	0.1	0.6	0.7
Other eastern soft hardwoods	- -	0.0	2.0	8.1	10.3
Other eastern hard hardwoods	- -	0.0	0.3	2.7	3.2
All hardwoods	- -	6.3	34.5	111.0	152.9
All species groups	- -	6.6	41.0	129.1	177.8

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

Table MD-25.—Average annual mortality of live trees (at least 5 inches d.b.h.), in million cubic feet, by owner class and forest-land status, Maryland, 1999 to 2008

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
National Park Service	- -	- -	- -	1.0	- -	1.0	1.0
Fish and Wildlife Service	0.2	- -	0.2	- -	- -	- -	0.2
Department of Defense or Energy	0.4	- -	0.4	- -	- -	- -	0.4
State and local government							
State	7.9	- -	7.9	2.0	- -	2.0	9.8
Local (county, municipal, etc.)	4.3	- -	4.3	0.5	- -	0.5	4.8
Private							
Undifferentiated private	40.3	0.2	40.5	- -	- -	- -	40.5
All owners	53.2	0.2	53.3	3.4	- -	3.4	56.7

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 MD-26.—Average annual mortality of trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by forest-type group and stand-size class, Maryland, 1999 to 2008

Forest-type group	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Non stocked	
White / red / jack pine group	- -	0.2	- -	- -	- -	0.2
Loblolly / shortleaf pine group	5.2	0.4	2.2	- -	- -	7.8
Oak / pine group	3.3	- -	- -	- -	- -	3.3
Oak / hickory group	30.9	1.4	0.4	- -	- -	32.7
Oak / gum / cypress group	5.4	0.1	0.2	- -	- -	5.6
Elm / ash / cottonwood group	1.9	0.3	0.0	- -	- -	2.2
Maple / beech / birch group	3.7	0.5	- -	- -	- -	4.2
Other hardwoods group	0.0	0.0	- -	- -	- -	0.0
Nonstocked	- -	- -	- -	- -	0.7	0.7
All forest-type groups	50.4	2.8	2.8	- -	0.7	56.7

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 MD-27.—Average annual mortality of trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

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	--	--	0.4	3.3	3.7
Other yellow pines	--	0.0	0.8	4.2	5.0
Eastern white and red pines	--	--	--	0.3	0.3
Eastern hemlock	--	--	0.2	0.6	0.9
Other eastern softwoods	--	--	--	0.0	0.0
All softwoods	--	0.0	1.4	8.3	9.8
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	0.2	0.5	3.2	5.1
Select red oaks	--	--	1.0	1.3	2.4
Other white oaks	--	--	1.2	1.0	2.1
Other red oaks	--	--	1.8	6.7	8.5
Hickory	--	--	0.0	0.8	0.9
Yellow birch	--	--	0.4	--	0.4
Hard maple	--	--	1.7	1.5	3.2
Soft maple	--	0.0	1.7	6.0	7.8
Beech	--	--	0.5	0.2	0.7
Sweetgum	--	0.3	0.1	1.1	1.5
Tupelo and blackgum	--	--	0.3	0.8	1.1
Ash	--	0.6	0.4	0.8	1.8
Cottonwood and aspen	--	0.1	--	--	0.1
Basswood	--	--	--	0.3	0.3
Yellow-poplar	--	0.0	0.7	2.2	3.0
Black walnut	--	--	--	0.2	0.2
Other eastern soft hardwoods	--	0.1	1.1	3.5	4.7
Other eastern hard hardwoods	--	0.2	1.6	2.4	4.3
Eastern noncommercial hardwoods	--	--	0.2	0.3	0.5
All hardwoods	--	1.6	13.2	32.2	48.5
All species groups	--	1.6	14.6	40.5	58.3

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 MD-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, Maryland, 1999 to 2008

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	--	--	0.4	3.1	3.5
Other yellow pines	--	--	0.6	3.8	4.4
Eastern white and red pines	--	--	--	0.3	0.3
Eastern hemlock	--	--	0.2	0.6	0.8
Other eastern softwoods	--	--	--	0.0	0.0
All softwoods	--	--	1.2	7.8	9.0
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	0.2	0.3	2.6	4.1
Select red oaks	--	--	0.9	1.1	2.1
Other white oaks	--	--	0.9	0.7	1.7
Other red oaks	--	--	0.9	5.8	6.7
Hickory	--	--	0.0	0.7	0.7
Yellow birch	--	--	0.3	--	0.3
Hard maple	--	--	1.4	1.2	2.6
Soft maple	--	0.0	1.0	4.4	5.5
Beech	--	--	--	0.1	0.1
Sweetgum	--	0.2	0.1	0.9	1.2
Tupelo and blackgum	--	--	0.2	0.7	0.9
Ash	--	--	0.2	0.6	0.7
Basswood	--	--	--	0.2	0.2
Yellow-poplar	--	--	0.1	1.3	1.5
Black walnut	--	--	--	0.2	0.2
Other eastern soft hardwoods	--	0.0	0.8	2.9	3.8
Other eastern hard hardwoods	--	--	0.7	1.8	2.5
All hardwoods	--	0.4	7.8	25.3	34.8
All species groups	--	0.4	9.0	33.1	43.8

