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Bulletin NE-87

1985



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# Forest Statistics for Vermont

## 1973 and 1983

Thomas S. Frieswyk  
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A statistical report on the fourth forest survey of Vermont conducted in 1982-1983 by the Forest Inventory and Analysis Unit, Northeastern Forest Experiment Station. Statistics for forest area, numbers of trees, timber volume, tree biomass, and timber products output are displayed at the state, unit, and county levels. The current inventory indicates that the state has approximately 6.3 billion cubic feet of growing-stock volume or 211.9 million tons of net green weight on 4.4221 million acres of timberland. The report includes reprocessed data from the 1973 survey for trend analysis.

### Foreword

The fourth inventory of Vermont was under the overall direction of Joseph E. Barnard, Project Leader of the Forest Inventory and Analysis Unit. John Peters assisted in the development and administration of the operating plan and had supervisory responsibility for the inventory process. Charles T. Scott was responsible for the design of the inventory and sample selection. David J. Alerich supervised the interpretation of aerial-photos and collection of data. He was assisted by Thomas B. Hartman, Joseph G. Reddan, and Karen Sykes. Members of the field crews were:

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David R. Dickson and Thomas S. Frieswyk applied FINSYS (Forest INventory SYStem), a generalized data processing system, to the specific needs of the Vermont inventory and produced summary tables for the state, geographic sampling units, and counties. Thomas W. Birch and Thomas S. Frieswyk were instrumental in assuring that the area estimates were consistent with the three previous inventories. Anne M. Malley assisted in various data processing capacities and prepared and balanced the tables in this report. Margaret Little, Carol McAfee, J. Roger Trettel, and Karen Sykes performed a variety of data editing and compilation tasks.

Robert L. Nevel, Richard H. Widmann, and Eric H. Wharton, with the assistance of William G. Gove, Vermont Department of Forests, Parks, and Recreation, collected and compiled the data on timber products output and timber removals.

Carmela M. Hyland was responsible for administrative and secretarial services. Marie Pennestri typed the text for this report.



# FOREST STATISTICS FOR VERMONT 1973 AND 1983

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## CONTENTS

HIGHLIGHTS.....	1
INTRODUCTION.....	3
RELIABILITY OF THE ESTIMATES.....	3
COMPARISON BETWEEN INVENTORIES.....	4
INDEX TO TABLES.....	5
RESOURCE TABLES.....	
State.....	9
Northern Unit.....	51
Southern Unit.....	65
County.....	79
LITERATURE CITED.....	93
APPENDIX.....	
Definition of terms.....	93
Log-grade Classification.....	98
Tree Species of Vermont.....	101
Metric Equivalents of Units Used in This Report.....	102



## Highlights

- \* The report contains both 1983 tables and updated 1973 tables (printed in italics).

### **AREA**

- \* Vermont, with 4,544 thousand acres of forest land is 77 percent forested. Forest land has increased 5 percent since 1966.
- \* More than 97 percent of Vermont's forest land, 4,422 thousand acres, is classified as timberland (formerly known as commercial forest land).
- \* Area of timberland has remained fairly stable between inventories.
- \* Sawtimber stands continue to dominate, with 65 percent of timberland area or 2,888 thousand acres. This is a 45 percent increase over the 1973 survey. The forest is continuing to mature.
- \* Ninety percent of Vermont's timberland is privately owned.

### **BIOMASS**

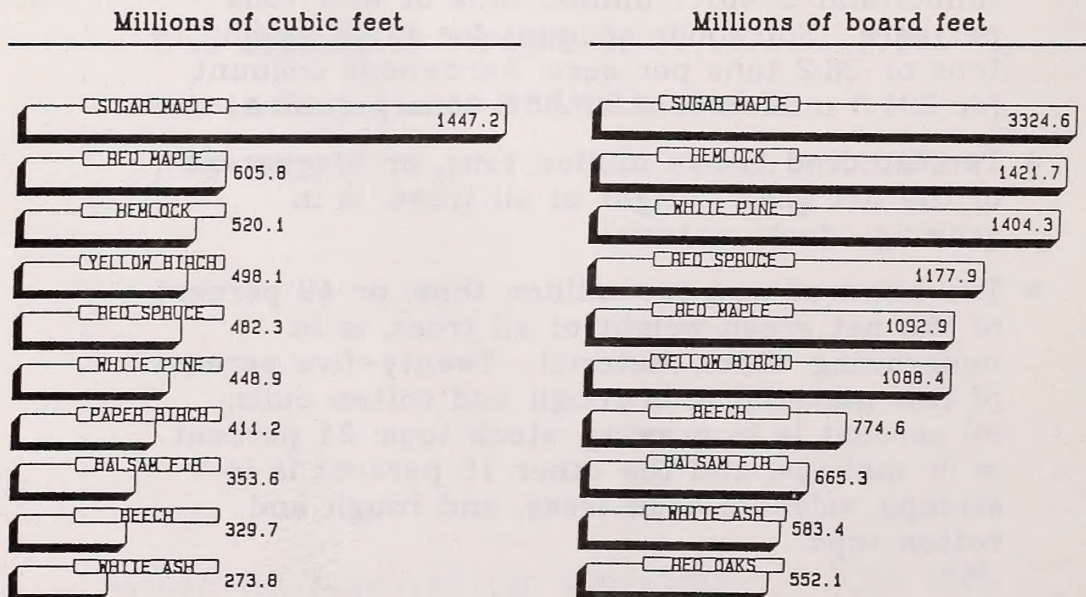
- \* The net green weight of all live trees on timberland is 407.1 million tons or 92.1 tons per acre. Softwoods account for 115.8 million tons or 26.2 tons per acre; hardwoods account for 291.3 million tons or 65.9 tons per acre.
- \* Two hundred twelve million tons, or 51 percent of the net green weight of all trees, is in growing-stock material.
- \* Two hundred and two million tons, or 49 percent of the net green weight of all trees, is in nongrowing-stock material. Twenty-five percent of this material is in rough and rotten culls; 39 percent is in growing-stock tops; 21 percent is in saplings; and the other 15 percent is in stumps, salvable dead trees, and rough and rotten tops.



## VOLUME

- \* Growing-stock volume is 6.3 billion cubic feet, an average of 1,419 cubic feet per acre. This is a 25 percent increase over the 1973 survey.
- \* Sawtimber volume is 14.0 billion board feet, an average of 3,163 board feet per acre. This is a 22 percent increase over the 1973 survey.
- \* Sugar maple continues to be the number one species in Vermont's forest. It accounts for 23 percent of the growing-stock volume and 24 percent of the sawtimber volume.
- \* Red maple has increased 119 percent since 1966 and has risen from a sixth place in volume rank to second place in 1983; it now accounts for 10 percent of the growing-stock volume.
- \* Sawlog quality is improving as the forest matures: grade-1 sawlogs account for 5.6 percent of pine sawtimber and 11.2 percent of hardwood sawtimber.
- \* Net annual growth of growing stock in Vermont is 2.9 percent of the inventory.

## MAJOR SPECIES BY VOLUME





## Introduction

The forests of Vermont provide a variety of valuable benefits. Each year millions of people journey to the Green Mountain state to enjoy the vibrant fall foliage displays, to hike among the scenic mountains and streams, and to enjoy many other forest-related recreational activities. Timber products supply much of the raw material used by the forest industries in the state and the region. More and more of the local heating needs are being met with fuelwood from the forests.

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 forest inventories of all states to provide up-to-date information on the forest resource of the Nation. The initial inventory of Vermont's forest resources was conducted in 1948. Succeeding inventories were carried out in 1966 and 1973. This report presents the forest resource data from the fourth inventory which was completed in 1983. This inventory involved a cooperative effort of the Vermont Department of Forests, Parks, and Recreation, the USDA Soil Conservation Service, the Green Mountain National Forest, and the Northeastern Forest Experiment Station.

The Forest Inventory and Analysis project of the Northeastern Forest Experiment Station conducted the inventory on all forest land, developed the resource tables, and prepared this report.

The sampling procedure used during 1982-83 resurvey utilized aerial photography, the partial remeasurement of ground plots established in the earlier inventories, and establishment of new ground plots. In Vermont this required remeasurement of 435 plots from the earlier inventories, classification of 16,313 points on aerial photographs into land-use and cubic-foot volume classes, and establishment of 823 new ground plot locations as a subsample of the photo points. The data collected were summarized by the FINSYS computer system developed at the Northeastern Forest Experiment Station.

The resurvey of Vermont's forest resources involved several associated studies and considerable analysis. Reports discussing the economic importance of Vermont's sawtimber, its private forest-land owners and its primary forest products industry are being prepared. Two additional reports will also be published for the first time. One will present 1983 biomass statistics; the second will describe wildlife habitat components.

The forest area, numbers of trees, timber volume, and biomass statistics shown in this report are a summary of the information collected. Other information or additional

summaries may be developed. For information about those, contact the Forest Inventory and Analysis Project, USDA Forest Service, 370 Reed Road, Broomall, PA 19008 (phone 215-461-3037).

## Reliability of the Estimates

The data in this report were 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. Among statisticians, accuracy refers to the success of estimating the true value, precision refers to the clustering of sample values about their own averages or to the variation among repeated samples. We are mainly interested 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 resources of Vermont. If questions arise, the data are reviewed and reanalyzed to resolve the differences. Also, great care is taken to keep all sources of procedural error to a minimum by 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.

Briefly, here is an example of how the sampling error is used to indicate reliability: The estimate of timberland for Vermont is 4,422.1 thousand acres. Its sampling error is 0.7 percent, or 30.9 thousand acres. This means that the estimate of timberland in 1983 is 4,422.1 thousand acres, and if there are no errors in the procedure and we repeated the inventory in the same way, the odds are 2 to 1 (66 percent probability) that the estimate would be between 4,391.2 and 4,453.0 thousand acres ( $4,422.1 \pm 30.9$ ). Similarly, the odds are 19 to 1 (95 percent probability) that the estimate would be within  $\pm 61.8$  thousand acres. It is worth noting that the state estimates have the smallest sampling errors and therefore are the most precise or reliable. Geographic unit estimates are the next most reliable, followed by county estimates. In Vermont for example, the sampling error for the state area tables is .7 percent; the sampling error for the northern geographic unit is 1.2 percent, and the sampling error for Orange County is 4 percent. Thus, county level estimates are often considerably less reliable than unit or state level



estimates. In general, as the size of the estimate decreases in relation to the total, the sampling error, expressed as a percentage of the estimate, increases.

#### Comparison Between Inventories

To evaluate the condition of the forest resource, it is often useful to compare the current inventory with data from the previous inventory. This enables one to perform trend analyses for the period between inventories. However, for the comparisons to be valid, the procedures used for the two inventories must be similar. **Because of an ongoing effort to improve efficiency, there were many changes in procedure and definitions between the 1973 and 1983 inventories. THEREFORE, DIRECT COMPARISON OF THE DATA PUBLISHED BY KINGSLEY (1977) WITH THE DATA IN THIS REPORT WOULD BE INAPPROPRIATE.**

Four significant changes affected the current Vermont inventory: (1) a new multiresource plot data collection procedure, (2) a new set of volume and height estimation equations, (3) a new procedure for developing county-level estimates, and (4) a different standard for calculating stand size.

The first major change was the use of a new plot design to collect multiresource data. In addition to data collected to estimate forest area and tree volume, special emphasis was placed on collecting information relevant to forest wildlife habitat, forest soils, and forest-tree biomass. Along with the implementation of the new plot design, many of the computer programs used to process the inventory data were rewritten, and several new processing procedures were developed. One of the most noteworthy changes occurred in a routine used to determine forest type. The elm/ash/red maple type used in the 1973 inventory has been divided into three separate types, depending on physiographic class and associated species. The three types are red maple/northern hardwoods, red maple/central hardwoods, and elm/ash/red maple.

The second major change involved the development of new height and volume equations for both growing stock and sawtimber (Scott 1979, 1981). All three sets of equations are derived by nonlinear regression techniques; previously linear regression was used. Nonlinear estimation is used because it yields data with smaller errors between predicted and actual values.

A third major improvement was to change the basic building block for estimating forest area and timber volume from the geographic-unit level to the county level. In the past, the statistics were developed at the unit level and prorated back to the county level on the basis of distribution of photo-interpretation points. Development of county-level data helps users interested in more precise local data, but can

make comparisons with past county estimates developed by the proration technique uncertain.

One of the prerequisites for developing county-level statistics is that a county have at least 60,000 acres of timberland. Counties that do not meet this criterion have too few plots to allow reliable estimates. Such counties were paired with neighboring counties to create a sampling base large enough to provide reliable estimates. This pairing was required once during the processing of the Vermont data: Plots in Grand Isle county (56,742 acres total land) were combined with plots in Franklin county. In previous inventories, Grand Isle county was not inventoried.

The fourth major change was a different standard for calculating stand size. Stand size is the classification of forest land by the predominant size of trees present: sawtimber, poletimber, seedling/sapling, or nonstocked. In past inventories, stand-size classification was based on growing-stock trees only. Currently, all live trees are used to make the determination. This has caused a major shift in acreage and volume, especially between the poletimber and seedling/sapling classes.

As a consequence of these changes, the 1973 inventory data were recalculated, using procedures consistent with the current inventory. A set of tables containing the recalculated 1973 data has been included in this statistical report. They are printed in italic type to distinguish them from the current tables. There are seven state level and four unit-level tables that provide area and volume data for comparison and trend analysis. Tables of recalculated data at the county level could not be provided because plots were selected at the geographic unit level in 1973; therefore, individual counties do not have enough plots to develop statistically sound data.

#### INDEX TO TABLES

The following tables are divided into four major sections: (1) State, (2) Northern Unit, (3) Southern Unit, and (4) County. Recalculated 1973 tables are printed in italic type.

#### STATE TABLES

<u>Table No.</u>	<u>Page</u>
<u>Area</u>	
1. Land area by land class, Vermont, 1983.....	11
2. Area of timberland by forest type, forest-type group, and stand-size class, Vermont, 1973.....	12



<u>Table No.</u>	<u>Page</u>
3. Area of timberland by forest type, forest-type group, and stand-size class, Vermont, 1983.....	13
4. Area of timberland by forest-type group and ownership class, Vermont, 1983.....	14
5. Area of timberland by stand-size class and ownership class, Vermont, 1983.....	14
6. Area of timberland by board foot stand-volume class and ownership class, Vermont, 1983.....	14
7. Area of timberland by forest-type group and cubic foot stand-volume class, Vermont, 1983.....	15
8. Area of timberland by forest-type group and board foot stand-volume class, Vermont, 1983.....	15
9. Area of timberland by forest-type group and green-ton stand-volume class, Vermont, 1983.....	16
10. Area of timberland by forest-type group and stocking class of all live trees, Vermont, 1983.....	16
11. Area of timberland by forest-type group and stocking class of growing-stock trees, Vermont, 1973.....	17
12. Area of timberland by forest-type group and stocking class of growing-stock trees, Vermont, 1983.....	17
13. Area of timberland by forest-type group and basal area class, Vermont, 1983.....	18
14. Area of timberland by stocking class of all live trees and basal area class, Vermont, 1983.....	18

Number of Trees

15. Number of live trees on timberland by diameter and tree class and softwoods and hardwoods, Vermont, 1983.....	19
16. Number of trees (5.0+ inches d.b.h.) on timberland by species and tree class, Vermont, 1983.....	20
17. Number of growing-stock trees on timberland by species and diameter class, Vermont, 1983.....	21
18. Number of standing dead trees on timberland by species, condition, and diameter class, Vermont, 1983.....	22
19. Number of all trees (5.0+ inches d.b.h.) with cavities on timberland by species and condition, Vermont, 1983.....	23

<u>Table No.</u>	<u>Page</u>
------------------	-------------

Weight

20. Net green weight of all live trees on timberland by species and diameter class, Vermont, 1983.....	24
--	----

21. Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Vermont, 1983....	25
--	----

Volume

22. Net volume of growing-stock trees on timberland by forest-type group and stand-size class, Vermont, 1983.....	26
---	----

23. Net volume of growing-stock trees on timberland by forest-type group and basal area class, Vermont, 1983.....	26
---	----

24. Net volume of growing-stock trees on timberland by species and forest-type group, Vermont, 1983.....	27
--	----

25. Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1973.....	28
---	----

26. Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1983.....	29
---	----

27. Net volume of growing-stock trees on timberland by species and cubic foot stand-volume class, Vermont, 1983.....	30
--	----

28. Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1973.....	32
---	----

29. Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1983.....	33
---	----

30. Net volume of sawtimber trees on timberland by species and diameter class, Vermont, 1973.....	34
---	----

31. Net volume of sawtimber trees on timberland by species and diameter class, Vermont, 1983.....	35
---	----

32. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Vermont, 1973....	36
--	----

33. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Vermont, 1983....	37
--	----

Growth

34. Average annual net change of growing-stock volume on timberland by species and component, Vermont, 1973-83.....	38
---	----

Timber Products Output

35. Output of timber products by product, softwoods and hardwoods, and source of material, Vermont, 1982.....40

36. Output of roundwood products by product, softwoods and hardwoods, and source of material, Vermont, 1982.....42

37. Timber removals from growing stock and sawtimber on timberland by item and softwoods and hardwoods, Vermont, 1982.....44

38. Volume of unused residues from primary manufacturing plants by softwoods and hardwoods, type of residue, and industry, Vermont, 1982.....45

Change

39. Change in area of timberland between inventories by forest-type group and stand-size class, Vermont, 1973-83.....46

40. Change in volume between inventories by species, Vermont, 1973-83.....47

Sampling errors

41. Sampling errors for estimates in various state tables, Vermont, 1983.....48

**UNIT TABLES**

42. Area of timberland by forest type, forest-type group, and geographic unit, Vermont, 1983.....49

43. Area of timberland by ownership class and geographic unit, Vermont, 1983.....50

44. Net volume of growing-stock and sawtimber trees on timberland by ownership class, and geographic unit, Vermont, 1983....50

Northern Unit

45. Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1973.....52

46. Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1983.....53

47. Number of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1983.....54

48. Net green weight of all live trees on timberland by species and diameter class, Northern Unit, Vermont, 1983.....55

49. Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Northern Unit, Vermont, 1983.....56

50. Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1973.....58

51. Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1983.....59

52. Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1973.....60

53. Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1983.....61

54. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Northern Unit, Vermont, 1973.....62

55. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Northern Unit, Vermont, 1983.....63

56. Sampling errors for various tables, Northern Unit, Vermont, 1973 and 1983.....64

Southern Unit

57. Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1973.....66

58. Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1983.....67

59. Number of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1983.....68

60. Net green weight of all live trees on timberland by species and diameter class, Southern Unit, Vermont, 1983.....69

61. Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Southern Unit, Vermont, 1983.....70

62. Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1973.....72

63. Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1983.....73



<u>Table No.</u>	<u>Page</u>
64. Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1973.....	74
65. Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1983.....	75
66. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Southern Unit, Vermont, 1973.....	76
67. Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Southern Unit, Vermont, 1983.....	77
68. Sampling errors for various tables, Southern Unit, Vermont, 1973 and 1983.....	78

#### COUNTY TABLES

69. Land area by county and land use class, Vermont, 1983.....	80
70. Area of timberland by county and forest-type group, Vermont, 1983.....	81
71. Area of timberland by county and stand-size class, Vermont, 1983.....	82
72. Area of timberland by county and cubic foot stand-volume class, Vermont, 1983.....	82
73. Area of timberland by county and green-ton stand-volume class, Vermont, 1983.....	83
74. Area of timberland by county and stocking class of growing-stock trees, Vermont, 1983.....	83
75. Net volume of growing-stock trees on timberland by county and forest-type group, Vermont, 1983.....	84
76. Net volume of growing-stock trees on timberland by county and stand-size class, Vermont, 1983.....	85
77. Net volume of growing-stock trees on timberland by species and county, Vermont, 1983.....	86
78. Net volume of sawtimber trees on timberland by county and forest-type group, Vermont, 1983.....	88
79. Net volume of sawtimber trees on timberland by county and stand-size class, Vermont, 1983.....	89

<u>Table No.</u>	<u>Page</u>
80. Net volume of sawtimber trees on timberland by species and county, Vermont, 1983.....	90
81. Sampling errors for various county and geographic-unit estimates, Vermont, 1983.....	92





# STATE TABLES



# PERCENT TIMBERLAND AREA BY COUNTY

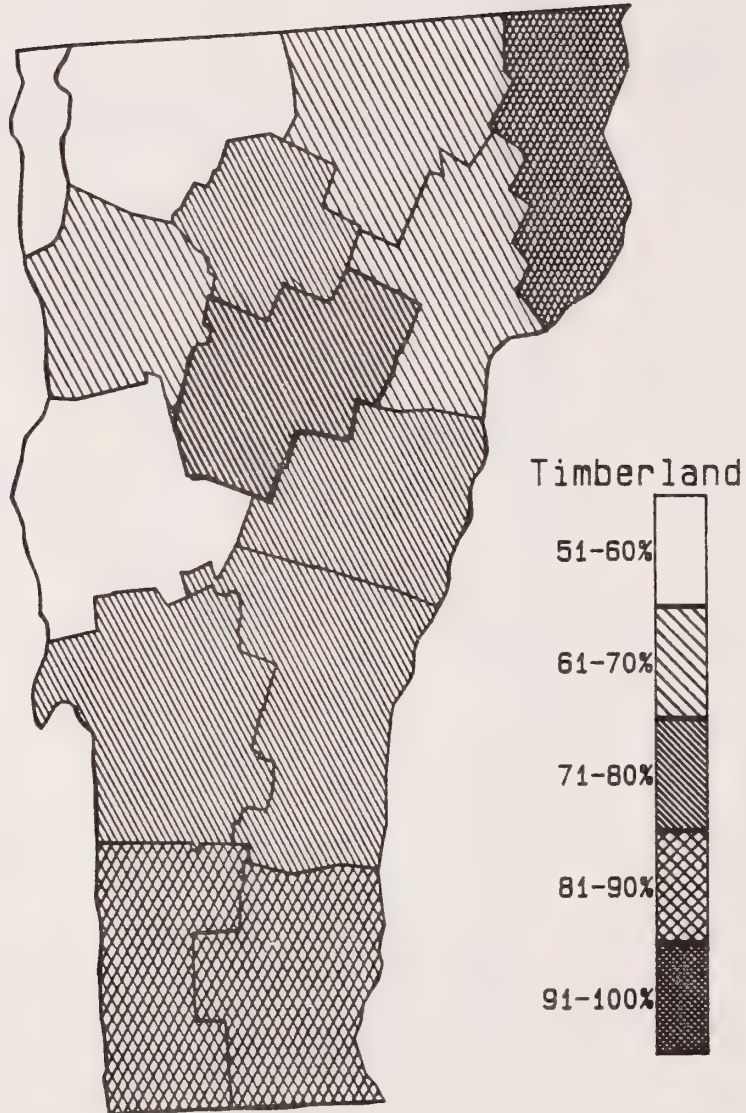




Table 1.--Land area by land class, Vermont, 1983

Land class	Area	
	Thousand acres	Percent
Timberland	4,422.1	75
Noncommercial forest land:		
Productive reserved	89.1	1
Unproductive <sup>a</sup>	33.2	1
Total forest	4,544.4	77
Nonforest land:		
Cropland <sup>b</sup>	566.7	10
Pasture <sup>b</sup>	320.3	5
Other	503.3	8
Total nonforest	1,390.3	23
Total land area	5,934.7	100

<sup>a</sup>Includes 12,200 acres of unproductive reserved forest land.

<sup>b</sup>Source: 1982 Census of Agriculture.

Table 2.--Area of timberland by forest type, forest-type group, and stand-size class, Vermont, 1973<sup>a</sup>

(In thousands of acres)<sup>b</sup>

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Red pine	18.3	13.8	.0	.0	32.1
White pine	158.8	68.7	65.9	.0	293.4
White pine/hemlock	73.6	44.5	9.2	.0	127.3
Hemlock	153.8	40.8	34.8	.0	229.4
White/red pine group	404.5	167.8	109.9	.0	682.2
Balsam fir	10.4	46.0	45.5	.0	101.9
Red spruce	42.2	58.3	99.8	.0	200.3
Red spruce/balsam fir	48.9	141.5	63.1	.0	253.5
White spruce	8.4	8.5	.0	.0	16.9
Black spruce	.0	9.2	.0	.0	9.2
Northern white-cedar	24.0	38.3	28.8	.0	91.1
Spruce/fir group	133.9	301.8	237.2	.0	672.9
Wh. pine/no. red oak/wh. ash	16.1	.0	.0	.0	16.1
Oak/pine group	16.1	.0	.0	.0	16.1
Chestnut oak	9.0	.0	.0	.0	9.0
White oak/red oak/hickory	9.1	.0	9.9	.0	19.0
Northern red oak	45.0	18.1	.0	.0	63.1
Hawthorn/reverting field	.0	.0	19.6	.0	19.6
Mixed central hardwoods	.0	9.1	17.3	.0	26.4
Oak/hickory group	63.1	27.2	17.3	.0	137.1
Black ash/Amer. elm/red maple	16.9	.0	86.8	.0	103.7
Elm/ash/red maple group	16.9	.0	86.8	.0	103.7
Sugar maple/beechn/y. birch	1,044.0	730.6	106.4	.0	1,881.0
Black cherry	19.0	6.6	50.6	.0	76.2
Red maple/northern hardwoods	121.5	179.1	12.7	.0	313.3
Mixed northern hardwoods	147.8	127.0	57.8	.0	332.6
Northern hardwoods group	1,332.3	1,043.3	227.5	.0	2,603.1
Aspen	.0	34.9	39.2	.0	74.1
Paper birch	19.5	52.7	47.8	.0	120.0
Gray birch	.0	8.4	11.5	.0	19.9
Aspen/birch group	19.5	96.0	98.5	.0	214.0
Indeterminate	.0	.0	1.8	.0	1.8
All forest types	1,986.3	1,636.1	808.5	.0	4,430.9

<sup>a</sup>The data on all 1973 tables have been reprocessed so as to be comparable to 1983 data.

<sup>b</sup>In this and other tables zeroes indicate no or negligible data. Dashes indicate no data.



