



Forest Service

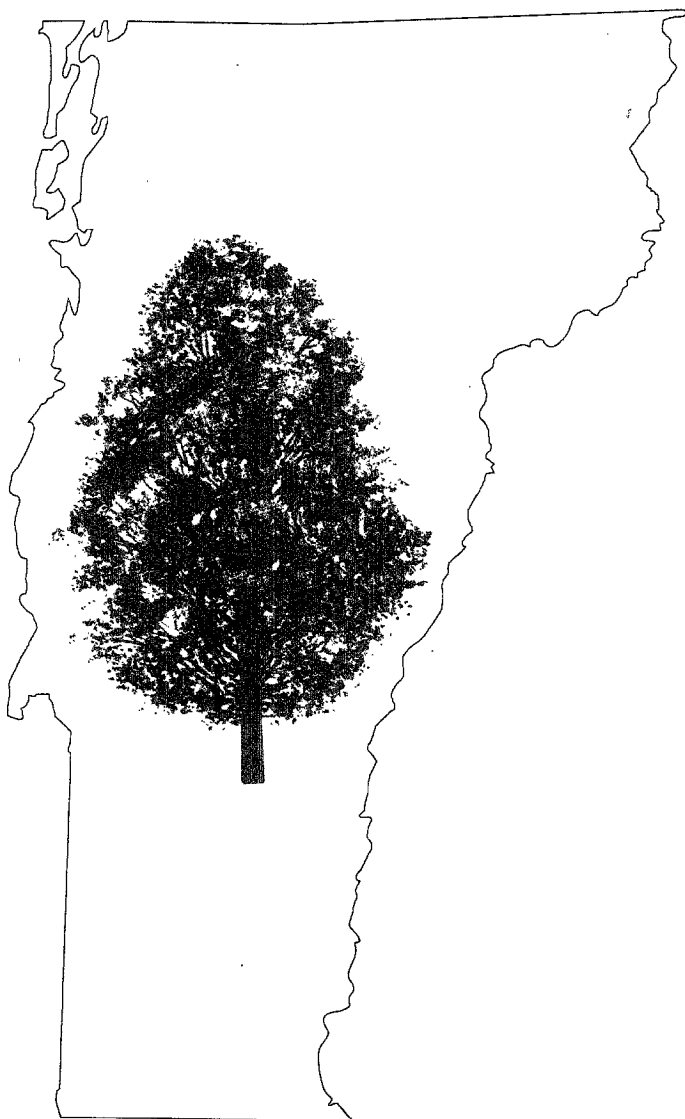
Northeastern
Research Station

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Forest Statistics for Vermont: 1983 and 1997

Thomas Frieswyk
Richard Widmann



Abstract

A statistical report on the fifth forest inventory of Vermont conducted in 1996-98 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 8.7 billion cubic feet of growing-stock volume on 4.5 million acres of timberland in Vermont.

Foreword

The fifth inventory of Vermont was directed by John R. Peters, Project Leader of the Forest Inventory and Analysis Unit. David J. Alerich supervised the data collection phase of the inventory. He was assisted by Robert E. Ilgenfritz, Richard A. McCullough, and Lucretia B. Stewart, and Kathryn M. Tillman at unit headquarters in Radnor, PA; and by Edward A. Doane, Brian M. LaPoint, Jason W. Morrison, and Scott H. Tepke, who coordinated the activities of the following members of the data-collection field staff in Vermont:

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Carol Alerich and Tom Frieswyk applied FINSYS (Forest Inventory SYStem), a generalized data processing system, ORACLE SQLPlus, and SAS to process and analyze the information provided by the field crews, and produced summary tables of estimates and errors for the state and counties. Doug Griffith, Richard Goren, and Michael Kazimer assisted in data entry and data management.

Bob DeGeus, along with other members of the Vermont Department of Forests, Parks and Recreation, collected and compiled data on public ownership and assisted in reviewing this document for accuracy. Thom J. McEvoy of the University of Vermont also assisted in reviewing this document.

Vickie M. Sharon was responsible for administrative and secretarial services.

The Forest Inventory and Analysis Unit thanks the landowners of Vermont and the Vermont State Department of Forests, Parks and Recreation for their cooperation and assistance during this inventory.

Forest Statistics for Vermont: 1983 and 1997

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Highlights

Forest-land Area

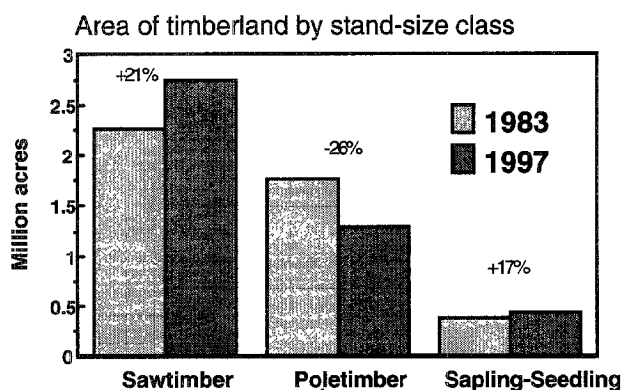
Forests cover 4.6 million acres or 78.2 percent of Vermont. This is an increase of 93,000 acres since the previous forest inventory in 1983. Timberland area increased by 69,600 acres and other forest land increased by 23,300 acres. Timberland area represents 97 percent of total forest-land area.

(Thousands of acres at each inventory)

	1948	1966	1973	1983	1997
Timberland	3,713.4	4,294.6	4,429.9	4,412.9	4,482.5
Other forest land	16.3	27.1	63.8	123.0	146.3
Total forest land	3,729.7	4,321.7	4,493.7	4,535.9	4,628.8
Percent forested	62.8%	72.8%	75.7%	76.6%	78.2%
Estimated total land area*	5,937.9	5,937.0	5,935.4	5,919.6	5,919.0

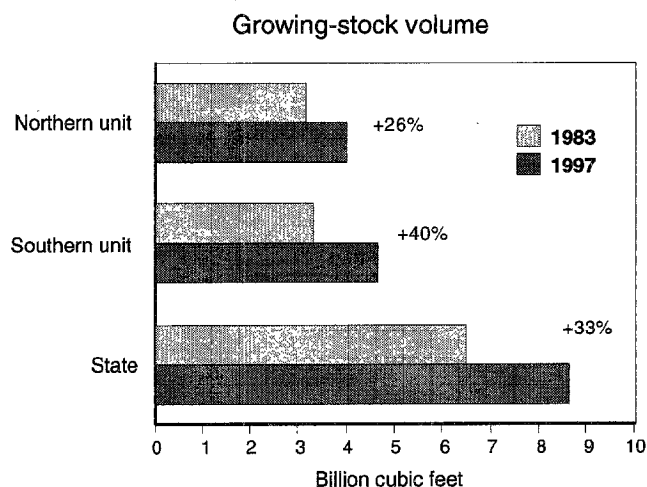
* Estimates of the total land area have changed because of new measurement techniques and refinements in the classification of small bodies of water and streams.

Sawtimber-size stands increased by 21 percent and now account for 61 percent of the timberland. Poletimber-size stands declined by 26 percent and now represent 29 percent of timberland. The area in sapling/seedling and nonstocked stands accounts for 10 percent of the timberland. Area in these conditions increased by 16 percent since the previous inventory.

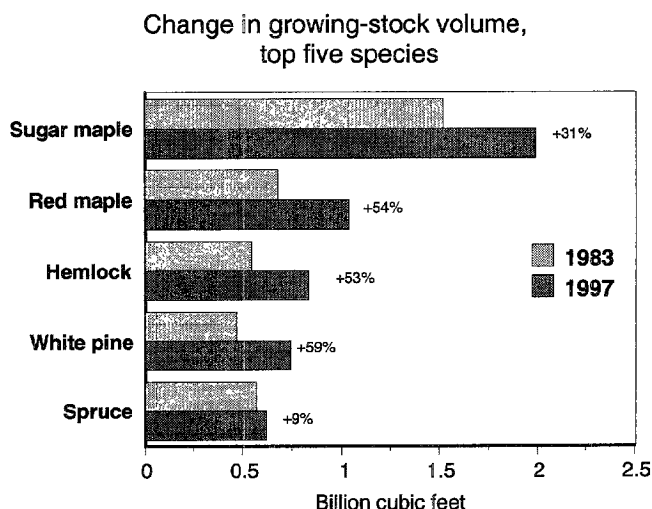


Volume

The total volume of all live trees on timberland 5 inches and larger in diameter increased by 20.5 percent. Growing-stock volume increased by 33.3 percent, 26.2 percent in the Northern Unit and by 40.0 percent in the Southern Unit. The portion of volume suitable for sawlogs increased by 47.4 percent.



Sugar maple continued to have the greatest volume, leading all other species. Growing-stock volume of sugar maple, red maple, and hemlock increased by 31.0, 54.4, and 53.2 percent, respectively. These species account for 52.2 percent of the increase in volume between inventories.

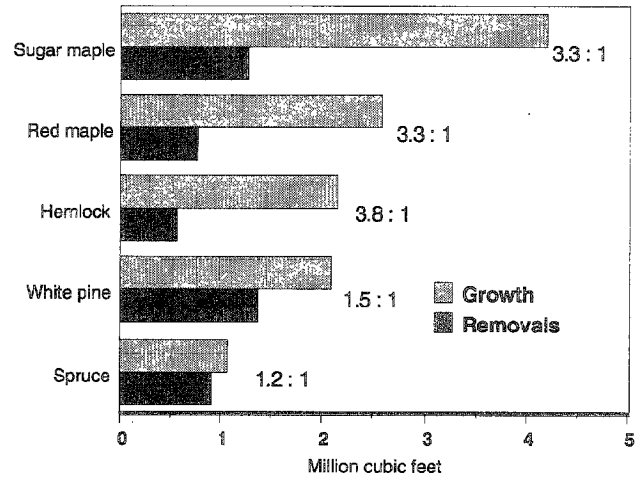


Growth and Removals

On an annual basis, net growth of growing stock on Vermont's timberland has averaged 189.8 million cubic feet of wood and the average annual harvest plus other removals has been 81.8 million cubic feet. The ratio of net growth to removals has averaged about 2.3 : 1 over the past inventory period.

On an annual basis, mortality has averaged (47.8 million cubic feet) 0.6 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 Vermont's forest resources was conducted in 1948. Succeeding inventories were carried out in 1966, 1973, and 1983. This report presents forest-resource data from the fifth inventory, which was conducted in 1996-98. This inventory was a cooperative effort of the Northeastern Research Station, the Vermont Department of Forests, Parks and Recreation, and the landowners of Vermont.

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.

The sampling procedure used during the current inventory included the use of aerial photography, the remeasurement of a sample of ground plots established in earlier inventories, and the establishment of new ground plots. For Vermont, this procedure required the photointerpretation and classification of 21,976 new photo points and 823 previously sampled ground plot locations into land-use and cubic-foot volume classes. Then 823 ground plots from the previous inventory were remeasured and 103 new ground plots were established. Of the total 926 plots, 724 were forested at plot center. The data collected were summarized using the FINSYS computer system developed at the Northeastern Research Station.

In January of 1998, a series of ice storms in northern New England and New York damaged an estimated 940,000 acres in Vermont. Five counties were declared disaster areas. FIA was asked to reinventory the area that was thought to be most severely impacted. During the spring and summer of 1998, 118 plots were selected and remeasured within the damage footprint identified by the State of Vermont. The entire inventory was reprocessed incorporating the updated data from the damage footprint. As per agreement with the State of Vermont only

one set of inventory data will be available and that data will contain the ice damage update.

The resurvey of Vermont's forest resources involved several associated studies and considerable analysis. Reports on the state's private forest-land owners and its primary forest-products industry also will be available, and a report analyzing Vermont's forest resource in greater detail is being prepared.

The forest area, numbers of trees, biomass, timber volume, growth, and change statistics in this report summarize the information collected. 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).**

Reliability of the Estimates

The data in this report are based on a carefully designed sample of forest conditions throughout Vermont. 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; while 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 Vermont. 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 Vermont is 4,482,500 acres. The associated sampling error is 1.0 percent, or 44,825 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 4,437,675 and 4,527,325 acres, or $4,482,500 \pm 44,825$ (one standard deviation). Similarly, we are 95 percent confident that the true number of acres is within $\pm 89,650$ acres (two standard deviations). County estimates are less precise. In Vermont, for example, while the sampling error for timberland at the state level is 1.0 percent, the sampling error for Addison County is 7.4 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)

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 1980. Because these changes make inappropriate the direct comparison of some of the current estimates with those published by Frieswyk and Malley (1985), readers should use caution when comparing the data in this report with those in the 1983 report. In this report, several tables containing 1983 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 subplots 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. In previous inventories, a ground plot was established wholly within the land class (forest or nonforest) that the plot was chosen to represent. The condition (e.g. privately-owned northern-hardwoods sawtimber timberland) that was found at plot center was used to classify the entire plot.

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 1983 report (1985), 1980 Bureau of Census data were used; in 1997, 1990 data were available. 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 a reduction in total land area. For comparison of land area between inventories, 1983 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., 2000). For the 1983 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, 1967). 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 are 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 1983 area tables showing estimates of area of timberland by stand-size class and forest type and forest-type group that are calculated based on relative density. There are also tables that show estimates of timberland area by forest type and stand size for both 1983 and 1997, 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, 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.

Eighty-nine percent of the plots that were visited during the 1997 inventory, were measured in 1983. The estimates of average annual net growth and change are derived from this set of data. These estimates afford an opportunity to look at change in overall volume from occasion to occasion and from plot to plot. The estimates showing 1983 information are from the plots that were selected at that occasion to produce an estimate of the area and volume.

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.

These data have been used in current procedures to recalculate estimates of area and volume at the 1983 occasion so that comparisons can be made. Although the data set from which estimates of growth and change are derived contains a portion of the plots from which the 1983 recalculated estimates were calculated, they are different data sets designed to produce different types of estimates. Inconsistencies in trends may result when the annual change tables are compared with the total change between the 1983 and 1997 tables. Sampling errors have been included to indicate the precision of the data.

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.

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:

$$(0.22D^2 - 0.71D)(0.904762)$$

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 stocked with less than 10 percent of minimum full stocking 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 stocked with at least 10 percent of minimum full stocking with live trees with half or more of such stocking in poletimber or sawtimber trees or both, and in which the stocking of poletimber exceeds that of sawtimber.

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

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 forest land. 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 Vermont (as encountered on field plots)

Scientific Name ***	Common Name(s)	Occurrence**
Softwoods		
<i>Abies balsamea</i> (L.) Mill.	balsam fir	vc
<i>Juniperus virginiana</i> L.	eastern redcedar	vr
<i>Larix</i> sp. Mill.	larch (introduced)	vr
<i>Larix laricina</i> (Du Roi) K. Koch	tamarack (native)	r
<i>Picea abies</i> (L.) Karst.	Norway spruce	r
<i>Picea glauca</i> (Moench) Voss	white spruce	c
<i>Picea mariana</i> (Mill.) B.S.P.	black spruce	vr
<i>Picea rubens</i> Sarg.	red spruce	vc
<i>Pinus resinosa</i> Ait.	red pine	r
<i>Pinus strobus</i> L.	eastern white pine	vc
<i>Pinus sylvestris</i> L.	Scotch pine	vr
<i>Thuja occidentalis</i> L.	northern white-cedar	c
<i>Tsuga canadensis</i> (L.) Carr.	eastern hemlock	vc
Hardwoods		
<i>Acer pensylvanicum</i> L. *	striped maple	c
<i>Acer rubrum</i> L.	red maple	vc
<i>Acer saccharinum</i> L.	silver maple	r
<i>Acer saccharum</i> Marsh.	sugar maple	vc
<i>Acer spicatum</i> Lam. *	mountain maple	vr
<i>Amelanchier</i> sp. Medic. *	serviceberry	r
<i>Betula alleghaniensis</i> Britton	yellow birch	vc
<i>Betula lenta</i> L.	sweet birch	c
<i>Betula papyrifera</i> Marsh.	paper birch	vc
<i>Betula populifolia</i> Marsh. *	gray birch	r
<i>Carpinus caroliniana</i> Walt. *	American hornbeam	vr
<i>Carya</i> sp. Nutt.	hickory	vr
<i>Carya cordiformis</i> (Wangenh.) K. Koch	bitternut hickory	r
<i>Carya glabra</i> (Mill.) Sweet	pignut hickory	vr
<i>Carya ovata</i> (Mill.) K. Koch	shagbark hickory	r
<i>Carya tomentosa</i> (Poir.) Nutt.	mockernut hickory	vr
<i>Crataegus</i> sp. L. *	hawthorn	r
<i>Fagus grandifolia</i> Ehrh.	American beech	vc
<i>Fraxinus americana</i> L.	white ash	c
<i>Fraxinus nigra</i> Marsh.	black ash	r
<i>Fraxinus pennsylvanica</i> Marsh.	green ash	r
<i>Juglans cinerea</i> L.	butternut	r
<i>Malus</i> sp. Mill. *	apple	r
<i>Ostrya virginiana</i> (Mill.) K. Koch *	eastern hophornbeam	c
<i>Populus balsamifera</i> L.	balsam poplar	r
<i>Populus deltoides</i> Bart. ex Marsh.	eastern cottonwood	vr
<i>Populus grandidentata</i> Michx.	bigtooth aspen	r
<i>Populus tremuloides</i> Michx.	quaking aspen	c

Tree Species of Vermont (continued)

Scientific Name ***	Common Name(s)	Occurrence**
<i>Prunus pensylvanica</i> L. f. *	pin cherry	r
<i>Prunus serotina</i> Ehrh.	black cherry	c
<i>Prunus virginiana</i> L. *	chokecherry	vr
<i>Quercus alba</i> L.	white oak	r
<i>Quercus bicolor</i> Willd.	swamp white oak	vr
<i>Quercus macrocarpa</i> Michx.	bur oak	vr
<i>Quercus prinus</i> L.	chestnut oak	r
<i>Quercus rubra</i> L.	northern red oak	c
<i>Quercus velutina</i> Lam.	black oak	vr
<i>Robinia pseudoacacia</i> L.	black locust	vr
<i>Salix</i> sp. L. *	willow	vr
<i>Salix nigra</i> Marsh.	black willow	vr
<i>Sorbus americana</i> Marsh. *	American mountain-ash	r
<i>Tilia</i> sp. L.	basswood	vr
<i>Tilia americana</i> L.	American basswood	r
<i>Ulmus americana</i> L.	American 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 Vermont

Species Group	Scientific name	Common name
Balsam fir	<i>Abies balsamea</i>	balsam fir
Tamarack	<i>Larix sp.</i> <i>Larix laricina</i>	larch (introduced) tamarack (native)
White spruce	<i>Picea gleuca</i>	white spruce
Black spruce	<i>Picea mariana</i>	black spruce
Red spruce	<i>Picea rubens</i>	red spruce
Red pine	<i>Pinus resinosa</i>	red pine
White pine	<i>Pinus strobus</i>	eastern white pine
Northern white-cedar	<i>Thuja occidentalis</i>	northern white-cedar
Hemlock	<i>Tsuga canadensis</i>	eastern hemlock
Other softwoods	<i>Chamaecyparis thyoides</i> <i>Juniperus virginiana</i> <i>Picea abies</i> <i>Pinus sylvestris</i>	Atlantic white-cedar eastern redcedar Norway spruce Scotch pine
Sugar maple	<i>Acer saccharum</i>	sugar maple
Red maple	<i>Acer rubrum</i> <i>Acer saccharinum</i>	red maple silver maple
Yellow birch	<i>Betula alleghaniensis</i>	yellow birch
Paper birch	<i>Betula papyrifera</i>	paper birch
Beech	<i>Fagus grandifolia</i>	American beech
White ash	<i>Fraxinus americana</i>	white ash
Black ash	<i>Fraxinus nigra</i>	black ash
Aspen	<i>Populus balsamifera</i> <i>Populus deltoides</i> <i>Populus grandidentata</i> <i>Populus tremuloides</i>	balsam poplar eastern cottonwood bigtooth aspen quaking aspen

Species Groups of Vermont (continued)

Species Group	Scientific name	Common name
White oaks	<i>Quercus alba</i>	white oak
	<i>Quercus bicolor</i>	swamp white oak
	<i>Quercus macrocarpa</i>	bur oak
	<i>Quercus prinus</i>	chestnut oak
Red oaks	<i>Quercus rubra</i>	northern red oak
	<i>Quercus velutina</i>	black oak
Basswood	<i>Tilia americana</i>	American basswood
Elm	<i>Ulmus americana</i>	American elm
	<i>Ulmus rubra</i>	slippery elm
Other hardwoods	<i>Acer sp.</i>	maple
	<i>Acer pensylvanicum</i>	striped maple
	<i>Acer spicatum</i>	mountain maple
	<i>Ailanthus altissima</i>	ailanthus
	<i>Amelanchier sp.</i>	serviceberry
	<i>Betula lenta</i>	sweet birch
	<i>Betula populifolia</i>	gray birch
	<i>Carpinus caroliniana</i>	American hornbeam
	<i>Carya sp.</i>	hickory
	<i>Carya cordiformis</i>	bitternut hickory
	<i>Carya glabra</i>	pignut hickory
	<i>Carya ovata</i>	shagbark hickory
	<i>Carya tomentosa</i>	mockernut hickory
	<i>Cornus florida</i>	flowering dogwood
	<i>Crataegus sp.</i>	hawthorn
	<i>Fraxinus pennsylvanica</i>	green ash
	<i>Gleditsia triacanthos</i>	honeylocust
	<i>Juglans cinerea</i>	butternut
	<i>Juglans nigra</i>	black walnut
	<i>Malus sp.</i>	apple
	<i>Ostrya virginiana</i>	eastern hophornbeam
	<i>Prunus pennsylvanica</i>	pin cherry
	<i>Prunus serotina</i>	black cherry
	<i>Prunus virginiana</i>	chokecherry
	<i>Robinia pseudoacacia</i>	black locust
	<i>Salix sp.</i>	willow
	<i>Salix nigra</i>	black willow
	<i>Sorbus americana</i>	American mountain-ash
	<i>Sorbus aucuparia</i>	European mountain-ash
	<i>Tilia sp.</i>	basswood
		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.

Tree-Grade Classification (continued)

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.

Tree-Grade Classification (continued)

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.

Tree-Grade Classification (continued)

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.

Field Plot Data Quality Standards

A quality assurance (QA) program is performed to ensure that a final product will meet the desired level of accuracy and precision. Quality control (QC) procedures are specific actions within the quality assurance program that are designed to maintain data quality within an acceptable range. There are three basic aspects of any QA program: error prevention, assessment and appraisal, and correction. Error prevention is achieved by developing standardized methods, establishing measurement quality objectives and data quality standards, and applying calibration techniques and training. Assessment and appraisal is accomplished by performing audits, debriefings and field personnel feedback, data validation and verification, and a remeasurement program for QC data collection. The purpose of correction, the last aspect of the quality assurance program, is to use all of the information from the prevention and assessment and appraisal components to make improvements, where needed, in the measurement system.

Our periodic resource inventories are designed to satisfy specified precision objectives. Much of our resource information comes from a statistically sound but very small sample of actual ground conditions that were selected to satisfy the precision objectives. While there is no guarantee that the data are completely error-free, it is obvious that field errors must be kept to a minimum. Establishing and adhering to a quality assurance (QA) program can accomplish this objective. By setting standards and monitoring fieldwork, we can detect and correct, prevent, or eliminate the repetition of most errors.

After the initial training period, periodic inspections are made of every crew's fieldwork by field supervisors. The number of errors detected will partially determine frequency of inspections. All instances of error are analyzed and discussed with the crew concerned. Supervisors monitor progress and goals, and minimum acceptable performance levels are adjusted as conditions warrant. In addition, a percentage of all plots are subjected to a second

measurement as part of the quality control program.

Tolerance levels are set depending on the type of data item. When an item is obtained by measurements that can be repeated with uniform results by several individuals, close tolerance limits that define acceptable data are set. Some items require subjective evaluation; the breadth of the tolerance limits depends on the degree of subjectivity. When an item requires a mutually exclusive answer, crews are expected to complete the item as best they can, based on their training, instructions received, and evidence on the plot, with zero tolerance for error.

Quality Control Program

The following procedures were followed to obtain the QC tree data results.

Sample Size

- * Four percent random sample of all plots in state is selected.

Data Collection

- * Crew 1 visits a plot.
- * The plot is identified as QC by field supervisor.
- * Crew 2 visits the same plot.

Compilation

- * Trees from both data sets (Crew 1 and 2) are extracted from forested subplots.
- * Trees are matched between sets based on the following criteria:
 - 1) Tree numbers for all remeasure trees.
 - 2) Distance, azimuth, and species for all new or ingrowth trees.

Comparison

- * Tolerance limits from state field instructions are used to compare the tree data between Crew 1 and Crew 2.
- * Four tree data item classes are grouped prior to applying tolerance.
 - 1) Six condition classes are reduced to three: live, dead, or snag.

- 2) Six tree grades are reduced to four: merchantable, tie & timber, cull, and dead.

- 3) Six tree classes are reduced to five: preferred and acceptable, rough, rotten, dead, and snag.
- 4) Three merchantability classes are reduced to two: sound and unsound.

Results

Tree data items are presented as:

- * Percentage of data within tolerance limits, and
- * Number of times data exceeded tolerance limits.
- * Values are either within tolerance (1x) or exceed tolerance (2x, 3x, or 4x).

Vermont QA Tree Data Results from 121 Subplots*

Tree data item		Percentage of data within tolerance				Number of times data exceeded tolerance				Records
		@1x	@2x	@3x	@4x	@1x	@2x	@3x	@4x	
Species	-- No tolerance	96%				75				1,958
Trees (missed)	-- No tolerance	98%				(38)				1,958
Horizontal distance	-- .2 feet (+ or -)	74%	89%	93%		505	225	133		1,958
Azimuth	-- 2 degrees (+ or -)	74%	91%	95%		514	184	104		1,958
Tree history	-- No tolerance	94%				66				1,076
Diameter	-- .1 inch (+ or -)	88%	93%	95%		184	106	83		1,545
Ecotype	-- No tolerance	95%				64				1,352
Condition	-- No tolerance**	87%				191				1,491
Tree grade	-- No tolerance**	77%				69				304
Saw length	-- 4 feet (+ or -)	53%	73%	84%	92%	142	82	48	24	304
Bole length	-- 4 feet (+ or -)	52%	76%	89%	95%	530	266	119	60	1,106
Total length	-- 10 feet (+ or -)	82%	96%	98%		218	49	25		1,237
Board foot cull	-- 10% (+ or -)	77%	90%	93%	94%	71	29	20	17	304
Board foot soundness	-- 1 class (+ or -)	91%	92%	93%	93%	27	24	22	20	304
Cubic foot cull	-- 10% (+ or -)	81%	93%	97%	99%	206	72	30	13	1,106
Cubic foot soundness	-- 1 class (+ or -)	89%	90%	91%	92%	122	112	102	94	1,106
Crown ratio	-- 1 class (+ or -)	89%	97%			125	34			1,106
Crown class	-- No tolerance	76%				266				1,106
General damage	-- Variable tolerance	100%				0				1,106
Special damage	-- Variable tolerance	90%				223				2,212
Tree class	-- No tolerance**	89%				163				1,491
Merchantability class	-- No tolerance**	91%				125				1,339

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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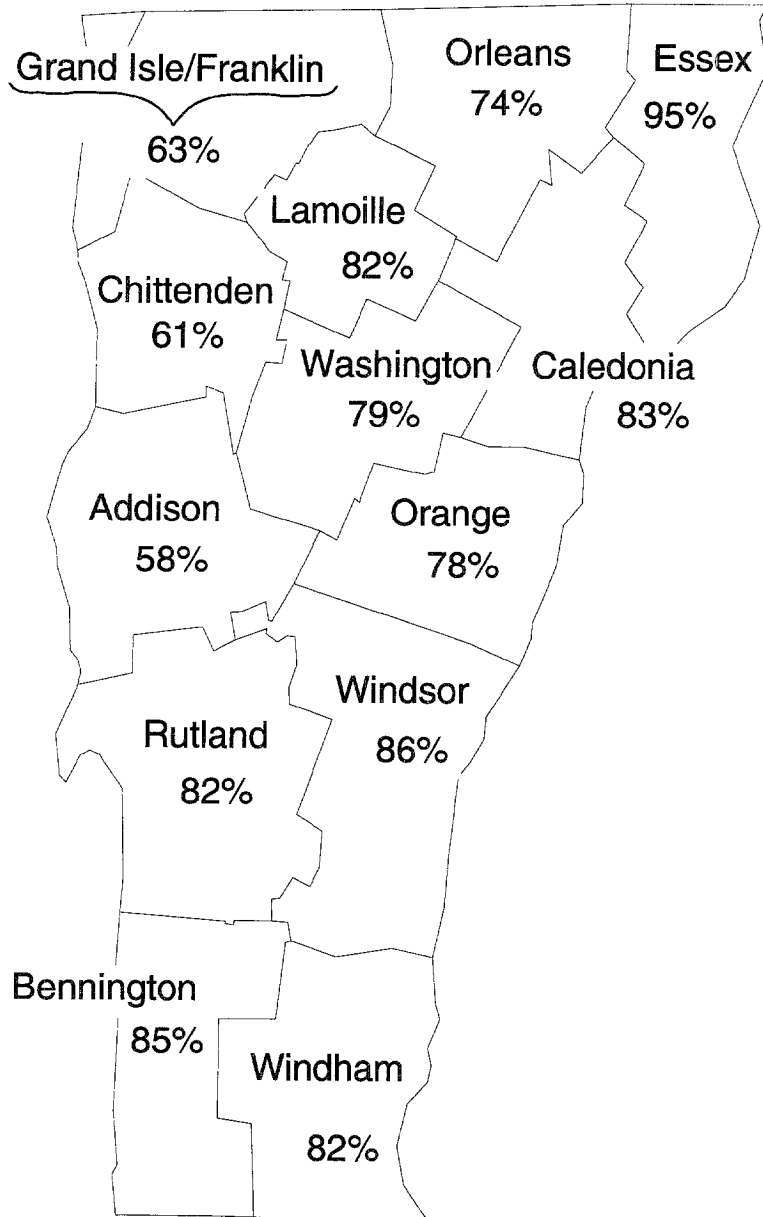
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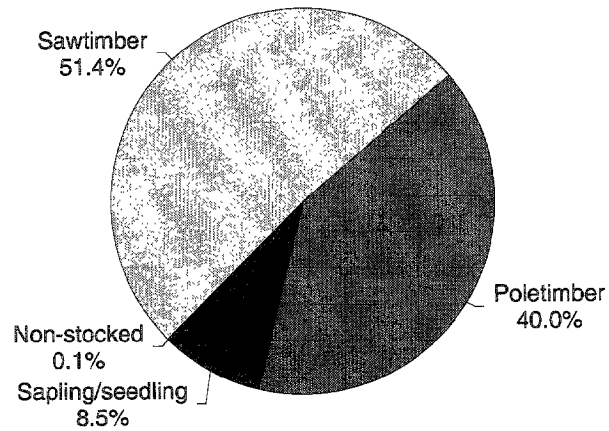
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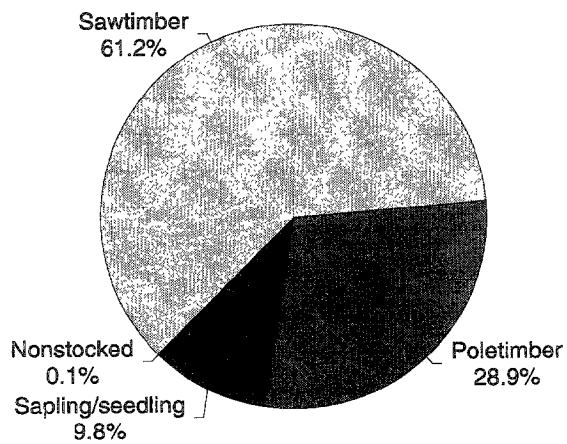


Percentage of land in forest by county, 1997
(State average = 78.2 percent)

Timberland area by stand-size
class
Vermont, 1983 and 1997



1983



1997

Table 1.--Land area by land class, Vermont, 1983 and 1997^a

(In thousands of acres)^b

Land class	Area			
	1983	Percent	1997	Percent
Timberland	4,412.9	76	4,482.5	75
Noncommercial forest land:				
Reserved productive	89.1	2	114.1	2
Urban forest land	0.0	<1	3.8	<1
Other forest land ^c	33.9	<1	17.7	<1
Christmas tree plantations	0.0	<1	10.7	<1
Total noncommercial ...	123.0	2	146.3	2
Total forest land	4,535.9	77	4,628.9	78
Nonforest land:				
Cropland	482.1	8	398.6	7
Pasture	357.4	6	273.4	5
Other	544.2	9	618.9	10
Total nonforest land	1,384.7	23	1,290.8	22
Total land area ^d	5,919.6	100	5,919.6	100

^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, Vermont, 1983

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	7.5	.0	.0	.0	7.5	100.0
White pine	115.7	55.8	7.0	.0	178.6	19.6
White pine/hemlock	56.5	6.7	.0	.0	63.2	33.0
Hemlock	182.4	43.5	.0	.0	225.9	17.5
White/red pine group	362.2	106.0	7.0	.0	475.2	11.4
Balsam fir	52.8	79.7	29.7	.0	162.2	19.7
Red spruce	43.1	43.8	.0	.0	86.9	28.8
Red spruce/balsam fir	73.9	66.5	14.9	.0	155.2	21.2
White spruce	7.4	15.4	12.7	.0	35.5	44.9
Northern white-cedar	37.4	14.4	.0	.0	51.8	37.4
Spruce/fir group	214.6	219.8	57.3	.0	491.6	10.6
Wh. pine/no.red oak/wh. ash	14.0	.0	.0	.0	14.0	70.7
Oak/pine group	14.0	.0	.0	.0	14.0	70.7
White oak/red oak/hickory	.0	20.5	.0	.0	20.5	57.0
White oak	.0	6.7	.0	.0	6.7	100.0
Northern red oak	29.5	14.2	.0	.0	43.7	40.8
Hawthorn/reverting field	.0	2.8	7.1	.0	9.9	77.2
Red maple/central hardwood	.0	6.4	.0	.0	6.4	100.0
Mixed central hardwoods	28.5	29.4	18.8	.0	76.7	30.2
Oak/hickory group	58.0	80.0	25.9	.0	163.9	20.1
Black ash/Amer. elm/red maple	22.6	47.5	21.8	.0	91.9	27.5
Red maple(upland)	.0	7.1	6.4	.0	13.5	70.8
Cottonwood	.0	7.0	.0	.0	7.0	100.0
Willow	.0	.0	5.0	.0	5.0	100.0
American elm/green ash	7.6	7.4	.0	.0	15.0	70.7
Elm/ash/red maple group	30.2	69.1	33.2	.0	132.4	22.4
Sugar maple/beech/yellow birch	1,324.1	741.3	74.4	.0	2,139.9	4.1
Black Cherry	.0	4.9	7.7	.0	12.6	72.5
Red maple/northern hardwoods	127.4	171.1	22.0	.0	320.5	14.4
Pin cherry/reverting field	.0	.0	48.6	5.6	54.2	32.7
Mixed northern hardwoods	78.4	146.3	82.0	.0	306.7	14.2
Northern hardwoods group	1,530.0	1,063.5	234.7	5.6	2,833.8	3.0
Aspen	22.0	44.4	19.2	.0	85.5	28.6
Paper birch	35.2	166.9	.0	.0	202.0	18.2
Gray birch	.0	14.3	.0	.0	14.3	70.8
Aspen/birch group	57.1	225.6	19.2	.0	301.9	14.8
All forest types	2,266.1	1,764.0	377.3	5.6	4,412.9	.7
SE	3.8	4.9	10.7	100.0	.7	

Table 3.--Area of timberland by forest type, forest-type group, and stand-size class, Vermont, 1997