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

Table MD-29.—Average annual removals of live trees (at least 5 inches d.b.h.), in million cubic feet, on forest land by species group and ownership group, Maryland, 1999 to 2008

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	--	--	2.4	16.6	20.0
Other yellow pines	--	--	--	3.8	4.1
Eastern white and red pines	--	--	--	0.9	0.9
Other eastern softwoods	--	--	--	--	--
All softwoods	--	--	2.4	21.3	25.1
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	--	--	--	2.0	2.9
Select red oaks	--	--	--	2.8	3.4
Other white oaks	--	--	--	0.6	0.7
Other red oaks	--	--	--	3.2	4.5
Hickory	--	--	--	0.9	1.2
Yellow birch	--	--	--	--	0.6
Hard maple	--	--	--	--	0.0
Soft maple	--	--	--	5.8	9.1
Beech	--	--	--	1.2	1.4
Sweetgum	--	--	--	1.2	2.9
Tupelo and blackgum	--	--	--	0.8	1.5
Ash	--	--	--	1.0	3.8
Cottonwood and aspen	--	--	--	--	0.5
Basswood	--	--	--	0.1	0.2
Yellow-poplar	--	--	--	2.5	7.7
Black walnut	--	--	--	--	0.2
Other eastern soft hardwoods	--	--	0.2	0.5	2.4
Other eastern hard hardwoods	--	--	0.0	0.9	1.6
Eastern noncommercial hardwoods	--	--	--	0.0	0.3
All hardwoods	--	--	0.2	23.5	44.9
All species groups	--	--	2.6	44.8	70.0

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

Table MD-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, Maryland, 1999 to 2008

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	- -	- -	3.4	16.0	20.3
Other yellow pines	- -	- -	- -	3.2	3.6
Eastern white and red pines	- -	- -	- -	0.8	0.8
Other eastern softwoods	- -	0.0	- -	- -	0.0
All softwoods	- -	0.0	3.4	20.1	24.7
Hardwood species groups					
Eastern hardwood species groups					
Select white oaks	- -	- -	0.1	1.7	2.5
Select red oaks	- -	- -	0.7	2.4	3.6
Other white oaks	- -	- -	0.0	0.5	0.7
Other red oaks	- -	- -	0.5	2.8	4.4
Hickory	- -	- -	- -	0.8	1.1
Yellow birch	- -	- -	- -	- -	0.4
Hard maple	- -	- -	- -	- -	0.0
Soft maple	- -	0.0	0.6	4.8	8.2
Beech	- -	- -	0.3	- -	0.5
Sweetgum	- -	0.2	1.0	1.1	3.8
Tupelo and blackgum	- -	- -	0.2	0.7	1.6
Ash	- -	- -	0.1	0.8	2.9
Cottonwood and aspen	- -	- -	- -	- -	0.5
Basswood	- -	- -	- -	0.1	0.2
Yellow-poplar	- -	- -	0.9	2.3	7.8
Black walnut	- -	- -	- -	- -	0.2
Other eastern soft hardwoods	- -	0.0	0.7	0.3	2.5
Other eastern hard hardwoods	- -	- -	0.1	0.8	1.6
All hardwoods	- -	0.2	5.1	19.2	42.6
All species groups	- -	0.2	8.5	39.2	67.3

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 MD-31.—Aboveground dry weight of live trees (at least 1 inch d.b.h.), in thousand dry short tons, by owner class and forest-land status, Maryland, 2008

Owner class	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
Other Federal							
National Park Service	- -	- -	- -	961	- -	961	961
Fish and Wildlife Service	1,598	- -	1,598	- -	- -	- -	1,598
Department of Defense or Energy	1,615	- -	1,615	- -	- -	- -	1,615
State and local government							
State	25,426	- -	25,426	6,347	- -	6,347	31,773
Local (county, municipal, etc.)	6,256	- -	6,256	1,386	- -	1,386	7,642
Private							
Undifferentiated private	132,709	51	132,760	- -	- -	- -	132,760
All owners	167,605	51	167,656	8,694	- -	8,694	176,350

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 MD-32.—Aboveground dry weight of live trees (at least 1 inch d.b.h., computed using "component ratio method" - CRM), in thousand dry short tons, on forest land by species group and dMDmeter class, Maryland, 2008

