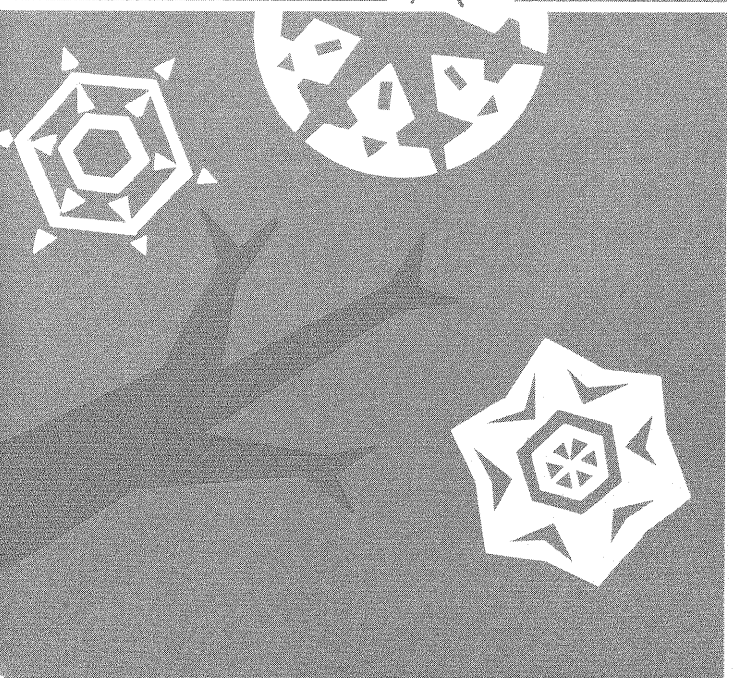
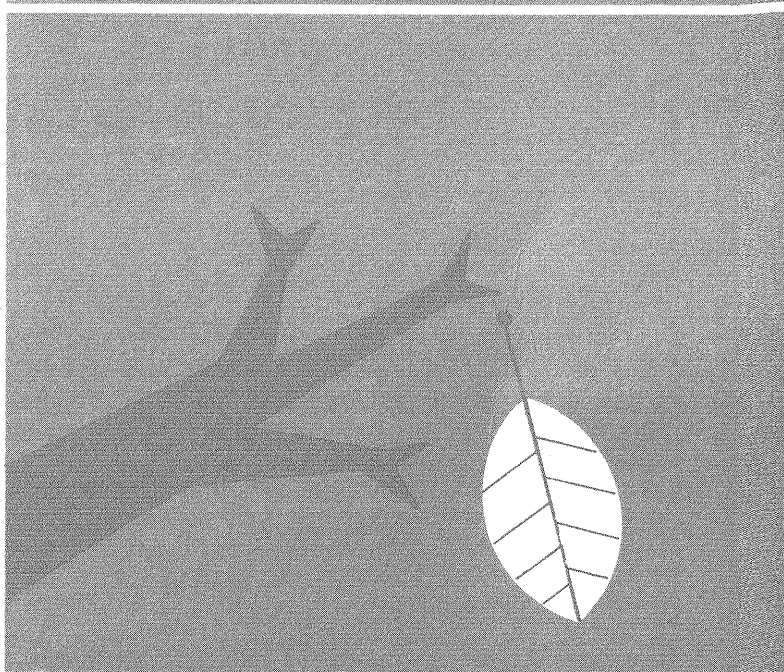
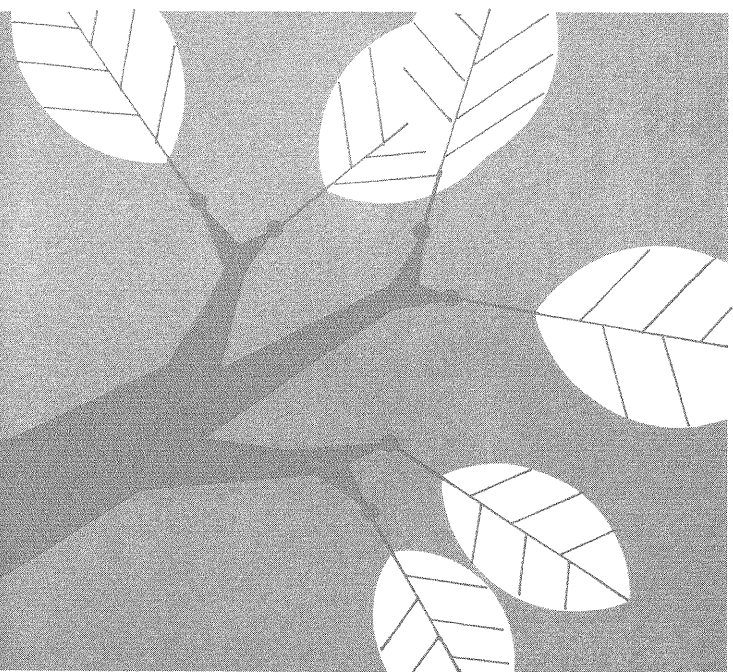
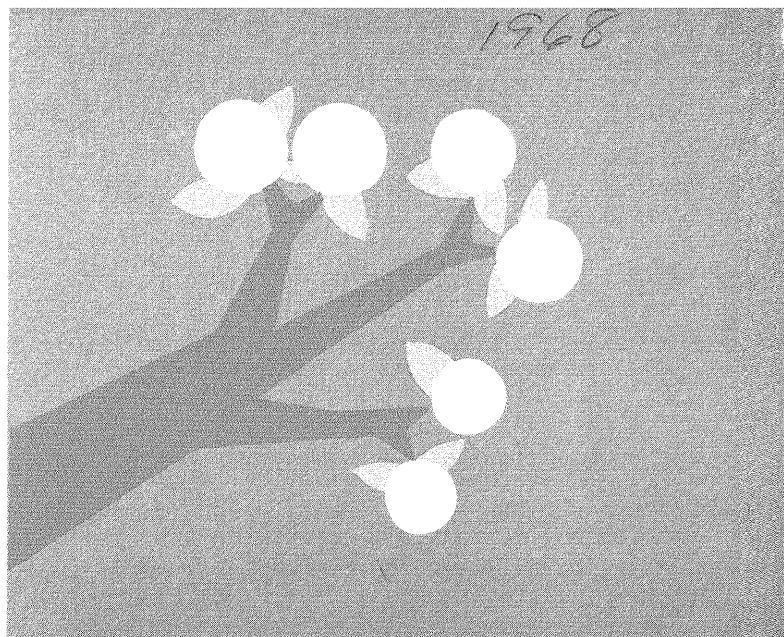


# Wisconsin's 1968 timber resource-- A PERSPECTIVE



**JOHN S. SPENCER, JR.**  
**and HARRY W. THORNE**

NORTH CENTRAL FOREST EXPERIMENT STATION  
FOREST SERVICE  
U.S. DEPARTMENT OF AGRICULTURE

## CONTENTS

|                                       | Page |
|---------------------------------------|------|
| THE FOREST . . . . .                  | 1    |
| TIMBER USE PAST AND PRESENT . . . . . | 15   |
| A LOOK INTO THE FUTURE . . . . .      | 19   |
| APPENDIX . . . . .                    | 24   |

North Central Forest Experiment Station  
John H. Ohman, Director  
Forest Service — U. S. Department of Agriculture  
Folwell Avenue  
St. Paul, Minnesota 55101  
(Maintained in cooperation with the University of Minnesota)

## FOREWORD

This report presents Wisconsin's timber resource in 1968 as found by the third Forest Survey of Wisconsin. It provides forest area, timber inventory, growth, mortality, removals, and forest industry statistics. It compares some of these findings with those of the 1956 survey.

The third Wisconsin Forest Survey was part of the continuing program authorized by Congress in the McSweeney-McNary Forest Research Act of 1928 to maintain a current inventory of the Nation's timber supply. The survey was organized and conducted jointly by the North Central Forest Experiment Station and the Wisconsin Department of Natural Resources. Each agency completed the aerial photo interpretation and field work for approximately half of the State. All work was done under the broad guidelines of the Department of Natural Resources Forest Advisory Council, a group composed of many public and private foresters within the State. The Eastern Region of the USDA Forest Service provided timber resource data for the two National Forests in Wisconsin. The Wisconsin Department of Highways, the Wisconsin Department of Natural Resources, and the Agricultural Stabilization and Conservation Service all provided aerial photographs used in the survey.

The following persons assisted in the Wisconsin survey:

North Central Forest Experiment Station, Forest Survey Project:

Robert N. Stone, then Burton L. Essex, Project Leader  
Berghild M. Berntsen, Statistical Clerk  
James E. Blyth, Market Analyst  
Thomas P. Ginnaty, Jr., Timber Drain Compilation Specialist  
Jerold T. Hahn, Compilation Supervisor  
Arnold J. Ostrom, Field Crew Coordinator  
Alexander Vasilevsky, Aerial Photo Interpreter

Field Personnel:

|                              |                 |
|------------------------------|-----------------|
| Alec Albee, Field Supervisor | Paul Hanson     |
| Craig Beardsley              | Richard Hesse   |
| Joseph Bondioli              | James Johnson   |
| Dennis Boland                | Donald Leffel   |
| Richard Buech                | Roderick Murphy |
| George Conn                  | John Prochazka  |
| Dale DeGroot                 | Lincoln Ruhinen |
| John Eschle                  |                 |
| Doug Glevanik                |                 |

Wisconsin Department of Natural Resources, Bureau of Forest Management:

M. E. Reinke, Director  
Charles S. Mueller, Chief, Forest Survey Section  
Carl F. Hensley, Aerial Photo Interpreter  
Donald H. Lodholz, Aerial Photo Interpreter

Field Personnel:

Lawrence E. Baer  
Richard J. Beier  
Norman K. Bickford  
Anthony P. Chos  
Carl A. Gustafson  
Robert H. Hass  
Dennis L. Hohlfelder  
Jack B. Hoisington  
Kenneth R. Hujanen  
Larry A. Johnson  
Michael D. Lanquist  
Craig T. Locey  
James E. Melton  
Donald L. Monson

John R. Muhvich  
Robert T. Pound, Jr.  
Chester R. Pryga  
Gregory E. St. Onge  
James A. Sanders  
Marvin L. Schmeiser  
Gerald N. Senkin  
Donald J. Showalter  
James L. Sparke  
James H. Stordahl  
Donald G. Thompson  
Jack W. Utton  
Peter J. Vick  
Edward F. Vlach  
David T. Wagner

**THE AUTHORS** are, respectively, Resource Analyst, North Central Forest Experiment Station, and Forester, Wisconsin Department of Natural Resources



## HIGHLIGHTS

### Forest Area

Forest land covers 43 percent of the State's land area or 14.9 million acres. In 1956 the area was 15.2 million acres.

Commercial forests account for 14.5 million acres compared with 14.9 million acres in 1956.

Poletimber stands constitute 45 percent of the commercial forest, more than any other stand-size class. In 1956, sapling and seedling stands dominated with 38 percent of the total.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the commercial forest.

The aspen-birch type (4.2 million acres) and the maple-beech-birch type (3.5 million acres) embrace the largest areas of commercial forest of all forest types.

### Timber Volume

Growing-stock volume on commercial forest land was 11.0 billion cubic feet in 1968, compared with 8.4 billion cubic feet in 1956.

Volume in sawtimber trees increased from 15.8 billion board feet in 1956 to 21.8 billion board feet in 1968.

The two northern Forest Survey units contain 68 percent of the growing-stock volume and 61 percent of the sawtimber volume.

Hardwoods account for three-fourths of the growing-stock volume.

Aspen is the chief species, followed by northern red oak and sugar maple.

Average volume per acre of growing stock is 756 cubic feet (9.6 cords).

Farmers and other individuals own 60 percent of the growing-stock volume.

In addition to the above growing-stock volume, there are 1.1 billion cubic feet in nongrowing-stock trees, principally rough trees.

Growing-stock inventory is projected to increase to 17.8 billion cubic feet in 1998.

### Stand Conditions

Net annual growth on growing-stock trees was 500 million cubic feet in 1967, 30 percent higher than in 1956.

The net annual growth rate of growing stock was 4.5 percent of inventory volume.

Mortality of growing-stock trees amounted to 60 million cubic feet, or 0.5 percent of inventory.

Sixty-five percent of the commercial area is medium-stocked or better with growing-stock trees. Only 4 percent of the area is nonstocked with these trees.

Seventy-six percent of the commercial area is capable of growing trees 50 feet and taller at age 50, but only 19 percent is capable of growing trees 70 feet and taller at the same age.

Fifty percent of Wisconsin's forest area supports commercial stands less than 40 years old.

### Timber Use

The number of primary wood-using plants in the State dropped from 1,753 in 1956 to 898 in 1967.

Wisconsin produced more paper (2.3 million tons) in 1967 than any other State, accounting for 11 percent of the country's total production.

Nearly half of the wood to operate Wisconsin's pulp-mills is from out of State.

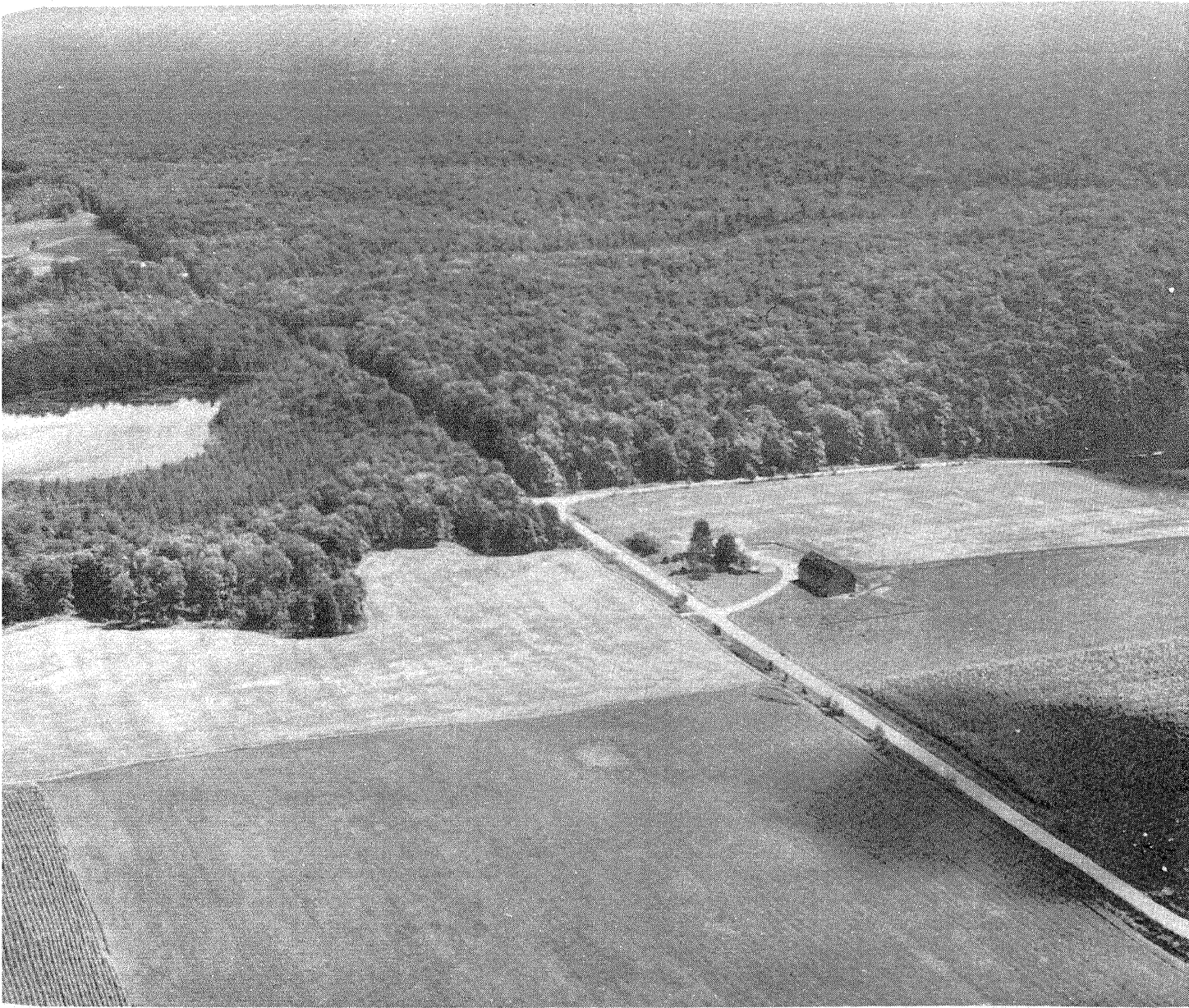
Timber products output of pulpwood in 1967 was 112 million cubic feet, up 52 percent from the 74 million cubic feet in 1956.

Sawmills account for 91 percent (818) of the total number of primary wood-using plants.

Lumber production in 1967 amounted to 286 million board feet, about the same as in 1956.

Growing-stock removals in 1967 were 233 million cubic feet, about half of the volume of net annual growth.

Growing-stock removals are projected to nearly double by 1998, reaching 426 million cubic feet.



*Figure 1. – Generally flat topography, large expanses of hardwood commercial timber, lakes surrounded by marshes and lowland conifers, and fertile fields – the face of much of rural Wisconsin. Glaciers from a long-past ice age etched most of the State into its present landforms. (Photo courtesy of Wisconsin Department of Natural Resources.)*

# WISCONSIN'S 1968 TIMBER RESOURCE — A PERSPECTIVE

John S. Spencer, Jr. and Harry W. Thorne

## THE FOREST

Wisconsin, perhaps best known for its sparkling waters and abundant dairy products, is a verdant State (fig. 1). Forest land in 1968 covered 43 percent (14.9 million acres) of the total land area. Most (14.5 million acres) of this is classed as commercial forest — land capable of growing industrial wood and not reserved from timber harvesting. These commercial forests supported 11.0 billion cubic feet in growing-stock trees, and 21.8 billion board feet in sawtimber-sized trees in 1968.

The above figures represent the latest situation in Wisconsin's forests which, like all living things, are in a perpetual state of change. The following few paragraphs suggest the extent of change that has occurred and put in better perspective the information in the rest of the report.

Her forests have always figured prominently in Wisconsin's past, and undoubtedly will be important in her future as well. Jean Nicolet, the first known non-Indian to visit the area now called Wisconsin, must have thought the forest endless in 1634. The settlers, who came after the Black Hawk War in 1832, must have thought so too, and probably cursed the sea of green as they undertook the task of leveling this barrier to their chosen vocation of raising crops and livestock. Lumbermen, however, began to make use of the timber and by 1860 there were 40 operating sawmills in Sheboygan, Manitowoc, and Kewaunee Counties alone. Most of the lumber produced in these mills found a ready market in burgeoning Milwaukee and Chicago after shipment by water down Lake Michigan.

Settlement of northern Wisconsin and much of the Midwest generally occurred after the Civil War, producing an insatiable demand for lumber and other wood

products. As lumbering spread westward across the State to help meet this demand, Wisconsin entered the boom days of logging which were to peak about 1900. During this period great expanses of cutover land were left behind the faller's crosscut saw as generally only the inaccessible or unmerchantable stands were spared. High quality eastern white pine was especially prized.

The residue of dry logging slash fueled the many fires that later swept the cutover timberlands and sometimes spread to unlogged areas as well. Such fires were usually of little concern unless life or property were threatened. The calamitous Peshtigo Fire of 1871, in which more than 1,200 persons died and much of six counties in northeastern Wisconsin was burned, was plain, if unheeded, testimony to the seriousness of forest fire and the impropriety of contemporary logging practices.

Lumber companies sold some of their cutover land to settlers and land speculators. Much of it, however, simply became tax delinquent as the companies moved away to unlogged forests. The closing of mills and resulting loss of employment in woods and mill, together with a sharp reduction in tax revenues, spelled economic disaster for many communities.

Fortunately, man and nature both helped change the dismal picture across the State, until now the forest stands phoenixlike where once there were only ashes and blackened snags or poor trees. For his part, man passed legislation promoting forest management and fire control; established National, State, and county forests; provided special means for taxing forest properties; and planted trees. For hers, nature greened the barren landscapes with vegetation — annual and perennial weeds, brush, and trees. Trees ultimately triumphed on many

sites, although often they were not the same species as their immediate predecessors. Aspen, one of the postfire species, was especially prolific and was considered a virtually useless weed by many until recently.

Today's youthful forest is different in many ways from the one it replaced. Because it is a dynamic system, today's forest is even different from the one a decade ago. Some measure of this recent change can be seen by comparing 1956 and 1968 survey data.

### Forty-Three Percent of State Is Forested

The areas of forest land (14.9 million acres) and commercial forest land (14.5 million acres) mentioned earlier represent slight declines from the 1956 areas of 15.2 million acres and 14.9 million acres,<sup>1</sup> respectively. This minor general decline is part of the long-term downward trend in forest areas throughout much of the country as forest land continues to be diverted to other uses to serve the desires of a growing population.

The decline in commercial forest area was not constant throughout the State, and slight increases even occurred in the easternmost Forest Survey Units as seen below:

| Forest Survey<br>Unit | Survey Year              |                          | Area Change<br>Since 1956<br>(Thousand acres) |
|-----------------------|--------------------------|--------------------------|-----------------------------------------------|
|                       | 1956<br>(Thousand acres) | 1968<br>(Thousand acres) |                                               |
| Northeast             | 4,045                    | 4,062                    | + 17                                          |
| Northwest             | 5,459                    | 5,246                    | -213                                          |
| Central               | 2,948                    | 2,832                    | -116                                          |
| Southwest             | 1,545                    | 1,493                    | - 52                                          |
| Southeast             | <u>871</u>               | <u>904</u>               | <u>+ 33</u>                                   |
| Total                 | 14,868                   | 14,537                   | -331                                          |

The two northern Forest Survey Units contain two-thirds of the State's commercial forest area (fig. 2). Bayfield County, on the shores of Lake Superior, contains the largest area of commercial forest among counties in the State — 777,300 acres.

In addition to commercial forests there were 408.6 thousand acres of noncommercial forest land in the State

<sup>1</sup> Published 1956 areas have been adjusted for boundary changes between Forest Survey Units and to align the 1956 estimates more closely with definitions of land classification used in the 1968 survey.

in 1968. Most (374.4 thousand acres) of this was unproductive and inherently incapable of growing industrial wood, and the remainder (34.2 thousand acres) was land withdrawn from commercial timber use, such as State and county parks. This noncommercial land is highly important for its recreational, esthetic, wildlife habitat, and watershed potential even though it yields few, if any, industrial timber products.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the State's commercial forest land; farmers alone own one-third of the total. Public owners account for 31 percent of the area of commercial forests, and forest industries own the remaining 9 percent. Among public owners, counties and municipalities own the largest share of the total (16 percent) followed by National Forests (9 percent).

The pattern of ownership has changed little since 1956 except for a shift of land from Federal ownership other than National Forests to forest industry ownership. This was largely the result of the transfer between surveys of land administered by the Bureau of Indian Affairs in Menominee County to ownership by Menominee Enterprises, a business corporation owned by members of the Menominee Indian tribe.

### Area of Poletimber Stands is Largest

Poletimber stands comprise 45 percent of the commercial forest, more than any other stand-size class. In 1956, sapling and seedling stands were the largest class with 38 percent of the commercial area. Area of sawtimber and poletimber stands increased between surveys, but area of nonstocked commercial forest decreased drastically (table 1).

The large drop in nonstocked areas is misleading because an unknown amount of it is not real, physical change. Improved sampling procedures used in the latest survey have provided a more sensitive estimate of established seedling trees. Had the newer techniques been used in 1956, some of the commercial forest classed as nonstocked then undoubtedly would have been classified as seedling stands. The changes found, then, understate the reduction in sapling and seedling stands and overstate by the same amount the change in nonstocked area. Unfortunately, this changed procedure precludes making any meaningful comparisons of nonstocked areas between surveys. It seems certain, however, that the nonstocked area did decline between surveys because of natural regeneration and tree planting. Much of the latter has been

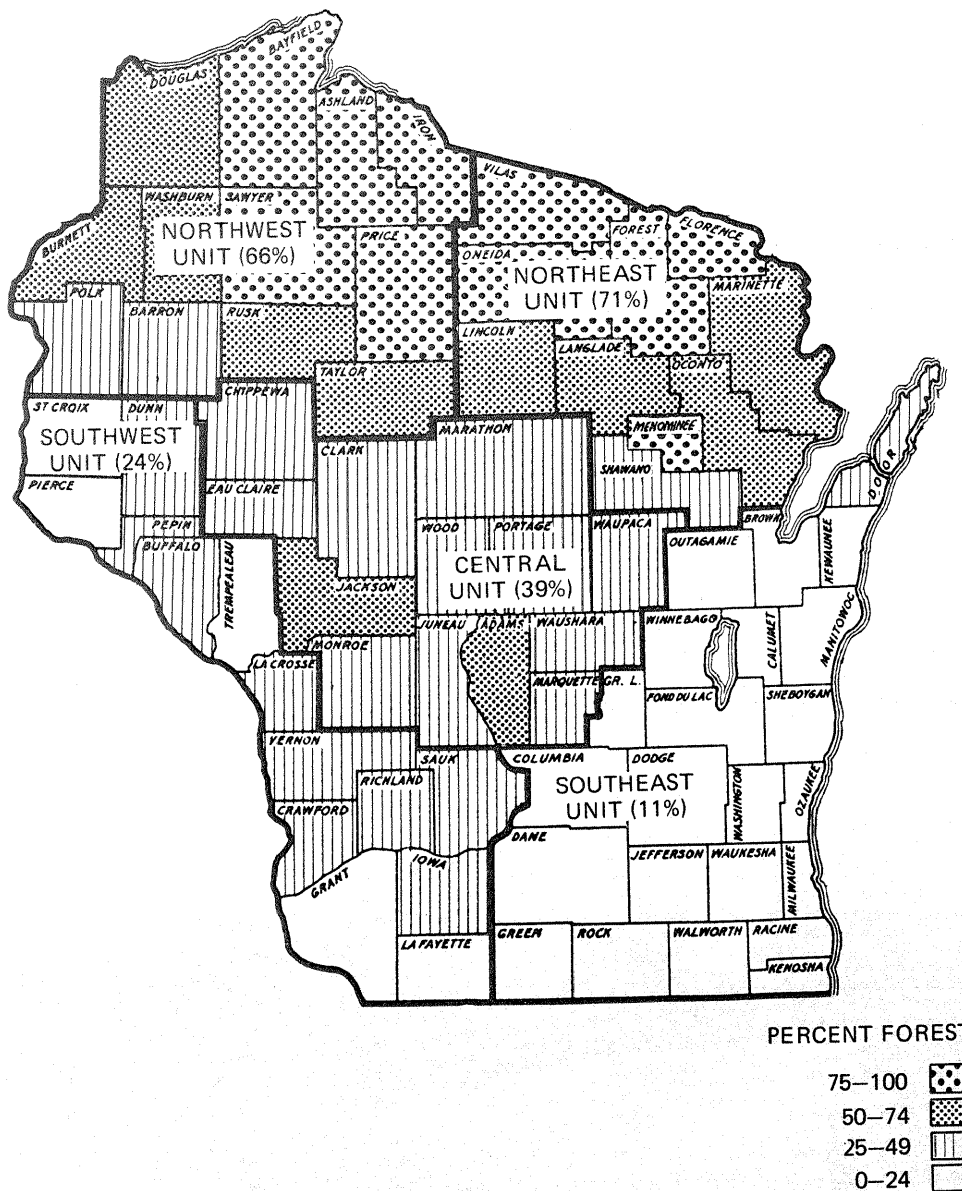


Figure 2. — Commercial forest area as a percent of all land area, by county, and by Forest Survey Unit, Wisconsin, 1968.

done in Wisconsin. From 1956 through 1968, more than half a million<sup>2</sup> acres were planted or seeded to forest trees, for an average of about 39,000 acres per year. The area planted has been in general decline since 1959, the peak year of the period, when 53,000 acres were artificially regenerated (fig. 3).

<sup>2</sup> USDA Forest Service. Reports of forest and wind-barrier planting and seeding. 1956-1968.

Much of the increase in area of the larger stand sizes is due to a general growth of trees into larger diameter classes and is dramatic evidence of the continuing improvement of the forests in Wisconsin and throughout the Lake States<sup>3</sup> from the cutover and/or burned over situation of the early 1900's. The remaining 4,489 thousand acres of sapling and seedling stands will con-

<sup>3</sup> Michigan, Wisconsin, and Minnesota.



Table 1. — Commercial forest land area by stand-size class, Wisconsin, 1956 and 1968

| Stand-size class     | 1956     |         | 1968     |         |
|----------------------|----------|---------|----------|---------|
|                      | Thousand | Percent | Thousand | Percent |
|                      | acres    |         | acres    |         |
| Sawtimber            | 2,054    | 14      | 3,098    | 21      |
| Poletimber           | 4,822    | 32      | 6,580    | 45      |
| Sapling and seedling | 5,645    | 38      | 4,489    | 31      |
| Nonstocked areas     | 2,347    | 16      | 370      | 3       |
| All classes          | 14,868   | 100     | 14,537   | 100     |

Figure 3. — Planting red pine by machine. One probable reason for the decline in tree planting since 1959 is the huge success of past planting and the resultant shrinking area of nonstocked forest land.





tribute substantially to future ingrowth, the portion of annual net growth attributable to trees just entering poletimber size. This should help to maintain annual net growth at a high level at least through the 1970's. The number of growing-stock trees in the larger diameter classes increased between surveys (table 2). Concurrently, there was a decrease in the number of trees in smaller diameter classes.

Table 2. — Number of growing-stock trees on commercial forest land by diameter class, Wisconsin, 1956 and 1968

| Diameter class | Number of growing-stock trees |               | Change  |
|----------------|-------------------------------|---------------|---------|
|                | 1956 <sup>1/</sup>            | 1968          |         |
|                | Million trees                 | Million trees | Percent |
| 2              | 3,571                         | 2,887         | (-)19   |
| 4              | 1,777                         | 1,583         | (-)11   |
| 6              | 764                           | 916           | 20      |
| 8              | 327                           | 437           | 34      |
| 10             | 147                           | 196           | 33      |
| 12             | 62                            | 85            | 37      |
| 14             | 32                            | 43            | 31      |
| 16             | 17                            | 23            | 37      |
| 18             | 8                             | 12            | 46      |
| 20             | 4                             | 6             | 48      |
| 22+            | 4                             | 6             | 43      |
| Total          | 6,714                         | 6,192         |         |

<sup>1/</sup> Published 1956 numbers of trees data were adjusted to be comparable with 1968 data.

The change in area of stand-size classes between surveys in Michigan is strikingly similar to the change in Wisconsin (table 3).

Table 3. — Area change between surveys, by stand-size class, Wisconsin, 1956-68, and Michigan, 1955-66 (In percent)

| Stand-size class     | Wisconsin | Michigan |
|----------------------|-----------|----------|
| Sawtimber            | +51       | +57      |
| Poletimber           | +36       | +34      |
| Sapling and seedling | -20       | -21      |
| Nonstocked areas     | -84       | -83      |
| All classes          | - 2       | - 1      |

The Northwestern Unit contains the largest areas of every stand-size class except sawtimber stands. The latter are most numerous in the Southwestern Unit, probably partly because the predominant oak stands found on the tops of bluffs and steep hills common to this part of the State are relatively inaccessible and were seldom logged. This portion of Wisconsin is in the so-called "driftless area" that was missed by the smoothing action of the last glaciers.

### Aspen-Birch Most Extensive Forest Type

The aspen-birch and maple-beech-birch forest types, which occupy 29 percent and 24 percent, respectively, of the total commercial area, were the most extensive in the State in 1968. These two types covered the largest areas during the 1956 survey also. However, the proportions each represented of the commercial forest changed somewhat between surveys as the aspen-birch area dropped and area of maple-beech-birch gained (table 4).

The drop in area of aspen-birch type can best be explained by an understanding of some of the characteristics of quaking aspen, the predominant member of the type. Quaking aspen is very intolerant of shade and is generally short-lived, reaching rotation age<sup>4</sup> in about 55 years on good sites and about 30 years on poor sites.<sup>5</sup> After fires or other disturbances it produces many aggressive suckers that reestablish aspen as the dominant species on the site. In Wisconsin and throughout the Lake States, aspen-birch replaced much of the original forests following logging and fires. Today mature aspen and paper birch are commonly replaced by more shade-tolerant species such as sugar maple, balsam fir, and white spruce. The probable outlook is for a continued decline in the area of this forest type because of natural plant succession unless management practices designed to favor aspen-birch — already applied on some areas — are more widely undertaken. Clearcutting is one such practice (fig. 4). It achieves the same results as fire in this regard by removing overstory trees in a patch or block of forest, permitting full sunlight to reach the forest floor and stimulate the growth of aspen suckers.

It may seem incongruous that the area of the aspen-birch type declined between surveys, yet, as mentioned

<sup>4</sup> Rotation age is the age at which a species matures and is harvested.

<sup>5</sup> USDA Forest Service, 1965. *Silvics of forest trees of the United States Agric. Handb. 271*, 72 p.

Table 4. — Commercial forest area by forest type, Wisconsin, 1956 and 1968

| Forest type          | 1956     |         | 1968     |         |
|----------------------|----------|---------|----------|---------|
|                      | Thousand | Percent | Thousand | Percent |
|                      | acres    |         | acres    |         |
| Aspen-birch          | 4,684    | 31      | 4,219    | 29      |
| Maple-beech-birch    | 2,634    | 18      | 3,522    | 24      |
| Oak-hickory          | 2,461    | 17      | 2,665    | 18      |
| Elm-ash-cottonwood   | 840      | 6       | 1,158    | 8       |
| Jack pine            | 687      | 5       | 727      | 5       |
| Spruce-fir           | 352      | 2       | 628      | 4       |
| Black spruce         | 207      | 1       | 236      | 2       |
| Northern white-cedar | 207      | 1       | 302      | 2       |
| White pine           | 172      | 1       | 178      | 1       |
| Red pine             | 146      | 1       | 310      | 2       |
| Tamarack             | 131      | 1       | 222      | 2       |
| Nonstocked           | 2,347    | 16      | 370      | 3       |
| Total                | 14,868   | 100     | 14,537   | 100     |

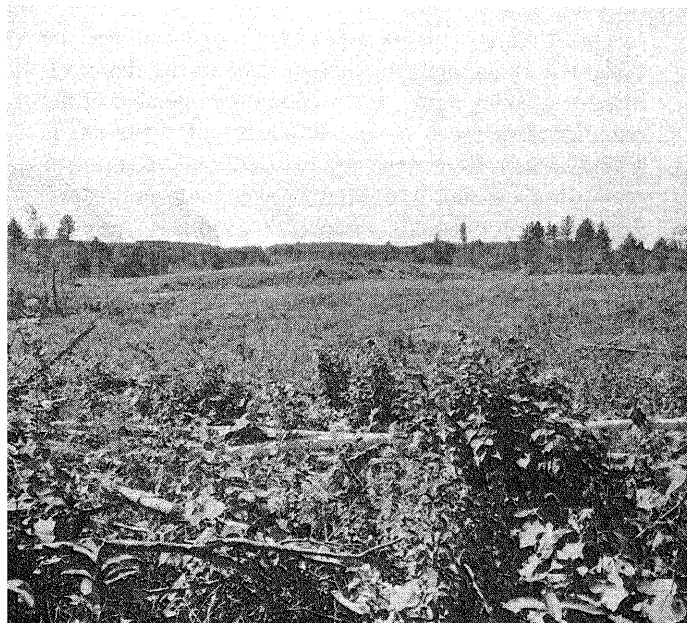


Figure 4. — The photos above show the speed with which aspen regenerates naturally after clearcut logging. The photo at ~~left~~ right taken in spring of 1971, shows an aspen-birch clearcut block in Vilas County following logging the previous summer. The photo at ~~right~~ left is the same area as it appeared in late summer of 1971. The lush carpet of aspen sprouts assures that aspen will remain the dominant species here in the future, and provides valuable food and cover for deer, grouse, and other wildlife. (Photos courtesy of Wisconsin Department of Natural Resources.)

later, the volume of both aspen and paper birch gained. The explanation lies in the fact that there were more larger trees in 1968 than in 1956. As shown earlier, the total area of sapling and seedling stands dropped between surveys, but the area of poletimber and sawtimber stands increased.

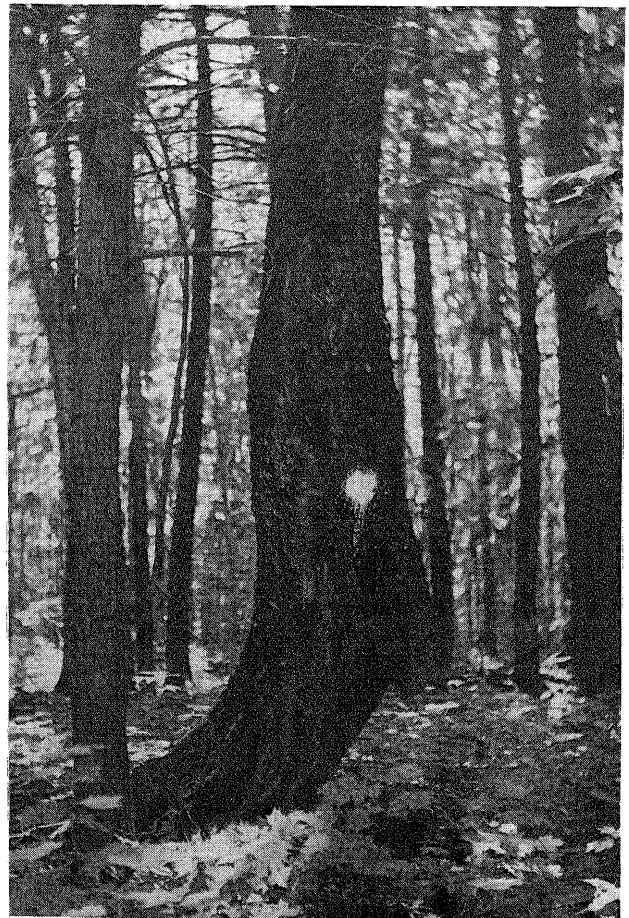
Some of the increase in area of the maple-beech-birch and spruce-fir types is probably at the expense of the aspen-birch type as discussed above. The doubling of the red pine type between surveys is almost certainly due to tree planting. Much of the more than 500,000 acres of forest tree planting in the State between 1956 and 1968 was planted to red pine.

### Tree Stocking Is Good

Tree stocking, expressed as a percent of the minimum stocking required to make full use of the site, is a useful measure of how well trees are utilizing an area. In general the stocking of live (growing-stock, rough, and rotten trees) and growing-stock trees is good in Wisconsin. For example, in 1968, 52 percent of the commercial forest area was overstocked or fully stocked (100 percent stocking or more) with live trees. When only growing-stock trees are considered, the figure changes to 24 percent. Ninety percent of the State's commercial area is medium-stocked or better (60 percent or more stocked) with live trees and 65 percent of the area is similarly stocked with growing-stock trees. Only 1 percent of the commercial area is nonstocked with live trees and only 4 percent is nonstocked with growing-stock trees.

The high rate of stocking of rough and rotten trees indicated above by the fairly wide differences between percent of area stocked with live and with growing-stock trees suggests a need for accelerated harvesting of rough and rotten trees or greater timber stand improvement effort. Thirty-one percent of all live trees in the State are rough or rotten. By far, the bulk are rough trees – those that are not classed as growing stock because of limbiness, poor form, or noncommercial species (fig. 5).

More rough trees are being used for lumber production as sawmills are equipped with more efficient machinery capable of using smaller logs. Logging operations in Wisconsin, as elsewhere, are moving toward more complete utilization of the timber resource by harvesting saw logs, pulpwood, and chip wood in one operation in some instances. Rough and rotten trees have had and will continue to have value by providing shelter for birds and some other forms of wildlife and by relieving the monotony to the viewer of some even-aged homogeneous stands.



*Figure 5. — A poorly formed rough tree marked for removal. In the past most rough trees had little or no commercial value, although they occupied growing space. However, the intensifying interest in chipping wood and in maximizing fiber yield from the forest may kindle a new interest in these trees among land-owners and timber producers alike. (Photo courtesy of Wisconsin Department of Natural Resources.)*

Following are the proportions of all live trees in Wisconsin by tree class:

|                                           | Percent of all<br>live trees |
|-------------------------------------------|------------------------------|
| Growing-stock trees (over 1-inch d.b.h.): |                              |
| Saplings                                  | 50                           |
| Poles and sawtimber trees:                |                              |
| Desirable                                 | 1                            |
| Acceptable                                | 18                           |
| Rough trees (over 1-inch d.b.h.)          | 29                           |
| Rotten trees (over 1-inch d.b.h.)         | 2                            |
| All live trees (over 1-inch d.b.h.)       | 100                          |

## Four-Fifths of Commercial Area on Average or Low Sites

An exact method of determining the potential productive capacity of forest land has yet to be devised. However, an approximation of the present productivity of the land is provided by site index<sup>6</sup> because the most productive land usually grows the tallest trees at an index age (50 years in this report). Even though there is wide fluctuation between species, forest land in the Midwest can generally be categorized as follows:

| Site index class | Description  |
|------------------|--------------|
| 55 or less       | Low site     |
| 56 to 70         | Average site |
| More than 70     | High site    |

Measurements of site index indicate that 76 percent of Wisconsin's commercial forest land is capable of growing trees 50 feet and taller at age 50, but only 19 percent is capable of growing trees 70 feet and taller at the same age. The proportion of area in each site index class for each of Wisconsin's four largest types is shown in table 5.

Table 5. — Area of commercial forest land by site index class for selected forest types, Wisconsin, 1968  
(In percent)

| Site index class | Aspen-birch | Maple-beech-birch | Oak-hickory | Elm-ash-cottonwood |
|------------------|-------------|-------------------|-------------|--------------------|
| 90-100           | 1           | —                 | 1           | 1                  |
| 80- 90           | 7           | 3                 | 3           | 4                  |
| 70- 80           | 24          | 16                | 10          | 9                  |
| 60- 70           | 34          | 38                | 22          | 18                 |
| 50- 60           | 24          | 33                | 33          | 32                 |
| 40- 50           | 8           | 9                 | 24          | 25                 |
| 30- 40           | 2           | 1                 | 7           | 10                 |
| 20- 30           | —           | —                 | —           | 1                  |
|                  | 100         | 100               | 100         | 100                |

Still another way of gaging the productive capacity of Wisconsin's forest land is to consider site class. This is a means of grouping forest lands in terms of their inherent capacity to grow crops of industrial wood. The following

<sup>6</sup> Site index is the height in feet of average dominant or codominant trees at 50 years of age. For example, "site index 60" for red pine means that the height of dominant or codominant trees in that area averages 60 feet at 50 years of age.

tabulation shows the percent of commercial forest land in Wisconsin and in neighboring Michigan in each site class, representing potential growth in cubic feet per acre per year providing all stands had an optimum distribution of age classes and were fully stocked and adequately protected.

| Site class              | Percent of commercial forest area |          |
|-------------------------|-----------------------------------|----------|
|                         | Wisconsin                         | Michigan |
| 120 to 165 cubic feet   | 1                                 | 1        |
| 85 to 120 cubic feet    | 10                                | 10       |
| 50 to 85 cubic feet     | 36                                | 30       |
| Less than 50 cubic feet | 53                                | 59       |
| Total                   | 100                               | 100      |

The above proportions are not the best that can be expected in either State. Potential growth may be increased even further in the future by such stratagems as fertilization, genetic improvement of trees, type conversion, irrigation, and drainage control.