Table 3.--Area of timberland by forest type, forest-type group, and stand-size class, Vermont, 1983

(In thousands of acres)

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Red pine	7.5	.0	.0	.0	7.5
White pine	236.9	43.1	44.0	.0	324.0
White pine/hemlock	100.4	7.5	.0	.0	107.9
Hemlock	177.2	14.7	.0	.0	191.9
White/red pine group	522.0	65.3	44.0	.0	631.3
Balsam fir	15.0	64.8	22.6	.0	102.4
Red spruce	100.6	14.4	.0	.0	115.0
Red spruce/balsam fir	168.2	52.6	65.8	.0	286.6
White spruce	22.8	14.3	.0	.0	37.1
Black spruce	.0	.0	6.9	.0	6.9
Northern white-cedar	51.8	7.4	26.4	.0	85.6
Spruce/fir group	358.4	153.5	121.7	.0	633.6
Wh. pine/no. red oak/wh. ash	6.7	6.8	.0	.0	13.5
Oak/pine group	6.7	6.8	.0	.0	13.5
White oak/red oak/hickory	7.2	7.1	6.0	.0	20.3
White oak	6.7	13.8	.0	.0	20.5
Northern red oak	58.3	14.2	6.7	.0	79.2
Hawthorn/reverting field	.0	2.9	5.6	6.4	14.9
Red/maple/central hardwoods	.0	.0	6.4	.0	6.4
Mixed central hardwoods	8.5	7.4	7.2	.0	23.1
Oak/hickory group	80.7	45.4	31.9	6.4	164.4
Black ash/Amer. elm/red maple	43.6	28.3	27.1	.0	99.0
Elm/ash/red maple group	43.6	28.3	27.1	.0	99.0
Sugar maple/beech/yellow birch	1,462.4	395.2	132.1	.0	1,989.7
Black cherry	12.2	.0	13.0	.0	25.2
Red maple/northern hardwoods	193.5	108.3	14.8	.0	316.6
Pin cherry/reverting field	.0	.0	32.6	5.6	38.2
Mixed northern hardwoods	164.2	121.1	42.5	.0	327.8
Northern hardwoods group	1,832.3	624.6	235.0	5.6	2,697.5
Aspen	15.0	29.8	14.1	.0	58.9
Paper birch	29.1	88.0	.0	.0	117.1
Gray birch	.0	6.8	.0	.0	6.8
Aspen/birch group	44.1	124.6	14.1	.0	182.8
All forest types	2,887.8	1,048.5	473.8	12.0	4,422.1

Table 4.--Area of timberland by forest-type group and ownership class, Vermont, 1983

(In thousands of acres)

Forest-type group	Ownership class				All classes
	National Forest	Other public	Forest industry	Other private	
White/red pine	8.8	26.0	8.7	587.8	631.3
Spruce/fir	8.6	17.1	72.2	535.7	633.6
Oak/pine	-	-	-	13.5	13.5
Oak/hickory	-	4.6	7.8	152.0	164.4
Elm/ash/red maple	-	4.1	-	94.9	99.0
Northern hardwoods	165.7	172.3	312.7	2,046.8	2,697.5
Aspen/birch	-	22.3	8.2	152.3	182.8
Total, all groups	183.1	246.4	409.6	3,583.0	4,422.1

Table 5.--Area of timberland by stand-size class and ownership class, Vermont, 1983

(In thousands of acres)

Stand-size class	Ownership class				All classes
	National Forest	Other public	Forest industry	Other private	
Sawtimber	146.5	162.8	217.2	2,361.3	2,887.8
Poletimber	24.6	70.9	130.0	823.0	1,048.5
Sapling and seedling	12.0	12.7	62.4	386.7	473.8
Nonstocked	.0	.0	.0	12.0	12.0
All classes	183.1	246.4	409.6	3,583.0	4,422.1

Table 6.--Area of timberland by board foot stand-volume class and ownership class, Vermont, 1983

(In thousands of acres)

Stand-volume class (board feet per acre)	Ownership class				All classes
	National Forest	Other public	Forest industry	Other private	
0 - 1,999	38.0	69.4	176.2	1,419.4	1,703.0
2,000 - 3,999	64.4	109.2	119.9	1,081.9	1,375.4
4,000 - 5,999	45.0	22.6	47.9	610.2	725.7
6,000 - 7,999	27.7	36.1	41.0	346.0	450.8
8,000 - 9,999	8.0	4.5	16.2	86.3	115.0
10,000+	-	4.6	8.4	39.2	52.2
All classes	183.1	246.4	409.6	3,583.0	4,422.1



Table 7.--Area of timberland by forest-type group and cubic foot stand-volume class, Vermont, 1983

(In thousands of acres)

Forest-type group	Stand-volume class (cubic feet per acre)						All classes
	0-499	500-999	1000-1499	1500-1999	2000-2499	2500+	
White/red pine	62.3	77.7	66.0	136.7	107.7	180.9	631.3
Spruce/fir	69.7	104.0	153.7	94.5	103.3	108.4	633.6
Oak/pine	.0	.0	6.8	6.7	.0	.0	13.5
Oak/hickory	41.1	22.1	21.5	34.7	30.2	14.8	164.4
Elm/ash/red maple	34.6	13.5	28.0	22.9	.0	.0	99.0
Northern hardwoods	204.7	281.2	485.7	686.6	678.0	361.3	2,697.5
Aspen/birch	6.8	21.5	28.9	59.2	29.3	37.1	182.8
Total, all groups	419.2	520.0	790.6	1,041.3	948.5	702.5	4,422.1

Table 8.--Area of timberland by forest-type group and board foot stand-volume class, Vermont, 1983

(In thousands of acres)

Forest-type group	Stand-volume class (board feet per acre)						All classes
	0-1999	2000-3999	4000-5999	6000-7999	8000-9999	10000+	
White/red pine	168.0	228.3	79.8	111.5	28.7	15.0	631.3
Spruce/fir	267.4	183.4	102.0	58.7	22.1	.0	633.6
Oak/pine	6.8	6.7	.0	.0	.0	.0	13.5
Oak/hickory	76.9	35.4	22.8	14.6	7.2	7.5	164.4
Elm/ash/red maple	62.6	29.0	7.4	.0	.0	.0	99.0
Northern hardwoods	1,021.0	854.6	476.4	258.8	57.0	29.7	2,697.5
Aspen/birch	100.3	38.0	37.3	7.2	.0	.0	182.8
Total, all groups	1,703.0	1,375.4	725.7	450.8	115.0	52.2	4,422.1

Table 9.--Area of timberland by forest-type group and green ton stand-volume class, Vermont, 1983  
(In thousands of acres)

Forest-type group	Stand-volume class (green tons per acre)										All classes
	0-24	25-49	50-74	75-99	100-124	125-149	150-174	175-199	200+		
White/red pine	31.2	73.0	50.2	158.9	129.4	137.5	43.9	7.2	.0	631.3	
Spruce/fir	39.9	95.2	111.2	161.3	130.2	59.0	29.4	7.4	.0	633.6	
Oak/pine	.0	.0	.0	13.5	.0	.0	.0	.0	.0	13.5	
Oak/hickory	20.9	14.7	34.2	22.1	57.8	7.2	.0	.0	7.5	164.4	
Elm/ash/red maple	34.6	13.5	35.1	7.4	8.4	.0	.0	.0	.0	99.0	
Northern hardwoods	113.2	201.5	401.4	759.1	722.7	361.9	103.4	34.3	.0	2,697.5	
Aspen/birch	6.8	14.7	7.1	45.3	65.2	21.3	22.4	.0	.0	182.8	
Total, all groups	246.6	412.6	639.2	1,167.6	1,113.7	586.9	199.1	48.9	7.5	4,422.1	

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
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Overstocked	
White/red pine	.0	46.0	91.9	287.5	205.9	631.3
Spruce/fir	.0	27.0	114.2	242.9	249.5	633.6
Oak/pine	.0	.0	6.8	6.7	.0	13.5
Oak/hickory	6.4	10.3	49.3	76.1	22.3	164.4
Elm/ash/red maple	.0	20.4	42.3	14.5	21.8	99.0
Northern hardwoods	5.6	38.7	357.7	1,552.5	743.0	2,697.5
Aspen/birch	.0	.0	23.0	94.9	64.9	182.8
Total, all groups	12.0	142.4	685.2	2,275.1	1,307.4	4,422.1



Table 11.--Area of timberland by forest-type group and stocking class of growing-stock trees, Vermont, 1973  
(In thousands of acres)

Forest-type group	Stocking class				All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	
White/red pine	22.9	104.3	363.0	156.3	682.2
Spruce/fir	9.2	112.0	244.1	201.8	672.9
Oak/pine	.0	.0	7.0	9.1	16.1
Oak/hickory	.0	35.4	38.9	53.7	137.1
Elm/ash/red maple	.0	68.4	26.1	9.2	103.7
Northern hardwoods	.0	564.9	1,397.7	556.5	2,603.1
Aspen/birch	9.1	38.3	88.6	60.0	214.0
Indeterminate	.0	.0	.0	1.8	1.8
Total, all groups	41.2	923.2	2,165.4	1,048.5	4,430.9

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
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	
White/red pine	13.4	74.0	193.3	275.9	631.3
Spruce/fir	.0	55.6	144.9	196.2	633.6
Oak/pine	.0	.0	6.8	6.7	13.5
Oak/hickory	9.3	7.5	75.9	42.6	164.4
Elm/ash/red maple	.0	41.8	21.0	22.9	99.0
Northern hardwoods	5.6	207.9	1,019.6	989.9	2,697.5
Aspen/birch	.0	.0	38.1	95.1	182.8
Total, all groups	28.3	386.8	1,499.6	1,629.3	4,422.1

Table 13.--Area of timberland by forest-type group and basal area class, Vermont, 1983

(In thousands of acres)

Forest-type group	Basal area class (square feet per acre)						All classes
	0-49	50-99	100-149	150-199	200-249	250-299	
White/red pine	77.5	141.3	267.4	145.1	.0	.0	631.3
Spruce/fir	63.3	174.2	256.7	102.4	37.0	.0	633.6
Oak/pine	.0	6.8	6.7	.0	.0	.0	13.5
Oak/hickory	35.6	41.9	79.4	7.5	.0	.0	164.4
Elm/ash/red maple	34.8	55.8	8.4	.0	.0	.0	99.0
Northern hardwoods	166.8	850.0	1,356.4	311.8	12.5	.0	2,697.5
Aspen/birch	6.8	45.3	108.8	21.9	.0	.0	182.8
Total, all groups	384.8	1,315.3	2,083.8	588.7	49.5	.0	4,422.1

Table 14.--Area of timberland by stocking class of all live trees and basal area class, Vermont, 1983

(In thousands of acres)

Stocking class	Basal area class (square feet per acre)						All classes
	0-49	50-99	100-149	150-199	200-249	250-299	
0 -15 (Nonstocked)	12.0	.0	.0	.0	.0	.0	12.0
16 - 19	2.8	.0	.0	.0	.0	.0	2.8
20 - 29	13.1	.0	.0	.0	.0	.0	13.1
30 - 39	11.3	.0	.0	.0	.0	.0	11.3
40 - 49	44.0	.0	.0	.0	.0	.0	44.0
50 - 59	40.5	23.9	6.8	.0	.0	.0	71.2
Total poorly stocked	111.7	23.9	6.8	.0	.0	.0	142.4
60 - 69	49.3	33.1	.0	.0	.0	.0	82.4
70 - 79	43.6	80.8	.0	.0	.0	.0	124.4
80 - 89	33.0	116.1	7.4	.0	.0	.0	156.5
90 - 99	27.6	258.2	36.1	.0	.0	.0	321.9
Total moderately stocked	153.5	488.2	43.5	.0	.0	.0	685.2
100 - 109	10.6	264.7	240.3	.0	.0	.0	515.6
109 - 119	35.0	261.8	551.0	14.1	.0	.0	861.9
120 - 129	7.0	132.8	639.5	118.3	.0	.0	897.6
Total fully stocked	52.6	659.3	1,430.8	132.4	.0	.0	2,275.1
130 - 139	21.3	87.8	441.0	195.5	.0	.0	745.6
140 - 149	20.0	41.5	132.1	194.7	13.8	.0	402.1
150 - 160	13.7	14.6	29.6	66.1	35.7	.0	159.7
Total overstocked	55.0	143.9	602.7	456.3	49.5	.0	1,307.4
Total all classes	384.8	1,315.3	2,083.8	588.7	49.5	.0	4,422.1



Table 15.--Number of live trees on timberland by diameter and tree classes  
and softwoods and hardwoods, Vermont, 1983

(In thousands of trees)

Diameter class	Growing Stock		Cull		Total
	Softwoods	Hardwoods	Softwoods	Hardwoods	
Seedlings	1,458,886	10,130,988	0	3,774,667	15,364,541
1.0- 2.9	352,729	623,778	0	183,227	1,159,734
3.0- 4.9	193,063	286,968	0	47,107	527,138
Total seedlings and saplings	2,004,678	11,041,734	0	4,005,001	17,051,413
5.0- 6.9	88,500	136,994	22,854	66,175	314,523
7.0- 8.9	57,976	109,687	10,369	28,229	206,261
9.0-10.9	-	70,400	-	15,382	85,782
Total poletimber	146,476	317,081	33,223	109,786	606,566
9.0-10.9	35,697	-	4,841	-	40,538
11.0-12.9	20,434	42,763	3,120	9,201	75,518
13.0-14.9	9,709	22,329	1,798	5,926	39,762
Total small sawtimber	65,840	65,092	9,759	15,127	155,818
15.0-16.9	4,995	11,983	1,132	4,122	22,232
17.0-18.9	2,246	5,782	650	2,684	11,362
19.0-20.9	961	3,013	305	1,923	6,202
21.0-28.9	979	2,598	419	2,785	6,781
29.0 and larger	101	318	135	780	1,334
Total larger sawtimber	9,282	23,694	2,641	12,294	47,911
All classes	2,226,276	11,447,601	45,623	4,142,208	17,861,708

Table 16.--Number of trees (5.0+ inches d.b.h.) on timberland by species and tree class, Vermont, 1983  
(In thousands of trees)

Species	Tree class							Total	
	Preferred	Acceptable	All growing stock	Rough cull	Rotten cull	All live	Salvable dead		Nonsalvable dead
Balsam fir	6,024	45,233	51,257	5,011	2,082	58,350	3,968	6,046	68,364
Tamarack	108	1,369	1,477	0	0	1,477	159	48	1,684
White spruce	417	8,415	8,832	561	43	9,436	666	349	10,451
Black spruce	90	573	663	0	0	663	0	0	663
Red spruce	4,449	49,592	54,041	7,044	1,625	62,710	5,704	5,040	73,454
Red pine	256	827	1,083	0	0	1,083	17	0	1,100
White pine	3,256	32,730	35,986	10,265	1,296	47,547	847	3,974	52,368
Northern white-cedar	692	14,134	14,826	3,424	1,358	19,608	1,426	1,064	22,098
Hemlock	5,187	48,174	53,361	11,051	1,249	65,661	1,067	1,821	68,549
Other softwoods	0	72	72	591	23	686	0	0	686
<b>Total softwoods</b>	<b>20,479</b>	<b>201,119</b>	<b>221,598</b>	<b>37,947</b>	<b>7,676</b>	<b>267,221</b>	<b>13,854</b>	<b>18,342</b>	<b>299,417</b>
Sugar maple	8,144	116,174	124,318	19,089	13,530	156,937	1,532	5,598	164,067
Soft maples	4,769	59,108	63,877	11,090	8,417	83,384	1,541	3,697	88,622
Yellow birch	3,215	42,061	45,276	9,455	5,438	60,169	1,552	6,378	68,099
Paper birch	5,107	46,449	51,556	3,549	2,267	57,372	1,269	3,584	62,225
Gray birch	0	2,129	2,129	4,063	240	6,432	205	370	7,007
Beech	1,118	31,348	32,466	9,344	10,723	52,533	510	4,204	57,247
White ash	4,506	19,147	23,653	1,907	1,156	26,716	538	529	27,783
Black ash	0	2,074	2,074	94	80	2,248	0	71	2,319
Aspen	973	13,214	14,187	1,204	734	16,125	922	2,526	19,573
White oaks	177	1,677	1,854	286	43	2,183	87	65	2,335
Red oaks	2,416	9,891	12,307	375	217	12,899	66	100	13,065
Basswood	132	2,775	2,907	489	287	3,683	70	240	3,993
Elm	50	5,145	5,195	659	172	6,026	838	2,809	9,673
Other commercial hardwoods	2,746	21,322	24,068	2,536	1,537	28,141	601	882	29,624
Noncommercial hardwoods	-	-	-	24,307 <sup>a</sup>	3,919	28,226	1,631	2,518	32,375
<b>Total hardwoods</b>	<b>33,353</b>	<b>372,514</b>	<b>405,867</b>	<b>88,447</b>	<b>48,760</b>	<b>543,074</b>	<b>11,362</b>	<b>33,571</b>	<b>588,007</b>
<b>Total, all species</b>	<b>53,832</b>	<b>573,633</b>	<b>627,465</b>	<b>126,394</b>	<b>56,436</b>	<b>810,295</b>	<b>25,216</b>	<b>51,913</b>	<b>887,424</b>

<sup>a</sup>Includes 14,753,000 trees that, except for being noncommercial species, would qualify as growing-stock trees.



Table 17.--Number of growing-stock trees on timberland by species and diameter class, Vermont, 1983  
(In thousands of trees)

Species	Diameter class (inches at breast height)										All classes
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 28.9	29+	
Balsam fir	25,963	14,768	6,552	3,092	751	114	0	17	0	0	51,257
Tamarack	724	368	198	124	34	29	0	0	0	0	1,477
White spruce	3,519	2,458	1,814	811	152	52	26	0	0	0	8,832
Black spruce	262	0	350	51	0	0	0	0	0	0	663
Red spruce	21,418	15,316	9,294	4,518	2,141	689	453	79	133	0	54,041
Red pine	309	124	221	73	159	121	42	17	17	0	1,083
White pine	12,750	6,906	6,081	3,908	2,569	1,799	867	456	554	96	35,986
Northern white-cedar	6,272	4,366	2,352	1,084	392	276	26	40	18	0	14,826
Hemlock	17,247	13,634	8,835	6,773	3,511	1,915	832	352	257	5	53,361
Other softwoods	36	36	0	0	0	0	0	0	0	0	72
<b>Total softwoods</b>	<b>88,500</b>	<b>57,976</b>	<b>35,697</b>	<b>20,434</b>	<b>9,709</b>	<b>4,995</b>	<b>2,246</b>	<b>961</b>	<b>979</b>	<b>101</b>	<b>221,598</b>
Sugar maple	39,839	33,367	19,803	14,284	8,015	4,198	2,030	1,432	1,211	139	124,318
Red maple	20,507	19,575	11,359	6,085	3,349	1,751	649	335	251	16	63,877
Yellow birch	13,690	10,821	9,429	5,308	2,862	1,518	757	331	495	65	45,276
Paper birch	19,977	15,002	10,490	3,801	1,467	477	244	81	17	0	51,556
Gray birch	1,717	412	0	0	0	0	0	0	0	0	2,129
Beech	12,520	7,789	5,029	3,164	1,871	981	612	308	183	9	32,466
White ash	7,460	7,061	3,688	2,608	1,474	881	293	101	87	0	23,653
Black ash	801	925	93	162	51	17	25	0	0	0	2,074
Aspen	4,909	2,683	2,960	1,693	911	621	271	73	66	0	14,187
White oaks	62	895	418	193	85	79	39	36	31	16	1,854
Red oaks	2,635	2,526	2,181	2,283	936	813	472	199	207	55	12,307
Basswood	1,039	463	679	272	285	92	55	16	0	6	2,907
Elm	1,228	1,802	1,088	544	297	113	70	19	26	8	5,195
Other hardwoods	10,610	6,366	3,183	2,366	726	442	265	82	24	4	24,068
<b>Total hardwoods</b>	<b>136,994</b>	<b>109,687</b>	<b>70,400</b>	<b>42,763</b>	<b>22,329</b>	<b>11,983</b>	<b>5,782</b>	<b>3,013</b>	<b>2,598</b>	<b>318</b>	<b>405,867</b>
<b>Total, all species</b>	<b>225,494</b>	<b>167,663</b>	<b>106,097</b>	<b>63,197</b>	<b>32,038</b>	<b>16,978</b>	<b>8,028</b>	<b>3,974</b>	<b>3,577</b>	<b>419</b>	<b>627,465</b>

Table 18.--Number of standing dead trees on timberland by species, condition, and diameter class, Vermont, 1983

Species	Intact top				Broken top				Total all trees	Sampling error
	5.0-10.9		11.0-14.9		5.0-10.9		11.0-14.9			
	15+	Total	15+	Total	15+	Total	15+	Total		
----- Thousand trees -----										
Balsam fir	3,438	274	58	3,770	5,518	627	48	6,193	9,963	15
Tamarack	159	14	0	173	34	0	0	34	207	79
White spruce	753	34	0	787	228	0	0	228	1,015	55
Black spruce	0	0	0	0	0	0	0	0	0	0
Red spruce	4,768	271	90	5,129	4,787	598	212	5,597	10,726	14
Red pine <sup>b</sup>	0	17	0	17	0	0	0	0	17	100
White pine	1,435	195	67	1,697	2,621	345	158	3,124	4,821	19
Northern white-cedar	1,885	34	0	1,919	469	17	0	486	2,405	32
Hemlock	721	18	19	758	1,475	268	120	1,863	2,621	24
Other softwoods	0	0	0	0	0	0	0	0	0	0
<b>Total softwoods</b>	<b>13,159</b>	<b>857</b>	<b>234</b>	<b>14,250</b>	<b>15,132</b>	<b>1,855</b>	<b>538</b>	<b>17,525</b>	<b>31,775</b>	<b>9</b>
Sugar maple	1,435	134	99	1,668	3,607	915	806	5,328	6,996	14
Red maple	1,804	60	15	1,879	2,653	492	214	3,359	5,238	21
Yellow birch	910	166	52	1,128	4,066	1,559	1,160	6,785	7,913	12
Paper birch	789	95	17	901	2,976	772	204	3,952	4,853	20
Gray birch	70	0	0	70	505	0	0	505	575	43
Beech	169	216	154	539	1,821	1,281	1,073	4,175	4,714	12
White ash	468	53	17	538	401	75	53	529	1,067	41
Black ash	0	0	0	0	35	0	0	35	35	100
Aspen	834	109	31	974	2,195	181	98	2,474	3,448	22
White oaks	71	0	16	87	31	0	34	65	152	63
Red oaks	66	0	0	66	64	0	36	100	166	51
Basswood	55	0	0	55	231	15	9	255	310	41
Elm	736	113	77	926	1,832	636	253	2,721	3,647	24
Other hardwoods <sup>a</sup>	1,451	34	53	1,538	3,389	456	140	3,985	5,523	15
<b>Total hardwoods</b>	<b>8,858</b>	<b>980</b>	<b>531</b>	<b>10,369</b>	<b>23,806</b>	<b>6,382</b>	<b>4,080</b>	<b>34,268</b>	<b>44,637</b>	<b>6</b>
<b>Total, all species</b>	<b>22,017</b>	<b>1,837</b>	<b>765</b>	<b>24,619</b>	<b>38,938</b>	<b>8,237</b>	<b>4,618</b>	<b>51,793</b>	<b>76,412</b>	<b>5</b>
Sampling error (percent)	9	15	17	8	7	8	7	5	5	5

<sup>a</sup>Includes noncommercial hardwoods.



Table 19.--Number of all trees (5.0+ inches d.b.h.) with observed cavities on timberland by species and condition, Vermont, 1983

Species	Live			Dead			Total all trees	Sampling error
	No cull	Intact live top	Broken top	Dead top	Intact top	Broken top		
Balsam fir	1,053	688	0	0	206	1,269	1,475	19
Tamarack	0	0	0	0	0	0	0	0
White spruce	46	85	0	0	17	125	142	67
Black spruce	0	0	0	0	0	0	0	0
Red spruce	520	253	0	0	51	549	600	23
Red pine	0	0	0	0	0	0	0	0
White pine	319	457	16	0	238	354	592	26
Northern white-cedar	215	217	0	0	17	50	67	33
Hemlock	491	473	16	17	0	731	731	22
Other softwoods	0	0	0	0	0	0	0	0
<b>Total softwoods</b>	<b>2,644</b>	<b>2,173</b>	<b>32</b>	<b>17</b>	<b>529</b>	<b>3,078</b>	<b>3,607</b>	<b>11</b>
Sugar maple	4,791	6,480	317	200	108	2,421	2,529	9
Red maple	2,090	4,703	16	118	132	1,285	1,417	13
Yellow birch	962	2,202	17	108	44	2,567	2,611	11
Paper birch	981	570	0	18	32	633	665	20
Gray birch	122	31	0	0	0	34	34	62
Beech	2,190	5,110	67	250	220	2,793	3,013	12
White ash	916	461	0	0	37	87	124	24
Black ash	134	16	0	0	0	35	35	83
Aspen	316	206	84	0	33	643	676	29
White oaks	48	12	0	0	0	5	5	61
Red oaks	279	113	0	0	0	15	15	35
Basswood	151	211	35	0	0	74	74	30
Elm	35	28	0	0	51	552	603	33
Other hardwoods <sup>a</sup>	758	1,804	0	49	457	1,041	1,498	16
<b>Total hardwoods</b>	<b>13,773</b>	<b>21,947</b>	<b>536</b>	<b>743</b>	<b>1,114</b>	<b>12,185</b>	<b>13,299</b>	<b>5</b>
<b>Total, all species</b>	<b>16,417</b>	<b>24,120</b>	<b>568</b>	<b>760</b>	<b>1,643</b>	<b>15,263</b>	<b>16,906</b>	<b>4</b>
Sampling error (percent)	7	6	27	20	21	7	7	4

<sup>a</sup>Includes noncommercial hardwoods.

Table 20.--Net green weight of all live trees on timberland by species and diameter class, Vermont, 1983  
(In thousands of tons)

Species	Diameter class (inches at breast height)											All classes
	1.0- 4.9	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21+		
Balsam fir	5,425.2	4,082.8	4,453.6	3,251.2	2,282.5	807.9	161.1	23.6	47.3	.0		20,535.2
Tamarack	.0	93.7	85.9	80.5	78.2	32.4	36.9	.0	.0	.0		407.6
White spruce	755.6	561.6	733.2	1,013.8	617.1	187.3	163.3	71.7	37.9	.0		4,141.5
Black spruce	111.7	31.1	.0	163.9	38.2	.0	.0	.0	.0	.0		344.9
Red spruce	2,540.7	3,934.3	4,827.3	4,792.5	3,435.0	2,539.7	1,196.5	887.0	254.4	512.7		24,923.8
Red pine	.0	32.2	38.3	111.9	65.3	230.6	211.4	105.0	47.1	103.8		945.6
White pine	1,022.0	2,386.7	2,596.2	3,700.1	3,713.5	3,689.3	3,695.0	2,410.8	1,591.8	5,205.6		30,011.0
Northern white-cedar	739.1	842.3	853.8	696.1	442.2	213.1	225.6	18.4	35.1	18.6		4,085.3
Hemlock	2,602.7	3,149.9	4,594.5	4,373.8	5,247.6	3,838.5	2,820.6	1,723.9	842.0	1,071.6		30,265.1
Other softwoods	45.9	55.2	14.5	14.9	.0	.0	.0	.0	.0	.0		130.5
Total softwoods	13,242.9	15,169.8	18,197.0	18,198.7	15,920.6	11,538.8	8,510.4	5,240.4	2,859.6	6,912.3		115,790.5
Sugar maple	7,633.3	8,610.4	12,267.8	12,497.3	13,011.7	10,556.4	7,518.8	5,131.2	4,173.6	12,417.4		93,817.9
Soft maples	3,188.5	4,309.7	6,848.4	6,708.6	5,550.8	3,988.9	3,298.2	1,753.1	1,271.6	1,695.0		38,612.8
Yellow birch	2,154.0	2,882.7	4,631.9	5,992.5	4,938.1	3,765.7	2,893.1	1,958.6	1,355.6	3,976.5		34,548.7
Paper birch	1,172.3	3,699.0	5,665.5	6,629.6	3,924.5	2,467.5	1,101.7	673.1	581.2	192.6		26,107.0
Gray birch	1,124.6	829.4	272.7	.0	.0	.0	.0	.0	.0	.0		2,226.7
Beech	5,426.2	3,537.2	3,882.4	4,048.3	3,830.2	3,371.2	2,854.1	2,495.3	1,961.4	2,262.6		33,668.9
White ash	1,048.9	1,283.7	2,249.7	2,038.2	2,111.9	1,701.2	1,407.9	644.9	277.9	658.8		13,423.1
Black ash	190.1	139.8	268.9	49.5	166.0	70.1	25.2	47.7	.0	.0		957.3
Aspen	676.6	839.7	957.5	1,569.6	1,494.9	1,288.6	1,051.0	534.0	274.7	279.6		8,966.2
White oaks	30.6	12.8	315.7	241.9	150.3	118.5	118.0	99.3	91.0	341.6		1,519.7
Red oaks	303.1	457.5	798.2	1,139.7	1,720.6	1,072.4	1,254.0	954.7	525.3	2,230.4		10,455.9
Basswood	159.3	185.6	217.0	386.2	237.4	342.5	152.4	184.4	75.2	110.3		2,050.3
Elm	395.8	267.3	623.8	531.2	452.4	308.9	150.9	132.6	31.2	127.6		3,021.7
Other comm. hrdwds.	1,281.1	1,828.5	2,227.7	1,864.2	1,892.4	947.0	746.5	587.5	259.2	452.5		12,086.6
Noncomm. hardwoods	4,404.6	2,613.4	1,521.3	649.9	157.1	196.1	114.4	187.4	.0	.0		9,844.2
Total hardwoods	29,189.0	31,496.7	42,748.5	44,346.7	39,638.3	30,195.0	22,686.2	15,383.8	10,877.9	24,744.9		291,307.0
Total, all species	42,431.9	46,666.5	60,945.5	62,545.4	55,558.9	41,733.8	31,196.6	20,624.2	13,737.5	31,657.2		407,097.5



Table 21.--Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Vermont, 1983

Class of material	Volume <sup>a</sup>			Weight <sup>b</sup>		
	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species
	-----Million cubic feet-----			-----Thousand tons-----		
Sawtimber trees:						
Sawlog portion	1,209.2	1,903.8	3,113.0	38,783.3	65,623.3	104,406.6
Upper stem	165.3	470.2	635.5	5,156.8	16,009.4	21,166.2
Total	1,374.5	2,374.0	3,748.5	43,940.1	81,632.7	125,572.8
Poletimber trees	630.0	1,896.9	2,526.9	18,545.2	67,772.2	86,317.4
All growing stock	2,004.5	4,270.9	6,275.4	62,485.3	149,404.9	211,890.2
Rough cull trees <sup>c</sup>	251.6	501.2	753.8	10,169.5	20,283.9	30,453.4
Rotten cull trees <sup>c</sup>	32.0	404.1	436.1	1,330.4	19,126.5	20,456.9
Salvable dead trees <sup>d</sup>	54.0	55.7	109.7	2,749.3	3,512.4	6,261.7
Saplings <sup>e</sup>	-	-	-	13,242.9	29,189.0	42,431.9
Stumps <sup>f</sup>	-	-	-	1,553.0	4,671.3	6,224.3
Tops - growing stock	-	-	-	22,986.0	54,800.4	77,786.4
Tops - rough and rotten	-	-	-	4,079.9	13,910.5	17,990.4
All nongrowing stock	337.6	961.0	1,298.6	56,111.0	145,494.0	201,605.0
All classes	2,342.1	5,231.9	7,574.0	118,596.3	294,898.9	413,495.2

<sup>a</sup>Excludes bark.

<sup>b</sup>Includes bark and sound cull; excludes rotten cull.

<sup>c</sup>Bole portion of trees 5.0 inches d.b.h. and larger.

<sup>d</sup>Volume of bole portion of trees 5.0 inches d.b.h. and larger, and weight of entire tree aboveground.

<sup>e</sup>Includes entire tree aboveground.

<sup>f</sup>Of all salvable dead and all live trees 5.0 inches d.b.h. and larger.