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	84	436	1,080	1,764	1,892	1,980	2,161	1,358	1,152	880	291	184	--	181	--	13,442
Other yellow pines	11	36	182	354	645	638	639	604	97	--	--	--	--	--	--	3,206
Eastern white and red pines	5	29	94	345	386	177	150	34	85	23	--	--	--	--	--	1,328
Eastern hemlock	1	--	27	56	62	14	12	105	--	--	--	81	--	--	110	469
Cypress	--	--	--	--	8	--	--	15	21	28	35	70	47	--	--	224
Other eastern softwoods	20	71	63	87	126	144	85	109	77	--	--	--	--	--	--	782
All softwoods	122	573	1,446	2,606	3,118	2,953	3,046	2,225	1,432	931	326	335	47	181	110	19,450
Hardwood species groups																
Eastern hardwood species groups																
Select white oaks	26	65	339	872	1,681	2,079	2,462	1,813	1,857	2,257	1,171	517	602	807	304	16,851
Select red oaks	120	50	106	262	330	488	691	876	1,122	1,238	829	660	840	430	273	8,316
Other white oaks	61	179	300	526	951	1,120	1,225	1,343	928	2,185	433	207	--	--	--	9,459
Other red oaks	87	164	424	656	1,255	1,666	2,391	2,733	2,037	2,360	2,065	852	1,085	478	1,512	19,766
Hickory	66	191	322	553	723	1,185	767	907	405	653	941	533	--	--	--	7,246
Yellow birch	--	27	31	56	36	43	57	--	--	--	--	--	--	--	--	250
Hard maple	48	292	171	357	261	471	226	252	136	71	95	--	--	108	163	2,650
Soft maple	711	1,113	1,283	1,803	2,301	2,538	2,327	2,133	1,513	1,741	1,089	865	580	109	819	20,924
Beech	112	233	260	515	552	418	835	616	875	183	515	339	223	--	--	5,677
Sweetgum	310	566	764	1,116	1,456	1,883	1,671	1,602	821	637	513	330	231	60	263	12,221
Tupelo and blackgum	183	391	455	498	658	561	594	378	429	76	127	193	--	62	--	4,605
Ash	9	58	138	305	259	475	590	167	335	271	412	286	269	228	--	3,801
Cottonwood and aspen	3	--	8	53	16	57	28	--	--	30	42	54	63	--	76	429
Basswood	1	10	6	21	57	93	178	104	30	--	--	--	70	--	--	571
Yellow-poplar	83	87	235	489	734	1,345	1,770	2,309	2,726	3,117	2,647	2,550	1,069	2,283	3,085	24,528
Black walnut	--	39	35	55	99	136	73	30	54	--	--	79	--	--	--	598
Other eastern soft hardwoods	118	520	682	1,019	1,414	1,083	1,188	903	828	452	383	233	250	152	1,174	10,399
Other eastern hard hardwoods	528	1,146	815	959	820	735	795	326	333	248	144	269	--	--	--	7,120
Eastern noncommercial hardwoods	318	338	140	203	112	85	159	43	92	--	--	--	--	--	--	1,489
All hardwoods	2,781	5,469	6,517	10,319	13,715	16,459	18,026	16,535	14,520	15,519	11,406	7,966	5,282	4,716	7,669	156,900
All species groups	2,903	6,041	7,963	12,926	16,832	19,412	21,073	18,761	15,952	16,450	11,732	8,301	5,328	4,897	7,779	176,350

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 MD-54.—Area of forest land, in thousand acres, by inventory unit, county, and forest-land status, Maryland, 2008

Inventory unit and county	Unreserved forests			Reserved forests			All forest land
	Timberland	Unproductive	Total	Productive	Unproductive	Total	
North Central							
Carroll	53.6	--	53.6	--	--	--	53.6
Frederick	126.5	--	126.5	4.9	--	4.9	131.4
Washington	119.6	--	119.6	16.5	--	16.5	136.0
Anne Arundel/Howard	116.8	--	116.8	1.5	--	1.5	118.3
Caroline/Talbot	115.2	--	115.2	--	--	--	115.2
Cecil/Harford	148.5	--	148.5	--	--	--	148.5
Kent/Queen Annes	112.4	--	112.4	--	--	--	112.4
Montgomery/Prince Georges	188.0	--	188.0	31.2	--	31.2	219.2
Baltimore/Baltimore City	88.5	--	88.5	29.9	--	29.9	118.4
Total	1,069.0	--	1,069.0	84.1	--	84.1	1,153.1
Southern							
Calvert	68.7	--	68.7	3.1	--	3.1	71.8
Charles	182.1	--	182.1	--	--	--	182.1
St. Mary's	120.2	--	120.2	--	--	--	120.2
Total	371.0	--	371.0	3.1	--	3.1	374.1
Lower Eastern Shore							
Dorchester	135.3	4.4	139.7	--	--	--	139.7
Somerset	114.2	--	114.2	--	--	--	114.2
Wicomico	108.2	--	108.2	--	--	--	108.2
Worcester	132.9	--	132.9	7.7	--	7.7	140.7
Total	490.6	4.4	495.1	7.7	--	7.7	502.8
Western							
Allegany	174.3	--	174.3	11.2	--	11.2	185.6
Garrett	263.9	--	263.9	13.3	--	13.3	277.1
Total	438.2	--	438.2	24.5	--	24.5	462.7
All counties	2,368.8	4.4	2,373.2	119.4	--	119.4	2,492.6