## Half of State's Timber Younger Than 40 Years

Timber stands in Wisconsin are generally young. On 50 percent of the commercial area, stands are less than 40 years of age and 83 percent of the area supports stands less than 70 years old. Despite the youth of forests in the State — common throughout the Lake States — most forest types include some stands that are over rotation age and, therefore, are considered overmature. Also, the distribution of age classes for all forest types is not balanced. This is not particularly significant for those large areas in the State where uneven-aged management, a system that results in trees of many ages being present in the stand, is practiced or contemplated. Stand-age distribution is important in planning the harvest sequence of stands managed under even-aged systems. Although there are a number of forest types in Wisconsin that may be managed in this manner, most notably aspen-birch, individual stand conditions and owner preferences and goals will determine the management prescription.

A model even-aged forest situation for maximum timber production would have an equal area in each 10-year-age class for each forest type and no overmature timber. While these ideal conditions rarely occur anywhere except under intensive management, they are a goal towards which present management can aim in those stands for which even-aged management is prescribed.

The largest area in three of the four major forest types is in the 40- to 59-year age class (fig. 6).

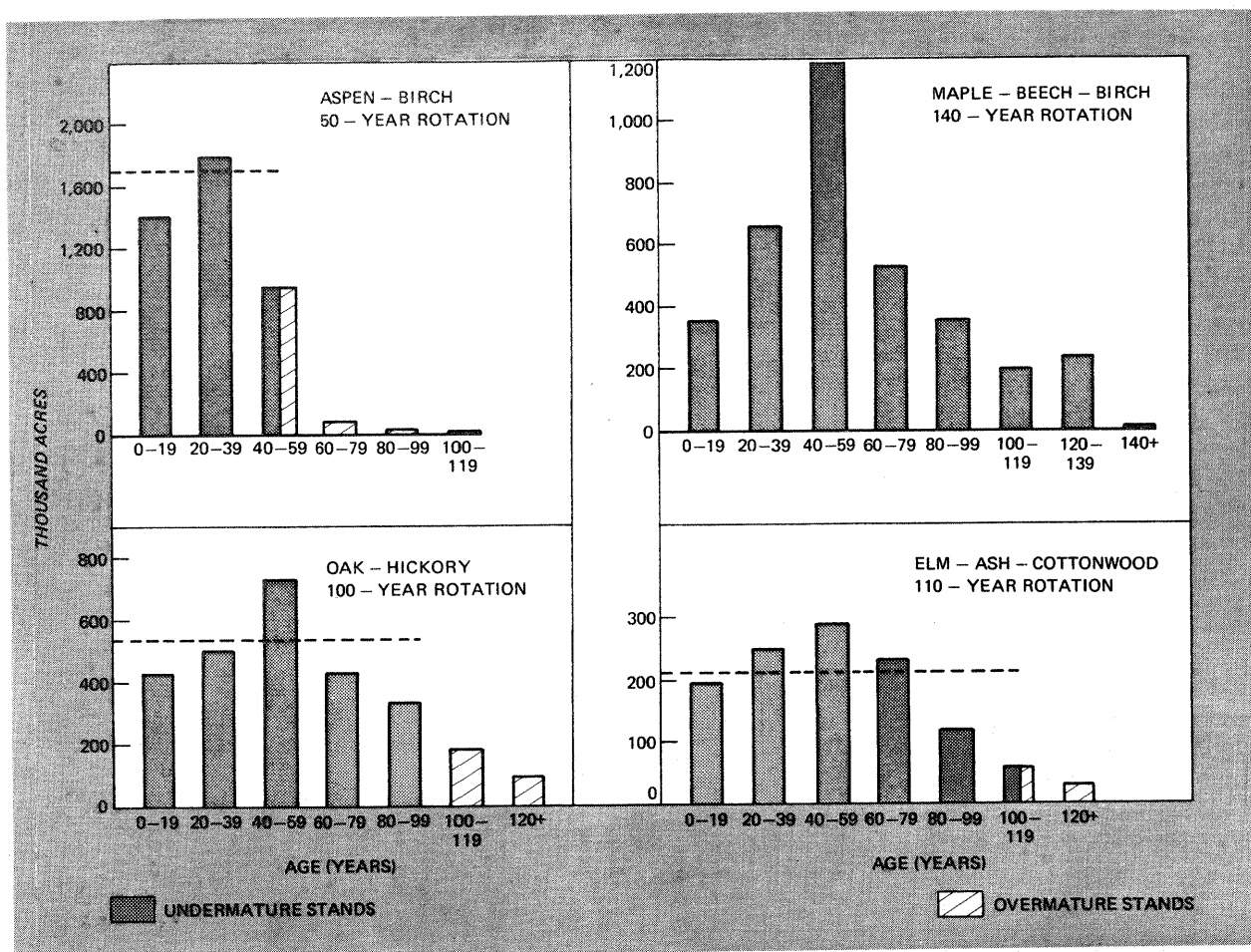


Figure 6. — Area of some forest types by stand-age class and desirable area based on rotations suggested for average sites in Wisconsin, 1968. Broken lines show desirable level for rotation shown. (No desirable level shown for the maple-beech-birch type because this type is usually managed under all-aged conditions.)

The predominance of stands originating around 1920 is probably largely due to the decline of logging in the State after its peak about 1899 and subsequent natural regeneration, much of which followed the burning of cutover areas. Fire played a big role in the genesis and character of stands then because little was done to control it. Although minimal public forest fire control efforts were undertaken as early as 1895, it was not until the early 1930's that the program was funded and staffed sufficiently to reduce significantly the annual burned acreage.

Small areas of overmature stands occur in all but the maple-beech-birch type. Mortality in the three affected types will be reduced as these overmature stands diminish.

### Volume of Growing Stock Up 30 Percent

Wisconsin's 1968 volume of growing stock on commercial forest land amounted to 11.0 billion cubic feet, a 30 percent gain from the 8.4 billion cubic feet in 1956.<sup>7</sup> This large increase came about in spite of a 2.2 percent loss of commercial forest area between surveys. Such a seemingly implausible situation can exist in young forests such as those in Wisconsin where the area of pole-timber and sawtimber stands, with attendant high volumes per acre, is increasing, and the area of sapling and seedling stands and nonstocked areas, with low volumes

<sup>7</sup> Published 1956 volumes have been adjusted to be comparable with 1968 volumes.



per acre, is declining. The following tabulation compares growing-stock volumes for 1956 and 1968:

|           | 1956                 | 1968   |
|-----------|----------------------|--------|
|           | (Million cubic feet) |        |
| Softwoods | 1,670                | 2,475  |
| Hardwoods | 6,768                | 8,521  |
| Total     | 8,438                | 10,996 |

Volume in the Northwestern Forest Survey Unit increased more between surveys than any other unit. This explains why the Northwestern Unit contained the largest growing-stock volume in 1968 – 35 percent of the State total – but ranked second in 1956 to the Northeastern Unit. The Northeastern Unit was a close second in 1968 with 32 percent of the State's volume. Volumes in every unit increased except for softwoods in the Southwestern Unit (table 6).

Table 6. – Growing-stock volume in 1968 and change since 1956, Wisconsin

| Survey unit  | Softwoods       |         | Hardwoods       |         |
|--------------|-----------------|---------|-----------------|---------|
|              | 1968 volume     | Change  | 1968 volume     | Change  |
|              | Million cu. ft. | Percent | Million cu. ft. | Percent |
| Northeastern | 1,148.2         | +36     | 2,384.6         | +31     |
| Northwestern | 911.1           | +73     | 2,987.0         | +42     |
| Central      | 320.8           | +56     | 1,321.5         | +18     |
| Southwestern | 21.5            | -19     | 1,218.6         | + 2     |
| Southeastern | 73.1            | + 9     | 609.7           | +13     |
| Total        | 2,474.7         | +48     | 8,521.4         | +26     |

The average volume per acre of growing stock rose from 567 cubic feet (7.2 cords) in 1956 to 756 cubic feet (9.6 cords) in 1968. The largest average volume per acre in 1968 was in the Northeastern Unit (870 cubic feet).

Hardwoods accounted for three-fourths of the growing-stock volume in 1968. However, the volume of softwoods increased much faster between surveys than did the hardwood volume, resulting in a gain in the proportion of volume in softwoods from 20 percent of the total in 1956 to 23 percent in 1968.

Five species made up half the total hardwood volume in 1968: aspen,<sup>8</sup> with twice as much volume as any other species, had 20 percent of the total followed by northern red oak (9 percent), sugar maple (9 percent), paper birch (7 percent), and elm (6 percent). Almost all species

<sup>8</sup> Includes both quaking and bigtooth aspen.

increased between surveys (fig. 7). The major exception was white oak which declined slightly. Surprisingly, the volume of elm gained in spite of the spread of Dutch elm disease into all but the northwest corner of the State by 1968. The probable outlook for elm is increasing heavy mortality as a direct result of the Dutch elm disease, causing inventories to dip. This was the case in lower Michigan where the disease was reported earlier than in Wisconsin.

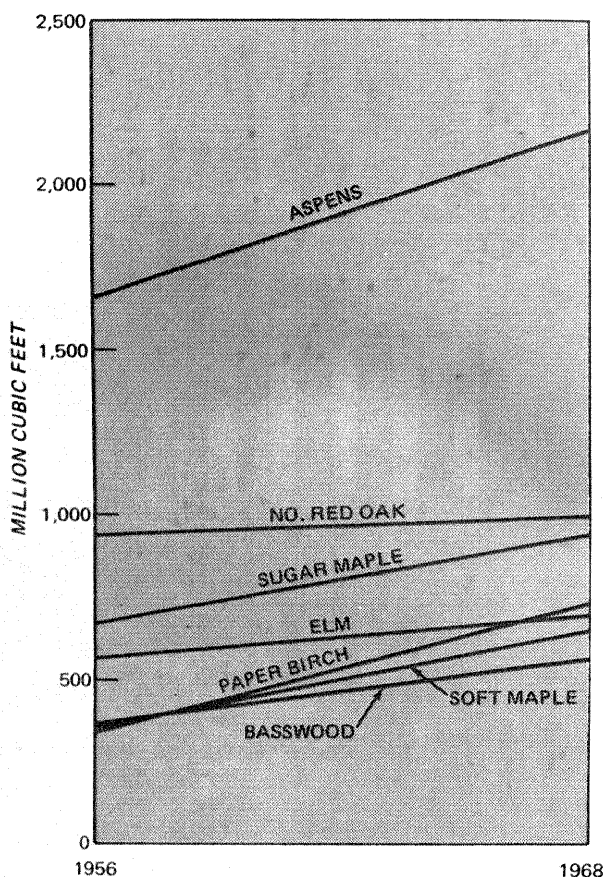


Figure 7. – Change in growing-stock volume between surveys for some major species in Wisconsin.

In general, the bulk of the softwood growing-stock volume is found in the two northern units. These units also contain the greatest volumes of hardwoods; but the two southern units have the highest proportion of hardwood volume to softwood volume: 98 percent of the volume in the Southwestern Unit is in hardwood species as is 89 percent of the Southeastern Unit volume.

Forty-five percent of the State's important aspen growing-stock volume is in the Northwestern Unit. The Northeastern Unit contains another 32 percent of it.

Growing-stock volumes gained in every diameter class, with gains especially large in the smaller diameters (fig. 8). This situation is common in the Lake States where forests are generally young and rebuilding.

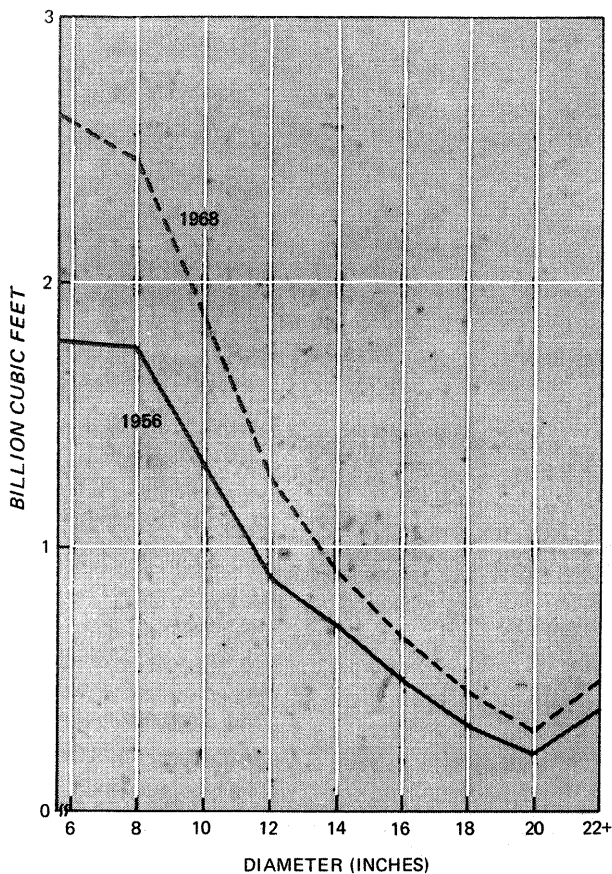


Figure 8. — Distribution of growing-stock volume by diameter class, Wisconsin, 1956 and 1968.

Farmers, private individuals, and corporations other than forest industries own 60 percent of the growing-stock volume in the State. Public agencies other than the USDA Forest Service own another 20 percent of the volume. Volume per acre is highest on forest industry-owned commercial forest land — 918 cubic feet, compared with the State average of 756 cubic feet.

### Nongrowing-Stock Volume Amounts to 1.1 Billion Cubic Feet

Besides the 11.0 billion cubic feet in growing-stock trees, there is another 1.1 billion cubic feet in nongrowing-stock trees in the State. Most of the latter volume is in rough or rotten trees, but a small amount is in salvable

dead trees. Short-log trees are rough trees and account for 34 percent of the nongrowing-stock volume. These trees must be sawtimber-sized and have at least one merchantable 8- to 11-foot saw log, but do not contain a 12-foot saw log. Short-log trees are utilized for pulpwood and saw logs by industry. Little of the remaining nongrowing-stock volume is harvested, although some of it is used for fuelwood, fenceposts, pulpwood, and veneer bolts. Volume in nongrowing-stock trees is distributed as follows:

| Class of timber     | Volume<br>(Million cubic feet) |
|---------------------|--------------------------------|
| Rough trees:        |                                |
| Short-log trees     | 383.9                          |
| Other rough trees   | 439.1                          |
| Rotten trees        | 260.8                          |
| Salvable dead trees | 53.6                           |
| Total               | 1,137.4                        |

### Sawtimber Volume Increased 37 Percent

The sawtimber portion<sup>9</sup> of the growing-stock volume also increased between surveys and at a faster rate than total growing-stock volume. Sawtimber volume rose from 15.8 billion board feet<sup>10</sup> in 1956 to 21.8 billion board feet in 1968, a gain of 37 percent compared with the 30 percent rise in growing-stock volume. The softwood and hardwood sawtimber distribution of the two surveys is shown below:

|           | 1956<br>(Million board feet) | 1968<br>(Million board feet) |
|-----------|------------------------------|------------------------------|
| Softwoods | 4,783                        | 6,497                        |
| Hardwoods | 11,049                       | 15,259                       |
| Total     | 15,832                       | 21,756                       |

One-third of the State's 1968 sawtimber volume is found in the Northeastern Unit — more than in any other unit. As mentioned earlier, the largest growing-stock volume is in the Northwestern Unit. In 1956 the Northeastern Unit also led in volume of sawtimber, but between surveys, volume increased faster in the Northwestern Unit (table 7).

<sup>9</sup> Sawtimber trees are growing-stock trees that contain at least one 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer and are at least 9.0 inches d.b.h. for softwoods and at least 11.0 inches d.b.h. for hardwoods.

<sup>10</sup> International 1/4-inch log rule.

Table 7. — Sawtimber volume in 1968 and change since 1956, Wisconsin

| Survey unit  | Softwoods          |         | Hardwoods          |         |
|--------------|--------------------|---------|--------------------|---------|
|              | 1968<br>volume     | Change  | 1968<br>volume     | Change  |
|              | Million<br>bd. ft. | Percent | Million<br>bd. ft. | Percent |
| Northeastern | 3,354.9            | +28     | 3,946.8            | +52     |
| Northwestern | 2,157.4            | +59     | 3,865.7            | +77     |
| Central      | 810.8              | +54     | 2,438.3            | +19     |
| Southwestern | 41.9               | -62     | 3,378.8            | +16     |
| Southeastern | 132.1              | -17     | 1,629.0            | +25     |
| Total        | 6,497.1            | +36     | 15,258.6           | +38     |

The average sawtimber volume per acre in 1956 was 1,065 board feet, but in 1968 it had risen to 1,496 board feet. Highest volumes per acre are found in the south — 2,291 board feet in the Southwestern Unit and 1,949 board feet in the Southeastern Unit.

Hardwoods dominate the sawtimber volume as they do growing-stock volume. Several of the species that contain the largest growing-stock volumes also contain the largest sawtimber volumes. However, the ranking of species differs, and two softwood species are among the top six in terms of proportion of sawtimber volume: northern red oak (13 percent of total sawtimber volume), sugar maple (10 percent), aspen (10 percent), white pine (9 percent), elm (9 percent), and hemlock (7 percent).

The largest volume by far of northern red oak, and other oaks as well, is in the Southwestern Unit. The biggest concentration of sugar maple sawtimber volume is in the Northeastern Unit.

The pattern of ownership of the sawtimber inventory is similar to that of the growing-stock volume — farmers, private individuals, and corporations other than forest industries own 63 percent of it. Public agencies own a slightly smaller percentage of the sawtimber inventory than of the growing-stock inventory.

### Quality of Butt Logs Better For Hardwoods than For Softwoods

An estimate of the quality of the sawtimber trees in Wisconsin's forests was made by grading the butt log in about one-third of the sawtimber trees sampled during the 1967 survey (table 8). (Log grade standards used for each species are indicated in the Appendix.)

The means are not available to convert the above percentages in Wisconsin to an expression of whole-tree

Table 8. — Percent of sawtimber trees by butt log grade and softwoods and hardwoods, Wisconsin, 1968

| Butt log grade | Softwoods | Hardwoods |
|----------------|-----------|-----------|
| Grade 1        | 2         | 10        |
| Grade 2        | 8         | 32        |
| Grade 3        | 85        | 53        |
| Grade 4        | 5         | 5         |
| Total          | 100       | 100       |

quality. The recent Michigan survey provided data that did permit such a conversion for hardwoods in that State. The result in Michigan showed that the percentage of hardwood-tree volume in each log grade was practically the same as the percentage of butt logs in each grade.

The percentage of sawtimber trees with a Grade 1 butt log in Wisconsin was highest for cottonwood, for which there is presently low demand, and northern red oak, presently in high demand. Other species with high percentages of Grade 1 butt logs were ash, basswood, and elm. The primary reason all of the above species have high percentages of Grade 1 butt logs is their big percentage of trees in the upper diameter classes where better quality butt logs are possible.

### Volume of Net Growth Rises

Net annual growth on growing-stock trees was 500 million cubic feet in 1967, a 30 percent increase over the 391 million cubic feet in 1955. The 1967 growth rate was 4.5 percent of inventory compared with 4.6 percent in 1955. Growth in 1967 averaged 34 cubic feet per acre in comparison with 26 cubic feet per acre in 1955. Although this represents a substantial gain between surveys and is further evidence of the improving condition of the State's forests, it is still much below the estimated average annual capacity of the commercial forest to produce 49 cubic feet of wood per acre. As mentioned earlier, this potential growth presupposes ideal conditions — fully stocked stands and optimum distribution of age classes. Therefore, potential yield serves as a goal as forest managers try to better the conditions for growth.

One-fourth of the total net growth in 1967 was in-growth — the net volume of small trees that grew to poletimber size during the year. The other three-fourths of the total was growth on trees already 5 inches d.b.h. and larger (fig. 9). The 4.5 million acres of sapling-seedling stands in 1968 represent a potentially large



Figure 9. — A field man measures the diameter at breast height (d.b.h.) of a sawtimber-sized tree while his companion records information on plot sheet. Such measurements made on the same trees during the 1956 and 1968 surveys on permanent sample plots provided a value of radial growth accrued between surveys. This information was used to estimate the total volume of growth in the State. (Photo courtesy of Wisconsin Department of Natural Resources.)

volume of ingrowth for the next 10 to 15 years. However, as the area of this stand-size class diminishes, as it has done between surveys, the volume of ingrowth will also diminish. This means that the present volume of growing-stock growth cannot be maintained for much longer if the intensity of management is not increased. The 30-year projections of inventory, growth, and removals that follow later in the report assume no change in the intensity of forest management and indicate a leveling off or turndown of growth volume toward the end of the period.

The percentage of total growth represented by ingrowth was somewhat larger in Wisconsin than in Michigan (table 9).

Sawtimber net annual growth increased between surveys from 912 million board feet in 1955 to 1,264 million board feet in 1967, a gain of 39 percent. Sawtimber

Table 9. — Volume of net annual growth by components of growth, Wisconsin, 1967, and Michigan, 1965

| Component of growth     | Net annual growth on growing stock |         |                  |         |
|-------------------------|------------------------------------|---------|------------------|---------|
|                         | Wisconsin                          |         | Michigan         |         |
|                         | Thousand cu. ft.                   | Percent | Thousand cu. ft. | Percent |
| Ingrowth                | 133,249                            | 27      | 133,386          | 23      |
| Growth on growing stock | 366,864                            | 73      | 446,171          | 77      |
| Total net growth        | 500,113                            | 100     | 579,557          | 100     |

growth rates remained unchanged between surveys — 5.8 percent of sawtimber inventory.

Mortality of growing-stock trees amounted to 60 million cubic feet in 1967, 0.5 percent of inventory. This is not a high mortality rate when compared with Michigan's 1965 rate of 1.6 percent. One reason for Wisconsin's lower mortality rate is its higher rate of timber removals than Michigan's. Wisconsin's 1967 removals rate was 2.1 percent of growing-stock inventory, but Michigan's 1965 rate was only 1.4 percent. Therefore, more dying trees probably were removed before they died in Wisconsin than in Michigan. Mortality amounted to 11 percent of the volume of growing-stock gross growth in 1967:

|              | 1967<br>(Thousand cu. ft.) |
|--------------|----------------------------|
| Gross growth | 560,026                    |
| Mortality    | <u>59,913</u>              |
| Net growth   | 500,113                    |

One-fourth of the total volume of mortality of growing-stock trees in 1967 was attributable to quaking aspen alone, and half the total mortality volume was made up of three species — quaking aspen, elm, and northern red oak.

Diseases were the cause of half the volume of mortality. Weather, logging, insects, suppression by trees or other vegetation, and animals were other important causes of the death of trees. Hypoxylon canker of aspen and Dutch elm disease are two of the most serious diseases. In 1968 Dutch elm disease had spread to 56 of Wisconsin's 72 counties.

Mortality of sawtimber trees in 1967 was 8 percent of sawtimber gross growth:



|              |                    |
|--------------|--------------------|
|              | 1967               |
|              | (Thousand bd. ft.) |
| Gross growth | 1,375,071          |
| Mortality    | <u>111,406</u>     |
| Net growth   | 1,263,665          |

Elm sustained the largest volume of sawtimber mortality — one-fifth of the State total. Three species account for nearly half the total mortality — elm, northern d oak, and hemlock.

### Timber Removals About Half of Growth

Timber removals of growing stock (fig. 10) in 1967 are an estimated 233 million cubic feet compared with e 500 million cubic feet of net annual growth mentioned earlier. Timber removals include not only trees rvested, but trees cut or destroyed by thinnings, land earing, or changes in land use. Sawtimber removals in

1967 were estimated to be 650 million board feet in comparison with 1,264 million board feet of net growth. Net growth of both growing stock and sawtimber in 1955 was also higher than removals. This continuing trend of growth over removals has, of course, caused inventories to build up between surveys.

Aspen growing-stock removals in 1967 amounted to 88 million cubic feet or 38 percent of the total, by far the largest proportion of any species. The red oaks were a distant second with 34 million cubic feet, followed by hard maple with 18 million cubic feet.

Two-thirds of the total removals came from the two northern survey units.

Sawtimber removals were generally similar to growing-stock removals in percentage by species and by survey unit.

*Figure 10. — A mechanical feller-buncher harvesting trees in an aspen-birch stand. Aspen growing-stock removals accounted for 38 percent of the State total in 1967, which easily made it the leader among species. (Photo courtesy of Wisconsin Department of Natural Resources.)*





## TIMBER USE PAST AND PRESENT

Despite a generally rising total production from them, there were only 898 primary wood-using plants operating in 1967 in Wisconsin, compared with 1,753 in 1956. Only medium-sized<sup>11</sup> sawmills increased in number between surveys.

### Wisconsin Topped Nation in Paper Production in 1967

That the pulp and paper industry in Wisconsin is highly important both to the Nation and to the State is attested to by the fact that in 1967 Wisconsin ranked second among all States in production of paper and board products (2.8 million tons).<sup>12</sup> Even more impressive was the State's production of paper in 1967 of 2.3 million tons which ranked first in the Nation and accounted for 11 percent of the country's total production. In 1958 Wisconsin ranked first in production of paper and board products with 2.1 million tons.

However, Wisconsin ranked only tenth among States in production of woodpulp in 1967. No exact figures are available on woodpulp imports<sup>13</sup> but when the 1967 woodpulp production of 1.4 million tons is compared with woodpulp consumption of 2.1 million tons, it is clear that a large amount is imported. Nearly half of the wood to operate Wisconsin's pulpmills is also imported (fig. 11). In 1967, of the 215.6 million cubic feet of pulpwood<sup>14</sup> received at pulpmills in the State, 106.0 million cubic feet were imported. Most of the imports came from neighboring Michigan and Minnesota, but about 30 million cubic feet came from western States and Canada.

The number of pulpmills declined slightly between surveys, from 29 in 1956 to 27 in 1967. Nine mills were located in the Central Unit, eight mills were found in

---

<sup>11</sup> *Sawmills with an annual lumber output of from 1 million to 4.999 million board feet.*

<sup>12</sup> *U.S. Bureau of the Census. Current Industrial Reports Series.*

<sup>13</sup> *Material brought into the State from any origin, chiefly from neighboring States.*

<sup>14</sup> *Includes round pulpwood and mill residues (mostly chips from sawmill slabs and edgings and from veneer cores).*

southeastern Wisconsin, and seven in the Northeastern Unit. No pulpmills were located in southwestern Wisconsin, and only three were situated in the northwestern group of counties. Pulpmill capacity climbed from 3,900 tons per day in 1956 to 4,620<sup>15</sup> tons per day in 1967.

### Sawmill Numbers Drop

Sawmills accounted for 91 percent (818) of the total number of primary wood-using plants in 1967. In 1956 sawmills made up 93 percent of the number of plants and were nearly twice as numerous (1,628). Most of the sawmills in both years were small — producing less than 1 million board feet of lumber annually. Only six sawmills in the State produced 5 million board feet or more of lumber annually in 1967, compared with eight mills in 1956. Five of the six large mills were located in northeastern Wisconsin. The total number of sawmills was divided rather evenly between Forest Survey Units, but a few more mills were located in southwestern and central Wisconsin.

Lumber production in the State amounted to 286 million board feet in 1967 and has remained generally constant since the last survey (fig. 12). The sawmill boom days peaked around 1899 when 3.4 billion board feet of lumber — the largest recorded volume in the State's history — was produced. From then until a Depression-time low of 120 million board feet, the trend of lumber production was one of sharp decline as the State's supply of old growth timber ebbed. Since 1932 there have been fluctuations in output of lumber, but the volume produced has not reached 500 million board feet.<sup>16</sup>

In 1967 more lumber (26 percent of the total volume) was sawn from red oaks<sup>17</sup> than from any other species. Sugar maple (16 percent), aspen (12 percent), and elm (11 percent) followed. All softwoods together amounted to only 10 percent of the lumber sawn.

---

<sup>15</sup> *The capacity of one paper products company is not available and is excluded from the 4,620 tons per day capacity shown.*

<sup>16</sup> *No data is available on lumber production volumes from 1948-1953.*

<sup>17</sup> *Red oaks include all species listed under the select red oak and other red oak groups of the Principal Tree Species in Wisconsin section of the Appendix.*



*Figure 11. – Pulpwood moving into the debarker at the American Can Company pulpmill at Wausau. It is natural that almost half the pulpwood received at Wisconsin pulpmills is from out of State because eastern Minnesota and upper Michigan are part of the timbershed for the State's pulp and paper industry. Markets for such material do not stop at State boundaries but extend to their economic limits.*

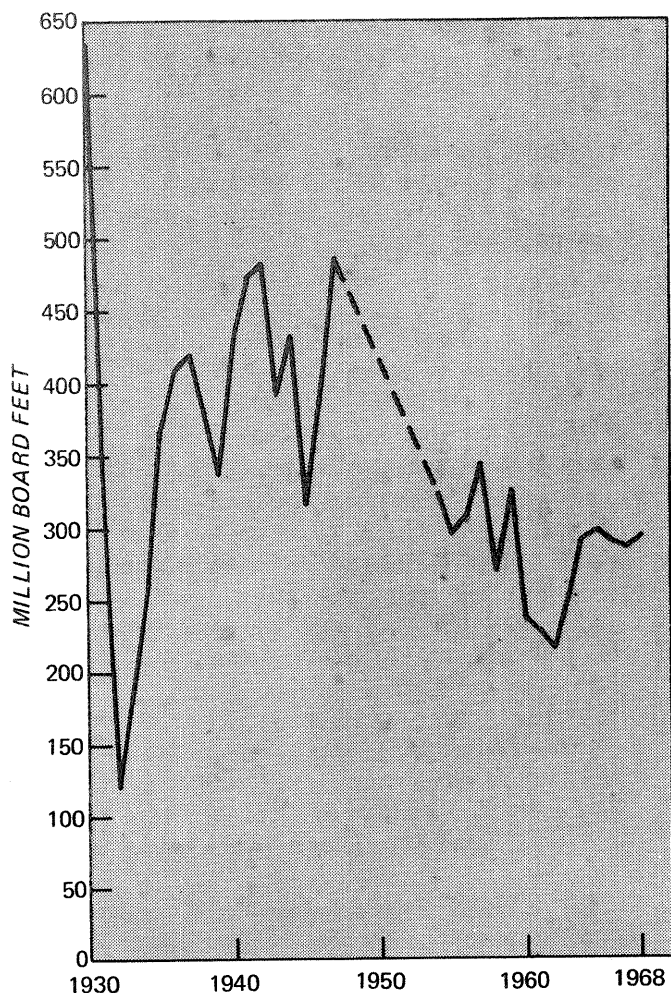


Figure 12. — Volume (lumber tally) of lumber produced in Wisconsin, 1930-1968. Figures are not available from 1948 to 1953.

The Northeastern Unit, led by Shawano County, produced more lumber in 1967 than any of the other units in the State (104 million board feet).

### More Than Half of State's Veneer Mill Log Supply Comes from Neighboring Areas

The number of veneer mills fell from 47 in 1956 to 26 in 1967. Container veneer mill numbers declined the most, from 26 to 10. The capture of part of the veneer market for fruit and vegetable produce containers by paper and plastic materials is a major reason for this decline. Veneer mills are located primarily in eastern Wisconsin and in the Northwestern Unit.

The State's veneer mills used three-fourths of the veneer logs received at mills in the Lake States in 1967.

Of the 42.2 million board feet of veneer logs processed in Wisconsin, only 20.5 million board feet were produced in the State. Michigan, Canada, and Minnesota provided most of the rest. A number of mills produce high-quality face and specialty veneers requiring fine hardwoods. Many of the logs required are brought into the State. For example, more yellow birch was consumed by Wisconsin veneer mills in 1967 than any other species (9.6 million board feet), but only about one-fifth of it (1.8 million board feet) was produced in the State. Canada shipped 4.2 million board feet of yellow birch veneer logs to Wisconsin. Slightly more than two-fifths of the 9.0 million board feet of hard maple veneer logs consumed came from Wisconsin. The rest were largely from Michigan.

Veneer log exports from Wisconsin amounted to 2.5 million board feet of a wide mixture of species. Significant is the 0.7 million board feet of black walnut that was shipped to Indiana and Iowa veneer mills. Only 33 thousand board feet of this highly prized wood that was produced in Wisconsin was used in the State's veneer mills.

The number of other primary mills declined between surveys at about the same rate as the above mills. Cooperage mills dipped from 5 to 3; charcoal plants from 4 to 2; and miscellaneous plants, including lath, particleboard, shaving, excelsior, fence, and specialty plants, fell from 40 to 22.

### Impact of Forest Industries on the State's Economy Is Great

Wisconsin's wood-using industries are important contributors to the State's economy. All lumber and wood products manufacturing plants<sup>18</sup> and all paper and allied products plants<sup>19</sup> together accounted for 11 percent of the number of all employees and payrolls of manufacturing firms in the State in 1967.<sup>20</sup>

<sup>18</sup> U.S. Bureau of the Census. *Standard Industrial Code 24. Includes logging camps and logging contractors, sawmills and planing mills, millwork, plywood and related products mills, wooden container mills, and miscellaneous wood products.*

<sup>19</sup> U.S. Bureau of the Census. *Standard Industrial Code 26. Includes pulpmills, paper mills (except building paper), paperboard plants, miscellaneous converted paper products mills, and plants producing paperboard containers and boxes.*

<sup>20</sup> 1967 Census of Manufactures.

Considering only primary wood-using industries, a total of 1.3 million man-weeks<sup>21</sup> of work were provided in 1967 — 1.0 million man-weeks by pulp and paper mills alone. Three-fourths of the total employment is located in two units, the Central and Southeastern.

The value of logs and bolts (f.o.b. mill) harvested in Wisconsin in 1967 amounted to 39.7 million dollars. Pulpwood accounted for slightly better than half of the total value and lumber logs and bolts for about one-third. The value of roundwood harvested was highest in the Northeastern Unit (about 40 percent of the total) because timber removals for products were highest there also.

According to Bureau of the Census data,<sup>22</sup> logging camps and logging contractors paid 5.0 million dollars in payrolls in 1967, sawmills and planing mills paid 9.0 million, veneer and plywood plants paid 10.1 million, and paper and allied products<sup>23</sup> paid 300.3 million.

Value added by manufacture — the difference between the cost of goods purchased by an enterprise and the sales value of its product — is an economic indicator of the dollar-generating capacity of an industry. Logging camps and logging contractors added 9.9 million dollars in 1967, compared with 6.2 million in 1963, according to Bureau of the Census. Sawmills and planing mills added 17.0 million in 1967 compared with 15.7 million in 1963; veneer and plywood mills added 16.8 million in 1967 compared with 17.0 million in 1963. Value added by paper and allied products mills was 663.5 million in 1967 and 501.8 million in 1963.

### **Pulpwood Accounts for Biggest Share of Timber Products Output**

Total timber products output<sup>24</sup> in 1967 was 199.9 million cubic feet, down about 20 percent from the 246.6 million cubic feet in 1956. Significant changes from 1956

were a 52 percent increase in output of pulpwood between surveys and a 70 percent decrease in fuelwood output.

Pulpwood accounted for 56 percent of the total timber products output. The 112 million cubic feet of pulpwood output in 1967 was 52 percent greater than the 74 million cubic feet output in 1956. Ninety percent of the 1967 pulpwood output came from growing-stock trees and 80 percent of the total was from hardwood trees, mostly aspen. The two northern units provided the bulk of the pulpwood output (83 percent).

Saw log and bolt output in 1967 made up 23 percent of the total timber products output. The 1967 volume of 45 million cubic feet was down significantly from the 55 million cubic feet in 1956. Hardwoods dominated with 90 percent of the saw log output. Select red oaks, hard maple, elm, aspen, and basswood were the leading saw log species. Even though total saw log output declined between surveys, the outputs of the Central and Southeastern Units increased somewhat.

The output of most other timber products dropped since the last survey. Some products, such as fuelwood and posts, fell to only a fraction of their 1956 volume, but a few, such as poles and pilings, gained a little.

The output of major roundwood products (total timber products output less plant residues) generally declined from 1946 to 1967 (fig. 13).

Total receipts of roundwood timber products at Wisconsin primary wood-using plants in 1967 (255 million cubic feet) remained nearly the same as in 1956 (254 million cubic feet). Receipts were greater than output in both survey years, but the difference was greatest in 1967 when the output was 156.7 million cubic feet. Wisconsin, then, is a net importer of roundwood. Pulpwood accounted for the largest share of imports in 1967. The State's pulpwood output of 103 million cubic feet was not sufficient alone to meet the 195 million cubic feet received at pulpmills.

Even though total receipts at primary plants remained static between surveys, the receipts of specific timber products varied considerably. Pulpwood gained but all other products<sup>25</sup> dropped. Veneer log receipts in 1967 fell to almost half the amount in 1956.

---

<sup>25</sup> Receipts of poles, piling, posts, and fuelwood are unknown and excluded from "all other products."

---

<sup>21</sup> Refers to all employees (not just production workers). A man-week is 40 hours of work by one person.

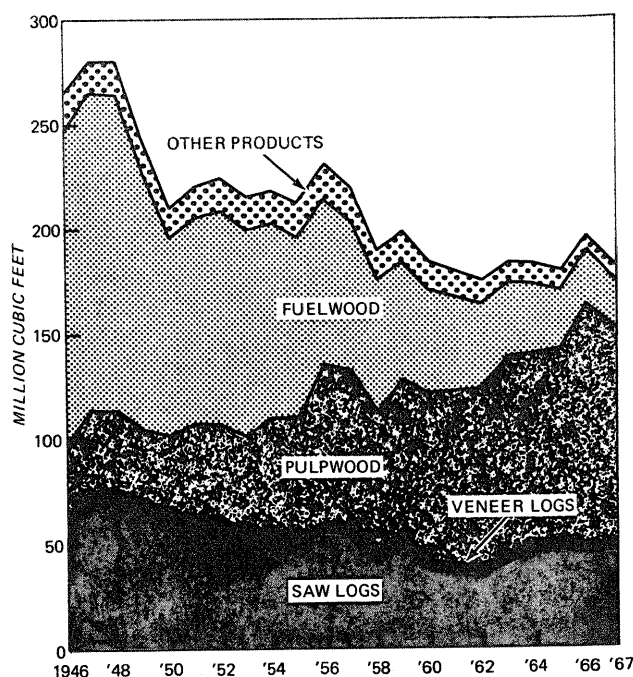
<sup>22</sup> 1967 Census of Manufactures.

<sup>23</sup> Includes primary and secondary mills.

<sup>24</sup> Includes output from both roundwood and plant residues.



Figure 13. — Output of roundwood products in Wisconsin, 1946 to 1967. Points for some years are based on trend-level curves because survey data are not available for every year.



## A LOOK INTO THE FUTURE

Recent Forest Service projections suggest that by the year 2000 the Nation's demand for industrial wood products (all roundwood products except fuelwood) from domestic forests may increase about 2.3 times present demand if the relative prices for wood products can be maintained.<sup>26</sup> The increase will not be the same for all timber products. For example, demand is projected to roughly double for saw logs and to nearly triple for veneer logs and pulpwood.

These prospective rising national demands will come during a period of generally shrinking commercial forest area, and possible important constraints on timber production brought on as a response to the mounting need to improve the environment and to promote multiple use of forest land.

The future of Wisconsin's timber resource undoubtedly will be shaped by the above as well as other pressures.

<sup>26</sup> Hair, Dwight, and H. O. Fleischer. *Meeting growing demands for wood products. In [1971] Yearbook of Agriculture. U.S. Dep. Agric., p. 330-334. 1971.*

Important questions are what the future timber supply in the State will be, and how it will relate to the needs of the Nation. As pointed out earlier, the growing-stock inventory increased 30 percent between 1956 and 1968. Three quarters of the volume is in hardwood trees — one-fifth of it in aspen trees alone. Also, growing-stock removals in 1967 were 47 percent of annual net growth.

One look at the State's possible forest situation 30 years hence is provided by computer-generated projections. Two such projections are presented; one assumes a high level of future timber removals and the other assumes a low level. Other assumptions common to both projections are: (1) the total area of commercial forest land will continue to decline modestly at an estimated rate of 0.141 percent per year; (2) radial growth as estimated from measurement of permanent plots during the last two surveys will decline over time in relation to the increase of basal area per acre of trees; (3) the intensity of forest management practiced will continue at the rate indicated by recent trends; and (4) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

## High Removals Option Projection

This projection is based on the assumption that timber removals for products will increase during the 30-year period, but at a decreasing rate each 10-year period. The initial removals rate for this option was higher than that for the low option, and the volume of removals is projected to be greater in every year than for the low option.

In general this projection shows increasing inventories of both growing stock and sawtimber (fig. 14), but the rate of increase drops off toward the end of the period — much more sharply for growing stock than for sawtimber. Growth and removals of growing stock almost meet in 1998 and for sawtimber they start to converge toward the end of the period.

Specifically, growth of growing stock, which amounted to 500 million cubic feet in 1968, is projected to peak about 1988 with 538 million cubic feet and to decline during the following decade to 528 million. At the same time timber removals, which were 233 million cubic feet in 1968, are projected to climb to 507 million in 1998. If the growth and removals curves were extended beyond 1998, they would cross at about the year 2000. The 1968 inventory of 11.0 billion cubic feet is projected to increase to 15.3 billion by 1988 and then to grow to only 16.0 billion in 1998 when the inventory curve almost flattens out. Should growth and removals become equal and remain so, the inventory curve would be a horizontal line.

Taken separately, the projections for softwoods and hardwoods show substantial differences. Softwood removals of growing stock are projected to jump from 30 million cubic feet in 1968 to 140 million in 1998, a 366 percent gain. Hardwood growing-stock removals, on the other hand, are projected to increase from 203 million cubic feet in 1968 to 367 million in 1998, only an 81 percent gain. Softwoods, which accounted for 13 percent of total removals in 1968, would make up 28 percent in 1998 under this projection. This reflects the assumed future faster rate of increase of softwood removals mentioned earlier.

Softwood growing-stock growth is projected to gain 15 percent between 1968 and 1998, compared with only 2 percent for hardwoods. Likewise softwood inventory would gain 73 percent during the same period, from 2.5 to 4.3 billion cubic feet, but hardwood inventory would increase only 38 percent, from 8.5 to 11.7 billion cubic feet.

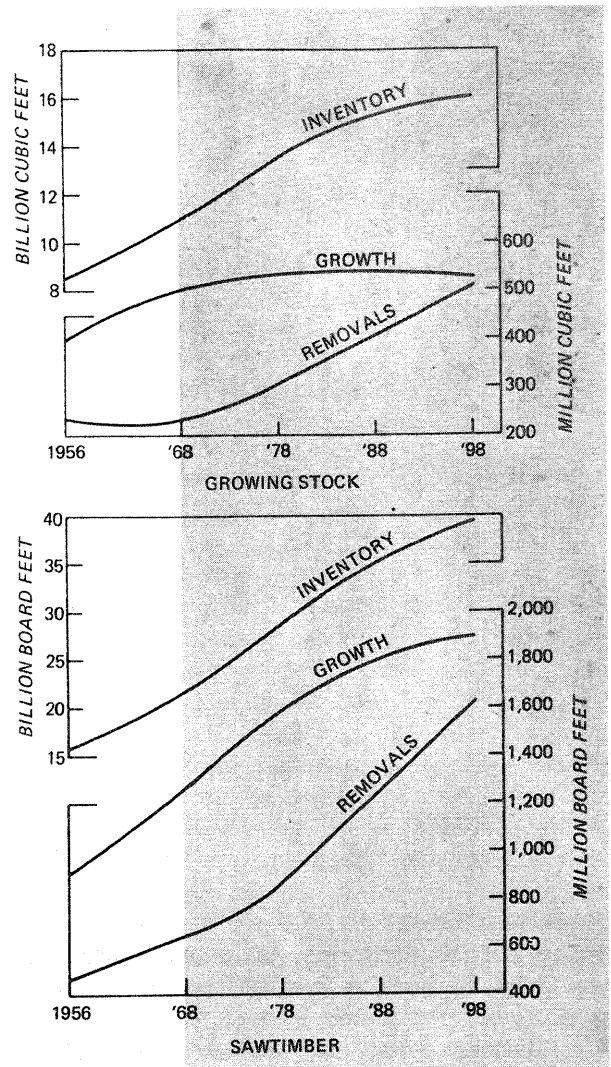


Figure 14. — Removals, net growth, and inventory of growing stock and sawtimber in Wisconsin, 1956 and 1968, and high removals option projections for 1978-1998.