Table 22.--Net volume of growing-stock trees on timberland by forest-type group and stand-size class, Vermont, 1983

(In millions of cubic feet)

Forest type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
White/red pine	890.6	76.1	9.6	.0	976.3
Spruce/fir	647.5	189.7	47.7	.0	884.9
Oak/pine	11.3	7.7	.0	.0	19.0
Oak/hickory	158.5	48.2	6.1	.9	213.7
Elm/ash/red maple	48.2	25.3	7.2	.0	80.7
Northern hardwoods	2,928.7	811.4	64.5	.0	3,804.6
Aspen/birch	93.1	196.2	6.9	.0	296.2
<b>Total, all groups</b>	<b>4,777.9</b>	<b>1,354.6</b>	<b>142.0</b>	<b>.9</b>	<b>6,275.4</b>

Table 23.--Net volume of growing-stock trees on timberland by forest-type group and basal area class, Vermont, 1983

(In millions of cubic feet)

Forest-type group	Basal area class (square feet per acre)						All classes
	0-49	50-99	100-149	150-199	200-249	250-299	
White/red pine	23.8	132.2	499.9	320.4	.0	.0	976.3
Spruce/fir	15.7	142.3	417.4	210.4	99.1	.0	884.9
Oak/pine	.0	7.7	11.3	.0	.0	.0	19.0
Oak/hickory	12.6	33.9	137.8	29.4	.0	.0	213.7
Elm/ash/red maple	10.5	56.2	14.0	.0	.0	.0	80.7
Northern hardwoods	41.2	802.6	2,265.6	645.0	50.2	.0	3,804.6
Aspen/birch	1.6	51.5	201.6	41.5	.0	.0	296.2
<b>Total, all groups</b>	<b>105.4</b>	<b>1,226.4</b>	<b>3,547.6</b>	<b>1,246.7</b>	<b>149.3</b>	<b>.0</b>	<b>6,275.4</b>



Table 24.--Net volume of growing-stock trees on timberland by species and forest-type group, Vermont, 1983  
(In millions of cubic feet)

Species	Forest-type group							All groups
	White/red pine	Spruce/fir	Oak/pine	Oak/hickory	Elm/ash/red maple	Northern hardwoods	Aspen/birch	
Balsam fir	24.1	232.3	.0	.8	2.7	85.8	7.9	353.6
Tamarack	.0	7.8	.0	.0	.0	1.8	.0	9.6
White spruce	7.6	56.2	.0	.0	.0	9.6	.0	73.4
Black spruce	.0	5.6	.0	.0	.0	.2	.0	5.8
Red spruce	35.1	262.9	.5	2.3	.0	164.6	16.9	482.3
Red pine	18.8	.0	.0	.0	.0	.0	.0	18.8
White pine	316.3	30.9	5.4	16.1	.0	72.5	7.7	448.9
Northern white-cedar	2.2	81.9	.0	.1	.0	7.7	.0	91.9
Hemlock	281.8	26.4	.1	13.7	.9	192.8	4.4	520.1
Other softwoods	.1	.0	.0	.0	.0	.0	.0	.1
<b>Total softwoods</b>	<b>686.0</b>	<b>704.0</b>	<b>6.0</b>	<b>33.0</b>	<b>3.6</b>	<b>535.0</b>	<b>36.9</b>	<b>2,004.5</b>
Sugar maple	56.0	18.9	2.2	13.8	2.6	1,341.6	12.1	1,447.2
Red maple	62.5	39.4	.1	8.9	16.2	461.1	17.6	605.8
Yellow birch	20.4	30.1	.0	.9	.0	436.7	10.0	498.1
Paper birch	39.0	39.2	.0	7.1	.6	184.4	141.4	411.7
Gray birch	2.8	2.7	.0	.0	.0	1.9	.6	8.0
Beech	5.9	.0	.7	6.2	2.5	313.1	1.3	329.7
White ash	20.5	10.4	.0	3.0	17.2	214.0	8.7	273.8
Black ash	3.9	2.7	.0	.0	7.1	2.7	.0	16.4
Aspen	25.5	30.5	.0	1.5	2.3	61.7	51.8	173.3
White oaks	2.0	.0	.0	16.5	1.5	3.5	.0	23.5
Red oaks	12.4	.3	10.0	101.3	.7	63.3	11.2	199.2
Basswood	1.8	.0	.0	3.4	1.2	26.6	.4	33.4
Elm	8.3	2.0	.0	1.5	18.6	10.8	2.6	43.8
Other hardwoods	29.3	4.7	.0	16.6	6.6	148.2	1.6	207.0
<b>Total hardwoods</b>	<b>290.3</b>	<b>180.9</b>	<b>13.0</b>	<b>180.7</b>	<b>77.1</b>	<b>3,269.6</b>	<b>259.3</b>	<b>4,270.9</b>
<b>Total, all species</b>	<b>976.3</b>	<b>884.9</b>	<b>19.0</b>	<b>213.7</b>	<b>80.7</b>	<b>3,804.6</b>	<b>296.2</b>	<b>6,275.4</b>

Table 25.--Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1973

(In millions of cubic feet)

Species	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Balsam fir	109.4	185.4	28.3	.0	323.1
Tamarack	4.8	.6	1.0	.0	6.4
White spruce	35.1	19.1	1.2	.0	55.4
Black spruce	1.0	2.0	.5	.0	3.5
Red spruce	239.8	219.4	33.6	.0	492.8
Red pine	23.4	13.8	.0	.0	37.2
White pine	266.0	83.6	25.9	.0	375.5
Northern white-cedar	19.5	49.1	2.4	.0	71.0
Hemlock	287.8	107.0	11.9	.0	406.7
Other softwoods	.6	5.2	.0	.0	5.8
<i>Total softwoods</i>	<i>987.4</i>	<i>685.2</i>	<i>104.8</i>	<i>.0</i>	<i>1,777.4</i>
Sugar maple	660.6	373.6	30.3	.0	1,064.5
Red maple	242.9	211.0	19.3	.0	473.2
Yellow birch	234.9	132.6	2.1	.0	369.6
Paper birch	116.0	198.0	28.3	.0	342.3
Gray birch	.0	.0	.0	.0	.0
Beech	179.7	71.9	5.5	.0	257.1
White ash	88.4	88.6	9.3	.0	186.3
Black ash	2.1	4.0	1.5	.0	7.6
Aspen	38.7	99.8	23.9	.0	162.4
White oaks	12.3	2.2	.0	.0	14.5
Red oaks	72.4	55.6	.0	.0	128.0
Basswood	17.8	10.1	.0	.0	27.9
Elm	27.3	14.6	4.5	.0	46.4
Other hardwoods	74.8	66.6	7.3	.0	148.7
<i>Total hardwoods</i>	<i>1,767.9</i>	<i>1,328.6</i>	<i>132.0</i>	<i>.0</i>	<i>3,228.5</i>
<i>Total, all species</i>	<i>2,755.3</i>	<i>2,013.8</i>	<i>236.8</i>	<i>.0</i>	<i>5,005.9</i>



Table 26.--Net volume of growing-stock trees on timberland by species and stand-size class, Vermont, 1983

(In millions of cubic feet)

Species	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Balsam fir	210.8	125.8	17.0	.0	353.6
Tamarack	8.8	.7	.1	.0	9.6
White spruce	58.0	11.5	3.9	.0	73.4
Black spruce	4.0	1.8	.0	.0	5.8
Red spruce	382.0	85.2	15.1	.0	482.3
Red pine	18.8	.0	.0	.0	18.8
White pine	384.7	49.9	14.3	.0	448.9
Northern white-cedar	76.2	6.4	9.3	.0	91.9
Hemlock	480.3	37.2	2.6	.0	520.1
Other softwoods	.0	.1	.0	.0	.1
<b>Total softwoods</b>	<b>1,623.6</b>	<b>318.6</b>	<b>62.3</b>	<b>.0</b>	<b>2,004.5</b>
Sugar maple	1,169.4	258.4	19.4	.0	1,447.2
Red maple	455.2	140.5	10.1	.0	605.8
Yellow birch	371.3	112.1	14.7	.0	498.1
Paper birch	209.8	193.5	8.4	.0	411.7
Gray birch	4.6	3.4	.0	.0	8.0
Beech	270.8	56.3	2.6	.0	329.7
White ash	175.8	93.6	4.4	.0	273.8
Black ash	13.6	2.8	.0	.0	16.4
Aspen	106.8	58.9	7.6	.0	173.3
White oaks	13.2	9.9	.4	.0	23.5
Red oaks	152.1	44.4	2.7	.0	199.2
Basswood	23.3	9.0	1.1	.0	33.4
Elm	26.5	13.1	4.2	.0	43.8
Other hardwoods	161.9	40.1	4.1	.9	207.0
<b>Total hardwoods</b>	<b>3,154.3</b>	<b>1,036.0</b>	<b>79.7</b>	<b>.9</b>	<b>4,270.9</b>
<b>Total, all species</b>	<b>4,777.9</b>	<b>1,354.6</b>	<b>142.0</b>	<b>.9</b>	<b>6,275.4</b>

Table 27.--Net volume of growing-stock trees on timberland by species and cubic foot stand-volume class, Vermont, 1983

(In millions of cubic feet)

Species	Stand-volume class (cubic feet per acre)						All classes
	0-499	500-999	1000-1499	1500-1999	2000-2499	2500+	
Balsam fir	4.4	29.5	60.8	79.4	89.5	90.0	353.6
Tamarack	.1	.7	.0	2.9	2.6	3.3	9.6
White spruce	3.6	7.2	6.3	2.8	16.0	37.5	73.4
Black spruce	.0	.0	.5	.0	1.3	4.0	5.8
Red spruce	1.8	27.4	81.6	89.8	115.4	166.3	482.3
Red pine	.0	.0	2.3	.0	.0	16.5	18.8
White pine	7.0	40.7	43.6	63.3	97.3	197.0	448.9
Northern white cedar	1.9	9.8	16.5	12.7	16.5	34.5	91.9
Hemlock	.3	14.5	46.8	117.1	134.9	206.5	520.1
Other softwoods	.0	.0	.1	.0	.0	.0	.1
<b>Total softwoods</b>	<b>19.1</b>	<b>129.8</b>	<b>258.5</b>	<b>368.0</b>	<b>473.5</b>	<b>755.6</b>	<b>2,004.5</b>
Sugar maple	16.2	44.2	164.6	337.7	556.3	328.2	1,447.2
Red maple	9.6	30.5	83.5	154.3	169.4	158.5	605.8
Yellow birch	2.9	36.5	70.3	156.5	147.8	84.1	498.1
Paper birch	1.8	23.3	53.6	92.9	103.0	137.1	411.7
Gray birch	.0	1.8	.7	2.3	2.3	.9	8.0
Beech	2.7	5.4	36.9	101.7	125.2	57.8	329.7
White ash	3.4	12.9	35.0	58.2	75.4	88.9	273.8
Black ash	.0	.9	1.0	8.3	.5	5.7	16.4
Aspen	2.0	12.6	24.3	48.7	39.2	46.5	173.3
White oaks	.4	.0	8.9	10.9	2.6	.7	23.5
Red oaks	3.0	7.4	20.4	37.2	70.3	60.9	199.2
Basswood	1.1	2.7	4.0	7.9	12.1	5.6	33.4
Elm	1.7	4.9	10.2	15.7	6.4	4.9	43.8
Other hardwoods	2.7	13.2	31.5	58.5	49.5	51.6	207.0
<b>Total hardwoods</b>	<b>47.5</b>	<b>196.3</b>	<b>544.9</b>	<b>1,090.8</b>	<b>1,360.0</b>	<b>1,031.4</b>	<b>4,270.9</b>
<b>Total, all species</b>	<b>66.6</b>	<b>326.1</b>	<b>803.4</b>	<b>1,458.8</b>	<b>1,833.5</b>	<b>1,787.0</b>	<b>6,275.4</b>

# NET CUBIC FOOT VOLUME OF GROWING STOCK BY DIAMETER CLASS

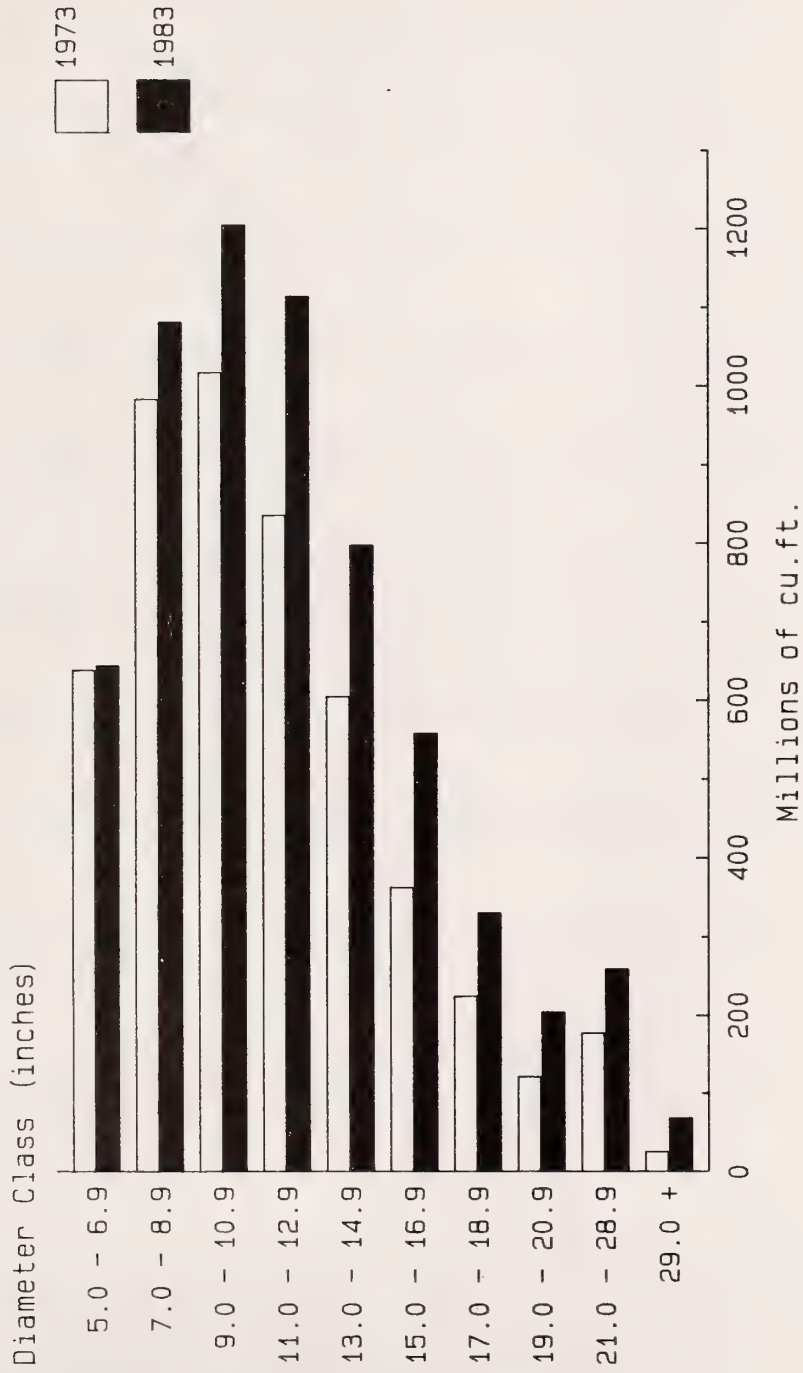




Table 28.--Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1973  
(In millions of cubic feet)

Species	Diameter class (inches at breast height)											All classes		
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9			
Balsam fir	84.9	97.4	78.0	36.7	16.9	6.8	2.4	.0	.0	.0	.0	.0	.0	323.1
Tamarack	.9	.7	1.1	2.3	.7	.0	.7	.0	.0	.0	.0	.0	.0	6.4
White spruce	9.9	10.1	8.6	11.8	6.6	6.2	.0	1.3	.9	.0	.0	.0	.0	55.4
Black spruce	1.9	.0	.6	.0	.0	.0	1.0	.0	.0	.0	.0	.0	.0	3.5
Red spruce	71.5	118.3	118.7	85.0	58.0	25.8	7.1	4.3	4.1	.0	.0	.0	.0	492.8
Red pine	5.5	7.8	8.8	5.7	4.5	2.0	1.0	.0	1.9	.0	.0	.0	.0	37.2
White pine	29.6	53.3	59.1	49.8	50.0	45.4	34.8	14.0	34.5	5.0	.0	.0	.0	375.5
Northern white-cedar	26.2	19.2	14.9	7.3	1.5	1.3	.5	.0	.1	.0	.0	.0	.0	71.0
Hemlock	37.9	66.0	79.8	84.8	62.3	30.3	18.7	18.0	8.9	.0	.0	.0	.0	406.7
Other softwoods	.1	.9	1.9	2.1	.8	.0	.0	.0	.0	.0	.0	.0	.0	5.8
<b>Total softwoods</b>	<b>268.4</b>	<b>373.7</b>	<b>371.5</b>	<b>285.5</b>	<b>201.3</b>	<b>117.8</b>	<b>66.2</b>	<b>37.6</b>	<b>50.4</b>	<b>5.0</b>	<b>1,777.4</b>			
Sugar maple	104.6	181.9	204.0	184.8	128.6	83.9	64.9	34.5	66.2	11.1	1,064.5			
Red maple	57.6	98.3	105.5	87.0	54.4	32.2	15.4	9.5	11.9	1.4	473.2			
Yellow birch	38.7	54.8	67.9	56.7	52.3	42.7	20.0	15.4	15.7	5.4	369.6			
Paper birch	59.7	88.8	79.1	53.1	31.3	15.2	7.4	1.5	6.2	.0	342.3			
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0			.0
Beech	16.4	47.3	37.4	38.3	53.4	26.2	18.5	11.0	8.6	.0	257.1			
White ash	28.0	39.8	40.0	39.9	19.1	8.8	4.6	.8	4.2	1.1	186.3			
Black ash	1.5	2.3	1.1	1.3	.0	1.4	.0	.0	.0	.0	7.6			
Aspen	27.3	45.0	40.4	21.5	15.9	6.4	3.8	1.2	.9	.0	162.4			
White oak	1.2	.0	3.9	4.0	3.6	.8	.7	.0	.3	.0	14.5			
Red oaks	6.8	15.6	15.0	21.5	25.3	15.5	14.9	6.4	5.6	1.4	128.0			
Basswood	1.6	3.3	5.3	7.9	3.5	1.4	2.0	.0	2.9	.0	27.9			
Elm	5.9	7.3	4.5	11.1	4.0	3.1	2.8	1.3	4.8	1.6	46.4			
Other hardwoods	22.5	26.9	43.5	24.8	13.6	8.6	4.5	3.5	.8	.0	148.7			
<b>Total hardwoods</b>	<b>371.8</b>	<b>611.3</b>	<b>647.6</b>	<b>551.9</b>	<b>405.0</b>	<b>246.2</b>	<b>159.5</b>	<b>85.1</b>	<b>128.1</b>	<b>22.0</b>	<b>3,228.5</b>			
<b>Total, all species</b>	<b>640.2</b>	<b>985.0</b>	<b>1,019.1</b>	<b>837.4</b>	<b>606.3</b>	<b>364.0</b>	<b>225.7</b>	<b>122.7</b>	<b>178.5</b>	<b>27.0</b>	<b>5,005.9</b>			

Table 29.--Net volume of growing-stock trees on timberland by species and diameter class, Vermont, 1983

(In millions of cubic feet)

Species	Diameter class (inches at breast height)											All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29+		
Balsam fir	83.9	101.4	83.3	59.1	20.7	4.1	.0	1.1	.0	.0	.0	353.6
Tamarack	1.8	1.8	2.0	2.1	.9	1.0	.0	.0	.0	.0	.0	9.6
White spruce	11.5	17.8	22.5	15.0	3.8	1.7	1.1	.0	.0	.0	.0	73.4
Black spruce	.6	.0	4.3	.9	.0	.0	.0	.0	.0	.0	.0	5.8
Red spruce	68.2	104.0	115.2	82.1	54.3	24.3	20.2	4.0	10.0	.0	.0	482.3
Red pine	.5	.8	2.3	1.4	4.9	4.4	2.0	.9	1.6	.0	.0	18.8
White pine	35.9	42.2	68.0	67.4	62.6	59.0	36.0	23.2	41.9	12.7	.0	448.9
Northern white-cedar	15.4	23.1	21.4	14.5	7.4	7.0	.8	1.5	7.9	.0	.0	91.9
Hemlock	43.9	77.1	89.3	105.3	78.7	58.4	33.1	16.4	17.2	.7	.0	520.1
Other softwoods	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1
<b>Total softwoods</b>	<b>261.7</b>	<b>368.3</b>	<b>408.3</b>	<b>347.8</b>	<b>233.3</b>	<b>159.9</b>	<b>93.2</b>	<b>47.1</b>	<b>71.5</b>	<b>13.4</b>	<b>13.4</b>	<b>2,004.5</b>
Sugar maple	114.5	220.1	231.4	263.0	207.6	142.2	84.5	74.6	90.8	18.5	.0	1,447.2
Red maple	54.6	123.7	124.0	104.7	79.5	57.1	25.8	17.0	17.2	2.2	.0	605.8
Yellow birch	35.4	70.7	101.9	88.9	68.3	46.7	29.5	15.6	33.1	8.0	.0	498.1
Paper birch	57.8	102.2	120.6	67.5	34.4	15.0	9.1	4.1	1.0	.0	.0	411.7
Gray birch	5.1	2.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	8.0
Beech	29.3	46.7	53.8	57.2	49.4	33.8	26.6	17.3	14.7	.9	.0	329.7
White ash	24.2	51.6	47.1	50.5	42.5	32.6	13.1	5.1	7.1	.0	.0	273.8
Black ash	3.0	6.2	.9	3.3	1.4	.5	1.1	.0	.0	.0	.0	16.4
Aspen	16.4	18.3	36.2	34.0	24.7	22.1	11.8	4.8	5.0	.0	.0	173.3
White oak	.2	4.7	3.7	2.8	1.9	2.2	1.2	1.7	1.9	3.2	.0	23.5
Red oaks	7.0	15.7	22.9	38.3	23.7	25.3	19.2	11.7	14.3	21.1	.0	199.2
Basswood	3.0	3.0	7.4	4.7	7.4	3.2	2.7	1.1	.0	.9	.0	33.4
Elm	3.0	8.6	9.5	8.4	6.1	2.9	2.4	.6	1.5	.8	.0	43.8
Other hardwoods	30.5	40.3	38.8	44.6	18.7	15.7	11.1	4.5	2.0	.8	.0	207.0
<b>Total hardwoods</b>	<b>384.0</b>	<b>714.7</b>	<b>798.2</b>	<b>767.9</b>	<b>565.6</b>	<b>399.3</b>	<b>238.1</b>	<b>158.1</b>	<b>188.6</b>	<b>56.4</b>	<b>56.4</b>	<b>4,270.9</b>
<b>Total, all species</b>	<b>645.7</b>	<b>1,083.0</b>	<b>1,206.5</b>	<b>1,115.7</b>	<b>798.9</b>	<b>559.2</b>	<b>331.3</b>	<b>205.2</b>	<b>260.1</b>	<b>69.8</b>	<b>69.8</b>	<b>6,275.4</b>

Table 30.--Net volume of sawtimber trees on timberland by species and diameter class, Vermont, 1973

Species	Diameter class (inches at breast height)										All classes
	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 23.9	24.0- 26.9	27.0- 29.9	30.0- 32.9	
Balsam fir	286.4	161.3	81.4	32.6	12.7	.0	.0	.0	.0	.0	584.4
Tamarack	3.8	7.9	2.6	.0	2.9	.0	.0	.0	.0	.0	17.2
White spruce	29.4	51.4	32.0	31.0	.0	6.8	4.9	.0	.0	.0	155.5
Black spruce	2.4	.0	.0	.0	5.2	.0	.0	.0	.0	.0	7.6
Red spruce	436.8	373.9	272.6	125.7	37.3	22.3	21.3	.0	.0	.0	1,289.9
Red pine	33.6	25.3	20.9	9.6	5.0	.0	10.2	.0	.0	.0	104.6
White pine	197.3	198.2	213.8	210.8	161.6	69.9	177.9	26.6	.0	.0	1,256.1
Northern white-cedar	36.5	20.5	4.6	4.5	2.0	.0	.3	.0	.0	.0	68.4
Hemlock	245.3	311.9	244.2	126.2	67.3	75.1	33.8	.0	.0	.0	1,103.8
Other softwoods	6.6	8.9	3.3	.0	.0	.0	.0	.0	.0	.0	18.8
<b>Total softwoods</b>	<b>1,288.1</b>	<b>1,159.3</b>	<b>875.4</b>	<b>540.4</b>	<b>294.0</b>	<b>174.1</b>	<b>248.4</b>	<b>26.6</b>	<b>4,606.3</b>		
Sugar maple	.0	740.2	557.3	358.5	299.9	161.5	324.3	58.0	2,499.7		
Red maple	.0	330.8	222.0	137.7	66.2	45.6	49.6	5.8	857.7		
Yellow birch	.0	229.6	215.1	185.5	83.5	67.8	78.3	29.5	889.3		
Paper birch	.0	217.8	128.9	63.6	34.4	5.0	27.2	.0	476.9		
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0		
Beech	.0	169.7	245.2	127.1	93.4	54.8	47.7	.0	737.9		
White ash	.0	169.3	82.1	41.6	20.2	3.8	19.2	5.2	341.4		
Black ash	.0	5.3	.0	6.5	.0	.0	.0	.0	11.8		
Aspen	.0	91.7	72.3	28.6	20.4	5.7	3.2	.0	221.9		
White oaks	.0	16.3	15.3	3.2	3.4	.0	1.5	.0	39.7		
Red oaks	.0	85.8	107.6	67.4	70.4	31.4	27.0	7.9	397.5		
Basswood	.0	29.2	16.3	7.6	9.5	.0	17.1	.0	79.7		
Elm	.0	40.6	16.3	15.1	12.8	5.6	18.8	7.5	116.7		
Other hardwoods	.0	99.8	56.9	38.2	20.1	15.1	4.3	.0	234.4		
<b>Total hardwoods</b>	<b>.0</b>	<b>2,226.1</b>	<b>1,735.3</b>	<b>1,080.6</b>	<b>734.2</b>	<b>396.3</b>	<b>618.2</b>	<b>113.9</b>	<b>6,904.6</b>		
<b>Total, all species</b>	<b>1,288.1</b>	<b>3,385.4</b>	<b>2,610.7</b>	<b>1,621.0</b>	<b>1,028.2</b>	<b>570.4</b>	<b>866.6</b>	<b>140.5</b>	<b>11,510.9</b>		

<sup>a</sup>International 1/4-inch rule.



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

(In millions of board feet)<sup>a</sup>

Species	Diameter class (inches at breast height)										All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29+			
Balsam fir	299.3	248.0	94.4	19.0	.0	4.6	.0	.0	.0	.0	665.3
Tamarack	6.4	7.5	3.5	4.3	.0	.0	.0	.0	.0	.0	21.7
White spruce	73.3	58.8	16.1	6.9	4.6	.0	.0	.0	.0	.0	159.7
Black spruce	14.0	3.6	.0	.0	.0	.0	.0	.0	.0	.0	17.6
Red spruce	375.1	316.0	223.7	108.0	91.1	18.0	46.0	.0	.0	.0	1,177.9
Red pine	5.8	5.2	20.4	16.9	9.4	3.0	5.0	.0	.0	.0	65.7
White pine	198.8	243.3	244.5	238.5	152.1	95.1	181.2	50.8	.0	.0	1,404.3
Northern white-cedar	50.3	41.0	22.7	22.9	2.7	5.6	3.2	.0	.0	.0	148.4
Hemlock	252.1	359.2	293.0	236.1	132.3	67.7	77.6	3.7	.0	.0	1,421.7
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>1,275.1</b>	<b>1,282.6</b>	<b>918.3</b>	<b>652.6</b>	<b>392.2</b>	<b>194.0</b>	<b>313.0</b>	<b>54.5</b>	<b>54.5</b>	<b>54.5</b>	<b>5,082.3</b>
Sugar maple	.0	866.6	760.8	548.9	336.8	309.2	408.5	93.8	.0	.0	3,324.6
Red maple	.0	335.6	279.4	225.2	100.7	69.4	75.3	7.3	.0	.0	1,092.9
Yellow birch	.0	297.5	253.3	176.4	116.5	64.4	140.2	40.1	.0	.0	1,088.4
Paper birch	.0	236.2	124.9	57.4	37.6	16.9	4.1	.0	.0	.0	477.1
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	.0	192.5	191.2	136.7	109.0	72.0	68.2	5.0	.0	.0	774.6
White ash	.0	176.8	161.0	136.9	55.8	20.5	32.4	.0	.0	.0	583.4
Black ash	.0	12.5	5.2	2.1	4.8	.0	.0	.0	.0	.0	24.6
Aspen	.0	126.2	94.0	90.2	48.9	21.0	24.5	.0	.0	.0	404.8
White oaks	.0	9.7	7.0	8.4	4.6	6.3	8.6	13.4	.0	.0	58.0
Red oaks	.0	121.2	80.3	93.6	73.0	47.5	63.0	73.5	.0	.0	552.1
Basswood	.0	16.6	25.5	14.4	10.4	4.7	.0	4.9	.0	.0	76.5
Elm	.0	29.1	21.1	11.7	9.5	2.9	6.8	3.7	.0	.0	84.8
Other hardwoods	.0	152.8	70.7	63.8	45.7	17.6	8.7	4.1	.0	.0	363.4
<b>Total hardwoods</b>	<b>.0</b>	<b>2,573.3</b>	<b>2,074.4</b>	<b>1,565.7</b>	<b>953.3</b>	<b>652.4</b>	<b>840.3</b>	<b>245.8</b>	<b>245.8</b>	<b>245.8</b>	<b>8,905.2</b>
<b>Total, all species</b>	<b>1,275.1</b>	<b>3,855.9</b>	<b>2,992.7</b>	<b>2,218.3</b>	<b>1,345.5</b>	<b>846.4</b>	<b>1,153.3</b>	<b>300.3</b>	<b>300.3</b>	<b>300.3</b>	<b>13,987.5</b>

<sup>a</sup>International 1/4-inch rule.

Table 32.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Vermont, 1973

Species	All size classes					>15" Diameter at breast height				
	(In millions of board feet) <sup>a</sup>									
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	584.4	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	17.2	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	155.5	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	7.6	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	1,289.9	.0	.0	.0	.0	.0
Red pine	5.8	5.9	92.9	.0	104.6	.0	4.9	19.8	.0	24.7
White pine	15.5	134.0	641.1	465.5	1,256.1	11.4	68.7	290.7	276.0	646.8
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	68.4	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	1,103.8	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	18.8	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>21.3</b>	<b>139.9</b>	<b>734.0</b>	<b>465.5</b>	<b>4,606.3</b>	<b>11.4</b>	<b>73.6</b>	<b>310.5</b>	<b>276.0</b>	<b>671.5</b>
Sugar maple	292.2	590.0	1,192.7	424.8	2,499.7	229.5	319.7	457.8	195.2	1,202.2
Red maple	22.4	139.3	529.8	166.2	857.7	18.2	68.3	173.0	45.4	304.9
Yellow birch	87.9	233.9	484.9	82.6	889.3	75.5	152.8	186.9	29.5	444.7
Paper birch	38.3	91.9	222.6	124.1	476.9	21.4	36.2	45.8	26.8	130.2
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	24.8	109.2	410.0	193.9	737.9	15.4	57.9	185.3	64.4	323.0
White ash	39.4	120.1	132.0	49.9	341.4	27.5	25.3	30.1	7.0	89.9
Black ash	.0	2.4	5.2	4.2	11.8	.0	2.4	3.2	1.0	6.6
Aspen	3.5	19.9	160.3	38.2	221.9	3.5	13.9	34.8	5.9	58.1
White oaks	3.1	11.3	21.0	4.3	39.7	.0	4.6	2.7	.7	8.0
Red oaks	68.0	98.1	167.2	64.2	397.5	61.7	63.3	57.8	21.3	204.1
Basswood	6.4	10.2	44.3	18.8	79.7	6.4	8.4	5.7	13.5	34.0
Elm	9.5	25.8	65.9	15.5	116.7	9.6	13.1	33.5	3.7	59.9
Other hardwoods	13.1	47.9	135.1	38.3	234.4	11.7	17.8	37.4	10.8	77.7
<b>Total hardwoods</b>	<b>608.6</b>	<b>1,500.0</b>	<b>3,571.0</b>	<b>1,265.0</b>	<b>6,904.6</b>	<b>480.4</b>	<b>783.7</b>	<b>1,254.0</b>	<b>425.2</b>	<b>2,943.3</b>
Percent of hardwood in each grade	9	21	52	18	100	16	27	43	14	100

<sup>a</sup> International 1/4-inch rule.

<sup>b</sup> Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

<sup>c</sup> These species are not divided into standard-lumber grades.