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	3.3	.1	.0	.0	3.4	97.3
White pine	133.9	25.2	7.6	.0	166.7	17.5
White pine/hemlock	80.0	8.1	3.5	.5	92.2	24.1
Hemlock	227.2	2.2	.0	.0	229.4	15.1
White/red pine group	444.4	35.6	11.1	.5	491.7	9.7
Balsam fir	52.8	119.0	58.6	.0	230.4	14.9
Red spruce	36.7	7.9	.0	.0	44.6	35.1
Red spruce/balsam fir	39.7	42.5	25.6	.0	107.8	22.3
White spruce	20.1	6.5	.0	.0	26.6	47.5
Black spruce	.0	.0	4.8	.0	4.8	100.0
Norway spruce	1.5	.0	.0	.0	1.5	100.0
Northern white-cedar	25.3	12.6	.0	.0	37.9	38.7
Tamarack	6.4	.0	.0	.0	6.4	100.0
Spruce/fir group	182.5	188.5	89.0	.0	460.0	9.8
Wh. pine/no.red oak/wh. ash	17.5	17.2	.0	.0	34.7	41.0
Oak/pine group	17.5	17.2	.0	.0	34.7	41.0
Chestnut oak	7.5	.0	.0	.0	7.5	100.0
White oak/red oak/hickory	15.9	12.6	.0	.0	28.5	50.4
Northern red oak	29.3	6.6	.0	.0	35.9	44.1
Hawthorn/reverting field	.0	.0	1.1	.0	1.1	100.0
Mixed central hardwoods	58.8	31.2	.0	.0	90.0	26.4
Oak/hickory group	111.6	50.4	1.1	.0	163.1	19.5
Black ash/Amer. elm/red maple	10.3	12.5	21.0	.0	43.8	35.9
Red maple(upland)	.0	5.0	.0	.0	5.0	100.0
Willow	.0	.0	7.1	.0	7.1	79.4
American elm/green ash	.0	4.3	.0	.0	4.3	100.0
Elm/ash/red maple group	10.3	21.8	28.2	.0	60.2	29.1
Sugar maple/beech/yellow birch	1,473.7	503.8	81.0	.0	2,058.4	4.0
Black Cherry	.0	2.2	.0	.0	2.2	100.0
Red maple/northern hardwoods	222.6	215.7	34.7	.0	473.0	10.9
Pin cherry/reverting field	.0	15.2	103.7	2.6	121.5	19.9
Mixed northern hardwoods	183.4	148.9	32.6	.0	364.9	12.5
Northern hardwoods group	1,879.7	885.8	252.0	2.6	3,020.1	2.7
Aspen	40.6	27.3	44.6	.0	112.6	22.4
Paper birch	55.2	66.7	13.0	.0	135.0	20.8
Gray birch	.0	3.3	1.8	.0	5.0	57.1
Aspen/birch group	95.9	97.3	59.4	.0	252.6	14.8
All forest types	2,741.9	1,296.6	440.8	3.2	4,482.5	1.0
SE	2.9	5.8	10.1	85.3	1.0	

Table 4.--Area of timberland by forest-type group and ownership class, Vermont, 1997

(In thousands of acres)

Forest-type group	Ownership class				All classes	SE
	National Forest	Other public	Forest industry	Other private		
White/red pine	1.9	35.9	.0	453.9	491.7	9.7
Spruce/fir	9.1	24.9	43.9	382.2	460.0	9.8
Oak/pine	.0	.0	.0	34.7	34.7	41.0
Oak/hickory	.0	10.7	.0	152.3	163.1	19.5
Elm/ash/red maple	.0	11.4	.0	48.8	60.2	29.1
Northern hardwoods	237.4	277.6	191.7	2,313.5	3,020.1	2.7
Aspen/birch	6.3	17.6	17.1	211.7	252.6	14.8
Total, all groups	254.6	378.1	252.6	3,597.2	4,482.5	1.0
SE	9.5	12.3	14.9	2.0	1.0	

Table 5. Area of timberland by stand-size class and ownership class, Vermont, 1997

(In thousands of acres)

Stand-size class	Ownership class				All classes	SE
	National Forest	Other public	Forest industry	Other private		
Sawtimber	185.6	261.1	104.2	2,191.1	2,741.9	2.9
Poletimber	57.9	102.8	110.7	1,025.3	1,296.6	5.8
Sapling and seedling	11.1	14.2	37.8	377.7	440.8	10.1
Nonstocked	.0	.0	.0	3.2	3.2	85.3
Total, all classes	254.6	378.1	252.6	3,597.2	4,482.5	1.0
SE	9.5	12.3	14.9	2.0	1.0	

Table 6.--Area of timberland by forest-type group and cubic-foot stand-volume class of all live trees, Vermont, 1997

(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+		
White/red pine	18.1	15.6	47.3	62.8	69.9	277.9	491.7	9.7
Spruce/fir	56.5	58.2	68.1	59.4	64.7	153.2	460.0	9.8
Oak/pine	.0	.0	4.8	11.4	.0	18.5	34.7	41.0
Oak/hickory	.0	.0	24.0	34.0	36.0	69.1	163.1	19.5
Elm/ash/red maple	14.5	18.4	1.7	11.4	11.0	3.2	60.2	29.1
Northern hardwoods	220.3	253.7	434.5	677.0	516.0	918.6	3,020.1	2.7
Aspen/birch	55.4	10.9	38.8	34.8	25.9	86.9	252.6	14.8
Total, all groups	364.8	356.8	619.2	890.9	723.4	1,527.4	4,482.5	1.0
SE	10.8	12.4	9.3	7.4	8.5	5.0	1.0	

Table 7.--Area of timberland by forest-type group and cubic-foot stand-volume class of growing-stock trees, Vermont, 1997

(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+		
White/red pine	27.3	11.9	41.9	80.5	61.9	268.1	491.7	9.7
Spruce/fir	70.3	63.8	70.2	38.9	80.7	136.1	460.0	9.8
Oak/pine	.0	6.1	4.8	11.4	6.0	6.4	34.7	41.0
Oak/hickory	.1	.0	39.9	24.6	34.3	64.1	163.1	19.5
Elm/ash/red maple	16.3	18.4	4.3	18.0	3.2	.0	60.2	29.1
Northern hardwoods	260.3	337.3	485.6	652.7	523.7	760.4	3,020.1	2.7
Aspen/birch	55.4	10.9	45.1	41.5	25.5	74.2	252.6	14.8
Total, all groups	429.7	448.4	691.9	867.7	735.4	1,309.4	4,482.5	1.0
SE	10.0	11.0	8.7	7.5	8.5	5.6	1.0	

Table 8.--Area of timberland by forest-type group and board-foot stand-volume class, Vermont, 1997

(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+		
White/red pine	45.7	45.2	73.8	113.4	53.3	160.3	491.7	9.7
Spruce/fir	172.2	101.9	42.7	96.0	19.8	27.4	460.0	9.8
Oak/pine	11.0	6.4	6.0	11.4	.0	.0	34.7	41.0
Oak/hickory	19.7	40.6	30.9	36.9	13.8	21.2	163.1	19.5
Elm/ash/red maple	39.6	4.3	13.1	.0	3.2	.0	60.2	29.1
Northern hardwoods	745.9	728.9	574.7	366.4	271.3	332.9	3,020.1	2.7
Aspen/birch	113.9	44.9	17.3	52.8	.0	23.7	252.6	14.8
Total, all groups	1,148.0	972.2	758.5	676.9	361.4	565.6	4,482.5	1.0
SE	6.0	7.1	8.3	8.6	12.8	9.5	1.0	

Table 9.--Area of timberland by forest-type group and basal-area class, Vermont, 1997

(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+		
White/red pine	18.9	88.3	157.3	169.1	45.8	7.3	5.0	491.7	9.7
Spruce/fir	66.3	76.8	141.7	135.6	38.0	1.7	.0	460.0	9.8
Oak/pine	.0	16.2	12.4	.0	6.1	.0	.0	34.7	41.0
Oak/hickory	.0	27.4	98.0	29.4	8.1	.0	.1	163.1	19.5
Elm/ash/red maple	14.5	27.2	15.3	3.2	.0	.0	.0	60.2	29.1
Northern hardwoods	225.9	991.5	1,352.5	380.5	61.1	8.6	.0	3,020.1	2.7
Aspen/birch	33.9	64.8	85.6	56.0	12.3	.0	.0	252.6	14.8
Total, all groups	359.5	1,292.4	1,862.8	773.8	171.3	17.5	5.1	4,482.5	1.0
SE	11.3	5.9	4.4	8.0	17.3	49.4	96.2	1.0	

Table 10.--Area of timberland by forest-type group and stocking class of all live trees, Vermont, 1983

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
White/red pine	.0	43.1	99.2	289.2	43.8	475.2	11.4
Spruce/fir	.0	75.8	188.6	219.9	7.4	491.6	10.6
Oak/pine	.0	.0	.0	14.0	.0	14.0	70.7
Oak/hickory	.0	22.5	42.6	92.0	6.7	163.9	20.1
Elm/ash/red maple	.0	52.9	56.1	23.4	.0	132.4	22.4
Northern hardwoods	5.6	117.9	551.2	1,859.0	300.0	2,833.8	3.0
Aspen/birch	.0	12.5	58.4	173.0	58.0	301.9	14.8
Total, all groups	5.6	324.7	996.1	2,670.6	415.9	4,412.9	.7
SE	100.0	13.4	7.4	3.2	12.7	.7	

Table 11.--Area of timberland by forest-type group and stocking class of all live trees, Vermont, 1997

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
White/red pine	.5	30.8	88.1	316.4	55.9	491.7	9.7
Spruce/fir	.0	43.0	106.1	283.8	27.2	460.0	9.8
Oak/pine	.0	.0	11.4	23.4	.0	34.7	41.0
Oak/hickory	.0	.0	18.0	135.7	9.3	163.1	19.5
Elm/ash/red maple	.0	13.6	15.8	30.8	.0	60.2	29.1
Northern hardwoods	2.6	99.4	617.0	2,033.8	267.2	3,020.1	2.7
Aspen/birch	.0	12.8	51.0	139.6	49.3	252.6	14.8
Total, all groups	3.2	199.6	907.4	2,963.5	408.9	4,482.5	1.0
SE	85.3	16.5	7.4	2.7	11.4	1.0	

Table 12.--Area of timberland by forest-type group and stocking class of growing-stock trees, Vermont, 1983

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
White/red pine	.0	93.2	186.3	181.0	14.7	475.2	11.4
Spruce/fir	.0	206.4	174.6	110.6	.0	491.6	10.6
Oak/pine	.0	.0	14.0	.0	.0	14.0	70.7
Oak/hickory	14.9	35.7	49.1	64.2	.0	163.9	20.1
Elm/ash/red maple	5.0	55.2	55.9	16.3	.0	132.4	22.4
Northern hardwoods	66.7	539.1	1,171.6	1,007.7	48.6	2,833.8	3.0
Aspen/birch	.0	47.0	124.2	108.7	22.0	301.9	14.8
Total, all groups	86.5	976.7	1,775.9	1,488.5	85.3	4,412.9	.7
SE	24.6	7.3	5.0	5.5	28.7	.7	

Table 13.--Area of timberland by forest-type group and stocking class of growing-stock trees, Vermont, 1997

(In thousands of acres)

Forest-type group	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
White/red pine	5.9	46.9	155.9	263.6	19.4	491.7	9.7
Spruce/fir	16.2	112.8	153.1	177.9	.0	460.0	9.8
Oak/pine	.0	6.1	22.2	6.4	.0	34.7	41.0
Oak/hickory	.1	.0	60.5	101.0	1.4	163.1	19.5
Elm/ash/red maple	9.7	25.6	25.0	.0	.0	60.2	29.1
Northern hardwoods	54.3	482.4	1,062.3	1,333.4	87.7	3,020.1	2.7
Aspen/birch	24.5	53.4	89.1	79.8	5.8	252.6	14.8
Total, all groups	110.6	727.2	1,568.1	1,962.2	114.4	4,482.5	1.0
SE	22.7	8.1	5.1	4.1	21.2	1.0	

Timberland area by forest-type group and
percent change, Vermont, 1983-97

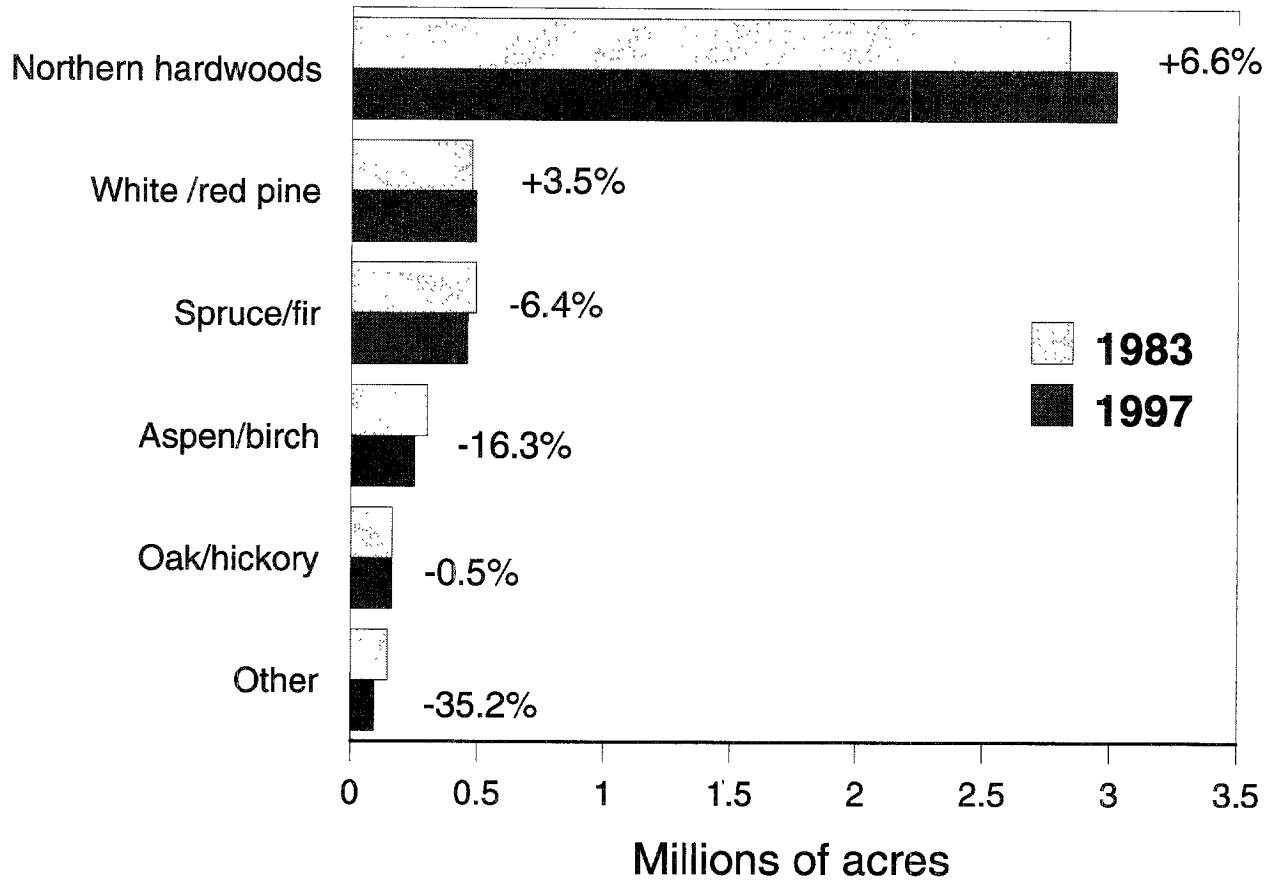


Table 14.--Number of trees (5.0+ inches d.b.h.) on timberland by species and tree class, Vermont, 1997

(In thousands of trees)										
Species group	Tree class								All classes	SE
	Preferred	Acceptable	All growing stock	Rough cull	Rotten cull	All live	Salvable dead	Nonsalvable dead		
Balsam fir	5,536	68,297	73,833	1,470	468	75,771	3,597	11,665	91,033	8.1
Tamarack	69	1,919	1,988	0	0	1,988	38	373	2,400	42.4
White spruce	507	9,084	9,591	389	0	9,980	445	575	11,000	20.9
Black spruce	0	239	239	0	0	239	0	89	328	56.6
Red spruce	2,237	51,100	53,337	2,379	194	55,911	3,336	4,509	63,756	8.5
Red pine	0	1,067	1,067	0	0	1,067	0	0	1,067	57.2
White pine	1,754	39,024	40,778	5,186	41	46,005	687	5,888	52,580	10.0
Northern white-cedar	187	14,323	14,511	1,507	547	16,565	1,165	1,161	18,892	20.1
Hemlock	1,215	72,805	74,020	4,736	405	79,161	2,085	2,761	84,007	7.5
Other softwoods	0	994	994	254	0	1,248	0	161	1,409	41.1
Total softwoods	11,506	258,852	270,358	15,921	1,657	287,936	11,354	27,183	326,472	4.2
Sugar maple	4,059	140,934	144,993	7,762	2,881	155,636	1,856	10,344	167,836	4.6
Red maple	1,335	93,997	95,333	6,101	2,649	104,082	2,239	7,222	113,543	5.8
Yellow birch	1,091	44,037	45,128	4,335	1,388	50,851	1,099	8,097	60,048	5.8
Paper birch	774	45,320	46,094	2,707	418	49,218	1,832	5,931	56,981	8.4
Beech	187	45,487	45,674	4,970	6,045	56,690	814	5,239	62,743	7.2
White ash	2,085	25,291	27,377	580	256	28,213	746	964	29,923	8.0
Black ash	85	2,285	2,370	116	121	2,607	167	316	3,091	26.7
Aspen	524	15,880	16,403	375	518	17,296	677	2,885	20,858	11.1
White oaks	76	2,632	2,708	102	0	2,810	45	529	3,385	39.2
Red oaks	1,578	13,983	15,561	452	197	16,209	0	444	16,654	13.2
Basswood	38	3,271	3,309	266	120	3,695	69	378	4,142	19.0
Elm	0	1,913	1,913	246	0	2,160	271	1,666	4,097	13.8
Other commercial hardwoods	465	27,634	28,099	2,388	454	30,941	872	2,549	34,361	7.8
Noncommercial hardwoods	0	0	0	29,660	2,054	31,714	2,417	6,400	40,531	7.3
Total hardwoods	12,298	462,665	474,963	60,059	17,101	552,123	13,106	52,965	618,194	2.1
Total, all species	23,804	721,517	745,321	75,981	18,757	840,060	24,460	80,147	944,667	1.8
SE	7.4	2.0	1.9	4.4	9.4	1.8	5.7	3.4	1.8	

Table 15.--Number of standing dead trees (5.0+ inches d.b.h.) on timberland by species, condition class, and diameter class, Vermont, 1997

(In thousands of trees)

Species group	Intact top				Broken top				Total all trees	SE
	5.0- 10.9	11.0- 14.9	15+	Total	5.0- 10.9	11.0- 14.9	15+	Total		
Balsam fir	997	73	0	1,069	11,385	1,397	125	12,907	13,976	11.2
Tamarack	71	0	0	71	265	76	0	341	412	59.2
White spruce	154	0	0	154	791	75	0	866	1,020	38.2
Black spruce	0	0	0	0	89	0	0	89	89	100.0
Red spruce	1,151	112	37	1,299	5,231	678	218	6,127	7,427	11.9
White pine	2,486	278	194	2,958	2,559	587	354	3,501	6,459	15.4
Northern white-cedar	619	0	0	619	1,514	77	77	1,668	2,288	27.2
Hemlock	561	114	78	753	2,772	576	144	3,492	4,245	13.3
Other softwoods	81	0	0	81	79	0	0	79	161	61.0
Total softwoods	6,120	577	309	7,007	24,687	3,465	918	29,071	36,077	6.4
Sugar maple	1,184	115	195	1,494	7,347	1,726	1,516	10,589	12,083	7.7
Red maple	969	119	117	1,205	7,116	835	190	8,142	9,347	10.0
Yellow birch	534	76	0	610	5,701	1,365	1,406	8,472	9,082	8.7
Paper birch	529	291	32	852	6,172	455	102	6,729	7,581	11.9
Beech	450	193	174	818	2,272	1,417	1,507	5,196	6,014	10.8
White ash	326	74	0	400	1,116	116	40	1,271	1,671	19.3
Black ash	40	0	42	83	318	40	42	401	483	39.1
Aspen	303	117	68	489	2,558	347	32	2,937	3,426	14.4
White oaks	0	0	0	0	460	75	39	575	575	60.0
Red oaks	45	45	0	91	276	38	39	353	444	36.1
Basswood	91	39	79	209	201	0	37	238	447	36.7
Elm	221	84	41	346	1,134	244	213	1,591	1,938	19.5
Other commercial hardwoods	806	41	40	887	1,998	398	68	2,465	3,351	15.3
Noncommercial hardwoods	1,774	0	0	1,774	6,836	60	38	6,934	8,708	10.9
Total hardwoods	7,273	1,195	789	9,257	43,505	7,118	5,271	55,895	65,152	3.6
Total, all species	13,393	1,773	1,098	16,264	68,192	10,584	6,189	84,965	101,229	3.2
SE	7.1	15.0	19.8	6.5	3.7	6.4	8.2	3.2	3.2	

Table 16.--Number of seedlings, saplings, and shrubs on timberland by species and stand-size class, Vermont, 1997

(In thousands of stems)

Species	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	630,491	830,557	337,947	0	1,798,995	9.6
Atlantic white cedar	3,070	0	0	0	3,070	100.0
Common juniper	14,086	0	10,161	0	24,247	61.8
Eastern redcedar	454	0	0	0	454	100.0
Larch	522	0	3,643	0	4,165	62.1
Spruce species	419,562	319,013	156,354	0	894,929	12.9
Eastern white pine	36,593	11,366	11,891	0	59,851	21.2
Canada yew	0	6,614	0	0	6,614	100.0
Northern white-cedar	44,690	49,754	11,738	0	106,182	31.8
Eastern hemlock	275,966	31,445	12,349	0	319,761	16.1
Striped maple	1,785,047	630,730	123,705	0	2,539,482	7.2
Red maple	538,844	595,949	245,585	0	1,380,378	9.8
Silver maple	3,379	22,196	0	0	25,575	86.4
Sugar maple	2,890,595	1,048,284	353,783	0	4,292,662	8.4
Mountain maple	318,706	159,888	82,125	0	560,719	17.4
Ailanthus species	2,893	484	0	0	3,378	73.5
Alder species	63,813	97,670	143,032	0	304,515	23.7
Serviceberry	99,170	95,040	9,843	0	204,054	34.9
Chokeberry species	9,522	6,456	0	0	15,978	72.0
Barberry	88,046	9,781	22,998	0	120,825	44.3
Yellow birch	794,068	357,186	102,075	0	1,253,330	11.6
Sweet birch	79,774	8,282	1,744	0	89,800	31.5
Paper birch	210,064	117,755	141,035	0	468,854	15.7
Gray birch	26,491	41,158	43,363	0	111,012	23.4
American hornbeam	136,695	40,832	0	0	177,527	34.8
Hickory species	3,260	8,620	1,637	0	13,517	57.1
Bitternut hickory	10,700	8,426	0	0	19,126	43.8
Shagbark hickory	8,001	6,184	0	0	14,186	50.5
Mockernut hickory	9,378	0	0	0	9,378	83.6
Sweetfern	3,224	0	0	0	3,224	100.0
Flowering dogwood	15,148	0	0	0	15,148	100.0
Alternate-leaved dogwood	55,979	27,072	11,505	0	94,556	30.5
Silky dogwood	0	0	11,430	0	11,430	71.4
Round-leaved dogwood	12,054	1,681	6,398	0	20,133	68.3
Panicled dogwood	196,057	85,067	75,443	0	356,567	34.1
Red-osier dogwood	68,469	66,409	198,021	0	332,898	30.7
Hawthorn species	23,069	12,776	9,916	0	45,760	26.5
American hazelnut	0	5,171	8,052	0	13,223	56.9
Beaked hazelnut	177,893	177,751	157,794	0	513,438	24.4
Leatherwood	6,745	1,641	0	0	8,386	82.8
American beech	1,772,732	583,747	76,968	0	2,433,448	6.8
Ash species	0	9,819	0	0	9,819	100.0
White ash	773,296	401,816	151,518	0	1,326,630	9.3
Black ash	9,763	27,358	15,238	0	52,359	35.4
Green ash	1,027	726	0	0	1,754	71.7
Witch-hazel	69,378	58,746	0	0	128,124	34.7
Large-leaved holly	4,890	0	0	0	4,890	100.0

Table 16.--continued

(In thousands of stems)

Species	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Winterberry holly	80,501	0	68,689	0	149,189	59.3
Butternut	6,321	0	0	0	6,321	60.8
Bush honeysuckle	67,428	52,190	41,348	0	160,965	27.0
Apple species	77,384	4,040	23,453	0	104,877	66.3
Mountain holly	6,100	33,202	63,495	0	102,798	46.5
Eastern hophornbeam	298,366	158,446	23,968	0	480,780	16.4
Balsam poplar	3,405	5,207	19,356	0	27,967	64.1
Eastern cottonwood	0	0	1,639	0	1,639	100.0
Bigtooth aspen	6,878	9,952	9,432	0	26,262	44.3
Quaking aspen	34,491	98,399	102,025	0	234,916	17.4
Pin cherry	117,857	99,535	338,699	0	556,092	19.2
Black cherry	399,575	327,032	112,579	0	839,186	13.1
Chokecherry	88,473	36,239	190,611	0	315,323	26.6
White oak	4,287	3,680	0	0	7,967	53.4
Bur oak	454	0	0	0	454	100.0
Chestnut oak	28,672	0	0	0	28,672	100.0
Northern red oak	69,239	66,772	2,072	0	138,083	24.1
Buckthorn species	92,641	23,637	22,203	0	138,482	36.4
Staghorn sumac	3,054	0	1,591	0	4,645	57.7
Currant species	22,834	34,933	6,775	0	64,542	38.5
Rose species	3,148	0	6,223	0	9,371	58.0
Rubus species	3,448,143	2,667,360	3,681,428	0	9,796,932	10.6
Willow species	44,913	8,722	60,747	0	114,382	29.1
Black willow	4,836	2,816	0	0	7,653	73.1
Crack willow	0	5,399	0	0	5,399	100.0
American elderberry	25,797	3,336	11,232	0	40,365	39.0
Red-berried alder	4,879	32,445	1,601	0	38,924	48.5
American mountain ash	16,246	3,188	4,211	0	23,645	44.2
European mountain ash	0	6,061	0	0	6,061	80.9
Spiraea species	262,563	410,186	868,591	0	1,541,339	22.3
American basswood	10,604	8,584	1,761	0	20,949	45.4
American elm	34,331	22,780	11,084	486	68,682	22.1
Slippery elm	3,260	0	0	0	3,260	100.0
Blueberry	240,699	113,204	93,148	0	447,051	52.0
Viburnum species	1,684	20,056	4,968	0	26,708	56.8
Maple-leaved viburnum	22,132	35,917	0	0	58,049	51.4
Hobblebush viburnum	2,389,933	698,603	39,993	0	3,128,529	11.4
Wild raisin	45,395	14,955	27,830	0	88,180	40.3
Arrowwood	0	49,207	0	0	49,207	54.1
Nannyberry	5,293	111,458	0	0	116,752	95.6
Common prickly ash	61,131	2,151	69,843	0	133,125	47.9
Unknown deciduous shrub	8,961	2,821	108,254	0	120,037	83.5
Unknown evergreen shrub	0	0	12,266	0	12,266	100.0
Unknown tree	0	9,970	0	0	9,970	58.1
All species	19,735,519	11,145,943	8,568,404	486	39,450,351	3.7
SE	5.5	8.3	13.3	100.0	3.7	

Table 17.--Number of live trees (1.0+ inches d.b.h.) on timberland by species and diameter class, Vermont, 1997

(In thousands of trees)

Species group	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
Balsam fir	228,787	74,724	39,959	20,787	10,391	3,335	950	308
Tamarack	0	522	769	382	349	339	38	37
White spruce	7,801	4,645	3,565	2,997	1,659	921	451	305
Black spruce	465	0	161	39	0	39	0	0
Red spruce	112,267	32,853	22,381	15,037	8,308	5,427	2,484	1,334
Red pine	0	0	0	38	409	192	159	165
White pine	17,315	10,397	10,511	9,469	7,310	6,322	4,469	2,727
Northern white-cedar	17,135	9,145	6,833	4,644	2,783	976	629	391
Hemlock	53,002	26,109	24,666	18,680	13,333	9,295	5,657	3,953
Other softwoods	454	0	352	178	320	79	247	71
Total softwoods	437,227	158,395	109,198	72,252	44,863	26,925	15,085	9,294
Sugar maple	264,356	80,336	46,467	37,582	26,107	18,401	11,473	7,179
Red maple	131,191	57,524	35,955	26,042	18,485	9,988	6,996	3,040
Yellow birch	108,960	23,214	15,279	11,519	8,704	6,805	3,908	2,424
Paper birch	46,148	15,585	14,869	13,733	10,289	6,076	2,927	967
Beech	220,693	49,771	20,971	14,297	8,318	6,005	2,855	1,733
White ash	50,500	18,235	8,785	6,769	5,903	3,252	1,662	589
Black ash	4,936	997	1,305	623	303	152	139	0
Aspen	42,943	9,801	4,198	3,561	3,135	2,984	1,489	1,101
White oaks	507	942	417	635	894	275	221	117
Red oaks	5,645	2,219	2,677	2,773	2,619	2,845	2,158	1,517
Basswood	917	471	1,242	617	783	509	311	195
Elm	12,667	5,310	1,120	621	237	36	116	0
Other commercial hardwoods	39,059	14,965	9,827	8,938	5,951	3,348	1,451	691
Noncommercial hardwoods	397,331	76,894	22,283	7,004	1,593	420	259	79
Total hardwoods	1,325,854	356,262	185,397	134,716	93,320	61,095	35,966	19,633
Total, all species	1,763,081	514,657	294,595	206,968	138,183	88,021	51,051	28,927
SE	4.3	4.2	2.7	2.4	2.7	2.9	3.5	4.2

Table 17.--continued

(In thousands of trees)

Species group	Diameter class (inches at breast height)					All classes	SE
	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+	Total 5.0+		
Balsam fir	40	0	0	0	75,771	379,283	8.6
Tamarack	74	0	0	0	1,988	2,510	46.3
White spruce	43	0	39	0	9,980	22,425	30.0
Black spruce	0	0	0	0	239	704	68.9
Red spruce	596	148	195	0	55,911	201,032	13.1
Red pine	40	23	40	0	1,067	1,067	57.2
White pine	1,767	1,364	1,809	259	46,005	73,717	11.2
Northern white-cedar	194	37	77	0	16,565	42,846	23.6
Hemlock	2,003	744	750	78	79,161	158,272	9.2
Other softwoods	0	0	0	0	1,248	1,703	40.7
Total softwoods	4,757	2,315	2,910	337	287,936	883,558	6.0
Sugar maple	2,880	1,635	3,190	721	155,636	500,328	6.4
Red maple	1,539	901	881	253	104,082	292,798	8.2
Yellow birch	1,146	317	711	37	50,851	183,024	8.3
Paper birch	217	77	64	0	49,218	110,952	12.0
Beech	1,309	314	812	75	56,690	327,154	7.1
White ash	634	311	234	74	28,213	96,947	11.3
Black ash	85	0	0	0	2,607	8,541	38.0
Aspen	643	104	79	0	17,296	70,039	21.0
White oaks	45	93	77	36	2,810	4,259	30.9
Red oaks	875	124	461	160	16,209	24,073	15.3
Basswood	0	0	37	0	3,695	5,083	21.3
Elm	0	30	0	0	2,160	20,137	24.9
Other commercial hardwoods	325	138	273	0	30,941	84,965	14.9
Noncommercial hardwoods	0	38	37	0	31,714	505,939	6.5
Total hardwoods	9,699	4,081	6,857	1,358	552,123	2,234,240	3.2
Total, all species	14,456	6,396	9,768	1,696	840,060	3,117,798	2.8
SE	6.0	7.9	7.3	16.7	1.8	2.8	

Table 18.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Vermont, 1983

(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+		
Balsam fir	28,486	14,500	6,819	3,237	668	117	0	17	0	0	53,845	10.5
Tamarack	697	295	259	101	50	23	0	0	0	0	1,425	54.3
White spruce	3,824	2,703	1,996	934	159	72	21	0	0	0	9,710	30.1
Black spruce	72	0	193	86	0	0	0	0	0	0	351	68.6
Red spruce	20,632	15,485	9,691	4,508	2,229	721	451	73	125	0	53,915	9.7
Red pine	74	59	158	58	204	166	41	19	12	0	792	85.9
White pine	9,815	7,323	6,169	3,955	2,789	1,944	867	457	530	75	33,924	13.5
Northern white-cedar	5,458	4,265	2,136	985	413	264	21	37	18	0	13,598	23.8
Hemlock	18,304	14,898	9,493	7,124	3,686	1,878	819	342	261	7	56,813	10.4
Other softwoods	70	63	0	0	0	0	0	0	0	0	133	100.0
Total softwoods	87,432	59,591	36,915	20,989	10,199	5,185	2,220	947	947	82	224,507	5.4
Sugar maple	40,346	32,348	20,573	14,509	7,999	4,363	2,118	1,422	1,215	123	125,015	5.3
Red maple	21,956	20,469	11,445	6,264	3,454	1,863	676	333	250	9	66,718	7.2
Yellow birch	11,627	10,900	9,071	5,432	2,898	1,549	778	328	500	72	43,154	6.7
Paper birch	20,610	15,281	10,551	3,799	1,405	459	212	84	16	0	52,417	11.5
Beech	12,155	8,497	4,944	3,584	1,733	1,081	623	302	175	10	33,105	9.3
White ash	6,765	6,828	3,894	2,596	1,515	960	279	105	91	0	23,034	11.8
Black ash	563	535	56	87	79	23	21	0	0	0	1,364	34.2
Aspen	5,047	2,861	2,967	1,766	998	573	268	72	66	0	14,619	14.5
White oaks	119	983	339	219	97	70	39	37	30	7	1,940	50.4
Red oaks	2,443	2,820	2,325	2,421	1,053	814	486	205	218	36	12,823	16.4
Basswood	1,071	495	723	397	249	87	58	17	0	8	3,106	28.2
Elm	1,863	1,435	1,005	536	351	133	67	18	27	10	5,445	20.9
Other hardwoods	11,943	6,056	3,377	2,418	873	405	260	87	27	6	25,453	10.0
Total hardwoods	136,507	109,507	71,271	44,030	22,704	12,381	5,885	3,011	2,617	282	408,194	2.7
Total, all species	223,939	169,098	108,186	65,019	32,903	17,565	8,105	3,958	3,564	364	632,701	2.1
SE	3.4	3.1	3.0	3.0	3.8	4.8	6.0	8.3	8.3	20.5	2.1	

Table 19.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Vermont, 1997

(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+		
Balsam fir	38,579	20,475	10,274	3,279	919	308	0	0	0	0	73,833	8.7
Tamarack	769	382	349	339	38	37	74	0	0	0	1,988	45.5
White spruce	3,527	2,922	1,507	879	408	305	43	0	0	0	9,591	21.3
Black spruce	161	39	0	39	0	0	0	0	0	0	239	57.0
Red spruce	21,337	14,641	7,998	5,038	2,326	1,255	485	102	156	0	53,337	8.7
Red pine	0	38	409	192	159	165	40	23	40	0	1,067	57.2
White pine	9,351	8,796	5,989	5,458	4,082	2,425	1,689	1,160	1,644	183	40,778	10.4
Northern white-cedar	6,637	4,407	1,972	668	430	276	80	0	40	0	14,511	20.7
Hemlock	23,361	18,267	11,321	8,551	5,357	3,716	1,923	693	750	78	74,020	7.8
Other softwoods	315	141	212	79	175	71	0	0	0	0	994	47.5
Total softwoods	104,039	70,108	40,031	24,522	13,895	8,559	4,334	1,978	2,630	262	270,358	4.4
Sugar maple	43,520	34,964	24,971	17,012	10,651	6,757	2,812	1,488	2,433	386	144,993	4.7
Red maple	33,143	24,421	17,673	8,451	6,084	2,678	1,337	624	729	192	95,333	5.9
Yellow birch	13,645	10,751	8,085	5,777	3,418	1,850	826	243	496	37	45,128	6.1
Paper birch	13,760	12,990	9,838	5,577	2,751	857	180	77	64	0	46,094	8.6
Beech	17,262	11,844	7,123	4,584	2,117	1,096	1,020	189	401	38	45,674	7.0
White ash	8,420	6,648	5,626	3,224	1,616	589	634	311	234	74	27,377	8.2
Black ash	1,229	502	263	152	139	0	85	0	0	0	2,370	28.1
Aspen	3,927	3,417	2,947	2,952	1,392	1,062	521	104	79	0	16,403	11.7
White oaks	417	578	848	275	221	117	45	93	77	36	2,708	36.5
Red oaks	2,569	2,734	2,502	2,693	2,082	1,517	757	124	461	122	15,561	13.5
Basswood	1,136	491	749	468	231	195	0	0	37	0	3,309	20.3
Elm	976	585	201	36	116	0	0	0	0	0	1,913	17.5
Other hardwoods	8,573	8,436	5,700	2,937	1,451	539	243	99	121	0	28,099	8.2
Total hardwoods	148,577	118,363	86,526	54,139	32,270	17,258	8,461	3,351	5,132	887	474,963	2.2
Total, all species	252,616	188,470	126,557	78,661	46,165	25,817	12,795	5,329	7,762	1,148	745,321	1.9
SE	2.9	2.5	2.8	3.2	3.7	4.5	6.4	8.7	8.4	21.0	1.9	

Table 20.--Net volume of all trees on timberland by species and tree class, Vermont, 1997

(In millions of cubic feet)

