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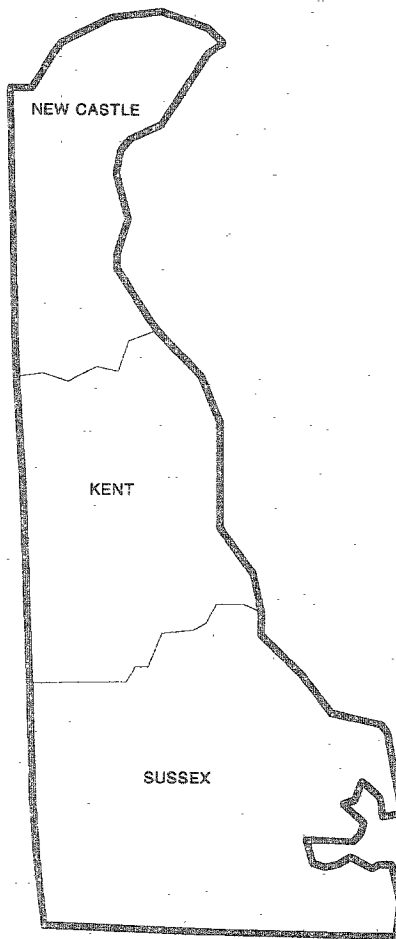
Forest Statistics for Delaware: 1986 and 1999

Douglas M. Griffith
Richard H. Widmann



Abstract

A statistical report on the fourth forest inventory of Delaware conducted in 1999 by the Forest Inventory and Analysis Unit of the Northeastern Research Station. Statistics for forest area, numbers of trees, tree biomass, timber volume, growth, and change are displayed at the state and, where appropriate, the county level. The current inventory indicates that there are approximately 690 million cubic feet of growing-stock volume on 375 thousand acres of timberland in Delaware.



Acknowledgment

The Forest Inventory and Analysis Unit thanks the landowners of Delaware and the Delaware Department of Agriculture, Forestry Section, for their cooperation and assistance during this inventory.

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Highlights

Forest-Land Area

Forests cover 382,900 acres or 30.6 percent of Delaware. This is a decrease of 19,800 acres since the previous forest inventory in 1986. A more inclusive definition of forest land was used in this new inventory. Small forested areas in rights of way and in some urban areas that previously were classified as nonforest have been reclassified as forest. These reclassified areas are stocked with trees and at least an acre in size and more than 120 feet wide. If not for this change, the decrease in the estimated forest-land area would have been larger. The area of timberland decreased by 20,200 acres. Timberland represents 98 percent of total forest-land area.

(Thousands of acres at each inventory)

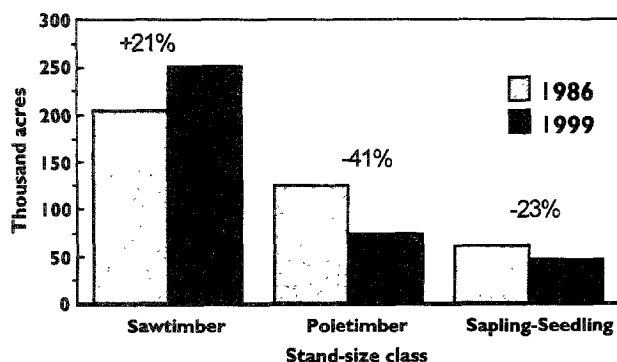
	1957	1972	1986**	1999
Timberland	391.0	384.4	395.8	375.6
Other forest land	1.0	7.4	7.0	7.3
Total forest land	392.0	391.8	402.7	382.9
Percent forested	31.0%	30.9%	32.2%	30.6%
Total land area*	1,266.0	1,268.5	1,251.0	1,251.0

* Estimates of the total land area have changed because of new measurement techniques and refinements in the classification of small bodies of water and streams.

** Based on reprocessing of 1986 data.

Sawtimber-size stands increased by 20.8 percent since the previous inventory and now account for 67.2 percent of the timberland. Poletimber-size stands declined by 41.1 percent and now account for 19.8 percent of timberland. The area in sapling/seedling stands account for 12.5 percent of the timberland and decreased by 22.7 percent. Sweet pepperbush was the most common shrub growing in sawtimber- and poletimber-size stands.

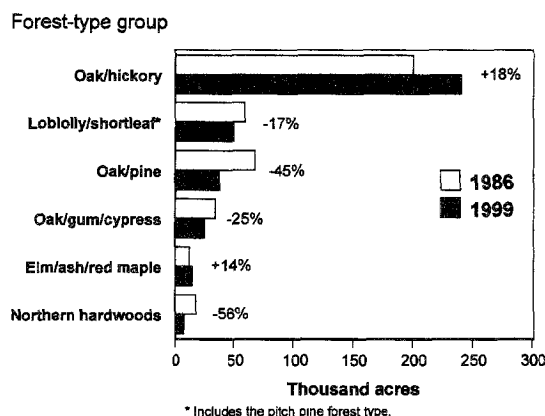
Area of timberland by stand-size class



Area by Forest-Type Group

Oak/hickory is the dominant forest-type group, occupying 64 percent of the timberland followed, by the loblolly/shortleaf group, which occupies 13 percent. Oak/hickory and oak/gum/cypress stands were the only forest-type groups that increased in area.

Area of timberland by forest-type group

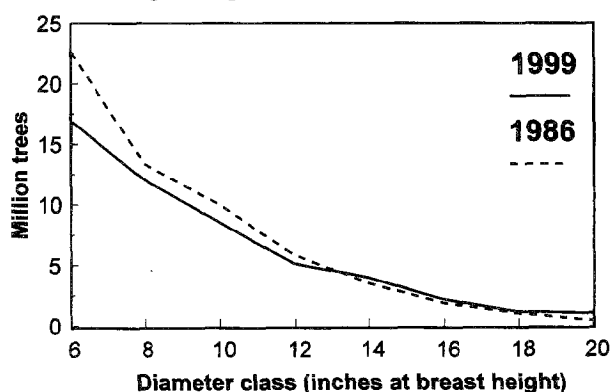


* Includes the pitch pine forest type.

Number of Trees Growing on Timberland

The total number of growing-stock trees at least 5 inches in diameter at breast height has decreased to 52.8 million, since 1986. The number of trees in diameter classes below 14 inches decreased while the number of trees in classes 14 inches and larger increased. Red maple was the most numerous species followed closely by loblolly pine.

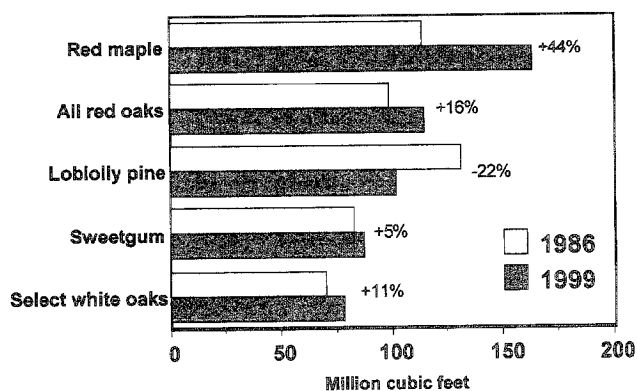
Number of growing-stock trees at each inventory



Volume

The volume of growing-stock trees increased by 4.8 percent to total 692.2 million cubic feet. The average volume per acre increased from 1,668 cubic feet per acre in 1986 to 1,843 cubic feet in 1999. The volume of softwood species decreased by 29.9 percent while the volume of hardwood species increased by 16.2 percent. Red maple has surpassed loblolly pine in volume and is now the leading species.

Change in growing-stock volume, top five species



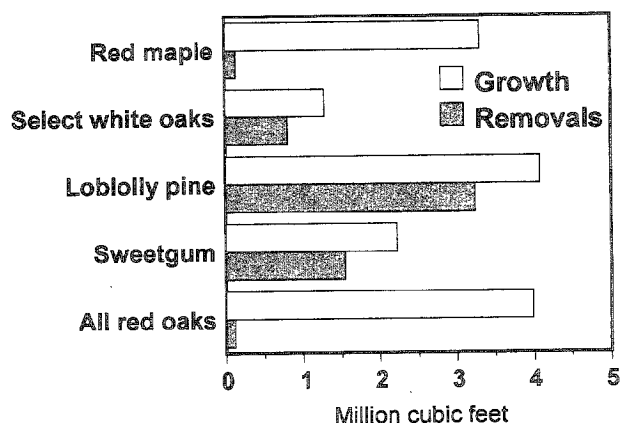
The volume in trees large enough to produce sawlogs increased by 16.7 percent to 2.2 billion board feet. Red maple has the largest board-foot volume followed by loblolly pine.

Growth and Removals

On an annual basis, net growth of growing stock on Delaware's timberland has averaged 16.4 million cubic feet of wood. The average annual harvest plus other removals is 14.5 million cubic feet. The ratio of net growth to removals has averaged about 1.1 : 1 over the past inventory period.

On an annual basis, mortality has averaged 7.8 million cubic feet—1.1 percent of the current inventory.

Average annual net growth and removals of growing-stock, top five species



Introduction

Under the authority of the McSweeney-McNary Forest Research Act of 1928 and subsequent acts, including the Renewable Resources Planning Act of 1974 and the Renewable Resources Research Act of 1978, the USDA Forest Service conducts periodic inventories of all states to provide up-to-date information on the forest resources of the Nation. The initial inventory of Delaware's forest resources was conducted in 1956. Succeeding inventories were carried out in 1971 and 1986. This report presents forest-resource data from the fourth inventory, which was conducted in 1999. This inventory was a cooperative effort between the Northeastern Research Station and the Delaware Department of Agriculture, Forestry Section, and the landowners of Delaware.

The Forest Inventory and Analysis Unit (FIA) of the Northeastern Research Station conducted the inventory on all lands, developed the resource tables, and prepared this report.

During the 1999 inventory of Delaware, a new system of selecting ground plots was implemented. This system has been adopted by all of the FIA units in the United States as the basis for the upcoming *Annual Inventory Program*. Specifically, a hexagonal grid with each cell representing approximately 5,750 acres was placed over the United States. Within Delaware, each hexagon was populated with one sample ground plot. If the hexagon contained one or more ground plots from the 1986 inventory, the plot located closest to the hexagon center was selected; otherwise, a new ground plot was established at random near the hexagon center.

There were 116 ground plots from the previous inventory that were remeasured, and 99 ground plots that were established for the first time. The data collected were summarized using the FINSYS computer system developed at the Northeastern Research Station. Reports analyzing the Delaware's forest resource in greater detail are being prepared.

The forest area, numbers of trees, biomass, timber volume, growth, and change statistics in this report summarize the information collected (see **Index to Tables**). Other information or additional summaries may be developed.

For information about these, contact the **Forest Inventory and Analysis Unit, USDA Forest Service, 11 Campus Boulevard, Suite 200, Newtown Square, PA 19073 (Telephone: 610-557-4075; Fax: 610-557-4200).**

Web address: www.fs.fed.us/ne/fia

Reliability of the Estimates

The data in this report are based on a carefully designed sample of forest conditions throughout Delaware. However, because the field crews did not measure every tree or every acre in the state, the data are estimates. The reliability of the estimating procedure can be judged by two important statistical measures: accuracy and precision. Accuracy refers to the success of estimating the true value; precision refers to the clustering of sample values about their own averages or to the variation among repeated samples. We are interested primarily in the accuracy of the inventory but in most cases we can only measure its precision.

Although accuracy cannot be measured exactly, it can be checked. Preliminary tables are sent to other agencies and to outside experts familiar with the forest conditions in Delaware. If questions arise, the data are reviewed and reanalyzed to resolve differences. Great care is taken to minimize sources of procedural error through careful training of both field and office personnel, frequent inspection of field and office work, and application of the most reliable inventory methods.

Because of the care exercised in the inventory process, estimates of precision afford a reasonable measure of the inventory's adequacy. The precision of each estimate is described by its sampling error. Sampling errors are given with several tables in this report. The others are available upon request.

Here is an example of how the sampling error is used to indicate reliability. The estimate of timberland for Delaware is 375,600 acres. The associated sampling error is 3.3 percent, or 12,395 acres. This means that if there are no errors in the procedure, we are 68 percent confident that the true number of acres is between 363,205 and 387,995 acres, or $375,600 \pm 12,395$ (one standard error). Similarly, we are 95 percent confident that the true number of acres is within $\pm 24,790$ acres (two standard

errors). County estimates are less precise. In Delaware, for example, while the sampling error for timberland at the state level is 3.3 percent, the sampling error for Sussex County is 3.9 percent. In general, as the size of the sample decreases, the sampling error, expressed as a percentage of the estimate, increases. A high amount of variance within a county increases the sampling error.

For many of the tables in this report, both the last column and last row are labeled "SE." These figures are the sampling errors of the column and row totals. The last sampling error given (SE) is for the table total. To calculate the approximate sampling error (SE_{ij}) for a table cell (ij), use the following formula (this formula is reliable only for estimating sampling errors of individual cells in AREA tables):

$$SE_{ij} = 1/P_{ij}((P_{ij}(1 - P_{ij}))/n)^{1/2}$$

where:

n = total number of sample plots of a population
 $P_{ij} = A_{ij} / A$
 A_{ij} = cell estimate
 A = total land area of a population
 ij = row(i) and column(j)

A note of caution:

Any estimate with a sampling error of 50 percent or more is not significantly different from zero, and estimates with errors of 25 to 50 percent are suspect. Therefore, any estimates with errors exceeding 25 percent should be used with caution.

Comparison Between Inventories

To evaluate the condition of the forest resource, it is useful to compare the current estimates with those from the previous inventory. However, as a result of ongoing efforts to improve the efficiency of the inventory, we have made several changes in procedures and definitions since 1986. Because these changes make inappropriate the direct comparison of some of the current estimates with those published by Frieswyk and DiGiovanni (1989), readers should use caution when comparing the data in this report with those in the 1986 report. In this

report, several tables containing 1986 data are provided to allow comparisons. The changes in methods and definitions follow.

To improve data consistency at the national level, a standard plot design is being used by all Forest Inventory projects in the country. The new plot design, a cluster of four 24-foot-radius points covering a 1/6-acre area, was established at this occasion at all selected plot locations, both new and previously measured. Field crews recorded different conditions on the plots if certain attributes (land use, forest type, stand origin, stand size, tree density, and/or owner) differed from those at plot center. They "mapped" these conditions by recording information that described the boundaries of the conditions. This mapping procedure is designed to reduce bias in the estimates. While mapping was used in the previous inventory, the variables that determined the mapped condition were different.

On all selected remeasured plot locations, a subsample of the trees that were recorded in the past were reconciled, and growth and removals estimates were calculated using these data. Condition mapping was ignored for calculations of estimates of change because this procedure was not used at the previous occasion.

Forest Inventory uses Bureau of Census estimates of total land area in a state or county as the basis for estimating land area by various classes. For the 1986 report, the 1980 Bureau of Census data were used; in 1999, the 1990 data were used. Between 1980 and 1990, the Bureau of Census changed its estimating procedures. It now can identify as inland water streams more than 200 feet wide and bodies of water 4.5 acres and larger in area. Previously, the minimum width was 660 feet for streams and the minimum area was 40 acres for bodies of water. This procedure results in an increase in total land area. For comparison of land area between inventories, 1986 estimates of land area by class were recalculated using 1990 land-area values from the Bureau of Census.

Stocking is a quantitative expression of live tree stand density that may be expressed in absolute terms, such as basal area per acre, volume per acre, or number of trees per acre; or in relative terms, such as a percent of a previously defined standard (Arner et al. 2000¹). For the 1986 inventory statistics, the stocking value of a tree

was calculated using the basal area of the tree as a percent of 75 square feet per acre, which is the basal area standard for full use of the site (Forest Survey Handbook 1967²). Basal-area stocking may well describe current timber volume, but it is inadequate to describe stand composition in a multi resource inventory in that it neither adequately measures present site utilization nor describes small-diameter stands. For the statistics in this publication, stocking is calculated using relative density, which represents site occupancy based on normal yield tables. Basal area is diameter-dependent only, whereas relative density reflects species composition, stage of development, and the social position of the trees present. A relative measure of stand density is a useful tool for interpreting findings of extensive inventories, such as those performed by Forest Inventory and Analysis, where a wide variety of stands is sampled. A procedure using relative density to calculate stocking was developed and accepted as a standard to be used by all FIA projects in the country.