Table 33.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Vermont, 1983

(In millions of board feet)<sup>a</sup>

Species	All size classes					>15" Diameter at breast height				
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	665.3	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	21.7	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	159.7	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	17.6	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	1,177.9	.0	.0	.0	.0	.0
Red pine	18.5	13.4	33.8	.0	65.7	8.6	7.6	18.1	.0	34.3
White pine	64.2	317.3	624.8	398.0	1,404.3	51.6	121.0	312.0	233.1	717.7
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	148.4	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	1,421.7	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>82.7</b>	<b>330.7</b>	<b>658.6</b>	<b>398.0</b>	<b>5,082.3</b>	<b>60.2</b>	<b>128.6</b>	<b>330.1</b>	<b>233.1</b>	<b>752.0</b>
Sugar maple	358.6	798.7	1,499.5	667.8	3,324.6	266.1	384.8	673.8	372.4	1,697.1
Red maple	88.9	273.8	527.7	202.5	1,092.9	76.1	135.8	189.9	76.0	477.8
Yellow birch	96.8	306.6	556.4	128.6	1,088.4	83.2	140.5	239.9	73.9	537.5
Paper birch	29.3	146.8	233.6	67.4	477.1	22.5	36.0	36.7	20.8	116.0
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	42.1	122.6	459.4	150.5	774.6	25.3	45.0	233.2	87.6	391.1
White ash	139.8	164.9	206.5	72.2	583.4	89.1	66.2	67.2	23.1	245.6
Black ash	3.0	3.0	15.0	3.6	24.6	3.0	1.7	1.9	.2	6.8
Aspen	50.9	106.7	178.1	69.1	404.8	45.8	43.9	66.4	28.6	184.7
White oaks	5.9	9.8	31.4	10.9	58.0	4.8	5.1	24.8	6.6	41.3
Red oaks	145.5	157.3	169.0	80.3	552.1	129.1	70.1	93.6	57.7	350.5
Basswood	6.0	26.0	38.8	5.7	76.5	6.0	12.2	14.6	1.5	34.3
Elm	3.7	31.2	36.1	13.8	84.8	3.7	8.0	16.1	6.8	34.6
Other hardwoods	30.8	99.3	175.2	58.1	363.4	20.8	49.2	45.9	24.3	140.2
<b>Total hardwoods</b>	<b>1,001.3</b>	<b>2,246.7</b>	<b>4,126.7</b>	<b>1,530.5</b>	<b>8,905.2</b>	<b>775.5</b>	<b>998.5</b>	<b>1,704.0</b>	<b>779.5</b>	<b>4,257.5</b>
Percent of hardwood in each grade	11	25	47	17	100	18	24	40	18	100

<sup>a</sup>International 1/4-inch rule.

<sup>b</sup>Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

<sup>c</sup>These species are not divided into standard-lumber grades.



Table 34.--Average annual net change of growing-stock volume on timberland by species and component, Vermont, 1973-83

(In thousands of cubic feet)

Species	Ingrowth	Accretion	Gross growth	Mortality	Cull increment	Net growth	Removals <sup>a</sup>	Net change
Spruce/fir	12,214	20,514	32,728	-12,172	- 5,161	15,395	-11,424	3,971
White & red pine	2,865	14,908	17,773	- 1,185	- 3,369	13,219	- 7,807	5,412
Hemlock	3,951	17,736	21,687	- 2,576	- 3,887	15,224	- 4,054	11,170
Other softwoods	1,270	2,736	4,006	- 591	- 632	2,783	- 969	1,814
Total softwoods	20,300	55,894	76,194	-16,524	-13,049	46,621	-24,254	22,367
Sugar maple	8,160	53,707	61,867	- 6,577	- 6,419	48,871	-11,171	37,700
Soft maples	7,622	20,248	27,870	- 2,113	- 9,087	16,670	- 3,598	13,072
Yellow birch	4,522	19,265	23,787	- 3,370	- 3,116	17,301	- 4,633	12,668
White birch	3,054	13,689	16,743	- 2,762	- 3,678	10,303	- 2,688	7,615
Beech	6,190	10,952	17,142	- 3,673	- 3,141	10,328	- 3,167	7,161
Ash	2,035	9,909	11,944	- 59	- 229	11,656	- 2,167	9,489
Oaks	803	10,528	11,331	- 1,205	- 447	9,679	- 1,786	7,893
Basswood	299	511	810	0	0	810	- 269	541
Elm	568	353	921	- 697	- 75	149	- 409	-260
Other hardwoods	5,259	19,500	24,759	- 5,979	- 9,073	9,707	- 2,877	6,830
Total hardwoods	38,512	158,662	197,174	-26,435	-35,265	135,474	-32,765	102,709
Total, all species	58,812	214,556	273,368	-42,959	-48,314	182,095	-57,019	125,076

<sup>a</sup>Removals are based on data from Timber Cut Summaries issued annually by the Vermont Department of Forests, Parks and Recreation.

OUTPUT OF TIMBER PRODUCTS  
VERMONT, 1982

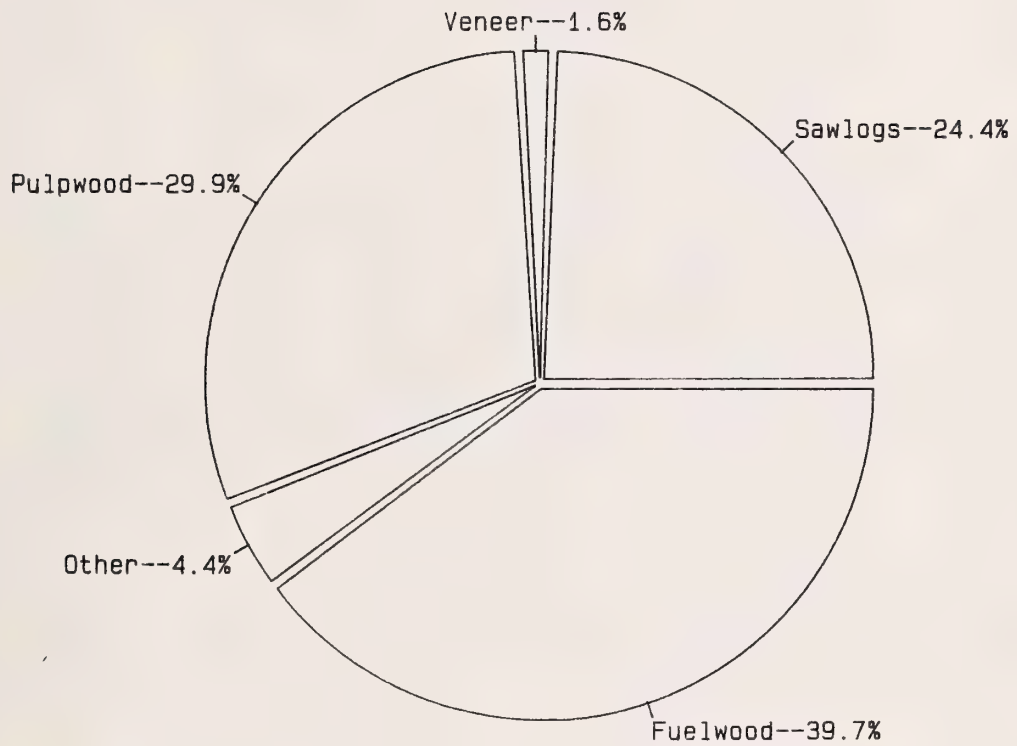


Table 35.--Output of timber products by product, softwoods and hardwoods, and source of material, Vermont, 1982

Product and species group	Standard units	Output from roundwood		Output from manufacturing residues		Total output	
		Number of units	Thousand cubic feet	Number of units	Thousand cubic feet	Number of units	Thousand cubic feet
<b>Sawlogs</b>							
Softwood	Mbf <sup>a</sup>	87,892	14,070	0	0	87,892	14,070
Hardwood	Mbf	69,975	10,664	0	0	69,975	10,664
Total	Mbf	157,867	24,734	0	0	157,867	24,734
<b>Veneer logs and bolts</b>							
Softwood	Mbf	2,250	360	0	0	2,250	360
Hardwood	Mbf	8,144	1,245	0	0	8,144	1,245
Total	Mbf	10,394	1,605	0	0	10,394	1,605
<b>Pulpwood</b>							
Softwood	Std cords <sup>b</sup>	148,057	12,585	33,423	2,841	181,480	15,426
Hardwood	Std cords	153,239	13,025	21,451	1,823	174,690	14,849
Total	Std cords	301,296	25,610	54,874	4,664	356,170	30,274
<b>Poles</b>							
Softwood	M pieces	3	84	0	0	3	84
Hardwood	M pieces	0	8	0	0	0	8
Total	M pieces	3	92	0	0	3	92
<b>Posts</b>							
Softwood	M pieces	18	37	0	0	18	37
Hardwood	M pieces	0	0	0	0	0	0
Total	M pieces	18	37	0	0	18	37
<b>Other<sup>c</sup></b>							
Softwood	Mft <sup>3</sup>		2,242		165		2,407
Hardwood	Mft <sup>3</sup>		1,924		150		2,074
Total	Mft <sup>3</sup>		4,166		315		4,481



Table 35.--continued

Product and species group	Standard units	Output from roundwood		Output from manufacturing residues		Total output	
		Number of units	Thousand cubic feet	Number of units	Thousand cubic feet	Number of units	Thousand cubic feet
Total industrial products							
Softwood	Mft <sup>3</sup>		29,378		3,006		32,384
Hardwood	Mft		26,866		1,973		28,840
Total	Mft <sup>3</sup>		56,244		4,979		61,224
Fuelwood							
Softwood	std cords <sup>d</sup>	9,097	728	16,788	1,343	25,885	2,071
Hardwood	std cords	430,667	34,453	46,775	3,742	477,442	38,195
Total	std cords	439,764	35,181	63,563	5,085	503,327	40,266
All products <sup>e</sup>							
Softwood	Mft <sup>3</sup>		30,106		4,349		34,455
Hardwood	Mft <sup>3</sup>		61,320		5,715		67,035
Total	Mft <sup>3</sup>		91,425		10,064		101,490

<sup>a</sup>International 1/4-inch rule.

<sup>b</sup>Rough wood basis, includes both production from roundwood and chips from manufacturing residues, equivalent to 85 cubic feet of solid wood.

<sup>c</sup>Includes cabin and tie logs, dimension stock, fencing, reconstituted wood panel products, shingles, turned products, and miscellaneous specialty products.

<sup>d</sup>Rough wood basis includes both production from roundwood and chips from manufacturing residues, equivalent to 80 cubic feet of solid wood.

<sup>e</sup>Does not include 2,845 cubic feet of softwood and 2,601 cubic feet of hardwood residues used for agricultural purposes.

Table 36.--Output of roundwood products by product, softwoods and hardwoods, and source of material, Vermont, 1982

(In thousands of cubic feet)

Product and species group	Growing-stock trees <sup>a</sup>			Rough and rotten trees <sup>a</sup>	Salvable dead trees <sup>a</sup>	Other sources <sup>b</sup>	All sources
	Poletimber	Sawtimber	Total				
PRINCIPAL INDUSTRIAL PRODUCTS							
Sawlogs							
Softwood	152	11,200	11,352	36	180	2,502	14,070
Hardwood	171	9,416	9,587	292	0	785	10,664
Total	323	20,616	20,939	328	180	3,287	24,734
Veneer logs and bolts							
Softwood	6	327	333	0	0	27	360
Hardwood	20	1,131	1,151	0	0	94	1,245
Total	26	1,458	1,484	0	0	121	1,605
Pulpwood							
Softwood	2,390	7,637	10,027	424	88	2,046	12,585
Hardwood	2,525	7,842	10,367	1,023	48	1,587	13,025
Total	4,915	15,479	20,394	1,447	136	3,633	25,610
MISCELLANEOUS INDUSTRIAL PRODUCTS							
Poles							
Softwood	17	53	70	0	0	14	84
Hardwood	2	5	7	0	0	1	8
Total	19	58	77	0	0	15	92
Posts							
Softwood	8	23	31	0	0	6	37
Hardwood	0	0	0	0	0	0	0
Total	8	23	31	0	0	6	37
Other							
Softwood	461	1,404	1,865	0	0	377	2,242
Hardwood	396	1,205	1,601	0	0	323	1,924
Total	857	2,609	3,466	0	0	700	4,166

Table 36.--continued

(In thousands of cubic feet)

Product and species group	Growing-stock trees <sup>a</sup>			Rough and rotten trees <sup>a</sup>	Salvable dead trees <sup>a</sup>	Other sources <sup>b</sup>	All sources
	Poletimber	Sawtimber	Total				
TOTAL INDUSTRIAL PRODUCTS							
Softwood	3,034	20,644	23,678	460	268	4,972	29,378
Hardwood	3,114	19,599	22,713	1,315	48	2,790	26,866
Total	6,148	40,243	46,391	1,775	316	7,762	56,244
NONINDUSTRIAL PRODUCTS							
Fuelwood							
Softwood	44	142	186	135	277	129	728
Hardwood	1,939	6,020	7,959	14,067	4,820	7,607	34,453
Total	1,983	6,162	8,145	14,202	5,097	7,736	35,181
ALL PRODUCTS							
Softwood	3,078	20,786	23,864	595	545	5,101	30,106
Hardwood	5,053	25,619	30,672	15,382	4,868	10,397	61,319
Total	8,131	46,405	54,536	15,977	5,413	15,498	91,425

<sup>a</sup>On timberland.<sup>b</sup>Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas, and any material from noncommercial forest land or nonforest land such as fence rows and suburban areas.



Table 37.--Timber removals from growing stock and sawtimber on timberland by item, softwoods and hardwoods, Vermont, 1982

Item	Growing stock			Sawtimber		
	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species
	-----Thousand cubic feet-----			-----Thousand board feet <sup>a</sup> -----		
Roundwood products:						
Sawlogs	11,352	9,587	20,939	50,316	40,253	90,569
Veneer logs and bolts	333	1,151	1,484	1,398	4,835	6,233
Pulpwood	10,027	10,367	20,394	32,695	36,023	68,718
Poles	70	7	77	274	21	295
Posts	31	0	31	119	0	119
Other	1,865	1,601	3,466	7,267	4,969	12,236
Fuelwood	186	7,959	8,145	608	9,594	10,202
All products	23,864	30,672	54,536	92,677	95,695	188,372
Logging residues	3,294	3,323	5,617	1,900	610	2,510
Administrative						
withdrawals	1,863	8,061	9,924	4,873	18,544	23,417
Total removals	29,021	41,056	70,077	99,450	114,849	214,299

<sup>a</sup>International 1/4-inch rule.

Table 38.--Volume of unused residues<sup>a</sup> from primary manufacturing plants by softwoods and hardwoods, type of residue, and industry, Vermont, 1982

(In thousands of cubic feet)

Species group and type of residue	Lumber <sup>b</sup>	Veneer and plywood	Other	All industries
<b>Softwoods</b>				
Coarse <sup>c</sup>	141	0	71	212
Fine <sup>d</sup>	12	0	4	16
Total	153	0	75	228
<b>Hardwoods</b>				
Coarse	34	0	0	34
Fine	6	0	0	6
Total	40	0	0	40
<b>All species</b>				
Coarse	175	0	71	246
Fine	18	0	4	22
Total	193	0	75	268

<sup>a</sup>Includes only woody material; does not include bark.

<sup>b</sup>Includes residues from sawlogs and boltwood sawn into lumber products.

<sup>c</sup>Includes slabs, edgings, trimmings, veneer cores, and other material suitable for chipping.

<sup>d</sup>Includes sawdust, shavings, and other materials considered unsuitable for chipping.

Table 39.--Change in area of timberland between inventories by forest-type group and stand-size class, Vermont, 1973-83

Group or class	1973	1983	Change	Change
	----- Thousands of acres -----			Percent
FOREST-TYPE GROUP				
White/red pine	682.2	631.3	-50.9	-7
Spruce/fir group	672.9	633.6	-39.3	-6
Oak/pine group	16.1	13.5	-2.6	-16
Oak/hickory group	137.1	164.4	27.3	20
Elm/ash/red maple group	103.7	99.0	-4.7	-5
Northern hardwoods group	2,603.1	2,697.5	94.4	4
Aspen/birch group	214.0	182.8	-31.2	-15
Indeterminate	1.8	-	-1.8	-100
All forest types	4,430.9	4,422.1	-8.8	
STAND-SIZE CLASS				
Sawtimber	1,986.3	2,887.8	901.5	45
Poletimber	1,636.1	1,048.5	-587.6	-36
Sapling and seedling	808.5	473.8	-334.7	-41
Nonstocked	.0	12.0	12.0	
All classes	4,430.9	4,422.1	-8.8	



Table 40.--Change in volume between inventories, Vermont, 1973-83

Species	Growing-stock volume			Sawtimber volume			
	1973	1983	Change	1973	1983	Change	
	--- Millions of cubic feet ---			--- Millions of board feet <sup>a</sup> ---			
		Percent			Percent		
Balsam fir	323.1	353.6	30.5	584.4	665.3	80.9	14
Tamarack	6.4	9.6	3.2	17.2	21.7	4.5	26
White spruce	55.4	73.4	18.0	155.5	159.7	4.2	3
Black spruce	3.5	5.8	2.3	7.6	17.6	10.0	132
Red spruce	492.8	482.3	-10.5	1,289.9	1,177.9	-112.0	-9
Red pine	37.2	18.8	-18.4	104.6	65.7	-38.9	-37
White pine	375.5	448.9	73.4	1,256.1	1,404.3	148.2	12
Northern white-cedar	71.0	91.9	20.9	68.4	148.4	80.0	117
Hemlock	406.7	520.1	113.4	1,103.8	1,421.7	317.9	29
Other softwoods	5.8	.1	-5.7	18.8	.0	-18.8	-100
<b>Total softwoods</b>	<b>1,777.4</b>	<b>2,004.5</b>	<b>227.1</b>	<b>4,606.3</b>	<b>5,082.3</b>	<b>476.0</b>	<b>10</b>
Sugar maple	1,064.5	1,447.2	382.7	2,499.7	3,324.6	824.9	33
Red maple	473.2	605.8	132.6	857.7	1,092.9	235.2	27
Yellow birch	369.6	498.1	128.5	889.3	1,088.4	199.1	22
Paper birch	342.3	411.7	69.4	476.9	477.1	.2	0
Gray birch	.0	8.0	8.0	.0	.0	.0	0
Beech	257.1	329.7	72.6	737.9	774.6	36.7	5
White ash	186.3	273.8	87.5	341.4	583.4	242.0	71
Black ash	7.6	16.4	8.8	11.8	24.6	12.8	108
Aspen	162.4	173.3	10.9	221.9	404.8	182.9	82
White oak	14.5	23.5	9.0	39.7	58.0	18.3	46
Red oak	128.0	199.2	71.2	397.5	552.1	154.6	39
Basswood	27.9	33.4	5.5	79.7	76.5	-3.2	-4
Elm	46.4	43.8	-2.6	116.7	84.8	-31.9	-27
Other hardwoods	148.7	207.0	58.3	234.4	363.4	129.0	55
<b>Total hardwoods</b>	<b>3,228.5</b>	<b>4,270.9</b>	<b>1,042.4</b>	<b>6,904.6</b>	<b>8,905.2</b>	<b>2,000.6</b>	<b>29</b>
<b>Total, all species</b>	<b>5,005.9</b>	<b>6,275.4</b>	<b>1,269.5</b>	<b>11,510.9</b>	<b>13,987.5</b>	<b>2,476.6</b>	<b>22</b>

<sup>a</sup>International 1/4-inch rule.

Table 41.--Sampling errors for estimates in various state tables, Vermont, 1983

(In percent)

Area by forest-type group (Table 3)	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
White/red pine	11	33	42	0	10
Spruce/fir	13	21	23	0	9
Oak/pine	100	100	0	0	71
Oak/hickory	30	38	45	100	20
Elm/ash/red maple	41	49	50	0	26
Northern hardwoods	5	10	16	100	3
Aspen/birch	41	24	71	0	20
All groups	2.8	7.1	10.0	70.9	.7

Species and diameter class	Number of trees (Table 17)	Growing-stock volume (Table 29)	Sawtimber volume (Table 31)
Balsam fir	10	11	14
Tamarack	56	46	46
White spruce	28	28	28
Black spruce	82	72	68
Red spruce	10	10	11
Red pine	78	89	95
White pine	13	12	13
Northern white-cedar	21	25	32
Hemlock	10	10	11
Other softwoods	100	100	-
Sugar maple	5	6	7
Red maple	8	8	10
Yellow birch	7	7	9
Paper birch	11	10	13
Gray birch	31	30	-
Beech	10	9	11
White ash	12	11	15
Black ash	40	48	78
Aspen	16	14	17
White oaks	45	35	35
Red oaks	17	18	20
Basswood	27	24	25
Elm	22	25	27
Other hardwoods	11	10	14
All species	1.8	2.0	2.8
D.b.h. class (inches)			
5.0 to 6.9	4	4	-
7.0 to 8.9	3	3	-
9.0 to 10.9	3	3	7
11.0 to 12.9	3	3	3
13.0 to 14.9	4	4	4
15.0 to 16.9	5	5	5
17.0 to 18.9	6	6	6
19.0 to 20.9	8	9	9
21.0 to 28.9	8	9	9
29 +	23	31	27

Table 42.--Area of timberland by forest type, forest-type group,  
and geographic unit, Vermont, 1983

(In thousands of acres)

Forest type and forest-type group	Northern Unit	Southern Unit	All units
Red pine	-	7.5	7.5
White pine	93.5	230.5	324.0
White pine/hemlock	59.5	48.4	107.9
Hemlock	90.3	101.6	191.9
White/red pine group	243.3	388.0	631.3
Balsam fir	102.4	-	102.4
Red spruce	51.7	63.3	115.0
Red spruce/balsam fir	257.3	29.3	286.6
White spruce	37.1	-	37.1
Black spruce	6.9	-	6.9
Northern white-cedar	73.6	12.0	85.6
Spruce/fir group	529.0	104.6	633.6
White pine/northern red oak/white ash	-	13.5	13.5
Oak/pine group	-	13.5	13.5
White oak/red oak/hickory	-	20.3	20.3
White oak	-	20.5	20.5
Northern red oak	7.5	71.7	79.2
Hawthorn/reverting field	2.9	12.0	14.9
Red maple/central hardwoods	-	6.4	6.4
Mixed central hardwoods	7.4	15.7	23.1
Oak/hickory group	17.8	146.6	164.4
Black ash/American elm/red maple	56.5	42.5	99.0
Elm/ash/red maple group	56.5	42.5	99.0
Sugar maple/beech/yellow birch	992.5	997.2	1,989.7
Black cherry	13.6	11.6	25.2
Red maple/northern hardwoods	117.8	198.8	316.6
Pin cherry/reverting field	21.7	16.5	38.2
Mixed northern hardwoods	111.3	216.5	327.8
Northern hardwoods group	1,256.9	1,440.6	2,697.5
Aspen	29.8	29.1	58.9
Paper birch	67.1	50.0	117.1
Gray birch	-	6.8	6.8
Aspen/birch group	96.9	85.9	182.8
All forest types	2,200.4	2,221.7	4,422.1



Table 43.--Area of timberland by ownership class  
and geographic unit, Vermont, 1983

(In thousands of acres)

Ownership class	Northern Unit	Southern Unit	All units
National Forest	2.9	180.2	183.1
Other federal	.8	7.8	8.6
State	113.4	73.8	187.2
County and municipal	22.4	28.2	50.6
<b>Total public</b>	<b>139.5</b>	<b>290.0</b>	<b>429.5</b>
Forest industry	302.7	106.9	409.6
Farmer <sup>a</sup>	513.8	460.4	974.2
Miscellaneous private:			
Individual	1,072.4	1,089.2	2,161.6
Corporate	49.7	168.9	218.6
Other	122.3	106.3	228.6
<b>Total private</b>	<b>2,060.9</b>	<b>1,931.7</b>	<b>3,992.6</b>
<b>All ownerships</b>	<b>2,200.4</b>	<b>2,221.7</b>	<b>4,422.1</b>

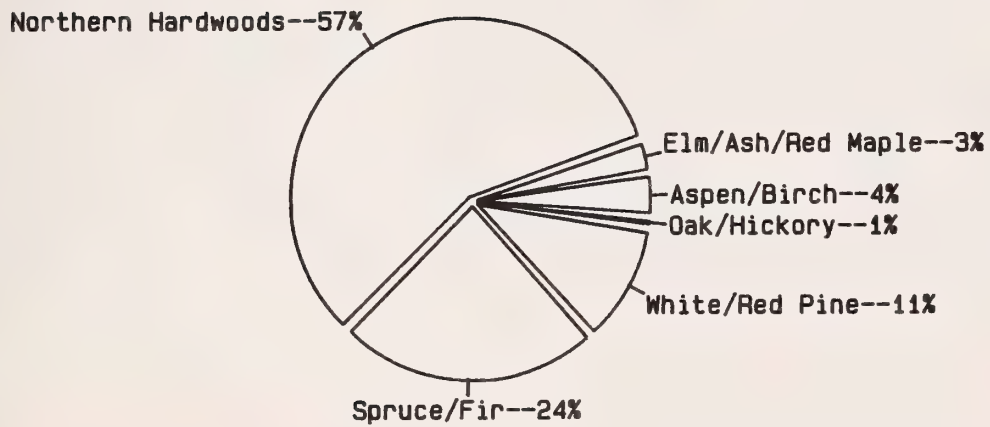
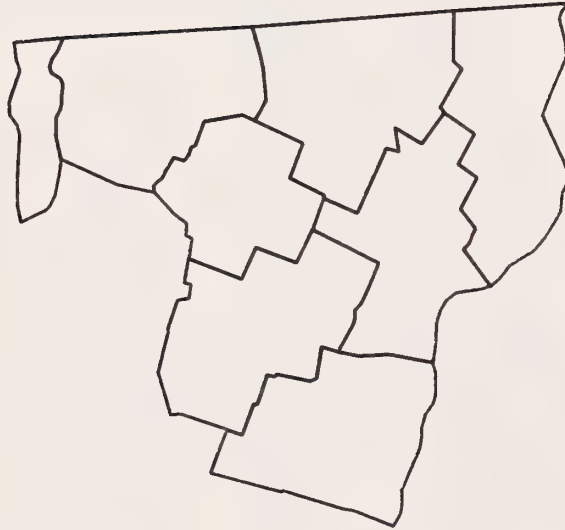
<sup>a</sup>Includes "part-time farmers" (persons whose occupation is not farmer but who say their land is part of a farm). These acres were included in miscellaneous private in the previous survey.

Table 44.--Net volume of growing-stock and sawtimber trees on timberland  
by ownership class and geographic unit, Vermont, 1983

Ownership class	Northern Unit	Southern Unit	All units
GROWING STOCK			
----- Million cubic feet -----			
National Forest	4.5	280.8	285.3
Public	228.4	160.5	388.9
Forest industry	400.5	130.4	530.9
Other private	2,522.9	2,547.4	5,070.3
<b>Total all classes</b>	<b>3,156.3</b>	<b>3,119.1</b>	<b>6,275.4</b>
SAWTIMBER			
----- Million board feet <sup>a</sup> -----			
National Forest	11.5	717.0	728.5
Public	493.6	370.3	863.9
Forest industry	936.3	274.3	1,210.6
Other private	5,340.1	5,844.4	11,184.5
<b>Total all classes</b>	<b>6,781.5</b>	<b>7,206.0</b>	<b>13,987.5</b>

<sup>a</sup>International 1/4-inch rule.