Species group	Tree class						All classes	SE
	Preferred	Acceptable	Preferred/ acceptable	Rough cull	Rotten cull	All cull		
Balsam fir	78.4	408.8	487.2	3.6	3.1	6.7	493.9	8.9
Tamarack	1.4	20.6	22.0	.0	.0	.0	22.0	49.2
White spruce	12.9	78.2	91.1	3.5	.0	3.5	94.6	20.5
Black spruce	.0	1.4	1.4	.0	.0	.0	1.4	71.8
Red spruce	38.8	490.1	528.8	26.4	.6	27.0	555.8	9.8
Red pine	.0	27.8	27.8	.0	.0	.0	27.8	59.1
White pine	63.8	677.8	741.6	52.1	.3	52.4	794.0	9.7
Northern white-cedar	1.1	84.0	85.1	16.1	2.0	18.2	103.3	23.7
Hemlock	28.6	807.1	835.7	37.3	4.2	41.5	877.2	8.3
Other softwoods	.0	12.5	12.5	1.8	.0	1.8	14.3	57.0
Total softwoods	224.9	2,608.5	2,833.4	140.7	10.3	151.0	2,984.4	4.5
Sugar maple	123.4	1,870.1	1,993.4	105.1	40.3	145.3	2,138.7	5.2
Red maple	35.8	1,009.3	1,045.1	63.0	17.0	80.0	1,125.1	6.4
Yellow birch	21.5	481.4	502.9	44.4	12.8	57.2	560.1	6.5
Paper birch	14.9	462.2	477.0	19.9	3.4	23.3	500.3	8.5
Beech	4.6	478.0	482.6	29.3	40.1	69.5	552.1	8.2
White ash	52.5	316.6	369.1	3.6	2.1	5.6	374.7	8.7
Black ash	4.4	15.3	19.8	.4	.0	.5	20.2	41.6
Aspen	17.3	242.3	259.6	2.9	6.2	9.2	268.8	12.3
White oaks	4.8	34.7	39.6	.5	.0	.5	40.0	33.4
Red oaks	51.6	240.4	292.0	5.0	3.4	8.4	300.5	12.8
Basswood	1.3	38.3	39.6	1.1	1.2	2.3	41.9	20.8
Elm	.0	10.1	10.1	1.4	.0	1.4	11.4	20.6
Other commercial hardwoods	15.0	290.9	305.9	21.3	2.5	23.8	329.7	8.7
Noncommercial hardwoods	.0	.0	.0	99.4	3.1	102.6	102.6	9.5
Total hardwoods	347.1	5,489.5	5,836.6	397.4	132.1	529.5	6,366.1	2.4
Total, all species	572.0	8,098.0	8,670.0	538.1	142.4	680.5	9,350.5	1.9
SE	6.9	2.0	2.0	5.6	9.8	5.0	1.9	

Volume of all live trees on timberland, for selected species and percent change, Vermont, 1983 and 1997

(Volume increased by 20.5 percent for all species)

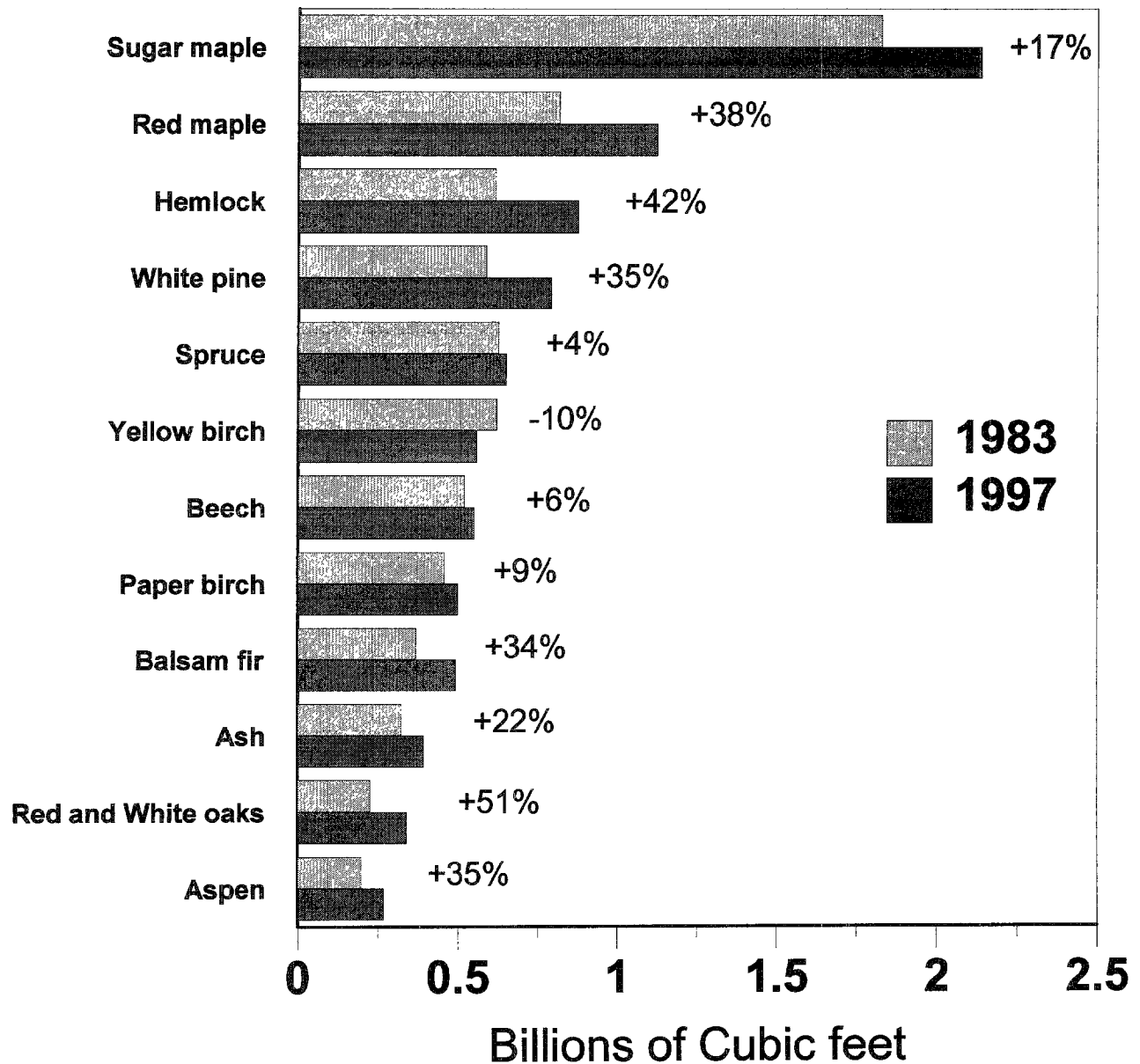


Table 21.--Net volume of all live trees on timberland by species and diameter class, Vermont, 1983

(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+		
Balsam fir	93.9	105.1	86.1	60.4	17.8	4.1	.6	1.1	.0	.0	369.0	10.2
Tamarack	1.9	1.7	3.3	2.0	1.2	.9	.0	.0	.0	.0	11.0	46.5
White spruce	12.6	18.7	26.0	17.4	4.5	3.9	1.4	.6	.0	.0	85.2	27.9
Black spruce	.2	.0	2.4	1.5	.0	.0	.0	.0	.0	.0	4.1	62.2
Red spruce	76.1	114.6	129.5	86.4	65.5	30.1	21.0	5.5	10.0	.0	538.5	9.5
Red pine	.1	.4	1.9	1.1	5.8	5.7	1.9	.9	1.3	.0	19.2	94.8
White pine	35.9	56.0	90.1	82.1	86.6	85.4	49.7	30.4	60.4	11.2	587.8	11.0
Northern white-cedar	18.1	24.0	21.5	14.0	8.5	7.7	.6	1.5	.7	.0	96.7	24.8
Hemlock	60.4	96.6	102.7	122.0	91.1	62.8	37.8	19.4	23.0	.9	616.9	9.9
Other softwoods	.6	.7	.6	.0	.0	.0	.0	.0	.0	.0	1.9	44.9
Total softwoods	299.7	417.9	464.0	386.9	281.1	200.7	113.0	59.4	95.5	12.1	2,330.3	5.1
Sugar maple	145.5	252.1	286.3	306.6	244.0	179.4	113.0	91.2	146.8	62.9	1,827.7	5.1
Red maple	79.0	160.7	160.2	140.7	98.2	81.2	39.9	26.0	28.1	4.1	818.2	6.8
Yellow birch	41.9	90.7	122.9	105.6	79.0	57.7	37.7	24.2	49.2	12.0	621.0	6.5
Paper birch	68.2	114.2	131.3	71.4	39.7	15.8	9.1	7.0	2.0	.0	458.7	10.1
Beech	38.8	70.5	73.0	93.9	67.8	64.5	45.8	33.9	32.3	1.4	521.8	7.3
White ash	24.2	55.0	56.9	55.3	45.9	38.2	14.6	7.1	9.9	3.7	310.7	10.4
Black ash	2.1	3.7	.9	2.3	2.5	.8	.9	.0	.0	.0	13.2	45.4
Aspen	17.7	25.1	40.3	38.6	32.1	22.3	11.8	5.3	5.9	.0	199.2	13.2
White oaks	.4	5.4	3.4	3.4	1.9	2.0	1.1	1.8	2.3	1.2	22.8	38.2
Red oaks	8.3	18.8	26.8	38.4	25.6	27.8	19.6	9.2	18.0	10.7	203.2	16.4
Basswood	2.9	5.2	8.6	8.4	7.1	3.5	3.8	.9	.4	1.9	42.6	21.6
Elm	5.1	8.1	8.9	9.3	5.6	3.8	1.6	.8	1.4	1.1	45.8	22.4
Other commercial hardwoods	36.1	43.2	47.0	48.6	25.8	15.7	11.8	6.0	5.4	1.9	241.6	9.2
Noncommercial hardwoods	52.5	26.8	11.7	4.8	3.3	2.3	1.9	.0	.0	.0	103.2	11.1
Total hardwoods	522.7	879.5	978.1	927.3	678.6	515.1	312.6	213.5	301.6	100.9	5,429.8	2.3
Total, all species	822.4	1,297.4	1,442.0	1,314.2	959.7	715.8	425.6	272.9	397.1	113.0	7,760.1	1.6
SE	3.0	2.8	2.8	2.8	3.5	4.3	5.2	7.0	6.4	14.8	1.6	

Table 22.--Net volume of live trees on timberland by species and diameter class, Vermont, 1997

(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+		
Balsam fir	120.2	143.7	130.9	62.8	24.5	10.6	1.2	.0	.0	.0	493.9	8.9
Tamarack	2.7	2.5	4.7	6.5	.7	1.4	3.4	.0	.0	.0	22.0	49.2
White spruce	10.3	21.7	19.6	16.4	12.6	11.5	1.5	.0	1.1	.0	94.6	20.5
Black spruce	.6	.2	.0	.6	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	71.2	106.7	105.7	104.2	67.9	50.1	28.0	7.4	14.6	.0	555.8	9.8
Red pine	.0	.3	4.9	3.7	4.2	6.9	2.3	1.2	4.4	.0	27.8	59.1
White pine	30.6	61.8	82.1	108.9	110.0	90.1	74.5	67.9	143.1	25.1	794.0	9.7
Northern white-cedar	17.4	23.4	22.7	12.5	10.6	8.5	4.5	1.3	2.5	.0	103.3	23.7
Hemlock	63.5	104.5	133.8	145.1	125.8	122.8	81.7	36.5	55.7	7.8	877.2	8.3
Other softwoods	.7	.6	3.4	1.6	5.5	2.5	.0	.0	.0	.0	14.3	57.0
Total softwoods	317.2	465.4	507.7	462.2	361.9	304.4	197.0	114.3	221.4	32.9	2,984.4	4.5
Sugar maple	138.9	262.2	322.4	345.2	305.7	245.7	123.5	86.6	222.5	86.1	2,138.7	5.2
Red maple	100.9	171.2	218.7	176.1	167.5	100.8	61.9	39.1	55.9	33.0	1,125.1	6.4
Yellow birch	41.1	70.9	92.8	107.6	86.1	66.8	39.7	13.7	39.1	2.3	560.1	6.5
Paper birch	50.1	101.7	125.6	108.3	71.9	28.6	6.5	3.3	4.2	.0	500.3	8.5
Beech	47.5	88.0	93.2	101.4	66.0	47.2	48.9	9.3	42.4	8.1	552.1	8.2
White ash	29.2	51.1	80.4	64.0	47.6	21.9	30.2	18.7	19.7	12.0	374.7	8.7
Black ash	3.4	3.5	3.4	2.8	2.7	.0	4.4	.0	.0	.0	20.2	41.6
Aspen	14.5	27.9	40.6	62.1	42.4	41.6	28.5	5.5	5.7	.0	268.8	12.3
White oaks	1.2	3.7	9.1	4.5	3.6	3.2	1.4	4.2	5.5	3.6	40.0	33.4
Red oaks	8.2	18.8	29.4	47.9	51.1	50.7	33.4	5.4	38.6	17.0	300.5	12.8
Basswood	3.6	4.2	9.0	8.5	6.8	7.4	.0	.0	2.4	.0	41.9	20.8
Elm	2.4	3.1	2.3	.5	2.1	.0	.0	1.1	.0	.0	11.4	20.6
Other commercial hardwoods	29.6	63.6	77.6	63.0	39.6	23.6	11.2	7.4	14.1	.0	329.7	8.7
Noncommercial hardwoods	48.0	31.3	11.5	4.7	4.0	2.2	.0	.4	.3	.0	102.6	9.5
Total hardwoods	518.4	901.1	1,115.9	1,096.8	897.0	639.6	389.8	194.8	450.4	162.2	6,366.1	2.4
Total, all species	835.6	1,366.5	1,623.7	1,559.0	1,258.9	944.0	586.8	309.1	671.8	195.1	9,350.5	1.9
SE	2.9	2.5	2.8	3.1	3.7	4.4	6.4	8.2	7.8	19.4	1.9	

Table 23.--Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1983

(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+		
Balsam fir	84.6	96.5	82.8	58.5	17.1	4.1	.0	1.1	.0	.0	344.7	10.5
Tamarack	1.9	1.7	3.3	2.0	1.2	.9	.0	.0	.0	.0	11.0	46.5
White spruce	11.8	18.7	24.9	17.1	4.0	2.4	.8	.0	.0	.0	79.7	28.9
Black spruce	.2	.0	2.4	1.5	.0	.0	.0	.0	.0	.0	4.1	62.2
Red spruce	62.8	104.6	122.0	81.5	57.0	25.8	19.7	3.6	8.5	.0	485.6	9.7
Red pine	.1	.4	1.9	1.1	5.8	5.7	1.9	.9	1.3	.0	19.2	94.8
White pine	28.1	46.3	72.0	68.5	70.1	68.1	37.3	24.2	42.9	8.9	466.4	11.8
Northern white-cedar	13.6	20.9	17.7	12.1	7.5	5.5	.6	1.5	.7	.0	80.2	25.8
Hemlock	47.3	81.4	93.1	110.9	83.8	58.2	33.2	17.5	19.2	.9	545.4	10.3
Other softwoods	.2	.3	.0	.0	.0	.0	.0	.0	.0	.0	.5	100.0
Total softwoods	250.5	370.9	420.1	353.2	246.5	170.7	93.6	48.8	72.7	9.8	2,036.9	5.3
Sugar maple	118.9	225.5	255.4	274.9	213.9	156.0	91.1	77.8	91.1	16.9	1,521.5	5.4
Red maple	63.4	140.1	138.9	117.3	86.9	64.9	28.7	16.8	18.7	1.2	676.9	7.4
Yellow birch	33.2	76.0	106.8	92.3	68.6	47.2	30.2	14.2	32.1	6.7	507.5	7.0
Paper birch	62.4	106.5	126.8	65.4	33.4	14.0	7.8	3.9	1.0	.0	421.1	10.4
Beech	28.1	54.6	58.4	66.5	47.2	38.0	27.9	16.8	13.8	1.4	352.7	8.7
White ash	21.8	52.1	52.5	51.7	43.5	35.8	12.9	6.2	7.5	.0	284.0	10.8
Black ash	1.8	3.7	.6	1.8	2.2	.8	.9	.0	.0	.0	11.8	49.3
Aspen	16.5	21.4	39.5	35.7	28.0	21.0	11.8	4.4	4.9	.0	183.3	13.7
White oaks	.4	5.1	3.0	3.4	1.5	2.0	.8	1.8	1.4	1.2	20.7	38.4
Red oaks	7.5	18.4	26.4	38.4	24.8	26.5	19.0	9.2	15.8	7.1	193.2	16.6
Basswood	2.6	3.5	8.4	7.1	5.8	3.5	2.6	.9	.0	1.2	35.5	23.2
Elm	4.3	6.5	8.9	8.3	5.6	3.8	1.5	.8	1.4	1.1	42.3	23.2
Other hardwoods	37.6	39.7	42.7	45.8	22.0	13.2	9.9	4.0	2.4	1.3	218.6	9.5
Total hardwoods	398.5	753.2	868.2	808.8	583.3	426.7	245.0	156.9	190.2	38.1	4,468.9	2.6
Total, all species	649.1	1,124.1	1,288.3	1,162.0	829.8	597.4	338.6	205.7	262.9	47.9	6,505.8	1.9
SE	3.5	3.1	3.1	3.0	3.8	4.9	6.0	8.5	8.5	21.6	1.9	

Table 24.--Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1997

(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+		
Balsam fir	117.9	142.0	129.8	62.8	24.0	10.6	.0	.0	.0	.0	487.2	8.9
Tamarack	2.7	2.5	4.7	6.5	.7	1.4	3.4	.0	.0	.0	22.0	49.2
White spruce	10.3	21.5	18.4	15.9	12.1	11.5	1.5	.0	.0	.0	91.1	20.7
Black spruce	.6	.2	.0	.6	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	69.2	104.7	103.1	99.2	63.9	47.3	23.8	5.8	11.9	.0	528.8	9.2
Red pine	.0	.3	4.9	3.7	4.2	6.9	2.3	1.2	4.4	.0	27.8	59.1
White pine	28.0	58.8	71.2	98.9	103.6	83.2	73.7	61.8	137.4	25.0	741.6	10.1
Northern white-cedar	17.1	22.9	17.6	8.8	7.9	6.6	2.3	.0	1.9	.0	85.1	24.8
Hemlock	61.4	103.1	118.6	136.6	121.0	116.6	79.1	35.9	55.7	7.8	835.7	8.4
Other softwoods	.6	.5	2.7	1.6	4.7	2.5	.0	.0	.0	.0	12.5	64.3
Total softwoods	307.9	456.6	470.9	434.5	342.1	286.6	186.1	104.6	211.3	32.8	2,833.4	4.6
Sugar maple	134.1	250.6	312.6	325.2	291.0	236.0	121.6	83.5	183.7	55.1	1,993.4	5.4
Red maple	96.8	165.8	212.9	158.1	153.0	92.1	56.8	30.7	49.7	29.2	1,045.1	6.5
Yellow birch	38.7	68.3	88.9	95.7	78.8	56.3	33.2	11.2	29.5	2.3	502.9	6.7
Paper birch	47.4	97.7	121.7	102.2	68.3	26.5	5.8	3.3	4.2	.0	477.0	8.5
Beech	43.9	79.6	86.2	87.3	56.8	38.6	45.3	7.6	31.8	5.5	482.6	8.7
White ash	28.0	50.4	77.8	63.6	46.9	21.9	30.2	18.7	19.7	12.0	369.1	8.8
Black ash	3.3	3.1	3.4	2.8	2.7	.0	4.4	.0	.0	.0	19.8	42.4
Aspen	13.8	27.1	39.2	61.7	41.3	40.7	24.7	5.5	5.7	.0	259.6	12.4
White oaks	1.2	3.4	8.9	4.5	3.6	3.2	1.4	4.2	5.5	3.6	39.6	33.6
Red oaks	7.9	18.6	28.3	46.3	50.1	50.7	30.7	5.4	38.6	15.4	292.0	12.9
Basswood	3.4	3.7	8.6	8.3	5.8	7.4	.0	.0	2.4	.0	39.6	20.9
Elm	2.2	3.1	2.1	.5	2.1	.0	.0	.0	.0	.0	10.1	20.8
Other hardwoods	27.3	61.6	75.6	56.8	39.6	19.8	10.2	5.9	9.0	.0	305.9	8.7
Total hardwoods	447.9	832.8	1,066.2	1,013.2	840.0	593.2	364.3	176.2	379.7	123.2	5,836.6	2.6
Total, all species	755.8	1,289.4	1,537.1	1,447.7	1,182.1	879.8	550.4	280.8	591.0	156.0	8,670.0	2.0
SE	3.1	2.6	2.9	3.3	3.9	4.6	6.7	8.8	8.6	22.9	2.0	

Table 25.--Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1983

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	167.3	169.9	7.5	.0	344.7	10.5
Tamarack	2.3	8.7	.0	.0	11.0	46.5
White spruce	36.9	37.5	5.3	.0	79.7	28.9
Black spruce	2.3	1.8	.0	.0	4.1	62.2
Red spruce	276.4	201.1	8.1	.0	485.6	9.7
Red pine	18.1	1.0	.0	.0	19.2	94.8
White pine	310.4	138.2	17.9	.0	466.4	11.8
Northern white-cedar	49.4	26.7	4.1	.0	80.2	25.8
Hemlock	447.8	97.2	.4	.0	545.4	10.3
Other softwoods	.0	.5	.0	.0	.5	100.0
Total softwoods	1,310.8	682.7	43.4	.0	2,036.9	5.3
Sugar maple	1,092.8	419.6	9.1	.0	1,521.5	5.4
Red maple	361.0	314.5	1.4	.0	676.9	7.4
Yellow birch	321.1	184.9	1.5	.0	507.5	7.0
Paper birch	134.1	285.0	2.0	.0	421.1	10.4
Beech	259.6	91.6	1.5	.0	352.7	8.7
White ash	117.0	164.7	2.4	.0	284.0	10.8
Black ash	7.5	3.8	.4	.0	11.8	49.3
Aspen	83.4	94.2	5.7	.0	183.3	13.7
White oaks	5.0	15.0	.6	.0	20.7	38.4
Red oaks	105.0	86.4	1.8	.0	193.2	16.6
Basswood	15.5	19.1	.9	.0	35.5	23.2
Elm	21.2	19.9	1.2	.0	42.3	23.2
Other hardwoods	116.4	100.1	2.1	.0	218.6	9.5
Total hardwoods	2,639.5	1,798.7	30.7	.0	4,468.9	2.6
Total, all species	3,950.3	2,481.5	74.1	.0	6,505.8	1.9
SE	4.3	5.8	18.0	.0	1.9	

Table 26.--Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1997

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	207.1	247.8	32.3	.0	487.2	8.9
Tamarack	19.7	1.8	.5	.0	22.0	49.2
White spruce	57.4	27.7	6.0	.0	91.1	20.7
Black spruce	.0	.2	1.2	.0	1.4	71.8
Red spruce	363.5	153.7	11.6	.0	528.8	9.2
Red pine	21.6	1.3	4.9	.0	27.8	59.1
White pine	607.8	122.9	10.9	.0	741.6	10.1
Northern white-cedar	49.2	31.6	4.3	.0	85.1	24.8
Hemlock	780.7	52.2	2.8	.0	835.7	8.4
Other softwoods	11.8	.3	.5	.0	12.5	64.3
Total softwoods	2,118.9	639.6	74.9	.0	2,833.4	4.6
Sugar maple	1,622.0	355.9	15.6	.0	1,993.4	5.4
Red maple	707.0	328.8	9.3	.0	1,045.1	6.5
Yellow birch	389.1	112.2	1.7	.0	502.9	6.7
Paper birch	280.3	192.4	4.4	.0	477.0	8.5
Beech	408.5	65.5	8.6	.0	482.6	8.7
White ash	247.5	115.2	6.3	.1	369.1	8.8
Black ash	8.8	5.9	5.1	.0	19.8	42.4
Aspen	189.2	65.0	5.4	.0	259.6	12.4
White oaks	31.4	8.1	.0	.0	39.6	33.6
Red oaks	220.6	71.5	.0	.0	292.0	12.9
Basswood	35.1	4.5	.0	.0	39.6	20.9
Elm	6.0	2.9	1.1	.0	10.1	20.8
Other hardwoods	204.6	94.8	6.4	.0	305.9	8.7
Total hardwoods	4,350.0	1,422.7	63.9	.1	5,836.6	2.6
Total, all species	6,468.9	2,062.2	138.8	.1	8,670.0	2.0
SE	3.3	6.6	16.0	100.0	2.0	

Table 27.--Net volume of growing-stock trees on timberland by forest type and stand-size class, Vermont, 1997

(In millions of cubic feet)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	17.3	1.3	.0	.0	18.6	93.2
White pine	403.5	29.7	.1	.0	433.2	21.5
White pine/hemlock	194.0	20.9	4.4	.0	219.3	25.5
Hemlock	614.0	3.5	.0	.0	617.5	15.8
White/red pine group	1,228.8	55.3	4.5	.0	1,288.7	11.0
Balsam fir	89.9	218.2	20.0	.0	328.1	18.1
Red spruce	109.3	15.8	.0	.0	125.0	36.4
Red spruce/balsam fir	91.7	93.1	12.3	.0	197.1	25.5
White spruce	59.8	6.3	.0	.0	66.0	52.6
Black spruce	.0	.0	1.8	.0	1.8	100.0
Norway spruce	6.5	.0	.0	.0	6.5	100.0
Northern white-cedar	67.9	29.6	.0	.0	97.4	40.3
Tamarack	19.0	.0	.0	.0	19.0	100.0
Spruce/fir group	443.9	362.9	34.1	.0	840.9	11.7
Wh. pine/no.red oak/wh. ash	28.4	35.3	.0	.0	63.7	44.4
Oak/pine group	28.4	35.3	.0	.0	63.7	44.4
Chestnut oak	16.3	.0	.0	.0	16.3	100.0
White oak/red oak/hickory	33.0	30.6	.0	.0	63.6	51.0
Northern red oak	57.1	19.5	.0	.0	76.6	44.9
Hawthorn/reverting field	.0	.0	1.8	.0	1.8	100.0
Mixed central hardwoods	150.5	56.0	.0	.0	206.5	28.8
Oak/hickory group	256.9	106.2	1.8	.0	364.8	20.8
Black ash/Amer. elm/red maple	19.4	18.2	8.3	.0	45.9	43.9
Red maple(upland)	.0	9.9	.0	.0	9.9	100.0
Willow	.0	.0	1.1	.0	1.1	71.1
American elm/green ash	.0	6.4	.0	.0	6.4	100.0
Elm/ash/red maple group	19.4	34.5	9.4	.0	63.3	36.5
Sugar maple/beech/yellow birch	3,194.4	726.4	27.8	.0	3,948.5	4.8
Black Cherry	.0	1.0	.0	.0	1.0	100.0
Red maple/northern hardwoods	572.2	334.2	21.3	.0	927.8	12.2
Pin cherry/reverting field	.0	11.7	15.4	.1	27.2	37.9
Mixed northern hardwoods	469.7	234.8	14.2	.0	718.6	14.5
Northern hardwoods group	4,236.2	1,308.0	78.7	.1	5,623.1	3.5
Aspen	103.8	45.5	8.6	.0	157.9	30.0
Paper birch	151.5	114.4	1.7	.0	267.6	24.2
Gray birch	.0	.1	.0	.0	.1	76.7
Aspen/birch group	255.3	160.0	10.2	.0	425.6	18.7
All forest types	6,468.9	2,062.2	138.8	.1	8,670.0	2.0
SE	3.3	6.6	16.0	100.0	2.0	

Percent of growing-stock volume by forest-type
group Vermont, 1997

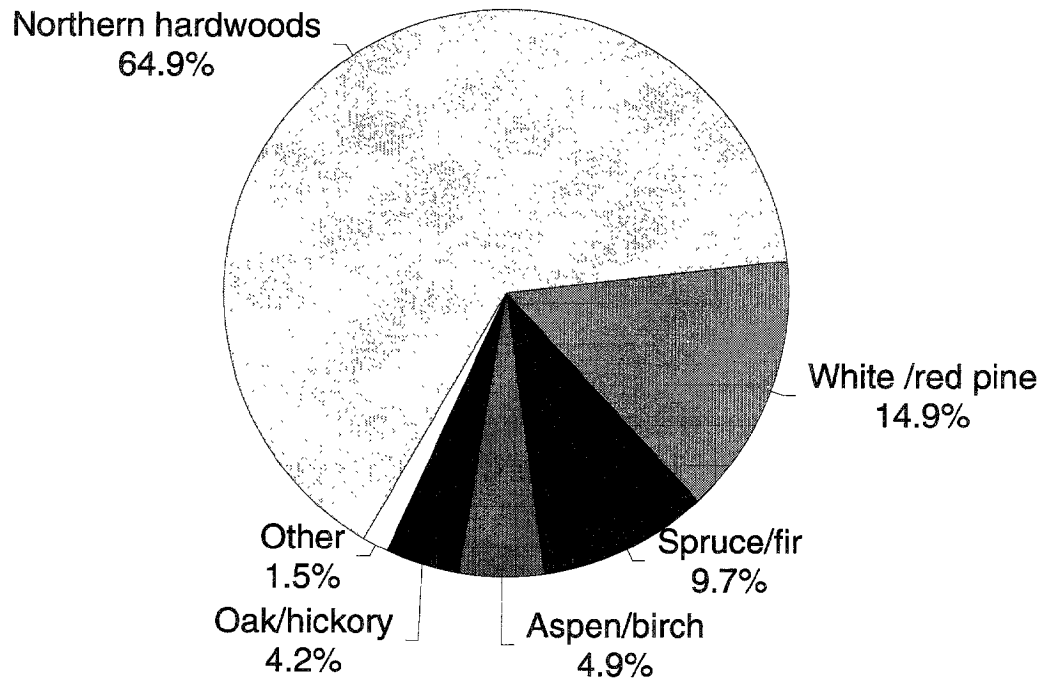


Table 28.--Net volume of growing-stock trees on timberland by species and forest-type group, Vermont, 1983

(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		
Balsam fir	25.7	178.4	.0	.0	.3	.0	2.3	123.2	14.9	344.7	10.5
Tamarack	.0	8.4	.0	.0	.0	.0	.0	2.7	.0	11.0	46.5
White spruce	1.7	66.4	.0	.0	.0	.0	.4	10.9	.4	79.7	28.9
Black spruce	.0	3.7	.0	.0	.0	.0	.0	.4	.0	4.1	62.2
Red spruce	44.5	227.6	.0	.0	2.4	.0	2.5	186.5	22.1	485.6	9.7
Red pine	19.2	.0	.0	.0	.0	.0	.0	.0	.0	19.2	94.8
White pine	259.6	32.7	.0	12.8	19.6	.0	1.4	107.8	32.4	466.4	11.8
Northern white-cedar	2.3	66.2	.0	.0	.0	.0	.8	9.3	1.6	80.2	25.8
Hemlock	310.1	14.8	.0	.0	5.7	.0	2.5	203.0	9.3	545.4	10.3
Other softwoods	.5	.0	.0	.0	.0	.0	.0	.0	.0	.5	100.0
Total softwoods	663.4	598.2	.0	12.8	27.9	.0	9.9	643.9	80.7	2,036.9	5.3
Sugar maple	37.9	12.8	.0	1.8	9.7	.0	2.8	1,438.2	18.2	1,521.5	5.4
Red maple	48.1	30.1	.0	1.7	11.2	.0	26.1	523.0	36.7	676.9	7.4
Yellow birch	18.4	20.3	.0	.0	.5	.0	.0	453.8	14.5	507.5	7.0
Paper birch	25.6	22.4	.0	2.8	8.0	.0	1.9	159.8	200.6	421.1	10.4
Beech	4.2	.0	.0	.0	13.7	.0	1.7	329.1	4.0	352.7	8.7
White ash	8.0	2.8	.0	.0	2.8	.0	17.9	237.7	14.8	284.0	10.8
Black ash	1.6	1.4	.0	.0	.0	.0	5.4	3.4	.0	11.8	49.3
Aspen	18.8	29.2	.0	.0	2.1	.0	5.7	69.1	58.2	183.3	13.7
White oaks	.5	.0	.0	.9	13.8	.0	1.7	3.8	.0	20.7	38.4
Red oaks	12.1	.0	.0	1.5	106.5	.0	.9	54.2	17.9	193.2	16.6
Basswood	2.3	.0	.0	.0	2.2	.0	.8	29.6	.6	35.5	23.2
Elm	5.1	1.7	.0	.5	1.2	.0	17.0	12.4	4.4	42.3	23.2
Other hardwoods	23.8	4.8	.0	.0	16.7	.0	13.5	148.8	11.1	218.6	9.5
Total hardwoods	206.3	125.5	.0	9.2	188.5	.0	95.4	3,462.9	381.1	4,468.9	2.6
Total, all species	869.7	723.8	.0	22.0	216.4	.0	105.3	4,106.8	461.8	6,505.8	1.9
SE	12.5	12.7	.0	72.9	24.6	.0	29.6	3.6	16.6	1.9	

Table 29.--Net volume of growing-stock trees on timberland by species and forest-type group, Vermont, 1997

(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		
Balsam fir	36.6	271.5	.0	.0	1.3	.0	1.9	143.5	32.4	487.2	8.9
Tamarack	.9	20.5	.0	.1	.0	.0	.0	.4	.0	22.0	49.2
White spruce	7.5	64.5	.0	.0	.0	.0	.0	15.1	4.0	91.1	20.7
Black spruce	.0	1.4	.0	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	49.4	204.7	.0	.0	.8	.0	.0	215.1	58.8	528.8	9.2
Red pine	22.9	.0	.0	.0	.0	.0	.0	4.9	.0	27.8	59.1
White pine	409.8	25.8	.0	31.1	36.8	.0	4.2	201.9	32.0	741.6	10.1
Northern white-cedar	1.4	70.4	.0	.0	.0	.0	.5	11.4	1.4	85.1	24.8
Hemlock	467.3	9.2	.0	.4	18.2	.0	.8	325.1	14.8	835.7	8.4
Other softwoods	.3	6.3	.0	.0	.0	.0	.0	6.0	.0	12.5	64.3
Total softwoods	996.1	674.5	.0	31.6	57.1	.0	7.3	923.3	143.5	2,833.4	4.6
Sugar maple	45.4	20.9	.0	9.4	29.2	.0	.3	1,872.3	15.9	1,993.4	5.4
Red maple	80.1	45.3	.0	8.1	31.1	.0	27.9	830.4	22.2	1,045.1	6.5
Yellow birch	22.7	19.3	.0	.0	.5	.0	.0	454.7	5.8	502.9	6.7
Paper birch	26.8	29.0	.0	3.0	16.3	.0	1.2	271.0	129.8	477.0	8.5
Beech	9.2	5.7	.0	.0	19.5	.0	.0	445.0	3.3	482.6	8.7
White ash	21.6	2.4	.0	6.6	16.8	.0	5.5	308.7	7.6	369.1	8.8
Black ash	.2	2.9	.0	.0	.0	.0	11.9	4.3	.5	19.8	42.4
Aspen	22.0	31.1	.0	.6	3.4	.0	.9	121.0	80.6	259.6	12.4
White oaks	.4	.0	.0	.1	30.1	.0	1.7	7.3	.0	39.6	33.6
Red oaks	26.2	.0	.0	3.3	137.9	.0	.0	114.1	10.6	292.0	12.9
Basswood	6.9	.0	.0	.0	.4	.0	.0	30.6	1.7	39.6	20.9
Elm	2.4	.3	.0	.0	.0	.0	.4	6.9	.0	10.1	20.8
Other hardwoods	28.9	9.6	.0	1.1	22.7	.0	6.2	233.3	4.0	305.9	8.7
Total hardwoods	292.6	166.4	.0	32.1	307.8	.0	56.0	4,699.7	282.1	5,836.6	2.6
Total, all species	1,288.7	840.9	.0	63.7	364.8	.0	63.3	5,623.1	425.6	8,670.0	2.0
SE	11.0	11.7	.0	44.4	20.8	.0	36.5	3.5	18.7	2.0	

Table 30.--Net volume of growing-stock in the sawlog portion of sawtimber trees on timberland by species and diameter class, Vermont, 1997

(In millions of cubic 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+		
Balsam fir	109.2	54.6	21.5	9.7	.0	.0	.0	.0	195.0	10.8
Tamarack	3.9	5.7	.7	1.2	3.2	.0	.0	.0	14.7	52.4
White spruce	15.5	13.8	10.8	10.4	1.4	.0	.0	.0	51.9	22.0
Black spruce	.0	.6	.0	.0	.0	.0	.0	.0	.6	100.0
Red spruce	86.7	86.3	57.1	43.0	22.0	5.4	11.2	.0	311.6	10.6
Red pine	4.1	3.2	3.8	6.3	2.1	1.1	4.1	.0	24.7	60.1
White pine	59.9	86.0	92.6	75.7	68.0	57.5	128.5	23.4	591.6	10.4
Northern white-cedar	14.8	7.6	7.1	6.0	2.1	.0	1.8	.0	39.4	34.1
Hemlock	99.8	118.9	108.1	106.1	73.0	33.3	52.0	7.3	598.5	9.1
Other softwoods	2.2	1.4	4.2	2.3	.0	.0	.0	.0	10.1	69.4
Total softwoods	396.1	378.1	305.9	260.8	171.6	97.3	197.5	30.7	1,837.9	5.2
Sugar maple	.0	239.4	235.7	198.2	103.3	71.0	156.1	46.9	1,050.6	6.7
Red maple	.0	116.3	123.9	77.4	48.3	26.1	42.2	24.8	459.1	8.6
Yellow birch	.0	70.5	63.8	47.3	28.2	9.5	25.1	2.0	246.3	8.5
Paper birch	.0	75.2	55.3	22.3	4.9	2.8	3.5	.0	164.1	11.2
Beech	.0	64.2	46.0	32.5	38.5	6.5	27.0	4.6	219.4	11.6
White ash	.0	46.8	38.0	18.4	25.7	15.9	16.7	10.2	171.6	12.3
Black ash	.0	2.1	2.2	.0	3.8	.0	.0	.0	8.0	64.1
Aspen	.0	45.4	33.4	34.2	21.0	4.7	4.8	.0	143.5	14.3
White oaks	.0	3.3	2.9	2.7	1.2	3.6	4.6	3.1	21.5	36.5
Red oaks	.0	34.1	40.6	42.6	26.1	4.6	32.8	13.1	193.9	13.9
Basswood	.0	6.1	4.7	6.2	.0	.0	2.1	.0	19.1	26.5
Elm	.0	.4	1.7	.0	.0	.0	.0	.0	2.1	51.5
Other hardwoods	.0	41.8	32.0	16.6	8.7	5.0	7.7	.0	111.9	12.1
Total hardwoods	.0	745.7	680.4	498.3	309.7	149.7	322.7	104.7	2,811.3	3.5
Total, all species	396.1	1,123.7	986.3	759.1	481.3	247.0	520.3	135.4	4,649.2	2.7
SE	6.1	3.3	3.9	4.6	6.7	8.8	8.6	23.1	2.7	