Stand size is a classification (sapling/seedling, poletimber, sawtimber, or nonstocked) of forest land based on the size of the trees that dominate an area, and forest type is a classification of forest land based on the species found in the area. Stand size and forest type are both calculated based on stocking of all live trees, and, therefore, are affected by the change in the procedure to calculate stocking. To allow comparisons, this report includes several 1986

area tables showing estimates of area timberland by stand-size class and forest type and forest-type group that are calculated based on relative density. There also are tables that show estimates of timberland area by forest type and stand size for both 1986 and 1999, where stocking is based on the basal area of all live trees.

Forest type is a classification of forest land based on species that form a plurality of live-tree stocking. Prior to 1995, basal area was used to determine plurality of live-tree stocking. Currently, the forest type classification is based on stocking values calculated using relative density. There have been minor refinements with respect to how several species (e.g., red maple and beech) are allocated to local types since the previous inventory and a programming error that affected the white pine type was corrected.

Forty eight percent of the plots that were visited during the 1986 inventory were remeasured in 1999. The estimates of average annual change are derived from this set of data. These estimates afford an opportunity to look at components of change in the overall volume from occasion to occasion or from plot to plot.

The tables showing 1986 information are from the plots that were selected at the prior inventory to produce an estimate of the area and volume. This dataset has been reprocessed using current procedures to produce a new estimate of the area and volume of the 1986 inventory.

Because the tables of estimates for average annual change only contain a portion of the plots from the 1986 survey, inconsistencies in trends may result when the recalculated estimates of 1986 are compared with the average annual change estimates between the 1986 and 1999 tables.

Sampling errors have been included to indicate the precision of the data calculated. In addition to the traditional data gathered to estimate forest area and tree volumes, information was collected to describe forest wildlife habitat and forest-tree biomass.

¹ Arner, Stanford L. et al. 2000. **National Algorithms for Determining Stocking Class, Stand Size Class, and Forest Type for Forest Inventory and Analysis Plots.** Unpublished document on file at Northeastern Research Station Forest Inventory and Analysis, 11 Campus Boulevard, Suite 200, Newtown Square, PA 19073.

² Author unknown. 1967. **Forest Survey Handbook.** Unpublished document on file at Northeastern Research Station Forest Inventory and Analysis, 11 Campus Boulevard, Suite 200, Newtown Square, PA 19073.

Definitions of Terms

Acceptable tree. (a) Live sawtimber trees that do not qualify as preferred trees but are not cull trees. (b) Live poletimber trees that prospectively will not qualify as preferred trees, but are not now or prospectively cull trees.

Accretion. The estimated net growth on growing-stock trees that were measured during the previous inventory (divided by the number of growing seasons between surveys to produce average annual accretion). It does not include the growth on trees that were cut during the period, nor those trees that died.

Basal-area class. A classification of forest land based on basal area (cross-sectional area of a tree stem at breast height in square feet per acre) of all live trees of all sizes.

Board foot. A unit of lumber measurement 1 foot long, 1 foot wide, and 1 inch thick, or its equivalent. International 1/4 inch rule is used as the USDA Forest Service standard log rule in the eastern United States.

Board-foot stand-volume class. A classification of forest land based on net board-foot volume of sawtimber trees per acre.

Bog/marsh/swamp. Land that has less than 10.0 percent stocking with live trees and which characteristically supports low, generally herbaceous or shrubby vegetation, and which is intermittently covered with water during all seasons; includes tidal areas that are covered with brackish water during high tides.

Commercial species. Tree species currently or prospectively suitable for industrial wood products; excludes species of typically small size, poor form, or inferior quality, such as hawthorn and sumac.

Condition. A classification of a land area based on land use, forest type, stand origin, and stand size (see definitions).

County and municipal lands. Lands owned by counties and local public agencies or municipalities or leased to them for 50 years or more.

Cropland. Land that currently supports agricultural crops including silage and feed grains, bare farm

fields resulting from cultivation or harvest, and maintained orchards.

Cubic-foot stand-volume class. A classification of forest land based on net cubic-foot volume of all live trees per acre.

Cull decrement. The net volume of rough or rotten trees in the previous inventory that are classified as growing-stock trees in current inventory (divided by the number of growing seasons between surveys to produce average annual cull decrement).

Cull tree. A rough tree or a rotten tree.

Cull increment. The net volume of growing-stock trees in the previous inventory that are classified as rough or rotten trees in the current inventory (divided by the number of growing seasons between surveys to produce average annual cull increment).

Diameter at breast height (d.b.h.). The diameter outside bark of a standing tree measured at 4-1/2 feet above the ground.

Dry ton. A unit of measure of dry weight equivalent to 2,000 pounds or 907.1848 kilograms.

Dry ton stand-volume class. A classification of forest land based on net dry weight of the aboveground components of all live trees per unit area; usually expressed in dry tons per acre.

Dry weight. The weight of wood and bark as it would be if it had been oven-dried; usually expressed in pounds or tons.

Farmer-owned lands. Lands owned by farm operators, whether part of the farmstead or not; excludes land leased by farm operators from nonfarm owners.

Federal lands. Lands (other than National Forests) administered by Federal agencies.

Forest industry lands. Lands owned by companies or individuals that operate primary wood-using plants.

Forest land. Land that is at least 10 percent stocked with trees of any size, or that formerly had such tree cover and is not currently developed for a nonforest use. The minimum area for

classification of forest land is one acre. The components that make up forest land are timberland and all noncommercial forest land (see definitions).

Forest type. A classification of forest land based on the species that form a plurality of live-tree stocking.

Forest-type group. A classification of forest land based on the species forming a plurality of live-tree stocking. A combination of forest types that share closely associated species or site requirements are combined into the following major forest-type groups (the descriptions apply to forests in this state):

a. White/red pine. Forests in which eastern white pine, red pine, or eastern hemlock, singly or in combination, make up the plurality of the stocking; common associates include red maple, oak, sugar maple, and aspen.

b. Spruce/fir. Forests in which red, white, black, or Norway spruces, balsam fir, northern white-cedar, tamarack, or planted larch, singly or in combination, make up a plurality of the stocking; common associates include white pine, red maple, yellow birch, and aspens.

c. Hard pine (also called loblolly/shortleaf pine). Forests in which eastern redcedar or pitch pine, singly or in combination, make up a plurality of the stocking; common associates include white pine, paper birch, sugar maple, and basswood.

d. Oak/pine. Forests in which hardwoods (usually hickory or upland oaks) make up a plurality of the stocking and in which pines or eastern redcedar contribute 25 to 50 percent of the stocking.

e. Oak/hickory. Forests in which upland oaks, hickory, yellow-poplar, black locust, sweetgum, or red maple (when associated with central hardwoods), singly or in combination, make up a plurality of the stocking and in which pines or eastern redcedar make up less than 25 percent of the stocking; common associates include white ash, sugar maple, and hemlock.

f. Oak/gum/cypress. Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination,

make up a plurality of the stocking and in which pines make up less than 25 percent of the stocking; common associates include cottonwood, willow, ash, elm, hackberry, and maple.

g. Elm/ash/red maple (also called elm /ash /cottonwood). Forests in which elm, willow, cottonwood, or red maple (when growing on wet sites), singly or in combination, make up a plurality of the stocking; common associates include white ash, sugar maple, aspens, and oaks.

h. Northern hardwoods (also called maple/beech/birch). Forests in which sugar maple, beech, yellow birch, black cherry, or red maple (when associated with northern hardwoods), singly or in combination, make up a plurality of the stocking; common associates include white ash, eastern hemlock, basswood, aspens, and red oak.

i. Aspen/birch. Forests in which aspen, paper birch, or gray birch, singly or in combination, make up a plurality of the stocking; common associates include red maple, white pine, red oaks, and white ash.

Gross growth. The sum of accretion and ingrowth.

Growing-stock trees. Live trees of commercial species classified as sawtimber, poletimber, saplings, or seedlings; that is, all live trees of commercial species except rough and rotten trees.

Growing-stock volume. Net volume, in cubic feet, of growing-stock trees 5.0 inches d.b.h. and larger from a 1-foot stump to a minimum 4.0-inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. Net volume equals gross volume less deduction for cull.

Hard hardwoods. Hardwood species with an average specific gravity of greater than 0.50.

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

Harvested cropland. All lands from which crops were harvested or hay was cut; all land in orchards, citrus groves, vineyards, and nursery and greenhouse products.

Idle farmland. Former cropland or pasture that has not been tended for within the last 2 years and has less than 10 percent stocking with live trees (established seedlings or larger trees), regardless of species.

Improved/maintained pasture. Land that is currently used and maintained for grazing (not including grazed cropland).

Indian lands. (a) Lands held in trust by the United States or States for Indian tribes or individual Indians. (b) Lands owned in fee by Indian tribes whether subject to Federal or State restrictions against alienation or not.

Industrial and commercial land. Supply yards, parking lots, factories, etc.

Ingrowth. The estimated net volume of growing-stock trees that became 5.0 inches d.b.h. or larger during the period between inventories (divided by the number of growing seasons between surveys to produce average annual ingrowth). Also, the estimated net volume of growing-stock trees 5.0 inches d.b.h. and larger that are growing on land that was reclassified from noncommercial forest land or nonforest land to timberland.

International 1/4-inch rule. A log rule or formula for estimating the board-foot volume of logs. The mathematical formula is:

$$\text{Board-foot volume} = (0.22D^2 - 0.71D)(0.904762)$$

for 4-foot sections, where D=diameter inside bark at the small end of the log section. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Land area. (a) Bureau of Census: 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. (b) Forest Inventory and Analysis: same as (a) except that the minimum width of streams, etc. is 120 feet, and the minimum size of lakes, etc. is 1 acre.

Land use. A classification of land that indicates the primary use at the time of inventory. Major categories are forest land and nonforest land (see definitions).

Merchantable stem. The main stem of the tree between a 1-foot stump height and a 4-inch top diameter (outside the bark), including the wood and bark.

Mining and waste land. Surface mining, gravel pits, dumps.

Miscellaneous private lands. Privately owned lands other than forest industry and farmer-owned lands.

Mortality. The estimated net volume of growing-stock trees at the previous inventory that died from natural causes before the current inventory (divided by the number of growing seasons between surveys to produce average annual mortality).

National Forest lands. Federal lands legally designated as National Forests or purchase units and other lands administered as part of the National Forest System by the USDA Forest Service.

Net change. The difference between the current and previous inventory estimates of growing-stock volume (divided by the number of growing seasons between surveys to produce average annual net change). Components of net change are ingrowth plus accretion, minus mortality, minus cull increment, plus cull decrement, minus removals.

Net dry weight. The dry weight of woody material less the weight of all unsound (rotten) material.

Net growth. The change, resulting from natural causes, in growing-stock volume during the period between surveys (divided by the number of growing seasons to produce average annual net growth). Components of net growth are ingrowth plus accretion, minus mortality, minus cull increment, plus cull decrement.

Noncensus water. Streams/rivers between 120 feet and 200 feet in width, and bodies of water between 1 and 4.5 acres in size. The Bureau of the Census classifies such water as land.

Noncommercial forest land. Reserved productive forest land, Christmas tree plantations, other forest land, and other reserved forest land (see definitions).

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

Nonforest land. Land that has never supported forests, or land formerly forested but now in nonforest use such as cropland, pasture, residential areas, marshes, swamps, highways, industrial or commercial sites, or noncensus water.

Nonsalvable dead tree. A dead tree with most or all of its bark missing that is at least 5.0 inches d.b.h. and is at least 4.5 feet tall.

Nonstocked area. A stand-size class of forest land that is less than 10 percent stocked with live trees.

Other cropland. Includes cropland used for cover crops and soil improvement (legumes).

Other farmland. All nonforest land on a farm excluding cropland, pasture, and idle farmland; includes farm lanes, stock pens, and farmsteads.

Other forest land. Forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions (formerly known as unproductive forest land).

Other reserved forest land. Forest land that is incapable of producing 20 cubic feet per acre per year of industrial wood under natural conditions, because of adverse site conditions, and is protected through statute or administrative designation.

Ownership class. A classification of forest land based on ownership and nature of business or control of decisionmaking for the land. It encompasses all types of legal entities having ownership interest in the land, whether public or private.

Pasture land. Includes any pasture land other than cropland and woodland pasture. It can include lands that have had lime fertilizer or seed applied, or that had been improved by irrigation, drainage, or control of weeds and brush.

Pastured cropland. Includes rotation pasture and grazing land that would have been used for crops without additional improvement.

Pastured timberland. Land that is partially developed, maintained, or managed for pasture and grazing, but which continues to meet the definition of timberland.

Poletimber stand. A stand-size class of forest land that is at least 10 percent stocked with live trees of which half or more of such stocking is in poletimber or sawtimber trees or both, and in which the stocking of poletimber exceeds that of sawtimber.

Poletimber tree. A live tree of commercial species meeting regional specifications of soundness and form and at least 5.0 inches in d.b.h., but smaller than a sawtimber tree.

Preferred tree. A high-quality tree, from a lumber viewpoint, that would be favored in cultural operations. General characteristics include grade 1 butt log (if sawtimber size), good form, good vigor, and freedom from serious damage.

Recreation site. Parks, campgrounds, playing fields, tracks, etc.

Relative stand density. A stocking classification procedure that reflects species, stage of development, and the characteristics of the trees present in a stand.

Removals. The net growing-stock volume harvested or killed in logging, cultural operations (such as timber stand improvement) or land clearing, and the net growing-stock volume neither harvested nor killed but growing on land that was reclassified from timberland to noncommercial forest land or nonforest land during the period between surveys. This volume is divided by the number of growing seasons to produce average annual removals.

Reserved productive forest land. Forest land sufficiently productive to qualify as timberland but withdrawn from timber utilization through statute or administrative designation; land exclusively used for Christmas tree production.

Rights-of-way. Highways, pipelines, powerlines, canals.

Rotten tree. A live tree of commercial species that does not contain at least one 12-foot sawlog or two noncontiguous sawlogs, each 8 feet or longer, now or prospectively, and does not meet regional specifications for freedom from defect

primarily because of rot; that is, more than 50 percent of the cull volume in the tree is rotten.

Rough tree. (a) The same as a rotten tree except that a rough tree does not meet regional specifications for freedom from defect primarily because of roughness or poor form; also (b) a live tree of noncommercial species.

Salvable dead tree. A tree at least 5.0 inches d.b.h. that has died recently and still has intact bark; may be standing, fallen, windthrown, knocked down, or broken off.

Sampling error. A measure of the reliability of an estimate, expressed as a percentage of the estimate. The sampling errors given in this report correspond to one standard error and are calculated as the square root of the variance, divided by the estimate, and multiplied by 100. Indicated in statistical tables as "SE".

Sapling. All live trees 1.0 through 4.9 inches d.b.h.

Sapling/seedling stand. A stand-size class of forest land that is at least 10 percent stocked with live trees of which half or more of such stocking is in saplings or seedlings or both.

Sawlog. A log meeting regional standards of diameter, length, and freedom from defect, including a minimum 8-foot length and a minimum top diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods. (See specifications under Tree-Grade Classification.)

Sawlog portion. That part of the bole of a sawtimber tree between the stump and the sawlog top.

Sawlog top. The point on the bole of a sawtimber tree above which a sawlog cannot be produced. The minimum sawlog top is 7.0 inches diameter outside bark (d.o.b.) for softwoods and 9.0 inches d.o.b. for hardwoods.

Sawtimber stand. A stand-size class of forest land that is at least 10 percent stocked with live trees of which half or more of such stocking is in poletimber or sawtimber trees or both, and in which the stocking of sawtimber is at least equal to that of poletimber.

Sawtimber tree. A live tree of commercial species at least 9.0 inches d.b.h. for softwoods or 11.0

inches for hardwoods, containing at least one 12-foot sawlog or two noncontiguous 8-foot sawlogs, and meeting regional specifications for freedom from defect.