Sawtimber projections of softwoods and hardwoods are similar to those above for growing stock. The major difference is that sawtimber growth for both species groups would increase substantially beyond that for growing stock. Softwood sawtimber growth is projected to rise 67 percent during the 30-year period compared with 15 percent for growing stock, and hardwood sawtimber growth would increase 44 percent compared with 2 percent for growing stock.

## Low Removals Option Projection

As the name implies, this projection assumes a level of removals lower than the preceding projection. The assumption is also made that use of both softwoods and hardwoods for products will increase at an increasing rate each 10-year period. In general, the volume of removals is projected to be lower in every year of the period than for the high option, and growth and inventory volumes are projected higher.

This projection shows increasing inventories of both growing stock and sawtimber over the next 30 years with the rate of increase dropping off slightly toward the end of the period (fig. 15).

Growing-stock growth is projected to rise from 500 million cubic feet in 1968 to 552 million cubic feet in 1998. In spite of this tapering off of net growth, it would still be substantially above removals in 1998, although the growth and removals curves would intersect before another decade if they were extended. Timber removals of growing stock are projected to nearly double during the period, increasing from 233 million cubic feet in 1968 to 426 million cubic feet in 1998.

Growing-stock inventory would enlarge from 11.0 billion cubic feet in 1968 to 17.8 billion cubic feet in 1998 under the above conditions of growth excess. As the growth and removals curves approach each other toward the end of the projection period, the inventory curve begins to flatten out.

If softwoods and hardwoods are considered separately, the shape of the curves for each would be very similar to those shown in figure 15. There are, however, important differences in the projections for these two species groups. The average rate of increase of softwood growing-stock inventory would be almost twice that of hardwoods during the 30-year projection period — 3.2 percent per year for softwoods compared with 1.7 percent per year for hardwoods. The disparity is even wider for net annual growth volume, where the average annual increase for softwoods is projected to be 0.6 percent contrasted to 0.2 percent for hardwoods. Comparison of projected removals, however, shows the greatest difference between rates of increase for softwoods (8.9 percent per year) and hardwoods (1.9 percent per year). The softwood removal rate would be nearly 5 times the rate for hardwoods, reflecting the expected increased importance of softwoods in the State's future. Softwoods amounted to

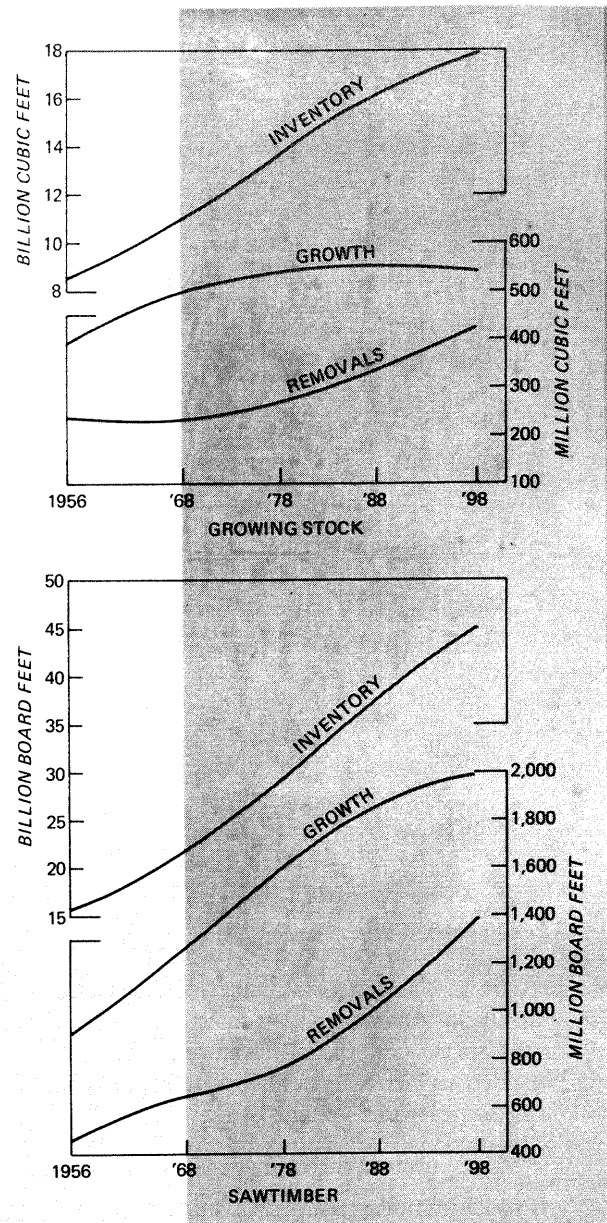


Figure 15. — Removals, net growth, and inventory of growing stock and sawtimber in Wisconsin, 1956 and 1968, and low removals option projections for 1978-1998.

only 13 percent of the State's total removals volume in 1968, but are projected to represent 26 percent of the total by 1998. Growing-stock inventory, too, would be weighted more heavily to softwood species in the future, increasing from 23 percent of the total in 1968 to 27 percent in 1998.

## Conclusions Drawn from Projections

Out of the above projections there emerge several obvious conclusions.

First, the timber resource is primarily hardwood (largely aspen) and will remain so in the foreseeable future. Because this is true, and because the State's timber economy is predominantly oriented toward pulpwood, Wisconsin will not figure prominently in helping to solve the Nation's forthcoming softwood building materials shortage.

Second, softwood inventories and timber removals will probably expand in the future. This projected mini-renaissance of softwoods will not manifest itself in a return to the Paul Bunyan days when white pine was king. Rather, it results largely from the considerable tree planting done in Wisconsin in the past, most of which favored red pine. Also, part comes from the buildup of shade-tolerant species, such as balsam fir, spruce, and hemlock, that replaced some of the past aspen-birch stands, as mentioned earlier. Probably more of the future increased demand for timber in the State will be met by softwoods.

In addition to the above, there are other changes that may occur in Wisconsin's forests and forest-related industries that are more difficult to predict. Certainly the boom in outdoor recreation and continuing public concern about environmental responsibilities and human amenities will have some impact on the extent and kind of timber harvesting. New harvesting systems, particularly whole-tree chipping in the woods, which is presently being done to a limited extent, will probably supplant older methods in many cases. These systems, though requiring large initial capital outlays, should reduce harvesting costs and help to keep wood products competitive with nonwood materials. Improved methods of transporting timber products to plant or mill seem likely, perhaps including delivery of chips by pipeline directly from the woods.

The intensity of forest management in the future, assumed to continue at the rate indicated by recent trends for the above projections, will probably increase. Cultural work, particularly thinning, probably will be performed over wider areas in stands managed for sawtimber (fig. 16). The increased growing space provided by thinning will help speed up tree growth. Fertilization of forests has also been shown to be effective in accelerating tree growth in other parts of the

The sawtimber projections show a much wider gap between growth and removals than do those for growing stock. Growth would remain far ahead of removals during the entire period, almost paralleling removals in the middle of the period and converging toward removals only in the last decade. Net annual sawtimber growth is projected to increase from 1,264 million board feet in 1968 to 1,997 million board feet in 1998, for an average gain of 1.9 percent per year. Sawtimber removals are projected to more than double during the period, from 650 million board feet in 1968 to 1,387 million board feet in 1998 — an average annual increase of 3.8 percent.

With the above forces impinging on each other, sawtimber inventory is projected to double from the 21.8 billion board feet in 1968 to 45.2 billion board feet in 1998. This would amount to an average annual increase of 3.6 percent, substantially higher than the 2.1 percent annual increase projected for growing-stock inventory. The faster rate of increase for sawtimber inventory is due to the expected continued general growth of trees into the larger diameter classes. As mentioned earlier, sapling and seedling stands dominated the commercial forest during the 1956 survey, and poletimber stands dominated in 1967. Sawtimber stands probably will dominate by 1998 and the increased proportion of sawtimber trees will mean a bigger increase in sawtimber inventory than in growing-stock inventory.

As with growing stock, when sawtimber projections for softwoods and hardwoods are considered separately, some significant differences appear. And, as with growing stock, the softwoods' growth, removals, and inventory are projected to increase at a faster rate than hardwoods, although the softwood volume of each will be less than that of hardwoods throughout the 30-year period.

Softwood sawtimber removals would demonstrate the fastest average annual increase rate of the three with 10.8 percent compared with only 2.5 percent for hardwoods. This high rate would translate into a much bigger share of the total volume of removals for softwoods — from 15 percent of the sawtimber total in 1968 to 30 percent in 1998. The average annual rate of increase for softwood sawtimber growth would be 2.5 percent compared with 1.7 percent for hardwoods. The softwood portion of the total growth volume would creep from 27 percent in 1968 to 30 percent in 1998. A somewhat faster rate of increase for softwood sawtimber inventory than for hardwoods results in a projected gain in the softwood portion of inventory from 30 percent of the total in 1968 to 32 percent in 1998.





*Figure 16. – Commercial thinning in a red pine plantation in the Lincoln County Forest. Properly done, thinnings will help to reduce some of the 11 percent of the State's commercial forest area that is overstocked with live trees, and will remove some of the rough and rotten trees that represent 31 percent of the live trees in the State. Thinnings also may yield timber products, such as the pulpwood above. (Photo courtesy of Wisconsin Department of Natural Resources.)*

country and probably will be practiced routinely on some land in the State in the future. More of the trees planted in the future will be grown from seeds harvested from genetically superior trees. Pulpwood growers probably will plant trees bred to maximize fiber yield and these trees may be harvested on extremely short rotations.

If the above management practices are to make significant changes in the State's forest situation, they will have to be performed on at least some of the farmer-owned and miscellaneous private commercial forest, which represents 59 percent of the total commercial area. Because

such practices require large investments of time and money and may not yield a return for several years or even decades, many owners may be unable or unwilling to apply them. It may be necessary to offer new forms of incentives to encourage more intense management on these generally small holdings.

In summary, the rebuilding of Wisconsin's formerly deteriorated forests may be essentially completed within the next few decades as growth and inventory volumes approach the point of stabilization or even turn down. The hard-won lessons of the past should serve as a reminder of the need for continued thoughtful management to ensure a stable and healthy timber resource and economy.

## APPENDIX

### Accuracy of Survey

The forest area and timber inventory estimates in this report are based on a carefully designed sample of Wisconsin's forests. Because neither every acre nor every tree in the State was measured, the reported figures are best estimates. A measure of reliability of these estimates is given by a sampling error. Sampling errors (at the 68-percent probability level) have been calculated for commercial forest area, timber inventory, growth, and removals as percentages of the estimated State totals. Separate sampling errors for the latter three have been calculated for both growing stock and sawtimber volumes. Sampling errors may be interpreted as meaning that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated. For example, the estimated area of commercial forest land in Wisconsin in 1968, 14,536.8 thousand acres, has a sampling error of  $\pm 0.38$  percent ( $\pm 55.2$  thousand acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 14,481.6 and 14,592.0 thousand acres ( $14,536.8 \pm 55.2$ ), there being a one in three chance that this is not the case. Following are sampling errors for total estimated volume, net growth, and removals for both growing stock and sawtimber, and for area of commercial forest land during the 1968 Wisconsin Survey:

| Item                      | Wisconsin<br>State<br>totals | Sampling<br>error <sup>27</sup><br>(Percent) |
|---------------------------|------------------------------|----------------------------------------------|
| Growing-stock:            |                              |                                              |
| Volume                    | 10,996.1 MM cu. ft.          | 0.86                                         |
| Growth                    | 500.1 MM cu. ft.             | 1.77                                         |
| Removals                  | 233.1 MM cu. ft.             | 3.96                                         |
| Sawtimber:                |                              |                                              |
| Volume                    | 21,755.7 MM bd. ft.          | 1.81                                         |
| Growth                    | 1,263.7 MM bd. ft.           | 2.95                                         |
| Removals                  | 650.2 MM bd. ft.             | 3.85                                         |
| Commercial<br>forest land | 14,536.8 M acres             | .38                                          |

In addition to sampling errors, there may be other nonsampling errors due to mistakes in judgment, recording, calculation, and compilation. The magnitude of such

errors cannot be determined. However, they are minimized through training, supervision, field checking, and complete editing and machine verification in compiling the data.

As survey data are broken down into units smaller than the State totals, the sampling error for such breakdowns increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is much higher than that for total commercial area in the State. An approximation of the increasing sampling error can be obtained from table 10, which shows the sampling error associated with estimates smaller than totals in Wisconsin.

### Survey Procedure

This inventory of the forests of Wisconsin combines data furnished by the staffs of the Nicolet and Chequamegon National Forests for those forests and data gathered by personnel of the Wisconsin Department of Natural Resources and the North Central Forest Experiment Station on all other land. Permanent sample plots were established on the Nicolet National Forest in 1963 and remeasured in 1967. Similar plots on the Chequamegon National Forest were established in 1964. Data from both forests were updated to the current survey year. Forest Survey sample plots were measured from June 1967 to December 1969.

#### National Forest Land

A total of 117 ten-point variable-radius plots were originally established on the Nicolet National Forest, and 95 of these plots were remeasured to obtain growth data. On the Chequamegon National Forest 127 ten-point variable-radius plots were established. Annual growth data were estimated using regression equations with input from outside the National Forest.

#### Outside National Forest Land

A triple sampling design was used for land outside the National Forests. First, 320,815 points distributed systematically across aerial photos of the entire area were observed. These points were classified as either forest land (139,867) or nonforest land (180,948) in order to make a preliminary estimate of forest area. Next, 46,104 of the forest points were stereoclassified as to forest type,

<sup>27</sup> At the 68-percent probability level.

Table 10. — Sampling errors<sup>1</sup> for estimates smaller than State totals of volume, net growth, and removals, and of area of commercial forest land in Wisconsin, 1968

| Sampling<br>error<br>(percent) | Commercial<br>forest | Growing stock      |         |          | Sawtimber          |          |          |
|--------------------------------|----------------------|--------------------|---------|----------|--------------------|----------|----------|
|                                |                      | Inventory          | Growth  | Removals | Inventory          | Growth   | Removals |
|                                | Thousand acres       | Million cubic feet |         |          | Million board feet |          |          |
| 1                              | 2,071.5              | 8,132.7            | 1,566.8 | 3,656.5  | 71,233.6           | 10,997.0 | 9,638.3  |
| 2                              | 517.9                | 2,033.2            | 391.7   | 914.1    | 17,808.4           | 2,749.3  | 2,409.6  |
| 3                              | 230.2                | 903.6              | 174.0   | 406.3    | 7,914.8            | 1,221.9  | 1,070.9  |
| 4                              | 129.5                | 508.3              | 97.9    | 228.5    | 4,452.1            | 687.3    | 602.4    |
| 5                              | 82.9                 | 325.3              | 62.7    | 146.3    | 2,849.3            | 439.9    | 385.5    |
| 10                             | 20.7                 | 81.3               | 15.7    | 36.6     | 712.3              | 110.0    | 96.4     |
| 15                             | 9.2                  | 36.1               | 7.0     | 16.3     | 316.5              | 48.9     | 42.8     |
| 20                             | 5.2                  | 20.3               | 3.9     | 9.1      | 178.0              | 27.5     | 24.1     |
| 25                             | 3.3                  | 13.0               | 2.5     | 5.9      | 113.9              | 17.6     | 15.4     |
| 50                             | .8                   | 3.2                | .6      | 1.5      | 28.4               | 4.4      | 3.8      |
| 100                            | .2                   | .8                 | .2      | .4       | 7.1                | 1.0      | .9       |

<sup>1/</sup> At the 68-percent probability level.

stand-size class, and density. Then 6,419 points classed as forest and 7,960 points classed as nonforest were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. At each of the 6,017 commercial forest locations, 10 variable-radius plots (37.5 basal area factor) were established uniformly over the sample acre.

Growth information on land outside the National Forests was obtained by remeasuring 105 one-fifth-acre circular plots in the three northern Forest Survey Units and 292 one-fifth-acre circular plots on which 10-point variable-radius plots were superimposed in the two southern units.

Mortality information was gained by counting trees that died within the last 3 years on newly established variable radius plots, then converting these trees to an annual volume of mortality.

### Timber Utilization

Statistics on utilization in 1967 were obtained from mill surveys and wood utilization studies. The Wisconsin Department of Natural Resources conducted a canvass of resident sawmills, veneer mills, and other primary wood-using plants. The North Central Forest Experiment Station canvassed pulpmills and the mining industry in Wisconsin as well as out-of-State sawmills, pulpmills, and veneer mills to determine their use of timber from Wisconsin. Fuelwood and fencepost output was based on

U.S. Census of Agriculture and Housing figures, a canvass of public and industrial timber owners, and estimates of mill residues used for fuelwood determined from a canvass of Wisconsin primary wood-using plants. Timber cut for products by owner class was determined by a canvass of all public and industrial timber owners. The portion of timber cut unaccounted for by the latter owners was grouped under "farmer and other owners."

To develop wood utilization factors used in converting timber products output to timber removals for saw logs, veneer logs, and pulpwood, 919 felled trees throughout the State were measured. Similar factors for cooperage logs and hardwood fenceposts were used from the 1960-61 Minnesota utilization study, and factors for all other products were used from the 1964-65 Michigan utilization study.

### Definition of Terms

#### Land-Use Classes

**Gross area**—The entire area of land and water as determined by the Bureau of Census, 1960.

**Land area** — The area of dry land and land temporarily or partially covered by water such as marshes, swamps, flood plains, streams, sloughs, and estuaries. Canals less than 1/8-mile wide, and lakes, reservoirs, and ponds smaller than 40 acres are included as land area. These figures are from the Bureau of Census, 1960.

*Forest land* — Land at least 16.7 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest use. Includes afforested areas. The minimum forest area classified was 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas were classed as forest if less than 120 feet in width.

*Commercial forest land* — Forestland which is producing or is capable of producing crops of industrial wood and not withdrawn from timber utilization by statute or administrative regulation. This includes areas suitable for growing crops of industrial wood generally of a site quality capable of producing in excess of 20 cubic feet per acre of annual growth. This includes both inaccessible and inoperable areas.

*Noncommercial forest land* — (a) Unproductive — forest land incapable of yielding crops of industrial wood because of adverse site conditions. (b) Productive-reserved — forest land withdrawn from commercial timber use through statute or administrative regulation, or exclusively used for Christmas tree production.

*Nonforest land* — Land that has never supported forests, and land formerly forested where forest use is precluded by development for nonforest uses, such as cropland, improved pasture, residential areas, and city parks. Also includes improved roads and adjoining rights-of-way, powerline clearings, and certain areas of water classified by the Bureau of Census as land. Unimproved roads, streams, canals, and nonforest strips in forest areas must be more than 120 feet wide, and clearings in forest areas must be more than 1 acre in size, to qualify as nonforest land. "Cropland" and "pasture and range" figures were obtained from the Bureau of Census.

### *Ownership Classes*

*National forest* — Federal land that has been designated by Executive Order or Statute as National Forests or purchase units, and other land under the administration of the Forest Service.

*Indian* — Tribal land held in fee by the Federal Government but administered for Indian tribal groups and Indian trust allotments.

*Miscellaneous Federal* — Federal land other than National Forest, Bureau of Land Management, and Indian land.

*State, county, and municipal* — Land owned by States, counties, or local public agencies, or land leased by them for more than 50 years.

*Other public* — All public land other than National Forests.

*Forest industry* — Land owned by companies or individuals operating wood-using plants.

*Farmer-owned* — Land owned by operators of farms. A farm must include 10 or more acres from which the sale of agricultural products totals \$50 or more annually or, if less than 10 acres, the yield must be at least \$250 annually.

*Miscellaneous private* — Privately owned land other than forest-industry or farmer-owned.

### *Tree Classes*

*All live trees* — Growing-stock, rough, and rotten trees 1 inch d.b.h. and larger.

*Growing-stock trees* — All live trees of any size except rough and rotten trees.

*Desirable trees* — Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

*Acceptable trees* — Trees meeting the standards for growing stock but not qualifying as desirable trees.

*Sawtimber trees* — Live trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs, each 8 feet or longer, and having a maximum allowable defect of 67 percent of the gross tree volume. Softwoods must be at least 9.0 inches d.b.h. and hardwoods at least 11.0 inches.

*Poletimber trees* — Live trees of commercial species at least 5.0 inches d.b.h. but smaller than sawtimber size, and of good form and vigor.

*Saplings* — Live trees of commercial species 1.0 to 5.0 inches d.b.h. and of good form and vigor.

*Seedlings* — Live trees of commercial species less than 1.0 inch d.b.h. that are expected to survive according to regional standards. (Example of seedlings not expected to survive are those that are diseased or heavily damaged by logging, browsing, or fire.) Only softwood seedlings over 6 inches and hardwood seedlings over 1 foot in height are counted.

*Rotten trees* — Live trees (of any size) of commercial species that do not contain a merchantable 12-foot saw log, now or prospectively, because of rot (that is, when more than 50 percent of the cull volume of the tree is rotten).

*Rough trees* — Live trees (of any size) that do not contain at least one merchantable 12-foot saw log, now or prospectively, because of roughness, poor form, or noncommercial species.

*Short-log trees (rough trees)* — Sawtimber-sized trees of commercial species that contain at least one merchantable 8- to 11-foot saw log but not a 12-foot saw log.

## Stocking

The degree of utilization of land by trees as measured in terms of basal area and/or the number of trees in a stand compared to the basal area and/or number of trees required to utilize fully the growth potential of the land.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees do reach 5 inches d.b.h.

Stocking of all live trees, growing-stock trees, and desirable trees are recorded separately and stands are grouped into stocking classes.

## Stocking Classes

*Overstocked stands* — Stands in which stocking of trees is 133 percent or more.

*Fully stocked stands* — Stands in which stocking of trees is from 100 to 133 percent.

*Medium-stocked stands* — Stands in which stocking of trees is from 60 to 100 percent.

*Poorly stocked stands* — Stands in which stocking of trees is from 16.7 to 60 percent.

*Nonstocked areas* — Commercial forest land on which stocking of trees is less than 16.7 percent.

## Stand-Size Classes

*Stand* — A growth of trees on a minimum of 1 acre of forest land that is at least 16.7 percent stocked by forest trees of any size.

*Sawtimber stands* — Stands at least 16.7 percent stocked with growing-stock trees, with half or more of this stocking in sawtimber or poletimber trees and with sawtimber stocking at least equal to poletimber stocking.

*Poletimber stands* — Stands at least 16.7 percent stocked with growing-stock trees, and with half or more of this stocking in sawtimber and/or poletimber trees and with poletimber stocking exceeding that of sawtimber.

*Sapling-seedling stands* — Stands at least 16.7 percent stocked with growing-stock trees and with saplings and/or seedlings comprising more than half of this stocking.

*Nonstocked areas* — Commercial forest land on which stocking of growing-stock trees is less than 16.7 percent.

## Area-Condition Classes

*Class 10* — Areas fully stocked with desirable trees and not overstocked.

*Class 20* — Areas fully stocked with desirable trees, but overstocked with all live trees.

*Class 30* — Areas medium to fully stocked with desirable trees, and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

*Class 40* — Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

*Class 50* — Areas poorly stocked with desirable trees, but fully stocked with growing-stock trees.



*Class 60* — Areas poorly stocked with desirable trees, but with medium to full stocking of growing-stock trees.

*Class 70* — Areas poorly stocked with desirable trees, and poorly stocked with growing-stock trees.

## *Other Land Classifications*

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

*Site classes* — A classification of forest land in terms of inherent capacity to grow crops of industrial wood expressed in cubic-foot growth per acre per year.

*Stand-age* — Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

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

## *Forest Types*

A classification of forest land based upon the species forming a plurality of live-tree stocking. Major forest types in Wisconsin are:

*Jack pine* — Forests in which pine species comprise a plurality of the live tree stocking, with jack pine the most common. (Common associates include aspen, white birch, maple, balsam fir, cherry, and oak.)

*Red pine* — Forests in which pine species comprise a plurality of the live-tree stocking, with red pine the most common. (Common associates include aspen, white birch, maple, balsam fir, and red oak.)

*White pine* — Forests in which pine species comprise a plurality of the live-tree stocking, with eastern white pine the most common. (Common associates include hemlock, aspen, white and yellow birch, and maple.)

*Balsam fir-white spruce* — Forests in which balsam fir or white spruce, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include white-cedar, black spruce, tamarack, maple, birch, hemlock, and aspen.)

*Black spruce* — Forests in which swamp conifers (black spruce, tamarack, and northern white-cedar) comprise a plurality of the live-tree stocking, with black spruce the most common.

*Northern white-cedar* — Forests in which swamp conifers comprise a plurality of live-tree stocking, with northern white-cedar the most common.

*Tamarack* — Forests in which swamp conifers comprise a plurality of live-tree stocking, with tamarack the most common.

*Oak-hickory* — Forests in which upland oaks or hickories, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include aspen, cherry, balsam fir, elm, maple, and white birch.)

*Elm-ash-cottonwood* — Forests in which lowland elm, ash, or cottonwood, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include maple, basswood, and river birch.) These forests may be subtyped cottonwood when it is the most common species.

*Maple-beech-birch* — Forests in which maple, beech, yellow birch, or upland elm, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include hemlock, elm, basswood, white pine, and white and yellow birch.) Locally this type is called “northern hardwoods.”

*Aspen* — Forests in which a mixture of quaking or bigtooth aspen, or balsam poplar, singly or in combination, comprise a plurality of the live-tree stocking. (Common associates include maple, white birch, balsam fir, red and northern pin oak, and cherry.)

*Paper birch* — Forests in which paper birch comprises a plurality of the live-tree stocking. (Common associates include aspen, maple, balsam fir, red and northern pin oak, and cherry.)

## *Timber Volume*

*Volume of growing stock* — The volume of sound wood in the bole of sawtimber and poletimber trees from stump to a minimum of 4.0-inch top diameter outside bark, or to the point where the central stem breaks into limbs. Growing-stock volumes are shown in cubic feet but may be converted into solid-wood cords by dividing by 79.

*Volume of sawtimber* — Net volume of the saw log portion of live sawtimber trees in board feet, International 1/4-inch rule, from stump to a minimum 7 inches top diameter outside bark for softwoods and 9 inches for hardwoods.

*Upper stem portion* — That part of the bole of sawtimber trees above the merchantable top to a minimum top diameter of 4.0 inches outside bark or to the point where the central stem breaks into limbs.

### *Quality Classes*

*Tree grade* — Classification of trees based on external characteristics as indicators of quality. Hardwood species were graded in accordance with “Hardwood Log Grades for Standard Lumber and How to Use Them” issued by the Forest Products Laboratory under the designation D1737A, 1961, and USDA Forest Service standards for hardwood tie and timber logs. The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards was graded.

Red pine was graded in accordance with “Interim Southern Pine Log Grades,” USDA Forest Service, 1953. Eastern white pine was graded in accordance with USDA Forest Service “Log Grades for Eastern White Pine.” All other softwoods were graded according to “Specifications for Log Grades of Hardwoods and Softwoods,” Northern Hemlock and Hardwood Association, 1947. The lowest 16-foot log in softwood trees or a shorter log down to 12 feet if a 16-foot butt log was not present was graded.

### *Growth and Mortality*

*Net annual growth of growing stock* — The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

*Net annual growth of sawtimber* — The annual change in volume of live sawtimber trees and the total volume of

trees reaching sawtimber size, less volume losses resulting from natural causes.

*Mortality of growing stock* — The volume of sound wood in live sawtimber and poletimber trees dying annually from natural causes. Natural causes include fire, insects, disease, animal damage, weather, and suppression.

*Mortality of sawtimber* — The net board-foot volume of sawtimber trees dying annually from natural causes.

### *Timber Removals*

*Timber removals from growing stock* — The volume of sound wood in live sawtimber and poletimber trees removed annually for forest products (including roundwood products and logging residues) and for other removals. Roundwood products are logs, bolts, or other round sections cut from trees. Logging residues are the unused portions of cut trees plus unused trees killed by logging. Other removals are growing-stock trees removed by cultural operations such as timber stand improvement work, and by land clearing and changes in land use.

*Timber removals from sawtimber* — The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

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

*Plant byproducts* — Wood products, such as pulpwood chips, obtained incidental to production of other manufactured products.

*Plant residues* — Wood materials from manufacturing plants not utilized for some product.

## Principal Tree Species in Wisconsin<sup>28</sup>

### SOFTWOOD SPECIES

#### White and red pines:

- Eastern white pine . . . . . *Pinus strobus*  
Red pine . . . . . *Pinus resinosa*

- Jack pine . . . . . *Pinus banksiana*

#### Spruce and balsam fir:

- White spruce . . . . . *Picea glauca*  
Black spruce . . . . . *Picea mariana*  
Balsam fir . . . . . *Abies balsamea*

- Eastern hemlock . . . . . *Tsuga canadensis*

#### Other eastern softwoods:

- Tamarack . . . . . *Larix laricina*  
Northern white-cedar . . . . . *Thuja occidentalis*

#### Other softwoods

- Scotch pine . . . . . *Pinus sylvestris*  
Eastern redcedar . . . . . *Juniperus virginiana*  
Norway spruce . . . . . *Picea abies*

### HARDWOOD SPECIES

#### Select white oaks:

- White oak . . . . . *Quercus alba*  
Bur oak . . . . . *Quercus macrocarpa*  
Chinkapin oak . . . . . *Quercus muehlenbergii*  
Swamp white oak . . . . . *Quercus bicolor*

#### Select red oaks:

- Northern red oak . . . . . *Quercus rubra*

#### Other red oaks:

- Black oak . . . . . *Quercus velutina*  
Pin oak . . . . . *Quercus palustris*

#### Hickory:

- Bitternut hickory . . . . . *Carya cordiformis*  
Shagbark hickory . . . . . *Carya ovata*

- Yellow birch . . . . . *Betula alleghaniensis*

#### Hard maple:

- Black maple . . . . . *Acer nigrum*  
Sugar maple . . . . . *Acer saccharum*

#### Soft maple:

- Red maple . . . . . *Acer rubrum*  
Silver maple . . . . . *Acer saccharinum*

- American beech . . . . . *Fagus grandifolia*

#### Ash:

- Black ash . . . . . *Fraxinus nigra*  
White ash . . . . . *Fraxinus americana*  
Green ash . . . . . *Fraxinus pennsylvanica*

#### Cottonwood and aspen:

- Balsam poplar . . . . . *Populus balsamifera*  
Bigtooth aspen . . . . . *Populus grandidentata*  
Quaking aspen . . . . . *Populus tremuloides*  
Eastern cottonwood . . . . . *Populus deltoides*

- American basswood . . . . . *Tilia americana*

- Black walnut . . . . . *Juglans nigra*

- Black cherry . . . . . *Prunus serotina*

- American elm . . . . . *Ulmus americana*

- Rock elm . . . . . *Ulmus thomasii*

- Slippery elm . . . . . *Ulmus rubra*

- Paper birch . . . . . *Betula papyrifera*

- Butternut . . . . . *Juglans cinerea*

#### Other hardwoods:

- Hackberry . . . . . *Celtis occidentalis*

- American sycamore . . . . . *Platanus occidentalis*

- Red mulberry . . . . . *Morus rubra*

- Blackgum . . . . . *Nyssa sylvatica*

- Black willow . . . . . *Salix nigra*

- Boxelder . . . . . *Acer negundo*

- Honeylocust . . . . . *Gleditsia triacanthos*

- Black locust . . . . . *Robinia pseudoacacia*

- River birch . . . . . *Betula nigra*

- Northern catalpa . . . . . *Catalpa speciosa*

<sup>28</sup> The common and scientific names are based on "Check List of Native and Naturalized Trees of the United

States (Including Alaska)" by Elbert L. Little, Jr., U.S. Dep. Agric., Agric. Handb. 41, 472 p. 1953.

## Tables<sup>29</sup>

### Text tables:

1. Commercial forest land area by stand-size class, 1956 and 1968 (see page 4)
2. Number of growing-stock trees on commercial forest land by diameter class, 1956 and 1968 (see page 5)
3. Area change between surveys, by stand-size class, Wisconsin, 1956-68, and Michigan, 1955-66 (see page 5)
4. Commercial forest area by forest type, 1956 and 1968 (see page 6)
5. Area of commercial forest land by site index class for selected forest types (see page 8)
6. Growing-stock volume in 1968 and change since 1956 (see page 10)
7. Sawtimber volume in 1968 and change since 1956 (see page 12)
8. Percent of sawtimber trees by butt log grade and softwoods and hardwoods (see page 12)
9. Volume of net annual growth by components of growth, Wisconsin, 1967, and Michigan, 1965 (see page 13)
10. Sampling errors for estimates smaller than State totals of volume, net growth, and removals, and of area of commercial forest land (see page 25)

### Area:

11. Area by land class and Forest Survey Unit
12. Area of commercial forest land, by ownership class and Forest Survey Unit
13. Area of commercial forest land, by stand-size and ownership class, and Forest Survey Unit

14. Area of commercial forest land, by stand-volume and ownership class
15. Area of commercial forest land, by stocking class based on selected stand components
16. Area of commercial forest land, by area-condition and ownership class
17. Area of commercial forest land, by site and ownership class
18. Area of commercial forest land, by forest type and ownership class
19. Area of noncommercial forest land, by forest type
20. Area of land and forest land, by county
21. Area of commercial forest land, by forest type, stand-size class, and Forest Survey Unit
22. Area of commercial forest land, by forest type and stand-age class
23. Area of commercial forest land, by forest type and area-condition class
24. Area of commercial forest land, by forest type and site-index class
25. Area of commercial forest land, by stocking class of growing-stock trees and stand-size class
26. Area of commercial forest land, by forest type and basal area class
27. Area of commercial forest land, by forest type, stand-size, and site class
28. Area of commercial forest land, by county and stand-size class
29. Area of commercial forest land, by county and forest type
30. Area of noncommercial forest land, by ownership class

<sup>29</sup> Tables containing growth, mortality, removals, and forest industry information are dated 1967. Tables containing forest area and timber inventory information are dated 1968 and represent conditions as of January 1, 1968, following changes to the area and inventory estimated to have occurred during calendar year 1967.

### *Number of trees:*

31. Number of live trees on commercial forest land, by species and diameter class

32. Number of growing-stock trees on commercial forest land, by species and diameter class

33. Number of growing-stock trees on commercial forest land, by species group, diameter class, and Forest Survey Unit

34. Number of short-log trees on commercial forest land, by species and diameter class

35. Percentage of sawtimber trees on commercial forest land, by butt-log grade and species

### *Volume:*

36. Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods

37. Net volume of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods

38. Net volume of growing stock on commercial forest land, by species and diameter class

39. Net volume of sawtimber on commercial forest land, by species and diameter class

40. Net volume of growing stock on commercial forest land, by species and Forest Survey Unit

41. Net volume of sawtimber on commercial forest land, by species and Forest Survey Unit

42. Net volume of growing stock on commercial forest land, by species and forest type

43. Net volume of sawtimber on commercial forest land, by species and forest type

44. Net volume of growing stock on commercial forest land, by county and species group

45. Net volume of sawtimber on commercial forest land, by county and species group

46. Net volume of growing stock, sawtimber, and rough, rotten, and short-log trees (cull) on commercial forest land, by species

47. Net volume of timber in rough, rotten, and short-log (cull) trees on commercial forest land, by species and cull tree class

48. Net volume of short-log trees on commercial forest land, by species and diameter class

### *Growth and removals:*

49. Net annual growth of growing stock on commercial forest land, by species and diameter class

50. Net annual growth of sawtimber on commercial forest land, by species and diameter class

51. Net annual growth of growing stock on commercial forest land, by species and Forest Survey Unit

52. Net annual growth of sawtimber on commercial forest land, by species and Forest Survey Unit

53. Timber removals from growing stock on commercial forest land, by item and softwoods and hardwoods

54. Timber removals from sawtimber on commercial forest land, by item and softwoods and hardwoods

55. Timber removals from growing stock on commercial forest land, by species and Forest Survey Unit

56. Timber removals from sawtimber on commercial forest land, by species and Forest Survey Unit

57. Net annual growth and removals of growing stock on commercial forest land, by species

58. Net annual growth and removals of sawtimber on commercial forest land, by species

59. Net annual growth and removals of growing stock on commercial forest land, by ownership class and softwoods and hardwoods

60. Net annual growth and removals of sawtimber on commercial forest land, by ownership class and softwoods and hardwoods



## Mortality:

61. Annual mortality of growing stock and sawtimber on commercial forest land, by species

62. Annual mortality of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods

63. Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods

## Utilization:

64. Output of timber products, by source of material and softwoods and hardwoods

65. Output of roundwood products, by source and softwoods and hardwoods

66. A comparison of the number of primary wood-using plants operating in 1956 and 1967, by Forest Survey Unit

67. Volume of unused residues at primary manufacturing plants, by industry, type of residue, and softwoods and hardwoods

68. Value of timber products to producer, by Forest Survey Unit

## Projections:

69. Removals, net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and low removals option projections to 1998

70. Removals, net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and high removals option projections to 1998

Table 11. — Area by land class and Forest Survey Unit, Wisconsin, 1968  
(Thousand acres)

| Land class               | All<br>units | Northeastern | Northwestern | Central | Southwestern | Southeastern |
|--------------------------|--------------|--------------|--------------|---------|--------------|--------------|
| Forest land:             |              |              |              |         |              |              |
| Commercial               | 14,536.8     | 4,062.0      | 5,246.4      | 2,831.8 | 1,493.1      | 903.5        |
| Productive reserved      | 34.2         | 1.8          | 5.5          | 3.9     | 12.3         | 10.7         |
| Unproductive             | 374.4        | 151.2        | 178.9        | 21.7    | 7.0          | 15.6         |
| Total                    | 14,945.4     | 4,215.0      | 5,430.8      | 2,857.4 | 1,512.4      | 929.8        |
| Nonforest land:          |              |              |              |         |              |              |
| Cropland <sup>1/</sup>   | 12,043.3     | 751.4        | 1,043.0      | 2,489.7 | 2,935.5      | 4,823.7      |
| Pasture and range        | 1,845.1      | 86.6         | 243.2        | 423.3   | 743.3        | 348.7        |
| Other <sup>2/</sup>      | 6,024.7      | 628.8        | 1,220.5      | 1,430.9 | 987.9        | 1,756.6      |
| Total                    | 19,913.1     | 1,466.8      | 2,506.7      | 4,343.9 | 4,666.7      | 6,929.0      |
| Total area <sup>3/</sup> | 34,858.5     | 5,681.8      | 7,937.5      | 7,201.3 | 6,179.1      | 7,858.8      |

<sup>1/</sup> Source: 1964 Census of Agriculture.

<sup>2/</sup> Includes swampland, industrial and urban areas, other nonforest land, and 138,400 acres, classed as water by forest survey standards, but defined by the Bureau of the Census as land.

<sup>3/</sup> Source: United States Bureau of the Census, Land and Water Area of the United States, 1960.

Table 12. -- Area of commercial forest land, by ownership class and Forest Survey Unit,  
Wisconsin, 1968  
(Thousand acres)

| Ownership class               | : All<br>: units | : Northeastern | : Northwestern | : Central | : Southwestern | : Southeastern |
|-------------------------------|------------------|----------------|----------------|-----------|----------------|----------------|
| National Forest               | 1,317.7          | 575.9          | 741.8          | --        | --             | --             |
| Other Federal:                |                  |                |                |           |                |                |
| Indian                        | 156.5            | 53.5           | 97.5           | 4.0       | 0.2            | 1.3            |
| Miscellaneous Federal         | 118.3            | 9.9            | 1.4            | 83.4      | 14.1           | 9.5            |
| Total other Federal           | 274.8            | 63.4           | 98.9           | 87.4      | 14.3           | 10.8           |
| State                         | 568.0            | 210.3          | 185.8          | 105.9     | 20.0           | 46.0           |
| County and municipal          | 2,365.7          | 665.2          | 1,281.7        | 405.4     | 4.3            | 9.1            |
| Forest industry <sup>1/</sup> | 1,368.1          | 743.8          | 508.9          | 105.7     | 6.5            | 3.2            |
| Farmer-owned                  | 4,809.0          | 495.7          | 1,174.3        | 1,283.0   | 1,234.4        | 621.6          |
| Miscellaneous private:        |                  |                |                |           |                |                |
| Individual                    | 3,343.3          | 1,146.8        | 1,088.8        | 756.2     | 179.6          | 171.9          |
| Corporate                     | 490.2            | 160.9          | 166.2          | 88.2      | 34.0           | 40.9           |
| Total miscellaneous private   | 3,833.5          | 1,307.7        | 1,255.0        | 844.4     | 213.6          | 212.8          |
| All ownerships                | 14,536.8         | 4,062.0        | 5,246.4        | 2,831.8   | 1,493.1        | 903.5          |

<sup>1/</sup> Not including 60.6 thousand acres of farmer-owned and miscellaneous private lands leased to forest industry.