# NORTHERN UNIT TABLES



*Area of timberland by type group*

Table 45.--Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1973

(In thousands of acres)

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Red pine	8.4	1.1	.0	.0	9.5
White pine	48.9	45.1	43.0	.0	137.0
White pine/hemlock	30.0	18.5	9.2	.0	57.7
Hemlock	73.8	6.6	25.7	.0	106.1
White/red pine group	161.1	71.3	77.9	.0	310.3
Balsam fir	10.4	46.0	45.5	.0	101.9
Red spruce	26.2	22.5	68.6	.0	117.3
Red spruce/balsam fir	48.9	122.5	63.1	.0	234.5
White spruce	8.4	8.5	.0	.0	16.9
Black spruce	.0	9.2	.0	.0	9.2
Northern white-cedar	24.0	38.3	28.8	.0	91.1
Spruce/fir group	117.9	247.0	206.0	.0	570.9
Mixed central hardwoods	.0	.0	17.3	.0	17.3
Oak/hickory group	.0	.0	17.3	.0	17.3
Black ash/Amer. elm/red maple	.0	.0	27.7	.0	27.7
Elm/ash/red maple group	.0	.0	27.7	.0	27.7
Sugar maple/beech/yellow birch	555.1	340.1	52.7	.0	947.9
Black cherry	.0	6.6	.0	.0	6.6
Red maple/northern hardwoods	35.1	85.3	.0	.0	120.4
Mixed northern hardwoods	58.8	24.6	26.5	.0	109.9
Northern hardwoods group	649.0	456.6	79.2	.0	1,184.8
Aspen	.0	15.9	27.8	.0	43.7
Paper birch	9.6	34.9	9.2	.0	53.7
Gray birch	.0	8.4	.0	.0	8.4
Aspen/birch group	9.6	59.2	37.0	.0	105.8
All forest types	937.6	834.1	445.1	.0	2,216.8



Table 46.--Area of timberland by forest type, forest-type group, and stand-size class, Northern Unit, Vermont, 1983

(In thousands of acres)

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
White pine	80.8	.0	12.7	.0	93.5
White pine/hemlock	52.0	7.5	.0	.0	59.5
Hemlock	75.6	14.7	.0	.0	90.3
White/red pine group	208.4	22.2	12.7	.0	243.3
Balsam fir	15.0	64.8	22.6	.0	102.4
Red spruce	44.3	7.4	.0	.0	51.7
Red spruce/balsam fir	161.2	44.9	51.2	.0	257.3
White spruce	22.8	14.3	.0	.0	37.1
Black spruce	.0	.0	6.9	.0	6.9
Northern white-cedar	51.8	7.4	14.4	.0	73.6
Spruce/fir group	295.1	138.8	95.1	.0	529.0
Northern red oak	7.5	.0	.0	.0	7.5
Hawthorn/reverting field	.0	2.9	.0	.0	2.9
Mixed central hardwoods	.0	7.4	.0	.0	7.4
Oak/hickory group	7.5	10.3	.0	.0	17.8
Black ash/Amer. elm/red maple	14.8	21.3	20.4	.0	56.5
Elm/ash/red maple group	14.8	21.3	20.4	.0	56.5
Sugar maple/beech/yellow birch	641.3	281.3	69.9	.0	992.5
Black cherry	7.3	.0	6.3	.0	13.6
Red maple/northern hardwoods	51.8	58.4	7.6	.0	117.8
Pin cherry/reverting field	.0	.0	21.7	.0	21.7
Mixed northern hardwoods	37.8	59.3	14.2	.0	111.3
Northern hardwoods group	738.2	399.0	119.7	.0	1,256.9
Aspen	15.0	7.5	7.3	.0	29.8
Paper birch	.0	67.1	.0	.0	67.1
Aspen/birch group	15.0	74.6	7.3	.0	96.9
All forest types	1,279.0	666.2	255.2	.0	2,200.4

Table 47.--Number of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

Species	(In thousands of trees)													All classes	
	Diameter class (inches at breast height)														
	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+					
Balsam fir	23,941	13,905	6,203	2,968	650	114	0	0	0	0	0	0	0	0	47,798
Tamarack	724	337	198	17	34	29	0	0	0	0	0	0	0	0	1,339
White spruce	3,519	2,458	1,814	811	152	52	26	0	0	0	0	0	0	0	8,832
Black spruce	262	0	350	51	0	0	0	0	0	0	0	0	0	0	663
Red spruce	14,523	9,414	6,544	2,682	1,308	415	290	41	102	0	0	0	0	0	35,319
Red pine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White pine	2,703	2,493	2,270	1,680	1,281	938	408	218	189	7	12,187				
Northern white-cedar	5,711	4,300	2,305	1,052	355	276	26	40	18	0	14,083				
Hemlock	7,562	7,232	5,014	3,339	1,596	962	402	135	103	0	26,345				
Other softwoods	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total softwoods</b>	<b>58,945</b>	<b>40,139</b>	<b>24,698</b>	<b>12,600</b>	<b>5,376</b>	<b>2,786</b>	<b>1,152</b>	<b>451</b>	<b>412</b>	<b>7</b>	<b>146,566</b>				
Sugar maple	22,279	18,728	10,092	6,879	3,258	1,461	873	475	441	56	64,542				
Red maple	10,208	8,730	6,147	2,700	1,468	424	246	55	52	0	30,030				
Yellow birch	7,828	6,373	5,291	3,010	1,353	832	442	152	299	47	25,627				
Paper birch	12,068	8,220	4,413	1,850	425	162	124	0	17	0	27,279				
Gray birch	1,305	412	0	0	0	0	0	0	0	0	1,717				
Beech	3,704	1,822	807	837	574	412	231	115	65	0	8,567				
White ash	2,413	2,838	1,282	815	458	312	92	17	72	0	8,299				
Black ash	801	894	93	162	51	17	25	0	0	0	2,043				
Aspen	3,071	1,461	1,432	1,094	498	413	157	73	51	0	8,250				
White oaks	0	117	0	0	0	47	0	0	18	0	182				
Red oaks	506	800	203	272	145	17	17	0	0	35	1,995				
Basswood	480	254	437	159	135	0	35	16	0	0	1,516				
Elm	303	584	186	133	132	50	0	0	0	8	1,396				
Other hardwoods	3,151	1,936	584	661	90	126	75	17	13	4	6,657				
<b>Total hardwoods</b>	<b>68,117</b>	<b>53,169</b>	<b>30,967</b>	<b>18,572</b>	<b>8,587</b>	<b>4,273</b>	<b>2,317</b>	<b>920</b>	<b>1,028</b>	<b>150</b>	<b>188,100</b>				
<b>Total, all species</b>	<b>127,062</b>	<b>93,308</b>	<b>55,665</b>	<b>31,172</b>	<b>13,963</b>	<b>7,059</b>	<b>3,469</b>	<b>1,371</b>	<b>1,440</b>	<b>157</b>	<b>334,666</b>				

Table 48.--Net green weight of all live trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

Species	(In thousands of tons)											All classes
	Diameter class (inches at breast height)											
	1.0- 4.9	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21+		
Balsam fir	4,766.0	3,744.4	4,108.3	3,055.3	2,165.8	717.5	161.1	23.6	47.3	.0	18,789.3	
Tamarack	.0	93.7	78.7	80.5	12.5	32.4	36.9	.0	.0	.0	334.7	
White spruce	755.6	561.6	733.2	1,013.8	617.1	187.3	163.3	71.7	37.9	.0	4,141.5	
Black spruce	111.7	31.1	.0	163.9	38.2	.0	.0	.0	.0	.0	344.9	
Red spruce	1,708.5	2,656.2	2,884.9	3,319.1	2,003.3	1,582.0	768.8	577.2	134.3	383.9	16,018.2	
Red pine	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
White pine	78.4	510.6	827.4	1,312.8	1,508.0	1,688.6	1,667.9	979.4	640.0	1,273.4	10,486.5	
Northern white-cedar	720.7	788.8	842.8	666.3	433.7	196.1	225.6	18.4	35.1	18.6	3,946.1	
Hemlock	1,891.5	1,629.8	2,378.3	2,457.5	2,576.9	1,742.0	1,406.3	803.6	310.3	456.3	15,652.5	
Other softwoods	.0	27.3	.0	14.9	.0	.0	.0	.0	.0	.0	42.2	
<b>Total softwoods</b>	<b>10,032.4</b>	<b>10,043.5</b>	<b>11,853.6</b>	<b>12,084.1</b>	<b>9,355.5</b>	<b>6,145.9</b>	<b>4,429.9</b>	<b>2,473.9</b>	<b>1,204.9</b>	<b>2,132.2</b>	<b>69,755.9</b>	
Sugar maple	4,326.6	4,979.4	6,977.6	6,276.1	6,460.9	4,630.3	2,807.7	2,389.9	1,646.5	6,195.1	46,690.1	
Soft maples	1,673.8	1,983.2	3,017.5	3,374.0	2,733.0	1,863.0	973.0	685.0	531.2	488.5	17,322.2	
Yellow birch	1,508.8	1,784.3	2,715.9	3,290.0	2,914.7	1,932.6	1,651.0	1,286.7	720.8	2,587.5	20,392.3	
Paper birch	750.8	2,209.2	2,944.9	2,685.4	1,880.4	820.6	435.6	376.3	160.4	153.5	12,417.1	
Gray birch	212.8	699.5	270.6	.0	.0	.0	.0	.0	.0	.0	1,182.9	
Beech	1,580.4	1,018.4	1,021.8	768.5	1,059.8	984.0	1,175.3	931.2	743.8	1,333.5	10,616.7	
White ash	426.1	495.6	902.4	743.5	633.9	546.0	472.6	231.0	43.1	356.8	4,851.0	
Black ash	190.1	139.8	261.5	49.5	166.0	57.3	25.2	47.7	.0	.0	937.1	
Aspen	366.5	523.5	535.7	760.8	942.4	773.2	740.4	334.7	251.1	220.4	5,448.7	
White oaks	.0	.0	36.2	.0	.0	.0	68.4	.0	.0	64.9	169.5	
Red oaks	4.2	64.3	250.5	116.1	212.8	162.6	28.9	36.6	.0	1,224.3	2,100.3	
Basswood	9.1	96.9	76.8	214.4	156.3	163.8	.0	148.3	75.2	40.9	981.7	
Elm	6.9	96.3	212.7	85.7	92.7	145.0	69.2	.0	.0	52.2	760.7	
Other comm. hardwoods	183.9	520.0	630.8	374.3	530.0	222.1	241.3	136.1	36.9	286.9	3,162.3	
Noncomm. hardwoods	1,441.0	951.1	449.8	146.7	26.2	40.6	52.5	31.3	.0	.0	3,139.2	
<b>Total hardwoods</b>	<b>12,681.0</b>	<b>15,561.5</b>	<b>20,304.7</b>	<b>18,885.0</b>	<b>17,809.1</b>	<b>12,341.1</b>	<b>8,741.1</b>	<b>6,634.8</b>	<b>4,209.0</b>	<b>13,004.5</b>	<b>130,171.8</b>	
<b>Total, all species</b>	<b>22,713.4</b>	<b>25,605.0</b>	<b>32,158.3</b>	<b>30,969.1</b>	<b>27,164.6</b>	<b>18,487.0</b>	<b>13,171.0</b>	<b>9,108.7</b>	<b>5,413.9</b>	<b>15,136.7</b>	<b>199,927.7</b>	



Table 49.--Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Northern Unit, Vermont, 1983

Class of material	Volume <sup>a</sup>			Weight <sup>b</sup>		
	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species
	-----Million cubic feet-----			-----Thousand tons-----		
Sawtimber trees:						
Sawlog portion	730.9	773.4	1,504.3	22,419.7	27,121.9	49,541.6
Upper stem	104.2	194.0	298.2	3,124.0	6,701.8	9,825.8
Total	835.1	967.4	1,802.5	25,543.7	33,823.7	59,367.4
Poletimber trees	442.0	911.8	1,353.8	12,506.2	31,537.8	44,044.0
All growing stock	1,277.1	1,879.2	3,156.3	38,049.9	65,361.5	103,411.4
Rough cull trees <sup>c</sup>	102.1	230.8	332.9	4,026.9	10,170.5	14,197.4
Rotten cull trees <sup>c</sup>	14.5	166.3	180.8	632.8	9,001.7	9,634.5
Salvable dead trees <sup>d</sup>	51.2	44.1	95.3	2,407.2	2,591.4	4,998.6
Saplings <sup>e</sup>	-	-	-	10,032.4	12,681.0	22,713.4
Stumps <sup>f</sup>	-	-	-	944.5	2,020.7	2,965.2
Tops - growing stock	-	-	-	14,326.4	24,296.5	38,622.9
Tops - rough and rotten	-	-	-	1,784.8	6,688.0	8,472.8
All nongrowing stock	167.8	441.2	609.0	34,155.0	67,449.8	101,604.8
All classes	1,444.9	2,320.4	3,765.3	72,204.9	132,811.3	205,016.2

<sup>a</sup>Excludes bark.

<sup>b</sup>Includes bark and sound cull; excludes rotten cull.

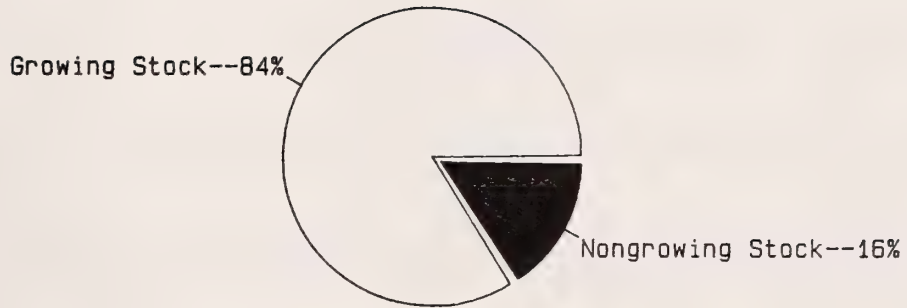
<sup>c</sup>Bole portion of trees 5.0 inches d.b.h. and larger.

<sup>d</sup>Volume of bole portion of trees 5.0 inches d.b.h. and larger, and weight of entire tree aboveground.

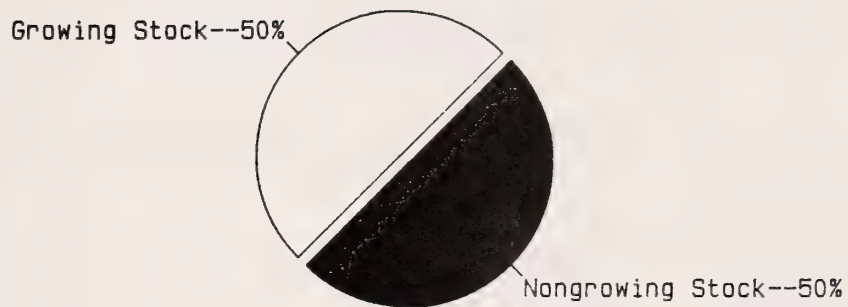
<sup>e</sup>Includes entire tree aboveground.

<sup>f</sup>Of all salvable dead and all live trees 5.0 inches d.b.h. and larger.

# PROPORTION OF GROWING STOCK VERSUS NONGROWING STOCK



## Net Cubic Foot Volume



## Net Green Weight

Table 50.--Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1973

Species	(In millions of cubic feet)											All classes	
	Diameter class (inches at breast height)												
	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+			
Balsam fir	78.2	92.1	73.3	35.6	16.9	6.8	2.4	.0	.0	.0	.0	.0	305.3
Tamarack	.9	.7	.5	1.5	.7	.0	.7	.0	.0	.0	.0	.0	5.0
White spruce	9.9	10.1	8.6	11.8	6.6	6.2	.0	1.3	.9	.0	.0	.0	55.4
Black spruce	1.9	.0	.6	.0	.0	.0	1.0	.0	.0	.0	.0	.0	3.5
Red spruce	45.6	83.0	83.9	49.6	31.6	16.8	5.9	3.5	3.0	.0	.0	.0	322.9
Red pine	3.3	2.4	1.8	.9	.1	1.1	1.0	.0	1.9	.0	.0	.0	12.5
White pine	11.5	24.1	17.7	18.3	18.2	11.4	12.2	7.1	19.2	2.7	.0	.0	142.4
Northern white-cedar	25.3	19.2	14.9	7.3	1.5	1.3	.5	.0	.1	.0	.0	.0	70.1
Hemlock	16.4	24.8	35.6	33.2	28.9	11.6	9.1	9.9	3.5	.0	.0	.0	173.0
Other softwoods	.0	.1	.2	.2	.0	.0	.0	.0	.0	.0	.0	.0	.5
<b>Total softwoods</b>	<b>193.0</b>	<b>256.5</b>	<b>237.1</b>	<b>158.4</b>	<b>104.5</b>	<b>55.2</b>	<b>32.8</b>	<b>21.8</b>	<b>28.6</b>	<b>2.7</b>	<b>1,090.6</b>		
Sugar maple	44.7	87.3	96.1	92.8	66.5	38.9	36.2	14.4	38.5	6.0	.0	.0	521.4
Red maple	25.8	40.1	49.3	36.1	19.6	11.8	6.4	4.5	1.7	.5	.0	.0	195.8
Yellow birch	17.3	26.6	37.3	25.5	33.0	24.4	13.3	9.3	10.3	4.4	.0	.0	201.4
Paper birch	22.5	44.4	33.2	17.8	10.1	6.0	2.1	.0	.1	.0	.0	.0	136.2
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	5.0	21.1	17.9	18.5	25.9	11.6	13.4	5.6	4.1	.0	.0	.0	123.1
White ash	5.9	9.8	13.4	13.3	6.9	1.6	2.2	.8	1.9	1.0	.0	.0	56.8
Black ash	1.5	2.3	1.1	.5	.0	1.4	.0	.0	.0	.0	.0	.0	6.8
Aspen	13.9	18.4	13.4	6.9	7.9	4.0	1.6	.0	.0	.0	.0	.0	66.1
White oak	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red oaks	.0	.0	.7	.1	.6	.0	.0	.0	1.8	.0	.0	.0	3.2
Basswood	.0	1.0	2.2	5.7	2.9	.0	.6	.0	1.9	.0	.0	.0	14.3
Elm	3.0	4.3	2.7	3.4	.6	2.0	1.6	.7	.4	.8	.0	.0	19.5
Other hardwoods	1.8	3.7	6.7	3.7	5.1	3.1	1.4	.7	.0	.0	.0	.0	26.2
<b>Total hardwoods</b>	<b>141.4</b>	<b>259.0</b>	<b>274.0</b>	<b>224.3</b>	<b>179.1</b>	<b>104.8</b>	<b>78.8</b>	<b>36.0</b>	<b>60.7</b>	<b>12.7</b>	<b>1,370.8</b>		
<b>Total, all species</b>	<b>334.4</b>	<b>515.5</b>	<b>511.1</b>	<b>382.7</b>	<b>283.6</b>	<b>160.0</b>	<b>111.6</b>	<b>57.8</b>	<b>89.3</b>	<b>15.4</b>	<b>2,461.4</b>		



Table 51.--Net volume of growing-stock trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

Species	(In millions of cubic feet)													All classes	
	Diameter class (inches at breast height)														
	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+					
Balsam fir	78.0	95.6	79.4	57.3	18.7	4.1	.0	1.1	.0	.0	.0	.0	.0	.0	334.2
Tamarack	1.8	1.7	2.0	.4	.9	1.0	.0	.0	.0	.0	.0	.0	.0	.0	7.8
White spruce	11.5	17.8	22.5	15.0	3.8	1.7	1.1	.0	.0	.0	.0	.0	.0	.0	73.4
Black spruce	.6	.0	4.3	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.8
Red spruce	47.1	65.4	82.1	50.2	34.0	15.1	13.3	2.2	7.6	.0	.0	.0	.0	.0	317.0
Red pine	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
White pine	8.6	15.9	26.5	30.8	32.6	31.7	16.9	11.6	14.1	1.0	189.7	.0	.0	.0	189.7
Northern white-cedar	14.2	22.8	21.0	14.1	6.7	7.0	.8	1.5	.8	.0	88.9	.0	.0	.0	88.9
Hemlock	20.6	40.4	51.0	51.9	36.3	30.2	16.1	6.6	7.2	.0	260.3	.0	.0	.0	260.3
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>182.4</b>	<b>259.6</b>	<b>288.8</b>	<b>220.6</b>	<b>133.0</b>	<b>90.8</b>	<b>48.2</b>	<b>23.0</b>	<b>29.7</b>	<b>1.0</b>	<b>1,277.1</b>				
Sugar maple	66.3	127.8	119.4	129.6	86.3	51.8	38.2	27.5	35.3	7.1	689.3				
Red maple	26.8	56.1	67.6	46.6	35.2	13.6	9.7	2.8	3.7	.0	262.1				
Yellow birch	21.6	41.7	58.2	50.1	31.8	25.9	17.6	7.7	20.3	5.6	280.5				
Paper birch	36.0	54.3	49.9	33.4	9.4	4.9	5.0	.0	1.0	.0	193.9				
Gray birch	4.1	2.9	.0	.0	.0	.0	.0	.0	.0	.0	7.0				
Beech	10.3	11.8	9.0	15.7	15.1	15.0	10.7	6.6	5.0	.0	99.2				
White ash	8.8	22.9	17.3	16.0	14.2	12.3	4.7	.8	6.2	.0	103.2				
Black ash	3.0	6.1	.9	3.3	1.4	.5	1.1	.0	.0	.0	16.3				
Aspen	10.7	10.0	18.2	22.6	14.0	14.8	7.3	4.8	4.0	.0	106.4				
White oak	.0	.6	.0	.0	.0	1.3	.0	.0	1.2	.0	3.1				
Red oaks	.9	5.0	2.5	4.8	3.5	.6	.9	.0	.0	18.3	36.5				
Basswood	1.3	1.5	4.5	2.7	3.2	.0	1.8	1.1	.0	.0	16.1				
Elm	.8	2.8	1.6	1.7	2.5	1.3	.0	.0	.0	.8	11.5				
Other hardwoods	9.3	12.7	6.6	12.9	2.4	4.4	3.2	.7	1.1	.8	54.1				
<b>Total hardwoods</b>	<b>199.9</b>	<b>356.2</b>	<b>355.7</b>	<b>339.4</b>	<b>219.0</b>	<b>146.4</b>	<b>100.2</b>	<b>52.0</b>	<b>77.8</b>	<b>32.6</b>	<b>1,879.2</b>				
<b>Total, all species</b>	<b>382.3</b>	<b>615.8</b>	<b>644.5</b>	<b>560.0</b>	<b>352.0</b>	<b>237.2</b>	<b>148.4</b>	<b>75.0</b>	<b>107.5</b>	<b>33.6</b>	<b>3,156.3</b>				

Table 52.--Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1973

Species	Diameter class (inches at breast height)										All classes	
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9		
Balsam fir	279.5	157.5	81.4	32.6	12.7	.0	.0	.0	.0	.0	.0	563.7
Tamarack	1.4	5.2	2.6	.0	2.9	.0	.0	.0	.0	.0	.0	12.1
White spruce	29.4	51.4	32.0	31.0	.0	6.8	4.9	.0	.0	.0	.0	155.5
Black spruce	2.4	.0	.0	.0	5.2	.0	.0	.0	.0	.0	.0	7.6
Red spruce	311.8	214.6	149.1	80.9	30.8	17.7	14.7	.0	.0	.0	.0	819.6
Red pine	6.7	4.3	.4	5.1	5.0	.0	10.2	.0	.0	.0	.0	31.7
White pine	58.3	72.1	80.7	53.9	58.0	36.8	102.6	.0	.0	.0	.0	477.1
Northern white-cedar	36.5	20.5	4.6	4.5	2.0	.0	.3	.0	.0	.0	.0	68.4
Hemlock	107.1	125.5	114.1	50.4	34.4	41.6	15.8	.0	.0	.0	.0	488.9
Other softwoods	.6	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.3
<b>Total softwoods</b>	<b>833.7</b>	<b>651.8</b>	<b>464.9</b>	<b>258.4</b>	<b>151.0</b>	<b>103.9</b>	<b>148.5</b>	<b>14.7</b>	<b>14.7</b>	<b>14.7</b>	<b>14.7</b>	<b>2,625.9</b>
Sugar maple	.0	374.4	289.3	170.0	163.9	67.4	195.1	33.6	33.6	33.6	33.6	1,293.7
Red maple	.0	143.0	78.2	51.9	26.8	23.2	8.2	2.0	2.0	2.0	2.0	333.3
Yellow birch	.0	106.1	138.8	107.9	57.6	40.3	51.2	24.5	24.5	24.5	24.5	526.4
Paper birch	.0	78.0	46.2	26.6	8.9	.0	.5	.0	.0	.0	.0	160.2
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	.0	81.5	116.8	52.3	67.1	28.4	22.6	.0	.0	.0	.0	368.7
White ash	.0	57.8	31.0	7.7	10.4	3.8	9.3	4.9	4.9	4.9	4.9	124.9
Black ash	.0	2.6	.0	6.5	.0	.0	.0	.0	.0	.0	.0	9.1
Aspen	.0	26.8	34.8	17.9	8.9	.0	.0	.0	.0	.0	.0	88.4
White oaks	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red oaks	.0	.3	2.6	.0	.0	.0	8.6	.0	.0	.0	.0	11.5
Basswood	.0	23.4	13.5	.0	3.1	.0	11.0	.0	.0	.0	.0	51.0
Elm	.0	13.8	2.6	9.5	6.7	3.1	1.7	3.5	3.5	3.5	3.5	40.9
Other hardwoods	.0	14.9	20.7	12.7	5.5	2.9	.0	.0	.0	.0	.0	56.7
<b>Total hardwoods</b>	<b>.0</b>	<b>922.6</b>	<b>774.5</b>	<b>463.0</b>	<b>358.9</b>	<b>169.1</b>	<b>308.2</b>	<b>68.5</b>	<b>68.5</b>	<b>68.5</b>	<b>68.5</b>	<b>3,064.8</b>
<b>Total, all species</b>	<b>833.7</b>	<b>1,574.4</b>	<b>1,239.4</b>	<b>721.4</b>	<b>509.9</b>	<b>272.0</b>	<b>456.7</b>	<b>83.2</b>	<b>83.2</b>	<b>83.2</b>	<b>83.2</b>	<b>5,690.7</b>

<sup>a</sup>International 1/4-inch rule.

Table 53.--Net volume of sawtimber trees on timberland by species and diameter class, Northern Unit, Vermont, 1983

Species	(In millions of board feet) <sup>a</sup>										All classes
	Diameter class (inches at breast height)										
	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+			
Balsam fir	286.6	241.8	86.0	19.0	.0	4.6	.0	.0	.0	.0	638.0
Tamarack	6.4	1.4	3.5	4.3	.0	.0	.0	.0	.0	.0	15.6
White spruce	73.3	58.8	16.1	6.9	4.6	.0	.0	.0	.0	.0	159.7
Black spruce	14.0	3.6	.0	.0	.0	.0	.0	.0	.0	.0	17.6
Red spruce	275.3	197.3	140.6	69.2	60.6	9.6	36.6	.0	.0	.0	789.2
Red pine	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
White pine	79.4	114.9	129.8	128.4	71.5	48.5	60.9	4.5	.0	.0	637.9
Northern white-cedar	49.5	40.3	20.3	22.9	2.7	5.6	3.2	.0	.0	.0	144.5
Hemlock	144.9	175.6	130.7	121.4	61.8	27.3	29.4	.0	.0	.0	691.1
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>929.4</b>	<b>833.7</b>	<b>527.0</b>	<b>372.1</b>	<b>201.2</b>	<b>95.6</b>	<b>130.1</b>	<b>4.5</b>	<b>4.5</b>	<b>4.5</b>	<b>3,093.6</b>
Sugar maple	.0	433.2	322.5	202.6	157.3	117.2	164.6	34.7	.0	.0	1,432.1
Red maple	.0	152.4	126.3	54.9	38.7	12.2	15.7	.0	.0	.0	400.2
Yellow birch	.0	170.3	119.4	97.6	68.9	31.4	90.4	28.0	.0	.0	606.0
Paper birch	.0	121.9	33.9	18.9	20.3	.0	4.1	.0	.0	.0	199.1
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	.0	51.6	58.4	60.7	43.0	27.2	24.2	.0	.0	.0	265.1
White ash	.0	62.6	58.5	55.0	22.3	3.3	28.5	.0	.0	.0	230.2
Black ash	.0	12.5	5.2	2.1	4.8	.0	.0	.0	.0	.0	24.6
Aspen	.0	88.6	55.6	61.8	29.9	21.0	20.4	.0	.0	.0	277.3
White oaks	.0	.0	.0	5.1	.0	.0	5.2	.0	.0	.0	10.3
Red oaks	.0	16.3	12.2	2.6	3.6	.0	.0	59.2	.0	.0	93.9
Basswood	.0	9.2	10.8	.0	6.9	4.7	.0	.0	.0	.0	31.6
Elm	.0	5.2	9.7	5.4	.0	.0	.0	3.7	.0	.0	24.0
Other hardwoods	.0	43.5	8.9	16.8	13.0	2.5	4.7	4.1	.0	.0	93.5
<b>Total hardwoods</b>	<b>.0</b>	<b>1,167.3</b>	<b>821.4</b>	<b>583.5</b>	<b>408.7</b>	<b>219.5</b>	<b>357.8</b>	<b>129.7</b>	<b>129.7</b>	<b>129.7</b>	<b>3,687.9</b>
<b>Total, all species</b>	<b>929.4</b>	<b>2,001.0</b>	<b>1,348.4</b>	<b>955.6</b>	<b>609.9</b>	<b>315.1</b>	<b>487.9</b>	<b>134.2</b>	<b>134.2</b>	<b>134.2</b>	<b>6,781.5</b>

<sup>a</sup>International 1/4-inch rule.

Table 54.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Northern Unit, Vermont, 1973

Species	All size classes				>15" Diameter at breast height					
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	563.7	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	12.1	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	155.5	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	7.6	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	819.6	.0	.0	.0	.0	.0
Red pine	5.3	5.6	20.8	.0	31.7	.0	4.9	15.3	.0	20.2
White pine	9.2	77.8	253.5	136.6	477.1	7.9	49.8	127.9	80.4	266.0
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	68.4	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	483.9	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	1.3	.0	.0	.0	.0	.0
Total softwoods	14.5	83.4	274.3	136.6	2,625.9	7.9	54.7	143.2	80.4	286.2
Sugar maple	180.6	311.7	591.8	209.6	1,293.7	146.7	163.0	214.1	106.2	630.0
Red maple	6.5	53.6	217.1	56.1	333.3	6.0	24.9	68.0	13.1	112.0
Yellow birch	66.9	146.1	270.2	43.2	526.4	57.1	97.4	105.7	21.3	281.5
Paper birch	11.9	43.2	80.0	25.1	160.2	7.6	14.6	10.2	3.6	36.0
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	12.5	71.0	198.4	66.8	368.7	9.7	41.7	87.3	31.7	170.4
White ash	16.1	34.0	56.2	18.6	124.9	11.3	7.8	13.6	3.3	36.0
Black ash	.0	2.4	5.2	1.5	9.1	.0	2.4	3.2	1.0	6.6
Aspen	.0	5.2	70.0	13.2	88.4	.0	2.9	21.0	3.1	27.0
White oaks	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red oaks	.9	4.3	4.3	2.0	11.5	.9	4.1	1.8	1.8	8.6
Basswood	4.7	5.1	35.8	5.4	51.0	4.7	5.0	3.6	.7	14.0
Elm	7.0	11.9	18.2	3.8	40.9	7.1	4.8	10.5	2.2	24.6
Other hardwoods	2.2	19.4	26.9	8.2	56.7	2.2	4.2	12.1	2.6	21.1
Total hardwoods	309.3	707.9	1,574.1	473.5	3,064.8	253.3	372.8	551.1	190.6	1,367.8
Percent of hardwood in each grade	10	23	51	16	100	19	27	40	14	100

<sup>a</sup>International 1/4-inch rule.

<sup>b</sup>Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

<sup>c</sup>These species are not divided into standard-lumber grades.



Table 55.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Northern Unit, Vermont, 1983

(In millions of board feet)<sup>a</sup>

Species	All size classes					>15" Diameter at breast height				
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	638.0	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	15.6	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	159.7	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	17.6	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	789.2	.0	.0	.0	.0	.0
Red pine	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
White pine	16.1	171.3	292.2	158.3	637.9	13.1	61.4	142.7	96.6	313.8
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	144.5	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	691.1	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>16.1</b>	<b>171.3</b>	<b>292.2</b>	<b>158.3</b>	<b>3,093.6</b>	<b>13.1</b>	<b>61.4</b>	<b>142.7</b>	<b>96.6</b>	<b>313.8</b>
Sugar maple	141.8	297.9	655.8	336.6	1,432.1	106.2	145.5	241.9	182.8	676.4
Red maple	11.0	59.7	240.5	89.0	400.2	11.0	29.4	63.1	18.0	121.5
Yellow birch	49.3	157.4	314.5	84.8	606.0	45.9	87.5	130.3	52.6	316.3
Paper birch	13.5	50.0	109.3	26.3	199.1	12.3	7.0	17.3	6.7	43.3
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	5.9	35.0	162.1	62.1	265.1	4.5	22.6	89.6	38.5	155.2
White ash	68.9	59.0	76.9	25.4	230.2	49.6	26.2	26.6	6.7	109.1
Black ash	3.0	3.0	15.0	3.6	24.6	3.0	1.7	1.9	.2	6.8
Aspen	33.8	78.8	114.7	50.0	277.3	31.0	38.9	42.1	21.1	133.1
White oaks	4.8	2.7	1.9	.9	10.3	4.8	2.7	1.9	.9	10.3
Red oaks	16.0	15.4	23.6	38.9	93.9	13.8	6.8	8.3	36.4	65.3
Basswood	1.9	12.4	13.8	3.5	31.6	1.9	5.7	3.4	.6	11.6
Elm	1.9	6.7	12.8	2.6	24.0	1.9	2.2	4.1	.9	9.1
Other hardwoods	2.9	19.4	46.1	25.1	93.5	2.9	11.6	12.7	14.0	41.2
<b>Total hardwoods</b>	<b>354.7</b>	<b>797.4</b>	<b>1,787.0</b>	<b>748.8</b>	<b>3,687.9</b>	<b>288.8</b>	<b>387.8</b>	<b>643.2</b>	<b>379.4</b>	<b>1,699.2</b>
Percent of hardwood in each grade	10	22	48	20	100	17	23	38	22	100

<sup>a</sup>International 1/4-inch rule.