Sawtimber volume. Net volume in board feet, by the International 1/4-inch rule, of sawlogs in sawtimber trees. Net volume equals gross volume less deductions for rot, sweep, and other defects that affect use for lumber.

SE. See Sampling error.

Seedling. A live tree less than 1.0 inch d.b.h. and at least 1 foot tall.

Single-family house. House sheltering one family and immediately adjacent managed land.

Snag. Standing dead tree with most or all of its bark missing that is at least 5.0 inches d.b.h. and at least 4.5 feet tall (does not include salvable dead).

Soft hardwoods. Hardwood species with an average specific gravity of 0.50 or less.

Softwoods. Coniferous trees, usually evergreen and having needles or scalelike leaves.

Stand. A group of forest trees growing on forest land.

Stand origin. An indication of how the measured stand originated: 100 percent natural, 100 percent artificial, or a combination of both.

Stand-size class. A classification of forest land based on the size class (that is, seedlings, saplings, poletimber, or sawtimber) of the stocking of all live trees in the area.

Standard cord. A unit of measure for stacked bolts of wood, encompassing 128 cubic feet of wood, bark, and air space. Fuelwood cord estimates can be derived from cubic-foot estimates of growing stock by applying an average factor of 80 cubic feet of solid wood per cord. For pulpwood, a conversion of 85 cubic feet of solid wood per cord is used because pulpwood is more uniform.

State lands. Lands owned by the state or leased to the state for 50 years or more.

Stocking. The degree of occupancy of land by trees relative to the growth potential utilized by a site. It is expressed as a percent of the "normal" value presented in yield tables and stocking guides. Two categories of stocking are used in this report: all live trees and growing-stock trees. The relationships between the classes and the percentage of the stocking standard are: nonstocked (0 to 9); poorly stocked (10 to 34); moderately stocked (35 to 59); fully stocked (60 to 100); and overstocked (greater than 100).

Strip mine. Area devoid of vegetation due to current or recent general excavation.

Stump. The main stem of a tree from ground level to 1 foot above ground level, including the wood and bark.

Timberland. Forest land producing or capable of producing crops of industrial wood (more than 20 cubic feet per acre per year) and not withdrawn from timber utilization (formerly known as commercial forest land).

Timber products. Roundwood (round timber) products and manufacturing plant by-products harvested from growing-stock trees on timberland; from other sources, such as cull trees, salvable dead trees, limbs, tops, and saplings; and from trees on noncommercial forest and nonforest lands.

Timber removals. The growing-stock or sawtimber volume of trees removed from the inventory for roundwood products, plus logging residues, volume destroyed during land clearing, and volume of standing trees on land that was reclassified from timberland to noncommercial forest land.

Top. The wood and bark of a tree above the merchantable height (or above the point on the stem 4.0 inches in diameter outside bark); generally includes the uppermost stem, branches, and twigs of the tree, but not the foliage.

Tract/multiple family housing. Multiple individual residential units or attached units (e.g., apartment buildings and condominiums) and immediately adjacent managed land.

Transportation right-of-way. Land associated with highways and railroads.

Tree class. A classification of the quality or condition of trees for sawlog production. Tree class for sawtimber trees is based on their current condition. Tree class for poletimber trees is a prospective determination--a forecast of their potential quality when they reach sawtimber size (11.0 inches d.b.h. for hardwoods, 9.0 inches d.b.h. for softwoods).

Tree grade. A classification of sawtimber quality based on guidelines for tree grades for hardwoods, white pine, and southern pine. (Note: Red pine was graded using the guidelines for southern pine. All specifications are shown under Tree-Grade Classification.)

Trees. Woody plants that have well-developed stems and that usually are more than 12 feet tall at maturity.

Unproductive forest land. See Other forest land.

Upper-stem portion. That part of the main stem or fork of a sawtimber tree above the sawlog top to a diameter of 4.0 inches outside bark, or to the point where the main stem or fork breaks into limbs.

Urban timberland. Forest land sufficiently productive to qualify as timberland that is completely surrounded by or nearly surrounded by urban development (not parks), whether commercial, industrial, or residential.

Utility right-of-way. Land associated with pipeline or electric transmission lines; identified only if vegetative cover differs from adjacent land use.

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

Volume suitable for pulpwood. The sound volume (only rotten cull excluded) of growing-stock and rough trees.

Windbreak/hedgerow. Linear areas, less than 120 feet in width, with predominantly tree and/or shrub vegetation.

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Tree Species of Delaware (as encountered on field plots)

Scientific name ***	Common name(s)	Occurrence**
<i>Juniperus virginiana</i> L.	eastern redcedar	r
<i>Pinus taeda</i> L.	loblolly pine	vc
<i>Pinus virginiana</i> Mill.	Virginia pine	c
<i>Acer negundo</i> L.*	boxelder	r
<i>Acer rubrum</i> L.	red maple	vc
<i>Betula lenta</i> L.	sweet birch	r
<i>Betula nigra</i> L.	river birch	vr
<i>Carpinus caroliniana</i> Walt.	American hornbeam	c
<i>Carya glabra</i> (Mill.) Sweet	pignut hickory	r
<i>Carya tomentosa</i> (Poir.) Nutt.	mockernut hickory	r
<i>Cornus florida</i> L.*	flowering dogwood	c
<i>Diospyros virginiana</i> L.	common persimmon	c
<i>Fagus grandifolia</i> Ehrh.	American beech	c
<i>Fraxinus americana</i> L.	white ash	c
<i>Fraxinus pennsylvanica</i> Marsh.	green ash	r
<i>Ilex opaca</i> Ait.	American holly	vc
<i>Juglans nigra</i> L.	black walnut	r
<i>Liquidambar styraciflua</i> L.	sweetgum	vc
<i>Liriodendron tulipifera</i> L.	yellow-poplar	c
<i>Magnolia virginiana</i> L.	sweetbay	r
<i>Malus</i> sp. Mill.*	apple	vr
<i>Morus</i> sp. L.*	mulberry	vr
<i>Morus alba</i>	white mulberry	r
<i>Nyssa sylvatica</i> Marsh.	blackgum	vc
<i>Platanus occidentalis</i> L.	sycamore	vr
<i>Populus grandidentata</i> Michx.	bigtooth aspen	r
<i>Populus heterophylla</i>	swamp cottonwood	c
<i>Prunus</i> sp. L.*	cherry, plum	r
<i>Prunus serotina</i> Ehrh.	black cherry	c
<i>Quercus alba</i> L.	white oak	vc
<i>Quercus bicolor</i> Willd.	swamp white oak	r
<i>Quercus coccinea</i> Muenchh.	scarlet oak	c
<i>Quercus falcata</i> var. <i>falcata</i> Michx.	southern red oak	c
<i>Quercus marilandica</i> Muenchh.*	blackjack oak	vr
<i>Quercus michauxii</i>	swamp chestnut oak	r
<i>Quercus nigra</i>	water oak	c
<i>Quercus palustris</i> Muenchh.	pin oak	r
<i>Quercus phellos</i> L.	willow oak	c
<i>Quercus prinus</i> L.	chestnut oak	r
<i>Quercus rubra</i> L.	northern red oak	r
<i>Quercus velutina</i> Lam.	black oak	c
<i>Robinia pseudoacacia</i> L.	black locust	r
<i>Salix</i> sp. L.*	willow	r
<i>Sassafras albidum</i> (Nutt.) Nees.*	sassafras	c
<i>Ulmus americana</i> L.	American elm	r
<i>Ulmus rubra</i> Muhl	slippery elm	r

*** Names according to: Little, Elbert L., Jr. 1979. Checklist of United States Trees (native and naturalized). Agric. Handb. 541. Washington, DC: U.S Department of Agriculture. 375 p.

** Occurrence is based on the proportion of the species among all live trees 5.0 inches d.b.h. or larger encountered on forest survey field plots: vr = very rare (<0.05%), r = rare (0.05 to 0.49%), c = common (0.5 to 4.9%), and vc = very common (>5.0%).

* Noncommercial species.

Species Groups of Delaware

Species group	Scientific name	Common name
White/red pine	<i>Pinus strobus</i> <i>Pinus resinosa</i>	eastern white pine red pine
Loblolly pine	<i>Pinus taeda</i> <i>Pinus echinata</i>	loblolly pine shortleaf pine
Virginia pine	<i>Pinus virginiana</i>	Virginia pine
Pitch pine	<i>Pinus rigida</i> <i>Pinus pungens</i> <i>Pinus sylvestris</i>	pitch pine Table mountain pine Scotch pine
Other softwoods	<i>Juniperus virginiana</i> <i>Tsuga canadensis</i> <i>Chamaecyparis thyoides</i>	eastern redcedar eastern hemlock Atlantic white-cedar
Red maple	<i>Acer rubrum</i> <i>Acer saccharinum</i>	red maple silver maple
Sugar maple	<i>Acer saccharum</i>	sugar maple
Hickory	<i>Caraya</i> sp. <i>Carya cordiformis</i> <i>Carya glabra</i> <i>Carya ovata</i> <i>Carya tomentosa</i>	hickory bitternut hickory pignut hickory shagbark hickory mockernut hickory
Beech	<i>Fagus grandifolia</i>	American beech
Sweetgum	<i>Liquidambar styraciflua</i>	sweetgum
Yellow-poplar	<i>Liriodendron tulipifera</i>	yellow-poplar
Blackgum	<i>Nyssa sylvatica</i>	blackgum
Ash-walnut-cherry	<i>Fraxinus</i> sp. <i>Fraxinus americana</i> <i>Fraxinus nigra</i> <i>Fraxinus pennsylvanica</i> <i>Juglans nigra</i> <i>Prunus serotina</i>	ash white ash black ash green ash black walnut black cherry
Select white oaks	<i>Quercus alba</i> <i>Quercus bicolor</i> <i>Quercus macrocarpa</i>	white oak swamp white oak bur oak
Select red oaks	<i>Quercus rubra</i> <i>Quercus shumardi</i>	northern red oak Shumard oak
Other white oaks	<i>Quercus</i> sp. <i>Quercus prinus</i> <i>Quercus stellata</i>	oak chestnut oak post oak

Species Group	Scientific name	Common name
Other red oaks	<i>Quercus coccinea</i>	scarlet oak
	<i>Quercus falcata</i> var. <i>falcata</i>	southern red oak
	<i>Quercus palustris</i>	pin oak
	<i>Quercus phellos</i>	willow oak
	<i>Quercus velutina</i>	black oak
Black locust	<i>Robinia pseudoacacia</i>	black locust
Other hardwoods	<i>Acer negundo</i>	boxelder
	<i>Acer pensylvanicum</i>	striped maple
	<i>Acer spicatum</i>	mountain maple
	<i>Acer platanoides</i>	Norway maple
	<i>Ailanthus altissima</i>	ailanthus
	<i>Amelanchier</i> sp.	serviceberry
	<i>Betula alleghaniensis</i>	yellow birch
	<i>Betula lenta</i>	sweet birch
	<i>Betula nigra</i>	river birch
	<i>Betula papyrifera</i>	paper birch
	<i>Betula populifolia</i>	gray birch
	<i>Carpinus caroliniana</i>	American hornbeam
	<i>Castanea dentate</i>	American chestnut
	<i>Catalpa</i> sp.	catalpa
	<i>Celtis occidentalis</i>	hackberry
	<i>Cornus florida</i>	flowering dogwood
	<i>Crataegus</i> sp.	Hawthorn
	<i>Diospyros virginiana</i>	common persimmon
	<i>Ilex opaca</i>	American holly
	<i>Juglans cinerea</i>	butternut
	<i>Maclura pomifera</i>	Osage-orange
	<i>Magnolia</i> sp.	magnolia
	<i>Magnolia acuminata</i>	cucumbertree
	<i>Magnolia virginiana</i>	sweetbay
	<i>Malus</i> sp.	apple
	<i>Morus</i> sp.	mulberry
	<i>Ostrya virginiana</i>	eastern hophornbeam
	<i>Oxydendron arboreum</i>	sourwood
	<i>Paulownia tomentosa</i>	Paulownia
	<i>Platanus deltoides</i>	sycamore
	<i>Populus deltoids</i>	eastern cottonwood
	<i>Populus grandidentata</i>	bigtooth aspen
	<i>Populus tremuloides</i>	quaking aspen
	<i>Prunus pensylvanica</i>	pin cherry
	<i>Prunus</i> sp.	cherry
	<i>Prunus virginiana</i>	chokecherry
	<i>Quercus ilicifolia</i>	bear oak
	<i>Salix</i> sp.	willow
	<i>Salix nigra</i>	black willow
	<i>Sassafras albidum</i>	sassafras
	<i>Tilia americana</i>	American basswood
	<i>Ulmus americana</i>	American elm
	<i>Ulmus rubra</i>	slippery elm
		unknown or not listed tree

Tree-Grade Classification

HARDWOOD TREE GRADES

GRADING FACTOR	TREE GRADE 1	TREE GRADE 2	TREE GRADE 3
Length of grading zone (feet)	Butt 16	Butt 16	Butt 16
Length of grading section ^a (feet)	Best 12	Best 12	Best 12
Minimum DBH (inches)	16 ^b	13	11
Minimum diameter inside bark at top of grading section (inches)	13 ^b 16 20	11 ^c 12	8
Clear cuttings on 3rd best face ^d			
minimum length (feet)	7 5 3	3 3	2
number on face (maximum)	2	2 3	unlimited
yield in face length (minimum)	5/6	4/6	3/6
Cull deduction, including crook and sweep but excluding shake, maximum within grading section (%)	9	9 ^e	50

- ^a Whenever a 14- or 16-foot section of the butt 16-foot log is better than the best 12-foot section, the grade of the longer section will become the grade of the tree. This longer section, when used, is the basis for determining the grading factors, such as diameter and cull deduction.
- ^b In basswood and ash, diameter inside bark at the top of the grading section may be 12 inches and DBH may be 15 inches.
- ^c Grade 2 trees can be 10 inches diameter inside bark at the top of the grading section if otherwise meeting surface requirements for small grade 1's.
- ^d A clear cutting is a portion of a face free of defects, extending the width of the face. A face is one-fourth of the surface of the grading section as divided lengthwise.
- ^e Fifteen percent crook and sweep, or 40 percent total cull deduction are permitted in grade 2 if size and surface of grading section qualify as grade 1. If rot shortens the required clear cuttings to the extent of dropping the butt log to grade 2, do not drop the tree's grade to 3 unless the cull deduction for rot is greater than 40 percent.

TIE AND TIMBER GRADE

GRADE FACTORS	SPECIFICATIONS
Position in tree	Butts and uppers
Scaling Diameter (inches)	8 inches d.i.b. and larger
Length, without trim (feet)	12 feet and larger
Clear cuttings	no requirements: not graded on cutting basis
Maximum sweep allowance	One-fourth d.i.b. of small end for half logs, and one-half d.i.b. for logs sixteen feet long
Sound surface defects permitted Single knots	Any number, if none has an average collar ^a diameter that is more than one third of the log diameter at the point of occurrence
Sound surface defects permitted Whorled knots	Any number, provided the sum of the collar diameters does not exceed one third the log diameter at the point of occurrence
Sound surface defects permitted Knots	Any number not exceeding knot specifications, if they do not extend more than 3 inches into the contained tie or timber
Unsound surface defects permitted ^b	Any number and size if they do not extend into contained tie or timber. If they extend into the contained tie or timber, they shall not exceed size, number, and depth of limits for sound defects.

^a Knot collar is the average of the vertical and horizontal diameters of the limb, or knot swelling, as measured flush with the surface of the log.

^b Interior defects are not visible in standing trees. They are considered in grading cut logs. No interior defects are permitted except one shake not more than one-third the width of the contained tie or timber, and one split not more than 5 inches long.