Table 13. — Area of commercial forest land, by stand-size and ownership class, and Forest Survey Unit, Wisconsin, 1968  
(Thousand acres)

| Stand-size class     | All<br>ownerships | National<br>Forest | Other<br>public | Forest<br>industry | Farmer and<br>miscellaneous<br>private |
|----------------------|-------------------|--------------------|-----------------|--------------------|----------------------------------------|
| All units:           |                   |                    |                 |                    |                                        |
| Sawtimber            | 3,098.4           | 84.3               | 406.6           | 346.2              | 2,261.3                                |
| Poletimber           | 6,579.5           | 749.2              | 1,636.5         | 599.0              | 3,594.8                                |
| Sapling and seedling | 4,489.2           | 420.2              | 1,101.6         | 418.1              | 2,549.3                                |
| Nonstocked areas     | 369.7             | 64.0               | 63.8            | 4.8                | 237.1                                  |
| All classes          | 14,536.8          | 1,317.7            | 3,208.5         | 1,368.1            | 8,642.5                                |
| Northeastern unit:   |                   |                    |                 |                    |                                        |
| Sawtimber            | 721.5             | 62.5               | 85.3            | 267.1              | 306.6                                  |
| Poletimber           | 2,010.1           | 339.7              | 506.8           | 295.4              | 868.2                                  |
| Sapling and seedling | 1,276.2           | 158.5              | 332.5           | 178.6              | 606.6                                  |
| Nonstocked areas     | 54.2              | 15.2               | 14.3            | 2.7                | 22.0                                   |
| All classes          | 4,062.0           | 575.9              | 938.9           | 743.8              | 1,803.4                                |
| Northwestern unit:   |                   |                    |                 |                    |                                        |
| Sawtimber            | 642.6             | 21.8               | 244.0           | 52.9               | 323.9                                  |
| Poletimber           | 2,829.3           | 409.5              | 827.9           | 263.0              | 1,328.9                                |
| Sapling and seedling | 1,642.2           | 261.7              | 468.8           | 190.9              | 720.8                                  |
| Nonstocked areas     | 132.3             | 48.8               | 25.7            | 2.1                | 55.7                                   |
| All classes          | 5,246.4           | 741.8              | 1,566.4         | 508.9              | 2,429.3                                |
| Central unit:        |                   |                    |                 |                    |                                        |
| Sawtimber            | 551.8             | --                 | 44.0            | 20.4               | 487.4                                  |
| Poletimber           | 1,100.6           | --                 | 272.2           | 37.6               | 790.8                                  |
| Sapling and seedling | 1,078.4           | --                 | 264.2           | 47.7               | 766.5                                  |
| Nonstocked areas     | 101.0             | --                 | 18.3            | --                 | 82.7                                   |
| All classes          | 2,831.8           | --                 | 598.7           | 105.7              | 2,127.4                                |
| Southwestern unit:   |                   |                    |                 |                    |                                        |
| Sawtimber            | 803.3             | --                 | 14.7            | 4.3                | 784.3                                  |
| Poletimber           | 402.6             | --                 | 12.0            | 2.2                | 388.4                                  |
| Sapling and seedling | 238.1             | --                 | 10.4            | --                 | 227.7                                  |
| Nonstocked areas     | 49.1              | --                 | 1.5             | --                 | 47.6                                   |
| All classes          | 1,493.1           | --                 | 38.6            | 6.5                | 1,448.0                                |
| Southeastern unit:   |                   |                    |                 |                    |                                        |
| Sawtimber            | 379.2             | --                 | 18.6            | 1.5                | 359.1                                  |
| Poletimber           | 236.9             | --                 | 17.6            | .8                 | 218.5                                  |
| Sapling and seedling | 254.3             | --                 | 25.7            | .9                 | 227.7                                  |
| Nonstocked areas     | 33.1              | --                 | 4.0             | --                 | 29.1                                   |
| All classes          | 903.5             | --                 | 65.9            | 3.2                | 834.4                                  |

Table 14. – Area of commercial forest land, by stand-volume and ownership class, Wisconsin, 1968  
(Thousand acres)

| Stand volume per :<br>acre <sup>1/</sup><br>(board feet) | All :<br>ownerships | National :<br>Forest | Other :<br>public | Forest :<br>industry | Farmer and :<br>miscellaneous<br>private |
|----------------------------------------------------------|---------------------|----------------------|-------------------|----------------------|------------------------------------------|
| Less than 1,500                                          | 9,928.2             | 894.5                | 2,461.3           | 815.1                | 5,757.3                                  |
| 1,500 to 5,000                                           | 3,606.8             | 353.4                | 603.6             | 354.8                | 2,295.0                                  |
| More than 5,000                                          | 1,001.8             | 69.8                 | 143.6             | 198.2                | 590.2                                    |
| All classes                                              | 14,536.8            | 1,317.7              | 3,208.5           | 1,368.1              | 8,642.5                                  |

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

Table 15. – Area of commercial forest land, by stocking class based on selected stand components, Wisconsin, 1968  
(Thousand acres)

| Stocking :<br>percentage | Stocking classified in terms of |                     |           |            |                             |                            |
|--------------------------|---------------------------------|---------------------|-----------|------------|-----------------------------|----------------------------|
|                          | All :<br>trees                  | Growing-stock trees |           |            | Rough and :<br>rotten trees | Inhibiting :<br>vegetation |
|                          |                                 | Total               | Desirable | Acceptable |                             |                            |
| 160+                     | 168.2                           | 55.3                | --        | 7.1        | --                          | --                         |
| 150 to 160               | 184.2                           | 49.0                | --        | 10.6       | --                          | --                         |
| 140 to 150               | 565.8                           | 160.7               | --        | 93.0       | --                          | --                         |
| 133 to 140               | 733.9                           | 256.3               | --        | 148.7      | 1.4                         | --                         |
| 130 to 133               | 408.5                           | 142.7               | --        | 82.7       | .8                          | --                         |
| 120 to 130               | 1,526.1                         | 596.5               | --        | 454.7      | --                          | --                         |
| 110 to 120               | 1,907.5                         | 957.2               | 8.0       | 841.7      | --                          | --                         |
| 100 to 110               | 2,106.5                         | 1,228.3             | 20.8      | 1,210.6    | 18.5                        | --                         |
| 90 to 100                | 2,002.6                         | 1,364.2             | 60.9      | 1,407.3    | 43.8                        | 17.7                       |
| 80 to 90                 | 1,472.2                         | 1,497.8             | 72.4      | 1,650.2    | 95.6                        | 13.3                       |
| 70 to 80                 | 1,250.4                         | 1,554.0             | 54.7      | 1,629.2    | 186.2                       | 7.5                        |
| 60 to 70                 | 788.4                           | 1,621.8             | 58.0      | 1,647.3    | 456.0                       | 9.8                        |
| 50 to 60                 | 478.9                           | 1,416.8             | 166.1     | 1,536.3    | 847.2                       | 45.5                       |
| 40 to 50                 | 352.0                           | 1,074.2             | 104.2     | 1,128.4    | 1,370.6                     | 74.0                       |
| 30 to 40                 | 255.3                           | 1,050.2             | 142.2     | 1,128.1    | 1,984.1                     | 94.4                       |
| 20 to 30                 | 117.6                           | 703.7               | 233.0     | 723.9      | 2,852.0                     | 167.9                      |
| 17 to 20                 | 34.6                            | 194.9               | 230.7     | 205.3      | 1,524.5                     | 140.5                      |
| 10 to 17                 | 41.3                            | 232.9               | 275.7     | 245.3      | 1,821.7                     | 167.9                      |
| Less than 10             | 142.8                           | 380.3               | 13,110.1  | 386.4      | 3,334.4                     | 13,798.3                   |
| Total                    | 14,536.8                        | 14,536.8            | 14,536.8  | 14,536.8   | 14,536.8                    | 14,536.8                   |

Table 16. – Area of commercial forest land, by area-condition and ownership class, Wisconsin, 1968  
(Thousand acres)

| Area-condition :<br>class | All :<br>ownerships | National :<br>Forest | Other :<br>public | Forest :<br>industry | Farmer and :<br>miscellaneous<br>private |
|---------------------------|---------------------|----------------------|-------------------|----------------------|------------------------------------------|
| 10                        | 16.4                | 16.4                 | --                | --                   | --                                       |
| 20                        | 28.8                | 28.8                 | --                | --                   | --                                       |
| 30                        | 229.9               | 227.4                | --                | 0.2                  | 2.3                                      |
| 40                        | 482.8               | 480.4                | --                | --                   | 2.4                                      |
| 50                        | 3,344.3             | 416.1                | 723.6             | 532.4                | 1,672.2                                  |
| 60                        | 5,700.4             | 84.6                 | 1,497.2           | 570.4                | 3,548.2                                  |
| 70                        | 4,734.2             | 64.0                 | 987.7             | 265.1                | 3,417.4                                  |
| All classes               | 14,536.8            | 1,317.7              | 3,208.5           | 1,368.1              | 8,642.5                                  |

Table 17. — Area of commercial forest land, by site and ownership class,  
Wisconsin, 1968  
(Thousand acres)

| Site class<br>(cubic feet) | All<br>owners | National<br>Forest | Other<br>public | Forest<br>industry | Farmer and<br>miscellaneous<br>private |
|----------------------------|---------------|--------------------|-----------------|--------------------|----------------------------------------|
| 165 or more                | 15.3          | 1.8                | 1.7             | 0.3                | 11.5                                   |
| 120 to 165                 | 168.7         | 17.5               | 39.7            | 28.1               | 83.4                                   |
| 85 to 120                  | 1,489.5       | 206.2              | 304.0           | 134.7              | 844.6                                  |
| 50 to 85                   | 5,189.1       | 733.4              | 1,208.4         | 491.1              | 2,756.2                                |
| Less than 50               | 7,674.2       | 358.8              | 1,654.7         | 713.9              | 4,946.8                                |
| All classes                | 14,536.8      | 1,317.7            | 3,208.5         | 1,368.1            | 8,642.5                                |

Table 18. — Area of commercial forest land, by forest types and owner-  
ship class, Wisconsin, 1968  
(Thousand acres)

| Forest types            | All<br>ownerships | National<br>Forest | Other<br>public | Forest<br>industry | Farmer and<br>miscellaneous<br>private |
|-------------------------|-------------------|--------------------|-----------------|--------------------|----------------------------------------|
| Jack pine               | 727.6             | 57.3               | 249.3           | 113.0              | 308.0                                  |
| Red pine                | 310.2             | 77.6               | 79.9            | 37.6               | 115.1                                  |
| White pine              | 177.6             | 19.5               | 37.3            | 18.2               | 102.6                                  |
| Balsam fir-white spruce | 628.0             | 116.4              | 155.1           | 96.9               | 259.6                                  |
| Black spruce            | 235.9             | 30.4               | 56.4            | 46.9               | 102.2                                  |
| Northern white-cedar    | 302.4             | 83.5               | 47.1            | 31.0               | 140.8                                  |
| Tamarack                | 222.2             | 7.9                | 59.4            | 13.8               | 141.1                                  |
| Oak-hickory             | 2,664.9           | 29.5               | 326.0           | 86.5               | 2,222.9                                |
| Elm-ash-cottonwood      | 1,157.6           | 41.5               | 267.1           | 101.3              | 747.7                                  |
| Maple-beech-birch       | 3,521.6           | 417.6              | 603.7           | 468.3              | 2,032.0                                |
| Aspen                   | 3,664.6           | 324.3              | 1,116.2         | 303.1              | 1,921.0                                |
| Paper birch             | 554.5             | 48.2               | 147.2           | 46.7               | 312.4                                  |
| Nonstocked              | 369.7             | 64.0               | 63.8            | 4.8                | 237.1                                  |
| All types               | 14,536.8          | 1,317.7            | 3,208.5         | 1,368.1            | 8,642.5                                |

Table 19. — Area of noncommercial forest land, by forest  
type, Wisconsin, 1968  
(Thousand acres)

| Forest type             | All<br>areas | Productive<br>reserve<br>areas | Unproductive<br>areas |
|-------------------------|--------------|--------------------------------|-----------------------|
| Jack pine               | 5.4          | 0.5                            | 4.9                   |
| Red pine                | 4.5          | 2.2                            | 2.3                   |
| White pine              | 2.5          | .2                             | 2.3                   |
| Balsam fir-white spruce | 22.2         | .6                             | 21.6                  |
| Black spruce            | 127.2        | --                             | 127.2                 |
| Northern white-cedar    | 16.5         | --                             | 16.5                  |
| Tamarack                | 53.8         | --                             | 53.8                  |
| Oak-hickory             | 25.3         | 13.9                           | 11.4                  |
| Elm-ash-cottonwood      | 104.3        | 1.7                            | 102.6                 |
| Maple-beech-birch       | 10.3         | 7.4                            | 2.9                   |
| Aspen                   | 21.5         | 6.7                            | 14.8                  |
| Paper birch             | 2.4          | --                             | 2.4                   |
| Nonstocked              | 12.7         | 1.0                            | 11.7                  |
| All types               | 408.6        | 34.2                           | 374.4                 |



Table 20. — Area of land and forest land by county, Wisconsin, 1968

| County                       | Land<br>area | Forest land |            |            | Commercial forest<br>as a percent of<br>land area |
|------------------------------|--------------|-------------|------------|------------|---------------------------------------------------|
|                              |              | All         | Non-       | Commercial |                                                   |
|                              |              | forest      | commercial |            |                                                   |
| ----- (Thousand acres) ----- |              |             |            |            | (percent)                                         |
| Adams                        | 413.6        | 252.9       | 2.1        | 250.8      | 61                                                |
| Ashland                      | 664.2        | 548.0       | 21.4       | 526.6      | 79                                                |
| Barron                       | 553.1        | 155.0       | 2.1        | 152.9      | 28                                                |
| Bayfield                     | 934.3        | 789.5       | 12.2       | 777.3      | 83                                                |
| Brown                        | 335.6        | 37.6        | .7         | 36.9       | 11                                                |
| Buffalo                      | 454.8        | 166.9       | 1.0        | 165.9      | 36                                                |
| Burnett                      | 537.8        | 324.6       | 7.3        | 317.3      | 59                                                |
| Calumet                      | 206.3        | 26.7        | 1.2        | 25.5       | 12                                                |
| Chippewa                     | 651.3        | 213.9       | 2.5        | 211.4      | 32                                                |
| Clark                        | 781.5        | 279.8       | 3.0        | 276.8      | 35                                                |
| Columbia                     | 496.5        | 82.9        | .8         | 82.1       | 16                                                |
| Crawford                     | 363.3        | 131.5       | .7         | 130.8      | 36                                                |
| Dane                         | 766.9        | 74.6        | .3         | 74.3       | 10                                                |
| Dodge                        | 569.0        | 43.5        | .8         | 42.7       | 8                                                 |
| Door                         | 314.5        | 105.2       | 9.0        | 96.2       | 31                                                |
| Douglas                      | 835.0        | 631.9       | 21.0       | 610.9      | 73                                                |
| Dunn                         | 545.8        | 139.3       | .3         | 139.0      | 25                                                |
| Eau Claire                   | 414.3        | 158.9       | 1.4        | 157.5      | 38                                                |
| Florence                     | 311.9        | 269.3       | 6.6        | 262.7      | 84                                                |
| Fond du Lac                  | 463.9        | 50.6        | 1.9        | 48.7       | 10                                                |
| Forest                       | 644.7        | 549.5       | 21.8       | 527.7      | 82                                                |
| Grant                        | 734.1        | 150.5       | 2.9        | 147.6      | 20                                                |
| Green                        | 374.2        | 31.8        | .5         | 31.3       | 8                                                 |
| Green Lake                   | 226.8        | 28.1        | .4         | 27.7       | 12                                                |
| Iowa                         | 487.9        | 123.9       | 3.1        | 120.8      | 25                                                |
| Iron                         | 478.1        | 389.5       | 15.6       | 373.9      | 78                                                |
| Jackson                      | 639.3        | 348.7       | 3.2        | 345.5      | 54                                                |
| Jefferson                    | 361.0        | 33.0        | .9         | 32.1       | 9                                                 |
| Juneau                       | 495.4        | 240.7       | 1.1        | 239.6      | 48                                                |
| Kenosha                      | 174.3        | 9.9         | --         | 9.9        | 6                                                 |
| Kewaunee                     | 211.0        | 32.1        | 1.2        | 30.9       | 15                                                |
| La Crosse                    | 288.5        | 94.7        | .4         | 94.3       | 33                                                |
| Lafayette                    | 411.5        | 34.9        | .3         | 34.6       | 8                                                 |
| Langlade                     | 548.1        | 395.9       | 13.7       | 382.2      | 70                                                |
| Lincoln                      | 570.8        | 413.3       | 14.2       | 399.1      | 70                                                |
| Manitowoc                    | 377.3        | 61.3        | 1.0        | 60.3       | 16                                                |
| Marathon                     | 1,015.2      | 377.8       | 4.0        | 373.8      | 37                                                |
| Marinette                    | 881.8        | 675.7       | 25.8       | 649.9      | 74                                                |
| Marquette                    | 291.2        | 101.2       | 1.3        | 99.9       | 34                                                |
| Milwaukee                    | 151.4        | --          | --         | --         | --                                                |
| Monroe                       | 585.3        | 219.4       | .9         | 218.5      | 37                                                |
| Oconto                       | 640.2        | 365.4       | 7.7        | 357.7      | 56                                                |
| Oneida                       | 711.4        | 604.0       | 37.4       | 566.6      | 80                                                |
| Outagamie                    | 406.0        | 69.9        | .8         | 69.1       | 17                                                |
| Ozaukee                      | 150.8        | 15.1        | .4         | 14.7       | 10                                                |
| Pepin                        | 150.2        | 44.3        | .2         | 44.1       | 29                                                |
| Pierce                       | 377.7        | 62.9        | .3         | 62.6       | 17                                                |
| Polk                         | 595.8        | 222.6       | 4.6        | 218.0      | 37                                                |
| Portage                      | 515.9        | 160.8       | 1.3        | 159.5      | 31                                                |
| Price                        | 806.4        | 655.2       | 47.0       | 608.2      | 75                                                |
| Racine                       | 215.4        | 15.2        | .5         | 14.7       | 7                                                 |
| Richland                     | 373.2        | 104.2       | 1.0        | 103.2      | 28                                                |
| Rock                         | 461.4        | 31.7        | 1.0        | 30.7       | 7                                                 |
| Rusk                         | 579.5        | 336.1       | 7.0        | 329.1      | 57                                                |
| St. Croix                    | 470.3        | 49.9        | .4         | 49.5       | 11                                                |
| Sauk                         | 538.4        | 156.5       | 4.4        | 152.1      | 28                                                |
| Sawyer                       | 806.1        | 644.8       | 23.4       | 621.4      | 77                                                |
| Shawano <sup>1/</sup>        | 818.3        | 496.1       | 10.7       | 485.4      | 59                                                |
| Sheboygan                    | 323.4        | 48.2        | 1.3        | 46.9       | 14                                                |
| Taylor                       | 624.2        | 381.5       | 12.5       | 369.0      | 59                                                |
| Trempealeau                  | 470.3        | 111.1       | 1.8        | 109.3      | 23                                                |
| Vernon                       | 513.1        | 141.8       | 2.5        | 139.3      | 27                                                |
| Vilas                        | 554.6        | 445.8       | 15.1       | 430.7      | 78                                                |
| Walworth                     | 356.2        | 26.6        | 1.0        | 25.6       | 7                                                 |
| Washburn                     | 523.0        | 352.1       | 10.3       | 341.8      | 65                                                |
| Washington                   | 274.5        | 36.8        | .7         | 36.1       | 13                                                |
| Waukesha                     | 355.5        | 47.9        | 1.5        | 46.4       | 13                                                |
| Waupaca                      | 480.3        | 166.4       | 2.2        | 164.2      | 34                                                |
| Waushara                     | 401.5        | 119.3       | 1.0        | 118.3      | 29                                                |
| Winnebago                    | 286.9        | 21.1        | .4         | 20.7       | 7                                                 |
| Wood                         | 516.5        | 217.6       | 1.6        | 216.0      | 42                                                |
| Total                        | 34,858.5     | 14,945.4    | 408.6      | 14,536.8   | 42                                                |

<sup>1/</sup> Shawano county includes Menominee county.

Table 21. — Area of commercial forest land, by forest type, stand-size class, and Forest Survey Unit, Wisconsin, 1968  
(Thousand acres)

| Forest type             | All stands | Sawtimber stands | Poietimber stands | Sapling and seedling stands | Non-stocked areas |
|-------------------------|------------|------------------|-------------------|-----------------------------|-------------------|
| All Units:              |            |                  |                   |                             |                   |
| Jack pine               | 727.6      | 45.0             | 360.3             | 322.3                       | --                |
| Red pine                | 310.2      | 46.8             | 90.6              | 172.8                       | --                |
| White pine              | 177.6      | 115.6            | 25.7              | 36.3                        | --                |
| Balsam fir-white spruce | 628.0      | 48.9             | 345.2             | 233.9                       | --                |
| Black spruce            | 235.9      | 6.8              | 40.4              | 188.7                       | --                |
| Northern white-cedar    | 302.4      | 43.7             | 180.7             | 78.0                        | --                |
| Tamarack                | 222.2      | 4.8              | 89.5              | 127.9                       | --                |
| Oak-hickory             | 2,664.9    | 1,028.3          | 1,046.3           | 590.3                       | --                |
| Elm-ash-cottonwood      | 1,157.6    | 345.0            | 498.2             | 314.4                       | --                |
| Maple-beech-birch       | 3,521.6    | 1,254.8          | 1,599.9           | 666.9                       | --                |
| Aspen                   | 3,664.6    | 138.8            | 1,937.8           | 1,588.0                     | --                |
| Paper birch             | 554.5      | 19.9             | 364.9             | 169.7                       | --                |
| Nonstocked              | 369.7      | --               | --                | --                          | 369.7             |
| All types               | 14,536.8   | 3,098.4          | 6,579.5           | 4,489.2                     | 369.7             |
| Northeastern Unit:      |            |                  |                   |                             |                   |
| Jack pine               | 130.7      | 18.3             | 68.9              | 43.5                        | --                |
| Red pine                | 122.2      | 24.9             | 30.4              | 66.9                        | --                |
| White pine              | 64.1       | 46.1             | 7.0               | 11.0                        | --                |
| Balsam fir-white spruce | 310.0      | 29.2             | 158.4             | 122.4                       | --                |
| Black spruce            | 132.1      | 5.9              | 21.0              | 105.2                       | --                |
| Northern white-cedar    | 166.8      | 14.1             | 107.6             | 45.1                        | --                |
| Tamarack                | 68.6       | --               | 33.8              | 34.8                        | --                |
| Oak-hickory             | 212.2      | 51.3             | 100.3             | 60.6                        | --                |
| Elm-ash-cottonwood      | 261.4      | 81.1             | 118.2             | 62.1                        | --                |
| Maple-beech-birch       | 1,189.1    | 407.7            | 578.3             | 203.1                       | --                |
| Aspen                   | 1,196.0    | 32.1             | 673.7             | 490.2                       | --                |
| Paper birch             | 154.6      | 10.8             | 112.5             | 31.3                        | --                |
| Nonstocked              | 54.2       | --               | --                | --                          | 54.2              |
| All types               | 4,062.0    | 721.5            | 2,010.1           | 1,276.2                     | 54.2              |
| Northwestern Unit:      |            |                  |                   |                             |                   |
| Jack pine               | 319.4      | 13.4             | 183.6             | 122.4                       | --                |
| Red pine                | 91.8       | 14.4             | 30.6              | 46.8                        | --                |
| White pine              | 45.7       | 30.6             | 12.7              | 2.4                         | --                |
| Balsam fir-white spruce | 298.5      | 19.7             | 175.2             | 103.6                       | --                |
| Black spruce            | 94.8       | .9               | 19.4              | 74.5                        | --                |
| Northern white-cedar    | 74.0       | 21.1             | 41.5              | 11.4                        | --                |
| Tamarack                | 101.5      | 1.8              | 45.5              | 54.2                        | --                |
| Oak-hickory             | 443.5      | 77.7             | 258.9             | 106.9                       | --                |
| Elm-ash-cottonwood      | 419.7      | 83.5             | 230.4             | 105.8                       | --                |
| Maple-beech-birch       | 1,380.5    | 319.9            | 772.5             | 288.1                       | --                |
| Aspen                   | 1,604.4    | 58.1             | 876.4             | 669.9                       | --                |
| Paper birch             | 240.3      | 1.5              | 182.6             | 56.2                        | --                |
| Nonstocked              | 132.3      | --               | --                | --                          | 132.3             |
| All types               | 5,246.4    | 642.6            | 2,829.3           | 1,642.2                     | 132.3             |

(Continued on next page)

Table 21 continued

| Forest type             | All<br>stands | Sawtimber<br>stands | Poletimber<br>stands | Sapling and<br>seedling<br>stands | Non-<br>stocked<br>areas |
|-------------------------|---------------|---------------------|----------------------|-----------------------------------|--------------------------|
| Central Unit:           |               |                     |                      |                                   |                          |
| Jack pine               | 255.7         | 13.3                | 103.1                | 139.3                             | --                       |
| Red pine                | 68.6          | 7.5                 | 20.1                 | 41.0                              | --                       |
| White pine              | 59.5          | 35.6                | 6.0                  | 17.9                              | --                       |
| Balsam fir-white spruce | 14.1          | --                  | 8.9                  | 5.2                               | --                       |
| Black spruce            | 9.0           | --                  | --                   | 9.0                               | --                       |
| Northern white-cedar    | 11.1          | --                  | 8.3                  | 2.8                               | --                       |
| Tamarack                | 43.6          | 3.0                 | 4.8                  | 35.8                              | --                       |
| Oak-hickory             | 861.6         | 217.9               | 375.5                | 268.2                             | --                       |
| Elm-ash-cottonwood      | 217.5         | 69.4                | 70.3                 | 77.8                              | --                       |
| Maple-beech-birch       | 390.6         | 175.4               | 136.4                | 78.8                              | --                       |
| Aspen                   | 688.4         | 23.9                | 326.4                | 338.1                             | --                       |
| Paper birch             | 111.1         | 5.8                 | 40.8                 | 64.5                              | --                       |
| Nonstocked              | 101.0         | --                  | --                   | --                                | 101.0                    |
| All types               | 2,831.8       | 551.8               | 1,100.6              | 1,078.4                           | 101.0                    |
| Southwestern Unit:      |               |                     |                      |                                   |                          |
| Jack pine               | 21.8          | --                  | 4.7                  | 17.1                              | --                       |
| Red pine                | 23.4          | --                  | 7.9                  | 15.5                              | --                       |
| White pine              | 2.6           | 2.6                 | --                   | --                                | --                       |
| Balsam fir-white spruce | --            | --                  | --                   | --                                | --                       |
| Black spruce            | --            | --                  | --                   | --                                | --                       |
| Northern white-cedar    | --            | --                  | --                   | --                                | --                       |
| Tamarack                | --            | --                  | --                   | --                                | --                       |
| Oak-hickory             | 867.9         | 502.6               | 260.3                | 105.0                             | --                       |
| Elm-ash-cottonwood      | 93.7          | 58.6                | 13.1                 | 22.0                              | --                       |
| Maple-beech-birch       | 324.9         | 219.2               | 65.7                 | 40.0                              | --                       |
| Aspen                   | 75.0          | 20.3                | 24.6                 | 30.1                              | --                       |
| Paper birch             | 34.7          | --                  | 26.3                 | 8.4                               | --                       |
| Nonstocked              | 49.1          | --                  | --                   | --                                | 49.1                     |
| All types               | 1,493.1       | 803.3               | 402.6                | 238.1                             | 49.1                     |
| Southeastern Unit:      |               |                     |                      |                                   |                          |
| Jack pine               | --            | --                  | --                   | --                                | --                       |
| Red pine                | 4.2           | --                  | 1.6                  | 2.6                               | --                       |
| White pine              | 5.7           | .7                  | --                   | 5.0                               | --                       |
| Balsam fir-white spruce | 5.4           | --                  | 2.7                  | 2.7                               | --                       |
| Black spruce            | --            | --                  | --                   | --                                | --                       |
| Northern white-cedar    | 50.5          | 8.5                 | 23.3                 | 18.7                              | --                       |
| Tamarack                | 8.5           | --                  | 5.4                  | 3.1                               | --                       |
| Oak-hickory             | 279.7         | 178.8               | 51.3                 | 49.6                              | --                       |
| Elm-ash-cottonwood      | 165.3         | 52.4                | 66.2                 | 46.7                              | --                       |
| Maple-beech-birch       | 236.5         | 132.6               | 47.0                 | 56.9                              | --                       |
| Aspen                   | 100.8         | 4.4                 | 36.7                 | 59.7                              | --                       |
| Paper birch             | 13.8          | 1.8                 | 2.7                  | 9.3                               | --                       |
| Nonstocked              | 33.1          | --                  | --                   | --                                | 33.1                     |
| All types               | 903.5         | 379.2               | 236.9                | 254.3                             | 33.1                     |

Table 22. — Area of commercial forest land, by forest type and stand-age class, Wisconsin,  
1968  
(Thousand acres)

| Forest type             | All<br>ages | Stand-age class (years) |         |         |         |         |         |       |       |       |       |       |       |  |
|-------------------------|-------------|-------------------------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-------|-------|--|
|                         |             | 0-                      | 10-     | 20-     | 30-     | 40-     | 50-     | 60-   | 70-   | 80-   | 90-   | 100-  | 120+  |  |
|                         |             | 9                       | 19      | 29      | 39      | 49      | 59      | 69    | 79    | 89    | 99    | 109   |       |  |
| Jack pine               | 747.6       | 70.2                    | 131.7   | 193.6   | 192.0   | 94.1    | 33.2    | 12.6  | 0.2   | --    | --    | --    | --    |  |
| Red pine                | 310.2       | 85.9                    | 70.4    | 82.0    | 25.6    | 9.1     | 13.3    | 13.4  | 3.0   | 4.7   | 2.8   | --    | --    |  |
| White pine              | 177.6       | 11.3                    | 13.0    | 12.9    | 16.8    | 21.5    | 17.7    | 24.8  | 14.1  | 18.8  | 6.4   | 7.6   | 12.7  |  |
| Balsam fir-white spruce | 628.0       | 36.1                    | 71.6    | 75.3    | 111.3   | 178.4   | 101.8   | 25.6  | 14.2  | 2.3   | 5.0   | 4.2   | 2.2   |  |
| Black spruce            | 235.9       | 4.9                     | 11.5    | 23.1    | 51.4    | 55.5    | 46.1    | 24.2  | 8.5   | .7    | 2.3   | 6.0   | 1.7   |  |
| Northern white-cedar    | 302.4       | 1.5                     | 8.9     | 15.3    | 21.3    | 36.4    | 39.2    | 50.0  | 24.6  | 44.4  | 10.4  | 21.6  | 28.8  |  |
| Tamarack                | 222.2       | 37.7                    | 35.9    | 17.8    | 11.3    | 37.5    | 35.2    | 22.5  | 12.9  | 3.8   | 5.9   | 1.7   | --    |  |
| Oak-hickory             | 2,664.9     | 267.8                   | 154.6   | 136.5   | 362.3   | 409.9   | 316.7   | 234.9 | 186.8 | 182.3 | 145.7 | 178.5 | 88.9  |  |
| Elm-ash-cottonwood      | 1,157.6     | 116.1                   | 78.6    | 97.1    | 150.6   | 130.2   | 156.7   | 154.2 | 74.3  | 70.2  | 45.4  | 56.5  | 27.7  |  |
| Maple-beech-birch       | 3,521.6     | 179.6                   | 176.7   | 221.4   | 434.1   | 634.1   | 551.9   | 300.1 | 230.0 | 192.0 | 163.0 | 192.5 | 246.2 |  |
| Aspen                   | 3,664.6     | 714.4                   | 585.8   | 509.4   | 1,069.4 | 594.8   | 136.7   | 36.9  | 8.6   | 4.3   | 4.3   | --    | --    |  |
| Paper birch             | 554.5       | 52.4                    | 51.7    | 72.2    | 131.2   | 137.4   | 80.8    | 18.7  | 2.3   | 6.3   | --    | 1.5   | --    |  |
| Nonstocked              | 369.7       | 168.9                   | 38.1    | 33.5    | 33.4    | 23.5    | 21.3    | 9.7   | 22.3  | 7.5   | 2.8   | 8.7   | --    |  |
| All types               | 14,536.8    | 1,746.8                 | 1,428.5 | 1,490.1 | 2,610.7 | 2,362.4 | 1,550.6 | 927.6 | 601.8 | 537.3 | 394.0 | 478.8 | 408.2 |  |

Table 23. — Area of commercial forest land, by forest type and area-condition class,  
Wisconsin, 1968  
(Thousand acres)

| Forest type             | All area   | Class |      |       |       |         |         |         |  |
|-------------------------|------------|-------|------|-------|-------|---------|---------|---------|--|
|                         | conditions | 10    | 20   | 30    | 40    | 50      | 60      | 70      |  |
| Jack pine               | 727.6      | --    | 0.6  | 5.1   | 12.8  | 138.4   | 332.5   | 238.2   |  |
| Red pine                | 310.2      | --    | 1.7  | 20.3  | 17.4  | 98.0    | 128.8   | 44.0    |  |
| White pine              | 177.6      | --    | .5   | 3.8   | 1.1   | 86.1    | 50.8    | 35.3    |  |
| Balsam fir-white spruce | 628.0      | 6.4   | --   | 28.9  | 37.7  | 206.8   | 249.6   | 98.6    |  |
| Black spruce            | 235.9      | --    | 1.2  | 2.7   | 16.3  | 84.4    | 98.6    | 32.7    |  |
| Northern white-cedar    | 302.4      | --    | 7.9  | 17.8  | 35.6  | 130.0   | 84.6    | 26.5    |  |
| Tamarack                | 222.2      | --    | --   | .1    | 7.6   | 42.1    | 110.9   | 61.5    |  |
| Oak-hickory             | 2,664.9    | 2.8   | .3   | 4.9   | 12.2  | 352.7   | 982.0   | 1,310.0 |  |
| Elm-ash-cottonwood      | 1,157.6    | --    | .3   | 4.7   | 26.1  | 227.3   | 429.8   | 469.4   |  |
| Maple-beech-birch       | 3,521.6    | 7.2   | 8.4  | 102.9 | 167.3 | 1,091.5 | 1,411.9 | 732.4   |  |
| Aspen                   | 3,664.6    | --    | 7.3  | 35.7  | 118.1 | 743.7   | 1,605.5 | 1,154.3 |  |
| Paper birch             | 554.5      | --    | .6   | 3.0   | 30.6  | 143.3   | 215.4   | 161.6   |  |
| Nonstocked              | 369.7      | --    | --   | --    | --    | --      | --      | 369.7   |  |
| All types               | 14,536.8   | 16.4  | 28.8 | 229.9 | 482.8 | 3,344.3 | 5,700.4 | 4,734.2 |  |

Table 24. — Area of commercial forest land, by forest type and site-index class, Wisconsin, 1968  
(Thousand acres)

| Forest type             | All sites | Site index class (height in feet at 50 years) |       |         |         |         |         |       |       |
|-------------------------|-----------|-----------------------------------------------|-------|---------|---------|---------|---------|-------|-------|
|                         |           | 20-29                                         | 30-39 | 40-49   | 50-59   | 60-69   | 70-79   | 80-89 | 90-99 |
| Jack pine               | 727.6     | 0.1                                           | 32.9  | 167.8   | 335.9   | 163.2   | 27.7    | --    | --    |
| Red pine                | 310.2     | --                                            | 4.9   | 6.5     | 135.6   | 104.0   | 51.0    | 8.2   | --    |
| White pine              | 177.6     | --                                            | 2.0   | 45.5    | 70.2    | 41.2    | 17.2    | 1.5   | --    |
| Balsam fir-white spruce | 628.0     | 21.4                                          | 78.4  | 145.6   | 248.4   | 102.8   | 30.6    | .8    | --    |
| Black spruce            | 235.9     | 107.4                                         | 85.9  | 33.0    | 8.7     | .9      | --      | --    | --    |
| Northern white-cedar    | 302.4     | 146.5                                         | 102.7 | 37.4    | 11.8    | 4.0     | --      | --    | --    |
| Tamarack                | 222.2     | 31.6                                          | 69.8  | 64.8    | 37.5    | 15.9    | 2.6     | --    | --    |
| Oak-hickory             | 2,664.9   | 6.6                                           | 194.9 | 642.0   | 881.0   | 599.7   | 260.1   | 68.4  | 12.2  |
| Elm-ash-cottonwood      | 1,157.6   | 17.7                                          | 113.6 | 291.3   | 366.0   | 213.5   | 103.7   | 42.0  | 9.8   |
| Maple-beech-birch       | 3,521.6   | --                                            | 52.6  | 328.5   | 1,146.4 | 1,332.0 | 554.1   | 101.9 | 6.1   |
| Aspen                   | 3,664.6   | 2.0                                           | 52.0  | 301.7   | 828.6   | 1,201.0 | 940.3   | 285.7 | 53.3  |
| Paper birch             | 554.5     | 1.9                                           | 20.4  | 51.3    | 165.2   | 212.7   | 83.4    | 19.6  | --    |
| Nonstocked              | 369.7     | 11.2                                          | 75.2  | 118.7   | 94.9    | 54.4    | 15.3    | --    | --    |
| All types               | 14,536.8  | 346.4                                         | 885.3 | 2,234.1 | 4,330.2 | 4,045.3 | 2,086.0 | 528.1 | 81.4  |

Table 25. — Area of commercial forest land, by stocking class of growing-stock trees and stand-size class, Wisconsin, 1968  
(Thousand acres)

| Stocking percentage | All stands | Sawtimber stands | Poletimber stands | Sapling and seedling stands | Nonstocked areas |
|---------------------|------------|------------------|-------------------|-----------------------------|------------------|
| 133 or more         | 521.3      | 142.0            | 296.7             | 82.6                        | --               |
| 100 to 133          | 2,924.7    | 754.0            | 1,618.7           | 552.0                       | --               |
| 60 to 100           | 6,037.8    | 1,209.2          | 3,034.3           | 1,794.3                     | --               |
| 17 to 60            | 4,439.8    | 973.9            | 1,572.1           | 1,893.8                     | --               |
| Less than 17        | 613.2      | 19.3             | 57.7              | 166.5                       | 369.7            |
| All classes         | 14,536.8   | 3,098.4          | 6,579.5           | 4,489.2                     | 369.7            |

Table 26. — Area of commercial forest land, by forest type and basal area class, Wisconsin, 1968  
(Thousand acres)

| Forest type             | All<br>classes | Basal area class (square feet per acre) |           |           |           |           |             |             |             |             |      |
|-------------------------|----------------|-----------------------------------------|-----------|-----------|-----------|-----------|-------------|-------------|-------------|-------------|------|
|                         |                | 0-<br>19                                | 20-<br>39 | 40-<br>59 | 60-<br>79 | 80-<br>99 | 100-<br>119 | 120-<br>139 | 140-<br>159 | 160-<br>179 | 180+ |
| Jack pine               | 727.6          | 68.7                                    | 132.6     | 204.6     | 143.9     | 119.6     | 33.8        | 16.7        | 7.7         | --          | --   |
| Red pine                | 310.2          | 74.4                                    | 55.2      | 46.0      | 34.7      | 30.5      | 30.2        | 21.0        | 4.6         | 8.4         | 5.2  |
| White pine              | 177.6          | 17.2                                    | 7.0       | 33.0      | 23.4      | 31.3      | 23.9        | 19.1        | 7.5         | 11.9        | 3.3  |
| Balsam fir-white spruce | 628.0          | 58.0                                    | 68.6      | 121.8     | 113.1     | 76.4      | 102.3       | 55.6        | 24.5        | 2.7         | 5.0  |
| Black spruce            | 235.9          | 35.8                                    | 50.8      | 74.6      | 34.9      | 22.1      | 9.1         | 8.2         | .4          | --          | --   |
| Northern white-cedar    | 302.4          | 11.7                                    | 14.5      | 16.8      | 46.5      | 37.9      | 31.4        | 60.1        | 26.6        | 28.4        | 28.5 |
| Tamarack                | 222.2          | 58.6                                    | 49.1      | 49.8      | 32.9      | 19.2      | 5.8         | 3.4         | 3.4         | --          | --   |
| Oak-hickory             | 2,664.9        | 121.0                                   | 192.6     | 536.3     | 627.8     | 562.4     | 415.9       | 144.0       | 43.9        | 18.4        | 2.6  |
| Elm-ash-cottonwood      | 1,157.6        | 99.4                                    | 153.6     | 210.5     | 189.1     | 179.0     | 171.6       | 82.3        | 31.6        | 25.7        | 14.8 |
| Maple-beech-birch       | 3,521.6        | 61.7                                    | 178.6     | 453.4     | 581.4     | 811.2     | 781.7       | 353.6       | 210.0       | 59.7        | 30.3 |
| Aspen                   | 3,664.6        | 465.3                                   | 676.1     | 911.3     | 646.6     | 421.9     | 320.0       | 166.1       | 30.2        | 19.9        | 7.2  |
| Paper birch             | 554.5          | 46.1                                    | 95.8      | 92.3      | 99.8      | 97.3      | 75.1        | 41.5        | 4.2         | 2.4         | --   |
| Nonstocked              | 369.7          | 273.4                                   | 52.2      | 30.8      | 11.2      | 2.0       | .1          | --          | --          | --          | --   |
| All types               | 14,536.8       | 1,391.3                                 | 1,726.7   | 2,781.2   | 2,585.3   | 2,410.8   | 2,000.9     | 971.6       | 394.6       | 177.5       | 96.9 |



Table 27. — Area of commercial forest land, by forest type, stand-size, and site class,  
Wisconsin, 1968  
(Thousand acres)

| Forest type and<br>stand-size class | All site<br>classes | 165 cu. ft.<br>or more | 120 to 165<br>cu. ft. | 85 to 120<br>cu. ft. | 50 to 85<br>cu. ft. | Less than<br>50 cu. ft. |
|-------------------------------------|---------------------|------------------------|-----------------------|----------------------|---------------------|-------------------------|
| White-red-jack pine:                |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 207.4               | 3.5                    | 37.4                  | 58.0                 | 77.4                | 31.1                    |
| Poletimber                          | 476.6               | 3.5                    | 3.1                   | 46.5                 | 174.4               | 249.1                   |
| Sapling and seedling                | 531.4               | 4.8                    | 17.2                  | 86.1                 | 161.2               | 262.1                   |
| All stands                          | 1,215.4             | 11.8                   | 57.7                  | 190.6                | 413.0               | 542.3                   |
| Spruce-fir:                         |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 104.2               | --                     | 14.9                  | 21.7                 | 13.1                | 54.5                    |
| Poletimber                          | 655.8               | --                     | 24.1                  | 163.9                | 223.0               | 244.8                   |
| Sapling and seedling                | 628.5               | --                     | 39.1                  | 82.5                 | 168.7               | 338.2                   |
| All stands                          | 1,388.5             | --                     | 78.1                  | 268.1                | 404.8               | 637.5                   |
| Oak-hickory:                        |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 1,025.8             | 2.5                    | --                    | 2.3                  | 224.1               | 796.9                   |
| Poletimber                          | 1,048.8             | --                     | 1.1                   | 8.8                  | 265.6               | 773.3                   |
| Sapling and seedling                | 590.3               | --                     | .2                    | 4.0                  | 64.2                | 521.9                   |
| All stands                          | 2,664.9             | 2.5                    | 1.3                   | 15.1                 | 553.9               | 2,092.1                 |
| Elm-ash-cottonwood:                 |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 345.0               | --                     | 2.2                   | 6.3                  | 84.7                | 251.8                   |
| Poletimber                          | 491.3               | --                     | .7                    | 15.6                 | 51.9                | 423.1                   |
| Sapling and seedling                | 321.3               | --                     | 6.5                   | 5.2                  | 23.5                | 286.1                   |
| All stands                          | 1,157.6             | --                     | 9.4                   | 27.1                 | 160.1               | 961.0                   |
| Maple-beech-birch:                  |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 1,254.8             | --                     | 2.4                   | 70.3                 | 453.4               | 728.7                   |
| Poletimber                          | 1,599.9             | 1.0                    | 7.4                   | 149.7                | 590.4               | 851.4                   |
| Sapling and seedling                | 666.9               | --                     | --                    | 63.2                 | 177.1               | 426.6                   |
| All stands                          | 3,521.6             | 1.0                    | 9.8                   | 283.2                | 1,220.9             | 2,006.7                 |
| Aspen-birch:                        |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 161.2               | --                     | 3.5                   | 52.2                 | 81.6                | 23.9                    |
| Poletimber                          | 2,307.1             | --                     | 6.6                   | 446.1                | 1,325.0             | 529.4                   |
| Sapling and seedling                | 1,750.8             | --                     | --                    | 205.6                | 960.1               | 585.1                   |
| All stands                          | 4,219.1             | --                     | 10.1                  | 703.9                | 2,366.7             | 1,138.4                 |
| Nonstocked                          | 369.7               | --                     | 2.3                   | 1.5                  | 69.7                | 296.2                   |
| All types:                          |                     |                        |                       |                      |                     |                         |
| Sawtimber                           | 3,098.4             | 6.0                    | 60.4                  | 210.8                | 934.3               | 1,886.9                 |
| Poletimber                          | 6,579.5             | 4.5                    | 43.0                  | 830.6                | 2,630.3             | 3,071.1                 |
| Sapling and seedling                | 4,489.2             | 4.8                    | 63.0                  | 446.6                | 1,554.8             | 2,420.0                 |
| Nonstocked                          | 369.7               | --                     | 2.3                   | 1.5                  | 69.7                | 296.2                   |
| All stands                          | 14,536.8            | 15.3                   | 168.7                 | 1,489.5              | 5,189.1             | 7,674.2                 |