Sawtimber volume on timberland, for selected species and percent change, Vermont, 1983 and 1997

(Volume increased by 47.4 percent for all species)

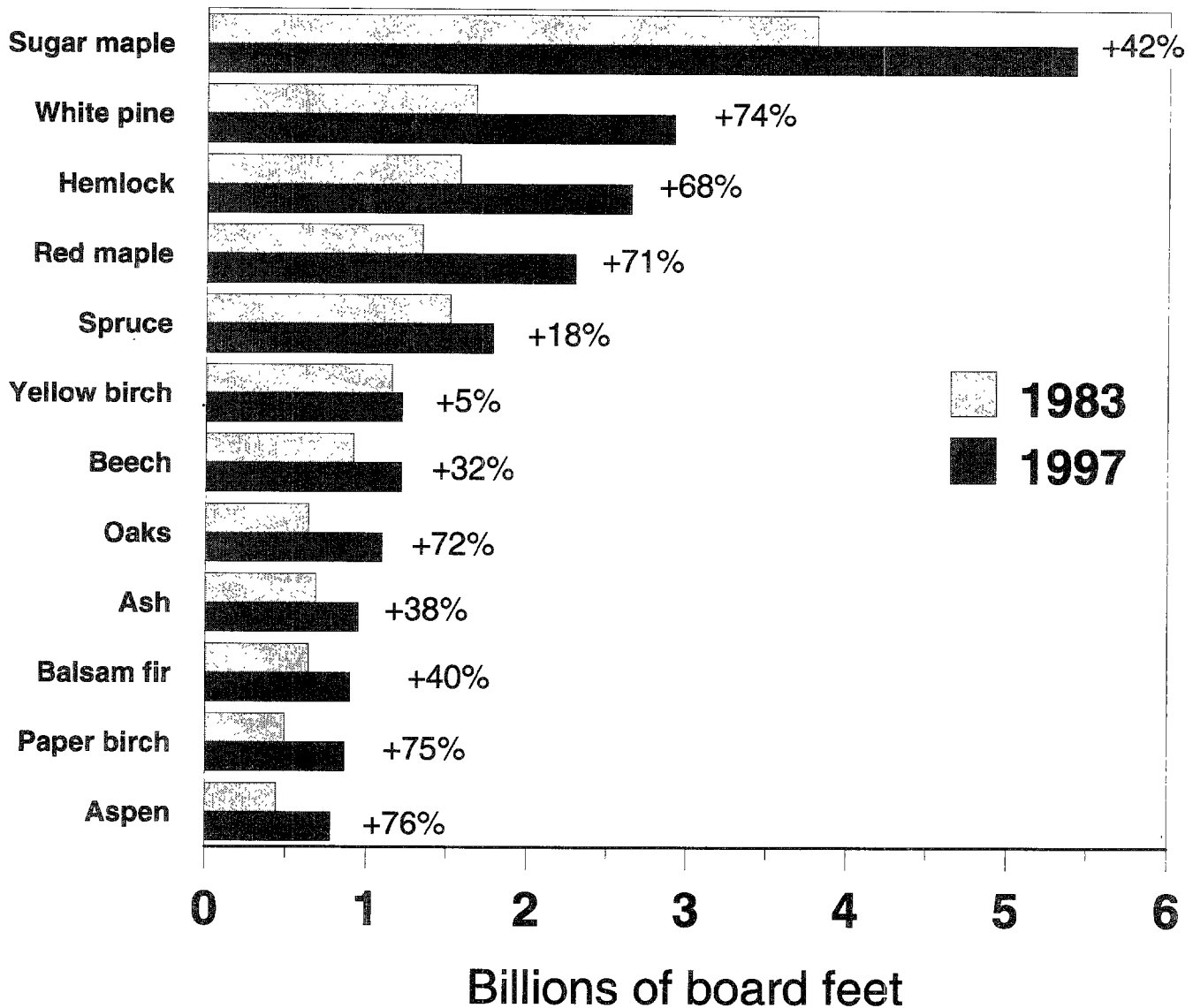


Table 31.--Net volume of sawtimber trees on timberland by species and diameter class, Vermont, 1983

(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+		
Balsam fir	301.4	239.3	73.0	20.5	.0	5.3	.0	.0	639.5	13.1
Tamarack	10.6	7.2	6.1	4.3	.0	.0	.0	.0	28.3	47.1
White spruce	87.3	71.3	17.9	10.9	4.2	.0	.0	.0	191.6	27.7
Black spruce	8.4	6.3	.0	.0	.0	.0	.0	.0	14.7	60.7
Red spruce	430.0	340.9	254.0	122.3	98.6	17.5	44.4	.0	1,307.7	10.7
Red pine	6.1	4.3	26.2	27.0	9.2	4.2	6.8	.0	83.9	97.8
White pine	229.7	269.3	308.2	312.2	172.6	111.8	214.9	50.5	1,669.3	12.3
Northern white-cedar	44.0	33.6	22.9	15.4	2.2	6.0	2.8	.0	126.9	30.4
Hemlock	276.1	392.8	337.2	241.2	148.2	77.8	92.9	3.5	1,569.7	11.2
Total softwoods	1,393.6	1,365.1	1,045.4	753.9	435.0	222.8	361.8	54.0	5,631.6	6.0
Sugar maple	.0	1,000.2	888.8	638.8	403.7	344.4	440.1	89.3	3,805.3	6.7
Red maple	.0	413.2	343.5	279.3	127.1	77.9	91.8	6.0	1,338.7	9.9
Yellow birch	.0	347.5	284.1	188.9	119.8	55.9	119.9	35.8	1,151.9	8.9
Paper birch	.0	249.6	138.3	56.0	30.8	15.8	3.5	.0	493.9	12.8
Beech	.0	266.3	195.3	174.1	132.1	74.8	66.9	7.3	916.7	10.3
White ash	.0	198.1	186.5	156.4	57.3	29.1	34.6	.0	662.0	13.4
Black ash	.0	6.9	9.3	3.3	4.1	.0	.0	.0	23.5	78.9
Aspen	.0	137.4	117.8	90.5	51.5	20.4	23.4	.0	441.2	17.1
White oaks	.0	12.3	5.8	7.5	6.3	8.4	8.8	3.8	52.8	34.3
Red oaks	.0	134.7	101.3	109.7	86.0	43.6	72.9	37.0	585.1	19.1
Basswood	.0	24.5	27.6	18.2	11.5	4.1	.0	5.9	91.8	23.7
Elm	.0	30.2	21.3	13.7	11.6	3.4	9.2	3.5	92.9	25.9
Other hardwoods	.0	173.1	90.9	50.9	47.2	17.7	9.9	4.1	393.8	12.9
Total hardwoods	.0	2,994.0	2,410.4	1,787.3	1,088.9	695.5	881.0	192.7	10,049.7	3.6
Total, all species	1,393.6	4,359.1	3,455.8	2,541.1	1,523.9	918.3	1,242.8	246.7	15,681.3	2.7
SE	6.7	3.0	3.8	4.9	6.0	8.6	8.5	22.2	2.7	

Table 32.--Net volume of sawtimber trees on timberland by species and diameter class, Vermont, 1997

(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+		
Balsam fir	467.0	267.5	107.3	55.9	.0	.0	.0	.0	897.6	11.3
Tamarack	16.7	25.1	3.1	5.6	14.8	.0	.0	.0	65.2	52.9
White spruce	61.8	63.9	56.1	58.3	8.1	.0	.0	.0	248.1	22.4
Black spruce	.0	2.5	.0	.0	.0	.0	.0	.0	2.5	100.0
Red spruce	365.9	426.6	294.2	228.8	118.7	30.6	66.7	.0	1,531.5	11.0
Red pine	16.3	15.3	20.0	35.6	11.6	6.2	24.1	.0	129.1	62.2
White pine	230.3	384.8	447.2	378.5	345.0	292.9	691.4	140.3	2,910.4	10.8
Northern white-cedar	45.0	26.1	26.4	21.4	9.2	.0	7.0	.0	135.1	34.8
Hemlock	365.9	497.3	486.4	491.0	344.2	159.1	263.7	35.3	2,642.9	9.4
Other softwoods	7.9	4.3	19.1	10.6	.0	.0	.0	.0	41.9	70.1
Total softwoods	1,576.9	1,713.5	1,459.6	1,285.6	851.6	488.7	1,052.9	175.6	8,604.4	5.5
Sugar maple	.0	1,203.2	1,192.7	989.5	537.4	374.3	857.1	263.6	5,417.8	6.9
Red maple	.0	572.9	601.6	387.5	243.9	135.7	221.0	129.5	2,292.1	8.8
Yellow birch	.0	373.2	315.1	225.3	128.7	43.1	116.2	13.3	1,214.9	8.6
Paper birch	.0	414.8	285.2	114.5	26.1	9.7	16.0	.0	866.4	11.2
Beech	.0	359.1	242.7	175.2	217.7	34.3	155.1	27.1	1,211.3	11.7
White ash	.0	247.2	202.8	92.0	133.8	89.1	87.6	51.7	904.2	12.5
Black ash	.0	11.1	11.2	.0	21.5	.0	.0	.0	43.7	65.5
Aspen	.0	246.6	184.0	179.3	112.9	26.0	28.7	.0	777.5	14.6
White oaks	.0	15.6	12.3	11.6	6.1	20.7	25.3	12.4	103.9	36.4
Red oaks	.0	167.9	206.0	212.1	136.2	24.1	170.7	76.3	993.2	14.3
Basswood	.0	28.4	24.8	34.1	.0	.0	12.2	.0	99.5	28.0
Elm	.0	1.9	7.7	.0	.0	.0	.0	.0	9.5	50.9
Other hardwoods	.0	211.8	163.4	80.4	42.3	27.4	43.5	.0	568.9	12.2
Total hardwoods	.0	3,853.6	3,449.5	2,501.4	1,606.7	784.4	1,733.4	573.9	14,502.9	3.7
Total, all species	1,576.9	5,567.1	4,909.1	3,787.1	2,458.2	1,273.2	2,786.3	749.5	23,107.2	2.9
SE	6.3	3.3	4.0	4.7	6.8	9.0	9.0	24.3	2.9	

Table 33.--Net volume of sawtimber trees on timberland by species, size class, and tree grade, Vermont, 1997

(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	
Balsam fir	50.9	.0	.0	.0	5.0	55.9	860.2	.0	.0	.0	37.4	897.6	11.3
Tamarack	20.3	.0	.0	.0	.0	20.3	63.5	.0	.0	.0	1.7	65.2	52.9
White spruce	60.8	.0	.0	.0	5.6	66.4	227.0	.0	.0	.0	21.1	248.1	22.4
Black spruce	.0	.0	.0	.0	.0	.0	2.5	.0	.0	.0	.0	2.5	100.0
Red spruce	277.1	.0	.0	.0	167.7	444.8	1,255.2	1.3	.0	.0	275.1	1,531.5	11.0
Red pine	.0	.0	44.8	.0	32.7	77.4	3.1	.0	82.8	.0	43.2	129.1	62.2
White pine	204.3	454.2	386.8	461.3	341.5	1,848.0	270.9	877.7	756.4	605.6	399.8	2,910.4	10.8
Northern white-cedar	26.5	.0	.0	.0	11.1	37.6	104.4	.0	.0	.0	30.7	135.1	34.8
Hemlock	816.3	.0	.0	.0	477.0	1,293.3	1,966.6	.0	.0	.0	676.3	2,642.9	9.4
Other softwoods	10.6	.0	.0	.0	.0	10.6	41.9	.0	.0	.0	.0	41.9	70.1
Total softwoods	1,466.8	454.2	431.5	461.3	1,040.6	3,854.4	4,795.4	879.0	839.2	605.6	1,485.3	8,604.4	5.5
Sugar maple	771.4	944.4	601.2	220.5	484.4	3,021.9	771.4	1,624.2	2,065.8	354.4	602.0	5,417.8	6.9
Red maple	101.9	235.4	237.8	187.5	355.1	1,117.6	101.9	454.7	991.1	285.8	458.7	2,292.1	8.8
Yellow birch	137.5	156.5	126.4	33.7	72.5	526.6	137.5	320.3	586.3	79.4	91.4	1,214.9	8.6
Paper birch	25.3	53.4	44.3	17.4	25.9	166.3	25.3	215.9	564.6	28.1	32.5	866.4	11.2
Beech	151.4	67.3	83.5	131.1	176.2	609.4	151.4	126.6	437.8	259.3	236.2	1,211.3	11.7
White ash	179.1	172.9	71.1	3.8	27.3	454.2	179.1	316.5	359.8	9.4	39.3	904.2	12.5
Black ash	21.5	.0	.0	.0	.0	21.5	21.5	.0	19.5	.0	2.7	43.7	65.5
Aspen	47.5	182.8	70.3	12.0	34.3	346.9	47.5	309.8	349.9	29.1	41.1	777.5	14.6
White oaks	25.2	5.2	6.4	.0	39.3	76.1	25.2	8.6	24.4	1.8	44.0	103.9	36.4
Red oaks	327.2	159.9	28.8	10.7	92.8	619.3	327.2	326.1	229.7	17.5	92.8	993.2	14.3
Basswood	15.0	20.8	.0	7.8	2.7	46.3	15.0	36.5	32.3	11.0	4.7	99.5	28.0
Elm	.0	.0	.0	.0	.0	.0	.0	5.2	4.3	.0	.0	9.5	50.9
Other hardwoods	48.9	88.0	6.0	8.4	42.3	193.6	48.9	195.2	249.1	21.1	54.5	568.9	12.2
Total hardwoods	1,851.9	2,086.6	1,275.8	632.9	1,352.6	7,199.8	1,851.9	3,939.6	5,914.7	1,096.8	1,699.8	14,502.9	3.7
Total, all species	3,318.7	2,540.8	1,707.3	1,094.2	2,393.2	11,054.2	6,647.3	4,818.6	6,753.9	1,702.4	3,185.1	23,107.2	2.9
SE	7.9	7.2	9.1	15.5	7.9	4.6	5.2	5.2	4.0	10.9	6.7	2.9	

Table 34.--Average annual net change of growing-stock volume on timberland by species and component of change, Vermont, 1997

(In thousands of cubic feet)

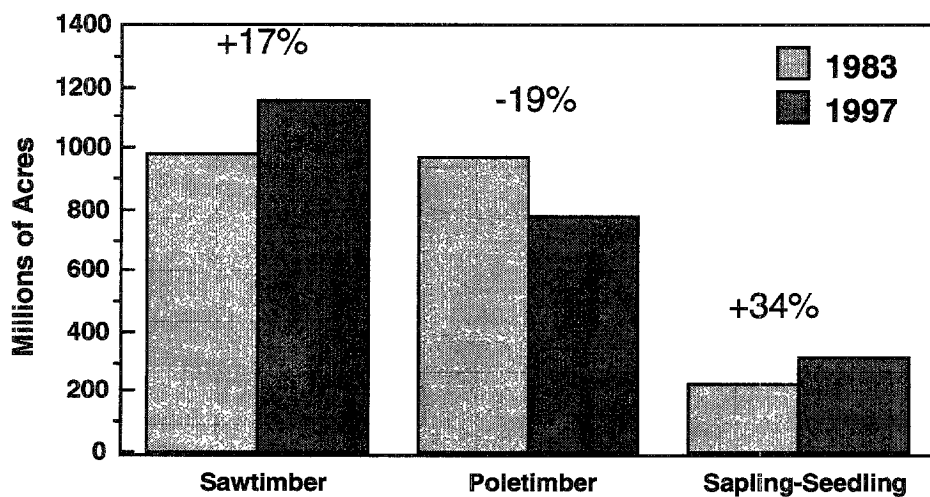
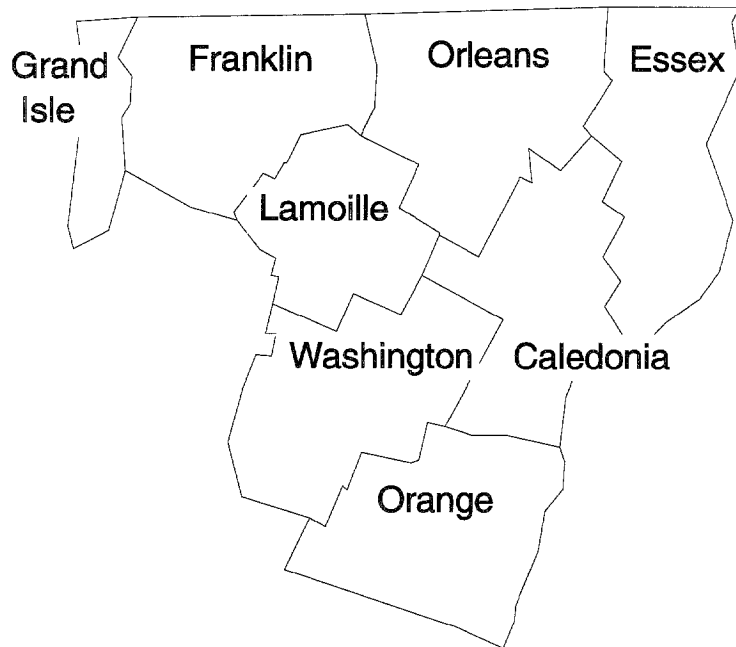
Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	10,858	6,961	17,820	-5,683	1,195	-164	13,168	-8,410	4,758
Tamarack	205	237	442	-309	0	0	133	-39	94
White spruce	1,327	1,484	2,811	-796	0	-51	1,964	-3,073	-1,108
Black spruce	0	65	65	0	0	0	65	-89	-25
Red spruce	4,363	6,203	10,567	-3,909	2,654	-555	8,757	-5,906	2,851
Red pine	0	289	289	-191	0	0	97	0	97
White pine	6,153	13,469	19,622	-2,574	6,543	-2,740	20,851	-13,688	7,163
Northern white-cedar	1,058	1,603	2,661	-387	540	-236	2,578	-804	1,774
Hemlock	6,926	13,875	20,801	-1,363	3,804	-1,523	21,719	-5,673	16,046
Other softwoods	59	44	103	0	57	0	159	0	159
Total softwoods	30,949	44,231	75,181	-15,212	14,794	-5,269	69,493	-37,683	31,810
Sugar maple	15,723	24,327	40,049	-7,871	15,243	-5,338	42,085	-12,858	29,227
Red maple	9,525	14,665	24,190	-3,733	9,159	-3,704	25,912	-7,914	17,998
Yellow birch	4,580	4,655	9,235	-2,984	4,143	-2,014	8,381	-5,163	3,218
Paper birch	3,091	5,438	8,529	-5,715	2,046	-987	3,872	-3,851	21
Beech	5,704	4,477	10,181	-3,919	6,753	-2,530	10,485	-3,298	7,186
White ash	4,828	6,177	11,005	-1,482	1,662	-93	11,093	-3,401	7,692
Black ash	416	378	795	-87	52	0	760	-55	705
Aspen	3,349	3,205	6,554	-2,001	992	-434	5,111	-2,669	2,442
White oaks	263	577	841	-237	0	-67	537	0	537
Red oaks	2,488	4,264	6,753	-789	730	-2,070	4,623	-2,432	2,191
Basswood	271	607	879	-392	261	-305	442	-368	74
Elm	96	475	572	-2,007	56	0	-1,380	-444	-1,823
Other hardwoods	3,891	4,485	8,376	-1,355	1,831	-429	8,423	-1,705	6,719
Total hardwoods	54,226	73,731	127,957	-32,572	42,930	-17,972	120,343	-44,157	76,187
Total, all species	85,176	117,962	203,138	-47,784	57,724	-23,241	189,837	-81,840	107,996

Table 35.--Average annual net change of sawtimber volume on timberland by species and component of change, Vermont, 1997

(In thousands of board feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	26,787	9,581	36,368	-12,241	552	-615	24,065	-22,031	2,033
Tamarack	589	463	1,051	-1,096	0	0	-44	-116	-161
White spruce	4,973	6,159	11,131	-1,172	0	-203	9,757	-10,738	-981
Black spruce	0	340	340	0	0	0	340	-356	-16
Red spruce	18,371	22,325	40,696	-11,581	5,086	-1,251	32,950	-16,757	16,194
Red pine	0	1,721	1,721	-837	0	0	884	0	884
White pine	30,810	62,281	93,092	-6,694	27,612	-12,087	101,923	-60,447	41,475
Northern white-cedar	2,169	2,991	5,161	-268	469	-661	4,700	-1,383	3,316
Hemlock	30,447	52,642	83,089	-3,796	7,425	-5,254	81,465	-16,662	64,802
Other softwoods	66	65	131	0	0	0	131	0	131
Total softwoods	114,213	158,568	272,781	-37,685	41,145	-20,071	256,170	-128,491	127,678
Sugar maple	72,874	64,141	137,015	-23,587	40,170	-17,544	136,054	-40,120	95,934
Red maple	40,314	27,841	68,155	-5,589	12,847	-8,853	66,560	-22,320	44,241
Yellow birch	20,911	13,500	34,412	-8,475	8,040	-5,055	28,921	-13,120	15,801
Paper birch	14,029	5,783	19,811	-5,378	3,614	-1,055	16,992	-6,202	10,789
Beech	26,316	10,431	36,747	-14,390	19,953	-6,534	35,776	-10,292	25,484
White ash	21,905	14,709	36,614	-1,852	2,475	-228	37,009	-11,709	25,300
Black ash	1,213	998	2,211	-362	0	0	1,850	0	1,850
Aspen	15,039	7,979	23,018	-2,199	2,434	-907	22,347	-7,909	14,439
White oaks	893	1,381	2,274	0	0	0	2,274	0	2,274
Red oaks	14,567	17,820	32,387	-3,781	2,703	-10,484	20,825	-10,118	10,706
Basswood	1,686	2,531	4,217	-478	283	-595	3,427	-1,933	1,494
Elm	0	667	667	-3,475	202	0	-2,606	-1,004	-3,610
Other hardwoods	15,885	7,403	23,287	-1,445	4,935	-643	26,135	-4,799	21,336
Total hardwoods	245,632	175,184	420,816	-71,011	97,658	-51,898	395,565	-129,527	266,037
Total, all species	359,845	333,752	693,597	-108,696	138,802	-71,969	651,734	-258,019	393,716

NORTHERN UNIT TABLES



Northern Unit, area of timberland by stand-size class, 1983 and 1997

Table 36.--Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1983

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
White pine	45.0	14.2	.0	.0	59.2	35.1
White pine/hemlock	21.4	.0	.0	.0	21.4	56.5
Hemlock	96.6	29.4	.0	.0	126.0	23.5
White/red pine group	163.0	43.7	.0	.0	206.6	17.5
Balsam fir	52.8	72.2	22.6	.0	147.6	20.5
Red spruce	15.2	36.7	.0	.0	51.8	37.6
Red spruce/balsam fir	66.9	59.4	14.9	.0	141.2	22.3
White spruce	7.4	15.4	12.7	.0	35.5	44.9
Northern white-cedar	37.4	14.4	.0	.0	51.8	37.4
Spruce/fir group	179.7	198.0	50.2	.0	427.9	11.1
Wh. pine/no.red oak/wh. ash	7.1	.0	.0	.0	7.1	100.0
Oak/pine group	7.1	.0	.0	.0	7.1	100.0
Hawthorn/reverting field	.0	2.8	.0	.0	2.8	100.0
Mixed central hardwoods	.0	7.4	.0	.0	7.4	100.0
Oak/hickory group	.0	10.2	.0	.0	10.2	77.7
Black ash/Amer. elm/red maple	7.4	21.1	14.6	.0	43.1	39.8
Red maple(upland)	.0	7.1	.0	.0	7.1	100.0
American elm/green ash	7.6	7.4	.0	.0	15.0	70.7
Elm/ash/red maple group	15.0	35.6	14.6	.0	65.1	32.5
Sugar maple/beech/yellow birch	547.6	457.2	47.5	.0	1,052.3	5.9
Red maple/northern hardwoods	42.4	66.4	22.0	.0	130.9	22.9
Pin cherry/reverting field	.0	.0	43.0	.0	43.0	40.9
Mixed northern hardwoods	17.5	51.9	47.8	.0	117.1	24.0
Northern hardwoods group	607.5	575.5	160.3	.0	1,343.2	4.6
Aspen	15.0	15.0	5.3	.0	35.2	43.6
Paper birch	.0	89.2	.0	.0	89.2	27.6
Gray birch	.0	7.6	.0	.0	7.6	100.0
Aspen/birch group	15.0	111.7	5.3	.0	131.9	22.2
All forest types	987.1	974.7	230.3	.0	2,192.1	1.2
SE	6.2	6.3	13.6	.0	1.2	

Table 37.--Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1997

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	.0	.1	.0	.0	.1	100.0
White pine	35.2	21.4	7.6	.0	64.2	28.6
White pine/hemlock	31.6	1.7	.0	.0	33.3	42.2
Hemlock	135.4	.6	.0	.0	135.9	19.3
White/red pine group	202.1	23.8	7.6	.0	233.6	14.3
Balsam fir	46.8	113.8	52.0	.0	212.6	15.2
Red spruce	10.9	7.9	.0	.0	18.7	51.9
Red spruce/balsam fir	31.5	42.5	18.2	.0	92.2	23.7
White spruce	20.1	6.5	.0	.0	26.6	47.5
Black spruce	.0	.0	4.8	.0	4.8	100.0
Northern white-cedar	20.4	12.6	.0	.0	33.1	41.8
Tamarack	6.4	.0	.0	.0	6.4	100.0
Spruce/fir group	136.1	183.3	75.0	.0	394.4	10.3
Wh. pine/no.red oak/wh. ash	.0	12.4	.0	.0	12.4	70.7
Oak/pine group	.0	12.4	.0	.0	12.4	70.7
Hawthorn/reverting field	.0	.0	1.1	.0	1.1	100.0
Mixed central hardwoods	6.4	6.5	.0	.0	12.9	70.7
Oak/hickory group	6.4	6.5	1.1	.0	14.0	65.6
Black ash/Amer. elm/red maple	3.2	12.5	11.9	.0	27.6	45.8
Red maple(upland)	.0	5.0	.0	.0	5.0	100.0
Elm/ash/red maple group	3.2	17.5	11.9	.0	32.6	40.8
Sugar maple/beech/yellow birch	672.8	287.0	63.9	.0	1,023.8	5.7
Black Cherry	.0	2.2	.0	.0	2.2	100.0
Red maple/northern hardwoods	75.6	123.9	27.2	.0	226.7	15.7
Pin cherry/reverting field	.0	6.8	64.2	2.6	73.6	26.4
Mixed northern hardwoods	18.5	57.4	22.3	.0	98.2	23.4
Northern hardwoods group	766.9	477.4	177.5	2.6	1,424.5	4.0
Aspen	25.6	17.0	32.1	.0	74.7	26.8
Paper birch	17.8	43.6	13.0	.0	74.4	27.9
Gray birch	.0	3.3	1.8	.0	5.0	57.1
Aspen/birch group	43.5	63.8	46.9	.0	154.2	18.7
All forest types	1,158.2	784.7	320.1	2.6	2,265.6	1.4
SE	4.8	7.1	11.8	100.0	1.4	

Table 38. Number of live trees (1.0+ inches d.b.h.) on timberland by species and diameter class, Northern Unit, Vermont, 1997

(In thousands of trees)

Species group	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
Balsam fir	194,681	63,483	33,625	17,909	8,714	2,848	813	160
Tamarack	0	522	734	382	349	339	38	37
White spruce	7,801	4,645	3,565	2,997	1,659	921	451	305
Black spruce	465	0	161	39	0	39	0	0
Red spruce	54,422	17,520	13,761	10,207	5,536	3,118	1,205	600
Red pine	0	0	0	38	115	0	0	0
White pine	5,290	2,403	2,715	3,346	2,160	1,496	1,493	808
Northern white-cedar	15,722	6,369	6,483	4,403	2,783	976	629	391
Hemlock	18,651	8,248	11,618	9,671	7,591	4,991	2,676	1,835
Other softwoods	0	0	205	104	131	0	136	32
Total softwoods	297,033	103,191	72,868	49,098	29,038	14,728	7,441	4,169
Sugar maple	174,970	46,196	25,311	21,317	13,946	9,910	5,333	3,165
Red maple	78,451	36,661	19,362	12,025	8,756	4,184	2,804	1,528
Yellow birch	74,079	16,021	9,275	6,670	4,645	3,491	2,050	1,231
Paper birch	39,427	11,989	9,525	7,393	4,417	2,256	1,089	409
Beech	53,513	11,828	6,023	3,410	2,160	1,561	741	469
White ash	25,368	5,565	3,712	2,845	2,265	1,304	742	190
Black ash	4,936	997	1,142	436	260	110	139	0
Aspen	40,477	6,374	2,840	2,136	2,357	1,580	887	429
White oaks	0	0	72	0	0	0	0	0
Red oaks	2,281	0	430	468	697	551	79	269
Basswood	418	0	319	233	233	199	234	82
Elm	8,255	1,940	661	465	117	36	39	0
Other commercial hardwoods	12,025	3,816	2,184	1,831	1,541	584	240	303
Noncommercial hardwoods	228,547	33,838	8,915	2,802	732	195	189	38
Total hardwoods	742,748	175,225	89,772	62,033	42,127	25,961	14,566	8,112
Total, all species	1,039,782	278,417	162,640	111,131	71,165	40,688	22,008	12,281
SE	5.8	5.7	3.8	3.4	3.7	4.1	5.3	6.6

Table 38.continued

(In thousands of trees)							
Species group	Diameter class (inches at breast height)						
	17.0-18.9	19.0-20.9	21.0-28.9	29.0+	Total 5.0+	All classes	
Balsam fir	0	0	0	0	64,069	322,234	8.8
Tamarack	74	0	0	0	1,953	2,475	47.0
White spruce	43	0	39	0	9,980	22,425	30.0
Black spruce	0	0	0	0	239	704	68.9
Red spruce	273	0	116	0	34,817	106,759	16.0
Red pine	0	0	0	0	153	153	100.0
White pine	826	279	425	35	13,583	21,277	18.1
Northern white-cedar	157	0	40	0	15,863	37,955	25.3
Hemlock	1,080	265	238	39	40,005	66,904	13.5
Other softwoods	0	0	0	0	608	608	63.4
Total softwoods	2,451	544	859	74	181,270	581,495	6.8
Sugar maple	1,338	579	1,276	418	82,593	303,758	9.3
Red maple	408	234	77	76	49,454	164,566	11.6
Yellow birch	367	115	409	0	28,253	118,353	10.1
Paper birch	76	0	32	0	25,196	76,612	16.3
Beech	379	37	152	38	14,970	80,312	12.1
White ash	188	78	117	0	11,440	42,373	19.0
Black ash	0	0	0	0	2,087	8,021	40.3
Aspen	299	76	79	0	10,684	57,535	25.0
White oaks	0	36	40	0	148	148	57.5
Red oaks	159	38	0	75	2,768	5,049	35.9
Basswood	0	0	37	0	1,338	1,756	34.6
Elm	0	30	0	0	1,348	11,543	24.0
Other commercial hardwoods	80	0	36	0	6,799	22,640	15.2
Noncommercial hardwoods	0	38	37	0	12,947	275,333	9.1
Total hardwoods	3,295	1,262	2,292	607	250,027	1,168,001	5.0
Total, all species	5,746	1,805	3,151	681	431,297	1,749,496	3.9
SE	9.6	13.9	12.9	23.3	2.6	3.9	

Table 39.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Northern Unit, Vermont, 1983

(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+		
Balsam fir	25,903	13,579	6,450	3,097	592	117	0	17	0	0	49,756	11.1
Tamarack	697	239	259	27	50	23	0	0	0	0	1,296	59.4
White spruce	3,824	2,703	1,996	934	159	72	21	0	0	0	9,710	30.1
Black spruce	72	0	193	86	0	0	0	0	0	0	351	68.6
Red spruce	13,550	9,977	6,648	2,689	1,287	416	290	37	95	0	34,990	11.8
White pine	2,593	2,465	2,264	1,642	1,216	1,028	378	216	176	9	11,988	22.4
Northern white-cedar	5,039	4,149	2,048	928	388	264	21	37	18	0	12,894	24.9
Hemlock	8,215	7,945	5,159	3,441	1,722	869	400	131	102	0	27,984	15.2
Total softwoods	59,893	41,057	25,017	12,846	5,415	2,789	1,111	439	393	9	148,969	6.9
Sugar maple	22,703	18,309	10,844	7,024	3,363	1,575	910	481	442	59	65,711	7.7
Red maple	10,214	9,415	6,032	2,551	1,480	461	248	54	55	0	30,511	10.7
Yellow birch	6,719	6,566	5,121	2,978	1,438	817	475	147	304	49	24,614	8.5
Paper birch	13,407	8,089	4,441	1,756	421	143	105	0	16	0	28,379	18.1
Beech	3,460	2,057	881	983	517	418	246	110	64	0	8,737	16.6
White ash	2,586	2,884	1,347	1,043	527	323	85	18	76	0	8,891	16.9
Black ash	563	478	56	87	79	23	21	0	0	0	1,307	35.4
Aspen	3,104	1,764	1,492	1,195	630	374	147	72	51	0	8,828	18.8
White oaks	0	57	0	0	0	45	0	0	16	0	119	69.7
Red oaks	565	601	252	264	159	23	21	0	0	9	1,893	33.8
Basswood	219	308	480	207	164	0	41	17	0	0	1,436	39.6
Elm	607	362	211	89	129	48	0	0	0	10	1,456	29.3
Other hardwoods	3,747	1,879	734	571	105	114	64	19	14	6	7,253	16.2
Total hardwoods	67,894	52,769	31,891	18,749	9,011	4,366	2,363	918	1,038	134	189,134	4.2
Total, all species	127,787	93,827	56,908	31,595	14,426	7,155	3,474	1,357	1,431	143	338,103	3.1
SE	4.9	4.0	4.3	4.4	5.8	7.9	9.0	13.8	12.8	27.3	3.1	

Table 40.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Northern Unit, Vermont, 1997

(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+		
Balsam fir	33,128	17,652	8,632	2,848	781	160	0	0	0	0	63,201	9.2
Tamarack	734	382	349	339	38	37	74	0	0	0	1,953	46.3
White spruce	3,527	2,922	1,507	879	408	305	43	0	0	0	9,591	21.3
Black spruce	161	39	0	39	0	0	0	0	0	0	239	57.0
Red spruce	13,491	10,005	5,396	2,919	1,205	600	233	0	116	0	33,965	10.3
Red pine	0	38	115	0	0	0	0	0	0	0	153	100.0
White pine	2,410	3,267	1,921	1,416	1,296	771	748	279	384	0	12,493	18.4
Northern white-cedar	6,286	4,167	1,972	668	430	276	80	0	40	0	13,919	21.4
Hemlock	11,383	9,517	6,645	4,724	2,557	1,795	1,080	265	238	39	38,243	11.1
Other softwoods	205	104	96	0	96	32	0	0	0	0	533	68.6
Total softwoods	71,327	48,092	26,635	13,832	6,811	3,976	2,257	544	778	39	174,291	5.6
Sugar maple	24,031	20,139	13,514	9,096	4,867	2,933	1,306	461	809	232	77,389	6.8
Red maple	18,474	11,247	8,458	3,421	2,270	1,265	332	157	77	76	45,778	8.4
Yellow birch	8,515	6,368	4,375	2,908	1,782	810	328	41	303	0	25,431	8.1
Paper birch	9,038	7,250	4,309	2,068	1,047	339	39	0	32	0	24,121	12.8
Beech	5,532	2,945	1,927	1,181	432	269	302	37	76	38	12,741	12.0
White ash	3,604	2,845	2,228	1,304	742	190	188	78	117	0	11,295	12.6
Black ash	1,065	358	220	110	139	0	0	0	0	0	1,893	31.8
Aspen	2,684	2,060	2,281	1,548	887	429	258	76	79	0	10,302	15.7
White oaks	72	0	0	0	0	0	0	36	40	0	148	57.5
Red oaks	430	468	697	551	79	269	119	38	0	36	2,689	29.3
Basswood	319	159	199	158	155	82	0	0	37	0	1,110	36.1
Elm	625	465	117	36	39	0	0	0	0	0	1,283	20.9
Other hardwoods	1,863	1,721	1,425	427	240	184	37	0	36	0	5,933	14.2
Total hardwoods	76,253	56,026	39,751	22,808	12,680	6,769	2,911	925	1,607	383	220,112	3.6
Total, all species	147,580	104,118	66,385	36,640	19,491	10,745	5,167	1,469	2,386	422	394,403	2.8
SE	4.1	3.5	3.8	4.3	5.6	7.2	10.3	15.7	14.7	29.7	2.8	