EASTERN WHITE PINE TREE GRADE SPECIFICATIONS

GRADING FACTOR	TREE GRADE 1	TREE GRADE 2	TREE GRADE 3	TREE GRADE 4
(1) Minimum DBH (inches)	9	9	9	9
(2) Maximum weevil injury in butt 16 ft section (number)	None	None	2 injuries	No limit
(3) Minimum face requirements on butt 16 ft section	Two full length or four 50% length good faces ¹ (In addition, knots on balance of faces shall not exceed size limitations for grade 2 sections)	NO GOOD FACES REQUIRED. Maximum diameter of knots on three best faces: SOUND RED KNOTS not to exceed 1/6 of scaling dia. or 3 inch maximum ² DEAD OR BLACK KNOTS , including overgrown knots, not to exceed 1/12 scaling dia. and 1-1/2 inch max.	NO GOOD FACES REQUIRED. Maximum diameter of knots on three best faces: SOUND RED KNOTS not to exceed 1/3 of scaling diameter or 5 inch maximum ² DEAD OR BLACK KNOTS , including overgrown knots, not to exceed 1/6 scaling dia. and 2-1/2 inch max.	Includes all trees not qualifying for grade 3 or better and judged to have at least 1/3 of their gross volume in sound wood suitable for manufacture into standard lumber
(4) Maximum sweep or crook in butt 16 ft section (percent)	20	30	40	No limit
(5) Maximum total scaling deduction in butt 16 ft. section (percent)	50	50	50	No limit

After the tentative grade of the section is established from face examination, the section will be reduced one grade whenever the following defects are evident:

CONKS, PUNK KNOTS, AND PINE BORER DAMAGE ON THE SURFACE OF THE SECTION³ Degrade one grade if present on one face. Degrade two grades if present on two faces. Degrade three grades if present on three or four faces.

(7) If the final grade of the grading section is 1, 2, or 3, examine the tree for weevil injuries in the merchantable stem above 16 ft. If the total apparent weevil injuries exceed three, degrade the tree one grade below the section grade³. Otherwise the tree grade equals the final section grade.

¹ Trees under 16 inches DBH require four full length good faces.

² Scaling diameter is estimated at the top of the 16-foot grading section.

³ No tree will be designated below Grade 4 unless net tree scale is less than one-third of gross tree scale.

SOUTHERN PINE TREE GRADES

Grade 1 - trees with 3 or 4 clear faces on the 16-foot grading section.

Grade 2 - trees with 1 or 2 clear faces on the 16-foot grading section.

Grade 3 - trees with no clear faces on the 16-foot grading section.

After the tentative grade is established, the tree will be reduced one grade for each of the following:

(1) **Sweep.** Degrade any tentative Grade 1 or 2 tree one grade if sweep in the lower 12 feet of the grading section amounts to 3 or more inches and equals or exceeds one-fourth the diameter at breast height.

(2) **Heart rot.** Degrade any tentative Grade 1 or 2 tree one grade if conks, punk knots, or other evidence of advanced heart rot is found anywhere on the tree stem.

NOTE: No tree can be degraded below Grade 3, provided the total scaling deductions for sweep and/or rot do not exceed two-thirds the gross scale of the tree. Trees with total scaling deductions in excess of two-thirds are classified as cull.

A face is one-fourth the circumference of the 16-foot grading section and extends the full length of the grading section. Clear faces are those free from knots measuring more than 1/2 inch in diameter, overgrown knots of any size, and holes more than 1/4 inch in diameter. Faces may be rotated, if necessary, to obtain the maximum number of clear faces on the grading section.

One-log trees are graded by using the Southern Pine Log Grades. This is recommended because the entire merchantable volume of the tree is contained in the graded section. The log grading system gives a more accurate prediction of the lumber grade-yields for such trees than would the tree grading system.

SPRUCE, FIR, CEDAR, TAMARACK, AND HEMLOCK LOGS

Minimum Merchantability Specifications for Grade One Logs				
D.I.B. ¹	LENGTH ²	TOTAL DEDUCTION	SWEEP PERMITTED	OTHER REQUIREMENTS
6" - 12"	12' - 16' in 2 foot multiples	50 %	25 %	Sound knots not over 2" in diameter permitted. Shake permitted up to 20 % of gross scale if not combined with other serious defect.
13"+	12' - 16' in 2 foot multiples	50 %	25 %	Sound knots not over 3" in diameter permitted. Shake permitted up to 20 % of gross scale if not combined with other serious defect.

¹ ...at small end of log.

² ...without trim.

TREE GRADE 5 (ALL SPECIES)

Any tree which does not make tree grade 1,2, or 3 (or 4) but is still a merchantable tree.

Metric Equivalents

1 acre = 4,046.86 square meters
 1 acre = 0.404686 hectares
 1,000 acres = 404.686 hectares
 1,000,000 acres = 404,686 hectares
 1 board foot = 0.00348 cubic meters
 1 board foot = 3,480 cubic centimeters
 1,000 board feet = 3.48 cubic meters
 1,000,000 board feet = 3,480 cubic meters
 1 cubic foot = 0.028317 cubic meters
 1,000 cubic feet = 28.317 cubic meters
 1,000,000 cubic feet = 28,317 cubic meters
 1 cord (wood, bark, and air space) = 3.6246 cubic meters
 1 cord (solid wood, pulpwood) = 2.4069 cubic meters
 1 cord (solid wood, other than pulpwood) = 2.2654 cubic meters
 1,000 cords (pulpwood) = 2,406.9 cubic meters
 1,000 cords (other products) = 2,265.4 cubic meters
 1 inch = 2.54 centimeters or 0.0254 meters
 1 foot = 30.48 centimeters or 0.3048 meters
 1 mile = 1.609 kilometers
 1 square foot = 929.03 square centimeters
 1 square foot = 0.0929 square meters
 1 square foot per acre basal area = 0.229568 square meters per hectare
 1 cubic foot per acre = 0.0699 cubic meters per hectare
 1 ton = 907.1848 kilograms
 1,000 tons = 907.1848 metric tons
 Breast height = 1.4 meters above ground level

Although 1,000 board feet are theoretically equivalent to 2.36 cubic meters, this is true only when a board foot is actually a piece of wood with a volume 1/12 of a cubic foot. The International 1/4-inch log rule is used by the USDA Forest Service in the East to estimate the product potential in board feet. The reliability of the estimate obtained by conversion will vary with the size of the log measure. The conversion given here, 3.48 cubic meters, is based on the cubic volume of a log 16 feet long and 15 inches in diameter inside bark (d.i.b.) at the small end. This conversion could be used for average comparisons when accuracy of 10 percent is acceptable. Because the board foot unit is not a true measure of wood volume and because products other than dimension lumber are becoming important, this unit may eventually be phased out and replaced by the cubic meter.

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3. Area of timberland by forest type, forest-type group, and stand-size class, Delaware, 1999.
4. Area of timberland by forest-type group and ownership class, Delaware, 1999.
5. Area of timberland by ownership class and stand-size class, Delaware, 1999.
6. Area of timberland by forest-type group and cubic-foot stand-volume class of growing-stock trees, Delaware, 1999.
7. Area of timberland by forest-type group and board-foot stand-volume class, Delaware, 1999.
8. Area of timberland by forest-type group and stocking class of all live trees, Delaware, 1986.
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10. Area of timberland by forest-type group and stocking class of growing-stock trees, Delaware, 1986.
11. Area of timberland by forest-type group and stocking class of growing-stock trees, Delaware, 1999.
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Number of Trees

13. Number of live trees (1.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1999.
14. Number of live trees on timberland by diameter class, tree class, and species group, Delaware, 1999.
15. Number of standing dead trees (5.0+ inches d.b.h.) on timberland by species, condition class, and diameter class, Delaware, 1999.
16. Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1986.
17. Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1999.
18. Number of seedlings on timberland by species and stand-size class, Delaware, 1999.
19. Number of saplings on timberland by species and stand-size class, Delaware, 1999.
20. Number of shrubs on timberland by species and stand-size class, Delaware, 1999.

Volume

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Table 1. Land area by land-use class, Delaware, 1986 and 1999^a

Land class	(In thousands of acres)			
	1999		1986	
	Area	Percent	Area	Percent
Timberland:				
Rural	370.4	29.6	392.3	31.4
Urban	5.1	.4	3.5	.3
Total timberland	375.6	30.0	395.8	31.6
Forested land:				
Other forest land ^c	7.3	.6	6.9	.6
Total forest land	382.9	30.6	402.7	32.2
Nonforest land:				
Cropland	433.4	34.6	488.8	39.1
Pasture	15.6	1.2	16.6	1.3
Other	411.4	32.9	312.4	25.0
Noncensus water	7.7	.6	30.4	2.4
Total nonforest land	868.1	69.4	848.3	67.8
Total land area ^d	1,251.0 ^b	100.0	1,251.0 ^b	100.0

^a In this and other tables, a zero indicates that the data are negligible or the condition was not encountered in the sample. A dash indicates that the condition is not possible under current Forest Service definitions.

^b Rows and columns in all tables may not sum due to rounding.

^c "Other forest land" formerly known as unproductive forest land.

^d Source: 1990 United States Department of Commerce, Bureau of Census.

Table 2. Area of timberland by forest type, forest-type group, and stand-size class, Delaware, 1986

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Loblolly pine	24.5	19.5	8.5	.0	52.4	26.2
Virginia pine	6.9	.0	.0	.0	6.9	69.6
Loblolly/shortleaf group	31.4	19.5	8.5	.0	59.4	24.6
Virginia pine/oak	7.5	7.2	3.7	.0	18.4	42.9
Loblolly pine/hardwood	22.9	14.3	12.0	.0	49.2	27.1
Oak/pine group	30.5	21.5	15.7	.0	67.6	22.9
White oak	15.8	7.2	.0	.0	23.0	37.0
Northern red oak	.0	3.1	.0	.0	3.1	100.0
Y-poplar/wh. oak/no.red oak	3.5	.0	.0	.0	3.5	100.0
Sweetgum/yellow-poplar	6.9	8.0	.0	.0	15.0	50.5
Yellow-poplar	3.5	.0	.0	.0	3.5	100.0
Scarlet oak	.0	7.2	.0	.0	7.2	70.8
Sassafras/persimmon	.0	3.5	.0	.0	3.5	100.0
Red maple/central hardwood	.0	3.5	3.7	.0	7.1	70.7
Mixed central hardwoods	91.2	25.8	20.9	.0	137.8	14.1
Oak/hickory group	120.8	58.3	24.6	.0	203.7	9.6
Sweetgm/nuttall oak/willow oak	14.4	12.1	.0	.0	26.5	38.1
Sweetbay/swamp tupelo/red mple	.0	7.5	.0	.0	7.5	68.4
Oak/gum/cypress group	14.4	19.6	.0	.0	34.1	32.8
Red maple(lowland)	4.9	.0	4.5	.0	9.4	70.8
American elm/green ash	.0	3.5	.0	.0	3.5	100.0
Elm/ash/red maple group	4.9	3.5	4.5	.0	12.9	58.3
Black Cherry	3.5	3.8	7.5	.0	14.7	51.2
Red maple/northern hardwoods	3.5	.0	.0	.0	3.5	100.0
Northern hardwoods group	6.9	3.8	7.5	.0	18.2	45.6
All forest types	208.9	126.1	60.8	.0	395.8	3.5
SE	9.4	15.1	23.0	.0	3.5	

Table 3. Area of timberland by forest type, forest-type group, and stand-size class, Delaware, 1999

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Loblolly pine	19.2	17.5	11.0	1.0	48.6	27.9
Virginia pine	.8	.0	.0	.0	.8	100.0
Loblolly/shortleaf group	19.9	17.5	11.0	1.0	49.4	27.5
Loblolly pine/hardwood	19.4	16.5	1.4	.0	37.3	31.9
Oak/pine group	19.4	16.5	1.4	.0	37.3	31.9
Post, black, or bear oak	7.1	.0	.0	.0	7.1	70.7
White oak/red oak/hickory	7.9	.0	.0	.0	7.9	64.2
White oak	17.8	.0	.0	.0	17.8	49.6
Y-poplar/wh. oak/no.red oak	4.5	.0	.0	.0	4.5	100.0
Sweetgum/yellow-poplar	7.5	1.8	1.5	.0	10.8	50.0
Yellow-poplar	1.4	.0	.0	.0	1.4	100.0
Hawthorn/reverting field	.0	.0	7.9	.8	8.7	61.7
Scarlet oak	13.1	3.1	.0	.0	16.3	47.9
Red maple/central hardwood	8.5	7.0	.0	.0	15.5	53.2
Mixed central hardwoods	108.5	23.0	19.0	.0	150.6	14.0
Oak/hickory group	176.5	35.0	28.4	.8	240.6	8.8
Swamp chsnt oak/cherrybark oak	4.9	.0	.0	.0	4.9	100.0
Sweetgm/nuttall oak/willow oak	15.8	1.9	.0	.0	17.7	49.0
Baldcypress/water tupelo	.0	.0	1.5	.0	1.5	100.0
Sweetbay/swamp tupelo/red mple	.0	.0	1.5	.0	1.5	100.0
Oak/gum/cypress group	20.7	1.9	3.0	.0	25.5	39.2
Black ash/Amer. elm/red maple	3.5	.0	.0	.0	3.5	100.0
Red maple(lowland)	6.0	.0	3.3	.0	9.3	69.4
Red maple(upland)	1.4	.0	.0	.0	1.4	100.0
Cottonwood	.0	.5	.0	.0	.5	100.0
Elm/ash/red maple group	10.9	.5	3.3	.0	14.7	50.7
Black Cherry	.0	1.4	.0	.0	1.4	100.0
Red maple/northern hardwoods	2.7	.0	.0	.0	2.7	100.0
Mixed northern hardwoods	2.3	1.6	.0	.0	4.0	71.8
Northern hardwoods group	5.0	3.0	.0	.0	8.0	51.6
All forest types	252.4	74.3	47.0	1.8	375.6	3.3
SE	7.9	21.2	27.9	70.9	3.3	

Table 4. Area of timberland by forest-type group and ownership class, Delaware, 1999

(In thousands of acres)

Forest-type group	Ownership class				All classes	SE
	National Forest	Other public	Forest industry	Other private		
Loblolly/shortleaf	.0	.8	15.5	33.1	49.4	27.5
Oak/pine	.0	2.5	10.2	24.6	37.3	31.9
Oak/hickory	.0	20.1	.0	220.5	240.6	8.8
Oak/gum/cypress	.0	.0	.0	25.5	25.5	39.2
Elm/ash/red maple	.0	1.6	.0	13.0	14.7	50.7
Northern hardwoods	.0	.0	.0	8.0	8.0	51.6
Total, all groups	.0	25.0	25.7	324.9	375.6	3.3
SE	.0	34.9	39.1	5.3	3.3	

Table 5. Area of timberland by ownership and stand-size classes, Delaware, 1999

(In thousands of acres)

Ownership class	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
State	12.9	.0	8.0	.8	21.7	38.7
State Forest	3.3	.0	.0	.0	3.3	100.0
Total public	16.2	.0	8.0	.8	25.0	34.9
Forest industry	8.7	12.0	5.0	.0	25.7	39.1
Farmer	62.2	5.7	4.5	.0	72.5	21.7
Misc. : corporate	22.7	14.5	6.0	.0	43.3	32.4
: individual	121.1	31.6	17.5	1.0	171.3	12.6
: other	21.4	10.4	6.0	.0	37.9	32.3
Total private	236.2	74.3	39.0	1.0	350.5	4.0
Total, all ownerships	252.4	74.3	47.0	1.8	375.6	3.3
SE	7.9	21.2	27.9	70.9	3.3	

Table 6. Area of timberland by forest-type group and cubic-foot stand-volume class of growing-stock trees, Delaware, 1999

(In thousands of acres)

Forest-type group	Stand-volume class (cubic feet per acre)						All classes	SE
	0-499	500-999	1000-1499	1500-1999	2000-2499	2500+		
Loblolly/shortleaf	15.4	4.3	11.5	.0	4.3	13.8	49.4	27.5
Oak/pine	.0	6.0	.0	11.9	6.8	12.6	37.3	31.9
Oak/hickory	30.3	14.7	58.8	31.4	25.9	79.5	240.6	8.8
Oak/gum/cypress	1.5	4.9	1.9	8.1	6.5	2.7	25.5	39.2
Elm/ash/red maple	2.2	1.6	3.5	.0	.0	7.4	14.7	50.7
Northern hardwoods	.0	3.0	.0	.0	.0	5.0	8.0	51.6
Total, all groups	49.3	34.6	75.7	51.4	43.6	121.0	375.6	3.3
SE	27.5	33.8	21.2	27.6	29.3	16.0	3.3	