Table 28. — Area of commercial forest land, by county and stand-size class, Wisconsin,  
1968  
(Thousand acres)

| County      | All<br>stands | Sawtimber<br>stands | Poletimber<br>stands | Sapling and<br>seedling<br>stands | Nonstocked<br>areas |
|-------------|---------------|---------------------|----------------------|-----------------------------------|---------------------|
| Adams       | 250.8         | 40.9                | 96.5                 | 106.8                             | 6.6                 |
| Ashland     | 526.6         | 57.6                | 296.7                | 159.0                             | 13.3                |
| Barron      | 152.9         | 26.8                | 86.2                 | 35.9                              | 4.0                 |
| Bayfield    | 777.3         | 64.1                | 422.6                | 266.4                             | 24.2                |
| Brown       | 36.9          | 18.1                | 10.3                 | 7.7                               | .8                  |
| Buffalo     | 165.9         | 95.5                | 41.2                 | 24.3                              | 4.9                 |
| Burnett     | 317.3         | 36.8                | 175.2                | 100.2                             | 5.1                 |
| Calumet     | 25.5          | 9.9                 | 6.8                  | 8.0                               | .8                  |
| Chippewa    | 211.4         | 35.1                | 92.7                 | 75.2                              | 8.4                 |
| Clark       | 276.8         | 46.4                | 114.3                | 106.0                             | 10.1                |
| Columbia    | 82.1          | 36.9                | 20.0                 | 23.1                              | 2.1                 |
| Crawford    | 130.8         | 67.5                | 39.0                 | 20.6                              | 3.7                 |
| Dane        | 74.3          | 36.9                | 18.1                 | 17.1                              | 2.2                 |
| Dodge       | 42.7          | 15.2                | 8.6                  | 14.1                              | 4.8                 |
| Door        | 96.2          | 31.5                | 37.6                 | 24.2                              | 2.9                 |
| Douglas     | 610.9         | 60.6                | 316.4                | 221.2                             | 12.7                |
| Dunn        | 139.0         | 71.7                | 36.3                 | 25.6                              | 5.4                 |
| Eau Claire  | 157.5         | 31.3                | 67.8                 | 52.2                              | 6.2                 |
| Florence    | 262.7         | 46.3                | 135.6                | 76.8                              | 4.0                 |
| Fond du Lac | 48.7          | 17.7                | 11.9                 | 17.1                              | 2.0                 |
| Forest      | 527.7         | 81.6                | 292.1                | 144.2                             | 9.8                 |
| Grant       | 147.6         | 76.9                | 43.1                 | 23.0                              | 4.6                 |
| Green       | 31.3          | 17.8                | 6.7                  | 5.9                               | .9                  |
| Green Lake  | 27.7          | 14.4                | 5.3                  | 7.0                               | 1.0                 |
| Iowa        | 120.8         | 51.9                | 35.9                 | 27.4                              | 5.6                 |
| Iron        | 373.9         | 60.0                | 205.1                | 102.6                             | 6.2                 |
| Jackson     | 345.5         | 57.2                | 141.4                | 137.7                             | 9.2                 |
| Jefferson   | 32.1          | 14.6                | 7.7                  | 8.2                               | 1.6                 |
| Juneau      | 239.6         | 51.5                | 94.2                 | 87.2                              | 6.7                 |
| Kenosha     | 9.9           | 4.8                 | 2.2                  | 2.6                               | .3                  |
| Kewaunee    | 30.9          | 12.4                | 8.8                  | 9.6                               | .1                  |
| La Crosse   | 94.3          | 53.9                | 24.6                 | 13.3                              | 2.5                 |
| Lafayette   | 34.6          | 19.3                | 8.6                  | 5.2                               | 1.5                 |
| Langlade    | 382.2         | 63.3                | 187.4                | 127.3                             | 4.2                 |
| Lincoln     | 399.1         | 59.6                | 193.2                | 142.0                             | 4.3                 |
| Manitowoc   | 60.3          | 27.3                | 17.8                 | 13.3                              | 1.9                 |
| Marathon    | 373.8         | 90.3                | 145.8                | 127.6                             | 10.1                |
| Marinette   | 649.9         | 97.4                | 307.0                | 235.7                             | 9.8                 |
| Marquette   | 99.9          | 23.8                | 30.8                 | 40.5                              | 4.8                 |
| Milwaukee   | --            | --                  | --                   | --                                | --                  |

(Continued on next page)

Table 28 continued

| County                | All<br>stands | Sawtimber<br>stands | Poletimber<br>stands | Sapling and<br>seedling<br>stands | Nonstocked<br>areas |
|-----------------------|---------------|---------------------|----------------------|-----------------------------------|---------------------|
| Monroe                | 218.5         | 54.7                | 86.3                 | 66.2                              | 11.3                |
| Oconto                | 357.7         | 73.3                | 173.8                | 103.1                             | 7.5                 |
| Oneida                | 566.6         | 82.6                | 275.7                | 201.7                             | 6.6                 |
| Outagamie             | 69.1          | 22.2                | 17.9                 | 25.1                              | 3.9                 |
| Ozaukee               | 14.7          | 4.6                 | 4.5                  | 4.7                               | .9                  |
| Pepin                 | 44.1          | 25.7                | 11.6                 | 5.7                               | 1.1                 |
| Pierce                | 62.6          | 37.8                | 13.6                 | 8.5                               | 2.7                 |
| Polk                  | 218.0         | 41.2                | 117.9                | 54.5                              | 4.4                 |
| Portage               | 159.5         | 37.0                | 56.2                 | 61.2                              | 5.1                 |
| Price                 | 608.2         | 107.0               | 296.2                | 184.7                             | 20.3                |
| Racine                | 14.7          | 7.2                 | 2.9                  | 4.6                               | --                  |
| Richland              | 103.2         | 55.4                | 26.6                 | 17.1                              | 4.1                 |
| Rock                  | 30.7          | 15.2                | 5.5                  | 9.3                               | .7                  |
| Rusk                  | 329.1         | 42.7                | 182.6                | 97.2                              | 6.6                 |
| St. Croix             | 49.5          | 24.4                | 15.6                 | 7.5                               | 2.0                 |
| Sauk                  | 152.1         | 87.0                | 37.0                 | 23.6                              | 4.5                 |
| Sawyer                | 621.4         | 66.2                | 338.4                | 199.2                             | 17.6                |
| Shawano <sup>1/</sup> | 485.4         | 142.1               | 222.4                | 117.9                             | 3.0                 |
| Sheboygan             | 46.9          | 15.7                | 15.4                 | 15.1                              | .7                  |
| Taylor                | 369.0         | 40.8                | 201.9                | 113.9                             | 12.4                |
| Trempealeau           | 109.3         | 58.0                | 28.6                 | 19.1                              | 3.6                 |
| Vernon                | 139.3         | 78.3                | 40.9                 | 17.2                              | 2.9                 |
| Vilas                 | 430.7         | 75.3                | 222.9                | 127.5                             | 5.0                 |
| Walworth              | 25.6          | 12.1                | 6.8                  | 6.2                               | .5                  |
| Washburn              | 341.8         | 38.8                | 190.1                | 107.4                             | 5.5                 |
| Washington            | 36.1          | 18.8                | 7.4                  | 8.3                               | 1.6                 |
| Waukesha              | 46.4          | 15.2                | 10.2                 | 18.3                              | 2.7                 |
| Waupaca               | 164.2         | 26.6                | 56.4                 | 71.8                              | 9.4                 |
| Waushara              | 118.3         | 28.1                | 39.5                 | 46.0                              | 4.7                 |
| Winnebago             | 20.7          | 10.7                | 4.5                  | 4.8                               | .7                  |
| Wood                  | 216.0         | 28.9                | 78.7                 | 100.0                             | 8.4                 |
| Total                 | 14,536.8      | 3,098.4             | 6,579.5              | 4,489.2                           | 369.7               |

<sup>1/</sup> Shawano county includes Menominee county.

Table 29. — Area of commercial forest land, by county and forest type, Wisconsin, 1968  
(Thousand acres)

| County                | All types | White-red-jack pine | Spruce-fir | Oak-hickory | Elm-ash-cottonwood | Maple-beech-birch | Aspen-birch | Nonstocked |
|-----------------------|-----------|---------------------|------------|-------------|--------------------|-------------------|-------------|------------|
| Adams                 | 250.8     | 85.0                | 4.5        | 73.4        | 10.6               | 16.9              | 53.8        | 6.6        |
| Ashland               | 526.6     | 15.9                | 96.5       | 18.1        | 39.9               | 176.2             | 166.7       | 13.3       |
| Barron                | 152.9     | 6.6                 | 6.7        | 20.4        | 12.4               | 52.1              | 50.7        | 4.0        |
| Bayfield              | 777.3     | 128.0               | 50.1       | 81.5        | 40.1               | 166.9             | 286.5       | 24.2       |
| Brown                 | 36.9      | .3                  | 3.2        | 4.4         | 9.6                | 15.1              | 3.5         | .8         |
| Buffalo               | 165.9     | 2.6                 | --         | 93.4        | 16.1               | 37.4              | 11.5        | 4.9        |
| Burnett               | 317.3     | 61.6                | 13.5       | 75.6        | 19.0               | 38.2              | 104.3       | 5.1        |
| Calumet               | 25.5      | .3                  | 1.3        | 7.1         | 6.5                | 6.7               | 2.8         | .8         |
| Chippewa              | 211.4     | 11.5                | 6.1        | 69.4        | 16.3               | 29.2              | 70.5        | 8.4        |
| Clark                 | 276.8     | 11.7                | 7.6        | 64.0        | 21.9               | 51.6              | 109.9       | 10.1       |
| Columbia              | 82.1      | .9                  | 3.7        | 37.1        | 11.1               | 15.1              | 12.1        | 2.1        |
| Crawford              | 130.8     | 1.6                 | --         | 78.4        | 9.7                | 25.5              | 11.9        | 3.7        |
| Dane                  | 74.3      | .6                  | 1.3        | 50.4        | 3.5                | 11.7              | 4.6         | 2.2        |
| Dodge                 | 42.7      | .5                  | 2.4        | 8.0         | 10.8               | 9.7               | 6.5         | 4.8        |
| Door                  | 96.2      | .5                  | 19.6       | 6.0         | 13.7               | 32.2              | 21.3        | 2.9        |
| Douglas               | 610.9     | 95.4                | 60.7       | 44.1        | 40.2               | 108.2             | 249.6       | 12.7       |
| Dunn                  | 139.0     | 5.3                 | --         | 75.2        | 11.7               | 32.0              | 9.4         | 5.4        |
| Eau Claire            | 157.5     | 17.5                | 2.4        | 64.2        | 8.3                | 16.2              | 42.7        | 6.2        |
| Florence              | 262.7     | 18.3                | 33.5       | 14.1        | 9.8                | 97.0              | 86.0        | 4.0        |
| Fond du Lac           | 48.7      | 1.1                 | 2.7        | 14.1        | 11.9               | 10.1              | 6.8         | 2.0        |
| Forest                | 527.7     | 27.4                | 108.4      | 7.7         | 16.9               | 218.3             | 139.2       | 9.8        |
| Grant                 | 147.6     | 2.9                 | --         | 90.1        | 8.4                | 29.5              | 12.1        | 4.6        |
| Green                 | 31.3      | .7                  | .4         | 18.5        | 2.4                | 6.6               | 1.8         | .9         |
| Green Lake            | 27.7      | .2                  | 1.5        | 11.2        | 4.3                | 7.0               | 2.5         | 1.0        |
| Iowa                  | 120.8     | 15.6                | --         | 60.4        | 7.7                | 21.8              | 9.7         | 5.6        |
| Iron                  | 373.9     | 4.8                 | 52.8       | 16.2        | 42.0               | 146.5             | 105.4       | 6.2        |
| Jackson               | 345.5     | 56.1                | 8.9        | 119.1       | 16.1               | 39.5              | 96.6        | 9.2        |
| Jefferson             | 32.1      | .3                  | 2.3        | 10.2        | 6.3                | 7.7               | 3.7         | 1.6        |
| Juneau                | 239.6     | 49.8                | 5.3        | 78.7        | 20.7               | 22.0              | 56.4        | 6.7        |
| Kenosha               | 9.9       | .3                  | .4         | 2.4         | 1.4                | 3.9               | 1.2         | .3         |
| Kewaunee              | 30.9      | .3                  | 3.3        | 4.3         | 7.3                | 13.0              | 2.6         | .1         |
| La Crosse             | 94.3      | 2.8                 | --         | 56.4        | 9.0                | 18.1              | 5.5         | 2.5        |
| Lafayette             | 34.6      | 1.8                 | --         | 20.6        | 1.4                | 6.4               | 2.9         | 1.5        |
| Langlade              | 382.2     | 17.9                | 75.8       | 16.6        | 25.2               | 116.4             | 146.1       | 4.2        |
| Lincoln               | 399.1     | 16.6                | 63.6       | 13.5        | 24.2               | 126.6             | 150.3       | 4.3        |
| Manitowoc             | 60.3      | .9                  | 5.4        | 10.9        | 14.4               | 19.3              | 7.5         | 1.9        |
| Marathon              | 373.8     | 17.7                | 9.2        | 67.9        | 35.7               | 101.7             | 131.5       | 10.1       |
| Marinette             | 649.9     | 53.1                | 103.4      | 57.9        | 49.6               | 132.8             | 243.3       | 9.8        |
| Marquette             | 99.9      | 15.4                | 3.4        | 36.7        | 9.0                | 9.5               | 21.1        | 4.8        |
| Milwaukee             | --        | --                  | --         | --          | --                 | --                | --          | --         |
| Monroe                | 218.5     | 20.9                | 1.1        | 115.9       | 8.8                | 24.0              | 36.5        | 11.3       |
| Oconto                | 357.7     | 41.7                | 61.5       | 16.5        | 39.2               | 83.3              | 108.0       | 7.5        |
| Oneida                | 566.6     | 54.2                | 118.7      | 30.5        | 38.5               | 120.1             | 198.0       | 6.6        |
| Outagamie             | 69.1      | .7                  | 4.6        | 12.0        | 21.8               | 17.3              | 8.8         | 3.9        |
| Ozaukee               | 14.7      | .1                  | .6         | 4.2         | 2.2                | 3.2               | 3.5         | .9         |
| Pepin                 | 44.1      | .5                  | --         | 25.2        | 4.1                | 10.1              | 3.1         | 1.1        |
| Pierce                | 62.6      | .8                  | --         | 38.0        | 2.2                | 15.3              | 3.6         | 2.7        |
| Polk                  | 218.0     | 32.5                | 7.6        | 63.1        | 10.5               | 33.4              | 66.5        | 4.4        |
| Portage               | 159.5     | 16.5                | 6.9        | 45.1        | 17.4               | 26.5              | 42.0        | 5.1        |
| Price                 | 608.2     | 23.6                | 115.4      | 20.0        | 63.0               | 185.7             | 180.2       | 20.3       |
| Racine                | 14.7      | .3                  | .7         | 3.0         | 2.5                | 5.6               | 2.6         | --         |
| Richland              | 103.2     | 1.8                 | --         | 58.6        | 4.5                | 28.7              | 5.5         | 4.1        |
| Rock                  | 30.7      | .4                  | .5         | 17.2        | 3.3                | 6.3               | 2.3         | .7         |
| Rusk                  | 329.1     | 7.0                 | 21.9       | 20.0        | 29.4               | 115.6             | 128.6       | 6.6        |
| St. Croix             | 49.5      | 2.1                 | --         | 27.1        | 4.1                | 9.7               | 6.5         | 2.0        |
| Sauk                  | 152.1     | 6.2                 | --         | 87.5        | 9.6                | 34.5              | 9.8         | 4.5        |
| Sawyer                | 621.4     | 28.9                | 78.1       | 30.7        | 47.2               | 167.2             | 251.7       | 17.6       |
| Shawano <sup>1/</sup> | 485.4     | 37.9                | 66.5       | 30.5        | 39.9               | 168.9             | 138.7       | 3.0        |
| Sheboygan             | 46.9      | .5                  | 4.7        | 14.1        | 7.4                | 13.0              | 8.5         | .7         |
| Taylor                | 369.0     | 6.7                 | 45.0       | 10.2        | 49.8               | 124.1             | 120.8       | 12.4       |
| Trempealeau           | 109.3     | 2.5                 | --         | 65.0        | 5.9                | 23.7              | 8.6         | 3.6        |
| Vernon                | 139.3     | 1.3                 | --         | 92.0        | 1.3                | 32.2              | 9.6         | 2.9        |
| Vilas                 | 430.7     | 49.9                | 46.1       | 24.9        | 18.1               | 125.7             | 161.0       | 5.0        |
| Walworth              | 25.6      | .3                  | .8         | 10.2        | 4.2                | 7.0               | 2.6         | .5         |
| Washburn              | 341.8     | 45.9                | 20.5       | 43.6        | 26.2               | 66.4              | 133.7       | 5.5        |
| Washington            | 36.1      | .2                  | 2.0        | 8.0         | 9.4                | 12.0              | 2.9         | 1.6        |
| Waukesha              | 46.4      | .2                  | 2.7        | 20.9        | 6.5                | 8.0               | 5.4         | 2.7        |
| Waupaca               | 164.2     | 16.3                | 10.2       | 38.3        | 21.4               | 20.9              | 47.7        | 9.4        |
| Waushara              | 118.3     | 22.9                | 3.8        | 42.5        | 9.9                | 11.6              | 32.9        | 4.7        |
| Winnebago             | 20.7      | .3                  | .3         | 7.5         | 4.8                | 6.0               | 1.1         | .7         |
| Wood                  | 216.0     | 42.5                | 8.4        | 46.4        | 21.4               | 21.0              | 67.9        | 8.4        |
| Total                 | 14,536.8  | 1,215.4             | 1,388.5    | 2,664.9     | 1,157.6            | 3,521.6           | 4,219.1     | 369.7      |

<sup>1/</sup> Shawano county includes Menominee county.

Table 30. — Area of noncommercial forest land, by ownership class, Wisconsin, 1968  
(Thousand acres)

| Ownership class                  | All areas | Productive-reserved areas | Unproductive areas |
|----------------------------------|-----------|---------------------------|--------------------|
| National Forest                  | 48.5      | .6                        | 47.9               |
| Other public                     | 155.0     | 33.6                      | 121.4              |
| Forest industry                  | 31.9      | --                        | 31.9               |
| Farmer and miscellaneous private | 173.2     | --                        | 173.2              |
| All ownerships                   | 408.6     | 34.2                      | 374.4              |

Table 31. — Number of all live trees on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Thousand trees)

| Species                                                                                                                 | All classes | Diameter class (inches at breast height) |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  | 29.0+ |
|-------------------------------------------------------------------------------------------------------------------------|-------------|------------------------------------------|-------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|--|-------|
|                                                                                                                         |             | 1.0-<br>2.9                              | 3.0-<br>4.9 | 5.0-<br>6.9 | 7.0-<br>8.9 | 9.0-<br>10.9 | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>24.9 | 25.0-<br>26.9 | 27.0-<br>28.9 |  |  |       |
| Softwoods:                                                                                                              |             |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  |       |
| White pine                                                                                                              | 107,269     | 50,953                                   | 22,644      | 11,820      | 6,694       | 4,508        | 3,514         | 2,345         | 1,817         | 1,261         | 760           | 417           | 447           | 89            |               |  |  |       |
| Red pine                                                                                                                | 147,843     | 53,565                                   | 24,241      | 11,820      | 6,694       | 4,508        | 3,514         | 2,345         | 1,817         | 1,261         | 760           | 417           | 447           | 89            |               |  |  |       |
| Jack pine                                                                                                               | 381,021     | 160,221                                  | 105,898     | 70,949      | 30,824      | 9,634        | 2,632         | 727           | 937           | 541           | 214           | 87            | 29            |               |               |  |  |       |
| White spruce                                                                                                            | 53,573      | 24,435                                   | 14,568      | 7,365       | 3,982       | 1,778        | 675           | 353           | 160           | 75            | 3             |               |               |               |               |  |  |       |
| Black spruce                                                                                                            | 203,992     | 111,242                                  | 64,897      | 22,321      | 4,533       | 879          | 74            | 33            | 7             | 5             |               |               |               |               |               |  |  |       |
| Balsam fir                                                                                                              | 638,684     | 360,606                                  | 161,661     | 78,902      | 27,855      | 7,556        | 1,697         | 329           | 69            | 9             |               |               |               |               |               |  |  |       |
| Hemlock                                                                                                                 | 61,643      | 20,452                                   | 10,589      | 7,268       | 7,153       | 5,727        | 4,013         | 2,582         | 1,774         | 1,058         | 486           | 272           | 254           | 15            |               |  |  |       |
| Tamarack                                                                                                                | 124,514     | 56,445                                   | 40,345      | 19,405      | 6,088       | 1,468        | 598           | 110           | 47            | 4             |               |               |               |               |               |  |  |       |
| Northern white-cedar                                                                                                    | 282,538     | 113,999                                  | 78,178      | 48,219      | 23,524      | 12,100       | 4,151         | 1,578         | 558           | 137           | 60            | 22            | 12            |               |               |  |  |       |
| Other softwoods                                                                                                         | 4,098       | 1,657                                    | 1,906       | 249         | 131         | 124          | 17            | 14            | --            | --            | --            | --            | --            |               |               |  |  |       |
| Total softwoods 2,005,175 953,575 554,378 290,939 119,532 46,413 18,976 9,616 5,484 3,070 1,539 804 744 105             |             |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  |       |
| Hardwoods:                                                                                                              |             |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  |       |
| White oak                                                                                                               | 209,972     | 78,491                                   | 48,582      | 30,778      | 18,693      | 12,793       | 8,838         | 5,269         | 3,097         | 1,678         | 771           | 423           | 463           | 96            |               |  |  |       |
| Select red oak                                                                                                          | 244,141     | 70,604                                   | 50,521      | 44,190      | 30,116      | 19,024       | 11,046        | 7,630         | 4,787         | 2,752         | 1,711         | 859           | 787           | 114           |               |  |  |       |
| Other red oak                                                                                                           | 268,664     | 87,281                                   | 70,230      | 48,857      | 27,424      | 15,007       | 9,047         | 5,005         | 2,774         | 1,447         | 811           | 377           | 353           | 51            |               |  |  |       |
| Hickory                                                                                                                 | 85,375      | 47,783                                   | 17,749      | 10,188      | 4,760       | 2,907        | 1,232         | 542           | 179           | 24            | 11            |               |               |               |               |  |  |       |
| Yellow birch                                                                                                            | 132,338     | 61,969                                   | 29,426      | 17,185      | 9,985       | 5,242        | 3,564         | 2,101         | 1,217         | 760           | 404           | 185           | 256           | 44            |               |  |  |       |
| Hard maple                                                                                                              | 1,215,122   | 801,979                                  | 236,873     | 94,481      | 38,193      | 18,704       | 9,958         | 6,172         | 3,857         | 2,200         | 1,316         | 640           | 680           | 69            |               |  |  |       |
| Soft maple                                                                                                              | 1,044,271   | 648,689                                  | 246,044     | 86,596      | 33,973      | 15,083       | 6,746         | 3,439         | 1,724         | 926           | 513           | 215           | 230           | 93            |               |  |  |       |
| Beech                                                                                                                   | 17,678      | 13,195                                   | 1,544       | 890         | 418         | 393          | 405           | 277           | 223           | 158           | 92            | 41            | 42            |               |               |  |  |       |
| Ash                                                                                                                     | 414,323     | 225,278                                  | 94,506      | 50,260      | 24,593      | 10,942       | 5,078         | 2,255         | 854           | 287           | 122           | 91            | 51            | 6             |               |  |  |       |
| Balsam poplar                                                                                                           | 14,388      | 8,227                                    | 1,760       | 1,890       | 992         | 683          | 384           | 253           | 93            | 53            | 29            | 21            | 3             |               |               |  |  |       |
| Cottonwood                                                                                                              | 1,884       | 224                                      | 516         | 234         | 298         | 205          | 150           | 45            | 75            | 35            | 30            | 18            | 31            | 23            |               |  |  |       |
| Paper birch                                                                                                             | 557,833     | 224,037                                  | 161,797     | 109,338     | 43,500      | 13,625       | 3,996         | 1,019         | 306           | 111           | 45            | 36            | 16            | 7             |               |  |  |       |
| Bigtooth aspen                                                                                                          | 226,112     | 92,888                                   | 47,793      | 38,325      | 26,035      | 12,550       | 5,228         | 2,031         | 885           | 275           | 58            | 36            | 8             |               |               |  |  |       |
| Quaking aspen                                                                                                           | 1,255,443   | 643,357                                  | 278,122     | 173,571     | 96,345      | 43,479       | 14,643        | 4,334         | 1,773         | 351           | 59            | 3             | 6             |               |               |  |  |       |
| Basswood                                                                                                                | 253,868     | 97,946                                   | 62,798      | 44,572      | 24,641      | 12,550       | 5,499         | 2,759         | 1,548         | 768           | 348           | 203           | 195           | 41            |               |  |  |       |
| Butternut                                                                                                               | 9,354       | 3,496                                    | 1,799       | 1,076       | 763         | 1,075        | 636           | 310           | 96            | 72            | 15            | 12            | 4             |               |               |  |  |       |
| Black walnut                                                                                                            | 2,389       | 803                                      | 327         | 288         | 367         | 245          | 165           | 92            | 58            | 26            | 9             | 7             | 2             |               |               |  |  |       |
| Black cherry                                                                                                            | 132,897     | 80,454                                   | 28,763      | 13,619      | 6,451       | 2,121        | 935           | 265           | 188           | 69            | 4             | 18            | 10            |               |               |  |  |       |
| Elm                                                                                                                     | 301,102     | 151,509                                  | 58,863      | 35,117      | 22,852      | 12,573       | 8,039         | 5,352         | 2,961         | 1,615         | 924           | 542           | 590           | 165           |               |  |  |       |
| Other hardwoods                                                                                                         | 25,591      | 15,739                                   | 4,195       | 2,355       | 1,379       | 640          | 630           | 247           | 198           | 92            | 48            | 29            | 34            | 5             |               |  |  |       |
| Noncommercial species                                                                                                   | 521,943     | 453,555                                  | 55,127      | 9,663       | 2,414       | 960          | 198           | 9             | 13            | 4             | --            | --            | --            |               |               |  |  |       |
| Total hardwoods 6,934,688 3,807,504 1,497,335 813,473 414,192 200,801 96,417 49,406 26,306 13,703 7,320 3,756 3,761 714 |             |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  |       |
| All Species 8,939,863 4,761,079 2,051,713 1,104,412 533,724 247,214 115,393 59,022 31,790 16,773 8,859 4,560 4,505 819  |             |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |  |  |       |

Table 32. — Number of growing-stock trees on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Thousand trees)

| Species                | All classes      | Diameter class (inches at breast height) |                  |                |                |                |               |               |               |               |               |               |               |               |               |                |  |
|------------------------|------------------|------------------------------------------|------------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|--|
|                        |                  | 1.9-<br>2.9                              | 3.0-<br>4.9      | 5.0-<br>6.9    | 7.0-<br>8.9    | 9.0-<br>10.9   | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>24.9 | 25.0-<br>26.9 | 27.0-<br>28.9 | 29.0-<br>30.0+ |  |
| <b>Softwoods:</b>      |                  |                                          |                  |                |                |                |               |               |               |               |               |               |               |               |               |                |  |
| White pine             | 93,892           | 46,545                                   | 18,796           | 9,619          | 5,297          | 3,989          | 3,073         | 2,167         | 1,703         | 1,147         | 710           | 386           | 377           | 83            |               |                |  |
| Red pine               | 142,479          | 50,648                                   | 52,139           | 23,621         | 8,642          | 2,558          | 1,576         | 1,514         | 920           | 535           | 214           | 83            | 29            |               |               |                |  |
| Jack pine              | 310,800          | 120,765                                  | 88,362           | 63,317         | 27,562         | 7,921          | 2,239         | 545           | 71            | 18            |               |               |               |               |               |                |  |
| White spruce           | 50,901           | 22,337                                   | 14,280           | 7,433          | 3,937          | 1,717          | 655           | 331           | 154           | 37            | 12            | 6             | 2             |               |               |                |  |
| Black spruce           | 180,550          | 95,978                                   | 58,207           | 21,228         | 4,171          | 847            | 74            | 33            | 7             | 5             |               |               |               |               |               |                |  |
| Balsam fir             | 592,892          | 326,730                                  | 153,979          | 76,273         | 26,796         | 7,093          | 1,653         | 299           | 69            |               |               |               |               |               |               |                |  |
| Hemlock                | 50,918           | 16,151                                   | 8,895            | 6,023          | 5,954          | 4,715          | 3,429         | 2,293         | 1,562         | 936           | 456           | 249           | 240           | 15            |               |                |  |
| Tamarack               | 113,447          | 50,253                                   | 37,208           | 18,402         | 5,679          | 1,321          | 474           | 66            | 40            |               |               |               |               |               |               |                |  |
| Northern white-cedar   | 233,028          | 90,854                                   | 68,520           | 40,735         | 18,792         | 9,377          | 3,072         | 1,159         | 361           | 89            | 44            | 17            | 8             |               |               |                |  |
| Other softwoods        | 3,242            | 1,470                                    | 1,576            | 131            | 47             | 11             | 7             |               |               |               |               |               |               |               |               |                |  |
| <b>Total softwoods</b> | <b>1,772,149</b> | <b>821,731</b>                           | <b>501,962</b>   | <b>266,782</b> | <b>106,877</b> | <b>39,549</b>  | <b>16,252</b> | <b>8,407</b>  | <b>4,887</b>  | <b>2,767</b>  | <b>1,440</b>  | <b>741</b>    | <b>656</b>    | <b>98</b>     |               |                |  |
| <b>Hardwoods:</b>      |                  |                                          |                  |                |                |                |               |               |               |               |               |               |               |               |               |                |  |
| White oak              | 105,241          | 27,954                                   | 28,174           | 19,125         | 11,309         | 7,814          | 5,000         | 2,859         | 1,635         | 775           | 294           | 139           | 144           | 19            |               |                |  |
| Select red oak         | 169,702          | 34,761                                   | 34,884           | 36,270         | 24,883         | 15,657         | 8,670         | 6,274         | 3,887         | 2,080         | 1,268         | 550           | 464           | 54            |               |                |  |
| Other red oak          | 107,964          | 24,526                                   | 30,573           | 23,234         | 13,497         | 7,203          | 4,143         | 2,384         | 1,175         | 592           | 343           | 150           | 131           | 13            |               |                |  |
| Hickory                | 55,537           | 26,493                                   | 13,931           | 8,050          | 3,529          | 2,167          | 845           | 365           | 135           | 15            |               |               |               |               |               |                |  |
| Yellow birch           | 80,065           | 34,728                                   | 18,491           | 11,648         | 6,701          | 3,295          | 2,165         | 1,145         | 873           | 532           | 227           | 138           | 101           | 21            |               |                |  |
| Hard maple             | 854,582          | 524,696                                  | 191,709          | 77,328         | 29,770         | 14,040         | 6,611         | 4,299         | 2,804         | 1,593         | 896           | 404           | 403           | 29            |               |                |  |
| Soft maple             | 659,219          | 362,347                                  | 185,797          | 66,693         | 24,847         | 10,611         | 4,479         | 2,317         | 1,024         | 529           | 323           | 115           | 116           | 21            |               |                |  |
| Beech                  | 11,652           | 8,872                                    | 1,088            | 629            | 182            | 207            | 239           | 130           | 131           | 93            | 37            | 25            | 19            |               |               |                |  |
| Ash                    | 302,891          | 146,926                                  | 73,603           | 43,900         | 21,710         | 9,431          | 4,325         | 1,873         | 721           | 221           | 85            | 61            | 33            | 2             |               |                |  |
| Balsam poplar          | 12,604           | 7,033                                    | 1,760            | 1,646          | 835            | 653            | 278           | 229           | 75            | 45            | 26            | 21            | 3             |               |               |                |  |
| Cottonwood             | 1,188            | --                                       | 205              | 157            | 298            | 205            | 107           | 38            | 64            | 35            | 28            | 13            | 22            | 16            |               |                |  |
| Paper birch            | 455,338          | 165,372                                  | 137,389          | 97,840         | 38,690         | 11,841         | 3,151         | 729           | 205           | 71            | 25            | 20            | 5             |               |               |                |  |
| Bigtooth aspen         | 187,029          | 70,152                                   | 38,534           | 35,128         | 24,355         | 11,660         | 4,687         | 1,669         | 614           | 177           | 32            | 18            | 3             |               |               |                |  |
| Quaking aspen          | 992,012          | 481,317                                  | 222,672          | 151,030        | 83,880         | 37,380         | 11,632        | 3,159         | 768           | 141           | 33            | --            | --            |               |               |                |  |
| Basswood               | 178,341          | 47,918                                   | 48,440           | 39,287         | 22,319         | 11,217         | 4,702         | 2,245         | 1,203         | 564           | 216           | 140           | 85            | 5             |               |                |  |
| Butternut              | 3,058            | 584                                      | 390              | 738            | 292            | 585            | 257           | 145           | 35            | 21            | 8             | 3             | --            |               |               |                |  |
| Black walnut           | 1,157            | 220                                      | 267              | 75             | 271            | 109            | 83            | 61            | 53            | 11            | 4             | 3             | --            |               |               |                |  |
| Black cherry           | 50,789           | 24,253                                   | 12,741           | 7,574          | 4,120          | 1,286          | 488           | 170           | 98            | 47            | --            | 7             | 5             |               |               |                |  |
| Elm                    | 183,625          | 72,614                                   | 39,434           | 27,492         | 18,207         | 10,345         | 6,448         | 4,064         | 2,281         | 1,185         | 714           | 374           | 383           | 84            |               |                |  |
| Other hardwoods        | 8,139            | 4,897                                    | 931              | 918            | 557            | 265            | 262           | 96            | 105           | 63            | 23            | 11            | 11            | --            |               |                |  |
| Noncommercial species  | --               | --                                       | --               | --             | --             | --             | --            | --            | --            | --            | --            | --            | --            | --            |               |                |  |
| <b>Total hardwoods</b> | <b>4,420,133</b> | <b>2,065,663</b>                         | <b>1,081,013</b> | <b>648,762</b> | <b>330,252</b> | <b>155,971</b> | <b>68,572</b> | <b>34,251</b> | <b>17,886</b> | <b>8,790</b>  | <b>4,589</b>  | <b>2,192</b>  | <b>1,928</b>  | <b>264</b>    |               |                |  |
| <b>All Species</b>     | <b>6,192,282</b> | <b>2,887,394</b>                         | <b>1,582,975</b> | <b>915,544</b> | <b>437,129</b> | <b>195,520</b> | <b>84,824</b> | <b>42,658</b> | <b>22,773</b> | <b>11,557</b> | <b>6,029</b>  | <b>2,933</b>  | <b>2,584</b>  | <b>362</b>    |               |                |  |



ALL UNITS

| Species<br>group       | All<br>classes | Diameter class (inches at breast height) |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
|------------------------|----------------|------------------------------------------|-------------|-------------|-------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                        |                | 1.0-<br>2.9                              | 3.0-<br>4.9 | 5.0-<br>6.9 | 7.0-<br>8.9 | 9.0-<br>10.9 | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>24.9 | 25.0-<br>26.9 | 27.0-<br>28.9 | 29.0-<br>30.9 | 31.0-<br>32.9 |
| Softwoods<br>Hardwoods | 1,772,149      | 821,731                                  | 501,962     | 266,782     | 106,877     | 39,549       | 16,252        | 8,407         | 4,887         | 2,767         | 1,440         | 741           | 656           | 98            | 264           | 1,928         | 264           |
|                        | 4,420,133      | 2,065,663                                | 1,081,013   | 648,762     | 330,252     | 155,971      | 68,572        | 34,251        | 17,886        | 8,790         | 4,589         | 2,192         | 1,928         | 264           | 1,928         | 264           | 264           |
| All species            | 6,192,282      | 2,887,394                                | 1,582,975   | 915,544     | 437,129     | 195,520      | 84,824        | 42,658        | 22,773        | 11,557        | 6,029         | 2,933         | 2,584         | 362           | 2,584         | 362           | 362           |
| NORTHWESTERN UNIT      |                |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
| Softwoods<br>Hardwoods | 633,573        | 289,633                                  | 169,124     | 102,141     | 44,533      | 16,205       | 5,755         | 3,030         | 1,582         | 861           | 361           | 198           | 139           | 11            | 198           | 139           | 11            |
|                        | 1,757,284      | 808,752                                  | 441,403     | 271,480     | 137,043     | 59,447       | 23,176        | 9,649         | 3,718         | 1,489         | 643           | 263           | 197           | 24            | 263           | 197           | 24            |
| All species            | 2,390,857      | 1,098,385                                | 610,527     | 373,621     | 181,576     | 75,652       | 28,931        | 12,679        | 5,300         | 2,350         | 1,004         | 461           | 336           | 35            | 461           | 336           | 35            |
| NORTHEASTERN UNIT      |                |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
| Softwoods<br>Hardwoods | 775,207        | 358,730                                  | 226,780     | 112,962     | 42,696      | 16,573       | 7,661         | 3,979         | 2,530         | 1,508         | 825           | 458           | 431           | 74            | 458           | 431           | 74            |
|                        | 1,456,306      | 719,927                                  | 352,723     | 204,511     | 100,615     | 44,859       | 16,894        | 8,020         | 3,932         | 2,408         | 1,252         | 564           | 541           | 60            | 564           | 541           | 60            |
| All species            | 2,231,513      | 1,078,657                                | 579,503     | 317,473     | 143,311     | 61,432       | 24,555        | 11,999        | 6,462         | 3,916         | 2,077         | 1,022         | 972           | 134           | 1,022         | 972           | 134           |
| CENTRAL UNIT           |                |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
| Softwoods<br>Hardwoods | 263,616        | 123,478                                  | 77,292      | 38,334      | 14,668      | 5,153        | 2,183         | 1,138         | 659           | 359           | 211           | 61            | 69            | 11            | 322           | 236           | 21            |
|                        | 731,357        | 337,168                                  | 185,044     | 108,754     | 51,895      | 25,339       | 11,751        | 5,796         | 3,158         | 1,240         | 633           | 322           | 236           | 21            | 633           | 322           | 21            |
| All species            | 994,973        | 460,646                                  | 262,336     | 147,088     | 66,563      | 30,492       | 13,934        | 6,934         | 3,817         | 1,599         | 844           | 383           | 305           | 32            | 383           | 305           | 32            |
| SOUTHWESTERN UNIT      |                |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
| Softwoods<br>Hardwoods | 27,680         | 13,788                                   | 9,339       | 3,309       | 850         | 109          | 125           | 31            | 36            | 27            | 28            | 19            | 17            | 2             | 621           | 544           | 87            |
|                        | 274,984        | 100,146                                  | 59,369      | 41,404      | 27,079      | 18,070       | 11,764        | 7,482         | 4,752         | 2,304         | 1,362         | 640           | 561           | 89            | 1,362         | 640           | 89            |
| All species            | 302,664        | 113,934                                  | 68,708      | 44,713      | 27,929      | 18,179       | 11,889        | 7,513         | 4,788         | 2,331         | 1,390         | 640           | 561           | 89            | 2,331         | 1,390         | 89            |
| SOUTHEASTERN UNIT      |                |                                          |             |             |             |              |               |               |               |               |               |               |               |               |               |               |               |
| Softwoods<br>Hardwoods | 72,073         | 36,102                                   | 19,427      | 10,036      | 4,130       | 1,509        | 528           | 229           | 80            | 12            | 15            | 5             | --            | --            | 422           | 410           | 72            |
|                        | 200,202        | 99,670                                   | 42,474      | 22,613      | 13,620      | 8,256        | 4,987         | 3,304         | 2,326         | 1,349         | 699           | 422           | 410           | 72            | 1,349         | 699           | 72            |
| All species            | 272,275        | 135,772                                  | 61,901      | 32,649      | 17,750      | 9,765        | 5,515         | 3,533         | 2,406         | 1,361         | 714           | 427           | 410           | 72            | 1,361         | 714           | 72            |

Table 34. — Number of short-log trees on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Thousand trees)

| Species               | All<br>classes | Diameter class (inches at breast height) |               |               |               |               |               |               |               |       |  |
|-----------------------|----------------|------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|--|
|                       |                | 9.0-<br>10.9                             | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>28.9 | 29.0+ |  |
| <b>Softwoods:</b>     |                |                                          |               |               |               |               |               |               |               |       |  |
| White pine            | 397            | 128                                      | 127           | 24            | 25            | 47            | 26            | 6             | 10            | 4     |  |
| Red pine              | 59             | 28                                       | 13            | 15            | --            | --            | --            | 3             | --            | --    |  |
| Jack pine             | 282            | 182                                      | 78            | 22            | --            | --            | --            | --            | --            | --    |  |
| White spruce          | 32             | 15                                       | 10            | 7             | --            | --            | --            | --            | --            | --    |  |
| Black spruce          | 16             | 16                                       | --            | --            | --            | --            | --            | --            | --            | --    |  |
| Balsam fir            | 128            | 88                                       | 24            | 16            | --            | --            | --            | --            | --            | --    |  |
| Hemlock               | 269            | 126                                      | 73            | 32            | 13            | 19            | 4             | --            | 2             | --    |  |
| Tamarack              | 111            | 33                                       | 71            | 7             | --            | --            | --            | --            | --            | --    |  |
| Northern white-cedar  | 672            | 443                                      | 157           | 50            | 14            | 8             | --            | --            | --            | --    |  |
| Other softwoods       | --             | --                                       | --            | --            | --            | --            | --            | --            | --            | --    |  |
| Total softwoods       | 1,966          | 1,059                                    | 553           | 173           | 52            | 74            | 30            | 9             | 12            | 4     |  |
| <b>Hardwoods:</b>     |                |                                          |               |               |               |               |               |               |               |       |  |
| White oak             | 3,610          | 33                                       | 1,427         | 897           | 527           | 351           | 191           | 86            | 90            | 8     |  |
| Select red oak        | 2,494          | 14                                       | 913           | 574           | 395           | 255           | 145           | 97            | 97            | 4     |  |
| Other red oak         | 3,313          | 13                                       | 1,368         | 838           | 518           | 330           | 117           | 70            | 51            | 8     |  |
| Hickory               | 250            | 14                                       | 143           | 77            | 11            | 5             | --            | --            | --            | --    |  |
| Yellow birch          | 718            | 17                                       | 380           | 182           | 71            | 43            | 4             | 3             | 16            | 2     |  |
| Hard maple            | 2,367          | 51                                       | 1,029         | 558           | 360           | 144           | 108           | 52            | 57            | 8     |  |
| Soft maple            | 1,415          | 12                                       | 650           | 311           | 242           | 98            | 37            | 22            | 35            | 8     |  |
| Beech                 | 123            | --                                       | 19            | 43            | 19            | 13            | 19            | 4             | 6             | --    |  |
| Ash                   | 454            | --                                       | 254           | 112           | 35            | 22            | 7             | 14            | 9             | 1     |  |
| Balsam poplar         | 46             | --                                       | 29            | 17            | --            | --            | --            | --            | --            | --    |  |
| Cottonwood            | 35             | --                                       | 15            | --            | 6             | --            | --            | 2             | 7             | 5     |  |
| Paper birch           | 507            | 14                                       | 358           | 108           | 17            | 4             | --            | 6             | --            | --    |  |
| Bigtooth aspen        | 276            | --                                       | 141           | 89            | 36            | 10            | --            | --            | --            | --    |  |
| Quaking aspen         | 792            | 15                                       | 553           | 180           | 31            | 9             | 4             | --            | --            | --    |  |
| Basswood              | 735            | 15                                       | 295           | 207           | 105           | 41            | 39            | 5             | 24            | 4     |  |
| Butternut             | 114            | --                                       | 50            | 49            | 10            | 5             | --            | --            | --            | --    |  |
| Black walnut          | 62             | --                                       | 32            | 19            | --            | 11            | --            | --            | --            | --    |  |
| Black cherry          | 236            | 16                                       | 140           | 36            | 23            | 11            | 4             | 6             | --            | --    |  |
| Elm                   | 1,959          | 29                                       | 674           | 556           | 280           | 193           | 74            | 49            | 82            | 22    |  |
| Other hardwoods       | 104            | 12                                       | 49            | 14            | 11            | 8             | 3             | 5             | 2             | --    |  |
| Noncommercial species | --             | --                                       | --            | --            | --            | --            | --            | --            | --            | --    |  |
| Total hardwoods       | 19,610         | 255                                      | 8,519         | 4,867         | 2,697         | 1,553         | 752           | 421           | 476           | 70    |  |
| All species           | 21,576         | 1,314                                    | 9,072         | 5,040         | 2,749         | 1,627         | 782           | 430           | 488           | 74    |  |