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 MD-55.—Area of forest land, in thousand acres, by inventory unit, county, ownership group and forest-land status, Maryland, 2008

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									
Carroll	--	--	--	--	4.9	--	48.6	--	53.6
Frederick	--	--	--	4.9	26.3	--	100.2	--	131.4
Washington	--	--	--	--	28.7	16.5	90.8	--	136.0
Anne Arundel/Howard	--	--	13.7	1.5	14.0	--	89.1	--	118.3
Caroline/Talbot	--	--	--	--	--	--	115.2	--	115.2
Cecil/Harford	--	--	19.0	--	22.8	--	106.7	--	148.5
Kent/Queen Annes	--	--	--	--	8.4	--	104.0	--	112.4
Montgomery/Prince Georges	--	--	7.3	9.4	55.5	21.8	125.1	--	219.2
Baltimore/Baltimore City	--	--	--	--	10.4	29.9	78.2	--	118.4
Total	--	--	40.0	15.9	171.0	68.2	857.9	--	1,153.1
Southern									
Calvert	--	--	--	--	--	3.1	68.7	--	71.8
Charles	--	--	--	--	32.8	--	149.3	--	182.1
St. Mary's	--	--	--	--	8.3	--	111.8	--	120.2
Total	--	--	--	--	41.2	3.1	329.9	--	374.1
Lower Eastern Shore									
Dorchester	--	--	6.3	--	19.5	--	109.4	4.4	139.7
Somerset	--	--	--	--	26.3	--	87.9	--	114.2
Wicomico	--	--	--	--	23.8	--	84.5	--	108.2
Worcester	--	--	--	--	21.9	7.7	111.0	--	140.7
Total	--	--	6.3	--	91.6	7.7	392.7	4.4	502.8
Western									
Allegany	--	--	--	--	74.8	11.2	99.5	--	185.6
Garrett	--	--	--	--	74.1	13.3	189.8	--	277.1
Total	--	--	--	--	148.9	24.5	289.3	--	462.7
All counties	--	--	46.3	15.9	452.6	103.5	1,869.8	4.4	2,492.6

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 MD-57.—Area of timberland, in thousand acres, by inventory unit, county, and stand-size class, Maryland, 2008

Inventory unit and county	Stand-size class					All size classes
	Large diameter	Medium diameter	Small diameter	Chaparral	Nonstocked	
North Central						
Carroll	46.5	4.0	3.1	--	--	53.6
Frederick	112.6	2.9	6.5	--	4.4	126.5
Washington	96.7	8.6	12.6	--	1.7	119.6
Anne Arundel/Howard	92.2	19.1	5.5	--	--	116.8
Caroline/Talbot	63.1	35.2	10.5	--	6.4	115.2
Cecil/Harford	120.3	18.5	9.7	--	--	148.5
Kent/Queen Annes	88.9	8.0	13.8	--	1.6	112.4
Montgomery/Prince Georges	173.9	2.6	2.0	--	9.5	188.0
Baltimore/Baltimore City	80.1	8.1	0.3	--	--	88.5
Total	874.3	107.0	64.0	--	23.7	1,069.0
Southern						
Calvert	62.6	--	6.1	--	--	68.7
Charles	158.0	19.3	4.8	--	--	182.1
St. Mary's	120.2	--	--	--	--	120.2
Total	340.9	19.3	10.9	--	--	371.0
Lower Eastern Shore						
Dorchester	105.5	9.6	20.1	--	--	135.3
Somerset	45.3	40.4	27.5	--	1.1	114.2
Wicomico	72.5	21.2	14.6	--	--	108.2
Worcester	107.8	9.8	15.3	--	--	132.9
Total	331.1	81.0	77.5	--	1.1	490.6
Western						
Allegany	111.4	43.7	19.2	--	--	174.3
Garrett	146.6	76.5	39.5	--	1.2	263.9
Total	258.0	120.2	58.8	--	1.2	438.2
All counties	1,804.2	327.4	211.2	--	26.0	2,368.8

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 MD-58.—Area of timberland, in thousand acres, by inventory unit, county, and stocking class, Maryland, 2008