<sup>b</sup>Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

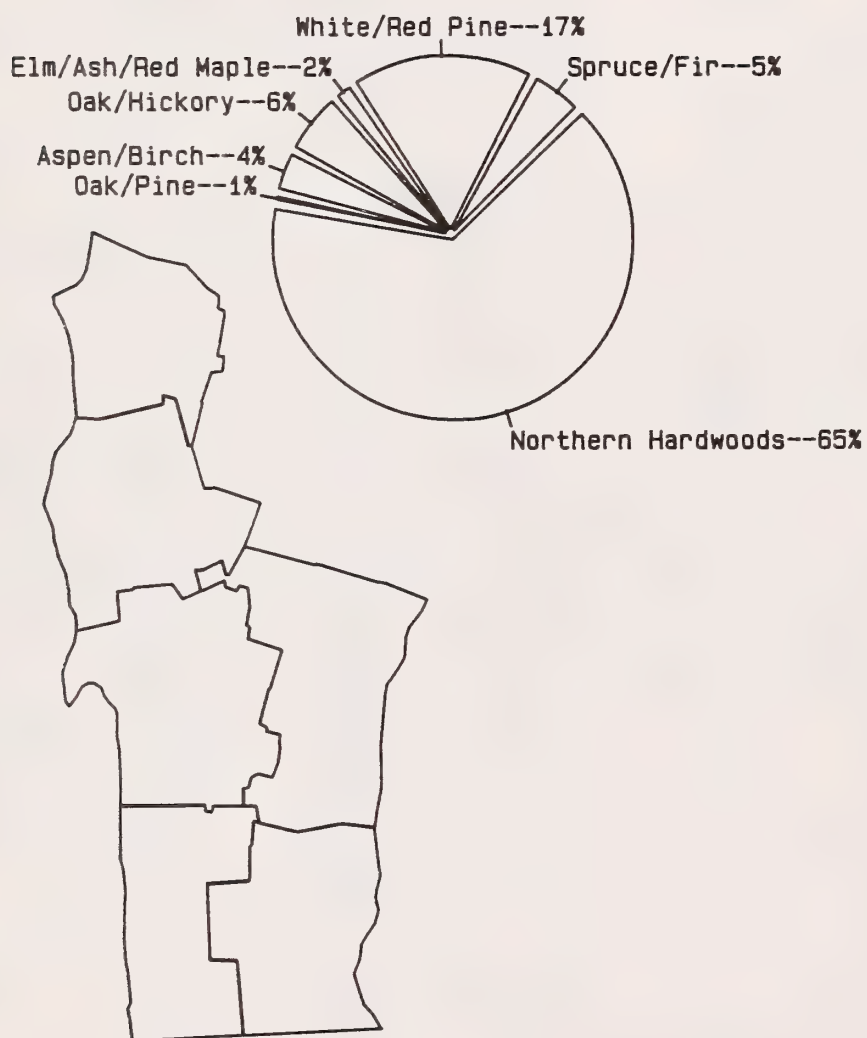
<sup>c</sup>These species are not divided into standard-lumber grades.

Table 56.--Sampling errors for various tables, Northern Unit, Vermont, 1973 and 1983

(In percent)

Species and diameter class	Number of trees (Table 47)	Growing-stock volume Table		Sawtimber volume Table	
		(50)	(51)	(52)	(53)
Balsam fir	11	12	11	16	14
Tamarack	62	58	55	56	60
White spruce	28	34	28	36	28
Black spruce	82	46	72	75	68
Red spruce	12	12	12	15	14
Red pine	-	65	-	72	-
White pine	21	22	20	25	21
Northern white-cedar	22	30	26	29	33
Hemlock	15	18	15	19	16
Other softwoods	-	100	-	100	-
Softwoods	7	8	7	9	8
Sugar maple	8	10	8	12	11
Red maple	11	13	11	14	15
Yellow birch	9	11	9	16	13
Paper birch	17	16	16	20	18
Gray birch	36	-	35	-	-
Beech	16	15	16	19	19
White ash	17	20	19	31	29
Black ash	41	40	48	58	78
Aspen	22	23	19	29	22
White oaks	81	-	61	-	61
Red oaks	35	57	51	60	63
Basswood	43	36	39	37	41
Elm	44	32	39	36	35
Other hardwoods	22	23	19	31	28
Hardwoods	4	6	4	8	6
All species	3	4	3	5	4
D.b.h. class (inches)					
5.0 to 6.9	5	7	5	-	-
7.0 to 8.9	4	5	4	-	-
9.0 to 10.9	5	5	5	10	9
11.0 to 12.9	5	6	5	6	5
13.0 to 14.9	6	7	6	7	7
15.0 to 16.9	8	8	8	8	8
17.0 to 18.9	9	10	9	10	9
19.0 to 20.9	14	14	14	14	15
21.0 to 28.9	13	18	13	18	13
29 +	32	31	56	33	47

# SOUTHERN UNIT TABLES



*Area of timberland by type group*

Southern Unit

Table 57.--Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1973

(In thousands of acres)

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Red pine	9.9	12.7	.0	.0	22.6
White pine	109.9	23.6	22.9	.0	156.4
White pine/hemlock	43.6	26.0	.0	.0	69.6
Hemlock	80.0	34.2	9.1	.0	123.3
White/red pine group	243.4	96.5	32.0	.0	371.9
Red spruce	16.0	35.8	31.2	.0	83.0
Red spruce/balsam fir	.0	19.0	.0	.0	19.0
Spruce/fir group	16.0	54.8	31.2	.0	102.0
Wh. pine/no. red oak/wh. ash	16.1	.0	.0	.0	16.1
Oak/pine group	16.1	.0	.0	.0	16.1
Chestnut oak	9.0	.0	.0	.0	9.0
White oak/red oak/hickory	9.1	.0	9.9	.0	19.0
Northern red oak	45.0	18.1	.0	.0	63.1
Hawthorn/reverting field	.0	.0	19.6	.0	19.6
Mixed central hardwoods	.0	9.1	.0	.0	9.1
Oak/hickory group	63.1	27.2	29.5	.0	119.8
Black ash/Amer. elm/red maple	16.9	.0	59.1	.0	76.0
Elm/ash/red maple group	16.9	.0	59.1	.0	76.0
Sugar maple/beech/yellow birch	488.9	390.5	53.7	.0	933.1
Black cherry	19.0	.0	50.6	.0	69.6
Red maple/northern hardwoods	86.4	93.8	12.7	.0	192.9
Mixed northern hardwoods	89.0	102.4	31.3	.0	222.7
Northern hardwoods group	683.3	586.7	148.3	.0	1,418.3
Aspen	.0	19.0	11.4	.0	30.4
Paper birch	9.9	17.8	38.6	.0	66.3
Gray birch	.0	.0	11.5	.0	11.5
Aspen/birch group	9.9	36.8	61.5	.0	108.2
Indeterminate	.0	.0	1.8	.0	1.8
All forest types	1,048.7	802.0	363.4	.0	2,214.1



Table 58.--Area of timberland by forest type, forest-type group, and stand-size class, Southern Unit, Vermont, 1983

(In thousands of acres)

Forest type and forest-type group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Red pine	7.5	.0	.0	.0	7.5
White pine	156.1	43.1	31.3	.0	230.5
White pine/hemlock	48.4	.0	.0	.0	48.4
Hemlock	101.6	.0	.0	.0	101.6
White/red pine group	313.6	43.1	31.3	.0	388.0
Red spruce	56.3	7.0	.0	.0	63.3
Red spruce/balsam fir	7.0	7.7	14.6	.0	29.3
Northern white-cedar	.0	.0	12.0	.0	12.0
Spruce/fir group	63.3	14.7	26.6	.0	104.6
White pine/no. red oak/white ash	6.7	6.8	.0	.0	13.5
Oak/pine group	6.7	6.8	.0	.0	13.5
White oak/red oak/hickory	7.2	7.1	6.0	.0	20.3
White oak	6.7	13.8	.0	.0	20.5
Northern red oak	50.8	14.2	6.7	.0	71.7
Hawthorn/reverting field	.0	.0	5.6	6.4	12.0
Red maple/central hardwoods	.0	.0	6.4	.0	6.4
Mixed central hardwoods	8.5	.0	7.2	.0	15.7
Oak/hickory group	73.2	35.1	31.9	6.4	146.6
Black ash/Amer. elm/red maple	28.8	7.0	6.7	.0	42.5
Elm/ash/red maple group	28.8	7.0	6.7	.0	42.5
Sugar maple/beech/yellow birch	821.1	113.9	62.2	.0	997.2
Black cherry	4.9	.0	6.7	.0	11.6
Red maple/northern hardwoods	141.7	49.9	7.2	.0	198.8
Pin cherry/reverting field	.0	.0	10.9	5.6	16.5
Mixed northern hardwoods	126.4	61.8	28.3	.0	216.5
Northern hardwoods group	1,094.1	225.6	115.3	5.6	1,440.6
Aspen	.0	22.3	6.8	.0	29.1
Paper birch	29.1	20.9	.0	.0	50.0
Gray birch	.0	6.8	.0	.0	6.8
Aspen/birch group	29.1	50.0	6.8	.0	85.9
All forest types	1,608.8	382.3	218.6	12.0	2,221.7

Table 59.--Number of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1983  
(In thousands of trees)

Species	Diameter class (inches at breast height)											All classes			
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 28.9	29+					
Balsam fir	2,022	863	349	124	101	0	0	0	0	0	0	0	0	0	3,459
Tamarack	0	31	0	107	0	0	0	0	0	0	0	0	0	0	138
White spruce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Black spruce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red spruce	6,895	5,902	2,750	1,836	833	274	163	38	31	0	0	0	0	0	18,722
Red pine	309	124	221	73	159	121	42	17	42	0	0	0	0	0	1,083
White pine	10,047	4,413	3,811	2,228	1,288	861	459	238	365	89	0	0	0	0	23,799
Northern white-cedar	561	66	47	32	37	0	0	0	0	0	0	0	0	0	743
Hemlock	9,685	6,402	3,821	3,434	1,915	953	430	217	154	5	0	0	0	0	27,016
Other softwoods	36	36	0	0	0	0	0	0	0	0	0	0	0	0	72
<b>Total softwoods</b>	<b>29,555</b>	<b>17,837</b>	<b>10,999</b>	<b>7,834</b>	<b>4,333</b>	<b>2,209</b>	<b>1,094</b>	<b>510</b>	<b>567</b>	<b>94</b>	<b>94</b>	<b>567</b>	<b>770</b>	<b>168</b>	<b>75,032</b>
Sugar maple	17,560	14,639	9,711	7,405	4,757	2,737	1,157	957	770	83	0	0	0	0	59,776
Red maple	10,299	10,845	5,212	3,385	1,881	1,327	403	280	199	16	0	0	0	0	33,847
Yellow birch	5,862	4,448	4,138	2,298	1,509	686	315	179	196	18	0	0	0	0	19,649
Paper birch	7,909	6,782	6,077	1,951	1,042	315	120	81	0	0	0	0	0	0	24,277
Gray birch	412	0	0	0	0	0	0	0	0	0	0	0	0	0	412
Beech	8,816	5,967	4,222	2,327	1,297	569	381	193	118	9	0	0	0	0	23,899
White ash	5,047	4,223	2,406	1,793	1,016	569	201	84	15	0	0	0	0	0	15,354
Black ash	0	31	0	0	0	0	0	0	0	0	0	0	0	0	31
Aspen	1,838	1,222	1,528	599	413	208	114	0	15	0	0	0	0	0	5,937
White oaks	62	778	418	193	85	32	39	36	13	16	0	0	0	0	1,672
Red oaks	2,129	1,726	1,978	2,011	791	796	455	199	207	20	0	0	0	0	10,312
Basswood	559	209	242	113	150	92	20	0	0	6	0	0	0	0	1,391
Elm	925	1,218	902	411	165	63	70	19	26	0	0	0	0	0	3,799
Other hardwoods	7,459	4,430	2,599	1,705	636	316	190	65	11	0	0	0	0	0	17,411
<b>Total hardwoods</b>	<b>68,877</b>	<b>56,518</b>	<b>39,433</b>	<b>24,191</b>	<b>13,742</b>	<b>7,710</b>	<b>3,465</b>	<b>2,093</b>	<b>1,570</b>	<b>168</b>	<b>168</b>	<b>1,570</b>	<b>2,137</b>	<b>262</b>	<b>217,767</b>
<b>Total, all species</b>	<b>98,432</b>	<b>74,355</b>	<b>50,432</b>	<b>32,025</b>	<b>18,075</b>	<b>9,919</b>	<b>4,559</b>	<b>2,603</b>	<b>2,137</b>	<b>262</b>	<b>262</b>	<b>2,137</b>	<b>2,137</b>	<b>262</b>	<b>292,799</b>

Table 60.--Net green weight of all live trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

Species	(In thousands of tons)											All classes	
	Diameter class (inches at breast height)												
	1.0- 4.9	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21+			
Balsam fir	659.2	338.4	345.3	195.9	116.7	90.4	.0	.0	.0	.0	.0	.0	1,745.9
Tamarack	.0	.0	7.2	.0	65.7	.0	.0	.0	.0	.0	.0	.0	72.9
White spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce	832.2	1,278.1	1,942.1	1,473.4	1,431.7	957.7	427.7	309.8	124.1	128.8	.0	.0	8,905.6
Red pine	.0	32.2	38.3	111.9	65.3	230.6	211.4	105.0	47.1	103.8	.0	.0	945.6
White pine	943.6	1,876.1	1,768.8	2,387.3	2,205.5	2,000.7	2,027.1	1,431.4	951.8	3,932.2	.0	.0	19,524.5
Northern white-cedar	18.4	53.5	11.0	29.8	9.5	17.0	.0	.0	.0	.0	.0	.0	139.2
Hemlock	711.2	1,520.1	2,216.2	1,916.3	2,670.7	2,096.5	1,414.3	920.3	531.7	615.3	.0	.0	14,612.6
Other softwoods	45.9	27.9	14.5	.0	.0	.0	.0	.0	.0	.0	.0	.0	88.3
<b>Total softwoods</b>	<b>3,210.5</b>	<b>5,126.3</b>	<b>6,343.4</b>	<b>6,114.6</b>	<b>6,565.1</b>	<b>5,392.9</b>	<b>4,080.5</b>	<b>2,766.5</b>	<b>1,654.7</b>	<b>4,780.1</b>	<b>46,034.6</b>		
Sugar maple	3,306.7	3,631.0	5,290.2	6,221.2	6,550.8	5,926.1	4,711.1	2,741.3	2,527.1	6,222.3	.0	.0	47,127.8
Soft maples	1,514.7	2,326.5	3,830.9	3,334.6	2,817.8	2,125.9	2,325.2	1,068.1	740.4	1,206.5	.0	.0	21,290.6
Yellow birch	645.2	1,098.4	1,916.0	2,702.5	2,023.4	1,833.1	1,242.1	671.9	634.8	1,389.0	.0	.0	14,156.4
Paper birch	421.5	1,489.8	2,720.6	3,944.2	2,044.1	1,646.9	666.1	296.8	420.8	39.1	.0	.0	13,689.9
Gray birch	911.8	129.9	2.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	1,043.8
Beech	3,845.8	2,518.8	2,860.6	3,279.8	2,770.4	2,387.2	1,678.8	1,564.1	1,217.6	929.1	.0	.0	23,052.2
White ash	622.8	788.1	1,347.3	1,294.7	1,478.0	1,155.2	935.3	413.9	234.8	302.0	.0	.0	8,572.1
Black ash	.0	.0	7.4	.0	.0	12.8	.0	.0	.0	.0	.0	.0	20.2
Aspen	310.1	316.2	421.8	808.8	552.5	515.4	310.6	199.3	23.6	59.2	.0	.0	3,517.5
White oaks	30.6	12.8	279.5	241.9	150.3	118.5	49.6	99.3	91.0	276.7	.0	.0	1,350.2
Red oaks	298.9	393.2	547.7	1,023.6	1,507.8	909.8	1,225.1	918.1	525.3	1,006.1	.0	.0	8,355.6
Basswood	150.2	88.7	140.2	171.8	81.1	178.7	152.4	36.1	.0	69.4	.0	.0	1,068.6
Elm	388.9	171.0	411.1	445.5	359.7	163.9	81.7	132.6	31.2	75.4	.0	.0	2,261.0
Other comm. hrdwds.	1,097.2	1,308.5	1,596.9	1,489.9	1,362.4	724.9	505.2	451.4	222.3	165.6	.0	.0	8,924.3
Noncomm. hardwoods	2,963.6	1,662.3	1,071.5	503.2	130.9	155.5	61.9	156.1	.0	.0	.0	.0	6,705.0
<b>Total hardwoods</b>	<b>16,508.0</b>	<b>15,935.2</b>	<b>22,443.8</b>	<b>25,461.7</b>	<b>21,829.2</b>	<b>17,853.9</b>	<b>13,945.1</b>	<b>8,749.0</b>	<b>6,668.9</b>	<b>11,740.4</b>	<b>161,135.2</b>		
<b>Total, all species</b>	<b>19,718.5</b>	<b>21,061.5</b>	<b>28,787.2</b>	<b>31,576.3</b>	<b>28,394.3</b>	<b>23,246.8</b>	<b>18,025.6</b>	<b>11,515.5</b>	<b>8,323.6</b>	<b>16,520.5</b>	<b>207,169.8</b>		

Table 61.--Net volume and green weight of all trees on timberland by class of material and softwoods and hardwoods, Southern Unit, Vermont, 1983

Class of material	Volume <sup>a</sup>			Weight <sup>b</sup>		
	Softwoods	Hardwoods	All species	Softwoods	Hardwoods	All species
	-----Million cubic feet-----			-----Thousand tons-----		
Sawtimber trees:						
Sawlog portion	478.3	1,130.4	1,608.7	16,363.6	38,501.4	54,865.0
Upper stem	61.1	276.2	337.3	2,032.8	9,307.6	11,340.4
Total	539.4	1,406.6	1,946.0	18,396.4	47,809.0	66,205.4
Poletimber trees	188.0	985.1	1,173.1	6,039.0	36,234.4	42,273.4
All growing stock	727.4	2,391.7	3,119.1	24,435.4	84,043.4	108,478.8
Rough cull trees <sup>c</sup>	149.5	270.4	420.9	6,142.6	10,113.4	16,256.0
Rotten cull trees <sup>c</sup>	17.5	237.8	255.3	697.6	10,124.8	10,822.4
Salvable dead trees <sup>d</sup>	2.8	11.6	14.4	342.1	921.0	1,263.1
Saplings <sup>e</sup>	-	-	-	3,210.5	16,508.0	19,718.5
Stumps <sup>f</sup>	-	-	-	608.5	2,650.6	3,259.1
Tops - growing stock	-	-	-	8,659.6	30,503.9	39,163.5
Tops - rough and rotten	-	-	-	2,295.1	7,222.5	9,517.6
All nongrowing stock	169.8	519.8	689.6	21,956.0	78,044.2	100,000.2
All classes	897.2	2,911.5	3,808.7	46,391.4	162,087.6	208,479.0

<sup>a</sup>Excludes bark.

<sup>b</sup>Includes bark and sound cull; excludes rotten cull.

<sup>c</sup>Bole portion of trees 5.0 inches d.b.h. and larger.

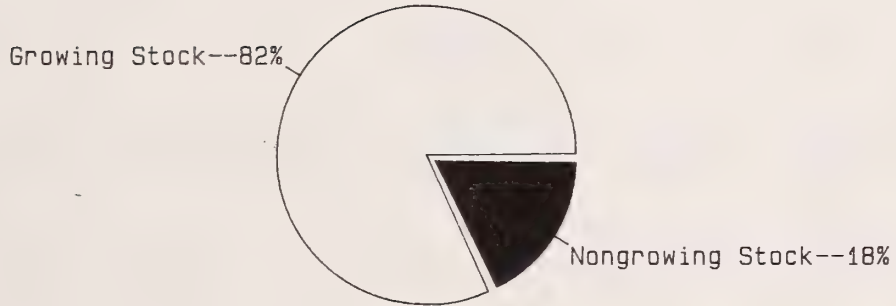
<sup>d</sup>Volume of bole portion of trees 5.0 inches d.b.h. and larger, and weight of entire tree aboveground.

<sup>e</sup>Includes entire tree aboveground.

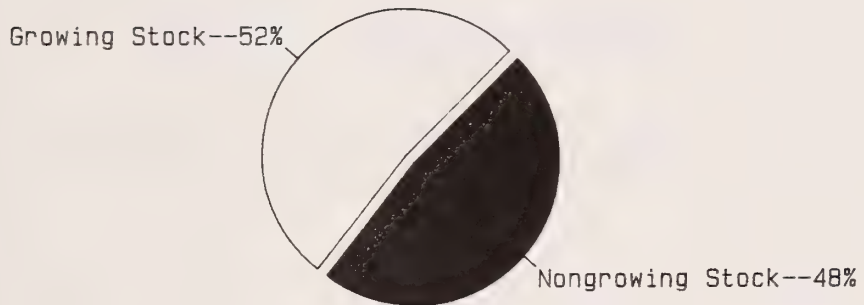
<sup>f</sup>Of all salvable dead and all live trees 5.0 inches d.b.h. and larger.



# PROPORTION OF GROWING STOCK VERSUS NONGROWING STOCK



Net Cubic Foot Volume



Net Green Weight

Table 62.--Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1973

Species	(In millions of cubic feet)													All classes		
	Diameter class (inches at breast height)															
	5.0- 6.9	7.0- 8.9	9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	19.0- 20.9	21.0- 22.9	23.0- 24.9	25.0- 26.9	27.0- 28.9	29.0- 30.9			
Balsam fir	6.7	5.3	4.7	1.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	17.8
Tamarack	.0	.0	.6	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.4
White spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce	25.9	35.3	34.8	35.4	26.4	9.0	1.2	.8	1.1	.0	.0	.0	.0	.0	.0	169.9
Red pine	2.2	5.4	7.0	4.8	4.4	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	24.7
White pine	18.1	29.2	41.4	31.5	31.8	34.0	22.6	6.9	15.3	2.3	.0	.0	.0	.0	.0	233.1
Northern white-cedar	.9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.9
Hemlock	21.5	41.2	44.2	51.6	33.4	18.7	9.6	8.1	5.4	.0	.0	.0	.0	.0	.0	233.7
Other softwoods	.1	.8	1.7	1.9	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	5.3
<b>Total softwoods</b>	<b>75.4</b>	<b>117.2</b>	<b>134.4</b>	<b>127.1</b>	<b>96.8</b>	<b>62.6</b>	<b>33.4</b>	<b>15.8</b>	<b>21.8</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>2.3</b>	<b>686.8</b>
Sugar maple	59.9	94.6	107.9	92.0	62.1	45.0	28.7	20.1	27.7	5.1	.0	.0	.0	.0	.0	543.1
Red maple	31.8	58.2	56.2	50.9	34.8	20.4	9.0	5.0	10.2	.9	.0	.0	.0	.0	.0	277.4
Yellow birch	21.4	28.2	30.6	31.2	19.3	18.3	6.7	6.1	5.4	1.0	.0	.0	.0	.0	.0	168.2
Paper birch	37.2	44.4	45.9	35.3	21.2	9.2	5.3	1.5	6.1	.0	.0	.0	.0	.0	.0	206.1
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	11.4	26.2	19.5	19.8	27.5	14.6	5.1	5.4	4.5	.0	.0	.0	.0	.0	.0	134.0
White ash	22.1	30.0	26.6	26.6	12.2	7.2	2.4	.0	2.3	.1	.0	.0	.0	.0	.0	129.5
Black ash	.0	.0	.0	.8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.8
Aspen	13.4	26.6	27.0	14.6	8.0	2.4	2.2	1.2	.9	.0	.0	.0	.0	.0	.0	96.3
White oak	1.2	.0	3.9	4.0	3.6	.8	.7	.0	.3	.0	.0	.0	.0	.0	.0	14.5
Red oaks	6.8	15.6	14.3	21.4	24.7	15.5	14.9	6.4	3.8	1.4	.0	.0	.0	.0	.0	124.8
Basswood	1.6	2.3	3.1	2.2	.6	1.4	1.4	.0	1.0	.0	.0	.0	.0	.0	.0	13.6
Elm	2.9	3.0	1.8	7.7	3.4	1.1	1.2	.6	4.4	.8	.0	.0	.0	.0	.0	26.9
Other hardwoods	20.7	23.2	36.8	21.1	8.5	5.5	3.1	2.8	.8	.0	.0	.0	.0	.0	.0	122.5
<b>Total hardwoods</b>	<b>230.4</b>	<b>353.3</b>	<b>373.6</b>	<b>327.6</b>	<b>225.9</b>	<b>141.4</b>	<b>80.7</b>	<b>49.1</b>	<b>67.4</b>	<b>9.3</b>	<b>9.3</b>	<b>9.3</b>	<b>9.3</b>	<b>9.3</b>	<b>9.3</b>	<b>1,857.7</b>
<b>Total, all species</b>	<b>305.8</b>	<b>469.5</b>	<b>508.0</b>	<b>454.7</b>	<b>322.7</b>	<b>204.0</b>	<b>114.1</b>	<b>64.9</b>	<b>89.2</b>	<b>11.6</b>	<b>11.6</b>	<b>11.6</b>	<b>11.6</b>	<b>11.6</b>	<b>11.6</b>	<b>2,544.5</b>

Table 63.--Net volume of growing-stock trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

Species	(In millions of cubic feet)												All classes			
	Diameter class (inches at breast height)															
	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+						
Balsam fir	5.9	5.8	3.9	1.8	2.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	19.4	
Tamarack	.0	.1	.0	1.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	1.8
White spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce	21.1	38.6	33.1	31.9	20.3	9.2	6.9	1.8	2.4	2.4	.0	.0	.0	.0	165.3	
Red pine	.5	.8	2.3	1.4	4.9	4.4	2.0	.9	1.6	1.6	.0	.0	.0	.0	18.8	
White pine	27.3	26.3	41.5	36.6	30.0	27.3	19.1	11.6	27.8	11.7	.0	.0	.0	.0	259.2	
Northern white-cedar	1.2	.3	.4	.4	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.0	
Hemlock	23.3	36.7	38.3	53.4	42.4	28.2	17.0	9.8	10.0	.7	.0	.0	.0	.0	259.8	
Other softwoods	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	
<b>Total softwoods</b>	<b>79.3</b>	<b>108.7</b>	<b>119.5</b>	<b>127.2</b>	<b>100.3</b>	<b>69.1</b>	<b>45.0</b>	<b>24.1</b>	<b>41.8</b>	<b>12.4</b>					<b>727.4</b>	
Sugar maple	48.2	92.3	112.0	133.4	121.3	90.4	46.3	47.1	55.5	11.4					757.9	
Red maple	27.8	67.6	56.4	58.1	44.3	43.5	16.1	14.2	13.5	2.2					343.7	
Yellow birch	13.8	29.0	43.7	38.8	36.5	20.8	11.9	7.9	12.8	2.4					217.6	
Paper birch	21.8	47.9	70.7	34.1	25.0	10.1	4.1	4.1	.0	.0					217.8	
Gray birch	1.0	.0	.0	.0	.0	.0	.0	.0	.0	.0					1.0	
Beech	19.0	34.9	44.8	41.5	34.3	18.8	15.9	10.7	9.7	.9					230.5	
White ash	15.4	28.7	29.8	34.5	28.3	20.3	8.4	4.3	.9	.0					170.6	
Black ash	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0					.1	
Aspen	5.7	8.3	18.0	11.4	10.7	7.3	4.5	.0	1.0	.0					66.9	
White oak	.2	4.1	3.7	2.8	1.9	.9	1.2	1.7	.7	3.2					20.4	
Red oaks	6.1	10.7	20.4	33.5	20.2	24.7	18.3	11.7	14.3	2.8					162.7	
Basswood	1.7	1.5	2.9	2.0	4.2	3.2	.9	.0	.0	.9					17.3	
Elm	2.2	5.8	7.9	6.7	3.6	1.6	2.4	.6	1.5	.0					32.3	
Other hardwoods	21.2	27.6	32.2	31.7	16.3	11.3	7.9	3.8	.9	.0					152.9	
<b>Total hardwoods</b>	<b>184.1</b>	<b>358.5</b>	<b>442.5</b>	<b>428.5</b>	<b>346.6</b>	<b>252.9</b>	<b>137.9</b>	<b>106.1</b>	<b>110.8</b>	<b>23.8</b>					<b>2,391.7</b>	
<b>Total, all species</b>	<b>263.4</b>	<b>467.2</b>	<b>562.0</b>	<b>555.7</b>	<b>446.9</b>	<b>322.0</b>	<b>182.9</b>	<b>130.2</b>	<b>152.6</b>	<b>36.2</b>					<b>3,119.1</b>	

Table 64.--Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1973

Species	(In millions of board feet) <sup>a</sup>										All classes
	Diameter class (inches at breast height)										
	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+			
Balsam fir	16.9	3.8	.0	.0	.0	.0	.0	.0	.0	20.7	
Tamarack	2.4	2.7	.0	.0	.0	.0	.0	.0	.0	5.1	
White spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
Black spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
Red spruce	125.0	159.3	123.5	44.8	6.5	4.6	6.6	.0	.0	470.3	
Red pine	26.9	21.0	20.5	4.5	.0	.0	.0	.0	.0	72.9	
White pine	139.0	126.1	133.1	156.9	103.6	33.1	75.3	11.9	.0	779.0	
Northern white-cedar	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	
Hemlock	138.2	186.4	130.1	75.8	32.9	33.5	18.0	.0	.0	614.9	
Other softwoods	6.0	8.2	3.3	.0	.0	.0	.0	.0	.0	17.5	
<b>Total softwoods</b>	<b>454.4</b>	<b>507.5</b>	<b>410.5</b>	<b>282.0</b>	<b>143.0</b>	<b>71.2</b>	<b>99.9</b>	<b>11.9</b>	<b>1,980.4</b>		
Sugar maple	.0	365.8	268.0	188.5	136.0	94.1	129.2	24.4	1,206.0		
Red maple	.0	187.8	143.8	85.8	39.4	22.4	41.4	3.8	524.4		
Yellow birch	.0	123.5	76.3	77.6	25.9	27.5	27.1	5.0	362.9		
Paper birch	.0	139.8	82.7	37.0	25.5	5.0	26.7	.0	316.7		
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0		
Beech	.0	88.2	128.4	74.8	26.3	26.4	25.1	.0	369.2		
White ash	.0	111.5	51.1	33.9	9.8	.0	9.9	.3	216.5		
Black ash	.0	2.7	.0	.0	.0	.0	.0	.0	2.7		
Aspen	.0	64.9	37.5	10.7	11.5	5.7	3.2	.0	133.5		
White oaks	.0	16.3	15.3	3.2	3.4	.0	1.5	.0	39.7		
Red oaks	.0	85.5	105.0	67.4	70.4	31.4	18.4	7.9	386.0		
Basswood	.0	5.8	2.8	7.6	6.4	.0	6.1	.0	28.7		
Elm	.0	26.8	13.7	5.6	6.1	2.5	17.1	4.0	75.8		
Other hardwoods	.0	84.9	36.2	25.5	14.6	12.2	4.3	.0	177.7		
<b>Total hardwoods</b>	<b>.0</b>	<b>1,303.5</b>	<b>960.8</b>	<b>617.6</b>	<b>375.3</b>	<b>227.2</b>	<b>310.0</b>	<b>45.4</b>	<b>3,839.8</b>		
<b>Total, all species</b>	<b>454.4</b>	<b>1,811.0</b>	<b>1,371.3</b>	<b>899.6</b>	<b>518.3</b>	<b>298.4</b>	<b>409.9</b>	<b>57.3</b>	<b>5,820.2</b>		

<sup>a</sup>International 1/4-inch rule.