Table 7. Area of timberland by forest-type group and board-foot stand-volume class, Delaware, 1999

(In thousands of acres)

Forest-type group	Stand-volume class (board feet per acre)						All classes	SE
	0-1999	2000-3999	4000-5999	6000-7999	8000-9999	10000+		
Loblolly/shortleaf	26.7	4.5	7.0	.8	4.3	6.0	49.4	27.5
Oak/pine	6.0	11.9	6.8	.0	4.3	8.3	37.3	31.9
Oak/hickory	44.8	37.0	48.3	38.4	30.6	41.5	240.6	8.8
Oak/gum/cypress	3.4	4.9	11.2	3.5	.0	2.7	25.5	39.2
Elm/ash/red maple	3.8	3.5	.0	.0	.0	7.4	14.7	50.7
Northern hardwoods	3.0	.0	.0	.0	2.3	2.7	8.0	51.6
Total, all groups	87.7	61.7	73.3	42.6	41.6	68.5	375.6	3.3
SE	19.8	25.5	22.9	29.5	27.6	22.6	3.3	

Table 8. Area of timberland by forest-type group and stocking class of all live trees, Delaware, 1986

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Loblolly/shortleaf	.0	.0	3.7	36.2	19.5	59.4	24.6
Oak/pine	.0	.0	13.2	54.5	.0	67.6	22.9
Oak/hickory	.0	15.6	72.6	102.0	13.5	203.7	9.6
Oak/gum/cypress	.0	.0	8.6	25.4	.0	34.1	32.8
Elm/ash/red maple	.0	.0	9.4	3.5	.0	12.9	58.3
Northern hardwoods	.0	.0	7.2	6.1	4.9	18.2	45.6
Total, all groups	.0	15.6	114.7	227.6	37.8	395.8	3.5
SE	.0	50.6	15.3	9.4	32.4	3.5	

Table 9. Area of timberland by forest-type group and stocking class of all live trees, Delaware, 1999

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Loblolly/shortleaf	1.0	3.5	.8	35.5	8.7	49.4	27.5
Oak/pine	.0	.0	.0	34.7	2.6	37.3	31.9
Oak/hickory	.8	18.2	69.5	136.7	15.4	240.6	8.8
Oak/gum/cypress	.0	6.4	5.3	9.7	4.2	25.5	39.2
Elm/ash/red maple	.0	3.5	3.3	6.5	1.4	14.7	50.7
Northern hardwoods	.0	1.4	.0	6.7	.0	8.0	51.6
Total, all groups	1.8	33.0	78.8	229.7	32.2	375.6	3.3
SE	70.9	30.0	20.3	8.8	35.5	3.3	

Table 10. Area of timberland by forest-type group and stocking class of growing-stock trees, Delaware, 1986

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Loblolly/shortleaf	.0	.0	3.7	36.2	19.5	59.4	24.6
Oak/pine	.0	.0	13.2	54.5	.0	67.6	22.9
Oak/hickory	3.5	18.9	95.5	82.2	3.7	203.7	9.6
Oak/gum/cypress	.0	.0	8.6	25.4	.0	34.1	32.8
Elm/ash/red maple	.0	.0	9.4	3.5	.0	12.9	58.3
Northern hardwoods	.0	7.2	.0	6.1	4.9	18.2	45.6
Total, all groups	3.5	26.2	130.3	207.8	28.0	395.8	3.5
SE	100.0	37.7	13.9	10.0	39.3	3.5	

Table 11. Area of timberland by forest-type group and stocking class of growing-stock trees, Delaware, 1999

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Loblolly/shortleaf	1.0	3.5	9.6	26.6	8.7	49.4	27.5
Oak/pine	.0	.0	3.4	31.3	2.6	37.3	31.9
Oak/hickory	5.7	26.2	97.0	104.4	7.4	240.6	8.8
Oak/gum/cypress	.0	6.4	5.3	9.7	4.2	25.5	39.2
Elm/ash/red maple	.0	3.5	3.3	7.9	.0	14.7	50.7
Northern hardwoods	.0	1.4	4.3	2.3	.0	8.0	51.6
Total, all groups	6.6	40.9	122.9	182.3	22.9	375.6	3.3
SE	75.6	28.2	15.9	11.3	40.6	3.3	

Table 12. Area of timberland by forest-type group and basal-area class, Delaware, 1999

(In thousands of acres)

Forest-type group	Basal area class (square feet per acre)							All classes	SE
	0-49	50-99	100-149	150-199	200-249	250-299	300+		
Loblolly/shortleaf	11.9	3.5	20.2	10.3	3.5	.0	.0	49.4	27.5
Oak/pine	.0	3.4	30.2	3.6	.0	.0	.0	37.3	31.9
Oak/hickory	23.9	81.2	93.7	38.5	3.3	.0	.0	240.6	8.8
Oak/gum/cypress	1.5	6.7	13.2	1.5	2.7	.0	.0	25.5	39.2
Elm/ash/red maple	2.2	5.1	.0	6.0	1.4	.0	.0	14.7	50.7
Northern hardwoods	1.4	.0	4.3	2.3	.0	.0	.0	8.0	51.6
Total, all groups	40.9	100.0	161.5	62.4	10.8	.0	.0	375.6	3.3
SE	31.4	18.1	12.6	25.4	48.3	.0	.0	3.3	

Table 13. Number of live trees (1.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1999

Species group	(In thousands of trees)							
	Diameter class (inches at breast height)							
	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
Loblolly pine	12,932	3,435	3,738	2,960	2,131	881	509	344
Virginia pine	1,987	596	699	186	169	139	163	20
Other softwoods	2,194	0	36	20	0	0	0	0
Total softwoods	17,114	4,031	4,473	3,166	2,300	1,021	673	364
Red maple	34,991	7,279	5,069	3,302	1,964	1,230	1,000	676
Hickory	1,948	0	145	123	54	42	21	0
Beech	746	509	282	127	172	63	0	41
Sweetgum	16,342	7,174	2,272	1,859	1,450	660	628	349
Yellow-poplar	2,331	699	828	774	144	161	211	62
Blackgum	16,928	4,436	1,505	543	467	203	253	152
Ash-walnut-cherry	3,542	1,709	859	349	279	269	64	63
Select white oaks	1,297	2,002	981	680	711	789	482	270
Select red oaks	0	0	0	43	68	0	42	0
Other white oaks	901	0	67	33	0	0	73	33
Other red oaks	8,656	5,142	1,517	1,532	1,027	840	693	363
Black locust	0	1,823	29	0	0	0	0	0
Other commercial hardwoods	32,935	8,459	3,230	1,221	685	181	94	0
Noncommercial hardwoods	18,345	2,684	1,081	422	321	100	21	0
Total hardwoods	138,963	41,917	17,866	11,008	7,343	4,537	3,581	2,009
Total, all species	156,077	45,948	22,339	14,174	9,643	5,558	4,254	2,374
SE	11.0	11.7	7.8	8.7	9.1	8.3	10.6	13.8

Table 13. continued

(In thousands of trees)

Species group	Diameter class (inches at breast height)				Total 5.0+	All classes	SE
	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+			
Loblolly pine	134	158	52	0	10,909	27,275	29.7
Virginia pine	20	0	0	0	1,396	3,980	40.7
Other softwoods	0	0	0	0	56	2,251	54.7
Total softwoods	154	158	52	0	12,361	33,506	24.8
Red maple	355	353	300	29	14,279	56,550	16.2
Hickory	0	0	0	0	385	2,334	47.3
Beech	41	20	36	0	782	2,037	42.5
Sweetgum	161	49	79	0	7,509	31,025	15.8
Yellow-poplar	0	82	159	20	2,441	5,471	31.4
Blackgum	65	0	50	0	3,238	24,602	18.7
Ash-walnut-cherry	0	0	63	0	1,946	7,197	28.6
Select white oaks	68	128	200	51	4,360	7,659	24.4
Select red oaks	43	0	39	0	235	235	45.7
Other white oaks	33	0	0	0	240	1,141	81.0
Other red oaks	346	289	162	21	6,790	20,588	19.3
Black locust	0	0	0	0	29	1,852	100.0
Other commercial hardwoods	0	0	0	21	5,433	46,827	14.5
Noncommercial hardwoods	0	0	0	0	1,946	22,975	23.8
Total hardwoods	1,114	921	1,090	142	49,613	230,493	8.0
Total, all species	1,269	1,079	1,142	142	61,974	263,999	7.7
SE	17.7	16.9	20.2	50.3	6.0	7.7	

Table 14. Number of live trees on timberland by diameter class, tree class, and species group, Delaware, 1999

(In thousands of trees)

Diameter class	Growing stock		Cull		All classes	SE
	Softwoods	Hardwoods	Softwoods	Hardwoods		
Seedlings	25,008	869,973	0	136,797	1,031,778	15.9
1.0 - 2.9	17,114	120,618	0	18,345	156,077	11.0
3.0 - 4.9	4,031	39,232	0	2,684	45,948	11.7
Total saplings	21,145	159,851	0	21,029	202,025	9.8
5.0 - 6.9	4,028	12,893	445	4,973	22,339	7.8
7.0 - 8.9	3,059	9,003	107	2,005	14,174	8.7
9.0 - 10.9	0	6,381	0	962	7,343	10.5
Total poletimber	7,087	28,277	552	7,940	43,856	6.8
9.0 - 10.9	2,245	0	55	0	2,300	25.8
11.0 - 12.9	1,000	4,219	21	318	5,558	8.3
13.0 - 14.9	673	3,437	0	144	4,254	10.6
Total small sawtimber	3,918	7,656	76	463	12,112	8.1
15.0 - 16.9	364	1,973	0	36	2,374	13.8
17.0 - 18.9	154	1,057	0	57	1,269	17.7
19.0 - 20.9	158	901	0	20	1,079	16.9
21.0 - 28.9	52	1,051	0	39	1,142	20.2
29.0 and larger	0	113	0	29	142	50.3
Total large sawtimber	729	5,095	0	182	6,006	11.1
All classes	57,886	1,070,853	628	166,411	1,295,777	13.0
SE	25.4	12.4	59.9	33.3	13.0	

Table 15. Number of standing dead trees (5.0+ inches d.b.h.) on timberland by species, condition class, and diameter class, Delaware, 1999

(In thousands of trees)

Species group	Intact top				Broken top				All trees	SE
	5.0-10.9	11.0-14.9	15+	Total	5.0-10.9	11.0-14.9	15+	Total		
Loblolly pine	114	52	26	193	1,053	208	52	1,313	1,506	35.7
Virginia pine	68	0	0	68	167	0	20	187	255	50.9
Other softwoods	20	0	0	20	36	0	0	36	56	73.6
Total softwoods	202	52	26	280	1,256	208	72	1,537	1,817	30.4
Red maple	108	0	0	108	431	89	0	520	628	29.6
Hickory	0	0	0	0	0	0	42	42	42	100.0
Sweetgum	21	0	0	21	140	62	26	229	250	49.8
Yellow-poplar	0	0	0	0	147	63	0	210	210	100.0
Ash-walnut-cherry	0	0	0	0	194	108	0	302	302	68.9
Select white oaks	0	0	36	36	201	50	21	273	309	35.5
Select red oaks	0	0	22	22	0	0	0	0	22	100.0
Other red oaks	100	0	22	122	419	78	55	553	674	26.1
Other commercial hardwoods	0	0	0	0	86	0	0	86	86	58.4
Noncommercial hardwoods	221	59	0	279	581	105	49	735	1,015	32.3
Total hardwoods	450	59	80	589	2,199	555	194	2,949	3,538	17.1
Total, all species	652	111	106	869	3,456	764	266	4,485	5,355	14.9
SE	30.3	70.8	50.5	26.2	15.5	25.9	33.1	15.3	14.9	

Table 16. Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1986

(In thousands of trees)

Species group	Diameter class (inches at breast height)										All classes	SE
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+		
White/red pine	0	0	0	0	0	0	0	8	0	0	8	100.0
Loblolly pine	3,644	3,480	2,244	1,193	830	511	228	91	70	0	12,291	23.1
Virginia pine	853	971	908	451	161	35	9	0	11	0	3,399	34.1
Other softwoods	0	0	28	0	0	0	0	0	0	0	28	100.0
Total softwoods	4,497	4,451	3,180	1,643	991	546	237	99	81	0	15,725	20.5
Red maple	5,760	2,720	1,993	1,054	542	300	132	46	103	4	12,654	13.2
Hickory	415	119	113	24	50	14	0	0	17	0	753	31.3
Beech	189	138	46	36	19	39	0	8	26	0	501	41.7
Sweetgum	3,392	1,853	1,206	750	473	269	131	77	62	0	8,214	16.7
Yellow-poplar	406	134	119	25	92	136	162	72	99	16	1,261	32.8
Blackgum	1,289	747	673	365	194	41	27	9	0	0	3,345	23.3
Ash-walnut-cherry	577	455	381	270	181	40	102	23	24	0	2,053	30.0
Select white oaks	1,899	975	837	649	371	252	144	113	132	11	5,384	15.3
Select red oaks	77	96	174	98	78	14	37	0	37	14	627	36.9
Other white oaks	114	0	60	52	0	10	28	16	28	0	309	55.1
Other red oaks	1,977	1,386	1,081	868	639	267	197	89	69	8	6,581	15.5
Other hardwoods	2,307	457	273	67	0	0	0	0	12	0	3,116	26.7
Total hardwoods	18,403	9,081	6,956	4,256	2,639	1,383	961	454	610	53	44,798	7.2
Total, all species	22,901	13,531	10,136	5,900	3,631	1,929	1,198	553	690	53	60,524	7.0
SE	9.8	10.0	8.5	9.2	8.7	11.8	11.2	16.5	16.2	30.7	7.0	

Table 17. Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Delaware, 1999

(In thousands of trees)

Species group	Diameter class (inches at breast height)										All classes	SE
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+		
Loblolly pine	3,294	2,879	2,076	860	509	344	134	158	52	0	10,307	21.6
Virginia pine	699	160	169	139	163	20	20	0	0	0	1,370	33.1
Other softwoods	36	20	0	0	0	0	0	0	0	0	56	73.6
Total softwoods	4,028	3,059	2,245	1,000	673	364	154	158	52	0	11,733	19.8
Red maple	3,608	2,509	1,653	1,176	953	676	298	353	300	0	11,527	11.8
Hickory	109	87	21	42	21	0	0	0	0	0	280	44.7
Beech	97	91	172	63	0	41	41	20	36	0	561	42.1
Sweetgum	1,976	1,816	1,371	660	589	313	161	29	79	0	6,995	17.9
Yellow-poplar	755	696	124	161	174	62	0	82	159	20	2,235	29.8
Blackgum	1,237	501	418	203	253	152	65	0	50	0	2,879	15.1
Ash-walnut-cherry	450	227	183	126	64	63	0	0	63	0	1,176	30.4
Select white oaks	814	680	711	789	482	270	68	128	200	51	4,193	17.3
Select red oaks	0	43	68	0	42	0	43	0	39	0	235	45.7
Other white oaks	67	33	0	0	73	33	33	0	0	0	240	85.2
Other red oaks	1,353	1,343	976	818	693	363	346	289	122	21	6,324	15.9
Other hardwoods	2,426	977	685	181	94	0	0	0	0	21	4,385	19.5
Total hardwoods	12,893	9,003	6,381	4,219	3,437	1,973	1,057	901	1,051	113	41,029	7.3
Total, all species	16,921	12,062	8,627	5,219	4,109	2,338	1,211	1,059	1,103	113	52,762	6.6
SE	9.1	10.2	9.6	8.7	11.0	13.9	18.3	17.1	19.4	44.7	6.6	

Table 18. Number of seedlings on timberland by species and stand-size class,
Delaware, 1999

(in thousands of stems)