Inventory unit and county	Stocking class of growing-stock trees					
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	All classes
North Central						
Carroll	- -	6.9	14.7	32.0	- -	53.6
Frederick	4.4	16.0	54.8	45.1	6.2	126.5
Washington	1.7	22.1	77.7	18.0	- -	119.6
Anne Arundel/Howard	- -	- -	54.9	59.7	2.3	116.8
Caroline/Talbot	7.3	9.5	21.2	67.6	9.7	115.2
Cecil/Harford	1.1	19.9	45.5	79.4	2.6	148.5
Kent/Queen Annes	3.3	22.4	32.8	49.7	4.1	112.4
Montgomery/Prince Georges	9.5	32.2	94.3	52.0	- -	188.0
Baltimore/Baltimore City	1.0	17.3	37.6	30.7	1.9	88.5
Total	28.2	146.3	433.6	434.2	26.7	1,069.0
Southern						
Calvert	0.7	4.2	28.0	34.0	1.9	68.7
Charles	- -	25.1	101.6	55.5	- -	182.1
St. Mary's	- -	15.2	47.6	55.2	2.1	120.2
Total	0.7	44.5	177.2	144.7	3.9	371.0
Lower Eastern Shore						
Dorchester	- -	25.6	40.1	65.7	3.9	135.3
Somerset	1.5	3.3	40.6	63.3	5.5	114.2
Wicomico	- -	7.0	60.0	35.6	5.7	108.2
Worcester	- -	9.4	56.2	66.0	1.3	132.9
Total	1.5	45.3	196.8	230.6	16.4	490.6
Western						
Allegany	8.1	10.6	87.0	57.3	11.3	174.3
Garrett	5.6	27.4	105.4	121.4	4.1	263.9
Total	13.7	38.0	192.4	178.7	15.4	438.2
All counties	44.1	274.0	1,000.1	988.2	62.5	2,368.8

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 MD-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, Maryland, 2008

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										
Carroll	3.9	--	58.6	76.4	138.8	18.6	--	248.3	276.8	543.8
Frederick	--	--	124.6	225.5	350.1	--	--	536.4	927.8	1,464.1
Washington	10.7	12.8	58.0	158.3	239.9	42.3	41.6	238.8	610.8	933.6
Anne Arundel/Howard	27.9	--	197.1	155.6	380.6	97.1	--	806.3	650.6	1,554.1
Caroline/Talbot	99.1	--	58.4	54.6	212.1	252.2	--	147.5	202.2	601.9
Cecil/Harford	6.6	0.1	270.8	208.1	485.6	22.2	--	1,169.8	877.9	2,070.0
Kent/Queen Annes	34.1	--	158.8	99.9	292.8	134.1	--	637.7	452.1	1,223.9
Montgomery/Prince Georges	7.0	0.9	303.6	204.0	515.5	23.4	--	1,361.0	930.4	2,314.7
Baltimore/Baltimore City	18.5	0.1	211.8	100.6	331.0	70.6	--	1,049.6	459.6	1,579.9
Total	207.7	14.0	1,441.8	1,283.0	2,946.4	660.6	41.6	6,195.4	5,388.4	12,286.0
Southern										
Calvert	5.0	--	97.0	86.7	188.7	12.9	--	365.1	327.8	705.8
Charles	41.4	0.1	294.2	184.8	520.5	132.5	--	1,217.8	687.8	2,038.1
St. Mary's	95.5	0.1	143.4	103.8	342.8	378.4	--	572.7	366.0	1,317.0
Total	141.8	0.2	534.6	375.4	1,052.0	523.8	--	2,155.6	1,381.6	4,060.9
Lower Eastern Shore										
Dorchester	117.1	--	114.4	79.1	310.6	398.5	--	337.1	310.4	1,046.1
Somerset	84.8	--	78.4	28.4	191.6	182.6	--	292.6	93.0	568.2
Wicomico	68.5	1.0	143.4	46.5	259.4	224.4	2.7	565.2	128.4	920.8
Worcester	99.5	14.0	198.3	54.2	366.0	374.9	55.9	658.5	189.5	1,278.8
Total	369.9	15.0	534.4	208.2	1,127.5	1,180.5	58.6	1,853.4	721.3	3,813.9
Western										
Allegany	20.5	--	51.8	216.1	288.5	77.4	--	185.1	643.9	906.5
Garrett	55.9	37.2	224.6	193.5	511.3	117.7	113.0	696.8	614.5	1,542.0
Total	76.5	37.2	276.4	409.6	799.7	195.1	113.0	881.9	1,258.4	2,448.5
All counties	795.9	66.4	2,787.3	2,276.1	5,925.7	2,560.0	213.2	11,086.3	8,749.7	22,609.3

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 MD-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, Maryland, 2008