Table 41.--Net volume of all trees on timberland by species and tree class, Northern Unit, Vermont, 1997

(In millions of cubic feet)

Species group	Tree class						All classes	SE
	Preferred	Acceptable	Preferred/ acceptable	Rough cull	Rotten cull	All cull		
Balsam fir	74.4	344.1	418.5	2.1	1.5	3.6	422.1	9.4
Tamarack	1.4	20.5	21.8	.0	.0	.0	21.8	49.5
White spruce	12.9	78.2	91.1	3.5	.0	3.5	94.6	20.5
Black spruce	.0	1.4	1.4	.0	.0	.0	1.4	71.8
Red spruce	34.0	283.0	317.1	5.8	.3	6.1	323.2	10.2
Red pine	.0	1.3	1.3	.0	.0	.0	1.3	100.0
White pine	38.5	177.5	216.0	9.2	.0	9.2	225.1	16.1
Northern white-cedar	1.1	82.2	83.4	13.7	2.0	15.7	99.1	24.5
Hemlock	28.6	396.3	424.9	12.3	1.0	13.3	438.2	12.1
Other softwoods	.0	5.8	5.8	.7	.0	.7	6.5	82.4
Total softwoods	190.8	1,390.4	1,581.3	47.2	5.0	52.2	1,633.4	5.7
Sugar maple	79.7	883.7	963.5	56.4	17.6	74.0	1,037.5	7.5
Red maple	23.5	402.5	426.0	25.6	6.6	32.2	458.2	8.5
Yellow birch	20.5	235.8	256.3	26.3	5.1	31.4	287.7	8.8
Paper birch	11.9	199.4	211.3	6.8	2.0	8.8	220.1	13.0
Beech	4.6	127.8	132.4	15.8	5.7	21.5	153.9	14.5
White ash	20.9	118.4	139.2	.6	.0	.6	139.9	13.8
Black ash	.0	13.0	13.0	.4	.0	.5	13.4	43.3
Aspen	15.4	137.5	152.9	.3	1.9	2.2	155.1	16.0
White oaks	4.8	.1	5.0	.0	.0	.0	5.0	73.3
Red oaks	9.6	35.6	45.2	.9	1.6	2.5	47.7	29.6
Basswood	.0	17.1	17.1	.7	1.2	1.8	18.9	36.7
Elm	.0	6.3	6.3	1.1	.0	1.1	7.4	25.4
Other commercial hardwoods	2.8	55.3	58.1	7.2	.0	7.2	65.3	15.9
Noncommercial hardwoods	.0	.0	.0	46.4	.8	47.2	47.2	13.6
Total hardwoods	193.8	2,232.5	2,426.3	188.5	42.4	230.9	2,657.2	3.9
Total, all species	384.6	3,622.9	4,007.6	235.7	47.3	283.1	4,290.6	2.7
SE	8.3	2.8	2.8	7.0	16.7	6.7	2.7	

Volume of all live trees on timberland, for selected species and percent change, Northern Unit of Vermont, 1983 and 1997

(Volume increased by 15.5 percent for all species)

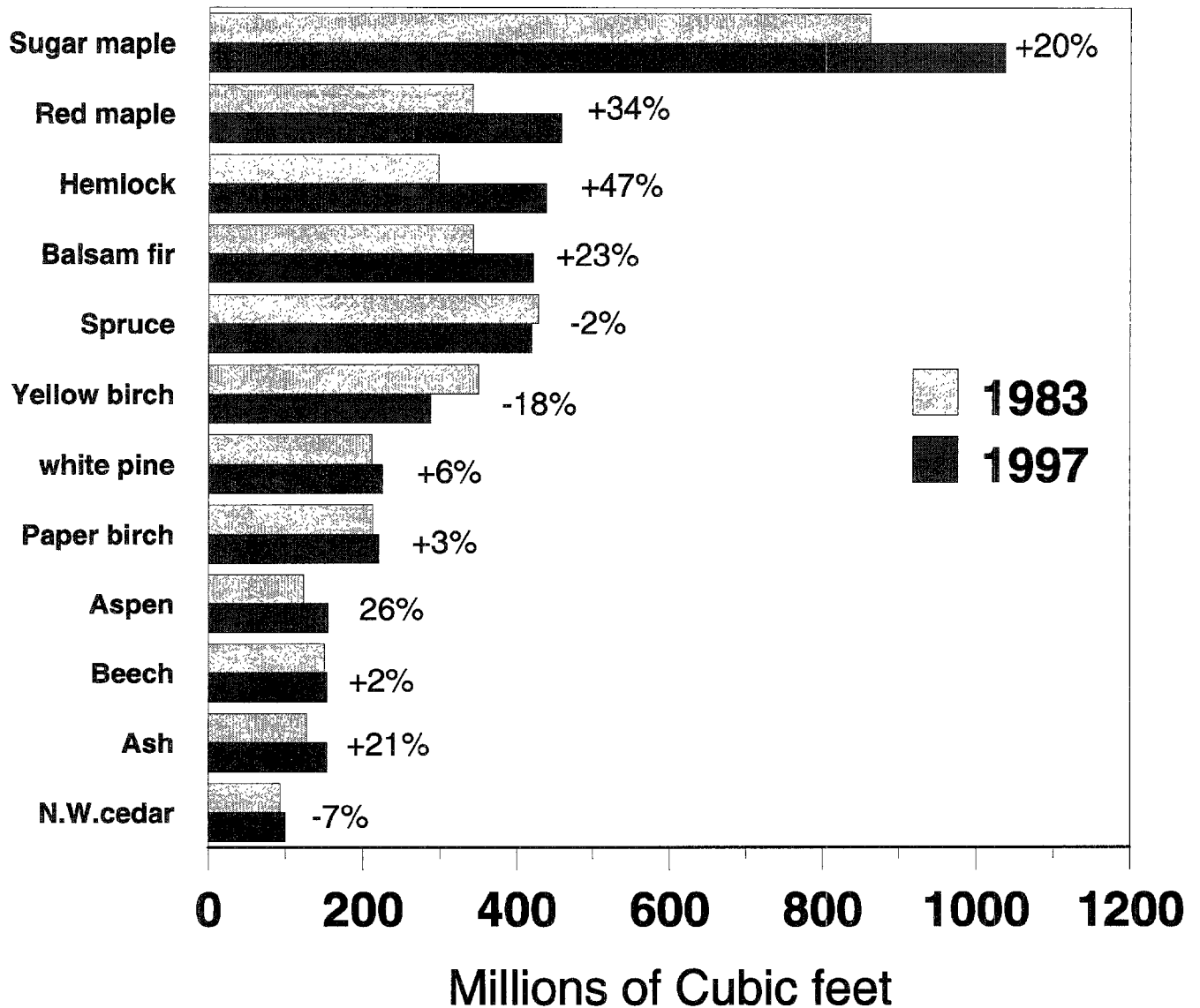


Table 42.--Net volume of all live trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

(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+		
Balsam fir	85.0	97.5	81.2	57.4	16.0	4.1	.6	1.1	.0	.0	342.8	10.8
Tamarack	1.9	1.4	3.3	.6	1.2	.9	.0	.0	.0	.0	9.3	54.2
White spruce	12.6	18.7	26.0	17.4	4.5	3.9	1.4	.6	.0	.0	85.2	27.9
Black spruce	.2	.0	2.4	1.5	.0	.0	.0	.0	.0	.0	4.1	62.2
Red spruce	49.8	72.6	86.4	50.3	38.3	18.6	13.4	2.5	7.1	.0	339.0	11.6
White pine	9.0	18.0	29.5	31.2	34.3	39.4	18.4	11.9	18.8	1.1	211.6	20.1
Northern white-cedar	17.0	23.4	20.2	13.3	8.1	7.7	.6	1.5	.7	.0	92.7	25.8
Hemlock	30.2	51.9	54.7	58.1	41.6	28.2	17.1	6.7	9.1	.0	297.7	14.2
Other softwoods	.1	.0	.6	.0	.0	.0	.0	.0	.0	.0	.7	62.7
Total softwoods	205.8	283.6	304.3	229.9	144.1	102.9	51.6	24.2	35.7	1.1	1,383.2	6.8
Sugar maple	82.6	144.3	147.7	147.1	104.5	64.4	48.6	33.0	66.2	23.4	861.8	7.7
Red maple	34.6	73.1	80.8	60.2	41.5	21.4	13.3	9.0	7.1	.9	341.9	9.9
Yellow birch	24.9	54.7	68.6	57.7	40.9	30.0	24.5	11.8	29.6	7.1	349.9	8.4
Paper birch	43.5	58.5	53.0	31.5	12.9	5.4	4.7	1.5	1.7	.0	212.7	16.2
Beech	11.5	19.0	14.5	23.3	17.5	22.2	15.1	11.4	16.0	.0	150.4	13.9
White ash	9.4	23.2	20.2	20.4	15.6	12.1	4.9	1.0	7.0	.7	114.5	18.2
Black ash	2.1	3.4	.9	2.3	2.2	.8	.9	.0	.0	.0	12.5	47.8
Aspen	10.8	15.7	20.1	25.2	20.7	15.2	6.7	4.9	4.3	.0	123.4	18.0
White oaks	.0	.3	.0	.0	.0	1.3	.0	.0	.8	.0	2.3	57.3
Red oaks	1.5	4.1	3.1	4.2	3.6	.8	.8	.0	.0	6.3	24.4	29.7
Basswood	.8	2.2	5.7	4.9	4.5	.0	3.0	.9	.0	.7	22.9	33.3
Elm	1.9	2.1	1.7	1.2	2.1	1.4	.0	.0	.0	1.1	11.5	27.0
Other commercial hardwoods	9.4	11.5	10.1	11.9	5.2	4.8	2.7	1.2	2.5	1.9	61.3	16.8
Noncommercial hardwoods	22.3	11.4	4.8	1.1	.7	1.2	.3	.0	.0	.0	41.9	14.5
Total hardwoods	255.1	423.3	431.3	391.0	271.9	181.0	125.7	74.8	135.0	42.1	2,331.2	3.6
Total, all species	460.9	706.8	735.5	620.9	416.0	283.9	177.3	99.0	170.7	43.2	3,714.3	2.4
SE	4.2	3.7	4.1	4.2	5.4	7.2	8.0	11.2	9.6	18.3	2.4	

Table 43.--Net volume of live trees on timberland by species and diameter class, Northern Unit, Vermont, 1997

(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+		
Balsam fir	104.7	125.6	110.6	54.5	20.8	5.9	.0	.0	.0	.0	422.1	9.4
Tamarack	2.6	2.5	4.7	6.5	.7	1.4	3.4	.0	.0	.0	21.8	49.5
White spruce	10.3	21.7	19.6	16.4	12.6	11.5	1.5	.0	1.1	.0	94.6	20.5
Black spruce	.6	.2	.0	.6	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	45.5	72.7	70.2	58.2	32.6	22.8	12.5	.0	8.7	.0	323.2	10.2
Red pine	.0	.3	1.0	.0	.0	.0	.0	.0	.0	.0	1.3	100.0
White pine	8.1	21.6	24.2	26.6	36.7	27.2	32.6	14.5	33.5	.0	225.1	16.1
Northern white-cedar	16.6	22.4	22.7	12.5	10.6	8.5	4.0	.0	1.9	.0	99.1	24.5
Hemlock	31.4	55.5	76.6	78.6	59.0	58.0	44.7	13.1	16.9	4.3	438.2	12.1
Other softwoods	.4	.3	1.5	.0	3.2	1.1	.0	.0	.0	.0	6.5	82.4
Total softwoods	220.0	322.9	331.0	253.9	176.3	136.4	98.8	27.7	62.1	4.3	1,633.4	5.7
Sugar maple	76.5	149.5	171.1	182.3	137.2	108.8	55.7	27.8	84.6	44.1	1,037.5	7.5
Red maple	55.3	78.6	102.9	70.1	62.8	47.9	15.3	8.8	5.9	10.6	458.2	8.5
Yellow birch	24.9	42.0	48.5	55.6	44.9	33.1	13.3	4.4	21.1	.0	287.7	8.8
Paper birch	32.8	54.5	52.3	38.3	25.9	12.0	2.3	.0	2.0	.0	220.1	13.0
Beech	15.4	23.0	26.6	26.9	17.8	13.5	14.8	1.8	8.7	5.5	153.9	14.5
White ash	12.0	20.7	30.2	25.7	21.4	7.0	8.1	4.2	10.5	.0	139.9	13.8
Black ash	3.0	2.9	2.9	2.0	2.7	.0	.0	.0	.0	.0	13.4	43.3
Aspen	9.6	17.2	30.3	32.7	26.2	16.3	12.5	4.7	5.7	.0	155.1	16.0
White oaks	.1	.0	.0	.0	.0	.0	.0	1.6	3.2	.0	5.0	73.3
Red oaks	1.2	3.5	9.0	9.3	1.8	8.4	5.8	2.0	.0	6.7	47.7	29.6
Basswood	1.0	1.4	2.7	2.8	5.1	3.4	.0	.0	2.4	.0	18.9	36.7
Elm	1.4	2.4	1.3	.5	.6	.0	.0	1.1	.0	.0	7.4	25.4
Other commercial hardwoods	5.6	11.7	18.7	9.2	6.0	9.8	2.2	.0	2.1	.0	65.3	15.9
Noncommercial hardwoods	19.8	14.4	5.9	2.7	2.8	1.0	.0	.4	.3	.0	47.2	13.6
Total hardwoods	258.6	421.7	502.2	458.1	355.2	261.1	129.9	56.9	146.6	66.8	2,657.2	3.9
Total, all species	478.6	744.7	833.2	712.0	531.5	397.6	228.7	84.5	208.7	71.2	4,290.6	2.7
SE	4.3	3.6	3.8	4.2	5.5	6.8	10.2	14.9	13.6	26.2	2.7	

Table 44.--Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

(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+		
Balsam fir	76.9	89.9	78.3	56.0	15.3	4.1	.0	1.1	.0	.0	321.6	11.0
Tamarack	1.9	1.4	3.3	.6	1.2	.9	.0	.0	.0	.0	9.3	54.2
White spruce	11.8	18.7	24.9	17.1	4.0	2.4	.8	.0	.0	.0	79.7	28.9
Black spruce	.2	.0	2.4	1.5	.0	.0	.0	.0	.0	.0	4.1	62.2
Red spruce	41.0	67.7	84.0	48.7	32.9	14.9	12.8	1.9	6.5	.0	310.4	11.7
White pine	7.8	15.9	26.7	29.1	30.8	36.1	16.0	11.4	14.0	1.1	188.8	21.1
Northern white-cedar	12.7	20.3	17.0	11.5	7.0	5.5	.6	1.5	.7	.0	76.8	26.8
Hemlock	21.8	44.0	50.6	52.9	38.8	26.9	15.9	6.7	7.6	.0	265.1	14.9
Total softwoods	173.9	258.0	287.2	217.4	130.0	90.8	46.2	22.5	28.7	1.1	1,255.9	7.0
Sugar maple	66.8	129.5	132.4	132.7	88.9	56.9	39.0	26.4	32.9	7.0	712.4	8.1
Red maple	29.1	64.0	73.5	47.8	36.9	15.8	10.2	2.7	3.9	.0	283.9	10.8
Yellow birch	19.4	45.5	60.4	50.4	33.7	24.6	18.6	6.3	20.1	4.2	283.1	9.2
Paper birch	40.3	55.5	52.6	30.3	9.9	4.2	4.1	.0	1.0	.0	197.9	16.5
Beech	8.4	13.2	10.2	17.9	13.7	14.6	10.9	6.0	4.5	.0	99.4	16.7
White ash	8.3	22.7	18.4	20.1	15.3	12.1	4.0	1.0	6.5	.0	108.4	18.8
Black ash	1.8	3.4	.6	1.8	2.2	.8	.9	.0	.0	.0	11.5	50.6
Aspen	10.2	13.0	19.7	24.1	17.5	13.9	6.7	4.4	3.8	.0	113.2	18.7
White oaks	.0	.3	.0	.0	.0	1.3	.0	.0	.8	.0	2.3	57.3
Red oaks	1.5	4.1	3.1	4.2	3.6	.8	.8	.0	.0	3.3	21.4	30.7
Basswood	.5	2.2	5.5	3.7	3.7	.0	1.9	.9	.0	.0	18.3	36.5
Elm	1.5	1.6	1.7	1.2	2.1	1.4	.0	.0	.0	1.1	10.6	27.8
Other hardwoods	12.0	12.0	8.7	11.2	2.7	3.7	2.3	.8	1.3	1.3	56.1	16.3
Total hardwoods	199.6	367.1	386.8	345.5	230.2	150.0	99.4	48.6	74.7	16.9	1,918.5	4.1
Total, all species	373.5	625.1	673.9	562.9	360.2	240.8	145.5	71.0	103.4	18.0	3,174.4	2.7
SE	4.9	4.0	4.3	4.4	5.9	7.9	9.0	14.0	13.3	29.0	2.7	

Table 45.--Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1997

(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+		
Balsam fir	103.7	124.1	109.8	54.5	20.3	5.9	.0	.0	.0	.0	418.5	9.4
Tamarack	2.6	2.5	4.7	6.5	.7	1.4	3.4	.0	.0	.0	21.8	49.5
White spruce	10.3	21.5	18.4	15.9	12.1	11.5	1.5	.0	.0	.0	91.1	20.7
Black spruce	.6	.2	.0	.6	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	45.2	71.7	69.0	56.2	32.6	22.8	11.0	.0	8.7	.0	317.1	10.3
Red pine	.0	.3	1.0	.0	.0	.0	.0	.0	.0	.0	1.3	100.0
White pine	7.6	21.3	22.4	25.7	33.7	26.7	31.8	14.5	32.1	.0	216.0	16.6
Northern white-cedar	16.4	21.9	17.6	8.8	7.9	6.6	2.3	.0	1.9	.0	83.4	25.3
Hemlock	31.1	55.1	69.7	75.5	57.4	57.0	44.7	13.1	16.9	4.3	424.9	12.3
Other softwoods	.4	.3	1.3	.0	2.7	1.1	.0	.0	.0	.0	5.8	91.5
Total softwoods	217.8	319.1	313.9	243.8	167.5	133.0	94.7	27.7	59.6	4.3	1,581.3	5.8
Sugar maple	74.6	144.8	167.5	170.4	129.5	103.1	55.0	25.1	62.7	30.8	963.5	7.8
Red maple	54.0	76.1	101.0	61.5	54.5	41.4	13.0	8.2	5.9	10.6	426.0	8.6
Yellow birch	24.0	40.8	47.0	48.4	40.4	25.0	13.3	2.0	15.5	.0	256.3	9.1
Paper birch	31.7	53.5	51.4	35.9	25.0	10.3	1.6	.0	2.0	.0	211.3	12.9
Beech	15.0	20.9	24.9	22.1	12.2	10.2	13.6	1.8	6.4	5.5	132.4	14.8
White ash	11.5	20.7	30.0	25.7	21.4	7.0	8.1	4.2	10.5	.0	139.2	13.9
Black ash	3.0	2.5	2.9	2.0	2.7	.0	.0	.0	.0	.0	13.0	44.5
Aspen	9.3	16.7	30.2	32.3	26.2	16.3	11.5	4.7	5.7	.0	152.9	15.9
White oaks	.1	.0	.0	.0	.0	.0	.0	1.6	3.2	.0	5.0	73.3
Red oaks	1.2	3.5	9.0	9.3	1.8	8.4	4.9	2.0	.0	5.1	45.2	29.8
Basswood	1.0	1.2	2.3	2.6	4.2	3.4	.0	.0	2.4	.0	17.1	37.4
Elm	1.4	2.4	1.3	.5	.6	.0	.0	.0	.0	.0	6.3	24.6
Other hardwoods	5.3	11.4	17.5	7.2	6.0	7.1	1.5	.0	2.1	.0	58.1	16.0
Total hardwoods	231.9	394.6	485.0	417.9	324.6	232.0	122.3	49.7	116.4	52.0	2,426.3	4.1
Total, all species	449.7	713.6	798.9	661.6	492.0	365.0	217.0	77.3	176.0	56.3	4,007.6	2.8
SE	4.4	3.7	3.9	4.4	5.8	7.2	10.7	15.9	15.1	31.0	2.8	

Table 46.--Net volume of growing-stock trees on timberland by species and stand-size class, Northern Unit, Vermont, 1983

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	152.3	162.3	6.9	.0	321.6	11.0
Tamarack	1.8	7.5	.0	.0	9.3	54.2
White spruce	36.9	37.5	5.3	.0	79.7	28.9
Black spruce	2.3	1.8	.0	.0	4.1	62.2
Red spruce	165.1	137.5	7.8	.0	310.4	11.7
White pine	143.9	34.1	10.8	.0	188.8	21.1
Northern white-cedar	47.4	25.7	3.7	.0	76.8	26.8
Hemlock	215.5	49.2	.4	.0	265.1	14.9
Total softwoods	765.2	455.6	35.0	.0	1,255.9	7.0
Sugar maple	443.9	260.8	7.7	.0	712.4	8.1
Red maple	125.6	156.9	1.4	.0	283.9	10.8
Yellow birch	165.0	116.6	1.5	.0	283.1	9.2
Paper birch	40.1	155.9	2.0	.0	197.9	16.5
Beech	73.3	25.6	.5	.0	99.4	16.7
White ash	37.8	69.9	.7	.0	108.4	18.8
Black ash	7.5	3.5	.4	.0	11.5	50.6
Aspen	57.7	51.4	4.1	.0	113.2	18.7
White oaks	1.7	.6	.0	.0	2.3	57.3
Red oaks	7.8	13.6	.0	.0	21.4	30.7
Basswood	5.3	12.1	.9	.0	18.3	36.5
Elm	5.1	5.5	.0	.0	10.6	27.8
Other hardwoods	24.1	31.1	.9	.0	56.1	16.3
Total hardwoods	995.0	903.6	20.0	.0	1,918.5	4.1
Total, all species	1,760.2	1,359.2	55.0	.0	3,174.4	2.7
SE	6.9	7.4	22.1	.0	2.7	

Table 47.--Net volume of growing-stock trees on timberland by species and stand-size class, Northern Unit, Vermont, 1997

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	166.4	222.3	29.8	.0	418.5	9.4
Tamarack	19.6	1.8	.5	.0	21.8	49.5
White spruce	57.4	27.7	6.0	.0	91.1	20.7
Black spruce	.0	.2	1.2	.0	1.4	71.8
Red spruce	184.6	122.3	10.2	.0	317.1	10.3
Red pine	.0	1.3	.0	.0	1.3	100.0
White pine	145.1	64.7	6.2	.0	216.0	16.6
Northern white-cedar	47.9	31.6	3.8	.0	83.4	25.3
Hemlock	387.7	34.3	2.8	.0	424.9	12.3
Other softwoods	5.3	.0	.5	.0	5.8	91.5
Total softwoods	1,014.2	506.2	60.9	.0	1,581.3	5.8
Sugar maple	730.6	219.6	13.3	.0	963.5	7.8
Red maple	234.1	184.2	7.7	.0	426.0	8.6
Yellow birch	184.8	70.0	1.5	.0	256.3	9.1
Paper birch	85.2	121.8	4.4	.0	211.3	12.9
Beech	101.6	27.1	3.8	.0	132.4	14.8
White ash	86.8	49.0	3.3	.1	139.2	13.9
Black ash	2.5	5.8	4.6	.0	13.0	44.5
Aspen	106.3	43.7	2.9	.0	152.9	15.9
White oaks	3.2	1.7	.0	.0	5.0	73.3
Red oaks	30.7	14.4	.0	.0	45.2	29.8
Basswood	15.9	1.2	.0	.0	17.1	37.4
Elm	3.5	1.9	.9	.0	6.3	24.6
Other hardwoods	23.7	30.5	3.9	.0	58.1	16.0
Total hardwoods	1,608.8	771.1	46.3	.1	2,426.3	4.1
Total, all species	2,623.0	1,277.3	107.2	.1	4,007.6	2.8
SE	5.4	8.0	18.0	100.0	2.8	

Table 48.--Net volume of growing-stock trees on timberland by forest type and stand-size class, Northern Unit, Vermont, 1997

(In millions of cubic feet)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	.0	1.3	.0	.0	1.3	100.0
White pine	96.7	28.7	.1	.0	125.5	36.1
White pine/hemlock	59.7	3.2	.0	.0	62.9	43.4
Hemlock	367.6	.2	.0	.0	367.8	20.1
White/red pine group	524.1	33.4	.1	.0	557.5	15.7
Balsam fir	69.1	214.5	15.1	.0	298.6	18.8
Red spruce	24.5	15.8	.0	.0	40.2	51.6
Red spruce/balsam fir	69.7	93.1	9.4	.0	172.2	27.1
White spruce	59.8	6.3	.0	.0	66.0	52.6
Black spruce	.0	.0	1.8	.0	1.8	100.0
Northern white-cedar	62.5	29.6	.0	.0	92.0	42.3
Tamarack	19.0	.0	.0	.0	19.0	100.0
Spruce/fir group	304.4	359.2	26.2	.0	689.8	12.4
Wh. pine/no.red oak/wh. ash	.0	29.8	.0	.0	29.8	72.8
Oak/pine group	.0	29.8	.0	.0	29.8	72.8
Hawthorn/reverting field	.0	.0	1.8	.0	1.8	100.0
Mixed central hardwoods	13.7	9.5	.0	.0	23.2	71.8
Oak/hickory group	13.7	9.5	1.8	.0	25.0	67.1
Black ash/Amer. elm/red maple	8.0	18.2	7.4	.0	33.6	49.4
Red maple(upland)	.0	9.9	.0	.0	9.9	100.0
Elm/ash/red maple group	8.0	28.1	7.4	.0	43.5	43.8
Sugar maple/beech/yellow birch	1,417.3	430.6	21.0	.0	1,869.0	6.8
Black Cherry	.0	1.0	.0	.0	1.0	100.0
Red maple/northern hardwoods	180.8	177.8	20.1	.0	378.7	17.2
Pin cherry/reverting field	.0	5.7	13.4	.1	19.1	48.3
Mixed northern hardwoods	52.0	96.2	9.7	.0	157.9	28.3
Northern hardwoods group	1,650.1	711.3	64.2	.1	2,425.7	5.3
Aspen	74.1	24.6	5.8	.0	104.6	37.2
Paper birch	48.5	81.3	1.7	.0	131.5	32.8
Gray birch	.0	.1	.0	.0	.1	76.7
Aspen/birch group	122.6	106.1	7.5	.0	236.2	24.6
All forest types	2,623.0	1,277.3	107.2	.1	4,007.6	2.8
SE	5.4	8.0	18.0	100.0	2.8	

Percent of growing-stock volume by forest-type group
Northern Unit of Vermont, 1997

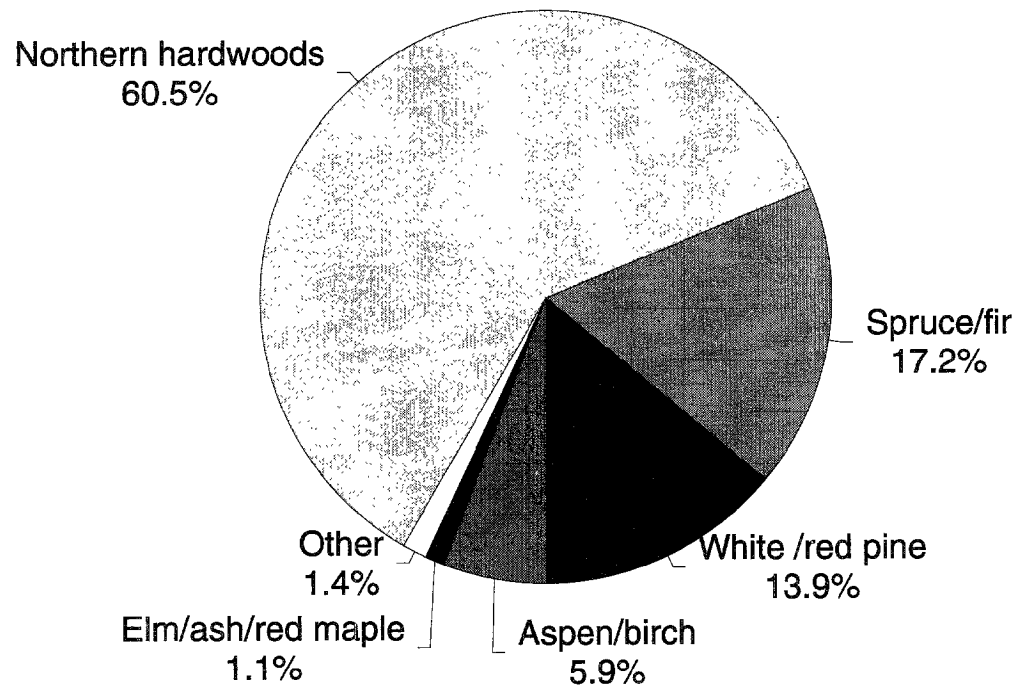


Table 49.--Net volume of growing-stock trees on timberland by species and forest-type group, Northern Unit, Vermont, 1983

(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		
Balsam fir	21.6	171.8	.0	.0	.3	.0	2.3	113.6	12.1	321.6	11.0
Tamarack	.0	8.4	.0	.0	.0	.0	.0	1.0	.0	9.3	54.2
White spruce	1.7	66.4	.0	.0	.0	.0	.4	10.9	.4	79.7	28.9
Black spruce	.0	3.7	.0	.0	.0	.0	.0	.4	.0	4.1	62.2
Red spruce	22.3	178.5	.0	.0	.0	.0	2.5	96.0	11.1	310.4	11.7
White pine	114.7	29.9	.0	8.9	.0	.0	1.3	27.2	6.8	188.8	21.1
Northern white-cedar	.3	66.2	.0	.0	.0	.0	.0	8.7	1.6	76.8	26.8
Hemlock	161.0	14.8	.0	.0	.7	.0	1.5	85.4	1.6	265.1	14.9
Total softwoods	321.6	539.8	.0	8.9	.9	.0	8.0	343.2	33.5	1,255.9	7.0
Sugar maple	21.0	9.4	.0	.2	.0	.0	2.1	674.1	5.6	712.4	8.1
Red maple	21.2	25.3	.0	1.7	.0	.0	15.2	204.1	16.5	283.9	10.8
Yellow birch	8.2	18.3	.0	.0	.0	.0	.0	242.4	14.1	283.1	9.2
Paper birch	7.5	17.4	.0	1.0	1.0	.0	.5	69.2	101.2	197.9	16.5
Beech	.5	.0	.0	.0	.0	.0	1.3	97.6	.0	99.4	16.7
White ash	2.5	2.2	.0	.0	.0	.0	.2	100.9	2.6	108.4	18.8
Black ash	1.6	1.4	.0	.0	.0	.0	5.4	3.1	.0	11.5	50.6
Aspen	7.8	28.7	.0	.0	.0	.0	1.8	42.4	32.5	113.2	18.7
White oaks	.0	.0	.0	.9	.0	.0	.6	.8	.0	2.3	57.3
Red oaks	4.1	.0	.0	.6	.0	.0	.0	9.2	7.5	21.4	30.7
Basswood	1.8	.0	.0	.0	.0	.0	.0	15.9	.6	18.3	36.5
Elm	1.8	1.7	.0	.5	.0	.0	3.3	3.3	.1	10.6	27.8
Other hardwoods	6.6	4.3	.0	.0	2.0	.0	10.4	30.5	2.3	56.1	16.3
Total hardwoods	84.8	108.8	.0	4.9	2.9	.0	40.9	1,493.4	183.0	1,918.5	4.1
Total, all species	406.3	648.5	.0	13.7	3.9	.0	48.8	1,836.6	216.5	3,174.4	2.7
SE	18.9	13.5	.0	100.0	100.0	.0	41.4	5.6	23.8	2.7	

Table 50.--Net volume of growing-stock trees on timberland by species and forest-type group, Northern Unit, Vermont, 1997

(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		
Balsam fir	29.6	245.7	.0	.0	1.3	.0	1.9	112.5	27.5	418.5	9.4
Tamarack	.9	20.5	.0	.0	.0	.0	.0	.4	.0	21.8	49.5
White spruce	7.5	64.5	.0	.0	.0	.0	.0	15.1	4.0	91.1	20.7
Black spruce	.0	1.4	.0	.0	.0	.0	.0	.0	.0	1.4	71.8
Red spruce	35.4	127.3	.0	.0	.1	.0	.0	121.3	33.0	317.1	10.3
Red pine	1.3	.0	.0	.0	.0	.0	.0	.0	.0	1.3	100.0
White pine	113.7	22.9	.0	16.4	4.6	.0	4.2	40.7	13.4	216.0	16.6
Northern white-cedar	.9	69.6	.0	.0	.0	.0	.0	11.4	1.4	83.4	25.3
Hemlock	266.3	7.9	.0	.4	.8	.0	.8	147.7	1.0	424.9	12.3
Other softwoods	.0	.0	.0	.0	.0	.0	.0	5.8	.0	5.8	91.5
Total softwoods	455.7	559.7	.0	16.8	6.8	.0	6.8	454.9	80.5	1,581.3	5.8
Sugar maple	26.4	18.3	.0	.1	1.9	.0	.0	908.2	8.5	963.5	7.8
Red maple	26.8	28.9	.0	5.2	5.2	.0	23.4	321.9	14.7	426.0	8.6
Yellow birch	11.4	18.0	.0	.0	.0	.0	.0	224.2	2.8	256.3	9.1
Paper birch	12.5	26.2	.0	3.0	.7	.0	.0	96.8	72.1	211.3	12.9
Beech	.8	1.0	.0	.0	.0	.0	.0	130.4	.3	132.4	14.8
White ash	6.2	2.1	.0	1.4	.4	.0	5.2	119.7	4.2	139.2	13.9
Black ash	.2	2.9	.0	.0	.0	.0	5.4	4.0	.5	13.0	44.5
Aspen	7.7	25.9	.0	.6	.0	.0	.0	66.9	51.7	152.9	15.9
White oaks	.0	.0	.0	.1	.0	.0	1.7	3.2	.0	5.0	73.3
Red oaks	1.4	.0	.0	2.6	9.9	.0	.0	31.2	.0	45.2	29.8
Basswood	4.0	.0	.0	.0	.0	.0	.0	13.2	.0	17.1	37.4
Elm	1.4	.3	.0	.0	.0	.0	.3	4.3	.0	6.3	24.6
Other hardwoods	3.1	6.4	.0	.0	.0	.0	.8	46.9	.9	58.1	16.0
Total hardwoods	101.8	130.1	.0	13.0	18.2	.0	36.7	1,970.8	155.7	2,426.3	4.1
Total, all species	557.5	689.8	.0	29.8	25.0	.0	43.5	2,425.7	236.2	4,007.6	2.8
SE	15.7	12.4	.0	72.8	67.1	.0	43.8	5.3	24.6	2.8	

Table 51.--Net volume of growing-stock in the sawlog portion of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1997

(In millions of cubic 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+		
Balsam fir	92.4	47.4	18.2	5.4	.0	.0	.0	.0	163.4	11.7
Tamarack	3.9	5.7	.7	1.2	3.2	.0	.0	.0	14.7	52.4
White spruce	15.5	13.8	10.8	10.4	1.4	.0	.0	.0	51.9	22.0
Black spruce	.0	.6	.0	.0	.0	.0	.0	.0	.6	100.0
Red spruce	58.0	48.9	29.1	20.7	10.1	.0	8.1	.0	175.1	12.3
Red pine	.9	.0	.0	.0	.0	.0	.0	.0	.9	100.0
White pine	18.9	22.4	30.2	24.3	29.3	13.5	30.0	.0	168.6	16.6
Northern white-cedar	14.8	7.6	7.1	6.0	2.1	.0	1.8	.0	39.4	34.1
Hemlock	58.6	65.7	51.3	51.9	41.3	12.2	15.8	4.0	300.8	13.3
Other softwoods	1.1	.0	2.4	1.0	.0	.0	.0	.0	4.5	100.0
Total softwoods	264.0	212.1	149.7	121.1	87.3	25.7	55.7	4.0	919.7	6.7
Sugar maple	.0	125.4	104.9	86.6	46.7	21.4	53.3	26.2	464.5	9.9
Red maple	.0	45.2	44.1	34.7	11.0	7.0	5.0	9.0	156.1	12.2
Yellow birch	.0	35.6	32.7	21.0	11.3	1.7	13.2	.0	115.5	12.3
Paper birch	.0	26.4	20.3	8.6	1.3	.0	1.7	.0	58.4	15.1
Beech	.0	16.3	9.9	8.6	11.6	1.5	5.4	4.6	57.9	20.1
White ash	.0	18.9	17.3	5.9	6.9	3.6	8.9	.0	61.6	19.5
Black ash	.0	1.4	2.2	.0	.0	.0	.0	.0	3.6	73.2
Aspen	.0	23.8	21.3	13.7	9.8	4.0	4.8	.0	77.3	18.3
White oaks	.0	.0	.0	.0	.0	1.3	2.7	.0	4.1	74.7
Red oaks	.0	6.8	1.5	7.0	4.2	1.7	.0	4.3	25.6	32.2
Basswood	.0	1.9	3.4	2.9	.0	.0	2.1	.0	10.2	41.6
Elm	.0	.4	.5	.0	.0	.0	.0	.0	.9	70.9
Other hardwoods	.0	5.3	4.9	5.9	1.3	.0	1.8	.0	19.2	25.9
Total hardwoods	.0	307.5	262.9	194.9	104.0	42.2	99.0	44.2	1,054.6	5.7
Total, all species	264.0	519.6	412.6	315.9	191.3	67.9	154.7	48.2	1,974.4	3.9
SE	7.4	4.4	5.8	7.2	10.7	15.9	15.1	30.9	3.9	