Species	Stand-size class				All classes	SE
	Saw- timber	Pole- timber	Sapling and seedling	Non- stocked		
eastern redcedar	0	0	3,036	0	3,036	100.0
loblolly pine	1,523	1,523	11,314	0	14,359	44.9
Virginia pine	0	0	4,568	0	4,568	100.0
baldcypress	1,523	0	1,523	0	3,045	100.0
striped maple	839	0	0	0	839	100.0
red maple	124,195	46,427	46,858	0	217,480	22.6
serviceberry	10,726	12,411	0	0	23,138	51.3
river birch	3,045	0	0	0	3,045	100.0
American hornbeam	1,783	0	0	0	1,783	70.7
hickory	1,407	0	0	0	1,407	100.0
pignut hickory	917	0	0	0	917	100.0
mockernut hickory	0	1,096	0	0	1,096	100.0
catalpa	2,519	0	1,231	0	3,750	74.7
eastern redbud	917	0	0	0	917	100.0
flowering dogwood	4,699	1,523	0	0	6,222	53.3
American beech	3,443	7,035	0	0	10,477	69.0
green ash	4,568	0	0	0	4,568	100.0
pumpkin ash	2,462	0	0	0	2,462	100.0
American holly	83,069	20,711	101,381	0	205,161	29.5
sweetgum	101,044	18,376	22,772	0	142,193	33.5
yellow-poplar	37,124	2,703	10,658	0	50,485	65.9
cucumber tree	0	5,628	0	0	5,628	100.0
sweetbay	44,186	0	1,523	0	45,709	29.2
apple	0	0	3,694	0	3,694	100.0
mulberry	3,358	0	0	0	3,358	100.0
blackgum	27,633	26,651	12,443	0	66,727	27.4
bigtooth aspen	0	901	0	0	901	100.0
quaking aspen	3,288	0	0	0	3,288	100.0
cherry, plum	1,763	0	0	0	1,763	100.0
pin cherry	1,763	0	0	0	1,763	100.0
black cherry	14,389	0	9,922	0	24,312	33.2
oak	9,171	0	0	0	9,171	100.0
white oak	25,237	0	0	0	25,237	39.1
scarlet oak	0	15,572	0	0	15,572	76.5
southern red oak	3,109	0	0	0	3,109	76.4
swamp chestnut oak	2,462	0	0	0	2,462	100.0
water oak	3,045	15,529	0	0	18,575	61.0
willow oak	2,885	1,231	0	0	4,116	55.9
northern red oak	0	0	1,654	0	1,654	100.0
black oak	13,393	0	0	0	13,393	53.5
sassafras	12,727	3,714	63,957	0	80,399	65.6
Total seedlings	554,214	181,031	296,533	0	1,031,778	15.9
SE	17.3	28.3	50.6	.0	15.9	

Table 19. Number of saplings on timberland by species and stand-size class,
Delaware, 1999

(In thousands of stems)						
Species	Stand-size class				All classes	SE
	Saw- timber	Pole- timber	Sapling and seedling	Non- stocked		
Atlantic white-cedar	980	451	0	0	1,431	75.4
eastern redcedar	497	267	0	0	764	73.8
loblolly pine	2,943	3,080	10,344	0	16,367	46.1
Virginia pine	2,583	0	0	0	2,583	56.4
striped maple	249	0	0	0	249	100.0
red maple	18,321	10,772	13,178	0	42,271	21.6
river birch	2,254	0	0	0	2,254	100.0
American hornbeam	2,515	0	0	0	2,515	90.2
pignut hickory	271	0	0	0	271	100.0
mockernut hickory	451	1,226	0	0	1,677	61.7
catalpa	0	0	2,916	0	2,916	100.0
flowering dogwood	2,223	1,265	0	0	3,488	42.3
common persimmon	625	0	0	0	625	71.7
American beech	1,255	0	0	0	1,255	57.0
green ash	0	271	0	0	271	100.0
American holly	18,183	3,543	7,668	0	29,394	19.6
black walnut	249	0	0	0	249	100.0
sweetgum	13,879	6,927	2,709	0	23,516	18.3
yellow-poplar	2,763	267	0	0	3,030	44.5
cucumbertree	0	417	0	0	417	100.0
sweetbay	7,071	0	833	0	7,904	35.3
apple	0	0	2,551	0	2,551	100.0
blackgum	14,091	4,568	2,705	0	21,364	20.8
bigtooth aspen	0	800	0	0	800	100.0
pin cherry	0	0	451	0	451	100.0
black cherry	3,029	722	979	0	4,731	40.8
white oak	2,485	324	489	0	3,299	47.7
scarlet oak	973	1,879	489	0	3,342	54.3
southern red oak	0	1,497	0	0	1,497	66.5
water oak	1,100	1,847	0	0	2,946	45.3
chestnut oak	0	0	901	0	901	100.0
black oak	2,251	901	2,860	0	6,012	41.1
black locust	0	0	1,823	0	1,823	100.0
sassafras	3,444	3,449	1,469	0	8,362	36.0
unknown tree	497	0	0	0	497	100.0
Total saplings	105,184	44,475	52,365	0	202,025	9.8
SE	12.2	26.5	36.2	.0	9.8	

Table 20. Number of shrubs on timberland by species and stand-size class, Delaware, 1999

Species	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
speckled alder	0	0	4,568	0	4,568	100.0
Hercules club	5,485	1,802	13,230	0	20,516	67.2
azalea	2,751	4,408	0	0	7,159	72.6
barberry	901	0	0	0	901	100.0
sweet pepperbush	1,620,178	340,131	1,523	0	1,961,832	16.2
fringetree	882	0	0	0	882	100.0
sweetfern	0	2,192	0	0	2,192	100.0
alternate-leaved dogwood	0	0	3,307	0	3,307	100.0
round-leaved dogwood	1,763	0	0	0	1,763	100.0
gray-stemmed dogwood	0	6,306	0	0	6,306	100.0
huckleberry	422,927	101,803	4,568	0	529,298	35.1
witch-hazel	4,504	0	0	0	4,504	100.0
fetterbush	6,311	901	0	0	7,212	63.1
sheep laurel	6,090	9,171	0	0	15,261	72.1
mountain laurel	7,029	0	0	0	7,029	72.8
common spicebush	22,943	1,231	0	0	24,174	65.3
male-berry, staggerbush	11,081	0	0	0	11,081	69.7
buckthorn	11,462	0	0	0	11,462	78.8
azalea (deciduous)	119,883	1,096	0	0	120,979	69.3
staghorn sumac	0	0	14,775	0	14,775	100.0
currant, gooseberry	1,763	0	0	0	1,763	100.0
rose	21,175	0	1,231	0	22,406	57.1
brier, bramble, dewberry	103,762	19,014	96,100	0	218,876	29.6
blueberry	577,246	315,852	88,442	0	981,541	19.1
viburnum	112,848	6,159	0	0	119,007	44.9
arrowwood	92,719	16,006	22,767	0	131,493	40.4
unknown deciduous shrub	2,664	0	1,654	0	4,318	59.7
unknown evergreen shrub	2,603	0	0	0	2,603	75.0
Total shrubs	3,158,973	826,072	252,165	0	4,237,210	11.6
SE	14.2	37.0	38.1	.0	11.6	

Table 21. Net volume of growing-stock trees on timberland by forest type and stand-size class, Delaware, 1999

(In millions of cubic feet)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Loblolly pine	46.3	19.4	.6	.0	66.3	39.3
Virginia pine	2.1	.0	.0	.0	2.1	100.0
Loblolly/shortleaf group	48.4	19.4	.6	.0	68.4	38.3
Loblolly pine/hardwood	49.7	24.1	1.2	.0	75.1	33.0
Oak/pine group	49.7	24.1	1.2	.0	75.1	33.0
Post, black, or bear oak	11.1	.0	.0	.0	11.1	72.3
White oak/red oak/hickory	13.3	.0	.0	.0	13.3	82.9
White oak	35.3	.0	.0	.0	35.3	45.4
Y-poplar/wh. oak/no.red oak	6.6	.0	.0	.0	6.6	100.0
Sweetgum/yellow-poplar	15.7	4.6	.2	.0	20.5	55.2
Yellow-poplar	4.8	.0	.0	.0	4.8	100.0
Scarlet oak	27.9	3.4	.0	.0	31.3	50.8
Red maple/central hardwood	21.1	8.5	.0	.0	29.6	59.7
Mixed central hardwoods	256.0	33.8	3.3	.0	293.1	16.7
Oak/hickory group	391.9	50.3	3.4	.0	445.6	11.5
Swamp chsnt oak/cherrybark oak	4.5	.0	.0	.0	4.5	100.0
Sweetgm/nuttall oak/willow oak	39.7	2.6	.0	.0	42.3	51.3
Sweetbay/swamp tupelo/red mple	.0	.0	2.5	.0	2.5	100.0
Oak/gum/cypress group	44.3	2.6	2.5	.0	49.4	45.0
Black ash/Amer. elm/red maple	3.8	.0	.0	.0	3.8	100.0
Red maple(lowland)	25.1	.0	.9	.0	26.0	96.6
Red maple(upland)	5.2	.0	.0	.0	5.2	100.0
Cottonwood	.0	.1	.0	.0	.1	100.0
Elm/ash/red maple group	34.1	.1	.9	.0	35.1	73.9
Black Cherry	.0	.8	.0	.0	.8	100.0
Red maple/northern hardwoods	8.2	.0	.0	.0	8.2	100.0
Mixed northern hardwoods	8.1	1.4	.0	.0	9.5	86.2
Northern hardwoods group	16.3	2.3	.0	.0	18.6	62.7
All forest types	584.7	98.7	8.7	.0	692.2	7.4
SE	9.7	24.3	42.3	.0	7.4	

Table 22. Net volume of all live trees on timberland by species and diameter class, Delaware, 1986

(In millions of cubic feet)												
Species group	Diameter class (inches at breast height)										All classes	SE
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+		
White/red pine	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.5	100.0
Loblolly pine	9.9	18.8	23.6	21.3	21.3	16.5	9.9	5.0	4.9	.0	131.3	17.2
Virginia pine	2.2	5.5	9.7	8.0	3.9	1.1	.4	.0	.6	.0	31.5	36.5
Other softwoods	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.3	100.0
Total softwoods	12.1	24.3	33.5	29.3	25.3	17.6	10.4	5.6	5.5	.0	163.5	15.7
Red maple	14.3	16.4	23.9	20.0	14.7	10.7	6.7	2.4	9.1	1.0	119.2	14.4
Hickory	1.3	.9	1.6	.4	1.7	.5	.0	.0	1.8	.0	8.2	39.7
Beech	.4	1.0	.7	.7	.6	1.4	.2	.5	2.5	.4	8.7	57.7
Sweetgum	8.0	12.1	14.4	12.6	12.3	9.5	6.1	4.3	4.8	.0	84.2	15.6
Yellow-poplar	1.1	1.0	1.5	.5	2.6	5.4	8.2	5.1	9.8	3.0	38.3	31.6
Blackgum	3.2	5.4	8.2	6.4	5.0	1.3	1.2	.9	.4	.0	32.0	31.7
Ash-walnut-cherry	1.5	3.2	5.7	6.4	6.2	1.5	4.7	1.4	2.2	.0	32.9	31.8
Select white oaks	4.3	5.4	8.9	10.5	8.7	8.1	6.4	7.1	10.2	1.1	70.7	15.4
Select red oaks	.2	.7	2.0	1.6	2.0	.5	1.7	.0	3.3	1.7	13.6	30.0
Other white oaks	.3	.0	.7	.8	.0	.3	1.1	.8	1.8	.0	5.8	52.9
Other red oaks	4.7	8.8	12.8	14.7	17.0	8.7	8.5	5.0	5.0	1.1	86.2	14.3
Black locust	.1	.0	.5	.5	.0	.0	.0	.0	.0	.0	1.1	85.6
Other commercial hardwoods	3.7	2.8	2.9	1.2	.2	.0	.0	.0	1.1	.0	11.9	34.3
Noncommercial hardwoods	1.7	1.5	2.1	.7	.5	.3	.0	.0	.0	.0	6.9	32.5
Total hardwoods	45.0	59.0	86.3	76.9	71.6	48.3	44.7	27.7	52.0	8.3	519.6	7.3
Total, all species	57.1	83.3	119.8	106.2	96.8	65.9	55.1	33.2	57.5	8.3	683.2	6.0
SE	9.8	9.7	8.2	9.0	8.5	11.8	11.1	16.6	17.0	30.7	6.0	

Table 23. Net volume of live trees on timberland by species and diameter class, Delaware, 1999

(In millions of cubic feet)

Species group	Diameter class (inches at breast height)										All classes	SE
	5.0-	7.0-	9.0-	11.0-	13.0-	15.0-	17.0-	19.0-	21.0-			
	6.9	8.9	10.9	12.9	14.9	16.9	18.9	20.9	28.9	29.0+		
Loblolly pine	9.6	15.9	22.0	14.6	12.4	11.5	5.7	8.7	3.3	.0	103.7	19.6
Virginia pine	2.1	1.0	1.5	2.4	3.8	.6	.9	.0	.0	.0	12.3	35.1
Other softwoods	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.2	70.8
Total softwoods	11.8	17.0	23.5	17.0	16.3	12.1	6.5	8.7	3.3	.0	116.2	18.0
Red maple	10.9	18.0	20.3	20.3	23.7	22.8	14.6	19.0	24.5	2.4	176.7	17.5
Hickory	.4	.8	.6	.8	.7	.0	.0	.0	.0	.0	3.2	41.5
Beech	.4	.5	1.9	1.0	.0	1.5	1.9	1.2	2.8	.0	11.2	47.4
Sweetgum	5.5	11.5	16.5	12.4	15.9	11.7	7.1	2.4	7.5	.0	90.5	17.4
Yellow-poplar	2.2	6.0	1.8	3.2	6.0	2.6	.0	5.7	14.8	5.8	48.2	26.1
Blackgum	3.2	2.8	4.9	3.1	6.4	4.8	2.7	.0	3.7	.0	31.5	21.2
Ash-walnut-cherry	1.5	1.7	2.8	4.6	1.9	2.2	.0	.0	4.8	.0	19.5	35.6
Select white oaks	2.4	3.9	7.9	12.6	11.4	8.7	2.8	7.0	15.9	6.3	78.8	18.6
Select red oaks	.0	.4	.9	.0	1.3	.0	1.8	.0	2.3	.0	6.6	50.5
Other white oaks	.2	.2	.0	.0	1.8	.9	1.2	.0	.0	.0	4.3	81.9
Other red oaks	3.8	9.6	11.5	14.4	16.1	11.6	14.4	16.4	13.3	2.9	114.0	18.7
Black locust	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	100.0
Other commercial hardwoods	6.1	5.7	6.1	2.4	1.9	.0	.0	.0	.0	2.1	24.4	20.9
Noncommercial hardwoods	1.8	1.6	2.6	.9	.6	.0	.0	.0	.0	.0	7.5	40.3
Total hardwoods	38.5	62.7	77.9	75.6	87.6	66.7	46.4	51.7	89.6	19.6	616.4	8.6
Total, all species	50.3	79.7	101.4	92.6	103.9	78.9	53.0	60.4	92.9	19.6	732.6	7.3
SE	8.6	9.5	9.2	8.7	10.8	13.8	18.0	16.9	21.4	49.6	7.3	

Table 24. Net volume of growing-stock trees on timberland by species and diameter class, Delaware, 1986

(In millions of cubic feet)