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										
Carroll	3.9	- -	58.6	76.4	138.8	14.2	- -	189.5	174.2	377.8
Frederick	- -	- -	124.6	225.5	350.1	- -	- -	404.9	634.4	1,039.3
Washington	10.7	12.8	58.0	158.3	239.9	25.9	29.6	164.5	397.3	617.3
Anne Arundel/Howard	27.9	- -	197.1	155.6	380.6	64.5	- -	633.7	469.9	1,168.1
Caroline/Talbot	99.1	- -	58.4	54.6	212.1	160.8	- -	87.5	135.9	384.1
Cecil/Harford	6.6	0.1	270.8	208.1	485.6	14.5	- -	844.9	612.3	1,471.7
Kent/Queen Annes	34.1	- -	158.8	99.9	292.8	90.5	- -	498.0	337.3	925.9
Montgomery/Prince Georges	7.0	0.9	303.6	204.0	515.5	11.8	- -	1,063.7	726.2	1,801.7
Baltimore/Baltimore City	18.5	0.1	211.8	100.6	331.0	40.4	- -	919.4	365.4	1,325.2
Total	207.7	14.0	1,441.8	1,283.0	2,946.4	422.5	29.6	4,806.1	3,852.9	9,111.1
Southern										
Calvert	5.0	- -	97.0	86.7	188.7	4.4	- -	256.4	201.5	462.4
Charles	41.4	0.1	294.2	184.8	520.5	74.7	- -	902.2	448.2	1,425.1
St. Mary's	95.5	0.1	143.4	103.8	342.8	233.1	- -	384.8	228.5	846.4
Total	141.8	0.2	534.6	375.4	1,052.0	312.3	- -	1,543.4	878.3	2,733.9
Lower Eastern Shore										
Dorchester	117.1	- -	114.4	79.1	310.6	249.1	- -	210.1	221.0	680.2
Somerset	84.8	- -	78.4	28.4	191.6	87.7	- -	194.4	59.0	341.1
Wicomico	68.5	1.0	143.4	46.5	259.4	149.5	1.7	431.4	77.0	659.6
Worcester	99.5	14.0	198.3	54.2	366.0	226.5	46.3	459.9	109.4	842.1
Total	369.9	15.0	534.4	208.2	1,127.5	712.8	48.1	1,295.8	466.3	2,523.0
Western										
Allegany	20.5	- -	51.8	216.1	288.5	42.7	- -	149.9	412.5	605.1
Garrett	55.9	37.2	224.6	193.5	511.3	52.6	66.1	427.1	383.3	929.1
Total	76.5	37.2	276.4	409.6	799.7	95.3	66.1	577.0	795.8	1,534.2
All counties	795.9	66.4	2,787.3	2,276.1	5,925.7	1,542.9	143.8	8,222.3	5,993.2	15,902.2

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

Table MD-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, Maryland, 2008

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										
Carroll	0.3	- -	2.7	1.0	4.0	1.5	- -	14.4	7.2	23.1
Frederick	0.0	- -	5.4	8.0	13.3	- -	- -	33.8	48.8	82.6
Washington	0.1	0.6	0.5	4.2	5.4	0.3	3.0	4.4	25.0	32.6
Anne Arundel/Howard	0.6	- -	7.0	6.8	14.5	4.2	- -	40.4	32.2	76.9
Caroline/Talbot	6.8	- -	2.8	2.8	12.4	10.9	- -	8.0	13.6	32.6
Cecil/Harford	-0.9	0.0	10.2	5.5	14.8	-3.9	- -	71.3	32.8	100.2
Kent/Queen Annes	0.4	- -	5.6	4.0	10.0	3.7	- -	27.2	27.8	58.6
Montgomery/Prince Georges	-0.1	0.0	15.4	5.4	20.7	0.3	- -	89.5	42.2	132.0
Baltimore/Baltimore City	0.3	0.0	4.9	3.7	8.9	1.9	- -	28.0	15.0	44.9
Total	7.4	0.6	54.5	41.4	104.0	19.0	3.0	317.1	244.6	583.7
Southern										
Calvert	0.0	- -	3.6	2.4	6.0	0.2	- -	19.9	12.8	33.0
Charles	-0.1	0.0	8.5	0.8	9.2	-1.0	- -	56.2	9.7	64.9
St. Mary's	-1.4	0.0	3.4	1.9	3.9	-0.1	- -	21.5	16.2	37.7
Total	-1.5	0.0	15.6	5.1	19.2	-0.9	- -	97.7	38.7	135.6
Lower Eastern Shore										
Dorchester	2.9	- -	1.9	0.2	5.1	13.5	- -	12.4	8.4	34.3
Somerset	6.1	- -	1.6	0.5	8.2	19.0	- -	8.6	3.0	30.6
Wicomico	2.3	0.0	4.3	2.1	8.7	5.7	0.1	27.5	6.4	39.7
Worcester	3.2	0.0	4.0	2.3	9.5	18.2	0.2	27.6	12.0	58.1
Total	14.5	0.0	11.8	5.0	31.4	56.5	0.3	76.0	29.8	162.6
Western										
Allegany	1.3	- -	2.0	5.8	9.1	5.1	- -	6.7	16.7	28.4
Garrett	1.7	0.7	6.2	5.5	14.1	5.9	3.5	32.4	30.4	72.2
Total	3.0	0.7	8.2	11.3	23.2	11.0	3.5	39.1	47.1	100.6
All counties	23.5	1.4	90.1	62.8	177.8	85.6	6.8	529.9	360.2	982.5