Sawtimber volume on timberland, for selected species and percent change, Northern Unit of Vermont, 1983 and 1997

(Volume increased by 33.8 percent for all species)

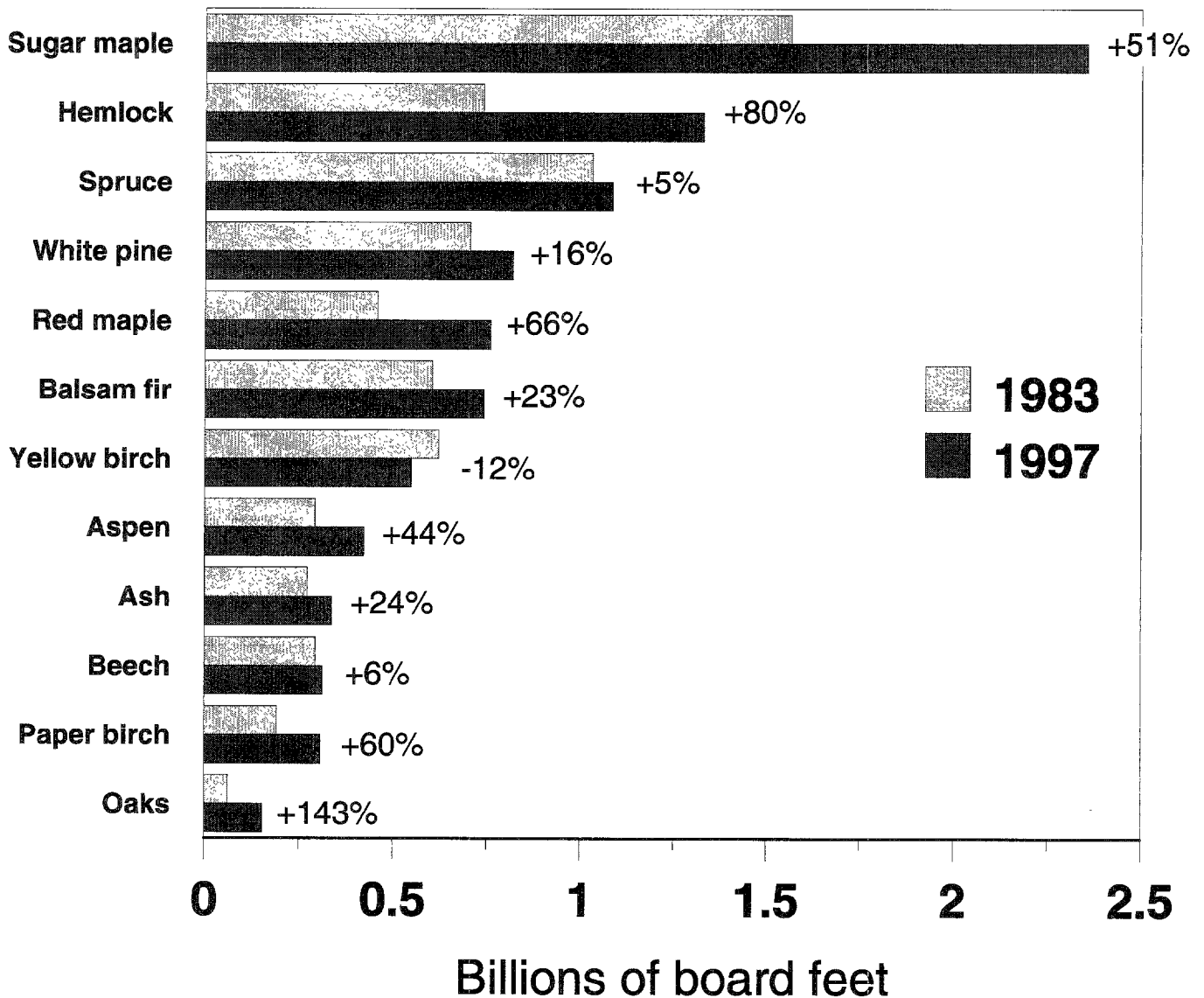


Table 52.--Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

(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+		
Balsam fir	285.1	229.2	65.3	20.5	.0	5.3	.0	.0	605.5	13.7
Tamarack	10.6	2.2	6.1	4.3	.0	.0	.0	.0	23.3	55.9
White spruce	87.3	71.3	17.9	10.9	4.2	.0	.0	.0	191.6	27.7
Black spruce	8.4	6.3	.0	.0	.0	.0	.0	.0	14.7	60.7
Red spruce	296.7	203.7	146.0	71.0	64.1	9.1	33.7	.0	824.2	13.2
White pine	85.6	115.3	135.7	165.2	73.8	52.4	69.2	6.2	703.5	21.3
Northern white-cedar	42.1	31.8	21.4	15.4	2.2	6.0	2.8	.0	121.9	31.6
Hemlock	150.2	186.3	155.3	111.5	70.5	29.3	36.3	.0	739.3	16.3
Total softwoods	966.1	846.2	547.7	398.8	214.8	102.2	142.0	6.2	3,224.0	8.1
Sugar maple	.0	481.5	367.6	232.5	171.7	117.0	158.0	35.8	1,564.1	10.7
Red maple	.0	168.4	145.6	67.5	44.2	12.2	19.1	.0	457.1	15.4
Yellow birch	.0	188.8	139.3	97.7	73.7	24.4	76.1	22.3	622.2	12.4
Paper birch	.0	116.2	40.8	16.7	15.9	.0	3.5	.0	193.1	16.5
Beech	.0	71.3	56.4	66.5	51.6	26.7	22.0	.0	294.6	19.3
White ash	.0	77.3	64.5	53.1	18.6	4.8	29.8	.0	248.0	27.0
Black ash	.0	6.9	9.3	3.3	4.1	.0	.0	.0	23.5	78.9
Aspen	.0	92.7	73.7	59.6	28.8	20.4	18.3	.0	293.5	22.9
White oaks	.0	.0	.0	4.6	.0	.0	4.8	.0	9.4	61.1
Red oaks	.0	15.0	14.5	3.1	3.5	.0	.0	17.5	53.6	37.6
Basswood	.0	12.8	17.6	.0	8.3	4.1	.0	.0	42.7	37.1
Elm	.0	4.2	8.0	4.9	.0	.0	.0	3.5	20.6	32.7
Other hardwoods	.0	42.3	9.9	13.3	12.4	3.4	5.9	4.1	91.2	25.8
Total hardwoods	.0	1,277.2	947.1	622.8	432.9	213.1	337.4	83.2	3,913.6	6.1
Total, all species	966.1	2,123.4	1,494.8	1,021.6	647.7	315.2	479.4	89.4	7,137.6	4.1
SE	8.5	4.4	5.9	8.0	9.0	14.1	13.3	29.8	4.1	
SE	7.4	4.4	5.8	7.2	10.7	15.9	15.1	30.9	3.9	

Table 53.--Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1997

(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+		
Balsam fir	390.4	231.9	89.4	31.2	.0	.0	.0	.0	742.8	12.3
Tamarack	16.7	25.1	3.1	5.6	14.8	.0	.0	.0	65.2	52.9
White spruce	61.8	63.9	56.1	58.3	8.1	.0	.0	.0	248.1	22.4
Black spruce	.0	2.5	.0	.0	.0	.0	.0	.0	2.5	100.0
Red spruce	240.9	235.0	149.6	106.2	54.5	.0	48.2	.0	834.3	12.8
Red pine	3.1	.0	.0	.0	.0	.0	.0	.0	3.1	100.0
White pine	70.5	99.8	147.7	126.3	148.9	65.8	159.5	.0	818.3	16.6
Northern white-cedar	45.0	26.1	26.4	21.4	9.2	.0	7.0	.0	135.1	34.8
Hemlock	212.0	279.6	234.7	247.5	195.8	60.4	77.4	22.3	1,329.7	13.6
Other softwoods	3.7	.0	10.8	4.7	.0	.0	.0	.0	19.1	100.0
Total softwoods	1,044.2	963.8	717.6	601.1	431.3	126.1	292.1	22.3	4,198.5	6.9
Sugar maple	.0	628.5	520.9	424.2	247.4	113.5	281.9	138.9	2,355.4	10.1
Red maple	.0	226.5	201.7	170.3	49.5	38.6	21.6	51.7	760.0	12.7
Yellow birch	.0	185.4	156.0	94.2	49.4	7.2	55.6	.0	547.7	12.1
Paper birch	.0	147.6	104.7	42.0	6.7	.0	7.3	.0	308.2	15.3
Beech	.0	83.7	47.7	49.0	67.0	9.8	28.4	27.1	312.8	20.5
White ash	.0	98.1	94.5	26.4	31.9	20.8	46.4	.0	318.2	20.4
Black ash	.0	7.4	11.2	.0	.0	.0	.0	.0	18.6	73.6
Aspen	.0	131.3	114.4	74.6	50.8	22.7	28.7	.0	422.5	18.7
White oaks	.0	.0	.0	.0	.0	7.9	17.2	.0	25.2	75.3
Red oaks	.0	33.7	7.8	34.8	20.3	9.8	.0	21.6	128.0	31.8
Basswood	.0	9.6	17.3	16.3	.0	.0	12.2	.0	55.4	43.1
Elm	.0	1.9	2.4	.0	.0	.0	.0	.0	4.3	71.3
Other hardwoods	.0	28.3	21.4	27.7	5.1	.0	11.3	.0	93.8	27.1
Total hardwoods	.0	1,582.1	1,299.9	959.4	528.0	230.4	510.7	239.3	5,349.9	5.8
Total, all species	1,044.2	2,545.9	2,017.6	1,560.5	959.3	356.5	802.7	261.7	9,548.4	4.0
SE	7.6	4.5	6.0	7.2	11.0	16.1	15.8	29.9	4.0	

Table 54.--Average annual net change of growing-stock volume on timberland by species and component of change, Northern Unit, Vermont, 1997

(In thousands of cubic feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	9,725	6,295	16,021	-5,283	1,156	-61	11,832	-8,314	3,519
Tamarack	205	215	420	-195	0	0	225	-39	186
White spruce	1,327	1,484	2,811	-796	0	-51	1,964	-3,073	-1,108
Black spruce	0	65	65	0	0	0	65	-89	-25
Red spruce	2,628	3,948	6,576	-2,715	1,577	-51	5,387	-5,177	209
White pine	1,850	4,558	6,407	-1,861	954	-247	5,253	-6,706	-1,453
Northern white-cedar	1,040	1,561	2,601	-355	540	-236	2,550	-804	1,746
Hemlock	3,966	6,940	10,906	-723	1,891	-483	11,591	-3,687	7,903
Other softwoods	23	0	23	0	0	0	23	0	23
Total softwoods	20,764	25,067	45,830	-11,928	6,117	-1,130	38,890	-27,889	11,001
Sugar maple	8,767	12,481	21,248	-4,109	5,878	-2,638	20,380	-6,635	13,745
Red maple	4,955	5,080	10,035	-1,805	3,732	-1,393	10,569	-4,262	6,307
Yellow birch	2,923	2,426	5,348	-1,544	2,319	-1,495	4,627	-3,566	1,061
Paper birch	1,395	3,103	4,498	-1,483	547	-156	3,407	-2,383	1,023
Beech	1,935	1,588	3,523	-1,529	1,816	-421	3,389	-788	2,601
White ash	2,093	2,688	4,780	-717	262	-31	4,294	-2,190	2,104
Black ash	205	170	375	-87	52	0	340	0	340
Aspen	2,001	2,579	4,580	-759	924	-232	4,513	-1,662	2,851
White oaks	0	99	99	0	0	0	99	0	99
Red oaks	225	927	1,152	-631	0	-1,360	-839	0	-839
Basswood	50	138	188	-261	107	-305	-272	-234	-506
Elm	67	305	372	-501	0	0	-129	-203	-332
Other hardwoods	1,180	1,524	2,704	-290	936	-122	3,228	-293	2,935
Total hardwoods	25,795	33,107	58,903	-13,717	16,574	-8,153	53,607	-22,216	31,390
Total, all species	46,559	58,174	104,733	-25,645	22,691	-9,283	92,497	-50,106	42,391

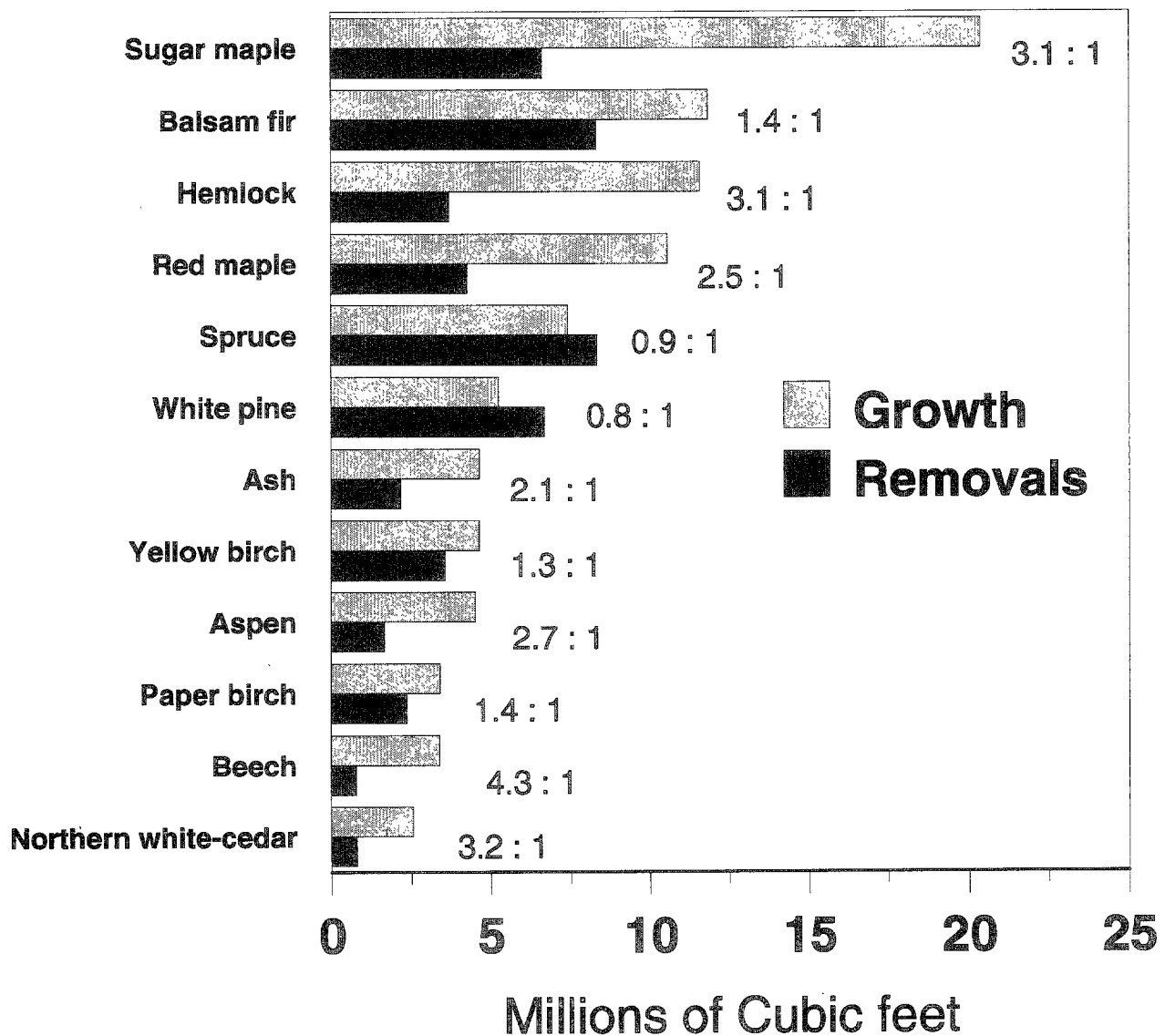
Table 55.--Average annual net change of sawtimber volume on timberland by species and component of change, Northern Unit, Vermont, 1997

(In thousands of board feet)

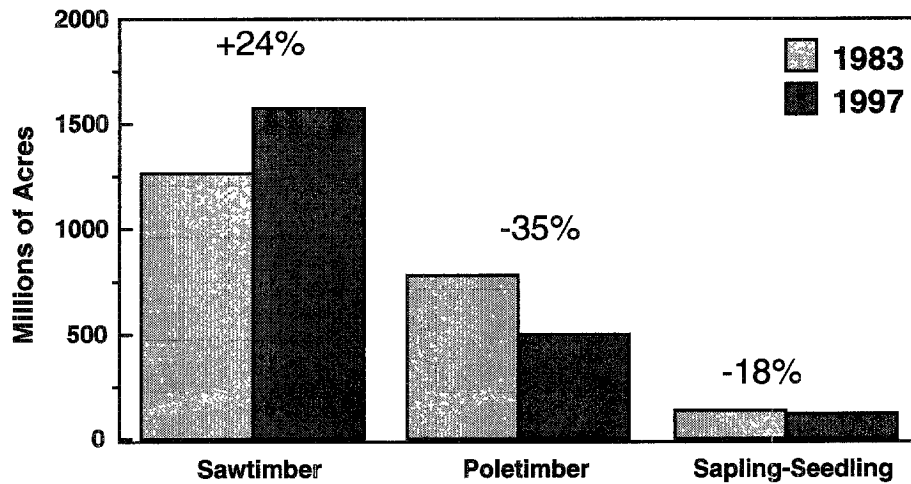
Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	24,099	8,614	32,713	-11,739	552	-203	21,323	-21,931	-608
Tamarack	589	304	893	-691	0	0	201	-116	85
White spruce	4,973	6,159	11,131	-1,172	0	-203	9,757	-10,738	-981
Black spruce	0	340	340	0	0	0	340	-356	-16
Red spruce	11,872	12,497	24,369	-7,858	2,052	-167	18,395	-14,089	4,307
White pine	10,456	20,773	31,229	-4,784	3,766	-952	29,259	-28,791	469
Northern white-cedar	2,053	2,940	4,993	-188	469	-661	4,612	-1,383	3,228
Hemlock	17,729	26,707	44,435	-2,164	2,863	-2,297	42,838	-10,530	32,308
Total softwoods	71,770	78,334	150,104	-28,597	9,703	-4,484	126,726	-87,934	38,792
Sugar maple	39,615	29,425	69,040	-10,945	12,843	-7,566	63,372	-18,501	44,871
Red maple	20,492	8,916	29,407	-3,167	5,333	-4,929	26,645	-8,911	17,735
Yellow birch	13,201	6,579	19,780	-5,338	4,783	-4,005	15,219	-9,391	5,829
Paper birch	4,705	2,612	7,317	-1,911	968	-504	5,870	-2,057	3,813
Beech	6,012	3,773	9,785	-5,241	4,171	-1,847	6,869	-2,907	3,961
White ash	7,434	5,333	12,767	-929	226	0	12,064	-6,693	5,371
Black ash	466	108	574	-362	0	0	212	0	212
Aspen	8,561	6,069	14,630	-620	2,141	-208	15,943	-5,907	10,035
White oaks	0	665	665	0	0	0	665	0	665
Red oaks	2,283	2,042	4,326	-3,353	0	-7,378	-6,405	0	-6,405
Basswood	538	2,137	2,675	-157	283	-595	2,206	-1,175	1,031
Elm	0	0	0	-927	0	0	-927	-411	-1,338
Other hardwoods	2,437	2,428	4,866	-654	4,010	0	8,222	-375	7,847
Total hardwoods	105,745	70,087	175,832	-33,604	34,757	-27,031	149,955	-56,328	93,627
Total, all species	177,515	148,421	325,936	-62,201	44,460	-31,515	276,680	-144,261	132,419

Average annual growth and removals of growing-stock volume
and ratio of growth to removals for selected species
on timberland, Northern Unit of Vermont, 1983-97

(Ratio of growth/removals for all species is 1.8 : 1)



SOUTHERN UNIT TABLES



Southern Unit, area of timberland by stand-size class, 1983 and 1997

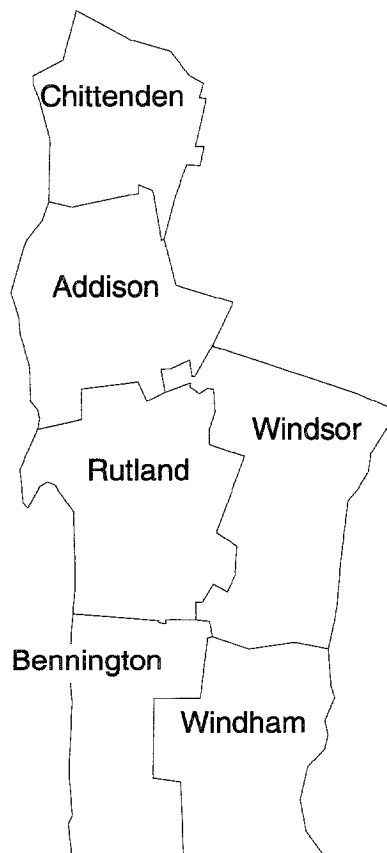


Table 56.--Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1983

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	7.5	.0	.0	.0	7.5	100.0
White pine	70.8	41.6	7.0	.0	119.4	23.6
White pine/hemlock	35.1	6.7	.0	.0	41.8	40.6
Hemlock	85.8	14.1	.0	.0	99.9	26.4
White/red pine group	199.2	62.4	7.0	.0	268.6	15.1
Balsam fir	.0	7.5	7.1	.0	14.6	70.7
Red spruce	27.9	7.2	.0	.0	35.1	44.7
Red spruce/balsam fir	6.9	7.1	.0	.0	14.0	70.7
Spruce/fir group	34.9	21.8	7.1	.0	63.8	32.8
Wh. pine/no.red oak/wh. ash	7.0	.0	.0	.0	7.0	100.0
Oak/pine group	7.0	.0	.0	.0	7.0	100.0
White oak/red oak/hickory	.0	20.5	.0	.0	20.5	57.0
White oak	.0	6.7	.0	.0	6.7	100.0
Northern red oak	29.5	14.2	.0	.0	43.7	40.8
Hawthorn/reverting field	.0	.0	7.1	.0	7.1	100.0
Red maple/central hardwood	.0	6.4	.0	.0	6.4	100.0
Mixed central hardwoods	28.5	21.9	18.8	.0	69.2	31.7
Oak/hickory group	58.0	69.8	25.9	.0	153.6	20.9
Black ash/Amer. elm/red maple	15.2	26.5	7.2	.0	48.9	38.0
Red maple(upland)	.0	.0	6.4	.0	6.4	100.0
Cottonwood	.0	7.0	.0	.0	7.0	100.0
Willow	.0	.0	5.0	.0	5.0	100.0
Elm/ash/red maple group	15.2	33.5	18.6	.0	67.3	30.7
Sugar maple/beech/yellow birch	776.6	284.1	26.9	.0	1,087.6	5.6
Black Cherry	.0	4.9	7.7	.0	12.6	72.5
Red maple/northern hardwoods	85.0	104.6	.0	.0	189.6	18.6
Pin cherry/reverting field	.0	.0	5.6	5.6	11.2	17.2
Mixed northern hardwoods	61.0	94.4	34.2	.0	189.6	17.6
Northern hardwoods group	922.5	488.0	74.4	5.6	1,490.5	3.8
Aspen	7.0	29.4	14.0	.0	50.4	37.7
Paper birch	35.2	77.7	.0	.0	112.9	24.3
Gray birch	.0	6.8	.0	.0	6.8	100.0
Aspen/birch group	42.2	113.9	14.0	.0	170.0	19.8
All forest types	1,278.9	789.3	147.0	5.6	2,220.8	.8
SE	4.7	7.7	17.3	100.0	.8	

Table 57.--Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1997

(In thousands of acres)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	3.3	.0	.0	.0	3.3	100.0
White pine	98.7	3.7	.0	.0	102.4	22.2
White pine/hemlock	48.4	6.4	3.5	.5	58.8	29.3
Hemlock	91.8	1.7	.0	.0	93.5	24.3
White/red pine group	242.3	11.8	3.5	.5	258.1	13.3
Balsam fir	6.0	5.2	6.6	.0	17.8	64.8
Red spruce	25.9	.0	.0	.0	25.9	47.5
Red spruce/balsam fir	8.2	.0	7.4	.0	15.6	64.2
Norway spruce	1.5	.0	.0	.0	1.5	100.0
Northern white-cedar	4.9	.0	.0	.0	4.9	100.0
Spruce/fir group	46.4	5.2	14.0	.0	65.6	30.6
Wh. pine/no.red oak/wh. ash	17.5	4.8	.0	.0	22.4	50.2
Oak/pine group	17.5	4.8	.0	.0	22.4	50.2
Chestnut oak	7.5	.0	.0	.0	7.5	100.0
White oak/red oak/hickory	15.9	12.6	.0	.0	28.5	50.4
Northern red oak	29.3	6.6	.0	.0	35.9	44.1
Mixed central hardwoods	52.4	24.6	.0	.0	77.1	28.5
Oak/hickory group	105.2	43.8	.0	.0	149.0	20.5
Black ash/Amer. elm/red maple	7.1	.0	9.1	.0	16.2	57.7
Willow	.0	.0	7.1	.0	7.1	79.4
American elm/green ash	.0	4.3	.0	.0	4.3	100.0
Elm/ash/red maple group	7.1	4.3	16.3	.0	27.7	41.2
Sugar maple/beech/yellow birch	800.9	216.8	17.0	.0	1,034.7	5.7
Red maple/northern hardwoods	147.0	91.8	7.6	.0	246.4	15.1
Pin cherry/reverting field	.0	8.4	39.5	.0	47.9	30.0
Mixed northern hardwoods	164.9	91.5	10.3	.0	266.7	14.8
Northern hardwoods group	1,112.8	408.4	74.4	.0	1,595.6	3.5
Aspen	15.0	10.3	12.5	.0	37.9	40.4
Paper birch	37.4	23.2	.0	.0	60.6	31.3
Aspen/birch group	52.4	33.5	12.5	.0	98.4	24.1
All forest types	1,583.7	511.9	120.7	.5	2,216.8	1.5
SE	3.5	9.8	19.3	100.0	1.5	
SE	4.7	7.7	17.3	100.0	.8	

Table 58.--Number of live trees (1.0+ inches d.b.h.) on timberland by species and diameter class, Southern Unit, Vermont, 1997

(In thousands of trees)

Species group	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
Balsam fir	34,106	11,241	6,334	2,877	1,677	488	138	148
Tamarack	0	0	35	0	0	0	0	0
Red spruce	57,845	15,332	8,619	4,830	2,771	2,309	1,279	734
Red pine	0	0	0	0	295	192	159	165
White pine	12,024	7,994	7,796	6,123	5,149	4,826	2,975	1,919
Northern white-cedar	1,413	2,776	351	241	0	0	0	0
Hemlock	34,351	17,861	13,047	9,009	5,743	4,303	2,982	2,118
Other softwoods	454	0	147	74	190	79	111	40
Total softwoods	140,194	55,203	36,329	23,153	15,824	12,198	7,643	5,125
Sugar maple	89,386	34,140	21,155	16,265	12,161	8,491	6,140	4,014
Red maple	52,741	20,863	16,593	14,018	9,729	5,804	4,193	1,512
Yellow birch	34,880	7,193	6,004	4,849	4,059	3,314	1,858	1,193
Paper birch	6,721	3,596	5,344	6,340	5,872	3,820	1,838	558
Beech	167,179	37,943	14,948	10,887	6,159	4,444	2,114	1,265
White ash	25,132	12,669	5,073	3,923	3,638	1,948	920	399
Black ash	0	0	163	187	42	42	0	0
Aspen	2,465	3,427	1,358	1,425	777	1,404	602	672
White oaks	507	942	345	635	894	275	221	117
Red oaks	3,364	2,219	2,247	2,305	1,921	2,294	2,079	1,248
Basswood	499	471	923	384	550	310	77	114
Elm	4,412	3,370	458	156	120	0	77	0
Other commercial hardwoods	27,034	11,149	7,644	7,106	4,409	2,764	1,211	387
Noncommercial hardwoods	168,784	43,055	13,369	4,202	861	224	70	41
Total hardwoods	583,106	181,037	95,625	72,683	51,193	35,135	21,399	11,521
Total, all species	723,299	236,240	131,955	95,837	67,017	47,333	29,043	16,646
SE	6.3	6.3	3.6	3.4	3.9	4.2	4.6	5.5

Table 58.--continued

(In thousands of trees)

Species group	Diameter class (inches at breast height)					All classes	SE
	17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0+	Total 5.0+		
Balsam fir	40	0	0	0	11,702	57,048	28.5
Tamarack	0	0	0	0	35	35	100.0
Red spruce	324	148	79	0	21,094	94,272	21.4
Red pine	40	23	40	0	914	914	64.6
White pine	941	1,085	1,384	224	32,422	52,440	13.9
Northern white-cedar	37	37	37	0	702	4,891	64.1
Hemlock	923	479	511	39	39,156	91,368	12.5
Other softwoods	0	0	0	0	640	1,094	52.7
Total softwoods	2,305	1,772	2,052	263	106,666	302,063	11.8
Sugar maple	1,542	1,056	1,915	303	73,043	196,569	7.7
Red maple	1,131	667	804	177	54,628	128,232	11.4
Yellow birch	779	202	302	37	22,598	64,671	14.7
Paper birch	141	77	32	0	24,022	34,339	13.1
Beech	930	276	660	37	41,719	246,842	8.6
White ash	446	233	117	74	16,773	54,574	13.6
Black ash	85	0	0	0	520	520	62.3
Aspen	344	28	0	0	6,612	12,504	24.1
White oaks	45	57	37	36	2,662	4,111	32.0
Red oaks	716	85	461	86	13,442	19,024	16.8
Basswood	0	0	0	0	2,357	3,327	26.9
Elm	0	0	0	0	811	8,594	48.6
Other commercial hardwoods	245	138	237	0	24,142	62,325	19.5
Noncommercial hardwoods	0	0	0	0	18,767	230,606	9.2
Total hardwoods	6,405	2,819	4,565	751	302,097	1,066,239	3.9
Total, all species	8,710	4,591	6,617	1,015	408,762	1,368,302	4.0
SE	7.7	9.5	8.8	23.1	2.5	4.0	

Table 59.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Southern Unit, Vermont, 1983

(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+		
Balsam fir	2,583	921	369	140	76	0	0	0	0	0	4,089	28.2
Tamarack	0	56	0	74	0	0	0	0	0	0	129	54.3
Red spruce	7,082	5,508	3,044	1,819	942	305	161	35	30	0	18,925	17.3
Red pine	74	59	158	58	204	166	41	19	12	0	792	85.9
White pine	7,222	4,859	3,904	2,313	1,573	916	489	241	354	65	21,936	16.8
Northern white-cedar	419	116	88	57	25	0	0	0	0	0	704	50.4
Hemlock	10,089	6,953	4,334	3,683	1,963	1,010	419	211	159	7	28,829	14.1
Other softwoods	70	63	0	0	0	0	0	0	0	0	133	100.0
Total softwoods	27,539	18,534	11,898	8,143	4,784	2,396	1,109	508	554	73	75,538	8.4
Sugar maple	17,643	14,038	9,729	7,485	4,635	2,787	1,207	942	773	64	59,304	7.2
Red maple	11,742	11,054	5,412	3,713	1,974	1,402	427	278	195	9	36,207	9.8
Yellow birch	4,907	4,334	3,950	2,453	1,460	732	303	181	196	23	18,541	10.7
Paper birch	7,203	7,191	6,110	2,043	985	316	107	84	0	0	24,039	13.2
Beech	8,695	6,440	4,062	2,601	1,215	663	377	192	111	10	24,367	11.1
White ash	4,179	3,944	2,547	1,553	988	637	194	87	15	0	14,143	16.0
Black ash	0	58	0	0	0	0	0	0	0	0	58	100.0
Aspen	1,943	1,096	1,476	571	369	200	121	0	15	0	5,791	22.8
White oaks	119	926	339	219	97	25	39	37	14	7	1,821	53.5
Red oaks	1,878	2,219	2,073	2,158	895	791	465	205	218	26	10,930	18.3
Basswood	852	187	243	190	86	87	17	0	0	8	1,670	39.9
Elm	1,255	1,073	794	447	222	84	67	18	27	0	3,988	26.4
Other hardwoods	8,196	4,177	2,644	1,848	768	290	196	68	13	0	18,200	12.4
Total hardwoods	68,613	56,737	39,380	25,281	13,693	8,015	3,522	2,093	1,579	148	219,060	3.6
Total, all species	96,152	75,271	51,278	33,423	18,477	10,411	4,631	2,601	2,133	221	294,598	3.0
SE	4.6	4.8	4.2	4.1	4.9	6.1	7.9	10.5	10.9	28.9	3.0	

Table 60.--Number of growing-stock trees (5.0+ inches d.b.h.) on timberland by species and diameter class, Southern Unit, Vermont, 1997

(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+		
Balsam fir	5,451	2,822	1,641	431	138	148	0	0	0	0	10,632	25.1
Tamarack	35	0	0	0	0	0	0	0	0	0	35	100.0
Red spruce	7,846	4,636	2,601	2,118	1,121	655	252	102	40	0	19,372	16.0
Red pine	0	0	295	192	159	165	40	23	40	0	914	64.6
White pine	6,941	5,529	4,067	4,041	2,786	1,654	941	881	1,260	183	28,285	12.6
Northern white-cedar	351	241	0	0	0	0	0	0	0	0	591	55.2
Hemlock	11,978	8,751	4,676	3,828	2,800	1,921	844	428	511	39	35,777	10.8
Other softwoods	110	37	116	79	79	40	0	0	0	0	461	64.6
Total softwoods	32,712	22,016	13,396	10,690	7,084	4,584	2,077	1,434	1,852	223	96,067	6.8
Sugar maple	19,489	14,825	11,456	7,916	5,783	3,824	1,506	1,027	1,624	153	67,605	6.3
Red maple	14,669	13,173	9,215	5,030	3,815	1,413	1,005	467	652	116	49,555	8.3
Yellow birch	5,130	4,383	3,710	2,869	1,636	1,039	498	202	193	37	19,698	9.4
Paper birch	4,722	5,740	5,529	3,509	1,704	519	141	77	32	0	21,973	11.2
Beech	11,730	8,900	5,196	3,403	1,684	827	717	151	324	0	32,933	8.6
White ash	4,816	3,803	3,398	1,921	874	399	446	233	117	74	16,081	10.8
Black ash	163	144	42	42	0	0	85	0	0	0	478	59.8
Aspen	1,243	1,357	667	1,404	505	633	263	28	0	0	6,101	17.1
White oaks	345	578	848	275	221	117	45	57	37	36	2,560	38.5
Red oaks	2,139	2,266	1,805	2,142	2,003	1,248	638	85	461	86	12,872	15.2
Basswood	816	332	550	310	77	114	0	0	0	0	2,199	24.6
Elm	351	120	83	0	77	0	0	0	0	0	631	31.5
Other hardwoods	6,710	6,715	4,275	2,510	1,211	355	206	99	84	0	22,165	9.7
Total hardwoods	72,324	62,337	46,775	31,331	19,590	10,488	5,551	2,426	3,525	504	254,851	2.8
Total, all species	105,036	84,353	60,172	42,021	26,674	15,072	7,628	3,860	5,377	726	350,918	2.7
SE	3.8	3.6	4.2	4.6	5.0	5.8	8.1	10.4	10.2	28.5	2.7	

Table 61.--Net volume of all trees on timberland by species and tree class, Southern Unit, Vermont, 1997

(In millions of cubic feet)

Species group	Tree class						All classes	SE
	Preferred	Acceptable	Preferred/ acceptable	Rough cull	Rotten cull	All cull		
Balsam fir	4.0	64.7	68.7	1.5	1.6	3.1	71.8	26.1
Tamarack	.0	.1	.1	.0	.0	.0	.1	100.0
Red spruce	4.7	207.0	211.8	20.6	.3	20.9	232.6	18.5
Red pine	.0	26.5	26.5	.0	.0	.0	26.5	61.8
White pine	25.3	500.3	525.7	42.9	.3	43.2	568.8	11.9
Northern white-cedar	.0	1.8	1.8	2.4	.0	2.4	4.2	78.9
Hemlock	.0	410.8	410.8	25.0	3.1	28.2	439.0	11.3
Other softwoods	.0	6.7	6.7	1.1	.0	1.1	7.8	78.7
Total softwoods	34.0	1,218.1	1,252.1	93.5	5.3	98.8	1,350.9	7.0
Sugar maple	43.6	986.4	1,030.0	48.7	22.6	71.3	1,101.3	7.3
Red maple	12.3	606.8	619.0	37.4	10.4	47.9	666.9	9.1
Yellow birch	1.0	245.6	246.6	18.1	7.7	25.8	272.4	9.7
Paper birch	3.0	262.7	265.7	13.0	1.4	14.5	280.2	11.3
Beech	.0	350.2	350.2	13.5	34.4	48.0	398.1	10.0
White ash	31.6	198.2	229.8	2.9	2.1	5.0	234.8	11.2
Black ash	4.4	2.4	6.8	.0	.0	.0	6.8	89.4
Aspen	1.9	104.8	106.7	2.7	4.4	7.0	113.7	19.2
White oaks	.0	34.6	34.6	.5	.0	.5	35.1	36.7
Red oaks	42.0	204.8	246.9	4.1	1.8	6.0	252.8	14.2
Basswood	1.3	21.2	22.5	.5	.0	.5	22.9	23.0
Elm	.0	3.8	3.8	.3	.0	.3	4.1	35.0
Other commercial hardwoods	12.2	235.6	247.7	14.2	2.5	16.7	264.4	10.2
Noncommercial hardwoods	.0	.0	.0	53.0	2.3	55.3	55.3	13.3
Total hardwoods	153.3	3,257.0	3,410.3	208.9	89.7	298.6	3,708.9	3.1
Total, all species	187.4	4,475.1	4,662.4	302.4	95.0	397.4	5,059.9	2.7
SE	12.4	2.9	2.9	8.3	12.0	7.1	2.7	