Species group	Diameter class (inches at breast height)										All classes	SE
	5.0-	7.0-	9.0-	11.0-	13.0-	15.0-	17.0-	19.0-	21.0-			
	6.9	8.9	10.9	12.9	14.9	16.9	18.9	20.9	28.9	29.0+		
White/red pine	.0	.0	.0	.0	.0	.0	.0	.5	.0	.0	.5	100.0
Loblolly pine	9.9	18.8	23.6	21.3	21.3	16.5	9.9	5.0	4.9	.0	131.3	17.2
Virginia pine	2.2	5.5	9.7	7.8	3.9	1.1	.4	.0	.6	.0	31.2	36.2
Other softwoods	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0	.3	100.0
Total softwoods	12.1	24.3	33.5	29.1	25.3	17.6	10.4	5.6	5.5	.0	163.3	15.7
Red maple	13.8	16.3	23.3	18.1	13.7	10.6	6.2	2.4	9.1	.6	114.2	14.4
Hickory	1.3	.7	1.4	.4	1.7	.5	.0	.0	1.8	.0	7.8	38.6
Beech	.4	1.0	.5	.7	.6	1.4	.0	.5	2.5	.0	7.9	63.3
Sweetgum	7.7	12.0	14.4	12.5	12.3	9.5	5.6	4.3	4.8	.0	83.1	15.6
Yellow-poplar	1.1	1.0	1.5	.5	2.6	5.4	8.0	5.1	9.8	3.0	38.0	31.4
Blackgum	2.9	4.6	7.9	6.1	4.9	1.3	1.2	.5	.0	.0	29.3	33.3
Ash-walnut-cherry	1.2	2.8	4.3	5.3	5.1	1.5	4.7	1.4	2.2	.0	28.7	32.3
select white oaks	4.3	5.4	8.9	10.5	8.7	8.1	6.4	7.1	10.2	1.1	70.7	15.4
select red oaks	.2	.7	2.0	1.6	2.0	.5	1.7	.0	3.3	1.7	13.6	30.0
Other white oaks	.3	.0	.7	.8	.0	.3	1.1	.8	1.8	.0	5.8	52.9
Other red oaks	4.7	8.7	12.8	14.7	16.5	8.7	8.5	5.0	5.0	1.1	85.6	14.2
Other hardwoods	4.4	2.6	2.9	1.2	.0	.0	.0	.0	1.1	.0	12.2	31.5
Total hardwoods	42.5	55.8	80.8	72.3	68.2	47.9	43.2	27.2	51.6	7.4	497.0	7.3
Total, all species	54.7	80.1	114.3	101.4	93.5	65.5	53.6	32.7	57.0	7.4	660.3	6.1
SE	10.1	9.8	8.5	9.2	8.7	11.8	11.3	16.6	17.1	33.3	6.1	

Table 25. Net volume of growing-stock trees on timberland by species and diameter class, Delaware, 1999

(In millions of cubic feet)

Species group	Diameter class (inches at breast height)										All classes	SE
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+		
Loblolly pine	8.6	15.7	21.7	14.4	12.4	11.5	5.7	8.7	3.3	.0	102.2	19.9
Virginia pine	2.1	.8	1.5	2.4	3.8	.6	.9	.0	.0	.0	12.2	35.3
Other softwoods	.1	.1	.0	.0	.0	.0	.0	.0	.0	.0	.2	70.8
Total softwoods	10.9	16.7	23.3	16.8	16.3	12.1	6.5	8.7	3.3	.0	114.5	18.3
Red maple	8.6	14.8	17.9	19.7	23.4	22.8	13.2	19.0	24.5	.0	163.9	18.4
Hickory	.3	.5	.4	.8	.7	.0	.0	.0	.0	.0	2.7	43.6
Beech	.3	.4	1.9	1.0	.0	1.5	1.9	1.2	2.8	.0	11.0	46.9
Sweetgum	5.0	11.4	15.9	12.4	15.0	11.2	7.1	2.0	7.5	.0	87.6	17.4
Yellow-poplar	2.1	5.5	1.5	3.2	5.0	2.6	.0	5.7	14.8	5.8	46.4	26.7
Blackgum	2.7	2.6	4.4	3.1	6.4	4.8	2.7	.0	3.7	.0	30.4	21.4
Ash-walnut-cherry	1.0	1.3	2.1	2.5	1.9	2.2	.0	.0	4.8	.0	15.7	38.5
Select white oaks	2.1	3.9	7.9	12.6	11.4	8.7	2.8	7.0	15.9	6.3	78.4	18.7
Select red oaks	.0	.4	.9	.0	1.3	.0	1.8	.0	2.3	.0	6.6	50.5
Other white oaks	.2	.2	.0	.0	1.8	.9	1.2	.0	.0	.0	4.3	81.9
Other red oaks	3.5	8.8	11.1	14.2	16.1	11.6	14.4	16.4	9.2	2.9	108.2	18.5
Other hardwoods	4.9	4.8	6.1	2.4	1.9	.0	.0	.0	.0	2.1	22.3	21.8
Total hardwoods	30.9	54.7	70.2	71.9	84.8	66.3	45.0	51.3	85.5	17.2	577.6	8.7
Total, all species	41.7	71.3	93.4	88.7	101.1	78.4	51.6	60.0	88.8	17.2	692.2	7.4
SE	9.8	10.7	9.6	9.1	11.2	13.9	18.4	17.0	20.4	48.1	7.4	

Table 26. Net volume of growing-stock trees on timberland by species and stand-size class, Delaware, 1986

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
White/red pine	.5	.0	.0	.0	.5	100.0
Loblolly pine	82.8	47.3	1.2	.0	131.3	17.2
Virginia pine	22.2	7.8	1.3	.0	31.2	36.2
Other softwoods	.3	.0	.0	.0	.3	100.0
Total softwoods	105.8	55.0	2.5	.0	163.3	15.7
Red maple	74.0	39.4	.9	.0	114.2	14.4
Hickory	7.2	.3	.4	.0	7.8	38.6
Beech	6.9	.9	.0	.0	7.9	63.3
Sweetgum	54.9	25.9	2.3	.0	83.1	15.6
Yellow-poplar	30.4	7.6	.1	.0	38.0	31.4
Blackgum	21.5	7.0	.8	.0	29.3	33.3
Ash-walnut-cherry	22.3	6.4	.0	.0	28.7	32.3
Select white oaks	55.9	14.7	.1	.0	70.7	15.4
Select red oaks	9.1	3.2	1.4	.0	13.6	30.0
Other white oaks	5.8	.0	.0	.0	5.8	52.9
Other red oaks	59.0	25.6	1.0	.0	85.6	14.2
Other hardwoods	6.6	5.6	.1	.0	12.2	31.5
Total hardwoods	353.5	136.5	7.1	.0	497.0	7.3
Total, all species	459.3	191.5	9.5	.0	660.3	6.1
SE	10.3	17.3	37.4	.0	6.1	

Table 27. Net volume of growing-stock trees on timberland by species and stand-size class, Delaware, 1999

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Loblolly pine	72.7	28.6	.9	.0	102.2	19.9
Virginia pine	10.5	1.7	.0	.0	12.2	35.3
Other softwoods	.1	.1	.0	.0	.2	70.8
Total softwoods	83.3	30.4	.9	.0	114.5	18.3
Red maple	140.3	20.1	3.5	.0	163.9	18.4
Hickory	2.7	.0	.0	.0	2.7	43.6
Beech	10.9	.1	.0	.0	11.0	46.9
Sweetgum	69.9	17.2	.5	.0	87.6	17.4
Yellow-poplar	42.6	3.8	.0	.0	46.4	26.7
Blackgum	28.3	2.1	.0	.0	30.4	21.4
Ash-walnut-cherry	14.3	1.5	.0	.0	15.7	38.5
Select white oaks	76.3	2.0	.2	.0	78.4	18.7
Select red oaks	3.8	.5	2.3	.0	6.6	50.5
Other white oaks	3.4	.9	.0	.0	4.3	81.9
Other red oaks	90.3	17.0	.9	.0	108.2	18.5
Other hardwoods	18.8	3.1	.4	.0	22.3	21.8
Total hardwoods	501.5	68.3	7.8	.0	577.6	8.7
Total, all species	584.7	98.7	8.7	.0	692.2	7.4
SE	9.7	24.3	42.3	.0	7.4	

Table 28. Net volume of growing-stock trees on timberland by species and forest-type group, Delaware, 1986

(In millions of cubic feet)

Species group	Forest-type group									Total	SE
	White/ red pine	Spruce/ fir	Loblolly/ shortleaf	Oak/ pine	Oak/ hickory	Oak/gum/ cypress	Elm/ash/ red maple	Northern hardwoods	Aspen/ birch		
White/red pine	.0	.0	.0	.0	.5	.0	.0	.0	.0	.5	100.0
Loblolly pine	.0	.0	78.3	32.7	18.8	1.5	.0	.0	.0	131.3	17.2
Virginia pine	.0	.0	19.7	8.4	3.1	.0	.0	.0	.0	31.2	36.2
Other softwoods	.0	.0	.0	.0	.3	.0	.0	.0	.0	.3	100.0
Total softwoods	.0	.0	98.0	41.1	22.7	1.5	.0	.0	.0	163.3	15.7
Red maple	.0	.0	7.4	15.4	51.9	26.9	8.7	4.0	.0	114.2	14.4
Hickory	.0	.0	.6	.5	6.5	.0	.0	.4	.0	7.8	38.6
Beech	.0	.0	.0	.0	7.6	.0	.3	.0	.0	7.9	63.3
Sweetgum	.0	.0	10.6	6.5	44.9	17.9	3.0	.3	.0	83.1	15.6
Yellow-poplar	.0	.0	.4	.6	32.4	3.9	.0	.7	.0	38.0	31.4
Blackgum	.0	.0	.1	1.1	12.8	15.1	.0	.3	.0	29.3	33.3
Ash-walnut-cherry	.0	.0	.1	.0	11.5	4.1	.0	13.0	.0	28.7	32.3
Select white oaks	.0	.0	.1	9.0	60.4	.3	.0	1.0	.0	70.7	15.4
Select red oaks	.0	.0	.6	1.6	10.0	.0	1.4	.0	.0	13.6	30.0
Other white oaks	.0	.0	1.2	.3	4.3	.0	.0	.0	.0	5.8	52.9
Other red oaks	.0	.0	4.5	21.1	50.5	7.7	1.7	.2	.0	85.6	14.2
Other hardwoods	.0	.0	.2	1.0	5.1	1.4	3.3	1.1	.0	12.2	31.5
Total hardwoods	.0	.0	25.8	56.9	297.8	77.3	18.4	20.9	.0	497.0	7.3
Total, all species	.0	.0	123.8	98.0	320.5	78.8	18.4	20.9	.0	660.3	6.1
SE	.0	.0	27.8	28.2	11.5	36.3	64.8	62.2	.0	6.1	

Table 29. Net volume of growing-stock trees on timberland by species and forest-type group, Delaware, 1999

(In millions of cubic feet)

Species group	Forest-type group									Total	SE
	White/ red pine	Spruce/ fir	Loblolly/ shortleaf	Oak/ pine	Oak/ hickory	Oak/gum/ cypress	Elm/ash/ red maple	Northern hardwoods	Aspen/ birch		
Loblolly pine	.0	.0	53.4	30.9	17.9	.0	.0	.0	.0	102.2	19.9
Virginia pine	.0	.0	2.0	3.0	3.7	.0	.0	3.5	.0	12.2	35.3
Other softwoods	.0	.0	.0	.1	.0	.1	.0	.0	.0	.2	70.8
Total softwoods	.0	.0	55.3	34.0	21.6	.1	.0	3.5	.0	114.5	18.3
Red maple	.0	.0	2.2	15.3	97.5	12.5	31.3	5.1	.0	163.9	18.4
Hickory	.0	.0	.0	.0	2.7	.0	.0	.0	.0	2.7	43.6
Beech	.0	.0	.0	.0	9.8	.0	.0	1.1	.0	11.0	46.9
Sweetgum	.0	.0	2.1	8.8	66.2	10.5	.0	.1	.0	87.6	17.4
Yellow-poplar	.0	.0	.4	3.1	41.6	.0	.0	1.2	.0	46.4	26.7
Blackgum	.0	.0	1.3	.7	26.5	1.9	.0	.0	.0	30.4	21.4
Ash-walnut-cherry	.0	.0	.0	.0	5.6	.0	3.8	6.2	.0	15.7	38.5
Select white oaks	.0	.0	.2	3.6	69.2	5.2	.0	.4	.0	78.4	18.7
Select red oaks	.0	.0	.0	.3	6.3	.0	.0	.0	.0	6.6	50.5
Other white oaks	.0	.0	.0	.9	3.4	.0	.0	.0	.0	4.3	81.9
Other red oaks	.0	.0	5.3	6.9	77.1	18.8	.0	.3	.0	108.2	18.5
Other hardwoods	.0	.0	1.5	1.6	18.2	.4	.0	.6	.0	22.3	21.8
Total hardwoods	.0	.0	13.0	41.1	424.0	49.3	35.1	15.1	.0	577.6	8.7
Total, all species	.0	.0	68.4	75.1	445.6	49.4	35.1	18.6	.0	692.2	7.4
SE	.0	.0	38.3	33.0	11.5	45.0	73.9	62.7	.0	7.4	

Table 30. Net volume of sawtimber trees on timberland by species and diameter class, Delaware, 1986

(In millions of board feet)

Species group	Diameter class (inches at breast height)								All classes	SE
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+		
White/red pine	.0	.0	.0	.0	.0	2.8	.0	.0	2.8	100.0
Loblolly pine	82.4	83.1	90.9	77.3	45.6	23.7	24.8	.0	427.8	17.9
Virginia pine	33.8	30.3	16.7	4.9	2.0	.0	3.1	.0	90.8	36.5
Other softwoods	.9	.0	.0	.0	.0	.0	.0	.0	.9	100.0
Total softwoods	117.0	113.3	107.6	82.2	47.6	26.5	28.0	.0	522.3	16.0
Red maple	.0	69.3	52.9	46.3	25.2	10.9	36.1	3.3	244.0	19.3
Hickory	.0	1.2	5.9	2.2	.0	.0	9.4	.0	18.8	49.5
Beech	.0	2.8	3.0	7.0	.0	2.2	12.6	.0	27.6	75.8
Sweetgum	.0	47.9	51.0	42.6	25.2	20.1	23.9	.0	210.8	19.9
Yellow-poplar	.0	2.1	10.3	25.2	35.4	26.4	53.2	19.4	172.0	31.7
Blackgum	.0	23.1	19.7	5.9	5.1	2.1	.0	.0	55.7	44.4
Ash-walnut-cherry	.0	21.3	21.7	7.3	20.8	6.6	9.1	.0	86.8	35.3
Select white oaks	.0	45.9	38.1	34.5	29.4	33.5	50.9	6.6	239.0	17.8
Select red oaks	.0	5.9	8.2	2.2	7.6	.0	16.7	9.3	49.9	30.3
Other white oaks	.0	3.4	.0	1.5	4.9	3.4	8.2	.0	21.4	57.9
Other red oaks	.0	56.7	68.6	38.0	37.9	23.6	24.1	5.7	254.7	15.0
Other hardwoods	.0	4.5	.0	.0	.0	.0	5.3	.0	9.8	60.5
Total hardwoods	.0	284.2	279.5	212.8	191.5	128.7	249.6	44.3	1,390.7	9.2
Total, all species	117.0	397.6	387.1	295.0	239.1	155.2	277.6	44.3	1,912.9	7.3
SE	20.2	9.2	8.7	11.9	11.3	16.7	17.1	34.3	7.3	

Table 31. Net volume of sawtimber trees on timberland by species and diameter class, Delaware, 1999

(In millions of board feet)

Species group	Diameter class (inches at breast height)								All classes	SE
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+		
Loblolly pine	77.0	57.1	54.6	53.1	26.8	41.5	16.9	.0	327.0	24.4
Virginia pine	5.3	9.6	16.5	2.9	3.9	.0	.0	.0	38.1	44.6
Total softwoods	82.2	66.7	71.1	56.0	30.7	41.5	16.9	.0	365.2	22.5
Red maple	.0	74.6	92.1	95.5	55.1	84.7	99.4	.0	501.5	23.4
Hickory	.0	3.4	2.3	.0	.0	.0	.0	.0	5.8	69.8
Beech	.0	4.6	.0	7.2	8.7	5.2	14.8	.0	40.4	51.7
Sweetgum	.0	46.0	64.1	50.1	32.0	8.6	40.7	.0	241.4	21.3
Yellow-poplar	.0	12.4	21.3	12.3	.0	29.5	78.6	36.4	190.5	33.8
Blackgum	.0	11.6	27.6	20.8	11.9	.0	18.2	.0	90.1	29.8
Ash-walnut-cherry	.0	9.7	8.0	7.9	.0	.0	16.3	.0	41.9	47.3
Select white oaks	.0	52.7	52.0	38.0	13.5	34.0	83.9	36.0	310.1	22.0
Select red oaks	.0	.0	5.7	.0	8.4	.0	11.8	.0	25.9	57.1
Other white oaks	.0	.0	6.3	4.0	5.3	.0	.0	.0	15.6	85.3
Other red oaks	.0	56.4	65.7	50.8	64.7	76.5	42.2	15.6	371.8	21.3
Other hardwoods	.0	10.2	9.3	.0	.0	.0	.0	13.7	33.2	47.6
Total hardwoods	.0	281.7	354.5	286.4	199.6	238.4	405.9	101.7	1,868.1	10.8
Total, all species	82.2	348.4	425.6	342.4	230.3	279.9	422.7	101.7	2,233.3	9.3
SE	26.7	9.3	11.4	14.2	18.5	17.1	20.5	48.5	9.3	