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

Table MD-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, Maryland, 2008

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										
Carroll	0.3	--	2.7	1.0	4.0	1.2	--	9.5	3.3	14.0
Frederick	0.0	--	5.4	8.0	13.3	--	--	25.8	35.5	61.2
Washington	0.1	0.6	0.5	4.2	5.4	0.1	2.4	3.0	16.2	21.8
Anne Arundel/Howard	0.6	--	7.0	6.8	14.5	2.8	--	31.4	18.8	53.0
Caroline/Talbot	6.8	--	2.8	2.8	12.4	5.5	--	4.2	9.8	19.6
Cecil/Harford	-0.9	0.0	10.2	5.5	14.8	-0.5	--	50.5	23.1	73.1
Kent/Queen Annes	0.4	--	5.6	4.0	10.0	1.9	--	21.3	21.3	44.6
Montgomery/Prince Georges	-0.1	0.0	15.4	5.4	20.7	0.9	--	62.2	34.1	97.1
Baltimore/Baltimore City	0.3	0.0	4.9	3.7	8.9	1.2	--	20.8	13.2	35.2
Total	7.4	0.6	54.5	41.4	104.0	13.2	2.4	228.7	175.2	419.5
Southern										
Calvert	0.0	--	3.6	2.4	6.0	0.1	--	12.7	7.2	20.0
Charles	-0.1	0.0	8.5	0.8	9.2	-0.1	--	42.3	5.5	47.6
St. Mary's	-1.4	0.0	3.4	1.9	3.9	0.3	--	12.5	11.2	24.0
Total	-1.5	0.0	15.6	5.1	19.2	0.2	--	67.5	23.9	91.7
Lower Eastern Shore										
Dorchester	2.9	--	1.9	0.2	5.1	8.6	--	7.3	6.9	22.8
Somerset	6.1	--	1.6	0.5	8.2	8.2	--	7.1	2.0	17.4
Wicomico	2.3	0.0	4.3	2.1	8.7	3.7	0.0	20.9	3.9	28.7
Worcester	3.2	0.0	4.0	2.3	9.5	10.0	0.0	26.0	7.0	43.0
Total	14.5	0.0	11.8	5.0	31.4	30.5	0.1	61.3	19.9	111.8
Western										
Allegany	1.3	--	2.0	5.8	9.1	2.7	--	4.6	4.2	11.5
Garrett	1.7	0.7	6.2	5.5	14.1	2.5	1.2	21.0	15.1	39.7
Total	3.0	0.7	8.2	11.3	23.2	5.2	1.2	25.6	19.2	51.2
All counties	23.5	1.4	90.1	62.8	177.8	49.1	3.7	383.2	238.3	674.2

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

Table MD-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, Maryland, 2008

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										
Carroll	--	--	0.0	1.7	1.8	--	--	--	8.4	8.4
Frederick	--	--	1.2	0.6	1.7	--	--	6.0	2.7	8.7
Washington	0.8	--	--	0.6	1.4	4.3	--	--	2.6	6.9
Anne Arundel/Howard	--	--	1.1	3.1	4.2	--	--	2.0	12.5	14.4
Caroline/Talbot	2.9	--	0.3	--	3.2	5.4	--	0.3	--	5.7
Cecil/Harford	0.0	--	2.6	0.7	3.3	--	--	7.9	2.5	10.4
Kent/Queen Annes	--	--	0.1	--	0.1	--	--	--	--	--
Montgomery/Prince Georges	--	0.0	3.5	0.4	3.8	--	--	15.6	1.1	16.8
Baltimore/Baltimore City	--	--	1.1	1.2	2.3	--	--	3.4	5.6	9.0
Total	3.7	0.0	9.8	8.2	21.8	9.7	--	35.1	35.5	80.2
Southern										
Calvert	--	--	0.4	0.0	0.4	--	--	0.6	--	0.6
Charles	1.0	--	3.6	1.3	5.9	2.4	--	17.2	5.3	24.9
St. Mary's	1.1	--	1.0	1.0	3.1	4.0	--	3.6	3.7	11.3
Total	2.1	--	5.0	2.3	9.4	6.4	--	21.5	8.9	36.9
Lower Eastern Shore										
Dorchester	2.3	--	0.7	0.1	3.1	7.7	--	2.8	--	10.5
Somerset	12.0	--	1.3	0.0	13.3	30.7	--	0.9	--	31.6
Wicomico	2.3	--	2.8	0.4	5.5	6.9	--	11.1	0.5	18.5
Worcester	2.3	--	3.6	1.2	7.1	7.3	--	11.0	2.1	20.4
Total	18.9	--	8.4	1.7	29.0	52.6	--	25.8	2.6	81.0
Western										
Allegany	0.0	--	0.0	0.2	0.2	--	--	--	--	--
Garrett	--	--	1.4	5.6	6.9	--	--	2.7	25.6	28.3
Total	0.0	--	1.4	5.7	7.1	--	--	2.7	25.6	28.3
All counties	24.7	0.0	24.6	18.0	67.3	68.7	--	85.1	72.6	226.4

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 MD-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, Maryland, 2008