Volume of all live trees on timberland, for selected species and percent change, Southern Unit of Vermont, 1983 and 1997

(Volume increased by 25.1 percent for all species)

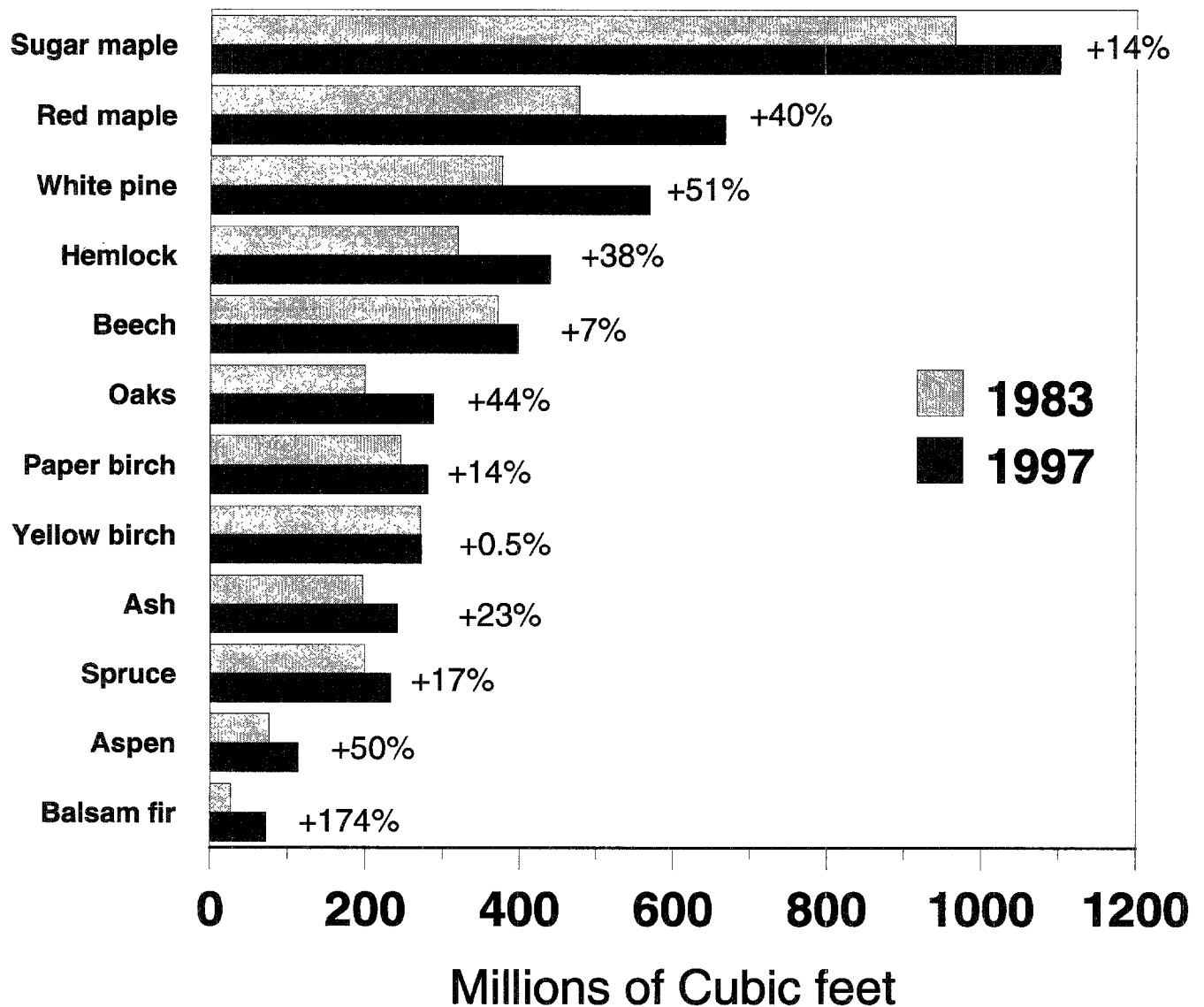


Table 62.--Net volume of all live trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

(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+		
Balsam fir	8.9	7.6	4.9	3.0	1.8	.0	.0	.0	.0	.0	26.2	25.1
Tamarack	.0	.3	.0	1.4	.0	.0	.0	.0	.0	.0	1.7	50.8
Red spruce	26.3	42.0	43.1	36.1	27.2	11.5	7.5	3.0	2.8	.0	199.5	16.4
Red pine	.1	.4	1.9	1.1	5.8	5.7	1.9	.9	1.3	.0	19.2	94.8
White pine	26.9	38.0	60.6	50.9	52.3	46.0	31.3	18.5	41.6	10.1	376.2	12.9
Northern white-cedar	1.0	.6	1.3	.6	.5	.0	.0	.0	.0	.0	4.0	57.0
Hemlock	30.2	44.7	48.0	63.9	49.5	34.6	20.7	12.8	13.9	.9	319.2	13.9
Other softwoods	.5	.7	.0	.0	.0	.0	.0	.0	.0	.0	1.2	61.7
Total softwoods	94.0	134.3	159.7	157.0	137.0	97.8	61.5	35.1	59.7	11.0	947.1	7.5
Sugar maple	62.8	107.8	138.6	159.5	139.6	115.0	64.4	58.2	80.6	39.5	966.0	6.8
Red maple	44.5	87.6	79.4	80.5	56.7	59.8	26.6	17.0	21.0	3.2	476.3	9.2
Yellow birch	17.0	36.1	54.3	47.9	38.2	27.7	13.2	12.4	19.5	4.8	271.1	10.1
Paper birch	24.7	55.8	78.3	39.9	26.8	10.4	4.4	5.6	.4	.0	246.1	12.7
Beech	27.3	51.5	58.4	70.7	50.3	42.3	30.7	22.5	16.3	1.4	371.4	8.5
White ash	14.8	31.8	36.6	34.9	30.3	26.1	9.7	6.1	2.9	3.0	196.2	12.6
Black ash	.0	.3	.0	.0	.4	.0	.0	.0	.0	.0	.7	70.7
Aspen	7.0	9.4	20.3	13.5	11.4	7.1	5.1	.5	1.6	.0	75.8	18.7
White oaks	.4	5.1	3.4	3.4	1.9	.7	1.1	1.8	1.5	1.2	20.5	42.0
Red oaks	6.9	14.7	23.7	34.1	22.0	27.0	18.8	9.2	18.0	4.5	178.8	18.2
Basswood	2.1	3.0	2.9	3.4	2.6	3.5	.7	.0	.4	1.2	19.8	26.3
Elm	3.2	6.0	7.2	8.1	3.5	2.4	1.6	.8	1.4	.0	34.2	28.6
Other commercial hardwoods	26.7	31.7	36.9	36.7	20.6	10.9	9.1	4.8	3.0	.0	180.4	10.9
Noncommercial hardwoods	30.1	15.4	6.9	3.7	2.6	1.1	1.6	.0	.0	.0	61.4	15.8
Total hardwoods	267.6	456.2	546.8	536.3	406.6	334.1	186.9	138.7	166.6	58.7	3,098.6	2.8
Total, all species	361.6	590.5	706.5	693.3	543.7	431.9	248.4	173.9	226.4	69.7	4,045.8	2.2
SE	4.2	4.2	3.9	3.9	4.5	5.3	6.8	9.0	8.6	21.2	2.2	

Table 63.--Net volume of live trees on timberland by species and diameter class, Southern Unit, Vermont, 1997

(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+		
Balsam fir	15.6	18.1	20.3	8.3	3.7	4.7	1.2	.0	.0	.0	71.8	26.1
Tamarack	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	100.0
Red spruce	25.7	34.0	35.5	45.9	35.3	27.3	15.5	7.4	6.0	.0	232.6	18.5
Red pine	.0	.0	3.9	3.7	4.2	6.9	2.3	1.2	4.4	.0	26.5	61.8
White pine	22.5	40.1	58.0	82.3	73.3	62.8	41.9	53.3	109.6	25.1	568.8	11.9
Northern white-cedar	.8	1.0	.0	.0	.0	.0	.5	1.3	.6	.0	4.2	78.9
Hemlock	32.2	49.0	57.3	66.5	66.7	64.8	36.9	23.4	38.7	3.5	439.0	11.3
Other softwoods	.3	.3	1.9	1.6	2.3	1.4	.0	.0	.0	.0	7.8	78.7
Total softwoods	97.1	142.5	176.7	208.3	185.6	167.9	98.3	86.6	159.3	28.6	1,350.9	7.0
Sugar maple	62.3	112.7	151.2	162.9	168.6	136.9	67.8	58.8	137.9	42.1	1,101.3	7.3
Red maple	45.6	92.5	115.8	106.0	104.7	52.9	46.7	30.3	50.0	22.4	666.9	9.1
Yellow birch	16.2	28.9	44.3	52.0	41.2	33.7	26.4	9.2	18.0	2.3	272.4	9.7
Paper birch	17.3	47.2	73.4	70.0	46.0	16.7	4.2	3.3	2.1	.0	280.2	11.3
Beech	32.0	65.0	66.7	74.5	48.1	33.6	34.2	7.5	33.7	2.7	398.1	10.0
White ash	17.2	30.4	50.3	38.2	26.2	14.9	22.1	14.5	9.2	12.0	234.8	11.2
Black ash	.4	.6	.6	.9	.0	.0	4.4	.0	.0	.0	6.8	89.4
Aspen	5.0	10.8	10.3	29.4	16.1	25.2	16.0	.8	.0	.0	113.7	19.2
White oaks	1.0	3.7	9.1	4.5	3.6	3.2	1.4	2.6	2.2	3.6	35.1	36.7
Red oaks	7.0	15.2	20.4	38.7	49.3	42.3	27.6	3.4	38.6	10.3	252.8	14.2
Basswood	2.6	2.7	6.3	5.7	1.7	4.0	.0	.0	.0	.0	22.9	23.0
Elm	.9	.6	1.0	.0	1.6	.0	.0	.0	.0	.0	4.1	35.0
Other commercial hardwoods	23.9	52.0	58.9	53.7	33.6	13.8	9.0	7.4	12.0	.0	264.4	10.2
Noncommercial hardwoods	28.3	16.9	5.6	2.0	1.2	1.2	.0	.0	.0	.0	55.3	13.3
Total hardwoods	259.8	479.4	613.8	638.7	541.8	378.5	259.9	137.9	303.8	95.4	3,708.9	3.1
Total, all species	357.0	621.8	790.5	847.0	727.4	546.4	358.2	224.5	463.1	123.9	5,059.9	2.7
SE	3.7	3.5	4.2	4.5	5.0	5.7	8.2	9.8	9.6	26.6	2.7	

Table 64.--Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

(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+		
Balsam fir	7.7	6.6	4.5	2.5	1.8	.0	.0	.0	.0	.0	23.1	26.1
Tamarack	.0	.3	.0	1.4	.0	.0	.0	.0	.0	.0	1.7	50.8
Red spruce	21.9	36.9	37.9	32.8	24.1	10.8	6.9	1.7	2.1	.0	175.2	16.9
Red pine	.1	.4	1.9	1.1	5.8	5.7	1.9	.9	1.3	.0	19.2	94.8
White pine	20.4	30.4	45.3	39.3	39.3	32.0	21.3	12.8	29.0	7.8	277.7	13.8
Northern white-cedar	.9	.6	.8	.6	.5	.0	.0	.0	.0	.0	3.4	61.3
Hemlock	25.5	37.4	42.5	58.0	45.0	31.3	17.3	10.9	11.6	.9	280.4	14.2
Other softwoods	.2	.3	.0	.0	.0	.0	.0	.0	.0	.0	.5	100.0
Total softwoods	76.7	112.9	132.9	135.8	116.5	79.9	47.4	26.3	44.0	8.7	781.1	8.0
Sugar maple	52.1	96.0	123.1	142.2	125.0	99.1	52.1	51.4	58.2	9.9	809.1	7.1
Red maple	34.3	76.1	65.4	69.5	49.9	49.1	18.6	14.1	14.8	1.2	393.0	10.1
Yellow birch	13.8	30.6	46.4	42.0	34.9	22.7	11.6	7.9	12.0	2.5	224.4	10.7
Paper birch	22.1	51.0	74.2	35.1	23.5	9.7	3.8	3.9	.0	.0	223.2	13.2
Beech	19.8	41.4	48.2	48.6	33.5	23.5	17.0	10.8	9.3	1.4	253.2	10.1
White ash	13.5	29.4	34.1	31.6	28.3	23.7	8.8	5.1	1.1	.0	175.6	13.0
Black ash	.0	.3	.0	.0	.0	.0	.0	.0	.0	.0	.3	100.0
Aspen	6.3	8.4	19.8	11.7	10.5	7.1	5.1	.0	1.1	.0	70.0	19.3
White oaks	.4	4.8	3.0	3.4	1.5	.7	.8	1.8	.6	1.2	18.4	42.6
Red oaks	6.1	14.3	23.2	34.1	21.2	25.8	18.2	9.2	15.8	3.8	171.8	18.3
Basswood	2.1	1.3	2.9	3.4	2.1	3.5	.7	.0	.0	1.2	17.1	27.8
Elm	2.8	4.9	7.2	7.1	3.5	2.4	1.5	.8	1.4	.0	31.6	29.6
Other hardwoods	25.6	27.7	34.0	34.6	19.3	9.5	7.5	3.3	1.1	.0	162.6	11.4
Total hardwoods	198.9	386.1	481.5	463.3	353.2	276.7	145.7	108.3	115.5	21.2	2,550.3	3.3
Total, all species	275.6	499.1	614.4	599.0	469.6	356.6	193.1	134.6	159.5	29.9	3,331.4	2.6
SE	4.8	4.9	4.3	4.2	4.9	6.2	8.0	10.7	10.9	29.9	2.6	

Table 65.--Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1997

(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+		
Balsam fir	14.2	17.9	20.0	8.3	3.7	4.7	.0	.0	.0	.0	68.7	26.3
Tamarack	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	100.0
Red spruce	24.1	33.0	34.1	42.9	31.3	24.5	12.9	5.8	3.3	.0	211.8	17.1
Red pine	.0	.0	3.9	3.7	4.2	6.9	2.3	1.2	4.4	.0	26.5	61.8
White pine	20.4	37.5	48.7	73.2	69.9	56.4	41.9	47.3	105.3	25.0	525.7	12.4
Northern white-cedar	.8	1.0	.0	.0	.0	.0	.0	.0	.0	.0	1.8	58.1
Hemlock	30.3	48.0	49.0	61.1	63.6	59.6	34.4	22.7	38.7	3.5	410.8	11.6
Other softwoods	.2	.2	1.4	1.6	2.0	1.4	.0	.0	.0	.0	6.7	90.0
Total softwoods	90.1	137.5	157.0	190.8	174.7	153.5	91.4	76.9	151.7	28.5	1,252.1	7.2
Sugar maple	59.5	105.8	145.1	154.8	161.5	132.9	66.6	58.4	121.0	24.3	1,030.0	7.5
Red maple	42.9	89.6	111.9	96.6	98.5	50.7	43.9	22.5	43.8	18.6	619.0	9.2
Yellow birch	14.7	27.5	41.9	47.3	38.4	31.4	19.9	9.2	13.9	2.3	246.6	9.8
Paper birch	15.8	44.2	70.3	66.4	43.2	16.2	4.2	3.3	2.1	.0	265.7	11.4
Beech	28.9	58.7	61.3	65.2	44.6	28.5	31.7	5.8	25.4	.0	350.2	10.6
White ash	16.4	29.7	47.8	37.9	25.5	14.9	22.1	14.5	9.2	12.0	229.8	11.4
Black ash	.4	.6	.6	.9	.0	.0	4.4	.0	.0	.0	6.8	89.4
Aspen	4.5	10.3	8.9	29.4	15.0	24.4	13.2	.8	.0	.0	106.7	19.7
White oaks	1.0	3.4	8.9	4.5	3.6	3.2	1.4	2.6	2.2	3.6	34.6	36.9
Red oaks	6.7	15.0	19.3	37.1	48.3	42.3	25.8	3.4	38.6	10.3	246.9	14.3
Basswood	2.4	2.5	6.3	5.7	1.7	4.0	.0	.0	.0	.0	22.5	23.3
Elm	.8	.6	.8	.0	1.6	.0	.0	.0	.0	.0	3.8	37.6
Other hardwoods	22.0	50.2	58.1	49.6	33.6	12.7	8.7	5.9	6.9	.0	247.7	10.1
Total hardwoods	216.0	438.2	581.2	595.3	515.5	361.2	242.0	126.5	263.3	71.2	3,410.3	3.3
Total, all species	306.1	575.7	738.2	786.1	690.1	514.7	333.4	203.4	415.0	99.7	4,662.4	2.9
SE	4.1	3.7	4.4	4.8	5.2	6.0	8.5	10.5	10.5	31.3	2.9	

Table 66.--Net volume of growing-stock trees on timberland by species and stand-size class, Southern Unit, Vermont, 1983

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	15.0	7.6	.5	.0	23.1	26.1
Tamarack	.5	1.2	.0	.0	1.7	50.8
Red spruce	111.2	63.6	.3	.0	175.2	16.9
Red pine	18.1	1.0	.0	.0	19.2	94.8
White pine	166.5	104.1	7.1	.0	277.7	13.8
Northern white-cedar	1.9	1.0	.4	.0	3.4	61.3
Hemlock	232.3	48.1	.0	.0	280.4	14.2
Other softwoods	.0	.5	.0	.0	.5	100.0
Total softwoods	545.6	227.1	8.4	.0	781.1	8.0
Sugar maple	648.8	158.8	1.4	.0	809.1	7.1
Red maple	235.4	157.6	.0	.0	393.0	10.1
Yellow birch	156.1	68.3	.0	.0	224.4	10.7
Paper birch	94.1	129.1	.0	.0	223.2	13.2
Beech	186.3	66.0	1.0	.0	253.2	10.1
White ash	79.1	94.8	1.7	.0	175.6	13.0
Black ash	.0	.3	.0	.0	.3	100.0
Aspen	25.8	42.7	1.6	.0	70.0	19.3
White oaks	3.3	14.4	.6	.0	18.4	42.6
Red oaks	97.2	72.8	1.8	.0	171.8	18.3
Basswood	10.1	7.0	.0	.0	17.1	27.8
Elm	16.0	14.3	1.2	.0	31.6	29.6
Other hardwoods	92.3	69.1	1.2	.0	162.6	11.4
Total hardwoods	1,644.5	895.2	10.6	.0	2,550.3	3.3
Total, all species	2,190.1	1,122.3	19.0	.0	3,331.4	2.6
SE	5.4	9.2	28.5	.0	2.6	

Table 67.--Net volume of growing-stock trees on timberland by species and stand-size class, Southern Unit, Vermont, 1997

(In millions of cubic feet)

Species group	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Balsam fir	40.7	25.5	2.5	.0	68.7	26.3
Tamarack	.1	.0	.0	.0	.1	100.0
Red spruce	179.0	31.4	1.3	.0	211.8	17.1
Red pine	21.6	.0	4.9	.0	26.5	61.8
White pine	462.7	58.3	4.7	.0	525.7	12.4
Northern white-cedar	1.3	.0	.5	.0	1.8	58.1
Hemlock	392.9	17.9	.0	.0	410.8	11.6
Other softwoods	6.5	.3	.0	.0	6.7	90.0
Total softwoods	1,104.8	133.4	14.0	.0	1,252.1	7.2
Sugar maple	891.4	136.2	2.3	.0	1,030.0	7.5
Red maple	472.9	144.5	1.6	.0	619.0	9.2
Yellow birch	204.3	42.2	.1	.0	246.6	9.8
Paper birch	195.1	70.7	.0	.0	265.7	11.4
Beech	306.9	38.4	4.8	.0	350.2	10.6
White ash	160.7	66.1	3.0	.0	229.8	11.4
Black ash	6.3	.1	.5	.0	6.8	89.4
Aspen	82.8	21.3	2.5	.0	106.7	19.7
White oaks	28.2	6.4	.0	.0	34.6	36.9
Red oaks	189.8	57.0	.0	.0	246.9	14.3
Basswood	19.2	3.3	.0	.0	22.5	23.3
Elm	2.6	1.0	.2	.0	3.8	37.6
Other hardwoods	180.9	64.2	2.5	.0	247.7	10.1
Total hardwoods	2,741.2	651.5	17.6	.0	3,410.3	3.3
Total, all species	3,846.0	784.9	31.6	.0	4,662.4	2.9
SE	4.3	11.3	34.7	.0	2.9	

Percent of growing-stock volume by forest-type group
Southern Unit of Vermont, 1997

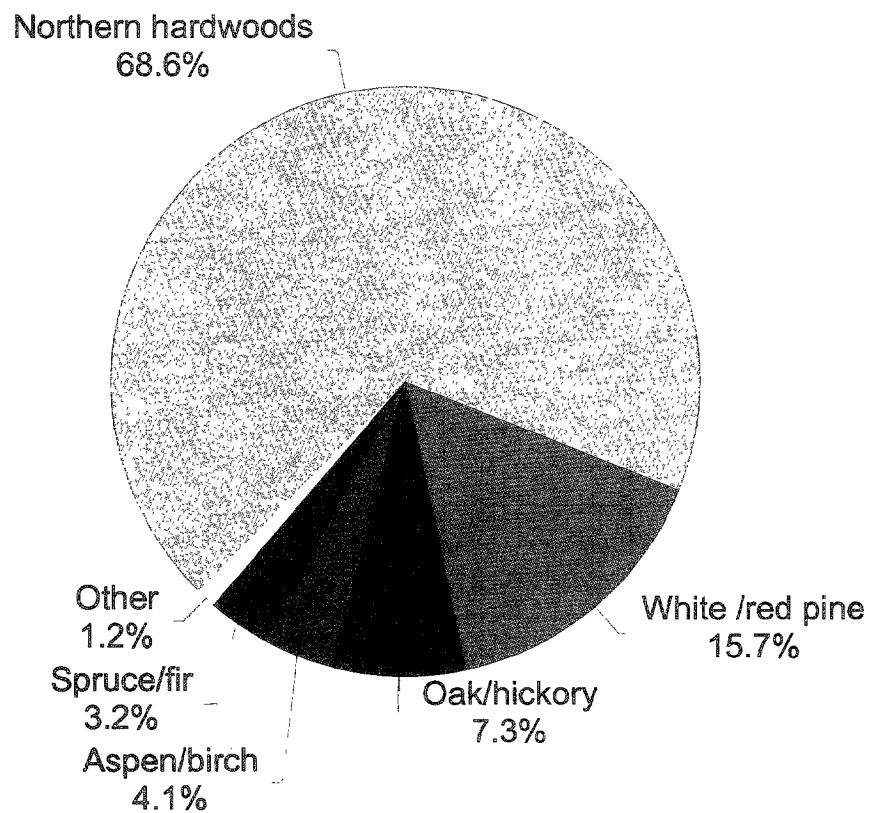


Table 68.--Net volume of growing-stock trees on timberland by forest type and stand-size class, Southern Unit, Vermont, 1997

(In millions of cubic feet)

Forest type	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Red pine	17.3	.0	.0	.0	17.3	100.0
White pine	306.8	.9	.0	.0	307.7	26.4
White pine/hemlock	134.3	17.7	4.4	.0	156.4	31.2
Hemlock	246.4	3.4	.0	.0	249.7	25.4
White/red pine group	704.7	21.9	4.4	.0	731.1	15.2
Balsam fir	20.8	3.7	5.0	.0	29.5	64.6
Red spruce	84.8	.0	.0	.0	84.8	47.7
Red spruce/balsam fir	22.0	.0	2.9	.0	24.9	74.3
Norway spruce	6.5	.0	.0	.0	6.5	100.0
Northern white-cedar	5.4	.0	.0	.0	5.4	100.0
Spruce/fir group	139.5	3.7	7.9	.0	151.1	32.2
Wh. pine/no.red oak/wh. ash	28.4	5.5	.0	.0	33.9	53.7
Oak/pine group	28.4	5.5	.0	.0	33.9	53.7
Chestnut oak	16.3	.0	.0	.0	16.3	100.0
White oak/red oak/hickory	33.0	30.6	.0	.0	63.6	51.0
Northern red oak	57.1	19.5	.0	.0	76.6	44.9
Mixed central hardwoods	136.8	46.5	.0	.0	183.3	31.1
Oak/hickory group	243.2	96.6	.0	.0	339.8	21.8
Black ash/Amer. elm/red maple	11.3	.0	.9	.0	12.3	92.6
Willow	.0	.0	1.1	.0	1.1	71.1
American elm/green ash	.0	6.4	.0	.0	6.4	100.0
Elm/ash/red maple group	11.3	6.4	2.0	.0	19.8	65.9
Sugar maple/beech/yellow birch	1,777.0	295.8	6.8	.0	2,079.6	6.8
Red maple/northern hardwoods	391.4	156.4	1.2	.0	549.1	16.9
Pin cherry/reverting field	.0	6.0	2.0	.0	8.0	56.7
Mixed northern hardwoods	417.7	138.6	4.5	.0	560.7	16.7
Northern hardwoods group	2,586.1	596.8	14.5	.0	3,197.4	4.7
Aspen	29.7	20.9	2.7	.0	53.3	50.6
Paper birch	103.0	33.0	.0	.0	136.1	35.5
Aspen/birch group	132.7	53.9	2.7	.0	189.4	28.7
All forest types	3,846.0	784.9	31.6	.0	4,662.4	2.9
SE	4.3	11.3	34.7	.0	2.9	

Table 69.--Net volume of growing-stock trees on timberland by species and forest-type group, Southern Unit, Vermont, 1983

(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		
Balsam fir	4.1	6.6	.0	.0	.0	.0	.0	9.6	2.9	23.1	26.1
Tamarack	.0	.0	.0	.0	.0	.0	.0	1.7	.0	1.7	50.8
Red spruce	22.2	49.1	.0	.0	2.4	.0	.0	90.5	11.0	175.2	16.9
Red pine	19.2	.0	.0	.0	.0	.0	.0	.0	.0	19.2	94.8
White pine	144.9	2.8	.0	4.0	19.6	.0	.1	80.6	25.6	277.7	13.8
Northern white-cedar	1.9	.0	.0	.0	.0	.0	.8	.7	.0	3.4	61.3
Hemlock	149.1	.0	.0	.0	5.0	.0	1.0	117.5	7.7	280.4	14.2
Other softwoods	.5	.0	.0	.0	.0	.0	.0	.0	.0	.5	100.0
Total softwoods	341.8	58.5	.0	4.0	27.0	.0	2.0	300.7	47.2	781.1	8.0
Sugar maple	16.9	3.4	.0	1.6	9.7	.0	.7	764.1	12.6	809.1	7.1
Red maple	26.9	4.8	.0	.0	11.2	.0	10.9	319.0	20.2	393.0	10.1
Yellow birch	10.2	2.0	.0	.0	.5	.0	.0	211.3	.4	224.4	10.7
Paper birch	18.1	4.9	.0	1.7	7.1	.0	1.3	90.6	99.4	223.2	13.2
Beech	3.6	.0	.0	.0	13.7	.0	.4	231.5	4.0	253.2	10.1
White ash	5.5	.6	.0	.0	2.8	.0	17.8	136.7	12.2	175.6	13.0
Black ash	.0	.0	.0	.0	.0	.0	.0	.3	.0	.3	100.0
Aspen	11.0	.5	.0	.0	2.1	.0	3.9	26.7	25.7	70.0	19.3
White oaks	.5	.0	.0	.0	13.8	.0	1.0	3.0	.0	18.4	42.6
Red oaks	8.0	.0	.0	.9	106.5	.0	.9	45.0	10.5	171.8	18.3
Basswood	.5	.0	.0	.0	2.2	.0	.8	13.7	.0	17.1	27.8
Elm	3.3	.0	.0	.0	1.2	.0	13.7	9.1	4.3	31.6	29.6
Other hardwoods	17.1	.4	.0	.0	14.7	.0	3.1	118.3	8.9	162.6	11.4
Total hardwoods	121.6	16.8	.0	4.3	185.6	.0	54.5	1,969.5	198.1	2,550.3	3.3
Total, all species	463.4	75.2	.0	8.2	212.6	.0	56.5	2,270.2	245.3	3,331.4	2.6
SE	16.6	37.3	.0	100.0	25.0	.0	42.0	4.8	23.1	2.6	

Table 70.--Net volume of growing-stock trees on timberland by species and forest-type group, Southern Unit, Vermont, 1997

(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		
Balsam fir	7.0	25.8	.0	.0	.0	.0	.0	31.0	4.9	68.7	26.3
Tamarack	.0	.0	.0	.1	.0	.0	.0	.0	.0	.1	100.0
Red spruce	14.0	77.5	.0	.0	.8	.0	.0	93.8	25.7	211.8	17.1
Red pine	21.6	.0	.0	.0	.0	.0	.0	4.9	.0	26.5	61.8
White pine	296.1	2.9	.0	14.7	32.2	.0	.0	161.2	18.6	525.7	12.4
Northern white-cedar	.4	.8	.0	.0	.0	.0	.5	.0	.0	1.8	58.1
Hemlock	201.0	1.4	.0	.0	17.3	.0	.0	177.3	13.8	410.8	11.6
Other softwoods	.3	6.3	.0	.0	.0	.0	.0	.2	.0	6.7	90.0
Total softwoods	540.4	114.7	.0	14.8	50.3	.0	.5	468.4	63.0	1,252.1	7.2
Sugar maple	19.0	2.6	.0	9.3	27.3	.0	.3	964.2	7.4	1,030.0	7.5
Red maple	53.3	16.3	.0	2.9	25.9	.0	4.6	508.5	7.5	619.0	9.2
Yellow birch	11.3	1.3	.0	.0	.5	.0	.0	230.5	3.0	246.6	9.8
Paper birch	14.3	2.8	.0	.0	15.6	.0	1.2	174.2	57.7	265.7	11.4
Beech	8.4	4.7	.0	.0	19.5	.0	.0	314.6	3.1	350.2	10.6
White ash	15.3	.3	.0	5.1	16.3	.0	.3	189.1	3.4	229.8	11.4
Black ash	.0	.0	.0	.0	.0	.0	6.6	.3	.0	6.8	89.4
Aspen	14.3	5.2	.0	.0	3.4	.0	.9	54.1	28.8	106.7	19.7
White oaks	.4	.0	.0	.0	30.1	.0	.0	4.1	.0	34.6	36.9
Red oaks	24.8	.0	.0	.7	127.9	.0	.0	82.9	10.6	246.9	14.3
Basswood	3.0	.0	.0	.0	.4	.0	.0	17.5	1.7	22.5	23.3
Elm	1.0	.0	.0	.0	.0	.0	.1	2.6	.0	3.8	37.6
Other hardwoods	25.8	3.2	.0	1.1	22.7	.0	5.4	186.4	3.1	247.7	10.1
Total hardwoods	190.7	36.3	.0	19.1	289.5	.0	19.3	2,729.0	126.3	3,410.3	3.3
Total, all species	731.1	151.1	.0	33.9	339.8	.0	19.8	3,197.4	189.4	4,662.4	2.9
SE	15.2	32.2	.0	53.7	21.8	.0	65.9	4.7	28.7	2.9	

Table 71.--Net volume of growing-stock in the sawlog portion of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1997

(In millions of cubic 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+		
Balsam fir	16.8	7.2	3.3	4.3	.0	.0	.0	.0	31.6	28.2
Red spruce	28.6	37.4	28.0	22.3	11.9	5.4	3.0	.0	136.5	18.4
Red pine	3.3	3.2	3.8	6.3	2.1	1.1	4.1	.0	23.8	62.2
White pine	41.0	63.7	62.5	51.4	38.7	44.0	98.5	23.4	423.0	12.9
Hemlock	41.2	53.1	56.8	54.2	31.7	21.1	36.2	3.3	297.7	12.5
Other softwoods	1.2	1.4	1.8	1.3	.0	.0	.0	.0	5.6	96.1
Total softwoods	132.0	166.0	156.2	139.7	84.3	71.5	141.8	26.7	918.2	8.0
Sugar maple	.0	113.9	130.8	111.7	56.6	49.6	102.9	20.7	586.2	9.1
Red maple	.0	71.1	79.8	42.6	37.3	19.1	37.3	15.8	303.0	11.5
Yellow birch	.0	34.8	31.1	26.3	16.9	7.9	11.9	2.0	130.9	11.7
Paper birch	.0	48.8	35.0	13.6	3.6	2.8	1.8	.0	105.7	15.2
Beech	.0	48.0	36.1	23.9	27.0	4.9	21.6	.0	161.5	14.0
White ash	.0	27.9	20.6	12.5	18.8	12.3	7.8	10.2	110.1	15.7
Black ash	.0	.7	.0	.0	3.8	.0	.0	.0	4.4	100.0
Aspen	.0	21.7	12.2	20.5	11.2	.7	.0	.0	66.2	22.5
White oaks	.0	3.3	2.9	2.7	1.2	2.2	1.9	3.1	17.4	41.5
Red oaks	.0	27.3	39.1	35.5	21.9	2.9	32.8	8.8	168.4	15.2
Basswood	.0	4.2	1.3	3.3	.0	.0	.0	.0	8.9	30.8
Elm	.0	.0	1.3	.0	.0	.0	.0	.0	1.3	72.1
Other hardwoods	.0	36.5	27.2	10.7	7.4	5.0	5.9	.0	92.7	13.5
Total hardwoods	.0	438.1	417.5	303.4	205.7	107.5	223.8	60.5	1,756.6	4.5
Total, all species	132.0	604.1	573.7	443.1	290.0	179.1	365.6	87.2	2,674.8	3.8
SE	10.5	4.8	5.2	6.0	8.5	10.5	10.5	31.5	3.8	

Sawtimber volume on timberland, for selected species and percent change, Southern Unit of Vermont, 1983 and 1997

(Volume increased by 58.7 percent for all species)