Table 35. — Percentage of sawtimber trees on commercial forest land, by butt-log grade and species, Wisconsin, 1968

(In percent)

| Species               | Percent of trees by butt-log grade |         |         |         |
|-----------------------|------------------------------------|---------|---------|---------|
|                       | Grade 1                            | Grade 2 | Grade 3 | Grade 4 |
| <b>Softwoods:</b>     |                                    |         |         |         |
| White pine            | 5                                  | 15      | 58      | 22      |
| Red pine              | 2                                  | 17      | 78      | 3       |
| Jack pine             | --                                 | 1       | 98      | 1       |
| White spruce          | --                                 | 5       | 95      | --      |
| Black spruce          | --                                 | --      | 100     | --      |
| Balsam fir            | --                                 | 1       | 98      | 1       |
| Hemlock               | 4                                  | 17      | 78      | 1       |
| Tamarack              | --                                 | 1       | 99      | --      |
| Northern white-cedar  | --                                 | 4       | 94      | 2       |
| Other softwoods       | --                                 | --      | 100     | --      |
| Total softwoods       | 2                                  | 8       | 85      | 5       |
| <b>Hardwoods:</b>     |                                    |         |         |         |
| White oak             | 7                                  | 34      | 53      | 6       |
| Select red oak        | 21                                 | 34      | 42      | 3       |
| Other red oak         | 4                                  | 20      | 62      | 14      |
| Hickory               | 3                                  | 17      | 77      | 3       |
| Yellow birch          | 10                                 | 32      | 53      | 5       |
| Hard maple            | 12                                 | 35      | 47      | 6       |
| Soft maple            | 8                                  | 33      | 55      | 4       |
| Beech                 | 6                                  | 39      | 44      | 11      |
| Ash                   | 15                                 | 40      | 44      | 1       |
| Balsam poplar         | 6                                  | 39      | 55      | --      |
| Cottonwood            | 24                                 | 10      | 49      | 17      |
| Paper birch           | 1                                  | 22      | 71      | 6       |
| Bigtooth aspen        | 4                                  | 30      | 64      | 2       |
| Quaking aspen         | 1                                  | 15      | 78      | 6       |
| Basswood              | 15                                 | 40      | 43      | 2       |
| Butternut             | --                                 | 46      | 39      | 15      |
| Black walnut          | 11                                 | 55      | 34      | --      |
| Black cherry          | 4                                  | 39      | 57      | --      |
| Elm                   | 15                                 | 40      | 42      | 3       |
| Other hardwoods       | 9                                  | 16      | 65      | 10      |
| Noncommercial species | --                                 | --      | --      | --      |
| Total hardwoods       | 10                                 | 32      | 53      | 5       |
| All species           | 8                                  | 24      | 63      | 5       |

Table 36. — Net volume of timber on commercial forest land, by class of timber and softwoods and hardwoods, Wisconsin, 1968

(Million cubic feet)

| Class of timber              | All species | Softwoods | Hardwoods |
|------------------------------|-------------|-----------|-----------|
| <b>Sawtimber trees:</b>      |             |           |           |
| Saw-log portion              | 3,631.4     | 1,039.1   | 2,592.3   |
| Upper-stem portion           | 810.9       | 219.1     | 591.8     |
| Total sawtimber              | 4,442.3     | 1,258.2   | 3,184.1   |
| Poletimber trees             | 6,553.8     | 1,216.5   | 5,337.3   |
| Total growing stock          | 10,996.1    | 2,474.7   | 8,521.4   |
| <b>Rough cull trees:</b>     |             |           |           |
| Sawtimber                    | 149.6       | 16.1      | 133.5     |
| Poletimber                   | 289.5       | 24.4      | 265.1     |
| Total rough cull             | 439.1       | 40.5      | 398.6     |
| <b>Short-log cull trees:</b> |             |           |           |
| Sawtimber                    | 383.9       | 19.9      | 364.0     |
| Poletimber                   | --          | --        | --        |
| Total short-log              | 383.9       | 19.9      | 364.0     |
| <b>Rotten cull trees:</b>    |             |           |           |
| Sawtimber                    | 163.1       | 18.4      | 144.7     |
| Poletimber                   | 97.7        | 6.3       | 91.4      |
| Total rotten cull            | 260.8       | 24.7      | 236.1     |
| Total cull                   | 1,083.8     | 85.1      | 998.7     |
| <b>Salvable dead trees:</b>  |             |           |           |
| Sawtimber                    | 24.9        | 7.4       | 17.5      |
| Poletimber                   | 28.7        | 5.9       | 22.8      |
| Total salvable dead          | 53.6        | 13.3      | 40.3      |
| All classes                  | 12,133.5    | 2,573.1   | 9,560.4   |

Table 37. — Net volume of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1968

| Ownership class                  | Growing stock      |         |         | Sawtimber                        |         |          |
|----------------------------------|--------------------|---------|---------|----------------------------------|---------|----------|
|                                  | All                | Soft-   | Hard-   | All                              | Soft-   | Hard-    |
|                                  | species            | woods   | woods   | species                          | woods   | woods    |
|                                  | Million cubic feet |         |         | Million board feet <sup>1/</sup> |         |          |
| National Forest                  | 1,095.0            | 352.2   | 742.8   | 1,575.2                          | 772.6   | 802.6    |
| Other public                     | 2,192.4            | 581.2   | 1,611.2 | 3,374.5                          | 1,396.5 | 1,978.0  |
| Forest industry                  | 1,256.6            | 436.8   | 819.8   | 3,077.6                          | 1,402.6 | 1,675.0  |
| Farmer and miscellaneous private | 6,452.1            | 1,104.5 | 5,347.6 | 13,728.4                         | 2,925.4 | 10,803.0 |
| All ownerships                   | 10,966.1           | 2,474.7 | 8,521.4 | 21,755.7                         | 6,497.1 | 15,258.6 |

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

Table 38. — Net volume of growing stock on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Million cubic feet)

| Species               | All classes | Diameter class (inches at breast height) |         |         |         |       |       |       |       |       |       |       |
|-----------------------|-------------|------------------------------------------|---------|---------|---------|-------|-------|-------|-------|-------|-------|-------|
|                       |             | 5.0-                                     | 7.0-    | 9.0-    | 11.0-   | 13.0- | 15.0- | 17.0- | 19.0- | 21.0- | 23.0- | 29.0+ |
|                       |             | 6.9                                      | 8.9     | 10.9    | 12.9    | 14.9  | 16.9  | 18.9  | 20.9  | 22.9  | 28.9  |       |
| Softwoods:            |             |                                          |         |         |         |       |       |       |       |       |       |       |
| White pine            | 412.7       | 24.4                                     | 26.9    | 36.4    | 45.5    | 47.0  | 52.7  | 49.4  | 38.9  | 29.9  | 42.8  | 18.8  |
| Red pine              | 241.1       | 47.6                                     | 38.8    | 23.5    | 24.6    | 34.4  | 30.2  | 22.6  | 11.5  | 5.4   | 2.5   | --    |
| Jack pine             | 417.6       | 161.5                                    | 141.1   | 70.9    | 31.0    | 10.5  | 2.0   | .6    | --    | --    | --    | --    |
| White spruce          | 81.7        | 17.1                                     | 21.2    | 17.0    | 10.0    | 7.8   | 5.3   | 1.9   | .8    | .4    | .2    | --    |
| Black spruce          | 92.0        | 57.9                                     | 23.1    | 8.6     | 1.2     | .6    | .3    | .3    | --    | --    | --    | --    |
| Balsam fir            | 439.0       | 200.0                                    | 139.5   | 65.8    | 25.1    | 6.4   | 2.2   | --    | --    | --    | --    | --    |
| Hemlock               | 336.2       | 14.9                                     | 28.3    | 38.9    | 47.0    | 47.9  | 46.6  | 38.8  | 26.2  | 18.9  | 25.5  | 3.2   |
| Tamarack              | 111.1       | 54.0                                     | 33.0    | 13.7    | 7.4     | 1.5   | 1.3   | --    | .2    | --    | --    | --    |
| Northern white-cedar  | 342.4       | 98.2                                     | 88.3    | 79.2    | 38.0    | 21.8  | 9.6   | 3.3   | 2.2   | 1.1   | .7    | --    |
| Other softwoods       | .9          | .4                                       | .3      | .1      | .1      | --    | --    | --    | --    | --    | --    | --    |
| Total softwoods       | 2,474.7     | 676.0                                    | 540.5   | 354.1   | 229.9   | 177.9 | 150.2 | 116.9 | 79.8  | 55.7  | 71.7  | 22.0  |
| Hardwoods:            |             |                                          |         |         |         |       |       |       |       |       |       |       |
| White oak             | 406.1       | 47.7                                     | 57.6    | 69.0    | 70.2    | 57.1  | 44.6  | 27.0  | 13.5  | 7.5   | 10.0  | 1.9   |
| Select red oak        | 992.8       | 112.7                                    | 142.8   | 146.1   | 128.1   | 131.5 | 112.5 | 78.8  | 60.9  | 33.2  | 38.6  | 7.6   |
| Other red oak         | 367.6       | 61.7                                     | 65.6    | 59.7    | 53.7    | 44.5  | 29.3  | 19.8  | 14.6  | 7.9   | 9.1   | 1.7   |
| Hickory               | 107.4       | 32.6                                     | 25.4    | 25.1    | 13.0    | 7.3   | 3.4   | .3    | .3    | --    | --    | --    |
| Yellow birch          | 219.6       | 29.5                                     | 33.8    | 26.8    | 30.4    | 23.5  | 25.3  | 19.5  | 11.2  | 8.3   | 8.3   | 3.0   |
| Hard maple            | 938.4       | 207.7                                    | 160.9   | 127.0   | 93.8    | 89.4  | 80.6  | 62.9  | 47.4  | 27.1  | 37.1  | 4.5   |
| Soft maple            | 646.7       | 195.0                                    | 140.3   | 101.8   | 68.2    | 51.2  | 31.4  | 21.6  | 16.3  | 7.4   | 10.3  | 3.2   |
| Beech                 | 25.8        | 2.9                                      | 1.2     | 2.2     | 3.7     | 3.0   | 4.0   | 3.6   | 1.9   | 1.6   | 1.7   | --    |
| Ash                   | 505.6       | 138.9                                    | 124.5   | 91.8    | 65.4    | 41.1  | 22.1  | 9.1   | 4.9   | 4.1   | 3.2   | .5    |
| Balsam poplar         | 32.6        | 5.9                                      | 5.1     | 6.2     | 4.0     | 4.6   | 2.0   | 1.8   | 1.2   | 1.4   | .4    | --    |
| Cottonwood            | 19.5        | .6                                       | 1.3     | 2.0     | 1.6     | .9    | 2.0   | 1.4   | 1.5   | .8    | 2.7   | 4.7   |
| Paper birch           | 727.5       | 300.0                                    | 232.8   | 118.0   | 49.4    | 16.2  | 5.9   | 2.7   | 1.3   | .9    | .3    | --    |
| Bigtooth aspen        | 519.2       | 102.1                                    | 148.6   | 121.3   | 78.9    | 39.7  | 19.3  | 6.6   | 1.5   | 1.0   | .2    | --    |
| Quaking aspen         | 1,640.3     | 458.7                                    | 510.9   | 384.0   | 186.6   | 70.9  | 22.7  | 5.1   | 1.4   | --    | --    | --    |
| Basswood              | 559.6       | 107.3                                    | 129.3   | 109.9   | 75.2    | 50.5  | 36.7  | 22.0  | 11.1  | 8.7   | 8.3   | .6    |
| Butternut             | 18.3        | 2.5                                      | 1.4     | 5.2     | 3.7     | 3.1   | 1.1   | .7    | .4    | .2    | --    | --    |
| Black walnut          | 7.5         | .2                                       | 1.4     | 1.0     | 1.2     | 1.3   | 1.5   | .5    | .2    | .2    | --    | --    |
| Black cherry          | 69.6        | 21.3                                     | 21.3    | 11.4    | 6.8     | 3.4   | 2.8   | 1.9   | --    | .3    | .4    | --    |
| Elm                   | 695.4       | 87.6                                     | 103.8   | 97.9    | 94.3    | 85.6  | 66.0  | 48.2  | 36.8  | 24.8  | 35.9  | 14.5  |
| Other hardwoods       | 21.9        | 2.5                                      | 3.1     | 2.4     | 3.9     | 2.1   | 3.0   | 2.3   | 1.1   | .7    | .8    | --    |
| Noncommercial species | --          | --                                       | --      | --      | --      | --    | --    | --    | --    | --    | --    | --    |
| Total hardwoods       | 8,521.4     | 1,917.4                                  | 1,911.1 | 1,508.8 | 1,032.1 | 726.9 | 516.2 | 335.8 | 227.5 | 136.1 | 167.3 | 42.2  |
| All species           | 10,996.1    | 2,593.4                                  | 2,451.6 | 1,862.9 | 1,262.0 | 904.8 | 666.4 | 452.7 | 307.3 | 191.8 | 239.0 | 64.2  |

Table 39. – Net volume of sawtimber on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Million board feet)<sup>1</sup>

| Species               | All<br>classes | Diameter class (inches at breast height) |               |               |               |               |               |               |               | 29.0+ |
|-----------------------|----------------|------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|
|                       |                | 9.0-<br>10.9                             | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>28.9 |       |
|                       |                |                                          |               |               |               |               |               |               |               |       |
| Softwoods:            |                |                                          |               |               |               |               |               |               |               |       |
| White pine            | 1,944.6        | 194.8                                    | 238.3         | 250.3         | 276.8         | 264.6         | 205.1         | 162.0         | 240.2         | 112.5 |
| Red pine              | 843.9          | 127.4                                    | 131.9         | 182.9         | 164.3         | 123.4         | 66.0          | 32.5          | 15.5          |       |
| Jack pine             | 561.3          | 345.8                                    | 151.9         | 51.0          | 9.8           | 2.8           | --            | --            | --            |       |
| White spruce          | 203.9          | 79.9                                     | 46.1          | 36.7          | 24.1          | 9.2           | 4.5           | 2.2           | 1.2           |       |
| Black spruce          | 50.5           | 39.5                                     | 5.4           | 3.2           | 1.2           | 1.2           | --            | --            | --            |       |
| Balsam fir            | 460.6          | 308.2                                    | 112.9         | 29.1          | 10.4          | --            | --            | --            | --            |       |
| Hemlock               | 1,583.8        | 206.8                                    | 243.9         | 251.7         | 250.1         | 209.4         | 144.5         | 106.5         | 150.1         | 20.8  |
| Tamarack              | 117.1          | 66.7                                     | 35.8          | 7.6           | 6.4           | --            | .6            | --            | --            |       |
| Northern white-cedar  | 730.4          | 372.9                                    | 181.5         | 97.0          | 45.3          | 15.8          | 10.4          | 4.6           | 2.9           |       |
| Other softwoods       | 1.0            | .5                                       | .5            | --            | --            | --            | --            | --            | --            |       |
| Total softwoods       | 6,497.1        | 1,742.5                                  | 1,148.2       | 909.5         | 788.4         | 626.4         | 431.1         | 307.8         | 409.9         | 133.3 |
| Hardwoods:            |                |                                          |               |               |               |               |               |               |               |       |
| White oak             | 1,091.8        | --                                       | 375.0         | 269.6         | 198.0         | 115.3         | 54.3          | 30.6          | 40.6          | 8.4   |
| Select red oak        | 2,889.2        | --                                       | 689.8         | 666.2         | 545.7         | 368.2         | 272.6         | 147.5         | 165.8         | 33.4  |
| Other red oak         | 825.0          | --                                       | 272.6         | 205.1         | 127.0         | 82.9          | 62.1          | 33.1          | 35.6          | 6.6   |
| Hickory               | 107.3          | --                                       | 57.2          | 31.0          | 16.0          | 2.0           | 1.1           | --            | --            |       |
| Yellow birch          | 642.0          | --                                       | 159.9         | 114.6         | 122.0         | 90.6          | 55.2          | 42.0          | 42.3          | 15.4  |
| Hard maple            | 2,119.4        | --                                       | 458.5         | 426.1         | 372.6         | 296.8         | 230.5         | 131.0         | 180.4         | 23.5  |
| Soft maple            | 980.2          | --                                       | 336.5         | 239.4         | 144.5         | 99.3          | 69.6          | 32.0          | 43.2          | 15.7  |
| Beech                 | 87.0           | --                                       | 16.1          | 13.6          | 18.7          | 16.9          | 8.2           | 6.3           | 7.2           |       |
| Ash                   | 765.7          | --                                       | 339.7         | 213.9         | 109.5         | 45.2          | 22.7          | 17.5          | 13.8          | 3.4   |
| Balsam poplar         | 80.6           | --                                       | 23.3          | 25.8          | 10.6          | 9.1           | 5.4           | 5.4           | 1.0           |       |
| Cottonwood            | 65.8           | --                                       | 7.7           | 4.8           | 9.8           | 6.6           | 6.5           | 3.1           | 11.4          | 15.9  |
| Paper birch           | 376.4          | --                                       | 237.2         | 80.5          | 29.3          | 14.3          | 6.6           | 6.1           | 2.4           | --    |
| Bigtooth aspen        | 740.8          | --                                       | 379.9         | 202.8         | 105.4         | 39.3          | 8.8           | 4.2           | .4            | --    |
| Quaking aspen         | 1,368.5        | --                                       | 869.2         | 342.2         | 118.4         | 30.4          | 8.3           | --            | --            |       |
| Basswood              | 1,005.8        | --                                       | 363.0         | 240.2         | 172.4         | 100.8         | 48.4          | 38.9          | 39.0          | 3.1   |
| Butternut             | 43.9           | --                                       | 18.4          | 14.9          | 4.8           | 3.6           | 1.5           | .7            | --            |       |
| Black walnut          | 22.5           | --                                       | 5.9           | 6.7           | 6.8           | 1.8           | 1.0           | .3            | --            |       |
| Black cherry          | 72.0           | --                                       | 32.8          | 14.6          | 13.4          | 8.5           | --            | 1.2           | 1.5           |       |
| Elm                   | 1,906.6        | --                                       | 455.3         | 408.3         | 316.8         | 229.5         | 169.4         | 112.9         | 159.6         | 54.8  |
| Other hardwoods       | 68.1           | --                                       | 19.2          | 10.5          | 14.8          | 10.2          | 5.8           | 3.2           | 4.4           |       |
| Noncommercial species | --             | --                                       | --            | --            | --            | --            | --            | --            | --            |       |
| Total hardwoods       | 15,258.6       | --                                       | 5,117.2       | 3,530.8       | 2,456.5       | 1,571.3       | 1,038.0       | 616.0         | 748.6         | 180.2 |
| All Species           | 21,755.7       | 1,742.5                                  | 6,265.4       | 4,440.3       | 3,244.9       | 2,197.7       | 1,469.1       | 923.8         | 1,158.5       | 313.5 |

1/ International 1/4-inch rule.

Table 40. – Net volume of growing stock on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1968  
(Million cubic feet)

| Species               | All<br>units | Northeastern<br>unit | Northwestern<br>unit | Central<br>unit | Southeastern<br>unit | Southwestern<br>unit |
|-----------------------|--------------|----------------------|----------------------|-----------------|----------------------|----------------------|
| <b>Softwoods:</b>     |              |                      |                      |                 |                      |                      |
| White pine            | 412.7        | 200.0                | 107.3                | 92.2            | 4.4                  | 8.8                  |
| Red pine              | 241.1        | 118.6                | 80.0                 | 32.8            | 2.3                  | 7.4                  |
| Jack pine             | 417.6        | 101.1                | 188.2                | 122.5           | .8                   | 5.0                  |
| White spruce          | 81.7         | 46.8                 | 33.4                 | .6              | .9                   | --                   |
| Black spruce          | 92.0         | 62.5                 | 27.9                 | 1.5             | .1                   | --                   |
| Balsam fir            | 439.0        | 204.5                | 223.6                | 9.2             | 1.7                  | --                   |
| Hemlock               | 336.2        | 229.4                | 77.9                 | 24.7            | 4.2                  | --                   |
| Tamarack              | 111.1        | 25.5                 | 63.9                 | 14.7            | 6.9                  | .1                   |
| Northern white-cedar  | 342.4        | 159.8                | 108.9                | 22.0            | 51.7                 | --                   |
| Other softwoods       | .9           | --                   | --                   | .6              | .1                   | .2                   |
| Total softwoods       | 2,474.7      | 1,148.2              | 911.1                | 320.8           | 73.1                 | 21.5                 |
| <b>Hardwoods:</b>     |              |                      |                      |                 |                      |                      |
| White oak             | 406.1        | 10.9                 | 51.5                 | 106.3           | 75.9                 | 161.5                |
| Select red oak        | 992.8        | 143.3                | 227.5                | 238.7           | 75.3                 | 308.0                |
| Other red oak         | 367.6        | 40.5                 | 39.1                 | 131.8           | 34.0                 | 122.2                |
| Hickory               | 107.4        | 4.6                  | 2.5                  | 8.6             | 28.1                 | 63.6                 |
| Yellow birch          | 219.6        | 97.1                 | 94.8                 | 22.7            | 4.0                  | 1.0                  |
| Hard maple            | 938.4        | 374.3                | 376.7                | 75.3            | 46.7                 | 65.4                 |
| Soft maple            | 646.7        | 165.6                | 241.0                | 139.8           | 34.5                 | 65.8                 |
| Beech                 | 25.8         | 13.1                 | --                   | .5              | 12.2                 | --                   |
| Ash                   | 505.6        | 127.0                | 220.5                | 61.6            | 64.7                 | 31.8                 |
| Balsam poplar         | 32.6         | 21.7                 | 6.4                  | .1              | 4.1                  | .3                   |
| Cottonwood            | 19.5         | 4.4                  | .1                   | --              | 5.2                  | 9.8                  |
| Paper birch           | 727.5        | 272.8                | 326.8                | 66.5            | 17.5                 | 43.9                 |
| Bigtooth aspen        | 519.2        | 148.6                | 198.9                | 88.3            | 13.4                 | 70.0                 |
| Quaking aspen         | 1,640.3      | 536.7                | 780.6                | 215.7           | 41.2                 | 66.1                 |
| Basswood              | 559.6        | 185.2                | 241.3                | 50.9            | 20.0                 | 62.2                 |
| Butternut             | 18.3         | 3.5                  | 3.1                  | 2.8             | 1.0                  | 7.9                  |
| Black walnut          | 7.5          | --                   | --                   | .2              | 2.4                  | 4.9                  |
| Black cherry          | 69.6         | 21.0                 | 11.7                 | 7.6             | 16.2                 | 13.1                 |
| Elm                   | 695.4        | 212.0                | 164.2                | 101.1           | 105.6                | 112.5                |
| Other hardwoods       | 21.9         | 2.3                  | .3                   | 3.0             | 7.7                  | 8.6                  |
| Noncommercial species | --           | --                   | --                   | --              | --                   | --                   |
| Total hardwoods       | 8,521.4      | 2,384.6              | 2,987.0              | 1,321.5         | 609.7                | 1,218.6              |
| All Species           | 10,996.1     | 3,532.8              | 3,898.1              | 1,642.3         | 682.8                | 1,240.1              |

Table 41. — Net volume of sawtimber on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1968  
(Million board feet)<sup>1</sup>

| Species               | All<br>units | Northeastern<br>unit | Northwestern<br>unit | Central<br>unit | Southeastern<br>unit | Southwestern<br>unit |
|-----------------------|--------------|----------------------|----------------------|-----------------|----------------------|----------------------|
| Softwoods:            |              |                      |                      |                 |                      |                      |
| White pine            | 1,944.6      | 949.2                | 532.3                | 417.0           | 17.0                 | 79.1                 |
| Red pine              | 843.9        | 469.6                | 261.6                | 105.1           | 1.8                  | 5.8                  |
| Jack pine             | 561.3        | 184.6                | 205.0                | 161.4           | 3.3                  | 7.0                  |
| White spruce          | 203.9        | 100.5                | 100.9                | 1.6             | .9                   | --                   |
| Black spruce          | 50.5         | 35.3                 | 13.7                 | 1.5             | --                   | --                   |
| Balsam fir            | 460.6        | 183.4                | 270.0                | 4.6             | 2.6                  | --                   |
| Hemlock               | 1,583.8      | 1,109.4              | 379.6                | 82.3            | 12.5                 | --                   |
| Tamarack              | 117.1        | 23.1                 | 71.9                 | 12.8            | 9.3                  | --                   |
| Northern white-cedar  | 730.4        | 299.8                | 322.4                | 23.5            | 84.7                 | --                   |
| Other softwoods       | 1.0          | --                   | --                   | 1.0             | --                   | --                   |
| Total softwoods       | 6,497.1      | 3,354.9              | 2,157.4              | 810.8           | 132.1                | 41.9                 |
| Hardwoods:            |              |                      |                      |                 |                      |                      |
| White oak             | 1,091.8      | 22.3                 | 82.6                 | 255.6           | 277.9                | 453.4                |
| Select red oak        | 2,889.2      | 318.5                | 369.2                | 699.2           | 290.0                | 1,212.3              |
| Other red oak         | 825.0        | 69.8                 | 65.5                 | 218.6           | 107.7                | 363.4                |
| Hickory               | 107.3        | 7.6                  | 2.2                  | 11.6            | 35.6                 | 50.3                 |
| Yellow birch          | 642.0        | 329.5                | 263.2                | 40.5            | 6.2                  | 2.6                  |
| Hard maple            | 2,119.4      | 1,040.1              | 546.2                | 203.1           | 125.2                | 204.8                |
| Soft maple            | 980.2        | 228.2                | 278.7                | 223.1           | 83.0                 | 167.2                |
| Beech                 | 87.0         | 48.1                 | --                   | 1.7             | 37.2                 | --                   |
| Ash                   | 765.7        | 192.2                | 301.4                | 93.7            | 105.4                | 73.0                 |
| Balsam poplar         | 80.6         | 52.6                 | 15.3                 | --              | 12.7                 | --                   |
| Cottonwood            | 65.8         | 14.5                 | --                   | --              | 17.7                 | 33.6                 |
| Paper birch           | 376.4        | 143.3                | 130.2                | 23.7            | 24.3                 | 54.9                 |
| Bigtooth aspen        | 740.8        | 166.7                | 270.4                | 96.8            | 24.2                 | 182.7                |
| Quaking aspen         | 1,368.5      | 418.3                | 756.5                | 116.8           | 24.3                 | 52.6                 |
| Basswood              | 1,005.8      | 281.6                | 363.7                | 127.3           | 62.3                 | 170.9                |
| Butternut             | 43.9         | 9.4                  | 6.6                  | 8.2             | 1.4                  | 18.3                 |
| Black walnut          | 22.5         | --                   | --                   | 1.0             | 8.4                  | 13.1                 |
| Black cherry          | 72.0         | 15.9                 | .8                   | 5.5             | 35.8                 | 14.0                 |
| Elm                   | 1,906.6      | 579.2                | 412.5                | 299.1           | 327.4                | 288.4                |
| Other hardwoods       | 68.1         | 9.0                  | .7                   | 12.8            | 22.3                 | 23.3                 |
| Noncommercial species | --           | --                   | --                   | --              | --                   | --                   |
| Total hardwoods       | 15,258.6     | 3,946.8              | 3,865.7              | 2,438.3         | 1,629.0              | 3,378.8              |
| All species           | 21,755.7     | 7,301.7              | 6,023.1              | 3,249.1         | 1,761.1              | 3,420.7              |

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



Table 42. — Net volume of growing stock on commercial forest land, by species and forest type, Wisconsin, 1968  
(Million cubic feet)

| Species               | Forest types     |           |          |            |                         |              |                      |          |             |                     |                   |         |             |
|-----------------------|------------------|-----------|----------|------------|-------------------------|--------------|----------------------|----------|-------------|---------------------|-------------------|---------|-------------|
|                       | All forest types | Jack pine | Red pine | White pine | Balsam fir—white spruce | Black spruce | Northern white-cedar | Tamarack | Oak-hickory | Elm-ash-cotton-wood | Maple-beech-birch | Aspen   | Paper birch |
| Softwoods:            |                  |           |          |            |                         |              |                      |          |             |                     |                   |         |             |
| White pine            | 412.7            | 6.9       | 22.8     | 148.5      | 13.4                    | 3.8          | 2.9                  | 5.2      | 35.2        | 18.6                | 103.3             | 43.5    | 8.5         |
| Red pine              | 241.1            | 14.9      | 121.9    | 19.8       | 4.1                     | 4.1          | .2                   | .7       | 16.3        | 1.0                 | 13.2              | 37.8    | 7.1         |
| Jack pine             | 417.6            | 306.8     | 9.9      | 4.3        | .3                      | .7           | --                   | .2       | 46.3        | 1.3                 | 1.2               | 43.1    | 3.3         |
| White spruce          | 81.7             | --        | 1.2      | 2.6        | 34.2                    | 1.0          | 2.8                  | 1.0      | --          | 7.6                 | 11.1              | 17.5    | 2.4         |
| Black spruce          | 92.0             | 1.9       | 1.2      | 1.8        | 17.6                    | 36.9         | 9.9                  | 10.1     | --          | 2.3                 | 1.7               | 7.8     | .8          |
| Balsam fir            | 439.0            | .2        | 3.1      | 5.5        | 190.3                   | 8.8          | 32.6                 | 6.1      | --          | 33.0                | 77.5              | 64.6    | 17.2        |
| Hemlock               | 336.2            | --        | .5       | 2.1        | 11.1                    | 1.1          | 8.8                  | .2       | .3          | 16.5                | 291.1             | 2.2     | 2.3         |
| Tamarack              | 111.1            | --        | .4       | 1.3        | 5.0                     | 8.2          | 8.7                  | 60.1     | 1.2         | 8.2                 | 2.1               | 13.7    | 1.8         |
| Northern white-cedar  | 342.4            | --        | .3       | 3.0        | 36.2                    | 1.0          | 179.4                | 2.1      | --          | 52.2                | 54.0              | 10.5    | 3.7         |
| Other softwoods       | .9               | .2        | .4       | --         | --                      | --           | --                   | --       | --          | --                  | .2                | .1      | --          |
| Total softwoods       | 2,474.7          | 330.9     | 161.7    | 188.9      | 312.2                   | 65.6         | 245.3                | 85.7     | 99.3        | 140.7               | 555.4             | 240.8   | 47.1        |
| Hardwoods:            |                  |           |          |            |                         |              |                      |          |             |                     |                   |         |             |
| White oak             | 406.1            | 0.5       | --       | 1.3        | 0.3                     | --           | 0.3                  | --       | 315.5       | 15.2                | 48.2              | 21.2    | 3.4         |
| Select red oak        | 992.8            | 3.7       | 3.1      | 3.9        | .6                      | 0.4          | --                   | 0.2      | 695.0       | 10.8                | 181.0             | 70.7    | 23.1        |
| Other red oak         | 167.6            | 8.3       | 1.6      | 1.8        | --                      | --           | --                   | --       | 321.7       | 1.6                 | 12.7              | 17.2    | 1.8         |
| Hickory               | 107.4            | --        | --       | --         | --                      | --           | .2                   | --       | 76.5        | .7                  | 27.4              | 1.9     | .6          |
| Yellow birch          | 219.6            | --        | --       | --         | 9.3                     | .2           | 3.2                  | .2       | .6          | 18.4                | 183.0             | 3.3     | 1.4         |
| Hard maple            | 938.4            | --        | .3       | 1.1        | 4.7                     | .2           | .3                   | --       | 26.3        | 12.2                | 868.8             | 16.5    | 7.7         |
| Soft maple            | 646.7            | --        | .5       | 7.0        | 16.0                    | .6           | 3.3                  | .5       | 61.4        | 167.3               | 305.8             | 65.1    | 19.2        |
| Beech                 | 25.8             | --        | --       | --         | --                      | --           | --                   | --       | --          | 1.0                 | 24.8              | --      | --          |
| Ash                   | 505.6            | --        | --       | .9         | 10.5                    | --           | 10.5                 | --       | 20.1        | 240.9               | 191.2             | 26.3    | 4.3         |
| Balsam poplar         | 32.6             | --        | --       | --         | 1.9                     | --           | .4                   | .4       | .5          | 5.6                 | 3.7               | 18.3    | 1.8         |
| Cottonwood            | 19.5             | --        | --       | .2         | --                      | --           | --                   | --       | 2.7         | 11.3                | 2.4               | 2.4     | .5          |
| Paper birch           | 727.5            | 1.8       | 3.5      | 5.5        | 26.3                    | 2.5          | 10.3                 | 3.5      | 74.7        | 34.0                | 164.9             | 177.1   | 223.4       |
| Bigtooth aspen        | 519.2            | 4.8       | 2.0      | 2.1        | 2.8                     | .8           | --                   | --       | 119.8       | 8.0                 | 51.3              | 313.1   | 14.5        |
| Quaking aspen         | 1,640.3          | 14.0      | 14.2     | 13.6       | 48.8                    | 8.1          | 5.3                  | 2.2      | 81.8        | 46.7                | 192.3             | 1,167.6 | 44.4        |
| Basswood              | 559.6            | --        | --       | .7         | 1.6                     | --           | 1.2                  | --       | 35.2        | 24.8                | 476.1             | 17.1    | 2.9         |
| Butternut             | 18.3             | --        | --       | --         | --                      | --           | --                   | --       | 6.6         | --                  | 10.2              | 1.2     | .1          |
| Black walnut          | 7.5              | --        | --       | --         | --                      | --           | --                   | --       | 5.3         | --                  | 2.2               | --      | --          |
| Black cherry          | 69.6             | --        | --       | --         | 2.1                     | --           | --                   | .3       | 28.5        | 1.9                 | 25.1              | 11.2    | .4          |
| Elm                   | 695.4            | .2        | --       | 1.4        | 4.9                     | --           | 5.9                  | .5       | 45.2        | 201.8               | 399.5             | 30.4    | 3.8         |
| Other hardwoods       | 21.9             | --        | .6       | --         | --                      | --           | .1                   | --       | 3.0         | 10.7                | 4.0               | 3.4     | .1          |
| Noncommercial species | --               | --        | --       | --         | --                      | --           | --                   | --       | --          | --                  | --                | --      | --          |
| Total hardwoods       | 8,521.4          | 33.3      | 25.8     | 39.5       | 129.8                   | 12.8         | 41.0                 | 7.8      | 1,920.4     | 813.1               | 3,174.6           | 1,964.0 | 353.4       |
| All species           | 10,996.1         | 364.2     | 187.5    | 228.4      | 442.0                   | 78.4         | 286.3                | 93.5     | 2,019.7     | 953.8               | 3,730.0           | 2,204.8 | 400.5       |

Table 43. — Net volume of sawtimber on commercial forest land, by species and forest type, Wisconsin, 1968  
(Million board feet)<sup>1</sup>

| Species               | Forest types |           |          |            |                   |              |       |          |              |                   |                     |         |             |              |
|-----------------------|--------------|-----------|----------|------------|-------------------|--------------|-------|----------|--------------|-------------------|---------------------|---------|-------------|--------------|
|                       | All          |           |          |            | Balsam            |              |       | Northern |              | Elm-              |                     |         |             |              |
|                       | forest types | Jack pine | Red pine | White pine | fir- white spruce | Black spruce | cedar | Tamarack | Oak- hickory | ash- cotton- wood | Maple- beech- birch | Aspen   | Paper birch | Non- stocked |
| Softwoods:            |              |           |          |            |                   |              |       |          |              |                   |                     |         |             |              |
| White pine            | 1,944.6      | 28.4      | 92.6     | 707.8      | 71.1              | 19.3         | 12.5  | 23.6     | 161.0        | 91.2              | 509.5               | 192.1   | 34.8        | 0.7          |
| Red pine              | 843.9        | 46.0      | 316.4    | 91.3       | 20.1              | 21.4         | 1.0   | 3.8      | 83.2         | 4.6               | 67.1                | 154.7   | 34.3        | --           |
| Jack pine             | 561.3        | 331.7     | 20.0     | 15.3       | 1.3               | 2.5          | --    | --       | 92.4         | 4.1               | 3.9                 | 79.9    | 10.2        | --           |
| White spruce          | 203.9        | --        | 1.2      | 10.5       | 67.1              | 4.0          | 9.5   | 1.1      | --           | 23.7              | 40.1                | 40.0    | 5.1         | 1.6          |
| Black spruce          | 50.5         | .7        | --       | 2.3        | 12.5              | 9.3          | 5.2   | 7.1      | --           | 5.4               | 4.3                 | 3.7     | --          | --           |
| Balsam fir            | 460.6        | --        | 4.5      | 12.0       | 186.0             | 12.1         | 10.9  | 1.4      | --           | 30.3              | 139.2               | 47.3    | 16.9        | --           |
| Hemlock               | 1,583.8      | --        | --       | 7.3        | 47.3              | 4.5          | 43.1  | 1.3      | 1.0          | 55.1              | 1,410.3             | 5.8     | 8.1         | --           |
| Tamarack              | 117.1        | --        | .8       | .7         | 1.6               | 5.3          | 9.9   | 52.6     | 3.7          | 22.8              | --                  | 16.3    | 2.6         | .8           |
| Northern white-cedar  | 730.4        | --        | 1.2      | 10.9       | 84.6              | 2.7          | 331.6 | 2.4      | --           | 107.8             | 172.6               | 10.3    | 6.3         | --           |
| Other softwoods       | 1.0          | --        | 1.0      | --         | --                | --           | --    | --       | --           | --                | --                  | --      | --          | --           |
| Total softwoods       | 6,497.1      | 406.8     | 437.7    | 858.1      | 491.6             | 81.1         | 423.7 | 93.3     | 341.3        | 345.0             | 2,347.0             | 550.1   | 118.3       | 3.1          |
| Hardwoods:            |              |           |          |            |                   |              |       |          |              |                   |                     |         |             |              |
| White oak             | 1,091.8      | --        | --       | 4.4        | --                | --           | 0.6   | --       | 855.2        | 49.4              | 144.6               | 27.1    | 9.3         | 1.2          |
| Select red oak        | 2,889.2      | 6.4       | 3.0      | 11.9       | 1.2               | --           | --    | --       | 2,092.3      | 31.8              | 578.2               | 108.0   | 55.0        | 1.4          |
| Other red oak         | 825.0        | 9.8       | 2.4      | 2.7        | --                | --           | --    | --       | 733.3        | 3.2               | 35.3                | 32.3    | 4.0         | 2.0          |
| Hickory               | 107.3        | --        | --       | --         | --                | --           | .4    | --       | 72.6         | 1.1               | 30.8                | 1.9     | .5          | --           |
| Yellow birch          | 642.0        | --        | --       | --         | 33.9              | 0.6          | 7.1   | 0.9      | 1.3          | 40.9              | 547.9               | 7.0     | 2.4         | --           |
| Hard maple            | 2,119.4      | --        | .8       | 2.4        | 8.4               | .9           | --    | --       | 57.8         | 21.7              | 2,003.5             | 13.4    | 9.8         | .7           |
| Soft maple            | 980.2        | --        | --       | 17.4       | 27.3              | .7           | 6.6   | .6       | 69.5         | 383.7             | 440.3               | 23.2    | 10.9        | --           |
| Beech                 | 87.0         | --        | --       | --         | --                | --           | --    | --       | --           | 1.3               | 85.7                | --      | --          | --           |
| Ash                   | 765.7        | --        | --       | 1.6        | 10.9              | --           | 7.3   | --       | 25.5         | 360.7             | 344.5               | 10.8    | 3.4         | 1.0          |
| Balsam poplar         | 80.6         | --        | --       | --         | 2.8               | --           | 2.1   | --       | .9           | 23.2              | 12.8                | 34.0    | 4.8         | --           |
| Cottonwood            | 65.8         | --        | --       | 1.0        | --                | --           | --    | --       | 8.8          | 39.1              | 8.3                 | 6.7     | 1.9         | --           |
| Paper birch           | 376.4        | --        | 3.4      | 5.4        | 10.1              | --           | 9.1   | .9       | 43.8         | 31.6              | 146.8               | 46.9    | 78.4        | --           |
| Bigtooth aspen        | 740.8        | 3.9       | 1.1      | 3.6        | 7.1               | .9           | --    | --       | 247.5        | 15.2              | 108.1               | 328.8   | 24.6        | --           |
| Quaking aspen         | 1,368.5      | 8.0       | 15.6     | 20.5       | 48.8              | 5.5          | 7.3   | --       | 60.7         | 71.4              | 296.9               | 778.9   | 53.4        | 1.5          |
| Basswood              | 1,005.8      | --        | --       | 2.9        | 3.0               | --           | 3.3   | --       | 69.7         | 54.5              | 855.9               | 13.4    | 3.1         | --           |
| Butternut             | 43.9         | --        | --       | --         | --                | --           | --    | --       | 15.7         | .7                | 25.2                | 2.3     | --          | --           |
| Black walnut          | 22.5         | --        | --       | --         | --                | --           | --    | --       | 15.5         | --                | 7.0                 | --      | --          | --           |
| Black cherry          | 72.0         | --        | --       | --         | 1.0               | --           | --    | --       | 41.4         | 2.6               | 22.1                | 4.9     | --          | --           |
| Elm                   | 1,906.6      | --        | --       | 2.9        | 11.6              | --           | 15.2  | .3       | 106.2        | 596.0             | 1,122.9             | 40.8    | 6.6         | 4.1          |
| Other hardwoods       | 68.1         | --        | 2.9      | --         | --                | --           | .7    | --       | 3.5          | 40.1              | 13.2                | 7.1     | .6          | --           |
| Noncommercial species | --           | --        | --       | --         | --                | --           | --    | --       | --           | --                | --                  | --      | --          | --           |
| Total hardwoods       | 15,258.6     | 28.1      | 29.2     | 76.7       | 166.1             | 8.6          | 59.7  | 2.7      | 4,521.2      | 1,768.2           | 6,830.0             | 1,487.5 | 268.7       | 11.9         |
| All species           | 21,755.7     | 434.9     | 466.9    | 934.8      | 657.7             | 89.7         | 483.4 | 96.0     | 4,862.5      | 2,113.2           | 9,177.0             | 2,037.6 | 387.0       | 15.0         |