Table 65.--Net volume of sawtimber trees on timberland by species and diameter class, Southern Unit, Vermont, 1983

Species	(In millions of board feet) <sup>a</sup>											All classes	
	Diameter class (inches at breast height)												
	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+					
Balsam fir	12.7	6.2	8.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	27.3
Tamarack	.0	6.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	6.1
White spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce	99.8	118.7	83.1	38.8	30.5	8.4	9.4	.0	.0	.0	.0	.0	388.7
Red pine	5.8	5.2	20.4	16.9	9.4	3.0	5.0	.0	.0	.0	.0	.0	65.7
White pine	119.4	128.4	114.7	110.1	80.6	46.6	120.3	46.3	.0	.0	.0	.0	766.4
Northern white-cedar	.8	.7	2.4	.0	.0	.0	.0	.0	.0	.0	.0	.0	3.9
Hemlock	107.2	183.6	162.3	114.7	70.5	40.4	48.2	3.7	.0	.0	.0	.0	730.6
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Total softwoods	345.7	448.9	391.3	280.5	191.0	98.4	182.9	50.0	.0	.0	.0	.0	1,988.7
Sugar maple	.0	433.4	438.3	346.3	179.5	192.0	243.9	59.1	.0	.0	.0	.0	1,892.5
Red maple	.0	183.2	153.1	170.3	62.0	57.2	59.6	7.3	.0	.0	.0	.0	692.7
Yellow birch	.0	127.2	133.9	78.8	47.6	33.0	49.8	12.1	.0	.0	.0	.0	482.4
Paper birch	.0	114.3	91.0	38.5	17.3	16.9	.0	.0	.0	.0	.0	.0	278.0
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	.0	140.9	132.8	76.0	66.0	44.8	44.0	5.0	.0	.0	.0	.0	509.5
White ash	.0	114.2	102.5	81.9	33.5	17.2	3.9	.0	.0	.0	.0	.0	353.2
Black ash	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aspen	.0	37.6	38.4	28.4	19.0	.0	4.1	.0	.0	.0	.0	.0	127.5
White oaks	.0	9.7	7.0	3.3	4.6	6.3	3.4	13.4	.0	.0	.0	.0	47.7
Red oaks	.0	104.9	68.1	91.0	69.4	47.5	63.0	14.3	.0	.0	.0	.0	458.2
Basswood	.0	7.4	14.7	14.4	3.5	.0	.0	4.9	.0	.0	.0	.0	44.9
Elm	.0	23.9	11.4	6.3	9.5	2.9	6.8	.0	.0	.0	.0	.0	60.8
Other hardwoods	.0	109.3	61.8	47.0	32.7	15.1	4.0	.0	.0	.0	.0	.0	269.9
Total hardwoods	.0	1,406.0	1,253.0	982.2	544.6	432.9	482.5	116.1	.0	.0	.0	.0	5,217.3
Total, all species	345.7	1,854.9	1,644.3	1,262.7	735.6	531.3	665.4	166.1	.0	.0	.0	.0	7,206.0

<sup>a</sup>International 1/4-inch rule.

Table 66.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Southern Unit, Vermont, 1973

Species	All size classes					>15" Diameter at breast height				
	All size classes					>15" Diameter at breast height				
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	20.7	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	5.1	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	470.3	.0	.0	.0	.0	.0
Red pine	.5	.3	72.1	.0	72.9	.0	.0	4.5	.0	4.5
White pine	6.3	56.2	387.6	328.9	779.0	3.5	18.9	162.8	195.6	380.8
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	614.9	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	17.5	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>6.8</b>	<b>56.5</b>	<b>459.7</b>	<b>328.9</b>	<b>1,980.4</b>	<b>3.5</b>	<b>18.9</b>	<b>167.3</b>	<b>195.6</b>	<b>385.3</b>
Sugar maple	111.6	278.3	600.9	215.2	1,206.0	82.8	156.7	243.7	99.0	572.2
Red maple	15.9	85.7	312.7	110.1	524.4	12.2	43.4	105.0	32.3	192.9
Yellow birch	21.0	87.8	214.7	39.4	362.9	18.4	55.4	81.2	8.2	163.2
Paper birch	26.4	48.7	142.6	99.0	316.7	13.8	21.6	35.6	23.2	94.2
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	12.3	38.2	211.6	107.1	369.2	5.7	16.2	98.0	32.7	152.6
White ash	23.3	86.1	75.8	31.3	216.5	16.2	17.5	16.5	3.7	53.9
Black ash	.0	.0	.0	2.7	2.7	.0	.0	.0	.0	.0
Aspen	3.5	14.7	90.3	25.0	133.5	3.5	11.0	13.8	2.8	31.1
White oaks	3.1	11.3	21.0	4.3	39.7	.0	4.6	2.7	.7	8.0
Red oaks	67.1	93.8	162.9	62.2	386.0	60.8	59.2	56.0	19.5	195.5
Basswood	1.7	5.1	8.5	13.4	28.7	1.7	3.4	2.1	12.8	20.0
Elm	2.5	13.9	47.7	11.7	75.8	2.5	8.3	23.0	1.5	35.3
Other hardwoods	10.9	28.5	108.2	30.1	177.7	9.5	13.6	25.3	8.2	56.6
<b>Total hardwoods</b>	<b>299.3</b>	<b>792.1</b>	<b>1,996.9</b>	<b>751.5</b>	<b>3,839.8</b>	<b>227.1</b>	<b>410.9</b>	<b>702.9</b>	<b>234.6</b>	<b>1,575.5</b>
Percent of hardwood in each grade	8	21	52	19	100	14	26	45	15	100

<sup>a</sup> International 1/4-inch rule.

<sup>b</sup> Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

<sup>c</sup> These species are not divided into standard-lumber grades.

Table 67.--Net volume of sawtimber trees on timberland by species, size class, and standard-lumber log grade, Southern Unit, Vermont, 1983

Species	All size classes					>15" Diameter at breast height				
	Grade 1	Grade 2	Grade 3	Grade 4 <sup>b</sup>	All grades	Grade 1	Grade 2	Grade 3	Grade 4	All grades
Balsam fir <sup>c</sup>	.0	.0	.0	.0	27.3	.0	.0	.0	.0	.0
Tamarack <sup>c</sup>	.0	.0	.0	.0	6.1	.0	.0	.0	.0	.0
White spruce <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Black spruce <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Red spruce <sup>c</sup>	.0	.0	.0	.0	388.7	.0	.0	.0	.0	.0
Red pine	18.5	13.4	33.8	.0	65.7	8.6	7.6	18.1	.0	34.3
White pine	48.1	146.0	332.6	239.7	766.4	38.5	59.6	169.3	136.5	403.9
Northern white-cedar <sup>c</sup>	.0	.0	.0	.0	3.9	.0	.0	.0	.0	.0
Hemlock <sup>c</sup>	.0	.0	.0	.0	730.6	.0	.0	.0	.0	.0
Other softwoods <sup>c</sup>	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>66.6</b>	<b>159.4</b>	<b>366.4</b>	<b>239.7</b>	<b>1,988.7</b>	<b>47.1</b>	<b>67.2</b>	<b>187.4</b>	<b>136.5</b>	<b>438.2</b>
Sugar maple	216.8	500.8	843.7	331.2	1,892.5	159.9	239.3	431.9	189.6	1,020.7
Red maple	77.9	214.1	287.2	113.5	692.7	65.1	106.4	126.8	58.0	356.3
Yellow birch	47.5	149.2	241.9	43.8	482.4	37.3	53.0	109.6	21.3	221.2
Paper birch	15.8	96.8	124.3	41.1	278.0	10.2	29.0	19.4	14.1	72.7
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Beech	36.2	87.6	297.3	88.4	509.5	20.8	22.4	143.6	49.1	235.9
White ash	70.9	105.9	129.6	46.8	353.2	39.5	40.0	40.6	16.4	136.5
Black ash	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
Aspen	17.1	27.9	63.4	19.1	127.5	14.8	5.0	24.3	7.5	51.6
White oaks	1.1	7.1	29.5	10.0	47.7	.0	2.4	22.9	5.7	31.0
Red oaks	129.5	141.9	145.4	41.4	458.2	115.3	63.3	85.3	21.3	285.2
Basswood	4.1	13.6	25.0	2.2	44.9	4.1	6.5	11.2	.9	22.7
Elm	1.8	24.5	23.3	11.2	60.8	1.8	5.8	12.0	5.9	25.5
Other hardwoods	27.9	79.9	129.1	33.0	269.9	17.9	37.6	33.2	10.3	99.0
<b>Total hardwoods</b>	<b>646.6</b>	<b>1,449.3</b>	<b>2,339.7</b>	<b>781.7</b>	<b>5,217.3</b>	<b>486.7</b>	<b>610.7</b>	<b>1,060.8</b>	<b>400.1</b>	<b>2,558.3</b>
Percent of hardwood in each grade	12	28	45	15	100	19	24	41	16	100

<sup>a</sup>International 1/4-inch rule.

<sup>b</sup>Grade 4 applies only to white pine. For hardwoods, the volumes in this column are for construction logs.

<sup>c</sup>These species are not divided into standard-lumber grades.

Table 68.--Sampling errors for various tables, Southern Unit, Vermont, 1973 and 1983

(In percent)

Species and diameter class	Number of trees (Table 59)	Growing-stock volume Table		Sawtimber volume Table	
		(62)	(63)	(64)	(65)
Balsam fir	27	39	28	42	37
Tamarack	54	72	58	71	60
White spruce	-	-	-	-	-
Black spruce	-	-	-	-	-
Red spruce	18	21	17	27	18
Red pine	78	50	89	57	95
White pine	17	16	14	16	15
Northern white-cedar	64	71	63	-	84
Hemlock	14	15	14	18	15
Other softwoods	100	98	100	100	-
Softwoods	8	9	8	10	9
Sugar maple	7	9	7	12	9
Red maple	11	11	11	15	14
Yellow birch	12	14	10	18	13
Paper birch	13	12	13	20	19
Gray birch	58	-	51	-	100
Beech	12	14	11	17	13
White ash	15	13	13	19	15
Black ash	100	100	100	100	-
Aspen	23	26	21	38	24
White oaks	49	51	39	61	41
Red oaks	19	20	18	23	20
Basswood	32	29	27	40	31
Elm	25	28	31	32	35
Other hardwoods	13	15	12	23	16
Hardwoods	4	4	4	7	5
All species	3	3	3	5	4
D.b.h. class (inches)					
5.0 to 6.9	5	7	5	-	-
7.0 to 8.9	5	6	5	-	-
9.0 to 10.9	4	5	5	12	11
11.0 to 12.9	5	6	5	6	5
13.0 to 14.9	5	7	5	7	5
15.0 to 16.9	6	7	6	8	6
17.0 to 18.9	8	11	8	10	9
19.0 to 20.9	11	16	11	15	11
21.0 to 28.9	11	13	11	13	12
29 +	31	30	30	30	31



# COUNTY TABLES



Table 69.--Land area by county and land use class, Vermont, 1983

(In thousands of acres)

County and unit	Forest land area			Total forest	Non-forest	Total land area
	Timberland	Productive reserved	Unproductive			
Caledonia	292.3	.7	6.7	299.7	117.2	416.9
Essex	393.7	.3	4.2	398.2	28.1	426.3
Franklin/Grand Isle	278.1	.1	-	278.2	194.0	472.2
Lamoille	235.5	.7	2.8	239.0	56.0	295.0
Orange	341.9	1.5	.8	344.2	97.3	441.5
Orleans	305.1	.2	4.7	310.0	135.9	445.9
Washington	353.8	.8	1.1	355.7	85.9	441.6
Northern Unit	2,200.4	4.3	20.3	2,225.0	714.4	2,939.4
Addison	285.6	23.4	4.1	313.1	181.6	494.7
Bennington	354.8	24.8	.4	380.0	53.1	433.1
Chittenden	214.9	6.7	4.7	226.3	119.1	345.4
Rutland	444.7	27.8	3.0	475.5	121.3	596.8
Windham	421.0	.1	-	421.1	82.5	503.6
Windsor	500.7	2.0	.7	503.4	118.3	621.7
Southern Unit	2,221.7	84.8	12.9	2,319.4	675.9	2,995.3
Total	4,422.1	89.1	33.2	4,544.4	1,390.3	5,934.7

Table 70.--Area of timberland by county and forest-type group, Vermont, 1983  
(In thousands of acres)

County and unit	Forest-type group								All groups
	White/red pine	Spruce/fir	Oak/pine	Oak/hickory	Elm/ash/red maple	Northern hardwoods	Aspen/birch		
Caledonia	51.5	86.9	-	-	-	139.0	14.9	292.3	
Essex	-	115.7	-	-	7.4	270.6	-	393.7	
Franklin/Grand Isle	67.7	20.2	-	2.9	35.1	152.2	-	278.1	
Lamoille	7.2	30.4	-	-	-	197.9	-	235.5	
Orange	79.9	59.8	-	7.5	-	179.6	15.1	341.9	
Orleans	7.4	156.7	-	-	-	118.6	22.4	305.1	
Washington	29.6	59.3	-	7.4	14.0	199.0	44.5	353.8	
Northern Unit	243.3	529.0	-	17.8	56.5	1,256.9	96.9	2,200.4	
Addison	30.7	7.7	-	27.8	8.5	194.7	16.2	285.6	
Bennington	6.5	-	-	20.6	-	327.7	-	354.8	
Chittenden	27.9	-	-	13.7	13.5	146.3	13.5	214.9	
Rutland	112.4	33.4	6.7	34.3	13.7	237.1	7.1	444.7	
Windham	85.0	28.9	-	43.2	-	249.5	14.4	421.0	
Windsor	125.5	34.6	6.8	7.0	6.8	285.3	34.7	500.7	
Southern Unit	388.0	104.6	13.5	146.6	42.5	1,440.6	85.9	2,221.7	
Total	631.3	633.6	13.5	164.4	99.0	2,697.5	182.8	4,422.1	

Table 71.--Area of timberland by county and stand-size class, Vermont, 1983

(In thousands of acres)

County and unit	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Caledonia	155.1	95.1	42.1	.0	292.3
Essex	162.1	162.1	69.5	.0	393.7
Franklin/Grand Isle	175.2	68.4	34.5	.0	278.1
Lamoille	146.5	65.3	23.7	.0	235.5
Orange	261.5	53.1	27.3	.0	341.9
Orleans	164.2	110.9	30.0	.0	305.1
Washington	214.4	111.3	28.1	.0	353.8
Northern Unit	1,279.0	666.2	255.2	.0	2,200.4
Addison	179.4	75.3	25.3	5.6	285.6
Bennington	265.4	56.6	32.8	.0	354.8
Chittenden	125.3	20.5	62.7	6.4	214.9
Rutland	289.5	103.6	51.6	.0	444.7
Windham	363.2	36.0	21.8	.0	421.0
Windsor	386.0	90.3	24.4	.0	500.7
Southern Unit	1,608.8	382.3	218.6	12.0	2,221.7
Total	2,887.8	1,048.5	473.8	12.0	4,422.1

Table 72.--Area of timberland by county and cubic foot stand-volume class, Vermont, 1983

(In thousands of acres)

County and unit	Stand-volume class (cubic feet per acre)						Total
	0-499	500-999	1000-1499	1500-1999	2000-2499	2500+	
Caledonia	33.8	36.5	29.2	44.2	89.1	59.5	292.3
Essex	54.7	66.4	95.8	73.7	58.9	44.2	393.7
Franklin/Grand Isle	51.8	60.2	44.7	44.3	46.1	31.0	278.1
Lamoille	23.7	14.4	36.4	73.1	58.2	29.7	235.5
Orange	19.5	29.5	42.4	83.5	84.0	83.0	341.9
Orleans	30.0	45.9	75.5	80.9	37.8	35.0	305.1
Washington	14.1	51.2	51.9	103.6	66.5	66.5	353.8
Northern Unit	227.6	304.1	375.9	503.3	440.6	348.9	2,200.4
Addison	30.9	35.9	80.3	63.2	37.5	37.8	285.6
Bennington	18.0	46.0	63.1	77.5	121.2	29.0	354.8
Chittenden	55.6	27.1	20.3	34.6	48.9	28.4	214.9
Rutland	44.9	42.2	90.3	137.6	88.7	41.0	444.7
Windham	7.2	43.9	63.8	72.0	93.0	141.1	421.0
Windsor	35.0	20.8	96.9	153.1	118.6	76.3	500.7
Southern Unit	191.6	215.9	414.7	538.0	507.9	353.6	2,221.7
Total	419.2	520.0	790.6	1,041.3	948.5	702.5	4,422.1



Table 73.--Area of timberland by county and green ton stand-volume class, Vermont, 1983

(In thousands of acres)

County and unit	Stand-volume class (green tons per acre)				All classes
	0-49	50-99	100-149	150+	
Caledonia	55.8	87.9	148.6	.0	292.3
Essex	84.2	184.2	117.9	7.4	393.7
Franklin/Grand Isle	89.6	90.2	91.1	7.2	278.1
Lamoille	30.9	73.1	102.1	29.4	235.5
Orange	40.1	112.2	144.3	45.3	341.9
Orleans	60.4	149.4	95.3	.0	305.1
Washington	28.1	155.7	133.0	37.0	353.8
Northern Unit	389.1	852.7	832.3	126.3	2,200.4
Addison	47.1	138.5	69.9	30.1	285.6
Bennington	30.6	138.6	163.3	22.3	354.8
Chittenden	61.9	62.1	83.9	7.0	214.9
Rutland	73.3	199.9	151.0	20.5	444.7
Windham	22.2	179.1	177.2	42.5	421.0
Windsor	35.0	235.9	223.0	6.8	500.7
Southern Unit	270.1	954.1	868.3	129.2	2,221.7
Total	659.2	1,806.8	1,700.6	255.5	4,422.1

Table 74.--Area of timberland by county and stocking class of growing-stock trees, Vermont, 1983

(In thousands of acres)

County and unit	Stocking class					All classes
	Nonstocked	Poorly stocked	Moderately stocked	Fully stocked	Over-stocked	
Caledonia	.0	19.9	58.7	133.7	80.0	292.3
Essex	.0	20.0	132.7	110.6	130.4	393.7
Franklin/Grand Isle	2.9	53.0	71.3	108.0	42.9	278.1
Lamoille	.0	15.1	110.6	65.7	44.1	235.5
Orange	6.3	28.6	80.1	150.7	76.2	341.9
Orleans	.0	30.3	113.6	100.7	60.5	305.1
Washington	.0	7.4	66.8	192.3	87.3	353.8
Northern Unit	9.2	174.3	633.8	861.7	521.4	2,200.4
Addison	5.6	11.9	60.2	129.2	78.7	285.6
Bennington	.0	17.2	141.0	161.6	35.0	354.8
Chittenden	6.4	27.5	70.1	69.4	41.5	214.9
Rutland	7.1	39.6	184.4	124.9	88.7	444.7
Windham	.0	22.1	142.9	177.9	78.1	421.0
Windsor	.0	94.2	267.2	104.6	34.7	500.7
Southern Unit	19.1	212.5	865.8	767.6	356.7	2,221.7
Total	28.3	386.8	1,499.6	1,629.3	878.1	4,422.1

Table 75.--Net volume of growing-stock trees on timberland by county and forest-type group, Vermont, 1983  
(In millions of cubic feet)

County and unit	Forest-type group										All groups
	White/red pine	Spruce/fir	Oak/pine	Oak/hickory	Elm/ash/red maple	Northern hardwoods	Aspen/birch				
Caledonia	113.8	111.8	-	-	-	231.4	20.3				477.3
Essex	-	175.0	-	-	2.3	315.9	-				493.2
Franklin/grand Isle	121.6	29.2	-	-	15.9	168.0	-				334.7
Lamoille	12.2	29.4	-	-	-	266.9	-				308.5
Orange	114.3	90.8	-	29.3	-	308.8	28.9				572.1
Orleans	3.3	205.0	-	-	-	153.1	23.4				384.8
Washington	72.9	131.9	-	5.3	16.4	275.6	83.6				585.7
Northern Unit	438.1	773.1	-	34.6	34.6	1,719.7	156.2				3,156.3
Addison	51.2	7.0	-	26.8	14.0	265.8	30.6				395.4
Bennington	4.3	-	-	29.0	-	495.6	-				528.9
Chittenden	34.2	-	-	1.3	12.3	197.9	15.6				261.3
Rutland	142.7	18.7	11.3	39.8	15.0	362.5	8.3				598.3
Windham	182.5	40.1	-	75.3	-	415.1	42.7				755.7
Windsor	123.3	46.0	7.7	6.9	4.8	348.0	42.8				579.5
Southern Unit	538.2	111.8	19.0	179.1	46.1	2,084.9	140.0				3,119.1
Total	976.3	884.9	19.0	213.7	80.7	3,804.6	296.2				6,275.4

Table 76.--Net volume of growing-stock trees on timberland by county and stand-size class, Vermont, 1983

(In millions of cubic feet)

County and unit	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Caledonia	312.6	150.0	14.7	.0	477.3
Essex	259.9	207.0	26.3	.0	493.2
Franklin/Grand Isle	266.5	59.9	8.3	.0	334.7
Lamoille	223.1	82.6	2.8	.0	308.5
Orange	466.7	95.9	9.5	.0	572.1
Orleans	260.8	115.7	8.3	.0	384.8
Washington	409.2	166.7	9.8	.0	585.7
Northern Unit	2,198.8	877.8	79.7	.0	3,156.3
Addison	306.6	86.5	2.3	.0	395.4
Bennington	438.8	71.3	18.8	.0	528.9
Chittenden	206.8	35.2	18.4	.9	261.3
Rutland	445.4	140.2	12.7	.0	598.3
Windham	698.1	49.1	8.5	.0	755.7
Windsor	483.4	94.5	1.6	.0	579.5
Southern Unit	2,579.1	476.8	62.3	.9	3,119.1
Total	4,777.9	1,354.6	142.0	.9	6,275.4

Table 77.--Net volume of growing-stock trees on timberland by species and county, Vermont, 1983  
(In millions of cubic feet)

Species	Caledonia	Essex	Franklin/ Grand Isle	Lamoille	Orange	Orleans	Washington	Northern unit
Balsam fir	60.6	110.8	9.5	14.4	18.2	77.4	43.3	334.2
Tamarack	4.9	.6	.0	.0	.0	.0	2.3	7.8
White spruce	25.6	14.5	.0	.0	5.1	12.5	15.7	73.4
Black spruce	.6	1.3	.0	.0	.0	3.9	.0	5.8
Red spruce	37.9	45.0	18.6	29.4	63.7	36.4	86.0	317.0
Red pine	.0	.0	.0	.0	.0	.0	.0	.0
White pine	46.0	2.8	36.6	1.3	63.0	10.1	29.9	189.7
Northern white-cedar	12.7	1.9	7.3	.7	6.7	54.7	4.9	88.9
Hemlock	31.7	6.2	70.4	30.5	81.0	13.8	26.7	260.3
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0
Total softwoods	220.0	183.1	142.4	76.3	237.7	208.8	208.8	1,277.1
Sugar maple	119.1	89.1	67.4	93.4	161.4	55.4	103.5	689.3
Red maple	17.8	74.6	38.4	36.8	25.4	23.9	45.2	262.1
Yellow birch	31.4	87.2	24.8	41.3	14.0	35.2	46.6	280.5
Paper birch	25.7	19.7	3.8	15.1	19.3	32.2	78.1	193.9
Gray birch	.0	.9	2.2	1.7	.0	.3	1.9	7.0
Beech	7.9	10.8	14.6	31.8	14.0	1.6	18.5	99.2
White ash	26.3	11.7	16.1	7.6	14.9	8.2	18.4	103.2
Black ash	2.9	.9	2.4	.0	2.2	.7	7.2	16.3
Aspen	17.2	12.3	4.1	2.2	34.4	5.7	30.5	106.4
White oaks	.0	.0	3.1	.0	.0	.0	.0	3.1
Red oaks	.9	.0	1.4	.0	30.6	.0	3.6	36.5
Basswood	1.3	.0	1.9	.7	6.9	5.3	.0	16.1
Elm	.1	.9	5.5	1.0	1.4	1.4	1.2	11.5
Other hardwoods	6.7	2.0	6.6	.6	9.9	6.1	22.2	54.1
Total hardwoods	257.3	310.1	192.3	232.2	334.4	176.0	376.9	1,879.2
Total, all species	477.3	493.2	334.7	308.5	572.1	384.8	585.7	3,156.3



Table 77.--continued

(In millions of cubic feet)

Species	Addison	Bennington	Chittenden	Rutland	Windham	Windsor	Southern unit	All counties
Balsam fir	2.8	3.3	2.1	1.9	6.1	3.2	19.4	353.6
Tamarack	1.0	.0	.1	.0	.0	.7	1.8	9.6
White spruce	.0	.0	.0	.0	.0	.0	.0	73.4
Black spruce	.0	.0	.0	.0	.0	.0	.0	5.8
Red spruce	20.3	15.8	1.7	28.5	47.1	51.9	165.3	482.3
Red pine	.0	.0	.0	2.3	16.5	.0	18.8	18.8
White pine	24.0	11.9	14.0	69.1	99.7	40.5	259.2	448.9
Northern white-cedar	.1	.0	.2	2.7	.0	.0	3.0	91.9
Hemlock	31.1	12.6	21.3	51.9	92.3	50.6	259.8	520.1
Other softwoods	.1	.0	.0	.0	.0	.0	.1	.1
Total softwoods	79.4	43.6	39.4	156.4	261.7	146.9	727.4	2,004.5
Sugar maple	87.7	160.0	97.3	138.4	96.1	178.4	757.9	1,447.2
Red maple	33.4	93.0	15.0	57.6	113.1	31.6	343.7	605.8
Yellow birch	46.8	56.3	9.4	44.0	34.5	26.6	217.6	498.1
Paper birch	33.5	23.8	7.8	35.2	48.0	69.5	217.8	411.7
Gray birch	.1	.2	.0	.1	.6	.0	1.0	8.0
Beech	28.1	74.5	21.9	37.8	40.7	27.5	230.5	329.7
White ash	20.4	9.9	37.4	36.3	24.8	41.8	170.6	273.8
Black ash	.0	.1	.0	.0	.0	.0	.1	16.4
Aspen	13.3	4.9	8.5	15.5	11.9	12.8	66.9	173.3
White oaks	2.3	6.7	.0	10.5	.2	.7	20.4	23.5
Red oaks	16.3	25.6	6.9	26.1	68.6	19.2	162.7	199.2
Basswood	7.4	.9	3.2	4.2	.2	1.4	17.3	33.4
Elm	14.0	.3	4.0	9.6	.9	3.5	32.3	43.8
Other hardwoods	12.7	29.1	10.5	26.6	54.4	19.6	152.9	207.0
Total hardwoods	316.0	485.3	221.9	441.9	494.0	432.6	2,391.7	4,270.9
Total, all species	395.4	528.9	261.3	598.3	755.7	579.5	3,119.1	6,275.4

Table 78.--Net volume of sawtimber trees on timberland by county and forest-type group, Vermont, 1983  
(In millions of board feet)<sup>a</sup>

County and unit	Forest-type group										All groups	
	White/red pine	Spruce/fir	Oak/pine	Oak/hickory	Elm/ash/red maple	Northern hardwoods	Aspen/birch					
Caledonia	288.5	217.5	-	-	-	520.2	18.9	1,045.1				
Essex	-	360.9	-	-	4.1	688.4	-	1,053.4				
Franklin/Grand Isle	339.6	40.0	-	-	16.5	387.8	-	783.9				
Lamoille	19.5	70.2	-	-	-	547.2	-	636.9				
Orange	293.2	192.4	-	83.9	-	733.4	61.7	1,364.6				
Orleans	6.7	423.8	-	-	-	258.7	11.3	700.5				
Washington	194.9	277.3	-	5.2	41.4	556.7	121.6	1,197.1				
Northern Unit	1,142.4	1,582.1	-	89.1	62.0	3,692.4	213.5	6,781.5				
Addison	129.5	3.3	-	60.7	31.4	540.7	51.4	817.0				
Bennington	13.4	-	-	67.7	-	1,319.5	-	1,400.6				
Chittenden	83.4	-	-	2.8	38.3	440.3	12.2	577.0				
Rutland	329.0	52.1	23.2	58.7	20.8	891.1	17.4	1,392.3				
Windham	501.1	86.0	-	217.5	-	893.1	83.4	1,781.1				
Windsor	280.0	114.1	9.4	10.8	5.2	788.4	30.1	1,238.0				
Southern Unit	1,336.4	255.5	32.6	418.2	95.7	4,873.1	194.5	7,206.0				
Total	2,478.8	1,837.6	32.6	507.3	157.7	8,565.5	408.0	13,987.5				

<sup>a</sup>International 1/4-inch rule.