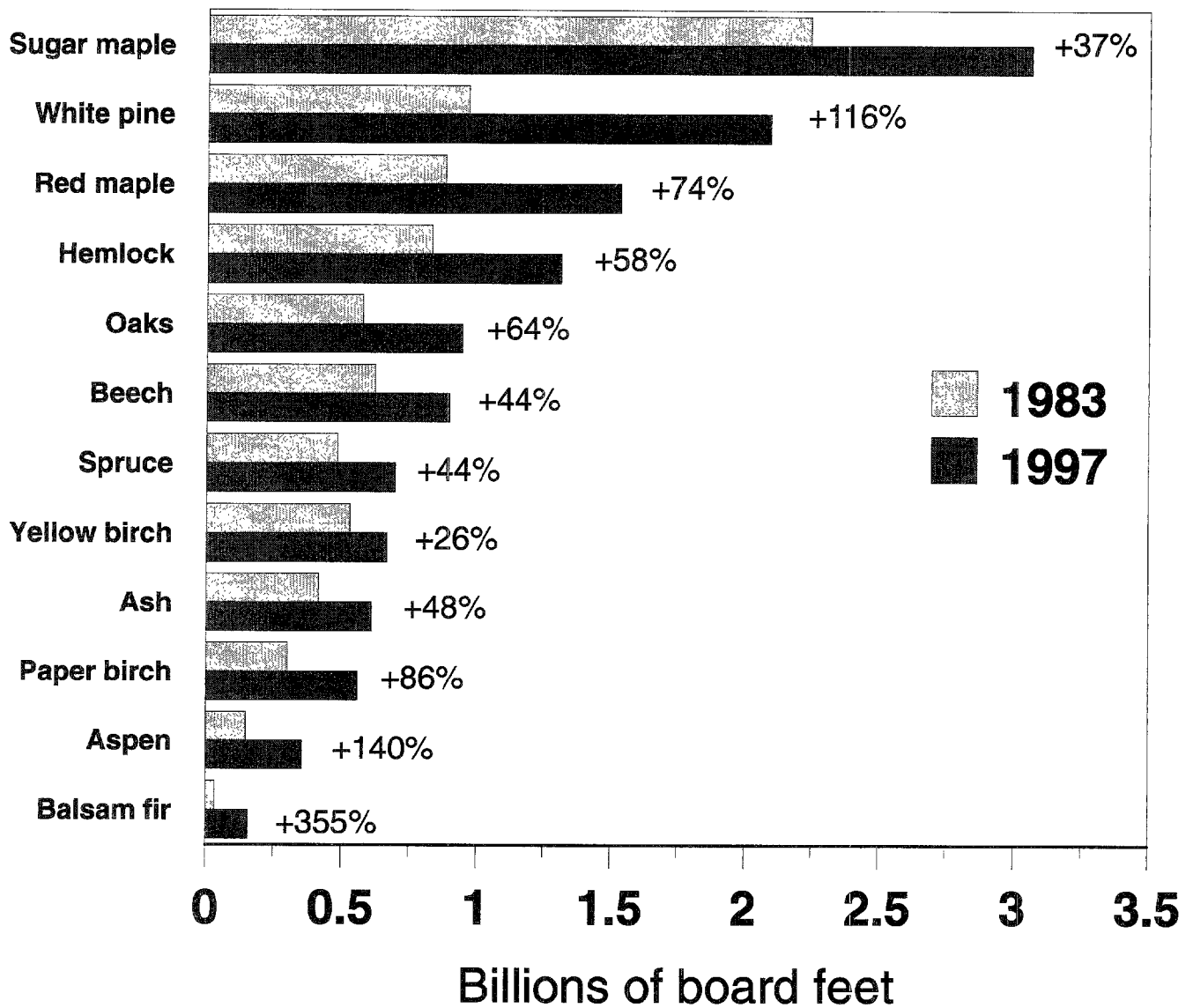


Table 72.--Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

(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+		
Balsam fir	16.3	10.1	7.6	.0	.0	.0	.0	.0	34.0	32.6
Tamarack	.0	5.0	.0	.0	.0	.0	.0	.0	5.0	57.8
Red spruce	133.3	137.2	108.1	51.3	34.5	8.4	10.8	.0	483.4	18.4
Red pine	6.1	4.3	26.2	27.0	9.2	4.2	6.8	.0	83.9	97.8
White pine	144.1	154.0	172.4	147.0	98.9	59.4	145.7	44.3	965.8	14.6
Northern white-cedar	1.9	1.7	1.4	.0	.0	.0	.0	.0	5.1	75.0
Hemlock	125.9	206.5	182.0	129.7	77.6	48.6	56.6	3.5	830.4	15.3
Total softwoods	427.4	518.9	497.7	355.1	220.2	120.6	219.8	47.8	2,407.5	9.0
Sugar maple	.0	518.7	521.2	406.3	232.0	227.4	282.2	53.5	2,241.2	8.5
Red maple	.0	244.8	197.9	211.8	82.9	65.7	72.6	6.0	881.7	12.7
Yellow birch	.0	158.7	144.8	91.2	46.1	31.5	43.8	13.5	529.7	12.8
Paper birch	.0	133.4	97.5	39.3	14.9	15.8	.0	.0	300.8	18.2
Beech	.0	195.0	138.9	107.5	80.5	48.0	44.9	7.3	622.1	12.2
White ash	.0	120.9	122.0	103.3	38.7	24.3	4.8	.0	413.9	14.1
Aspen	.0	44.8	44.1	30.9	22.7	.0	5.2	.0	147.7	22.9
White oaks	.0	12.3	5.8	2.9	6.3	8.4	4.0	3.8	43.5	39.6
Red oaks	.0	119.7	86.8	106.5	82.4	43.6	72.9	19.5	531.5	20.7
Basswood	.0	11.7	10.0	18.2	3.2	.0	.0	5.9	49.1	30.4
Elm	.0	26.0	13.3	8.8	11.6	3.4	9.2	.0	72.2	31.9
Other hardwoods	.0	130.9	81.0	37.6	34.7	14.3	4.1	.0	302.6	14.9
Total hardwoods	.0	1,716.8	1,463.3	1,164.5	656.0	482.5	543.6	109.5	6,136.1	4.5
Total, all species	427.4	2,235.6	1,961.0	1,519.6	876.2	603.0	763.5	157.3	8,543.6	3.5
SE	10.7	4.2	4.9	6.2	8.1	10.8	11.0	30.4	3.5	

Table 73.--Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1997

(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+		
Balsam fir	76.6	35.7	17.9	24.7	.0	.0	.0	.0	154.8	28.3
Red spruce	125.0	191.6	144.6	122.6	64.2	30.6	18.5	.0	697.2	18.7
Red pine	13.1	15.3	20.0	35.6	11.6	6.2	24.1	.0	125.9	63.7
White pine	159.8	285.0	299.5	252.2	196.1	227.1	531.9	140.3	2,092.1	13.6
Hemlock	154.0	217.7	251.6	243.5	148.4	98.7	186.3	12.9	1,313.1	13.1
Other softwoods	4.2	4.3	8.3	5.9	.0	.0	.0	.0	22.8	98.0
Total softwoods	532.7	749.7	742.0	684.5	420.3	362.6	760.8	153.3	4,405.9	8.4
Sugar maple	.0	574.7	671.8	565.3	290.0	260.8	575.2	124.7	3,062.5	9.5
Red maple	.0	346.3	400.0	217.2	194.4	97.1	199.4	77.8	1,532.1	11.5
Yellow birch	.0	187.8	159.1	131.1	79.3	35.9	60.5	13.3	667.2	12.0
Paper birch	.0	267.2	180.6	72.5	19.4	9.7	8.7	.0	558.2	15.3
Beech	.0	275.4	195.0	126.2	150.8	24.4	126.7	.0	898.5	14.1
White ash	.0	149.0	108.3	65.6	101.9	68.3	41.2	51.7	585.9	15.7
Black ash	.0	3.7	.0	.0	21.5	.0	.0	.0	25.2	100.0
Aspen	.0	115.3	69.6	104.7	62.1	3.3	.0	.0	355.0	23.1
White oaks	.0	15.6	12.3	11.6	6.1	12.8	8.0	12.4	78.8	41.6
Red oaks	.0	134.2	198.2	177.2	116.0	14.3	170.7	54.7	865.2	15.8
Basswood	.0	18.8	7.5	17.8	.0	.0	.0	.0	44.1	32.6
Elm	.0	.0	5.2	.0	.0	.0	.0	.0	5.2	71.8
Other hardwoods	.0	183.5	142.0	52.7	37.3	27.4	32.3	.0	475.1	13.6
Total hardwoods	.0	2,271.5	2,149.5	1,542.0	1,078.7	554.0	1,222.7	334.5	9,153.0	4.7
Total, all species	532.7	3,021.2	2,891.5	2,226.5	1,499.0	916.6	1,983.6	487.8	13,558.9	4.0
SE	11.0	4.8	5.3	6.2	8.7	10.8	10.9	33.7	4.0	

Table 74.--Average annual net change of growing-stock volume on timberland by species and component of change, Southern Unit, Vermont, 1997

(In thousands of cubic feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	1,133	666	1,799	-400	40	-103	1,335	-96	1,239
Tamarack	0	22	22	-114	0	0	-92	0	-92
Red spruce	1,736	2,255	3,991	-1,193	1,077	-504	3,371	-729	2,641
Red pine	0	289	289	-191	0	0	97	0	97
White pine	4,303	8,912	13,215	-714	5,590	-2,493	15,598	-6,982	8,617
Northern white-cedar	18	41	60	-32	0	0	28	0	28
Hemlock	2,959	6,935	9,895	-639	1,913	-1,040	10,129	-1,986	8,142
Other softwoods	36	44	80	0	57	0	136	0	136
Total softwoods	10,185	19,165	29,350	-3,284	8,676	-4,140	30,603	-9,794	20,809
Sugar maple	6,955	11,846	18,801	-3,761	9,365	-2,700	21,705	-6,223	15,482
Red maple	4,570	9,585	14,155	-1,928	5,427	-2,311	15,343	-3,652	11,691
Yellow birch	1,657	2,229	3,887	-1,439	1,825	-518	3,754	-1,598	2,156
Paper birch	1,696	2,335	4,031	-4,233	1,498	-832	465	-1,468	-1,003
Beech	3,769	2,888	6,658	-2,390	4,937	-2,109	7,095	-2,511	4,585
White ash	2,735	3,490	6,225	-765	1,400	-61	6,799	-1,210	5,588
Black ash	211	208	420	0	0	0	420	-55	365
Aspen	1,348	626	1,974	-1,242	67	-202	597	-1,006	-409
White oaks	263	478	742	-237	0	-67	437	0	437
Red oaks	2,263	3,338	5,600	-158	730	-710	5,462	-2,432	3,030
Basswood	221	469	691	-131	155	0	714	-134	581
Elm	30	170	199	-1,506	56	0	-1,251	-241	-1,491
Other hardwoods	2,711	2,961	5,672	-1,065	896	-307	5,196	-1,412	3,784
Total hardwoods	28,431	40,623	69,055	-18,855	26,356	-9,819	66,737	-21,940	44,796
Total, all species	38,616	59,788	98,405	-22,139	35,032	-13,959	97,340	-31,734	65,605

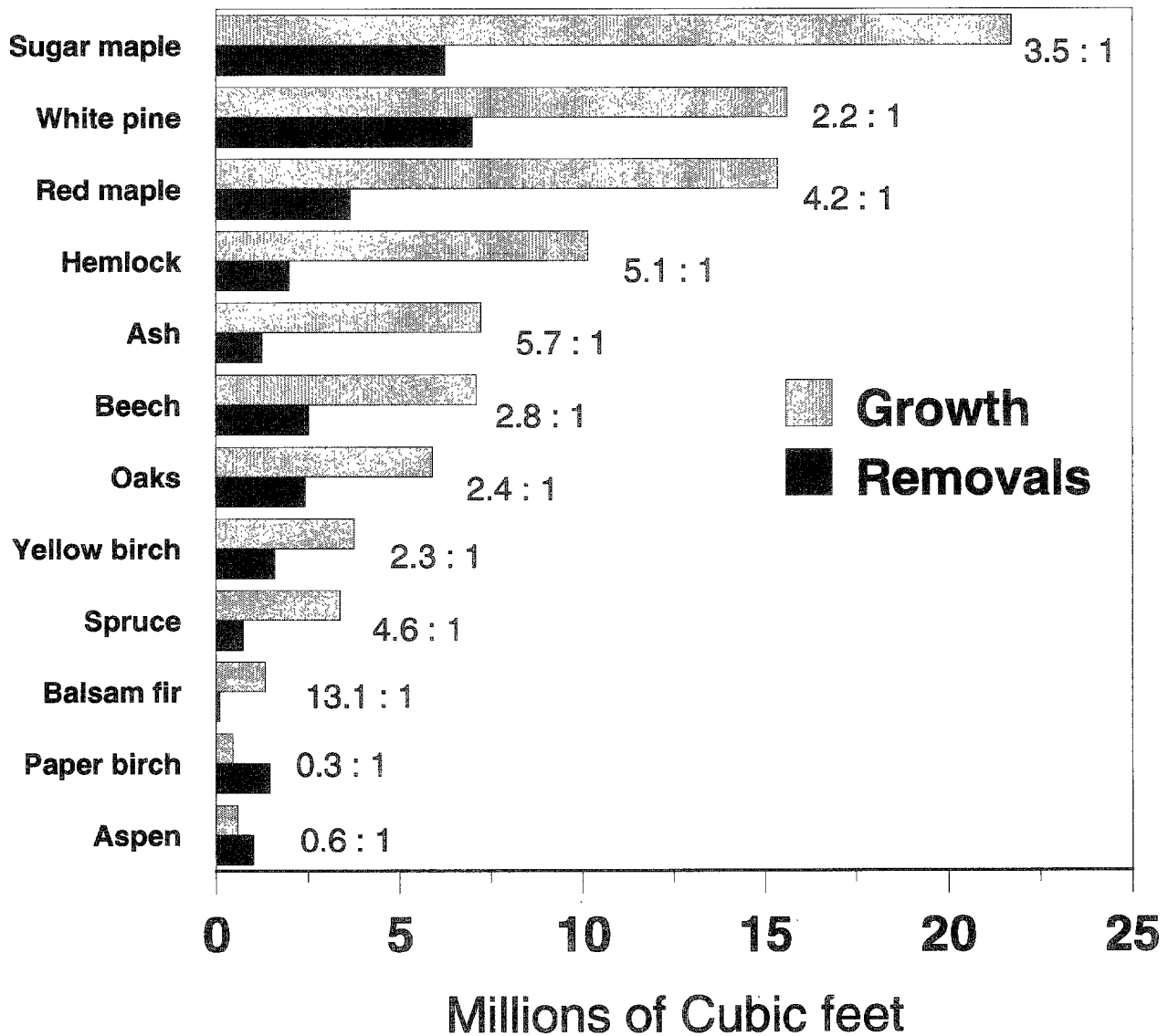
Table 75.--Average annual net change of sawtimber volume on timberland by species and component of change, Southern Unit, Vermont, 1997

(In thousands of board feet)

Species group	Component of change								Net change
	Ingrowth	Accretion	Gross growth	Mortality	Cull decrement	Cull increment	Net growth	Removals	
Balsam fir	2,687	967	3,655	-502	0	-411	2,741	-100	2,641
Tamarack	0	158	158	-404	0	0	-246	0	-246
Red spruce	6,499	9,828	16,328	-3,722	3,033	-1,083	14,555	-2,668	11,887
Red pine	0	1,721	1,721	-837	0	0	884	0	884
White pine	20,354	41,508	61,862	-1,910	23,846	-11,135	72,663	-31,657	41,007
Northern white-cedar	116	51	168	-80	0	0	88	0	88
Hemlock	12,719	25,935	38,653	-1,632	4,562	-2,957	38,627	-6,133	32,494
Other softwoods	66	65	131	0	0	0	131	0	131
Total softwoods	42,443	80,234	122,677	-9,088	31,442	-15,587	129,444	-40,558	88,887
Sugar maple	33,258	34,717	67,975	-12,641	27,327	-9,978	72,683	-21,619	51,063
Red maple	19,822	18,926	38,747	-2,422	7,514	-3,924	39,915	-13,409	26,506
Yellow birch	7,710	6,921	14,632	-3,137	3,257	-1,050	13,701	-3,729	9,973
Paper birch	9,323	3,171	12,495	-3,468	2,646	-552	11,121	-4,145	6,976
Beech	20,304	6,657	26,961	-9,149	15,783	-4,688	28,907	-7,385	21,523
White ash	14,471	9,376	23,847	-923	2,249	-228	24,945	-5,016	19,929
Black ash	747	890	1,637	0	0	0	1,637	0	1,637
Aspen	6,479	1,909	8,388	-1,579	293	-699	6,404	-2,001	4,403
White oaks	893	716	1,609	0	0	0	1,609	0	1,609
Red oaks	12,283	15,778	28,061	-428	2,703	-3,107	27,229	-10,118	17,111
Basswood	1,148	394	1,542	-321	0	0	1,221	-758	463
Elm	0	667	667	-2,548	202	0	-1,679	-594	-2,273
Other hardwoods	13,447	4,974	18,421	-791	925	-643	17,913	-4,424	13,489
Total hardwoods	139,887	105,097	244,984	-37,407	62,900	-24,867	245,610	-73,199	172,410
Total, all species	182,329	185,331	367,661	-46,495	94,342	-40,454	375,054	-113,757	261,297

Average annual growth and removals of growing-stock volume
and ratio of growth to removals for selected species
on timberland, Southern Unit of Vermont, 1983-97

(Ratio of growth/removals for all species is 3.1 : 1)



COUNTY TABLES

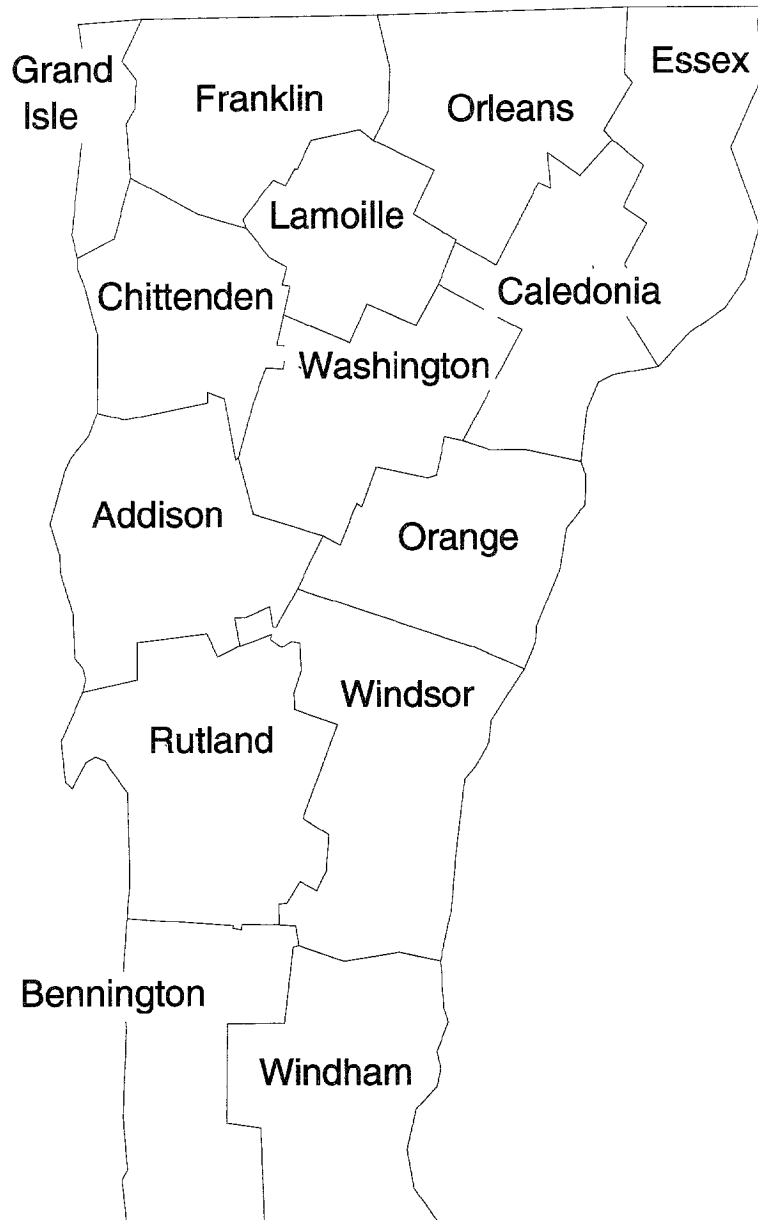


Table 76.--Net land area by county, and land class, Vermont, 1997

(In thousands of acres)

County	Land class					Nonforest land	All classes
	Timberland	Other-urban forest	Reserved forest	Other res forest	Total forest land		
Caledonia	345.5	.0	.0	.0	345.5	71.1	416.6
Essex	405.5	.0	.0	.0	405.5	20.3	425.8
Lamoille	216.6	.0	25.1	.0	241.7	53.1	294.8
Orange	342.6	.0	.0	.0	342.6	98.2	440.8
Orleans	325.4	6.8	.0	.0	332.2	113.8	446.0
Washington	339.2	3.8	6.7	.0	349.7	91.7	441.3
Franklin/Grand Isle	290.9	.0	.0	.0	290.9	169.7	460.6
Northern Unit	2,265.6	10.6	31.8	.0	2,308.1	617.9	2,925.9
Addison	239.6	4.0	49.0	.0	292.6	200.2	492.8
Bennington	349.3	3.7	24.7	.0	377.7	55.2	432.8
Chittenden	208.8	3.2	.0	.0	211.9	133.0	344.9
Rutland	472.5	.0	19.3	.0	491.8	104.8	596.6
Windham	436.2	.0	.0	.0	436.2	68.6	504.8
Windsor	510.5	.0	.0	.0	510.5	111.2	621.6
Southern Unit	2,216.8	10.9	93.0	.0	2,320.7	673.0	2,993.7
Total	4,482.5	21.5	124.8	.0	4,628.7	1,290.8	5,919.6

Table 77.--Area of timberland by county and ownership class, Vermont, 1997

(In thousands of acres)

County	Ownership class								All ownerships	SE
	National Forest	Misc. federal	State	County and municipal	Forest industry	Farmer	Corporate	Individual		
Caledonia	.0	.0	25.6	5.8	.0	20.1	19.5	274.5	345.5	3.3
Essex	.0	.0	36.4	7.1	114.3	15.8	96.5	135.3	405.5	1.2
Lamoille	.0	.0	25.2	.0	18.8	7.6	16.5	148.5	216.6	7.4
Orange	.0	.0	17.7	6.0	.0	24.7	.0	294.2	342.6	3.8
Orleans	.0	.0	.0	.0	6.2	35.8	26.0	257.4	325.4	3.5
Washington	5.3	.0	55.6	.0	.0	8.4	59.7	210.1	339.2	3.3
Franklin/Grand Isle	.0	.0	6.5	.0	38.5	45.9	12.2	187.8	290.9	4.3
Northern Unit	5.3	.0	167.1	18.9	177.8	158.2	230.5	1,507.8	2,265.6	1.4
Addison	45.4	.0	8.5	8.5	21.7	13.6	17.0	125.0	239.6	7.4
Bennington	107.4	.0	.0	26.2	.0	11.0	50.1	154.6	349.3	4.1
Chittenden	.0	6.3	41.0	.0	7.0	.0	13.6	140.9	208.8	5.1
Rutland	54.0	4.6	32.9	11.3	6.5	61.2	46.1	255.9	472.5	3.2
Windham	20.1	5.7	.0	6.5	13.3	10.1	77.4	303.1	436.2	1.9
Windsor	22.5	15.2	25.3	.0	26.4	1.4	68.1	351.6	510.5	2.7
Southern Unit	249.3	31.8	107.6	52.6	74.8	97.3	272.2	1,331.1	2,216.8	1.5
Total	254.6	31.8	274.7	71.5	252.6	255.6	502.7	2,838.9	4,482.5	1.0
SE	9.5	44.8	14.4	30.2	14.9	14.4	10.5	2.9	1.0	

Table 78.--Area of timberland by county and forest-type group, Vermont, 1997

(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		
Caledonia	28.3	105.8	.0	.0	6.5	.0	.0	196.8	8.0	345.5	3.3
Essex	1.8	86.1	.0	.0	.0	.0	3.2	270.7	43.6	405.5	1.2
Lamoille	19.4	17.1	.0	.0	.0	.0	5.3	167.5	7.3	216.6	7.4
Orange	87.4	23.9	.0	6.4	6.4	.0	.0	185.4	33.1	342.6	3.8
Orleans	10.2	118.6	.0	.0	1.1	.0	.0	174.4	21.1	325.4	3.5
Washington	32.9	36.3	.0	.0	.0	.0	.0	229.1	40.9	339.2	3.3
Franklin/Grand Isle	53.6	6.5	.0	6.0	.0	.0	24.1	200.5	.1	290.9	4.3
Northern Unit	233.6	394.4	.0	12.4	14.0	.0	32.6	1,424.5	154.2	2,265.6	1.4
Addison	20.1	1.5	.0	.0	10.6	.0	.0	175.1	32.3	239.6	7.4
Bennington	.5	.0	.0	5.4	18.3	.0	.0	325.0	.0	349.3	4.1
Chittenden	40.2	.0	.0	.0	.0	.0	7.1	161.6	.0	208.8	5.1
Rutland	59.8	35.7	.0	11.0	61.9	.0	18.9	266.2	19.1	472.5	3.2
Windham	64.7	22.2	.0	6.0	39.3	.0	.0	300.2	3.8	436.2	1.9
Windsor	72.9	6.2	.0	.0	19.0	.0	1.7	367.6	43.1	510.5	2.7
Southern Unit	258.1	65.6	.0	22.4	149.0	.0	27.7	1,595.6	98.4	2,216.8	1.5
Total	491.7	460.0	.0	34.7	163.1	.0	60.2	3,020.1	252.6	4,482.5	1.0
SE	9.7	9.8	.0	41.0	19.5	.0	29.1	2.7	14.8	1.0	

Table 79.--Area of timberland by county and stand-size class, Vermont, 1997

(In thousands of acres)

County	Stand-size class				All classes	SE
	Saw- timber	Pole- timber	Sapling and seedling	Non- stocked		
Caledonia	138.0	111.5	96.0	.0	345.5	3.3
Essex	160.8	171.5	73.2	.0	405.5	1.2
Lamoille	124.9	82.5	9.2	.0	216.6	7.4
Orange	251.5	64.1	26.9	.0	342.6	3.8
Orleans	148.7	112.0	64.7	.0	325.4	3.5
Washington	188.5	129.8	20.9	.0	339.2	3.3
Franklin/Grand Isle	145.7	113.4	29.2	2.6	290.9	4.3
Northern Unit	1,158.2	784.7	320.1	2.6	2,265.6	1.4
Addison	160.8	63.9	14.9	.0	239.6	7.4
Bennington	251.5	95.8	1.5	.5	349.3	4.1
Chittenden	151.6	33.3	23.9	.0	208.8	5.1
Rutland	345.3	100.3	26.9	.0	472.5	3.2
Windham	346.2	67.3	22.7	.0	436.2	1.9
Windsor	328.4	151.2	30.8	.0	510.5	2.7
Southern Unit	1,583.7	511.9	120.7	.5	2,216.8	1.5
Total	2,741.9	1,296.6	440.8	3.2	4,482.5	1.0
SE	2.9	5.8	10.1	85.3	1.0	

Table 80.--Area of timberland by county and stocking class of growing-stock trees, Vermont, 1997

(In thousands of acres)

County	Stocking class					All classes	SE
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked		
Caledonia	24.2	75.5	124.2	114.9	6.7	345.5	3.3
Essex	22.4	128.6	114.7	130.9	8.9	405.5	1.2
Lamoille	.0	10.5	57.2	148.9	.0	216.6	7.4
Orange	6.7	49.5	92.0	170.5	23.9	342.6	3.8
Orleans	11.8	88.3	151.9	71.8	1.6	325.4	3.5
Washington	4.4	42.4	119.6	166.5	6.2	339.2	3.3
Franklin/Grand Isle	2.6	49.7	142.1	94.6	1.8	290.9	4.3
Northern Unit	72.0	444.5	801.8	898.2	49.1	2,265.6	1.4
Addison	.0	35.4	79.0	119.2	6.1	239.6	7.4
Bennington	.5	47.6	112.6	179.1	9.4	349.3	4.1
Chittenden	22.9	19.6	89.0	72.5	4.7	208.8	5.1
Rutland	9.8	82.8	193.0	172.8	14.1	472.5	3.2
Windham	.0	30.8	128.0	259.3	18.1	436.2	1.9
Windsor	5.4	66.5	164.7	261.1	12.8	510.5	2.7
Southern Unit	38.6	282.7	766.3	1,064.0	65.3	2,216.8	1.5
Total	110.6	727.2	1,568.1	1,962.2	114.4	4,482.5	1.0
SE	22.7	8.1	5.1	4.1	21.2	1.0	

Table 81.--Net volume of growing-stock trees on timberland by county and forest-type group, Vermont, 1997

(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		
Caledonia	47.7	212.9	.0	.0	9.5	.0	.0	311.4	.7	582.4	7.6
Essex	7.3	130.1	.0	.0	.0	.0	8.0	381.8	41.9	569.0	7.6
Lamoille	51.6	27.4	.0	.0	.0	.0	2.7	331.2	16.7	429.6	8.4
Orange	210.3	50.5	.0	18.5	13.7	.0	.0	384.9	59.5	737.4	6.9
Orleans	25.8	168.8	.0	.0	1.8	.0	.0	263.7	43.3	503.3	7.9
Washington	82.7	86.8	.0	.0	.0	.0	.0	463.9	74.1	707.5	6.5
Franklin/Grand Isle	132.1	13.4	.0	11.3	.0	.0	32.8	288.8	.0	478.3	7.1
Northern Unit	557.5	689.8	.0	29.8	25.0	.0	43.5	2,425.7	236.2	4,007.6	2.8
Addison	50.4	6.5	.0	.0	26.4	.0	.0	292.9	66.5	442.7	9.7
Bennington	.0	.0	.0	9.5	28.7	.0	.0	657.5	.0	695.7	8.5
Chittenden	100.2	.0	.0	.0	.0	.0	11.3	267.8	.0	379.3	11.5
Rutland	145.5	75.3	.0	10.9	125.3	.0	8.0	508.3	34.8	908.0	6.3
Windham	218.7	54.4	.0	13.5	107.2	.0	.0	718.3	.0	1,112.1	5.7
Windsor	216.5	14.9	.0	.0	52.2	.0	.5	752.6	88.1	1,124.7	5.5
Southern Unit	731.1	151.1	.0	33.9	339.8	.0	19.8	3,197.4	189.4	4,662.4	2.9
Total	1,288.7	840.9	.0	63.7	364.8	.0	63.3	5,623.1	425.6	8,670.0	2.0
SE	11.0	11.7	.0	44.4	20.8	.0	36.5	3.5	18.7	2.0	

Table 82.--Net volume of growing-stock trees on timberland by county and stand-size class, Vermont, 1997

(In millions of cubic feet)

County	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Caledonia	342.7	203.2	36.5	.0	582.4	7.6
Essex	294.8	251.4	22.8	.0	569.0	7.6
Lamoille	282.5	146.4	2.7	.0	429.6	8.4
Orange	619.0	114.2	4.2	.0	737.4	6.9
Orleans	289.0	190.9	23.4	.0	503.3	7.9
Washington	490.4	209.7	7.4	.0	707.5	6.5
Franklin/Grand Isle	304.6	163.5	10.1	.1	478.3	7.1
Northern Unit	2,623.0	1,277.3	107.2	.1	4,007.6	2.8
Addison	328.2	113.4	1.0	.0	442.7	9.7
Bennington	581.1	114.0	.6	.0	695.7	8.5
Chittenden	341.1	36.9	1.3	.0	379.3	11.5
Rutland	759.1	142.5	6.5	.0	908.0	6.3
Windham	992.2	111.6	8.3	.0	1,112.1	5.7
Windsor	844.3	266.6	13.9	.0	1,124.7	5.5
Southern Unit	3,846.0	784.9	31.6	.0	4,662.4	2.9
Total	6,468.9	2,062.2	138.8	.1	8,670.0	2.0
SE	3.3	6.6	16.0	100.0	2.0	

Table 83.--Net volume of sawtimber trees on timberland by county and forest-type group, Vermont, 1997

(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		
Caledonia	106.8	455.0	.0	.0	11.4	.0	.0	714.0	1.1	1,288.3	9.7
Essex	21.8	251.4	.0	.0	.0	.0	28.6	779.6	64.6	1,146.0	11.3
Lamoille	144.9	37.3	.0	.0	.0	.0	4.0	799.7	21.0	1,007.0	11.2
Orange	650.2	92.8	.0	25.3	34.6	.0	.0	1,062.0	165.6	2,030.5	9.0
Orleans	97.3	329.2	.0	.0	.0	.0	.0	616.8	95.5	1,138.7	11.3
Washington	266.6	219.2	.0	.0	.0	.0	.0	1,109.9	128.8	1,724.5	9.8
Franklin/Grand Isle	417.9	7.0	.0	29.3	.0	.0	61.6	697.4	.0	1,213.3	11.6
Northern Unit	1,705.6	1,392.0	.0	54.6	45.9	.0	94.2	5,779.4	476.7	9,548.4	4.0
Addison	152.5	22.3	.0	.0	67.2	.0	.0	752.2	165.9	1,160.2	11.5
Bennington	.0	.0	.0	37.9	64.8	.0	.0	2,037.1	.0	2,139.8	11.2
Chittenden	317.0	.0	.0	.0	.0	.0	41.9	693.1	.0	1,052.0	15.0
Rutland	452.6	230.7	.0	14.1	276.9	.0	12.5	1,462.1	105.1	2,553.9	8.3
Windham	794.7	173.4	.0	39.8	322.4	.0	.0	2,134.5	.0	3,464.7	8.7
Windsor	706.3	39.2	.0	.0	189.3	.0	.0	2,042.5	210.9	3,188.2	7.6
Southern Unit	2,423.0	465.6	.0	91.8	920.7	.0	54.4	9,121.4	481.9	13,558.9	4.0
Total	4,128.6	1,857.6	.0	146.4	966.6	.0	148.7	14,900.8	958.6	23,107.2	2.9
SE	11.7	13.6	.0	46.5	23.8	.0	43.2	4.3	21.4	2.9	

Table 84.--Net volume of sawtimber trees on timberland by county and stand-size class, Vermont, 1997

(In millions of board feet)

County	Stand-size class				All classes	SE
	Saw-timber	Pole-timber	Sapling and seedling	Non-stocked		
Caledonia	892.8	338.4	57.1	.0	1,288.3	9.7
Essex	773.4	342.4	30.2	.0	1,146.0	11.3
Lamoille	817.5	185.5	4.0	.0	1,007.0	11.2
Orange	1,844.8	178.4	7.3	.0	2,030.5	9.0
Orleans	821.9	279.8	37.0	.0	1,138.7	11.3
Washington	1,392.8	324.8	6.9	.0	1,724.5	9.8
Franklin/Grand Isle	938.5	246.4	28.5	.0	1,213.3	11.6
Northern Unit	7,481.7	1,895.6	171.1	.0	9,548.4	4.0
Addison	939.3	218.5	2.4	.0	1,160.2	11.5
Bennington	1,958.3	181.5	.0	.0	2,139.8	11.2
Chittenden	1,017.1	34.9	.0	.0	1,052.0	15.0
Rutland	2,308.2	222.6	23.1	.0	2,553.9	8.3
Windham	3,262.1	178.0	24.6	.0	3,464.7	8.7
Windsor	2,688.9	463.3	36.0	.0	3,188.2	7.6
Southern Unit	12,174.0	1,298.8	86.1	.0	13,558.9	4.0
Total	19,655.7	3,194.4	257.2	.0	23,107.2	2.9
SE	3.7	7.4	23.4	.0	2.9	

Table 85.--Biomass of all trees and shrubs on timberland, by county and class of material, Vermont, 1997

(In thousands of dry tons)

County	Non-timber					Total trees and shrubs	SE
	Timber	Salvable dead trees	Saplings	Seedlings	Shrubs		
Caledonia	19,681	523	2,458	345	134	23,141	6.5
Essex	23,003	499	3,413	633	230	27,779	5.8
Lamoille	16,797	250	1,417	198	71	18,733	8.2
Orange	26,946	338	1,679	332	48	29,344	6.1
Orleans	19,023	329	2,640	395	78	22,464	6.9
Washington	26,880	385	1,977	358	57	29,658	5.6
Franklin/Grand Isle	18,444	459	1,796	280	39	21,018	5.9
Addison	17,603	197	1,533	221	185	19,739	8.2
Bennington	31,462	97	2,308	304	215	34,387	6.1
Chittenden	16,335	170	1,401	215	61	18,182	8.8
Rutland	38,184	370	2,346	404	142	41,447	5.2
Windham	40,868	468	2,294	347	84	44,060	4.8
Windsor	43,795	577	2,549	559	49	47,530	4.5
Total	339,023	4,663	27,811	4,592	1,393	377,483	1.7
SE	1.8	8.6	3.6	3.5	8.1	1.7	

Table 86.--Biomass of all timber on timberland, by county, class of timber, and component, Vermont, 1997

(In thousands of dry tons)

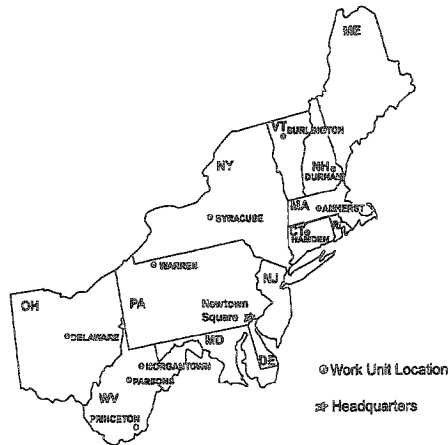
County	Growing stock trees					Total timber	SE
	Growing stock	Branches	Foliage	Stump and roots	Cull trees		
Caledonia	12,098	1,729	827	3,799	1,228	19,681	7.7
Essex	13,743	1,833	746	4,249	2,431	23,003	6.9
Lamoille	10,308	1,363	547	3,165	1,413	16,797	8.4
Orange	15,465	2,141	944	4,789	3,607	26,946	6.5
Orleans	10,847	1,547	731	3,409	2,489	19,023	8.3
Washington	15,667	2,116	883	4,833	3,381	26,880	6.1
Franklin/Grand Isle	11,238	1,530	636	3,474	1,566	18,444	6.5
Addison	10,915	1,368	479	3,288	1,553	17,603	8.2
Bennington	18,564	2,283	712	5,620	4,283	31,462	6.5
Chittenden	9,395	1,204	438	2,847	2,451	16,335	9.5
Rutland	21,600	2,833	1,095	6,590	6,067	38,184	5.5
Windham	25,598	3,470	1,406	7,875	2,519	40,868	5.2
Windsor	26,283	3,449	1,309	8,019	4,734	43,795	4.9
Total	201,720	26,869	10,754	61,957	37,723	339,023	1.8
SE	2.0	1.9	2.2	2.0	5.2	1.8	

Frieswyk, Thomas S.; Widmann, Richard H. 2000. **Forest statistics for Vermont: 1983 and 1997**. Resour. Bull. NE-00-145. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 130 p.

A statistical report on the fifth forest inventory of Vermont (1996-1998). Findings are displayed in 86 tables containing estimates of forest area, numbers of trees, timber volume, growth, change, and biomass. Data are presented at three levels: state, county, and region.

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





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