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

Table 44. — Net volume of growing stock on commercial forest land by county and species group, Wisconsin, 1968  
(Thousand cubic feet)

| County      | All<br>: species | Softwoods<br>: | Oak<br>: | Yellow<br>: birch | Hard<br>: maple | Ash<br>: | Aspen<br>: | Elm<br>: | Other<br>: hardwoods |
|-------------|------------------|----------------|----------|-------------------|-----------------|----------|------------|----------|----------------------|
| Adams       | 127,142          | 37,896         | 39,705   | 893               | 3,112           | 3,033    | 21,757     | 4,922    | 15,824               |
| Ashland     | 422,105          | 109,376        | 22,112   | 13,620            | 50,947          | 25,217   | 88,590     | 16,851   | 95,392               |
| Barron      | 122,379          | 18,668         | 14,512   | 2,947             | 13,414          | 6,944    | 31,545     | 6,249    | 28,100               |
| Bayfield    | 572,308          | 151,791        | 52,006   | 13,169            | 52,211          | 25,525   | 139,459    | 16,906   | 121,241              |
| Brown       | 32,777           | 3,950          | 4,424    | 284               | 3,049           | 3,840    | 2,149      | 7,410    | 7,671                |
| Buffalo     | 143,148          | 1,880          | 66,794   | 111               | 8,074           | 4,148    | 13,778     | 13,809   | 34,554               |
| Burnett     | 211,104          | 52,851         | 34,618   | 2,283             | 10,120          | 8,801    | 60,782     | 7,047    | 34,602               |
| Calumet     | 18,446           | 1,793          | 4,945    | 126               | 1,288           | 2,015    | 1,248      | 2,844    | 4,187                |
| Chippewa    | 122,861          | 20,090         | 35,558   | 1,659             | 5,467           | 4,361    | 27,334     | 7,070    | 21,322               |
| Clark       | 163,103          | 26,781         | 38,544   | 2,836             | 9,211           | 6,502    | 37,691     | 11,004   | 30,534               |
| Columbia    | 60,285           | 4,116          | 24,016   | 237               | 3,034           | 4,424    | 5,198      | 6,525    | 12,735               |
| Crawford    | 107,930          | 1,130          | 50,947   | 95                | 4,945           | 2,836    | 13,027     | 9,686    | 25,264               |
| Dane        | 57,394           | 1,793          | 29,301   | 150               | 2,876           | 2,844    | 3,500      | 4,748    | 12,182               |
| Dodge       | 24,103           | 2,022          | 5,767    | 134               | 1,722           | 2,639    | 1,936      | 4,440    | 5,443                |
| Door        | 85,265           | 20,248         | 7,244    | 616               | 6,359           | 8,137    | 11,400     | 14,647   | 16,614               |
| Douglas     | 384,311          | 107,076        | 26,797   | 6,020             | 24,553          | 17,941   | 117,441    | 14,394   | 70,089               |
| Dunn        | 111,050          | 1,943          | 50,536   | 95                | 6,170           | 3,239    | 11,605     | 10,831   | 26,631               |
| Eau Claire  | 90,479           | 16,519         | 31,466   | 798               | 2,899           | 2,520    | 18,478     | 4,092    | 13,707               |
| Florence    | 233,903          | 61,280         | 5,980    | 20,169            | 41,420          | 2,931    | 55,134     | 15,089   | 31,900               |
| Fond du Lac | 30,210           | 3,350          | 8,571    | 158               | 1,588           | 3,176    | 2,449      | 4,266    | 6,652                |
| Forest      | 448,965          | 145,265        | 4,195    | 17,262            | 76,164          | 10,468   | 76,132     | 28,874   | 90,605               |
| Grant       | 120,293          | 1,667          | 58,247   | 103               | 5,601           | 2,970    | 13,754     | 10,586   | 27,365               |
| Green       | 25,801           | 1,001          | 12,047   | 87                | 1,398           | 1,580    | 1,319      | 2,686    | 5,333                |
| Green Lake  | 20,643           | 1,485          | 7,260    | 95                | 1,462           | 1,533    | 1,422      | 2,828    | 4,558                |
| Iowa        | 90,645           | 5,017          | 40,519   | 63                | 3,982           | 2,315    | 10,080     | 8,050    | 20,619               |
| Iron        | 290,443          | 57,685         | 19,118   | 7,963             | 34,578          | 20,374   | 63,777     | 17,159   | 69,789               |
| Jackson     | 183,770          | 38,497         | 58,436   | 1,849             | 6,826           | 5,040    | 36,434     | 8,595    | 28,093               |
| Jefferson   | 23,787           | 2,275          | 7,466    | 134               | 1,635           | 2,220    | 1,398      | 3,595    | 5,064                |
| Juneau      | 139,380          | 31,355         | 44,090   | 1,406             | 4,337           | 5,285    | 23,139     | 7,916    | 21,852               |
| Kenosha     | 7,821            | 537            | 1,833    | 47                | 830             | 743      | 474        | 1,485    | 1,872                |
| Kewaunee    | 26,512           | 3,729          | 3,547    | 205               | 2,528           | 3,168    | 2,077      | 5,467    | 5,791                |
| La Crosse   | 81,804           | 1,130          | 38,907   | 55                | 3,705           | 2,291    | 8,303      | 7,853    | 19,560               |
| Lafayette   | 28,851           | 632            | 14,354   | 24                | 1,390           | 703      | 3,105      | 2,481    | 6,162                |
| Langlade    | 287,078          | 62,916         | 4,921    | 7,379             | 49,841          | 9,132    | 58,152     | 24,909   | 69,828               |
| Lincoln     | 307,057          | 53,024         | 13,359   | 5,870             | 34,239          | 22,231   | 73,019     | 25,501   | 79,814               |
| Manitowoc   | 51,239           | 5,980          | 8,856    | 395               | 4,211           | 5,957    | 3,602      | 10,467   | 11,771               |

(Continued on next page)

Table 44 continued

| County                | All<br>: species | Softwoods<br>: | Oak<br>:  | Yellow<br>: birch | Hard<br>: maple | Ash<br>: | Aspen<br>: | Elm<br>: | Other<br>: hardwoods |
|-----------------------|------------------|----------------|-----------|-------------------|-----------------|----------|------------|----------|----------------------|
| Marathon              | 272,463          | 41,806         | 55,774    | 6,826             | 22,199          | 13,312   | 51,832     | 24,166   | 56,548               |
| Marinette             | 485,826          | 127,150        | 57,078    | 2,512             | 22,215          | 24,419   | 119,677    | 25,075   | 107,700              |
| Marquette             | 53,617           | 10,443         | 19,640    | 427               | 1,390           | 2,022    | 7,979      | 3,065    | 8,651                |
| Milwaukee             | --               | --             | --        | --                | --              | --       | --         | --       | --                   |
| Monroe                | 127,972          | 21,093         | 54,984    | 1,066             | 4,361           | 3,192    | 18,533     | 5,617    | 19,126               |
| Oconto                | 330,378          | 159,106        | 8,761     | 3,002             | 10,476          | 17,119   | 59,132     | 24,869   | 47,913               |
| Oneida                | 482,240          | 209,129        | 30,794    | 6,620             | 15,318          | 9,275    | 111,532    | 4,851    | 94,721               |
| Outagamie             | 45,780           | 5,538          | 8,129     | 348               | 3,128           | 5,980    | 3,871      | 8,279    | 10,507               |
| Ozaukee               | 9,472            | 916            | 2,275     | 55                | 592             | 822      | 1,359      | 1,288    | 2,165                |
| Pepin                 | 39,982           | 411            | 18,178    | 24                | 2,101           | 1,145    | 4,708      | 3,816    | 9,599                |
| Pierce                | 53,175           | 553            | 26,876    | 47                | 3,350           | 1,224    | 5,475      | 4,661    | 10,989               |
| Polk                  | 161,484          | 32,793         | 33,686    | 2,149             | 9,599           | 6,138    | 43,442     | 5,972    | 27,705               |
| Portage               | 100,022          | 18,794         | 27,919    | 1,683             | 5,451           | 4,535    | 15,215     | 7,576    | 18,849               |
| Price                 | 499,809          | 134,355        | 27,697    | 14,970            | 53,886          | 34,484   | 101,578    | 24,269   | 108,570              |
| Racine                | 12,506           | 933            | 2,465     | 87                | 1,098           | 1,311    | 1,043      | 2,496    | 3,073                |
| Richland              | 84,024           | 1,438          | 40,100    | 79                | 5,388           | 2,125    | 8,177      | 8,105    | 18,612               |
| Rock                  | 22,831           | 727            | 10,609    | 79                | 1,359           | 1,501    | 1,359      | 2,323    | 4,874                |
| Rusk                  | 244,292          | 36,680         | 19,308    | 5,783             | 27,002          | 15,413   | 68,801     | 13,130   | 58,175               |
| St. Croix             | 41,649           | 853            | 18,549    | 24                | 2,046           | 1,003    | 7,742      | 3,223    | 8,209                |
| Sauk                  | 128,723          | 2,165          | 62,600    | 103               | 7,189           | 3,207    | 13,651     | 11,621   | 28,187               |
| Sawyer                | 470,745          | 105,528        | 30,075    | 11,574            | 45,085          | 25,960   | 130,816    | 18,691   | 103,016              |
| Shawano <sup>1/</sup> | 576,241          | 194,483        | 45,844    | 22,522            | 82,783          | 29,885   | 44,517     | 57,962   | 98,245               |
| Sheboygan             | 34,270           | 4,305          | 8,248     | 205               | 2,315           | 3,523    | 3,326      | 4,930    | 7,418                |
| Taylor                | 280,237          | 51,832         | 13,572    | 10,681            | 39,050          | 21,701   | 58,626     | 14,054   | 70,721               |
| Trempealeau           | 89,104           | 1,351          | 43,023    | 79                | 4,685           | 2,244    | 9,440      | 8,011    | 20,271               |
| Vernon                | 119,724          | 1,304          | 62,236    | 95                | 6,794           | 2,370    | 13,193     | 9,756    | 23,976               |
| Vilas                 | 380,827          | 135,825        | 23,708    | 11,723            | 41,814          | 1,493    | 88,014     | 4,993    | 73,257               |
| Walworth              | 19,940           | 1,249          | 6,675     | 103               | 1,406           | 1,825    | 1,296      | 2,962    | 4,424                |
| Washburn              | 238,896          | 52,424         | 24,601    | 3,658             | 16,282          | 11,992   | 74,615     | 9,504    | 45,820               |
| Washington            | 30,684           | 2,891          | 6,233     | 253               | 2,504           | 3,642    | 1,375      | 6,407    | 7,379                |
| Waukesha              | 27,050           | 3,073          | 10,135    | 111               | 980             | 2,228    | 2,236      | 2,812    | 5,475                |
| Waupaca               | 88,259           | 18,004         | 21,425    | 1,327             | 3,895           | 4,764    | 15,026     | 6,668    | 17,150               |
| Waushara              | 66,076           | 13,762         | 23,755    | 679               | 2,228           | 2,386    | 9,259      | 3,713    | 10,294               |
| Winnebago             | 15,950           | 790            | 5,174     | 87                | 1,304           | 1,556    | 553        | 2,662    | 3,824                |
| Wood                  | 107,132          | 25,739         | 25,580    | 1,287             | 3,887           | 4,621    | 21,362     | 6,660    | 17,996               |
| State total           | 10,995,772       | 2,474,541      | 1,766,704 | 219,605           | 938,346         | 505,500  | 2,159,448  | 695,469  | 2,236,159            |

<sup>1/</sup> Volumes for Menominee County have been combined with Shawano County.

Table 45. — Net volume of sawtimber on commercial forest land by county and species group, Wisconsin, 1968  
(Thousand board feet)<sup>1</sup>

| County      | All species | Softwoods | Oak     | Yellow birch | Hard maple | Ash    | Aspen   | Elm    | Other hardwoods |
|-------------|-------------|-----------|---------|--------------|------------|--------|---------|--------|-----------------|
| Adams       | 234,402     | 70,533    | 95,960  | 1,563        | 8,737      | 4,893  | 15,048  | 15,027 | 22,641          |
| Ashland     | 651,481     | 256,355   | 38,161  | 32,555       | 65,568     | 32,310 | 92,937  | 40,891 | 92,704          |
| Barron      | 204,412     | 55,725    | 26,496  | 9,374        | 22,537     | 9,173  | 36,549  | 16,086 | 28,472          |
| Bayfield    | 844,308     | 351,977   | 58,916  | 33,530       | 66,419     | 38,400 | 144,409 | 42,087 | 108,570         |
| Brown       | 87,729      | 7,589     | 16,700  | 508          | 8,545      | 7,130  | 2,316   | 24,379 | 20,562          |
| Buffalo     | 406,468     | 4,773     | 232,621 | 290          | 25,318     | 9,855  | 25,217  | 36,213 | 72,181          |
| Burnett     | 292,939     | 96,487    | 55,191  | 7,395        | 16,975     | 10,646 | 61,354  | 17,484 | 27,407          |
| Calumet     | 47,294      | 3,524     | 17,757  | 173          | 3,404      | 3,188  | 1,185   | 8,505  | 9,558           |
| Chippewa    | 224,317     | 56,202    | 79,264  | 2,824        | 14,345     | 5,766  | 18,473  | 19,775 | 27,668          |
| Clark       | 306,826     | 81,634    | 89,642  | 4,981        | 24,492     | 8,916  | 23,860  | 31,295 | 42,006          |
| Columbia    | 159,947     | 6,576     | 86,949  | 347          | 7,919      | 6,847  | 5,035   | 19,551 | 26,723          |
| Crawford    | 288,695     | 3,327     | 171,013 | 218          | 15,247     | 6,199  | 20,896  | 24,375 | 47,420          |
| Dane        | 161,916     | 4,244     | 102,855 | 182          | 7,404      | 4,587  | 5,087   | 14,331 | 23,226          |
| Dodge       | 63,372      | 3,376     | 21,517  | 223          | 5,057      | 4,633  | 1,569   | 13,640 | 13,357          |
| Door        | 177,249     | 33,333    | 27,116  | 818          | 16,433     | 12,873 | 5,805   | 44,541 | 36,330          |
| Douglas     | 534,483     | 206,758   | 41,687  | 18,931       | 38,874     | 21,895 | 112,453 | 34,484 | 59,401          |
| Dunn        | 303,749     | 4,021     | 171,557 | 230          | 19,316     | 7,242  | 20,170  | 28,037 | 53,176          |
| Eau Claire  | 174,828     | 46,190    | 73,275  | 1,342        | 7,582      | 3,645  | 12,875  | 11,750 | 18,169          |
| Florence    | 504,039     | 185,522   | 7,032   | 81,669       | 126,109    | 2,078  | 28,474  | 40,712 | 32,443          |
| Fond du Lac | 75,979      | 6,427     | 30,966  | 210          | 4,366      | 5,066  | 1,757   | 12,223 | 14,964          |
| Forest      | 791,849     | 369,493   | 8,431   | 58,547       | 169,794    | 8,700  | 57,960  | 41,135 | 77,789          |
| Grant       | 324,837     | 3,943     | 195,808 | 260          | 17,341     | 6,683  | 23,543  | 26,642 | 50,617          |
| Green       | 75,375      | 2,170     | 44,706  | 133          | 3,580      | 2,568  | 2,177   | 8,532  | 11,509          |
| Green Lake  | 58,794      | 3,191     | 27,318  | 131          | 4,352      | 2,661  | 1,485   | 8,919  | 10,737          |
| Iowa        | 231,416     | 2,860     | 134,280 | 168          | 12,280     | 5,072  | 16,357  | 19,910 | 40,489          |
| Iron        | 482,476     | 151,805   | 35,623  | 24,687       | 54,409     | 26,924 | 74,280  | 43,251 | 71,497          |
| Jackson     | 339,162     | 93,317    | 133,640 | 3,167        | 17,714     | 7,032  | 24,636  | 24,507 | 35,149          |
| Jefferson   | 65,788      | 4,258     | 28,368  | 202          | 4,561      | 3,701  | 1,443   | 11,220 | 12,035          |
| Juneau      | 281,361     | 67,754    | 114,082 | 2,376        | 12,182     | 8,572  | 16,913  | 24,357 | 35,125          |
| Kenosha     | 21,979      | 1,120     | 6,998   | 99           | 2,234      | 1,371  | 475     | 4,897  | 4,785           |
| Kewaunee    | 64,778      | 6,853     | 13,272  | 360          | 6,056      | 5,255  | 1,585   | 17,237 | 14,160          |
| La Crosse   | 230,319     | 2,470     | 133,883 | 179          | 11,612     | 5,497  | 15,790  | 20,492 | 40,396          |
| Lafayette   | 82,334      | 1,075     | 50,610  | 63           | 4,405      | 1,625  | 5,853   | 6,349  | 12,354          |
| Langlade    | 500,221     | 124,981   | 11,875  | 23,842       | 162,480    | 9,151  | 45,776  | 57,301 | 64,815          |
| Lincoln     | 557,306     | 167,770   | 26,493  | 16,391       | 86,547     | 46,310 | 37,384  | 84,217 | 92,194          |
| Manitowoc   | 133,626     | 10,958    | 32,991  | 759          | 12,053     | 9,834  | 3,126   | 34,121 | 29,784          |

(Continued on next page)

Table 45 continued

| County                | All<br>species | Softwoods | Oak       | Yellow<br>birch | Hard<br>maple | Ash     | Aspen     | Elm       | Other<br>hardwoods |
|-----------------------|----------------|-----------|-----------|-----------------|---------------|---------|-----------|-----------|--------------------|
| Marathon              | 577,480        | 127,003   | 149,652   | 13,396          | 61,166        | 22,257  | 36,723    | 73,764    | 93,519             |
| Marinette             | 891,003        | 407,408   | 86,982    | 7,721           | 73,495        | 16,093  | 115,289   | 55,575    | 128,440            |
| Marquette             | 117,412        | 26,064    | 53,406    | 647             | 3,966         | 3,328   | 6,202     | 9,564     | 14,235             |
| Milwaukee             | ---            | ---       | ---       | ---             | ---           | ---     | ---       | ---       | ---                |
| Monroe                | 278,083        | 65,568    | 135,592   | 1,825           | 11,508        | 5,128   | 15,734    | 16,554    | 26,174             |
| Oconto                | 716,974        | 282,975   | 59,185    | 8,792           | 20,249        | 58,911  | 71,732    | 118,948   | 96,182             |
| Oneida                | 966,649        | 659,429   | 55,606    | 32,329          | 35,747        | 6,984   | 103,094   | 11,796    | 61,664             |
| Outagamie             | 110,892        | 10,854    | 29,082    | 517             | 8,599         | 9,319   | 3,129     | 24,663    | 24,729             |
| Ozaukee               | 21,888         | 1,775     | 8,187     | 58              | 1,529         | 1,192   | 973       | 3,779     | 4,395              |
| Pepin                 | 111,649        | 1,208     | 62,922    | 84              | 6,574         | 2,803   | 7,771     | 10,116    | 20,171             |
| Pierce                | 154,283        | 1,686     | 94,613    | 127             | 10,661        | 2,984   | 10,429    | 12,420    | 21,363             |
| Polk                  | 267,072        | 76,377    | 62,648    | 7,423           | 18,502        | 7,713   | 52,013    | 16,067    | 26,329             |
| Portage               | 215,182        | 49,827    | 74,044    | 3,151           | 14,952        | 7,569   | 11,295    | 23,097    | 31,247             |
| Price                 | 894,095        | 348,478   | 56,554    | 45,399          | 87,478        | 52,940  | 114,290   | 65,334    | 123,622            |
| Racine                | 33,908         | 1,935     | 9,260     | 159             | 3,111         | 2,396   | 805       | 8,387     | 7,855              |
| Richland              | 235,290        | 3,632     | 139,349   | 176             | 16,813        | 4,838   | 14,728    | 20,491    | 35,263             |
| Rock                  | 66,806         | 1,849     | 39,035    | 93              | 3,693         | 2,571   | 2,025     | 7,064     | 10,476             |
| Rusk                  | 376,855        | 105,633   | 33,465    | 17,604          | 41,613        | 19,779  | 72,159    | 32,228    | 54,374             |
| St. Croix             | 106,378        | 1,452     | 63,093    | 89              | 6,462         | 2,123   | 9,200     | 8,533     | 15,426             |
| Sauk                  | 364,253        | 4,241     | 219,394   | 277             | 22,681        | 7,514   | 24,236    | 30,280    | 55,630             |
| Sawyer                | 702,867        | 264,993   | 46,805    | 30,057          | 61,697        | 33,441  | 129,760   | 45,665    | 90,449             |
| Shawano <sup>2/</sup> | 1,637,642      | 712,370   | 116,410   | 59,465          | 284,025       | 42,857  | 50,446    | 164,213   | 207,856            |
| Sheboygan             | 79,395         | 6,573     | 29,300    | 288             | 5,411         | 5,148   | 2,275     | 14,749    | 15,651             |
| Taylor                | 435,134        | 131,181   | 23,468    | 24,973          | 46,396        | 33,289  | 62,830    | 35,440    | 77,557             |
| Trempealeau           | 248,464        | 3,288     | 147,744   | 196             | 14,721        | 5,260   | 16,919    | 20,429    | 39,907             |
| Vernon                | 332,553        | 3,926     | 212,144   | 278             | 21,339        | 5,291   | 24,143    | 24,113    | 41,319             |
| Vilas                 | 735,999        | 444,972   | 38,614    | 40,692          | 81,675        | 1,162   | 74,822    | 5,260     | 48,802             |
| Walworth              | 54,214         | 2,632     | 24,404    | 169             | 3,496         | 3,011   | 1,317     | 9,215     | 9,970              |
| Washburn              | 337,019        | 111,700   | 38,278    | 11,312          | 25,777        | 14,874  | 73,834    | 23,442    | 37,802             |
| Washington            | 86,316         | 5,931     | 23,619    | 445             | 7,441         | 6,341   | 1,754     | 21,237    | 19,548             |
| Waukesha              | 67,434         | 4,919     | 36,291    | 117             | 2,335         | 3,131   | 2,428     | 7,688     | 10,525             |
| Waupaca               | 171,025        | 45,087    | 51,483    | 2,091           | 10,149        | 6,490   | 10,409    | 18,992    | 26,324             |
| Waushara              | 143,768        | 32,451    | 64,139    | 1,194           | 6,306         | 3,967   | 7,376     | 11,601    | 16,734             |
| Winnebago             | 46,453         | 2,032     | 18,967    | 176             | 3,608         | 2,594   | 756       | 8,520     | 9,800              |
| Wood                  | 185,256        | 49,163    | 59,207    | 1,921           | 10,040        | 6,122   | 14,041    | 18,841    | 25,921             |
| State total           | 21,755,745     | 6,497,203 | 4,805,995 | 641,968         | 2,119,462     | 765,718 | 2,109,189 | 1,906,538 | 2,909,672          |

<sup>1/</sup> International 1/4-inch rule.<sup>2/</sup> Volumes for Menominee County have been combined with Shawano County.

Table 46. — Net volume of growing stock, sawtimber, and rough, rotten, and short-log trees (cull) on commercial forest land, by individual species, Wisconsin, 1968

| Species              | : Growing    | : Sawtimber                | : Cull       |
|----------------------|--------------|----------------------------|--------------|
|                      | : stock      | : Million                  | : Million    |
|                      | : Million    | : Million                  | : Million    |
|                      | : cubic feet | : board feet <sup>1/</sup> | : cubic feet |
| Softwoods:           |              |                            |              |
| White pine           | 412.7        | 1,944.6                    | 14.3         |
| Red pine             | 241.1        | 843.9                      | 1.2          |
| Jack pine            | 417.6        | 561.3                      | 16.8         |
| White spruce group   |              |                            |              |
| White spruce         | 81.7         | 203.9                      | .7           |
| Norway spruce        | --           | --                         | --           |
| Black spruce         | 92.0         | 50.5                       | 3.2          |
| Balsam fir           | 439.0        | 460.6                      | 5.2          |
| Hemlock              | 336.2        | 1,583.8                    | 9.7          |
| Tamarack             | 111.1        | 117.1                      | 3.3          |
| Northern white-cedar | 342.4        | 730.4                      | 30.4         |
| Other softwoods      |              |                            |              |
| Scotch pine          | .4           | 1.0                        | .1           |
| Eastern redcedar     | .5           | --                         | .2           |
| Total softwoods      | 2,474.7      | 6,497.1                    | 85.1         |
| Hardwoods:           |              |                            |              |
| White oak group      |              |                            |              |
| White oak            | 320.0        | 883.6                      | 97.7         |
| Swamp white oak      | 10.2         | 32.6                       | 4.3          |
| Bur oak              | 75.8         | 174.9                      | 23.4         |
| Chinkapin oak        | .1           | .7                         | --           |
| Select red oak group |              |                            |              |
| Northern red oak     | 992.8        | 2,889.2                    | 98.3         |
| Other red oak group  |              |                            |              |
| Northern pin oak     | 187.1        | 327.5                      | 73.7         |
| Black oak            | 180.5        | 497.5                      | 71.9         |
| Hickory group        |              |                            |              |
| Bitternut hickory    | 33.4         | 27.2                       | 3.0          |
| Shagbark hickory     | 74.0         | 80.1                       | 4.2          |
| Yellow birch         | 219.6        | 642.0                      | 42.5         |
| Hard maple group     |              |                            |              |
| Black maple          | .9           | 3.2                        | .1           |
| Sugar maple          | 937.5        | 2,116.2                    | 123.6        |
| Soft maple group     |              |                            |              |
| Red maple            | 595.7        | 841.6                      | 85.7         |
| Silver maple         | 51.0         | 138.6                      | 11.3         |

(Continued on next page)



Table 46 continued

| Species                       | Growing      | Sawtimber                  | Cull         |
|-------------------------------|--------------|----------------------------|--------------|
|                               | stock        |                            |              |
|                               | : Million    | : Million                  | : Million    |
|                               | : cubic feet | : board feet <sup>1/</sup> | : cubic feet |
| Hardwood species (Continued): |              |                            |              |
| American beech                | 25.8         | 87.0                       | 7.6          |
| Ash group                     |              |                            |              |
| White ash                     | 148.9        | 272.8                      | 7.6          |
| Black ash                     | 305.8        | 379.8                      | 10.8         |
| Green ash                     | 50.9         | 113.1                      | 7.4          |
| Balsam poplar                 | 32.6         | 80.6                       | 2.2          |
| Cottonwood                    | 19.5         | 65.8                       | 2.6          |
| Paper birch group             |              |                            |              |
| River birch                   | 8.9          | 23.2                       | 1.4          |
| Paper birch                   | 718.6        | 353.2                      | 30.9         |
| Bigtooth aspen                | 519.2        | 740.8                      | 20.2         |
| Quaking aspen                 | 1,640.3      | 1,368.5                    | 111.5        |
| Basswood                      | 559.6        | 1,005.8                    | 38.3         |
| Butternut                     | 18.3         | 43.9                       | 7.1          |
| Black walnut                  | 7.5          | 22.5                       | 2.1          |
| Black cherry                  | 69.6         | 72.0                       | 13.9         |
| Elm group                     |              |                            |              |
| American elm                  | 604.7        | 1,669.8                    | 68.8         |
| Slippery elm                  | 57.2         | 159.5                      | 8.5          |
| Rock elm                      | 33.5         | 77.3                       | .7           |
| Other hardwoods               |              |                            |              |
| Black willow                  | 15.0         | 54.6                       | 2.5          |
| Boxelder                      | 3.3          | 7.5                        | 2.4          |
| Northern catalpa              | --           | --                         | .2           |
| Hackberry                     | 1.0          | 3.0                        | .1           |
| Honeylocust                   | --           | --                         | .1           |
| Red mulberry                  | .2           | .7                         | --           |
| Tupelo, blackgum              | --           | --                         | --           |
| Sycamore                      | --           | --                         | --           |
| Black locust                  | 2.4          | 2.3                        | .2           |
| Noncommercial species         | --           | --                         | 11.9         |
| <hr/>                         |              |                            |              |
| Total hardwoods               | 8,521.4      | 15,258.6                   | 998.7        |
| <hr/>                         |              |                            |              |
| All species                   | 10,996.1     | 21,755.7                   | 1,083.8      |

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

Table 47. — Net volume of timber in rough, rotten, and short-log (cull) trees on commercial forest land, by species and cull tree class, Wisconsin, 1968

(Million cubic feet)

| Species               | : All<br>: cull<br>: trees | : Rough<br>: trees | : Short-log<br>: trees <sup>1/</sup> | : Rotten<br>: trees |
|-----------------------|----------------------------|--------------------|--------------------------------------|---------------------|
| Softwoods:            |                            |                    |                                      |                     |
| White pine            | 14.3                       | 5.7                | 6.4                                  | 2.2                 |
| Red pine              | 1.2                        | .5                 | .5                                   | .2                  |
| Jack pine             | 16.8                       | 13.3               | 2.4                                  | 1.1                 |
| White spruce          | .7                         | .1                 | .4                                   | .2                  |
| Black spruce          | 3.2                        | 3.0                | .1                                   | .1                  |
| Balsam fir            | 5.2                        | 3.1                | 1.0                                  | 1.1                 |
| Hemlock               | 9.7                        | 3.0                | 2.8                                  | 3.9                 |
| Tamarack              | 3.3                        | 1.7                | 1.0                                  | .6                  |
| Northern white-cedar  | 30.4                       | 9.8                | 5.3                                  | 15.3                |
| Other softwoods       | .3                         | .3                 | --                                   | --                  |
| Total softwoods       | 85.1                       | 40.5               | 19.9                                 | 24.7                |
| Hardwoods:            |                            |                    |                                      |                     |
| White oak             | 125.4                      | 50.7               | 64.1                                 | 10.6                |
| Select red oak        | 98.3                       | 30.6               | 51.2                                 | 16.5                |
| Other red oak         | 145.6                      | 70.6               | 56.4                                 | 18.6                |
| Hickory               | 7.2                        | 3.3                | 3.0                                  | .9                  |
| Yellow birch          | 42.5                       | 13.0               | 10.9                                 | 18.6                |
| Hard maple            | 123.7                      | 39.5               | 48.3                                 | 35.9                |
| Soft maple            | 97.0                       | 41.4               | 29.8                                 | 25.8                |
| Beech                 | 7.6                        | 1.7                | 3.8                                  | 2.1                 |
| Ash                   | 25.8                       | 12.8               | 7.0                                  | 6.0                 |
| Balsam poplar         | 2.2                        | .4                 | .6                                   | 1.2                 |
| Cottonwood            | 2.6                        | .1                 | 2.2                                  | .3                  |
| Paper birch           | 32.3                       | 19.2               | 6.5                                  | 6.6                 |
| Bigtooth aspen        | 20.2                       | 6.9                | 4.0                                  | 9.3                 |
| Quaking aspen         | 111.5                      | 43.5               | 10.6                                 | 57.4                |
| Basswood              | 38.3                       | 11.8               | 15.4                                 | 11.1                |
| Butternut             | 7.1                        | 3.5                | 1.8                                  | 1.8                 |
| Black walnut          | 2.1                        | .9                 | .8                                   | .4                  |
| Black cherry          | 13.9                       | 9.0                | 3.1                                  | 1.8                 |
| Elm                   | 78.0                       | 25.5               | 43.0                                 | 9.5                 |
| Other hardwoods       | 5.5                        | 2.9                | 1.5                                  | 1.1                 |
| Noncommercial species | 11.9                       | 11.3               | --                                   | .6                  |
| Total hardwoods       | 998.7                      | 398.6              | 364.0                                | 236.1               |
| All species           | 1,083.8                    | 439.1              | 383.9                                | 260.8               |

<sup>1/</sup> Volumes are for trees 9.0 inches d.b.h. and larger for softwoods and 11.0 inches d.b.h. and larger for hardwoods. Volumes for rough and rotten trees are for trees 5.0 inches d.b.h. and larger.

Table 48. — Net volume of short-log trees on commercial forest land, by species and diameter class, Wisconsin, 1968  
(Million board feet)<sup>1</sup>

| Species               | All<br>classes | Diameter class (inches at breast height) |       |       |       |       |       |       |       |       |
|-----------------------|----------------|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                       |                | 9.0-                                     | 11.0- | 13.0- | 15.0- | 17.0- | 19.0- | 21.0- | 23.0- | 29.0+ |
|                       |                | 10.9                                     | 12.9  | 14.9  | 16.9  | 18.9  | 20.9  | 22.9  | 28.9  |       |
| Softwoods:            |                |                                          |       |       |       |       |       |       |       |       |
| White pine            | 34.9           | 6.5                                      | 7.6   | 4.8   | 4.6   | 2.7   | 5.5   | 0.8   | 1.8   | 0.6   |
| Red pine              | 6.9            | 2.3                                      | .4    | 3.8   | —     | —     | —     | .4    | —     | —     |
| Jack pine             | 24.8           | 15.5                                     | 3.4   | 5.9   | —     | —     | —     | —     | —     | —     |
| White spruce          | 16.5           | 4.7                                      | 4.0   | 7.8   | —     | —     | —     | —     | —     | —     |
| Black spruce          | .4             | .4                                       | —     | —     | —     | —     | —     | —     | —     | —     |
| Balsam fir            | 24.9           | 13.9                                     | 4.3   | 6.7   | —     | —     | —     | —     | —     | —     |
| Hemlock               | 45.0           | 20.6                                     | 10.0  | 7.8   | .7    | 5.0   | .4    | —     | .5    | —     |
| Tamarack              | 10.6           | 6.2                                      | 2.3   | 2.1   | —     | —     | —     | —     | —     | —     |
| Northern white-cedar  | 96.9           | 57.1                                     | 26.3  | 9.3   | 3.5   | .7    | —     | —     | —     | —     |
| Other softwoods       | —              | —                                        | —     | —     | —     | —     | —     | —     | —     | —     |
| Total softwoods       | 260.9          | 127.2                                    | 58.3  | 48.2  | 8.8   | 8.4   | 5.9   | 1.2   | 2.3   | .6    |
| Hardwoods:            |                |                                          |       |       |       |       |       |       |       |       |
| White oak             | 175.4          | —                                        | 55.1  | 33.5  | 25.8  | 21.5  | 14.0  | 8.0   | 14.6  | 2.9   |
| Select red oak        | 208.2          | —                                        | 73.5  | 40.2  | 34.7  | 20.6  | 14.5  | 9.6   | 14.1  | 1.0   |
| Other red oak         | 234.8          | —                                        | 82.1  | 58.5  | 45.2  | 22.9  | 8.0   | 10.3  | 7.5   | .3    |
| Hickory               | 10.3           | —                                        | 5.4   | 3.7   | .7    | .5    | —     | —     | —     | —     |
| Yellow birch          | 114.7          | —                                        | 48.9  | 17.4  | 22.9  | 14.2  | .5    | .6    | 8.0   | 2.2   |
| Hard maple            | 402.5          | —                                        | 127.9 | 115.7 | 65.8  | 45.3  | 23.4  | 13.8  | 9.2   | 1.4   |
| Soft maple            | 162.7          | —                                        | 62.5  | 33.7  | 29.8  | 14.9  | 3.4   | 2.2   | 8.7   | 7.5   |
| Beech                 | 32.6           | —                                        | .6    | 4.7   | .9    | 9.6   | 13.7  | .4    | 2.7   | —     |
| Ash                   | 27.0           | —                                        | 8.1   | 5.4   | 1.9   | 4.0   | .2    | 6.1   | 1.0   | .3    |
| Balsam poplar         | 11.5           | —                                        | 9.7   | 1.8   | —     | —     | —     | —     | —     | —     |
| Cottonwood            | 7.5            | —                                        | .4    | —     | .4    | —     | —     | .4    | 1.4   | 4.9   |
| Paper birch           | 56.7           | —                                        | 36.4  | 15.4  | 4.1   | .3    | —     | .5    | —     | —     |
| Bigtooth aspen        | 20.6           | —                                        | 11.4  | 3.3   | 5.1   | .8    | —     | —     | —     | —     |
| Quaking aspen         | 97.7           | —                                        | 66.7  | 25.6  | 4.5   | .5    | .4    | —     | —     | —     |
| Basswood              | 51.9           | —                                        | 15.3  | 16.2  | 8.8   | 5.1   | 2.9   | .5    | 1.9   | 1.2   |
| Butternut             | 8.0            | —                                        | 2.0   | 5.1   | .8    | .1    | —     | —     | —     | —     |
| Black walnut          | 2.9            | —                                        | 1.5   | .8    | —     | .6    | —     | —     | —     | —     |
| Black cherry          | 31.3           | —                                        | 17.8  | 4.7   | 7.4   | .6    | .3    | .5    | —     | —     |
| Elm                   | 220.7          | —                                        | 65.5  | 53.3  | 34.9  | 27.4  | 10.0  | 3.9   | 16.2  | 9.5   |
| Other hardwoods       | 5.4            | —                                        | 4.3   | .1    | .1    | .2    | .1    | .3    | .3    | —     |
| Noncommercial species | —              | —                                        | —     | —     | —     | —     | —     | —     | —     | —     |
| Total hardwoods       | 1,882.4        | —                                        | 695.1 | 439.1 | 293.8 | 189.1 | 91.4  | 57.1  | 85.6  | 31.2  |
| All species           | 2,143.3        | 127.2                                    | 753.4 | 487.3 | 302.6 | 197.5 | 97.3  | 58.3  | 87.9  | 31.8  |

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

Table 49. — Net annual growth of growing stock on commercial forest land, by species  
and diameter class, Wisconsin, 1967  
(Thousand cubic feet)

| Species                | All<br>classes | Diameter class (inches at breast height) |               |               |               |               |               |               |               |               |               |               |               |
|------------------------|----------------|------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                        |                | 5.0-<br>6.9                              | 7.0-<br>8.9   | 9.0-<br>10.9  | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>24.9 | 25.0-<br>26.9 | 27.0-<br>28.9 |
| <b>Softwoods:</b>      |                |                                          |               |               |               |               |               |               |               |               |               |               |               |
| White pine             | 13,535         | 2,382                                    | 1,064         | 1,504         | 1,854         | 1,779         | 1,765         | 1,416         | 898           | 549           | 321           | 3             |               |
| Red pine               | 12,628         | 5,966                                    | 1,736         | 1,082         | 1,010         | 1,192         | 853           | 531           | 182           | 66            | 10            |               |               |
| Jack pine              | 27,425         | 17,341                                   | 6,107         | 2,691         | 1,022         | 226           | 34            | 4             |               |               |               |               |               |
| White spruce           | 4,482          | 2,083                                    | 1,072         | 755           | 331           | 180           | 58            | 3             |               |               |               |               |               |
| Black spruce           | 7,098          | 6,195                                    | 599           | 256           | 26            | 14            | 8             |               |               |               |               |               |               |
| Balsam fir             | 29,378         | 20,045                                   | 5,733         | 2,542         | 903           | 134           | 21            |               |               |               |               |               |               |
| Hemlock                | 10,127         | 709                                      | 1,130         | 1,449         | 1,659         | 1,505         | 1,277         | 927           | 538           | 343           | 365           | 225           |               |
| Tamarack               | 6,447          | 5,076                                    | 896           | 294           | 149           | 18            | 14            |               |               |               |               |               |               |
| Northern white-cedar   | 11,957         | 8,359                                    | 1,813         | 1,095         | 458           | 190           | 38            | 1             | 1             | 2             |               |               |               |
| Other softwoods        | 28             | 13                                       | 8             | 3             | 4             |               |               |               |               |               |               |               |               |
| <b>Total softwoods</b> | <b>123,105</b> | <b>68,169</b>                            | <b>20,158</b> | <b>11,671</b> | <b>7,416</b>  | <b>5,238</b>  | <b>4,068</b>  | <b>2,882</b>  | <b>1,619</b>  | <b>960</b>    | <b>696</b>    | <b>228</b>    |               |
| <b>Hardwoods:</b>      |                |                                          |               |               |               |               |               |               |               |               |               |               |               |
| White oak              | 11,219         | 3,202                                    | 1,523         | 1,801         | 1,685         | 1,285         | 875           | 471           | 198           | 95            | 76            | 8             |               |
| Select red oak         | 31,889         | 7,097                                    | 4,618         | 4,671         | 4,689         | 3,454         | 2,726         | 2,110         | 1,214         | 588           | 660           | 62            |               |
| Other red oak          | 12,092         | 4,031                                    | 1,905         | 1,782         | 1,538         | 1,215         | 743           | 442           | 274           | 97            | 64            | 1             |               |
| Hickory                | 3,444          | 2,180                                    | 532           | 414           | 202           | 85            | 25            | 2             | 4             |               |               |               |               |
| Yellow birch           | 7,317          | 2,458                                    | 1,210         | 1,024         | 929           | 637           | 559           | 318           | 111           | 58            | 12            | 1             |               |
| Hard maple             | 38,861         | 18,775                                   | 5,694         | 4,400         | 3,035         | 2,624         | 2,018         | 1,243         | 716           | 232           | 115           | 9             |               |
| Soft maple             | 31,970         | 18,281                                   | 4,673         | 3,405         | 2,154         | 1,487         | 849           | 484           | 322           | 141           | 138           | 36            |               |
| Beech                  | 812            | 282                                      | 37            | 70            | 104           | 86            | 90            | 67            | 30            | 29            | 17            |               |               |
| Ash                    | 15,325         | 8,347                                    | 2,656         | 1,909         | 1,279         | 647           | 270           | 76            | 49            | 48            | 36            | 8             |               |
| Balsam poplar          | 1,133          | 363                                      | 161           | 219           | 135           | 131           | 46            | 30            | 22            | 23            | 3             |               |               |
| Cottonwood             | 588            | 18                                       | 56            | 67            | 71            | 39            | 73            | 45            | 60            | 32            | 71            | 56            |               |
| Paper birch            | 49,333         | 32,294                                   | 10,078        | 4,705         | 1,647         | 447           | 126           | 27            | 7             | 2             |               |               |               |
| Bigtooth aspen         | 26,989         | 10,334                                   | 6,848         | 5,182         | 2,899         | 1,181         | 410           | 106           | 22            | 7             |               |               |               |
| Quaking aspen          | 95,805         | 46,926                                   | 23,559        | 16,262        | 6,607         | 1,955         | 434           | 58            | 4             |               |               |               |               |
| Basswood               | 22,701         | 8,361                                    | 4,945         | 4,063         | 4,446         | 1,410         | 811           | 405           | 152           | 74            | 33            | 1             |               |
| Butternut              | 551            | 85                                       | 56            | 170           | 124           | 83            | 25            | 6             | 2             |               |               |               |               |
| Black walnut           | 192            | 7                                        | 47            | 34            | 32            | 32            | 30            | 7             | 2             | 1             |               |               |               |
| Black cherry           | 3,548          | 2,250                                    | 687           | 357           | 168           | 58            | 16            | 12            |               |               |               |               |               |
| Elm                    | 22,418         | 7,485                                    | 3,058         | 2,899         | 2,747         | 2,243         | 1,614         | 1,009         | 643           | 339           | 310           | 71            |               |
| Other hardwoods        | 821            | 189                                      | 134           | 103           | 156           | 75            | 77            | 55            | 20            | 9             | 3             |               |               |
| Noncommercial species  | --             | --                                       | --            | --            | --            | --            | --            | --            | --            | --            | --            | --            |               |
| <b>Total hardwoods</b> | <b>377,008</b> | <b>172,965</b>                           | <b>72,477</b> | <b>53,537</b> | <b>32,647</b> | <b>19,174</b> | <b>11,817</b> | <b>6,973</b>  | <b>3,852</b>  | <b>1,775</b>  | <b>1,538</b>  | <b>253</b>    |               |
| <b>All species</b>     | <b>500,113</b> | <b>241,134</b>                           | <b>92,635</b> | <b>65,208</b> | <b>40,063</b> | <b>24,412</b> | <b>15,885</b> | <b>9,855</b>  | <b>5,471</b>  | <b>2,735</b>  | <b>2,234</b>  | <b>481</b>    |               |