Table 79.--Net volume of sawtimber trees on timberland by county and stand-size class, Vermont, 1983

(In millions of board feet)<sup>a</sup>

County and unit	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling and seedling	Nonstocked	
Caledonia	823.5	182.4	39.2	.0	1,045.1
Essex	716.1	290.7	46.6	.0	1,053.4
Franklin/Grand Isle	727.8	41.6	14.5	.0	783.9
Lamoille	555.5	80.8	.6	.0	636.9
Orange	1,197.3	135.4	31.9	.0	1,364.6
Orleans	577.8	115.0	7.7	.0	700.5
Washington	963.8	212.5	20.8	.0	1,197.1
Northern Unit	5,561.8	1,058.4	161.3	.0	6,781.5
Addison	715.7	98.7	2.6	.0	817.0
Bennington	1,231.7	118.3	50.6	.0	1,400.6
Chittenden	508.5	42.7	23.0	2.8	577.0
Rutland	1,165.6	211.9	14.8	.0	1,392.3
Windham	1,702.1	68.5	10.5	.0	1,781.1
Windsor	1,152.3	84.4	1.3	.0	1,238.0
Southern Unit	6,475.9	624.5	102.8	2.8	7,206.0
Total	12,037.7	1,682.9	264.1	2.8	13,987.5

<sup>a</sup>International 1/4-inch rule.

Table 80.--Net volume of sawtimber trees on timberland by species and county, Vermont, 1983  
(In millions of board feet)<sup>a</sup>

Species	Caledonia	Essex	Franklin/ Grand Isle	Lamoille	Orange	Orleans	Washington	Northern unit
Balsam fir	103.3	213.6	8.6	21.9	24.8	167.4	98.4	638.0
Tamarack	5.9	2.2	.0	.0	.0	.0	7.5	15.6
White spruce	56.6	34.4	.0	.0	13.1	27.0	28.6	159.7
Black spruce	1.8	4.7	.0	.0	.0	11.1	.0	17.6
Red spruce	88.7	129.1	42.4	85.8	155.3	77.5	210.4	789.2
Red pine	.0	.0	.0	.0	.0	.0	.0	.0
White pine	161.8	9.0	124.8	4.8	201.8	30.3	105.4	637.9
Northern white-cedar	22.8	2.9	7.7	2.0	9.1	92.3	7.7	144.5
Hemlock	69.7	20.8	200.2	63.0	232.3	32.0	73.1	691.1
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0
<b>Total softwoods</b>	<b>510.6</b>	<b>416.7</b>	<b>383.7</b>	<b>177.5</b>	<b>636.4</b>	<b>437.6</b>	<b>531.1</b>	<b>3,093.6</b>
Sugar maple	304.5	175.5	134.9	187.9	368.2	88.8	172.3	1,432.1
Red maple	12.0	131.8	57.1	57.4	48.0	37.3	56.6	400.2
Yellow birch	57.3	227.9	59.7	90.2	23.0	58.1	89.8	606.0
Paper birch	28.2	26.2	8.4	15.1	28.8	18.1	74.3	199.1
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0
Beech	16.2	20.6	49.8	88.1	38.0	.9	51.5	265.1
White ash	67.2	27.7	38.9	11.2	15.0	19.3	50.9	230.2
Black ash	.0	.0	.0	.0	3.8	2.1	18.7	24.6
Aspen	29.1	19.8	13.6	9.5	87.2	13.6	104.5	277.3
White oaks	.0	.0	10.3	.0	.0	.0	.0	10.3
Red oaks	3.3	.0	.0	.0	85.0	.0	5.6	93.9
Basswood	3.8	.0	6.4	.0	12.5	8.9	.0	31.6
Elm	.0	2.9	8.1	.0	2.3	5.3	5.4	24.0
Other hardwoods	12.9	4.3	13.0	.0	16.4	10.5	36.4	93.5
<b>Total hardwoods</b>	<b>534.5</b>	<b>636.7</b>	<b>400.2</b>	<b>459.4</b>	<b>728.2</b>	<b>262.9</b>	<b>666.0</b>	<b>3,687.9</b>
<b>Total, all species</b>	<b>1,045.1</b>	<b>1,053.4</b>	<b>783.9</b>	<b>636.9</b>	<b>1,364.6</b>	<b>700.5</b>	<b>1,197.1</b>	<b>6,781.5</b>



Table 80.--continued

(In millions of board feet)<sup>a</sup>

Species	Addison	Bennington	Chittenden	Rutland	Windham	Windsor	Southern unit	All countries
Balsam fir	1.3	2.6	4.7	2.1	7.3	9.3	27.3	665.3
Tamarack	3.8	.0	.0	.0	.0	2.3	6.1	21.7
White spruce	.0	.0	.0	.0	.0	.0	.0	159.7
Black spruce	.0	.0	.0	.0	.0	.0	.0	17.6
Red spruce	32.9	43.1	6.0	68.5	112.8	125.4	388.7	1,177.9
Red pine	.0	.0	.0	3.5	62.2	.0	65.7	65.7
White pine	51.3	43.5	44.2	203.5	324.2	99.7	766.4	1,404.3
Northern white-cedar	.2	.0	.0	3.7	.0	.0	3.9	148.4
Hemlock	98.2	38.9	50.4	138.2	251.8	153.1	730.6	1,421.7
Other softwoods	.0	.0	.0	.0	.0	.0	.0	.0
Total softwoods	187.7	128.1	105.3	419.5	758.3	389.8	1,988.7	5,082.3
Sugar maple	206.7	444.2	238.7	388.2	211.9	402.8	1,892.5	3,324.6
Red maple	40.1	251.5	24.1	122.0	194.0	61.0	692.7	1,092.9
Yellow birch	91.4	148.1	12.1	115.0	60.2	55.6	482.4	1,088.4
Paper birch	50.1	43.9	6.1	46.4	63.2	68.3	278.0	477.1
Gray birch	.0	.0	.0	.0	.0	.0	.0	.0
Beech	63.0	189.4	58.3	61.4	72.8	64.6	509.5	774.6
White ash	36.8	27.4	67.5	72.6	57.8	91.1	353.2	583.4
Black ash	.0	.0	.0	.0	.0	.0	.0	24.6
Aspen	25.7	13.7	8.5	28.5	24.1	27.0	127.5	404.8
White oaks	8.4	15.5	.0	21.2	.4	2.2	47.7	58.0
Red oaks	44.9	78.3	22.4	60.6	216.5	35.5	458.2	552.1
Basswood	19.4	3.2	11.2	6.7	.0	4.4	44.9	76.5
Elm	21.9	.9	11.2	14.7	4.1	8.0	60.8	84.8
Other hardwoods	20.9	56.4	11.6	35.5	117.8	27.7	269.9	363.4
Total hardwoods	629.3	1,272.5	471.7	972.8	1,022.8	848.2	5,217.3	8,905.2
Total, all species	817.0	1,400.6	577.0	1,392.3	1,781.1	1,238.0	7,206.0	13,987.5

<sup>a</sup>International 1/4-inch rule.

Table 81.--Sampling errors for various county and geographic unit estimates, Vermont, 1983

(In percent)

County	Timberland area	Growing stock volume	Sawtimber volume
Caledonia	3.8	7.8	11.7
Essex	2.0	6.0	10.1
Franklin/Grand Isle	3.4	8.8	14.1
Lamoille	1.7	7.1	11.1
Orange	4.0	6.7	8.8
Orleans	3.9	9.1	13.9
Washington	2.5	6.3	9.9
Northern Unit	1.2	2.8	4.2
Addison	2.2	8.8	9.7
Bennington	1.8	6.5	8.7
Chittenden	3.8	8.3	10.2
Rutland	1.3	5.9	8.9
Windham	1.2	6.1	7.6
Windsor	2.2	5.8	8.8
Southern Unit	.8	2.7	3.7

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## Appendix

### Definition 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. 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 in terms of 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.

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

Cabin log. A relatively slender roundwood product that is cut to standard sizes; meets specifications of strength, straightness, and soundness; and is finished for use in constructing cabins, barns, and other buildings.

Cavities. Holes in tree stems and branches with entrances 1 inch or larger in diameter.

Coarse residues. Manufacturing residues suitable for chipping, such as slabs, edgings, and veneer cores.

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

Cord. See Standard cord.

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

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

Cull tree. A rough tree or a rotten tree.

Cull increment. The net volume of growing-stock trees on the previous inventory that became rough or rotten trees in the current inventory, divided by the number of growing seasons between surveys.

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

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.

Fine residues. Manufacturing residues not suitable for chipping, such as sawdust and shavings.

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 1 acre.

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

Forest-type group. A combination of forest types that share closely associated species or site requirements. The many forest types in Vermont were combined into the following major forest-type groups (the descriptions apply to forests in Vermont):

a. White/red pine--forests in which white pine, hemlock, or red pine make up the plurality of the stocking, singly or in combination; common associates include sugar maple, red maple, red spruce, balsam fir, and paper birch.



b. Spruce/fir--forests in which red spruce, northern white-cedar, balsam fir, white spruce, black spruce, or tamarack, singly or in combination, make up a plurality of the stocking; common associates include paper birch, red maple, aspen, white pine, hemlock, and sugar maple.

c. Oak/pine--forests in which northern red oak or white ash, singly or in combination, make up a plurality of the stocking but where white pine contributes 25 to 50 percent of the stocking; beech, red spruce, and sugar maple are associates.

d. Oak/hickory--forests in which upland oaks, red maple (when associated with central hardwoods), or hawthorn, singly or in combination, make up a plurality of the stocking and in which white pine makes up less than 75 percent of the stocking; common associates include white pine, paper birch, red spruce, beech, hemlock, sugar maple, and red maple.

e. Elm/ash/red maple--forests in which black ash, elm, red maple (when growing on wet sites), willow, or green ash, singly or in combination, make up a plurality of the stocking; common associates include balsam fir, red maple, aspen, and white ash.

f. Northern hardwoods--forests in which sugar maple, beech, yellow birch, red maple (when associated with northern hardwoods), pin cherry, or black cherry, singly or in combination, make up a plurality of the stocking; common associates include balsam fir, red spruce, paper birch, hemlock, white ash, aspen, and basswood.

g. 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 balsam fir, red maple, red spruce, white ash, and white pine.

Fuelwood. Round, split, or chipped woody material (with or without bark) that is converted to household, commercial, or industrial energy.

Geographic unit. A county or a group of counties within a state that is large enough to provide an adequate sample that will yield statistically reliable estimates of timberland area, volume, and components of change.

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

Green ton stand-volume class. A classification of forest land in terms of net green weight of the aboveground components of all live trees per unit area. It is usually expressed in green tons per acre.

Green weight. The weight of wood and bark as it would be if it had been recently cut. It is usually expressed in pounds or tons.

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.

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

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 products. All roundwood products except fuelwood.

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.

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 1/8 statute mile wide; and lakes, reservoirs, and ponds less than 40 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.

Logging residues. The unused portions of growing-stock trees harvested or killed in the process of logging.

Manufacturing plant residues. Wood materials that are generated when round timber (roundwood) is converted into wood products. This includes



slabs, edgings, trimmings, bark, miscuts, sawdust, shavings, veneer cores and clippings, and pulp screening. If these residues are used, they are referred to as plant byproducts.

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.

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. Components of net change are ingrowth plus accretion, minus mortality, minus cull increment, minus removals.

Net green weight. The green 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. Components of net growth are ingrowth plus accretion, minus mortality, minus cull increment.

Noncommercial forest land. Productive-reserved, urban, and unproductive forest land.

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, and highways.

Nonsalvable dead tree. A dead tree with most or all of its bark missing that is at least 5.0 inches in diameter at breast height and is at least 10 feet in height.

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

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

Piling (piles). Relatively slender structural roundwood products that are cut to the maximum length possible (within top circumference and other specifications of strength, straightness, and soundness) that when nearly buried in the ground provide vertical or lateral support for buildings, foundations, bridges, docks, and other structures.

Plant byproducts. Wood products, such as pulp chips, recycled from manufacturing plant residues.

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.

Productive-reserved forest land. Forest land sufficiently productive to qualify as timberland, but withdrawn from timber utilization through statute, administrative designation, or exclusive use for Christmas tree production.

Primary manufacturing plant. A plant that converts round timber into wood products such as woodpulp, lumber, veneer, cooperage, and dimension products.

Pulpwood. Roundwood converted into 4- or 5-foot lengths or chips, and chipped plant byproducts that are prepared for manufacture into woodpulp.

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

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.

Roundwood products. Logs, bolts, total tree chips, or other round timber generated by harvested trees for industrial or consumer uses.

Salvable dead trees. A tree at least 5.0 inches in diameter at breast height that has recently died and still has intact bark. The tree 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.

Saplings. Live trees 1.0 inch 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 all 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 diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods. (See specifications under Log-Grade Classification).

Sawlog portion. That part of the bole of a sawtimber tree between the stump and the sawlog top; that is, the merchantable height.

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 trees. Live trees 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.

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

Snag. Standing dead tree, with most or all of its bark missing that is at least 5.0 inches in diameter and at least 10 feet tall (does not include salvable dead).

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

Stand-size class. A classification of forest land based on the size class (that is, seedlings, saplings, poletimber, or sawtimber) 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.

Standard-lumber log grade. A classification of the quality of sawtimber volume based on standard sawlog grades for hardwoods, white pine, and southern pine. (Note: In Vermont, red pine was graded using the southern pine guidelines. All specifications are shown under Log-Grade Classification).

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, measured by basal area and/or number of trees in a stand compared to the basal area and/or number of trees required to fully use the growth potential of the land (or the stocking standard). In the Eastern United States this standard is 75 square feet of basal area per acre for trees 5.0 inches d.b.h. and larger, or its equivalent in numbers of trees per acre for seedlings and saplings.

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 15, poorly stocked = 16 to 59, moderately stocked = 60 to 99, fully stocked = 100 to 129, and overstocked = 130 to 160.

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 byproducts 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 (See Table 37).

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). It generally includes the uppermost stem, branches, and twigs of the tree, but not the foliage.

Tree class. A classification of the quality or condition of trees for sawlog production. Tree class for sawtimber trees is based on their present 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).

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

Unproductive 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.

Unused manufacturing residues. Plant residues that are dumped or destroyed and not recovered for plant byproducts.

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. Noncommercial forest land within urban areas that is completely surrounded by urban development (not parks), whether commercial, industrial, or residential.

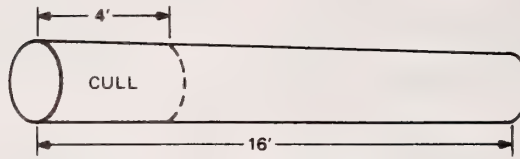
Veneer log or bolt. A roundwood product from which veneer is sliced or sawn that usually meets certain minimum standards of diameter, length, and defect.

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

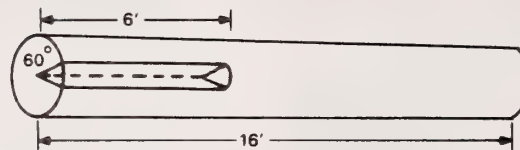
## Log-grade classification

### Methods of determining scaling deduction.

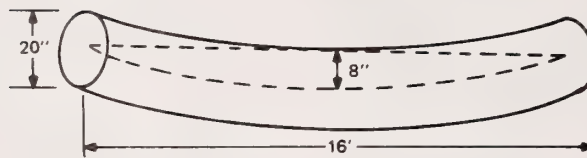
(Examples based on a 16-foot log with 20-inch scaling diameter)



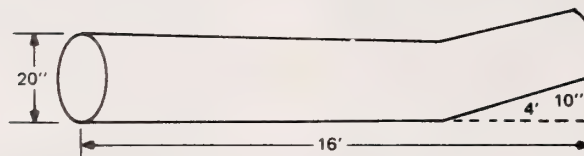
Defect section (rule 1): Percent deduction =  $\frac{4}{16} = 25\%$



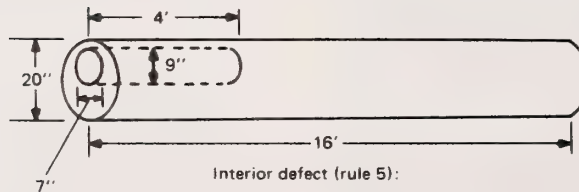
Defect section (rule 2): Percent deduction =  $\left(\frac{6}{16}\right) \left(\frac{60}{360}\right) = 6\text{-}1/4\%$



Sweep (rule 3): Percent deduction =  $\frac{8 \cdot 2}{20} = 30\%$



Crook (rule 4): Percent deduction =  $\left(\frac{10}{20}\right) \left(\frac{4}{16}\right) = 12\text{-}1/2\%$



Interior defect (rule 5):

Percent deduction =  $\frac{(8)(10)}{(20-1)^2} \times \frac{4}{16} = 5\text{-}5/9\%$

In practice each ellipse axis can be divided by (20-1)

Thus  $\frac{8}{19} = .4$ ,  $\frac{10}{19} = .5$ , and  $(.4)(.5) \left(\frac{4}{16}\right) = 5\%$

From: Gosenbaugh, L.R. 1952. Shortcuts for cruisers and scalers. U.S. Dep. Agric. For. Serv. South. For. Exp. Stn. Occas. Pap. 126.



## STANDARD GRADES FOR HARDWOOD FACTORY LUMBER LOGS

Grading Factors		Log grades							F3
		F1			F2				
Position in tree		Butts only	Butts & uppers		Butts & Uppers			Butts & uppers	
Scaling diameter, inches		13-15 <sup>a</sup>	16-19	20+	11+ <sup>b</sup>	12+			8+
Length without trim, feet		10+			10+	8-9	10-11	12+	8+
Required clear cuttings <sup>c</sup> of each of 3 best faces <sup>d</sup>	Min. length, feet	7	5	3	3	3	3	3	2
	Max. number	2	2	2	2	2	2	3	No limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep & crook allowance	For logs with less than 1/4 of end in sound defects	15%			30%				50%
	For logs with more than 1/4 of end in sound defects	10%			20%				35%
Maximum scaling	deduction	40% <sup>e</sup>			50% <sup>e</sup>				50%

End defects although not visible in standing trees, are important in grading cut logs. Instructions for dealing with this factor are contained in Forest Prod. Lab. Rpt. D 1737.

<sup>a</sup>Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.

<sup>b</sup>Ten-inch logs of all species can be #2 if they otherwise meet requirements for small #1's.

<sup>c</sup>A clear cutting is the portion of a face, extending the width of the face, that is free of defects.

<sup>d</sup>A face is 1/4 of the surface of the log as divided lengthwise.

<sup>e</sup>Otherwise #1 logs with 41-60% deductions can be #2.

<sup>f</sup>Otherwise #2 logs with 51-60% deductions can be #3.

From: Vaughan, C. L., A. C. Wollin, K. A. McDonald, and E. H. Bulgrin. 1966. Hardwood log grades for standard lumber. USDA For. Serv. Res. Pap. FPL-63.

### STANDARD SPECIFICATIONS FOR HARDWOOD CONSTRUCTION LOGS.<sup>a</sup>

Position in tree		Butt & upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		1/4 diameter small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of 1/3 of log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed 1/3 of log diameter at point of occurrence.
	Holes	Any number provided none has a diameter over 1/3 of log diameter at point of occurrence, and none extends over 3 inches into included timber. <sup>b</sup>
Unsound surface defects		Same requirements as for sound defects if they extend into included timber. <sup>b</sup> No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit 1 shake not to exceed 1/4 the scaling diameter and a longitudinal split not extending over 5 inches into the contained timber.

<sup>a</sup>These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only non-factory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection for construction logs is given first priority, then it may be necessary to subdivide the class into grades.

<sup>b</sup>Included timber is always square, and dimension is judged from small end.

From: Rast, E. D., D. L. Sonderman, and G. L. Gammon. 1973. A guide to hardwood log grading (Revised). USDA For. Serv. Gen. Tech. Rep. NE-1.

EASTERN WHITE PINE SAWLOG GRADE SPECIFICATIONS

GRADING FACTOR	LOG GRADE 1	LOG GRADE 2	LOG GRADE 3	LOG GRADE 4
(1) MINIMUM SCALING DIAMETER (inches)	14 <sup>1</sup>	6	6	6
(2) MINIMUM LOG LENGTH (feet)	10 <sup>2</sup>	8	8	8
(3) MAXIMUM WEEVIL INJURY (number)	None	None	2 injuries <sup>3</sup>	No limit
(4) MINIMUM FACE REQUIREMENTS	Two full length or four 50% length good faces. <sup>4</sup> (In addition, log knots on balance of faces shall not exceed size limitations of grade 2 logs.)	No GOOD FACES REQUIRED. Maximum diameter of log knots on three best faces		Includes all logs not qualifying for No. 3 or better and judged to have at least one-third of their gross volume in sound wood suitable for manufacture into standard lumber.
		SOUND RED KNOTS not to exceed 1/6 scaling diameter and 3 inch maximum  DEAD OR BLACK KNOTS including overgrown knots not to exceed 1/12 scaling diameter and 1 1/2 inch maximum.	SOUND RED KNOTS not to exceed 1/3 scaling diameter and 5 inch maximum.  DEAD OR BLACK KNOTS including overgrown knots not to exceed 1/6 scaling diameter and 2 1/2 inch maximum.	
(5) MAXIMUM SWEEP OR CROOK ALLOWANCE (percent)	20	30	40	66 2/3
(6) MAXIMUM TOTAL SCALING DEDUCTION (percent)	50	50	50	66 2/3
<p>After the tentative log grade is established from face examination, the log will be reduced in grade whenever the following defects are evident</p> <p>(7) CONKS, PUNK KNOTS, AND PINE BORER DAMAGE ON BARK SURFACE<sup>5</sup>                      Degrade one grade if present on one face.                      Degrade two grades if present on two faces.                      Degrade three grades if present on three or more faces</p> <p>(8) LOG END DEFECTS: RED ROT, RING SHAKE, HEAVY STAIN AND PINE BORER DAMAGE OUTSIDE HEART CENTER OF LOG<sup>6</sup>                      Consider log as having a total of 8 quarters (4 on each end) and degrade as indicated below:                      Degrade one grade if present in 2 quarters of log ends.                      Degrade two grades if present in 3 or 4 quarters of log ends.                      Degrade three grades if present in 5 or more quarters of log ends.</p>				
<p><sup>1</sup>12 and 13 inch logs with four full length good faces are acceptable  <sup>2</sup>8 foot logs with four full length good faces are acceptable  <sup>3</sup>8 foot No. 3 logs limited to one weevil injury  <sup>4</sup>Minimum 50% length good face must be at least 6 feet  <sup>5</sup>Factors 7 and 8 are not cumulative (total degrade based on more serious of the two). No log to be degraded below grade 4 if net scale is at least one-third gross log scale</p>				

From: Ostrander, M. D., and R. L. Brisbin, 1971. Sawlog grades for eastern white pine. USDA For. Serv. Res. Pap. NE-205.

SOUTHERN PINE SAWLOGS

Grade 1. Logs with 3 or 4 clear faces.<sup>1</sup> Code 1.

Grade 2. Logs with 1 or 2 clear faces. Code 2.

Grade 3. Logs with no clear faces. Code 3.

After the tentative log grade is established from above, the log will be degraded one grade for each of the following, except that no log can be degraded below grade 3.

1. *Sweep.* Degrade any tentative 1 or 2 log one grade if sweep amounts to 3 or more inches and equals or exceeds one third (1/3) the diameter inside bark at small end. This is the final grade if there is no evidence of heart rot.

2. *Heart rot.* Degrade any tentative 1 or 2 log one grade if conk, massed hyphae, or other evidence of advanced heart rot is found anywhere in it.

<sup>1</sup> A face is one-fourth of the circumference in width extending full length of the log. Clear faces are those free of: knots measuring more than one-half inch in diameter, overgrown knots of any size, holes more than one-fourth inch in diameter. The faces may be rotated if necessary to obtain the maximum number of clear ones.

From: Schroeder, J. G., R. A. Campbell, and R. C. Rodenbach. 1968. Southern pine sawlogs for yard and structural lumber. USDA For. Serv. Res. Pap. SE-39.



Tree Species of Vermont (as encountered on field plots)

<u>Scientific Name</u> <sup>a</sup>	<u>Common Name(s)</u>	<u>Occurrence</u> <sup>b</sup>
Softwoods		
<u>Abies balsamea</u> (L.) Mill.	balsam fir	vc
<u>Juniperus virginiana</u> L.	eastern redcedar	r
<u>Larix laricina</u> (Du Roi) K. Koch	tamarack, eastern larch	r
<u>Picea glauca</u> (Moench) Voss	white spruce	c
<u>P. mariana</u> (Mill.) B.S.P.	black spruce	r
<u>P. rubens</u> Sarg.	red spruce	vc
<u>Pinus resinosa</u> Ait.	red or Norway pine	r
<u>P. strobus</u> L.	eastern white pine	vc
<u>Thuja occidentalis</u> L.	northern white-cedar	c
<u>Tsuga canadensis</u> (L.) Carr.	eastern hemlock	vc
Hardwoods		
<u>Acer negundo</u> L.	boxelder	vr
<u>Acer pensylvanicum</u> L. <sup>c</sup>	striped maple, moosewood	c
<u>A. rubrum</u> L.	red, soft, or swamp maple	vc
<u>A. saccharinum</u> L.	silver or soft maple	c
<u>A. saccharum</u> Marsh.	sugar, rock, or hard maple	vc
<u>Ailanthus altissima</u> (Mill.) Swingle <sup>c</sup>	ailanthus, tree-of-heaven	vr
<u>Betula alleghaniensis</u> Britton	yellow birch	vc
<u>B. lenta</u> L.	sweet, black, or cherry birch	c
<u>B. papyrifera</u> Marsh.	paper, white, or canoe birch	vc
<u>B. populifolia</u> Marsh.	gray birch	c
<u>Carpinus caroliniana</u> Walt. <sup>c</sup>	American hornbeam, blue beech	vr
<u>Carya</u> spp. Nutt.	hickory	c
<u>Crataegus</u> spp. L. <sup>c</sup>	hawthorn	vr
<u>Fagus grandifolia</u> Ehrh.	American beech	vc
<u>Fraxinus americana</u> L.	white ash	c
<u>F. nigra</u> Marsh.	black ash, brown ash	r
<u>F. pennsylvanica</u> Marsh.	green ash, red ash	r
<u>Gleditsia triacanthos</u> L.	honeylocust	vr
<u>Juglans cinera</u> L.	butternut	r
<u>Juglans nigra</u> L.	black walnut	vr
<u>Malus</u> spp. Mill. <sup>c</sup>	apple	r
<u>Ostrya virginiana</u> (Mill.) K. Koch <sup>c</sup>	eastern hophornbeam, ironwood	c
<u>Populus balsamifera</u> L.	balsam poplar	vr
<u>P. deltoides</u> Bartr. ex Marsh	eastern cottonwood	vr
<u>P. grandidentata</u> Michx.	bigtooth aspen, poplar, popple	r
<u>P. tremuloides</u> Michx.	quaking or trembling aspen	c
<u>Prunus pensylvanica</u> L.f. <sup>c</sup>	pin or fire cherry	r
<u>Prunus serotina</u> Ehrh.	black cherry	c
<u>Quercus alba</u> L.	white oak	r
<u>Q. bicolor</u> Willd.	swamp white oak	vr
<u>Q. prinus</u> L.	chestnut oak	vr
<u>Q. rubra</u> L.	northern red oak	c
<u>Robinia pseudoacacia</u> L.	black locust	vr
<u>Tilia americana</u> L.	American basswood	r
<u>Ulmus americana</u> L.	American elm	c
<u>U. rubra</u> Muhl.	slippery or red elm	r

<sup>a</sup>Names according to: Little, Elbert L., Jr. Checklist of United States Trees (native and naturalized). Agric. Handb. 541 Washington, DC: U.S Department of Agriculture, Forest Service; 1979. 375 p.

<sup>b</sup>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%).

<sup>c</sup>Noncommercial species.



### Metric Equivalents of Units Used in This Report

1 acre = 4,046.86 square meters or 0.404686 hectares  
1,000 acres = 404.686 hectares  
1,000,000 acres = 404,686 hectares  
1 board foot<sup>a</sup> = 0.00348 cubic meters or 3,480 cubic centimeters  
1,000 board feet<sup>a</sup> = 3.48 cubic meters  
1,000,000 board feet<sup>a</sup> = 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  
Breast height = 1.4 meters above ground level  
1 mile = 1.609 kilometers  
1 square foot = 929.03 square centimeters or 0.0929 square meters  
1 square foot per acre basal area = 0.229568 square meters per hectare  
1 ton = 907.1848 kilograms  
1,000 tons = 907.1848 metric tons

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<sup>a</sup>Although 1,000 board feet is 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.




Frieswyk, Thomas S.; Malley, Anne M. Forest Statistics for Vermont - 1973 and 1983. Resour. Bull. NE 87. Broomall, PA: U.S. Department of Agriculture, Forest Service; 1985. 102 p.

A statistical report on the fourth forest survey of Vermont (1983). Findings are displayed in 81 tables containing estimates of forest area, numbers of trees, timber volume, tree biomass, and timber products output. Data are presented at three levels: state, geographic unit, and county.

ODC 905.1 (743)

Keywords: Forest survey, inventory, area, volume, biomass.



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Headquarters of the Northeastern Forest Experiment Station are in Broomall, Pa. Field laboratories are maintained at:

- Amherst, Massachusetts, in cooperation with the University of Massachusetts.
  - Berea, Kentucky, in cooperation with Berea College.
  - Burlington, Vermont, in cooperation with the University of Vermont.
  - Delaware, Ohio.
  - Durham, New Hampshire, in cooperation with the University of New Hampshire.
  - Hamden, Connecticut, in cooperation with Yale University.
  - Morgantown, West Virginia, in cooperation with West Virginia University, Morgantown.
  - Orono, Maine, in cooperation with the University of Maine, Orono.
  - Parsons, West Virginia.
  - Princeton, West Virginia.
  - Syracuse, New York, in cooperation with the State University of New York College of Environmental Sciences and Forestry at Syracuse University, Syracuse.
  - University Park, Pennsylvania, in cooperation with the Pennsylvania State University.
  - Warren, Pennsylvania.
-