Table 32. Net volume of sawtimber trees on timberland by species, size class, and tree grade, Delaware, 1999

(In millions of board feet)

Species group	>15" Diameter at breast height						All size classes						SE
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	All grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	All grades	
Loblolly pine	111.8	6.5	10.7	.0	9.4	138.3	206.8	38.1	72.7	.0	9.4	327.0	24.4
Virginia pine	.0	6.8	.0	.0	.0	6.8	.0	13.9	22.4	.0	1.9	38.1	44.6
Total softwoods	111.8	13.3	10.7	.0	9.4	145.1	206.8	52.0	95.1	.0	11.2	365.2	22.5
Red maple	39.7	85.8	120.7	56.2	32.3	334.8	39.7	107.5	213.0	101.5	39.8	501.5	23.4
Hickory	.0	.0	.0	.0	.0	.0	.0	2.3	3.4	.0	.0	5.8	69.8
Beech	.0	.0	.0	35.8	.0	35.8	.0	.0	.0	39.2	1.2	40.4	51.7
Sweetgum	56.1	29.5	37.1	8.6	.0	131.3	56.1	75.2	92.6	17.4	.0	241.4	21.3
Yellow-poplar	50.2	43.8	.0	.0	62.8	156.8	50.2	54.2	11.6	11.7	62.8	190.5	33.8
Blackgum	22.0	12.0	16.9	.0	.0	50.8	22.0	30.2	35.7	2.1	.0	90.1	29.8
Ash-walnut-cherry	4.2	.0	5.9	.0	14.1	24.2	4.2	6.5	13.9	1.7	15.6	41.9	47.3
Select white oaks	61.2	19.6	65.4	.0	59.1	205.3	61.2	45.2	134.1	10.4	59.1	310.1	22.0
Select red oaks	4.5	3.9	11.8	.0	.0	20.2	4.5	9.6	11.8	.0	.0	25.9	57.1
Other white oaks	.0	.0	.0	.0	9.2	9.2	.0	.0	6.3	.0	9.2	15.6	85.3
Other red oaks	94.5	75.6	57.7	15.1	6.9	249.7	94.5	102.2	130.7	30.7	13.7	371.8	21.3
Other hardwoods	.0	.0	13.7	.0	.0	13.7	.0	.0	21.7	11.4	.0	33.2	47.6
Total hardwoods	332.4	270.2	329.2	115.7	184.4	1,231.8	332.4	433.1	674.9	226.3	201.4	1,868.1	10.8
Total, all species	444.1	283.5	339.8	115.7	193.8	1,376.9	539.2	485.1	770.0	226.3	212.6	2,233.3	9.3
SE	22.1	17.8	16.7	30.9	29.8	12.8	21.6	12.9	9.3	22.4	27.9	9.3	

Table 33. Average annual net change of growing-stock volume on timberland by species and component of change, Delaware, 1999

(In thousands of cubic feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Loblolly pine	3,644	2,496	6,141	-2,061	0	0	4,080	-3,244	836
Virginia pine	26	82	108	-29	0	0	79	-3,472	-3,393
Other softwoods	43	0	43	0	0	0	43	0	43
Total softwoods	3,714	2,578	6,292	-2,090	0	0	4,201	-6,716	-2,514
Red maple	559	3,647	4,206	-322	286	-863	3,307	-143	3,164
Hickory	28	163	191	0	0	-47	143	0	143
Beech	275	527	802	-2,291	0	0	-1,489	0	-1,489
Sweetgum	677	2,519	3,196	-723	40	-20	2,494	-850	1,644
Yellow-poplar	610	683	1,293	0	0	-37	1,256	-3,768	-2,512
Blackgum	129	308	437	-447	0	-19	-28	-153	-181
Ash-walnut-cherry	260	608	868	-181	0	-46	641	-1,799	-1,159
Select white oaks	264	1,903	2,167	-827	0	-51	1,289	-817	472
Select red oaks	0	607	607	0	0	0	607	0	607
Other red oaks	583	3,561	4,144	-626	0	-142	3,377	-126	3,250
Other hardwoods	437	459	895	-255	36	-112	564	-91	472
Total hardwoods	3,822	14,986	18,808	-5,672	363	-1,337	12,161	-7,748	4,412
Total, all species	7,535	17,564	25,100	-7,762	363	-1,337	16,362	-14,464	1,898

Table 34. Average annual net change of sawtimber volume on timberland by species and component of change, Delaware, 1999

(In thousands of board feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Loblolly pine	7,915	8,842	16,756	-6,348	0	0	10,409	-9,024	1,385
Virginia pine	457	0	457	0	0	0	457	-9,869	-9,412
Total softwoods	8,371	8,842	17,213	-6,348	0	0	10,865	-18,893	-8,027
Red maple	5,413	8,349	13,763	0	1,037	-2,825	11,975	0	11,975
Beech	1,209	3,387	4,595	-15,407	0	0	-10,811	0	-10,811
Sweetgum	5,384	4,582	9,966	-1,941	0	0	8,025	0	8,025
Yellow-poplar	3,412	1,223	4,635	0	0	0	4,635	-18,317	-13,682
Blackgum	969	476	1,445	-2,003	0	0	-558	0	-558
Ash-walnut-cherry	2,485	1,046	1,439	0	0	0	1,439	-7,438	-5,999
Select white oaks	5,265	6,739	12,004	-3,213	0	0	8,792	-3,834	4,958
Select red oaks	1,801	1,086	2,887	0	0	0	2,887	0	2,887
Other red oaks	5,680	10,327	16,007	-627	0	0	15,380	0	15,380
Other hardwoods	861	0	861	0	0	0	861	0	861
Total hardwoods	32,479	35,122	67,601	-23,190	1,037	-2,825	42,624	-29,589	13,035
Total, all species	40,851	43,964	84,815	-29,538	1,037	-2,825	53,489	-48,482	5,007

Table 35. Land area by county and land-use class, Delaware, 1999

(In thousands of acres)

County	Land class						All classes
	Timberland	Productive reserved	Unproductive reserved	Other forest	Total forest land	Nonforest land	
Sussex	226.1	.0	.0	7.3	233.4	366.7	600.1
Kent/New Castle	149.5	.0	.0	.0	149.5	501.4	650.9
Total	375.6	.0	.0	7.3	382.9	868.1	1,251.0

Table 36. Area of timberland by county and forest-type group, Delaware, 1999

(In thousands of acres)

County	Forest-type group									Total	SE
	White/red pine	Spruce/fir	Loblolly/shortleaf	Oak/pine	Oak/hickory	Oak/gum/cypress	Elm/ash/red maple	Northern hardwoods	Aspen/birch		
Sussex	.0	.0	42.5	34.8	128.9	9.5	9.0	1.4	.0	226.1	3.9
Kent/New Castle	.0	.0	6.9	2.5	111.8	16.0	5.6	6.7	.0	149.5	5.8
Total	.0	.0	49.4	37.3	240.6	25.5	14.7	8.0	.0	375.6	3.3
SE	.0	.0	27.5	31.9	8.8	39.2	50.7	51.6	.0	3.3	

Table 37. Area of timberland by county and ownership class, Delaware, 1999

(In thousands of acres)

County	Ownership class								All ownerships	SE
	National Forest	Misc. federal	State	County and municipal	Forest industry	Farmer	Corporate	Individual		
Sussex	.0	.0	.0	.0	22.2	37.7	57.4	108.8	226.1	3.9
Kent/New Castle	.0	.0	25.0	.0	3.5	34.7	23.7	62.5	149.5	5.8
Total	.0	.0	25.0	.0	25.7	72.5	81.1	171.3	375.6	3.3
SE	.0	.0	34.9	.0	39.1	21.7	21.6	12.6	3.3	

Table 38. Area of timberland by county and stand-size class, Delaware, 1999

(In thousands of acres)

County	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Sussex	136.6	52.5	36.0	1.0	226.1	3.9
Kent/New Castle	115.8	21.8	11.0	.8	149.5	5.8
Total	252.4	74.3	47.0	1.8	375.6	3.3
SE	7.9	21.2	27.9	70.9	3.3	

Table 39. Area of timberland by county and stocking class of growing-stock trees, Delaware, 1999

(In thousands of acres)

County	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Sussex	1.0	8.9	78.0	118.0	20.2	226.1	3.9
Kent/New Castle	5.7	32.0	44.9	64.2	2.7	149.5	5.8
Total	6.6	40.9	122.9	182.3	22.9	375.6	3.3
SE	75.6	28.2	15.9	11.3	40.6	3.3	

Table 40. Area of timberland by county and site productivity class,
Delaware, 1999

(In thousands of acres)

County	Site class					All classes	SE
	Very good (120+)	Good (85-119)	Fair (50-84)	Poor (20-49)	Unknown		
Sussex	3.6	12.4	27.4	10.7	167.7	221.8	4.4
Kent/New Castle	.8	5.8	23.7	25.8	93.4	149.5	5.8
Total	4.4	18.2	51.1	36.5	261.1	371.2	3.5
SE	84.5	49.7	25.7	27.0	7.8	3.5	

Table 41. Net volume of growing-stock trees on timberland by county and
stand-size class, Delaware, 1999

(In millions of cubic feet)

County	Stand-size class				All classes	SE
	Saw- timber	Pole- timber	Sapling and seedling	Non- stocked		
Sussex	315.1	72.1	7.6	.0	394.9	10.2
Kent/New Castle	269.6	26.6	1.1	.0	297.3	10.6
Total	584.7	98.7	8.7	.0	692.2	7.4
SE	9.7	24.3	42.3	.0	7.4	

Table 42. Net volume of growing-stock trees on timberland by county and forest-type group, Delaware, 1999

(In millions of cubic feet)

County	Forest-type group									Total	SE
	White/ red pine	Spruce/ fir	Loblolly/ shortleaf	Oak/ pine	Oak/ hickory	Oak/gum/ cypress	Elm/ash/ red maple	Northern hardwoods	Aspen/ birch		
Sussex	.0	.0	62.4	69.6	215.8	15.9	30.4	.8	.0	394.9	10.2
Kent/New Castle	.0	.0	6.0	5.5	229.9	33.5	4.7	17.8	.0	297.3	10.6
Total	.0	.0	68.4	75.1	445.6	49.4	35.1	18.6	.0	692.2	7.4
SE	.0	.0	38.3	33.0	11.5	45.0	73.9	62.7	.0	7.4	

Table 43. Net volume of sawtimber trees on timberland by county and forest-type group, Delaware, 1999

(In millions of board feet)

County	Forest-type group									Total	SE
	White/ red pine	Spruce/ fir	Loblolly/ shortleaf	Oak/ pine	Oak/ hickory	Oak/gum/ cypress	Elm/ash/ red maple	Northern hardwoods	Aspen/ birch		
Sussex	.0	.0	169.8	185.8	673.8	41.5	115.6	.0	.0	1,186.5	12.7
Kent/New Castle	.0	.0	8.6	14.8	846.4	115.0	8.6	53.3	.0	1,046.8	13.7
Total	.0	.0	178.4	200.7	1,520.3	156.5	124.1	53.3	.0	2,233.3	9.3
SE	.0	.0	49.3	35.0	12.9	47.5	82.4	71.9	.0	9.3	

Table 44. Net volume of sawtimber trees on timberland by county and stand-size class, Delaware, 1999

(In millions of board feet)

County	Stand-size class				All classes	SE
	Saw- timber	Pole- timber	Sapling and seedling	Non- stocked		
Sussex	1,054.2	112.4	19.9	.0	1,186.5	12.7
Kent/New Castle	1,008.2	38.5	.0	.0	1,046.8	13.7
Total	2,062.5	150.9	19.9	.0	2,233.3	9.3
SE	10.6	28.1	72.0	.0	9.3	

Table 45. Average annual net growth of growing-stock and sawtimber volume on timberland by county and species group, Delaware, 1999

(In thousands of cubic feet/board feet)

County	Growing Stock			Sawtimber		
	Softwoods	Hardwoods	All groups	Softwoods	Hardwoods	All groups
Sussex	3,630	8,597	12,227	9,122	31,678	40,800
Kent/New Castle	571	3,564	4,135	1,743	10,946	12,689
Total	4,201	12,161	16,362	10,865	42,624	53,489

Table 46. Average annual removals of growing-stock and sawtimber volume on timberland by county and species group, Delaware, 1999

(In thousands of cubic feet/board feet)

County	Growing Stock			Sawtimber		
	Softwoods	Hardwoods	All groups	Softwoods	Hardwoods	All groups
Sussex	3,905	4,463	8,368	10,778	19,611	30,389
Kent/New Castle	2,811	3,285	6,096	8,115	9,978	18,092
Total	6,716	7,748	14,464	18,893	29,589	48,482

Table 47. Biomass of growing stock on timberland, by county and component, dry-weight basis, Delaware, 1999

(In thousands of dry tons)

County	Growing stock			Total growing stock	SE
	Poletimber	Sawlog	Upper stem		
Sussex	2,921	5,449	1,148	9,518	10.3
Kent/New Castle	1,759	5,175	1,049	7,983	11.2
Total	4,680	10,624	2,197	17,501	7.6
SE	7.5	9.4	9.0	7.6	

Table 48. Biomass of all timber on timberland, by county, class of timber, and component, Delaware, 1999

(In thousands of dry tons)

County	Growing stock trees					Total timber	SE
	Growing stock	Branches	Foliage	Stump and roots	Cull trees		
Sussex	9,518	1,191	435	2,828	1,054	15,025	9.6
Kent/New Castle	7,983	905	254	2,287	1,209	12,639	11.5
Total	17,501	2,096	689	5,115	2,264	27,665	7.4
SE	7.6	7.0	6.8	7.3	17.1	7.4	

Table 49. Biomass of all trees and shrubs on timberland, by county and class of material, Delaware, 1999

(In thousands of dry tons)

County	Non-timber					Total trees and shrubs	SE
	Timber	Salvable dead trees	Saplings	Seedlings	Shrubs		
Sussex	15,025	160	1,743	192	53	17,173	8.2
Kent/New Castle	12,639	79	765	58	85	13,626	10.7
Total	27,665	238	2,508	250	138	30,799	6.6
SE	7.4	34.3	10.1	15.9	19.9	6.6	

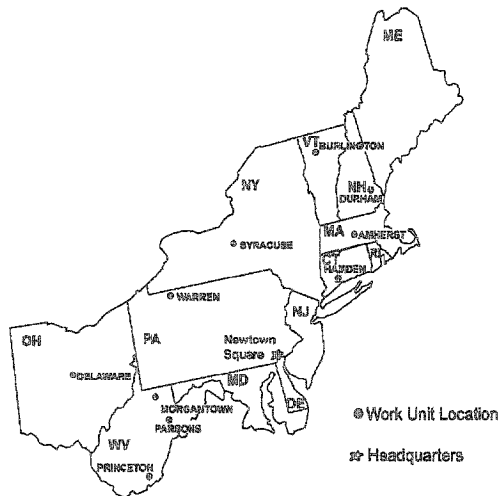
Griffith, Douglas M., Widmann, Richard H. 2001. **Forest statistics for Delaware: 1986 and 1999**. Resour. Bull. NE-151. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 58 p.

A statistical report on the fourth forest inventory of Delaware conducted in 1999 by the Forest Inventory and Analysis Unit of the Northeastern Research Station. Statistics for forest area, numbers of trees, tree biomass, timber volume, growth, and change are displayed at the state and, where appropriate, the county level. The current inventory indicates that there are approximately 690 million cubic feet of growing-stock volume on 375 thousand acres of timberland in Delaware.

Keywords: Forest survey; inventory; area, volume; growth; change; biomass.



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