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										
Carroll	--	--	0.0	1.7	1.8	--	--	--	0.3	0.3
Frederick	--	--	1.2	0.6	1.7	--	--	--	--	--
Washington	0.8	--	--	0.6	1.4	--	--	--	--	--
Anne Arundel/Howard	--	--	1.1	3.1	4.2	--	--	--	0.6	0.6
Caroline/Talbot	2.9	--	0.3	--	3.2	--	--	--	--	--
Cecil/Harford	0.0	--	2.6	0.7	3.3	--	--	3.8	0.2	4.0
Kent/Queen Annes	--	--	0.1	--	0.1	--	--	--	--	--
Montgomery/Prince Georges	--	0.0	3.5	0.4	3.8	--	--	--	--	--
Baltimore/Baltimore City	--	--	1.1	1.2	2.3	--	--	2.7	4.7	7.5
Total	3.7	0.0	9.8	8.2	21.8	--	--	6.5	5.8	12.3
Southern										
Calvert	--	--	0.4	0.0	0.4	--	--	0.3	--	0.3
Charles	1.0	--	3.6	1.3	5.9	--	--	--	--	--
St. Mary's	1.1	--	1.0	1.0	3.1	--	--	--	--	--
Total	2.1	--	5.0	2.3	9.4	--	--	0.3	--	0.3
Lower Eastern Shore										
Dorchester	2.3	--	0.7	0.1	3.1	0.2	--	--	--	0.2
Somerset	12.0	--	1.3	0.0	13.3	--	--	--	--	--
Wicomico	2.3	--	2.8	0.4	5.5	--	--	--	--	--
Worcester	2.3	--	3.6	1.2	7.1	4.9	--	6.2	1.3	12.5
Total	18.9	--	8.4	1.7	29.0	5.1	--	6.2	1.3	12.7
Western										
Allegany	0.0	--	0.0	0.2	0.2	--	--	--	--	--
Garrett	--	--	1.4	5.6	6.9	--	--	0.5	0.7	1.2
Total	0.0	--	1.4	5.7	7.1	--	--	0.5	0.7	1.2
All counties	24.7	0.0	24.6	18.0	67.3	5.1	--	13.5	7.8	26.5

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

Table MD-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, Maryland, 2008

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										
Carroll	21.68	21.68	29.24	35.65	74.88	63.01	29.01	30.52	77.53	70.37
Frederick	11.89	12.86	17.80	46.95	72.45	48.52	21.31	33.93	76.14	60.68
Washington	8.67	11.43	21.56	31.37	84.46	56.05	25.94	21.94	85.95	64.25
Anne Arundel/Howard	12.57	12.38	18.80	33.71	67.97	42.75	24.20	26.65	85.01	62.60
Caroline/Talbot	11.76	11.76	18.14	21.86	61.76	54.98	25.47	30.10	57.40	100.00
Cecil/Harford	12.20	12.20	17.70	24.66	47.28	57.69	19.82	22.76	60.22	75.89
Kent/Queen Annes	9.58	9.58	16.23	20.33	99.13	44.34	20.70	25.61	- -	60.12
Montgomery/Prince Georges	8.48	11.38	15.20	26.69	74.07	23.83	17.56	17.07	82.91	33.10
Baltimore/Baltimore City	13.61	18.59	25.20	50.10	70.57	45.18	27.67	48.76	84.36	57.27
Total	3.77	4.28	6.50	11.71	26.68	15.61	7.81	9.70	32.22	21.56
Southern										
Calvert	14.37	14.55	18.85	26.49	100.00	36.80	20.64	24.14	100.00	- -
Charles	7.84	7.84	12.21	28.67	81.02	22.96	13.83	21.28	85.10	30.67
St. Mary's	8.48	8.48	16.08	43.77	62.67	28.83	18.87	25.07	61.41	34.78
Total	5.44	5.44	8.66	18.27	63.60	17.60	9.89	13.57	70.26	23.38
Lower Eastern Shore										
Dorchester	9.21	9.52	15.95	100.00	84.86	49.22	18.53	56.24	86.91	63.83
Somerset	12.46	12.46	21.14	30.12	48.74	43.58	30.60	29.11	56.29	64.48
Wicomico	12.61	12.61	21.43	27.86	77.95	51.42	27.68	35.84	75.39	68.46
Worcester	7.30	9.71	15.68	37.26	66.77	36.64	19.43	34.22	88.14	57.93
Total	5.11	5.47	9.14	21.32	32.87	29.17	11.72	19.33	37.52	36.66
Western										
Allegany	6.14	7.97	12.11	32.07	53.08	54.04	17.02	56.93	- -	63.56
Garrett	5.25	6.46	12.61	14.86	53.37	32.07	15.04	14.24	58.37	41.54
Total	3.99	5.02	9.33	15.07	52.69	32.89	11.54	17.16	58.37	47.51
All counties	2.31	2.57	4.15	8.21	19.97	11.22	5.13	7.04	22.21	15.26

Sampling errors that exceed 100% are reported as 100%.

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