Table 50. — Net annual growth of sawtimber on commercial forest land, by species and diameter class, Wisconsin, 1967  
(Thousand board feet)<sup>1</sup>

| Species               | All<br>classes | Diameter class (inches at breast height) |               |               |               |               |               |               |               |               |               |       |  |
|-----------------------|----------------|------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------|--|
|                       |                | 9.0-<br>10.9                             | 11.0-<br>12.9 | 13.0-<br>14.9 | 15.0-<br>16.9 | 17.0-<br>18.9 | 19.0-<br>20.9 | 21.0-<br>22.9 | 23.0-<br>24.9 | 25.0-<br>26.9 | 27.0-<br>28.9 | 29.0+ |  |
| Softwoods:            |                |                                          |               |               |               |               |               |               |               |               |               |       |  |
| White pine            | 76,195         | 30,253                                   | 9,461         | 9,376         | 9,298         | 7,821         | 4,938         | 3,141         | 1,887         |               |               | 20    |  |
| Red pine              | 43,542         | 22,650                                   | 4,757         | 6,164         | 4,843         | 3,301         | 1,249         | 479           | 99            |               |               | --    |  |
| Jack pine             | 75,673         | 69,306                                   | 4,952         | 1,199         | 196           | 20            |               |               |               |               |               | --    |  |
| White spruce          | 10,723         | 8,131                                    | 1,441         | 860           | 276           | 15            |               |               |               |               |               | --    |  |
| Black spruce          | 7,296          | 7,072                                    | 112           | 73            | 39            |               |               |               |               |               |               | --    |  |
| Balsam fir            | 46,945         | 42,404                                   | 3,810         | 619           | 112           |               |               |               |               |               |               | --    |  |
| Hemlock               | 47,555         | 8,960                                    | 8,729         | 8,258         | 7,425         | 5,586         | 3,476         | 2,143         | 2,687         |               |               | 291   |  |
| Tamarack              | 2,805          | 1,963                                    | 674           | 97            | 71            |               |               |               |               |               |               | --    |  |
| Northern white-cedar  | 26,975         | 23,841                                   | 2,094         | 854           | 173           | 7             | 6             |               |               |               |               | --    |  |
| Other softwoods       | 29             | 14                                       | 15            | --            | --            | --            | --            | --            | --            |               |               | --    |  |
| Total softwoods       | 337,738        | 214,594                                  | 36,045        | 27,500        | 22,433        | 16,750        | 9,669         | 5,763         | 4,673         |               |               | 311   |  |
| Hardwoods:            |                |                                          |               |               |               |               |               |               |               |               |               |       |  |
| White oak             | 49,902         | --                                       | 39,747        | 3,985         | 2,910         | 1,673         | 760           | 398           | 374           |               |               | 55    |  |
| Select red oak        | 118,159        | --                                       | 76,707        | 12,778        | 10,560        | 7,663         | 4,711         | 2,363         | 3,080         |               |               | 297   |  |
| Other red oak         | 43,564         | --                                       | 33,656        | 4,132         | 2,541         | 1,548         | 1,052         | 383           | 247           |               |               | 5     |  |
| Hickory               | 10,257         | --                                       | 9,624         | 427           | 169           | 27            | 10            |               |               |               |               | --    |  |
| Yellow birch          | 34,577         | --                                       | 26,946        | 2,646         | 2,462         | 1,513         | 604           | 325           | 63            |               |               | 18    |  |
| Hard maple            | 100,906        | --                                       | 69,238        | 11,847        | 8,928         | 5,731         | 3,462         | 1,118         | 527           |               |               | 55    |  |
| Soft maple            | 63,886         | --                                       | 49,261        | 6,008         | 3,577         | 2,156         | 1,367         | 647           | 666           |               |               | 204   |  |
| Beech                 | 4,211          | --                                       | 2,892         | 368           | 394           | 271           | 117           | 107           | 62            |               |               | --    |  |
| Ash                   | 34,291         | --                                       | 29,108        | 3,063         | 1,229         | 343           | 190           | 167           | 11            |               |               | 73    |  |
| Balsam poplar         | 4,118          | --                                       | 3,075         | 590           | 194           | 115           | 69            | 68            |               |               |               | --    |  |
| Cottonwood            | 2,288          | --                                       | 973           | 185           | 301           | 172           | 208           | 96            | 193           |               |               | 160   |  |
| Paper birch           | 43,793         | --                                       | 40,716        | 2,252         | 613           | 148           | 45            | 19            |               |               |               | --    |  |
| Bigtooth aspen        | 78,571         | --                                       | 67,061        | 7,113         | 3,130         | 983           | 241           | 43            |               |               |               | --    |  |
| Quaking aspen         | 164,719        | --                                       | 150,066       | 11,183        | 2,902         | 544           | 24            |               |               |               |               | --    |  |
| Basswood              | 68,586         | --                                       | 56,193        | 6,154         | 3,448         | 1,731         | 594           | 318           | 141           |               |               | 7     |  |
| Butternut             | 3,636          | --                                       | 3,173         | 335           | 91            | 28            | 9             |               |               |               |               | --    |  |
| Black walnut          | 1,013          | --                                       | 740           | 121           | 115           | 28            | 8             | 1             |               |               |               | --    |  |
| Black cherry          | 4,866          | --                                       | 4,512         | 217           | 79            | 58            |               |               |               |               |               | --    |  |
| Elm                   | 92,103         | --                                       | 64,351        | 10,583        | 7,493         | 4,564         | 2,668         | 1,315         | 1,000         |               |               | 129   |  |
| Other hardwoods       | 2,481          | --                                       | 1,358         | 326           | 354           | 247           | 127           | 46            | 23            |               |               | --    |  |
| Noncommercial species | --             | --                                       | --            | --            | --            | --            | --            | --            | --            |               |               | --    |  |
| Total hardwoods       | 925,927        | --                                       | 729,397       | 84,313        | 51,490        | 29,543        | 16,266        | 7,414         | 6,501         |               |               | 1,003 |  |
| All species           | 1,263,665      | 214,594                                  | 765,442       | 111,813       | 73,923        | 46,293        | 25,935        | 13,177        | 11,174        |               |               | 1,314 |  |

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

Table 51. — Net annual growth of growing stock on commercial forest land, by species  
and Forest Survey Unit, Wisconsin, 1967  
(Thousand cubic feet)

| Species               | All<br>units | Northeastern<br>units | Northwestern<br>units | Central<br>units | Southwestern<br>units | Southeastern<br>units |
|-----------------------|--------------|-----------------------|-----------------------|------------------|-----------------------|-----------------------|
| Softwoods:            |              |                       |                       |                  |                       |                       |
| White pine            | 13,535       | 5,586                 | 4,045                 | 3,562            | 258                   | 84                    |
| Red pine              | 12,628       | 6,008                 | 3,712                 | 2,424            | 468                   | 16                    |
| Jack pine             | 27,425       | 6,192                 | 11,850                | 9,118            | 240                   | 25                    |
| White spruce          | 4,482        | 3,137                 | 1,304                 | 18               | --                    | 23                    |
| Black spruce          | 7,098        | 4,035                 | 2,676                 | 384              | --                    | 3                     |
| Balsam fir            | 29,378       | 14,421                | 14,006                | 912              | --                    | 39                    |
| Hemlock               | 10,127       | 6,517                 | 2,296                 | 1,173            | --                    | 141                   |
| Tamarack              | 6,447        | 1,570                 | 2,832                 | 1,742            | 3                     | 300                   |
| Northern white cedar  | 11,957       | 5,897                 | 2,103                 | 1,943            | --                    | 2,014                 |
| Other softwoods       | 28           | --                    | --                    | 18               | 7                     | 3                     |
| Total softwoods       | 123,105      | 53,363                | 44,824                | 21,294           | 976                   | 2,648                 |
| Hardwoods:            |              |                       |                       |                  |                       |                       |
| White oak             | 11,219       | 241                   | 2,221                 | 3,892            | 3,538                 | 1,327                 |
| Select red oak        | 31,889       | 7,988                 | 7,697                 | 7,090            | 7,433                 | 1,681                 |
| Other red oak         | 12,092       | 1,286                 | 1,524                 | 4,971            | 3,381                 | 930                   |
| Hickory               | 3,444        | 115                   | 173                   | 363              | 2,398                 | 395                   |
| Yellow birch          | 7,317        | 2,877                 | 3,131                 | 1,195            | 25                    | 89                    |
| Hard maple            | 38,861       | 15,064                | 18,779                | 2,513            | 1,675                 | 830                   |
| Soft maple            | 31,970       | 6,933                 | 13,344                | 7,840            | 2,328                 | 1,525                 |
| Beech                 | 812          | 256                   | --                    | 22               | --                    | 534                   |
| Ash                   | 15,325       | 4,509                 | 6,229                 | 1,670            | 969                   | 1,948                 |
| Balsam poplar         | 1,133        | 710                   | 247                   | 6                | 15                    | 155                   |
| Cottonwood            | 588          | 78                    | 7                     | --               | 372                   | 131                   |
| Paper birch           | 49,333       | 17,763                | 23,352                | 5,709            | 1,760                 | 749                   |
| Bigtooth aspen        | 26,989       | 7,523                 | 9,975                 | 6,013            | 2,884                 | 594                   |
| Quaking aspen         | 95,805       | 28,292                | 45,724                | 15,561           | 3,064                 | 3,164                 |
| Basswood              | 22,701       | 7,933                 | 10,335                | 1,719            | 2,145                 | 569                   |
| Butternut             | 551          | 126                   | 71                    | 72               | 250                   | 32                    |
| Black walnut          | 192          | --                    | --                    | 3                | 140                   | 49                    |
| Black cherry          | 3,548        | 1,229                 | 860                   | 361              | 620                   | 478                   |
| Elm                   | 22,418       | 7,136                 | 5,690                 | 3,041            | 3,326                 | 3,225                 |
| Other hardwoods       | 821          | 54                    | 7                     | 72               | 425                   | 263                   |
| Noncommercial species | --           | --                    | --                    | --               | --                    | --                    |
| Total hardwoods       | 377,008      | 110,113               | 149,366               | 62,113           | 36,748                | 18,668                |
| All species           | 500,113      | 163,476               | 194,190               | 83,407           | 37,724                | 21,316                |

Table 52. — Net annual growth of sawtimber on commercial forest land, by species and Forest Survey Unit, Wisconsin, 1967  
(Thousand board feet)<sup>1</sup>

| Species               | :<br>: All<br>: units | :<br>: Northeastern<br>: unit | :<br>: Northwestern<br>: unit | :<br>: Central<br>: unit | :<br>: Southwestern<br>: unit | :<br>: Southeastern<br>: unit |
|-----------------------|-----------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|-------------------------------|
| Softwoods:            |                       |                               |                               |                          |                               |                               |
| White pine            | 76,195                | 33,331                        | 26,502                        | 15,456                   | 374                           | 532                           |
| Red pine              | 43,542                | 23,416                        | 13,728                        | 6,310                    | 85                            | 3                             |
| Jack pine             | 75,673                | 17,392                        | 33,764                        | 23,366                   | 58                            | 1,093                         |
| White spruce          | 10,723                | 6,075                         | 4,608                         | 29                       | --                            | 11                            |
| Black spruce          | 7,296                 | 4,389                         | 2,865                         | 42                       | --                            | --                            |
| Balsam fir            | 46,945                | 17,557                        | 27,668                        | 807                      | --                            | 913                           |
| Hemlock               | 47,555                | 31,298                        | 11,510                        | 4,546                    | --                            | 201                           |
| Tamarack              | 2,805                 | 500                           | 1,878                         | 315                      | --                            | 112                           |
| Northern white-cedar  | 26,975                | 11,628                        | 5,841                         | 2,790                    | --                            | 6,716                         |
| Other softwoods       | 29                    | --                            | --                            | 29                       | --                            | --                            |
| Total softwoods       | 337,738               | 145,586                       | 128,364                       | 53,690                   | 517                           | 9,581                         |
| Hardwoods:            |                       |                               |                               |                          |                               |                               |
| White oak             | 49,902                | 1,293                         | 5,304                         | 17,861                   | 19,691                        | 5,753                         |
| Select red oak        | 118,159               | 21,752                        | 23,859                        | 28,541                   | 37,192                        | 6,815                         |
| Other red oak         | 43,564                | 2,452                         | 3,402                         | 17,638                   | 16,517                        | 3,555                         |
| Hickory               | 10,257                | 1,496                         | 39                            | 1,514                    | 5,342                         | 1,866                         |
| Yellow birch          | 34,577                | 16,971                        | 14,205                        | 2,634                    | 671                           | 96                            |
| Hard maple            | 100,906               | 42,290                        | 39,457                        | 9,672                    | 6,109                         | 3,378                         |
| Soft maple            | 63,886                | 18,956                        | 20,162                        | 14,663                   | 6,746                         | 3,359                         |
| Beech                 | 4,211                 | 1,288                         | --                            | 49                       | --                            | 2,874                         |
| Ash                   | 34,291                | 5,977                         | 10,837                        | 5,940                    | 3,417                         | 8,120                         |
| Balsam poplar         | 4,118                 | 1,644                         | 1,296                         | --                       | --                            | 1,178                         |
| Cottonwood            | 2,288                 | 170                           | --                            | --                       | 1,717                         | 401                           |
| Paper birch           | 43,793                | 17,763                        | 13,703                        | 2,431                    | 5,626                         | 4,270                         |
| Bigtooth aspen        | 78,571                | 24,059                        | 25,944                        | 10,300                   | 13,593                        | 4,675                         |
| Quaking aspen         | 164,719               | 51,108                        | 85,221                        | 22,083                   | 4,044                         | 2,263                         |
| Basswood              | 68,586                | 12,646                        | 38,691                        | 4,067                    | 10,110                        | 3,072                         |
| Butternut             | 3,636                 | 1,795                         | 99                            | 118                      | 1,607                         | 17                            |
| Black walnut          | 1,013                 | --                            | --                            | 12                       | 870                           | 131                           |
| Black cherry          | 4,866                 | 1,049                         | 12                            | 592                      | 725                           | 2,488                         |
| Elm                   | 92,103                | 24,741                        | 25,524                        | 11,488                   | 15,685                        | 14,665                        |
| Other hardwoods       | 2,481                 | 941                           | 5                             | 278                      | 680                           | 577                           |
| Noncommercial species | --                    | --                            | --                            | --                       | --                            | --                            |
| Total hardwoods       | 925,927               | 248,391                       | 307,760                       | 149,881                  | 150,342                       | 69,553                        |
| All species           | 1,263,665             | 393,977                       | 436,124                       | 203,571                  | 150,859                       | 79,134                        |

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



Table 53. — Timber removals from growing stock on commercial forest land, by item and softwoods and hardwoods, Wisconsin, 1967  
(Thousand cubic feet)

| Item                     | : All<br>: species | : Softwoods | : Hardwoods |
|--------------------------|--------------------|-------------|-------------|
| Roundwood products:      |                    |             |             |
| Saw logs                 | 43,216             | 4,770       | 38,446      |
| Veneer logs and bolts    | 3,345              | 10          | 3,335       |
| Pulpwood                 | 100,664            | 21,416      | 79,248      |
| Cooperage logs and bolts | 183                | --          | 183         |
| Piling                   | 75                 | 17          | 58          |
| Poles                    | 387                | 368         | 19          |
| Posts                    | 1,677              | 943         | 734         |
| Other                    | 4,680              | --          | 4,680       |
| Fuelwood                 | 5,951              | 115         | 5,836       |
| All products             | 160,178            | 27,639      | 132,539     |
| Logging residues         | 14,972             | 1,217       | 13,755      |
| Other removals           | 58,000             | 1,100       | 56,900      |
| Total removals           | 233,150            | 29,956      | 203,194     |

Table 54. — Timber removals from live sawtimber on commercial forest land, by item and softwoods and hardwoods, Wisconsin, 1967  
(Thousand board feet)<sup>1</sup>

| Item                     | : All<br>: species | : Softwoods | : Hardwoods |
|--------------------------|--------------------|-------------|-------------|
| Roundwood products:      |                    |             |             |
| Saw logs                 | 258,207            | 28,341      | 229,866     |
| Veneer logs and bolts    | 21,769             | 65          | 21,704      |
| Pulpwood                 | 238,334            | 64,172      | 174,162     |
| Cooperage logs and bolts | 1,372              | --          | 1,372       |
| Piling                   | 454                | 88          | 366         |
| Poles                    | 1,559              | 1,484       | 75          |
| Posts                    | 2,586              | 989         | 1,597       |
| Other                    | 24,396             | --          | 24,396      |
| Fuelwood                 | 19,521             | 387         | 19,134      |
| All products             | 568,198            | 95,526      | 472,672     |
| Logging residues         | 23,270             | 1,613       | 21,657      |
| Other removals           | 58,700             | 2,900       | 55,800      |
| Total removals           | 650,168            | 100,039     | 550,129     |

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

Table 55. — Timber removals from growing stock on commercial forest land, by species  
and Forest Survey Unit, Wisconsin, 1967  
(Thousand cubic feet)

| Species               | : All<br>: units | : Northeastern<br>: unit | : Northwestern<br>: unit | : Central<br>: unit | : Southwestern<br>: unit | : Southeastern<br>: unit |
|-----------------------|------------------|--------------------------|--------------------------|---------------------|--------------------------|--------------------------|
| Softwoods:            |                  |                          |                          |                     |                          |                          |
| White pine            | 4,162            | 2,241                    | 693                      | 925                 | 171                      | 132                      |
| Red pine              | 1,770            | 696                      | 560                      | 448                 | 37                       | 29                       |
| Jack pine             | 13,295           | 3,179                    | 4,978                    | 5,021               | 55                       | 62                       |
| White spruce          | 543              | 392                      | 129                      | 8                   | --                       | 14                       |
| Black spruce          | 612              | 441                      | 145                      | 23                  | --                       | 3                        |
| Balsam fir            | 3,963            | 2,193                    | 1,705                    | 52                  | --                       | 13                       |
| Hemlock               | 4,237            | 2,737                    | 1,204                    | 232                 | --                       | 64                       |
| Tamarack              | 329              | 130                      | 110                      | 64                  | 1                        | 24                       |
| Northern white-cedar  | 1,043            | 637                      | 40                       | 106                 | --                       | 260                      |
| Other softwoods       | 2                | --                       | --                       | 1                   | 1                        | --                       |
| Total softwoods       | 29,956           | 12,646                   | 9,564                    | 6,880               | 265                      | 601                      |
| Hardwoods:            |                  |                          |                          |                     |                          |                          |
| White oak             | 8,142            | 64                       | 749                      | 2,426               | 3,819                    | 1,084                    |
| Select red oak        | 24,558           | 1,422                    | 3,160                    | 8,950               | 9,703                    | 1,323                    |
| Other red oak         | 9,083            | 526                      | 1,168                    | 3,310               | 3,589                    | 490                      |
| Hickory               | 2,013            | 236                      | 197                      | 288                 | 1,192                    | 100                      |
| Yellow birch          | 3,037            | 1,573                    | 1,079                    | 371                 | 8                        | 6                        |
| Hard maple            | 17,551           | 6,303                    | 6,110                    | 2,510               | 1,972                    | 656                      |
| Soft maple            | 9,732            | 1,494                    | 3,456                    | 2,793               | 1,036                    | 953                      |
| Beech                 | 334              | 189                      | --                       | 15                  | --                       | 130                      |
| Ash                   | 7,116            | 1,291                    | 3,526                    | 1,221               | 610                      | 468                      |
| Balsam poplar         | 85               | --                       | 67                       | 3                   | 3                        | 12                       |
| Cottonwood            | 449              | 14                       | 3                        | 43                  | 215                      | 174                      |
| Paper birch           | 10,497           | 1,994                    | 6,661                    | 1,125               | 634                      | 83                       |
| Bigtooth aspen        | 21,059           | 9,944                    | 8,360                    | 1,851               | 815                      | 89                       |
| Quaking aspen         | 66,532           | 31,417                   | 27,657                   | 5,849               | 1,327                    | 282                      |
| Basswood              | 8,198            | 1,227                    | 3,457                    | 1,304               | 1,816                    | 394                      |
| Butternut             | 343              | 66                       | 58                       | 52                  | 148                      | 19                       |
| Black walnut          | 292              | 3                        | 1                        | 9                   | 258                      | 21                       |
| Black cherry          | 462              | 199                      | 147                      | 43                  | 46                       | 27                       |
| Elm                   | 13,300           | 2,937                    | 3,166                    | 2,772               | 2,309                    | 2,116                    |
| Other hardwoods       | 411              | 79                       | 82                       | 130                 | 85                       | 35                       |
| Noncommercial species | --               | --                       | --                       | --                  | --                       | --                       |
| Total hardwoods       | 203,194          | 60,978                   | 69,104                   | 35,065              | 29,585                   | 8,462                    |
| All species           | 233,150          | 73,624                   | 78,668                   | 41,945              | 29,850                   | 9,063                    |

Table 56. — Timber removals from live sawtimber on commercial forest land, by species  
and Forest Survey Unit, Wisconsin, 1967  
(Thousand board feet)<sup>1</sup>

| Species               | :<br>: All<br>: units | :<br>: Northeastern<br>: unit | :<br>: Northwestern<br>: unit | :<br>: Central<br>: unit | :<br>: Southwestern<br>: unit | :<br>: Southeastern<br>: unit |
|-----------------------|-----------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|-------------------------------|
| Softwoods:            |                       |                               |                               |                          |                               |                               |
| White pine            | 22,414                | 12,637                        | 3,466                         | 4,564                    | 984                           | 763                           |
| Red pine              | 6,196                 | 3,026                         | 1,739                         | 1,294                    | 57                            | 80                            |
| Jack pine             | 28,247                | 6,741                         | 10,702                        | 10,507                   | 121                           | 176                           |
| White spruce          | 3,386                 | 2,443                         | 832                           | 54                       | --                            | 57                            |
| Black spruce          | 838                   | 604                           | 169                           | 51                       | --                            | 14                            |
| Balsam fir            | 14,227                | 7,900                         | 6,141                         | 137                      | --                            | 49                            |
| Hemlock               | 21,414                | 13,902                        | 6,036                         | 1,108                    | --                            | 368                           |
| Tamarack              | 985                   | 466                           | 358                           | 108                      | --                            | 53                            |
| Northern white-cedar  | 2,331                 | 1,349                         | 112                           | 158                      | --                            | 712                           |
| Other softwoods       | 1                     | --                            | --                            | 1                        | --                            | --                            |
| Total softwoods       | 100,039               | 49,068                        | 29,555                        | 17,982                   | 1,162                         | 2,272                         |
| Hardwoods:            |                       |                               |                               |                          |                               |                               |
| White oak             | 23,911                | 349                           | 1,695                         | 6,870                    | 10,310                        | 4,687                         |
| Select red oak        | 91,847                | 6,880                         | 8,276                         | 32,179                   | 38,247                        | 6,265                         |
| Other red oak         | 26,226                | 1,965                         | 2,363                         | 9,188                    | 10,921                        | 1,789                         |
| Hickory               | 3,188                 | 526                           | 365                           | 645                      | 1,394                         | 258                           |
| Yellow birch          | 11,962                | 6,776                         | 3,912                         | 1,178                    | 51                            | 45                            |
| Hard maple            | 63,978                | 31,118                        | 13,593                        | 9,234                    | 7,128                         | 2,905                         |
| Soft maple            | 24,623                | 5,351                         | 5,514                         | 7,251                    | 1,871                         | 4,636                         |
| Beech                 | 1,560                 | 942                           | --                            | 60                       | --                            | 558                           |
| Ash                   | 17,038                | 4,259                         | 6,672                         | 3,110                    | 1,379                         | 1,618                         |
| Balsam poplar         | 179                   | --                            | 144                           | 21                       | 2                             | 12                            |
| Cottonwood            | 1,853                 | 74                            | 5                             | 243                      | 642                           | 889                           |
| Paper birch           | 19,622                | 6,105                         | 11,178                        | 1,522                    | 621                           | 196                           |
| Bigtooth aspen        | 64,025                | 32,861                        | 23,968                        | 5,698                    | 1,179                         | 319                           |
| Quaking aspen         | 118,278               | 60,706                        | 44,277                        | 10,527                   | 2,179                         | 589                           |
| Basswood              | 28,330                | 6,604                         | 8,568                         | 5,048                    | 6,305                         | 1,805                         |
| Butternut             | 1,304                 | 279                           | 196                           | 244                      | 544                           | 41                            |
| Black walnut          | 1,677                 | 25                            | 9                             | 56                       | 1,446                         | 141                           |
| Black cherry          | 1,598                 | 624                           | 397                           | 162                      | 256                           | 159                           |
| Elm                   | 46,906                | 12,885                        | 8,609                         | 9,726                    | 5,842                         | 9,844                         |
| Other hardwoods       | 2,024                 | 472                           | 291                           | 770                      | 446                           | 45                            |
| Noncommercial species | --                    | --                            | --                            | --                       | --                            | --                            |
| Total hardwoods       | 550,129               | 178,801                       | 140,032                       | 103,732                  | 90,763                        | 36,801                        |
| All species           | 650,168               | 227,869                       | 169,587                       | 121,714                  | 91,925                        | 39,073                        |

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

Table 57. — Net annual growth and removals of growing stock on commercial forest land, by species, Wisconsin, 1967

(Thousand cubic feet)<sup>1</sup>

| Species               | :<br>: Net<br>: Annual<br>: Growth | :<br>: Timber<br>: Removals |
|-----------------------|------------------------------------|-----------------------------|
| Softwoods:            |                                    |                             |
| White pine            | 13,535                             | 4,162                       |
| Red pine              | 12,628                             | 1,770                       |
| Jack pine             | 27,425                             | 13,295                      |
| White spruce          | 4,482                              | 543                         |
| Black spruce          | 7,098                              | 612                         |
| Balsam fir            | 29,378                             | 3,963                       |
| Hemlock               | 10,127                             | 4,237                       |
| Tamarack              | 6,447                              | 329                         |
| Northern white-cedar  | 11,957                             | 1,043                       |
| Other softwoods       | 28                                 | 2                           |
| Total softwoods       | 123,105                            | 29,956                      |
| Hardwoods:            |                                    |                             |
| White oak             | 11,219                             | 8,142                       |
| Select red oak        | 31,889                             | 24,558                      |
| Other red oak         | 12,092                             | 9,083                       |
| Hickory               | 3,444                              | 2,013                       |
| Yellow birch          | 7,317                              | 3,037                       |
| Hard maple            | 38,861                             | 17,551                      |
| Soft maple            | 31,970                             | 9,732                       |
| Beech                 | 812                                | 334                         |
| Ash                   | 15,325                             | 7,116                       |
| Balsam poplar         | 1,133                              | 85                          |
| Cottonwood            | 588                                | 449                         |
| Paper birch           | 49,333                             | 10,497                      |
| Bigtooth aspen        | 26,989                             | 21,059                      |
| Quaking aspen         | 95,805                             | 66,532                      |
| Basswood              | 22,701                             | 8,198                       |
| Butternut             | 551                                | 343                         |
| Black walnut          | 192                                | 292                         |
| Black cherry          | 3,548                              | 462                         |
| Elm                   | 22,418                             | 13,300                      |
| Other hardwoods       | 821                                | 411                         |
| Noncommercial species | --                                 | --                          |
| Total hardwoods       | 377,008                            | 203,194                     |
| All species           | 500,113                            | 233,150                     |

Table 58. — Net annual growth and removals of saw-timber on commercial forest land, by species, Wisconsin, 1967

(Thousand board feet)<sup>1</sup>

| Species               | :<br>: Net<br>: Annual<br>: Growth | :<br>: Timber<br>: Removals |
|-----------------------|------------------------------------|-----------------------------|
| Softwoods:            |                                    |                             |
| White pine            | 76,195                             | 22,414                      |
| Red pine              | 43,542                             | 6,196                       |
| Jack pine             | 75,673                             | 28,247                      |
| White spruce          | 10,723                             | 3,386                       |
| Black spruce          | 7,296                              | 838                         |
| Balsam fir            | 46,945                             | 14,227                      |
| Hemlock               | 47,555                             | 21,414                      |
| Tamarack              | 2,805                              | 985                         |
| Northern white-cedar  | 26,975                             | 2,331                       |
| Other softwoods       | 29                                 | 1                           |
| Total softwoods       | 337,738                            | 100,039                     |
| Hardwoods:            |                                    |                             |
| White oak             | 49,902                             | 23,911                      |
| Select red oak        | 118,159                            | 91,847                      |
| Other red oak         | 43,564                             | 26,226                      |
| Hickory               | 10,257                             | 3,188                       |
| Yellow birch          | 34,577                             | 11,962                      |
| Hard maple            | 100,906                            | 63,978                      |
| Soft maple            | 63,886                             | 24,623                      |
| Beech                 | 4,211                              | 1,560                       |
| Ash                   | 34,291                             | 17,038                      |
| Balsam poplar         | 4,118                              | 179                         |
| Cottonwood            | 2,288                              | 1,853                       |
| Paper birch           | 43,793                             | 19,622                      |
| Bigtooth aspen        | 78,571                             | 64,025                      |
| Quaking aspen         | 164,719                            | 118,278                     |
| Basswood              | 68,586                             | 28,330                      |
| Butternut             | 3,636                              | 1,304                       |
| Black walnut          | 1,013                              | 1,677                       |
| Black cherry          | 4,866                              | 1,598                       |
| Elm                   | 92,103                             | 46,906                      |
| Other hardwoods       | 2,481                              | 2,024                       |
| Noncommercial species | --                                 | --                          |
| Total hardwoods       | 925,927                            | 550,129                     |
| All species           | 1,263,665                          | 650,168                     |

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

Table 59. — Net annual growth and removals of growing stock on commercial forest land,  
by ownership class and softwoods and hardwoods, Wisconsin, 1967  
(Thousand cubic feet)

| Ownership class                        | Net annual growth |           |           | Annual removals |           |           |
|----------------------------------------|-------------------|-----------|-----------|-----------------|-----------|-----------|
|                                        | All species       | Softwoods | Hardwoods | All species     | Softwoods | Hardwoods |
| National Forest                        | 52,867            | 17,438    | 35,429    | 20,699          | 2,419     | 18,280    |
| Other public                           | 119,649           | 31,891    | 87,758    | 32,196          | 5,605     | 26,591    |
| Forest industry                        | 48,979            | 16,402    | 32,577    | 35,195          | 8,435     | 26,760    |
| Farmer and<br>miscellaneous<br>private | 278,618           | 57,374    | 221,244   | 145,060         | 13,497    | 131,563   |
| All ownerships                         | 500,113           | 123,105   | 377,008   | 233,150         | 29,956    | 203,194   |

Table 60. — Net annual growth and removals of sawtimber on commercial forest land,  
by ownership class and softwoods and hardwoods, Wisconsin, 1967  
(Thousand board feet)<sup>1</sup>

| Ownership class                        | Net annual growth |           |           | Annual removals |           |           |
|----------------------------------------|-------------------|-----------|-----------|-----------------|-----------|-----------|
|                                        | All species       | Softwoods | Hardwoods | All species     | Softwoods | Hardwoods |
| National Forest                        | 124,055           | 52,595    | 71,460    | 40,712          | 7,760     | 32,952    |
| Other public                           | 219,900           | 81,682    | 138,218   | 59,863          | 16,141    | 43,722    |
| Forest industry                        | 135,469           | 53,093    | 82,376    | 103,693         | 32,242    | 71,451    |
| Farmer and<br>miscellaneous<br>private | 784,241           | 150,368   | 633,873   | 445,900         | 43,896    | 402,004   |
| All ownerships                         | 1,263,665         | 337,738   | 925,927   | 650,168         | 100,039   | 550,129   |

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

Table 61. — Annual mortality of growing stock and sawtimber on commercial forest land, by species, Wisconsin, 1967

| Species               | Growing stock<br>: thousand cubic feet | Sawtimber<br>: thousand board feet <sup>1/</sup> |
|-----------------------|----------------------------------------|--------------------------------------------------|
| Softwoods:            |                                        |                                                  |
| White pine            | 1,154                                  | 4,075                                            |
| Red pine              | 446                                    | 2,481                                            |
| Jack pine             | 3,397                                  | 5,172                                            |
| White spruce          | 64                                     | 251                                              |
| Black spruce          | 622                                    | 307                                              |
| Balsam fir            | 3,896                                  | 6,178                                            |
| Hemlock               | 2,386                                  | 11,097                                           |
| Tamarack              | 675                                    | 954                                              |
| Northern white-cedar  | 1,748                                  | 4,273                                            |
| Other softwoods       | --                                     | --                                               |
| Total softwoods       | 14,388                                 | 34,788                                           |
| Hardwoods:            |                                        |                                                  |
| White oak             | 865                                    | 1,003                                            |
| Select red oak        | 5,435                                  | 16,920                                           |
| Other red oak         | 3,568                                  | 6,248                                            |
| Hickory               | 175                                    | 84                                               |
| Yellow birch          | 1,157                                  | 2,788                                            |
| Hard maple            | 1,097                                  | 1,957                                            |
| Soft maple            | 1,546                                  | 2,943                                            |
| Beech                 | --                                     | --                                               |
| Ash                   | 1,873                                  | 4,170                                            |
| Balsam poplar         | 249                                    | 309                                              |
| Cottonwood            | --                                     | --                                               |
| Paper birch           | 1,247                                  | 868                                              |
| Bigtooth aspen        | 2,248                                  | 3,282                                            |
| Quaking aspen         | 15,986                                 | 9,690                                            |
| Basswood              | 393                                    | 434                                              |
| Butternut             | 455                                    | 1,016                                            |
| Black walnut          | --                                     | --                                               |
| Black cherry          | 583                                    | 420                                              |
| Elm                   | 8,404                                  | 24,451                                           |
| Other hardwoods       | 244                                    | 35                                               |
| Noncommercial species | --                                     | --                                               |
| Total hardwoods       | 45,525                                 | 76,618                                           |
| All species           | 59,913                                 | 111,406                                          |

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

Table 62. — Annual mortality of growing stock and sawtimber on commercial forest land, by ownership class and softwoods and hardwoods, Wisconsin, 1967

| Ownership class                        | Growing stock       |           |           | Sawtimber                         |           |           |
|----------------------------------------|---------------------|-----------|-----------|-----------------------------------|-----------|-----------|
|                                        | All                 | Softwoods | Hardwoods | All                               | Softwoods | Hardwoods |
|                                        | species             |           |           | species                           |           |           |
|                                        | Thousand cubic feet |           |           | Thousand board feet <sup>1/</sup> |           |           |
| National Forest                        | 4,525               | 1,399     | 3,126     | 1,306                             | 760       | 546       |
| Other public                           | 11,620              | 3,187     | 8,433     | 14,357                            | 6,739     | 7,618     |
| Forest industry                        | 6,996               | 3,537     | 3,459     | 17,277                            | 11,822    | 5,455     |
| Farmer and<br>miscellaneous<br>private | 36,772              | 6,265     | 30,507    | 78,466                            | 15,467    | 62,999    |
| All ownerships                         | 59,913              | 14,388    | 45,525    | 111,406                           | 34,788    | 76,618    |

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

Table 63. — Annual mortality of growing stock and sawtimber on commercial forest land, by cause and softwoods and hardwoods, Wisconsin, 1967

| Cause                    | Growing stock       |        |        | Sawtimber                         |        |        |
|--------------------------|---------------------|--------|--------|-----------------------------------|--------|--------|
|                          | All                 | Soft-  | Hard-  | All                               | Soft-  | Hard-  |
|                          | species             | woods  | woods  | species                           | woods  | woods  |
|                          | Thousand cubic feet |        |        | Thousand board feet <sup>1/</sup> |        |        |
| Fire                     | 131                 | 131    | --     | --                                | --     | --     |
| Animals                  | 752                 | 203    | 549    | 861                               | 127    | 734    |
| Insects                  | 952                 | 909    | 43     | 1,265                             | 1,265  | --     |
| Weather                  | 13,478              | 4,198  | 9,280  | 29,836                            | 11,891 | 17,945 |
| Disease                  | 31,124              | 4,268  | 26,856 | 56,075                            | 9,872  | 46,203 |
| Suppression              | 886                 | 339    | 547    | 995                               | 995    | --     |
| Logging                  | 1,416               | 803    | 613    | 3,253                             | 2,368  | 885    |
| Unknown and other        | 10,717              | 3,537  | 7,180  | 18,140                            | 8,270  | 9,870  |
| Timber stand improvement | 457                 | --     | 457    | 981                               | --     | 981    |
| All causes               | 59,913              | 14,388 | 45,525 | 111,406                           | 34,788 | 76,618 |

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

Table 64. — Output of timber products, by source of material and softwoods and hardwoods, Wisconsin, 1967

| Products and species group | Standard unit            | Total output      |           | Roundwood products |           | Plant byproducts  |           |
|----------------------------|--------------------------|-------------------|-----------|--------------------|-----------|-------------------|-----------|
|                            |                          | No. of std. units | M cu. ft. | No. of std. units  | M cu. ft. | No. of std. units | M cu. ft. |
| Saw logs:                  | M bd. ft. <sup>1/</sup>  |                   |           |                    |           |                   |           |
| Softwood                   |                          | 28,680            | 4,839     | 28,680             | 4,839     | --                | --        |
| Hardwood                   |                          | 243,830           | 40,256    | 243,830            | 40,256    | --                | --        |
| Total                      |                          | 272,510           | 45,095    | 272,510            | 45,095    | --                | --        |
| Veneer logs and bolts:     | M bd. ft.                |                   |           |                    |           |                   |           |
| Softwood                   |                          | 69                | 11        | 69                 | 11        | --                | --        |
| Hardwood                   |                          | 22,915            | 3,678     | 22,915             | 3,678     | --                | --        |
| Total                      |                          | 22,984            | 3,689     | 22,984             | 3,689     | --                | --        |
| Pulpwood:                  | Std. cords <sup>2/</sup> |                   |           |                    |           |                   |           |
| Softwood                   |                          | 290,186           | 22,888    | 279,821            | 22,071    | 10,365            | 817       |
| Hardwood                   |                          | 1,126,350         | 88,953    | 1,025,578          | 80,994    | 100,772           | 7,959     |
| Total                      |                          | 1,416,536         | 111,841   | 1,305,399          | 103,065   | 111,137           | 8,776     |
| Cooperage:                 | M bd. ft.                |                   |           |                    |           |                   |           |
| Softwood                   |                          | --                | --        | --                 | --        | --                | --        |
| Hardwood                   |                          | 1,532             | 209       | 1,532              | 209       | --                | --        |
| Total                      |                          | 1,532             | 209       | 1,532              | 209       | --                | --        |
| Piling:                    | M linear ft.             |                   |           |                    |           |                   |           |
| Softwood                   |                          | 43                | 17        | 43                 | 17        | --                | --        |
| Hardwood                   |                          | 76                | 58        | 76                 | 58        | --                | --        |
| Total                      |                          | 119               | 75        | 119                | 75        | --                | --        |
| Poles:                     | M pieces                 |                   |           |                    |           |                   |           |
| Softwood                   |                          | 44                | 368       | 44                 | 368       | --                | --        |
| Hardwood                   |                          | 2                 | 19        | 2                  | 19        | --                | --        |
| Total                      |                          | 46                | 387       | 46                 | 387       | --                | --        |
| Posts (round and split):   | M pieces                 |                   |           |                    |           |                   |           |
| Softwood                   |                          | 1,023             | 1,027     | 1,023              | 1,027     | --                | --        |
| Hardwood                   |                          | 1,198             | 1,178     | 1,198              | 1,178     | --                | --        |
| Total                      |                          | 2,221             | 2,205     | 2,221              | 2,205     | --                | --        |
| Other: <sup>3/</sup>       | M cu. ft.                |                   |           |                    |           |                   |           |
| Softwood                   |                          | 288               | 288       | --                 | --        | 288               | 288       |
| Hardwood                   |                          | 8,443             | 8,443     | 4,687              | 4,687     | 3,756             | 3,756     |
| Total                      |                          | 8,731             | 8,731     | 4,687              | 4,687     | 4,044             | 4,044     |
| Total industrial products: |                          |                   |           |                    |           |                   |           |
| Softwood                   |                          | --                | 29,438    | --                 | 28,333    | --                | 1,105     |
| Hardwood                   |                          | --                | 142,794   | --                 | 131,079   | --                | 11,715    |
| Total                      |                          | --                | 172,232   | --                 | 159,412   | --                | 12,820    |
| Fuelwood:                  | Std. cords               |                   |           |                    |           |                   |           |
| Softwood                   |                          | 11,000            | 767       | 6,300              | 433       | 4,700             | 334       |
| Hardwood                   |                          | 385,400           | 26,903    | 309,100            | 21,566    | 76,300            | 5,337     |
| Total                      |                          | 396,400           | 27,670    | 315,400            | 21,999    | 81,000            | 5,671     |
| All products:              |                          |                   |           |                    |           |                   |           |
| Softwood                   |                          | --                | 30,205    | --                 | 28,766    | --                | 1,439     |
| Hardwood                   |                          | --                | 169,697   | --                 | 152,645   | --                | 17,052    |
| Total                      |                          | --                | 199,902   | --                 | 181,411   | --                | 18,491    |

<sup>1/</sup> M (meaning thousand) board feet by International 1/4-inch rule.

<sup>2/</sup> Rough-wood basis (include chips converted to equivalent standard cords).

<sup>3/</sup> Includes roundwood used in manufacturing moulded products, heading, lath, shavings, particleboard, excelsior, charcoal, etc.



*Table 65. - Output of roundwood products, by source and softwoods and hardwoods,  
Wisconsin, 1967  
(Thousand cubic feet)*

| Products and species group     | : All     | : Growing stock trees <sup>1/</sup> | : Rough and      | : Salvable     | : Other   |        |
|--------------------------------|-----------|-------------------------------------|------------------|----------------|-----------|--------|
|                                | : sources | : Total : Sawtimber: Poletimber :   | : rotten trees : | : dead trees : | : sources | 2/     |
| Industrial products            |           |                                     |                  |                |           |        |
| Sawlogs:                       |           |                                     |                  |                |           |        |
| Softwood                       | 4,839     | 4,770                               | 4,770            | --             | 62        | 7      |
| Hardwood                       | 40,256    | 38,446                              | 38,407           | 39             | 1,122     | 583    |
| Total                          | 45,095    | 43,216                              | 43,177           | 39             | 1,184     | 590    |
| Veneer logs and bolts:         |           |                                     |                  |                |           |        |
| Softwood                       | 11        | 10                                  | 10               | --             | 1         | --     |
| Hardwood                       | 3,678     | 3,335                               | 3,335            | --             | 343       | --     |
| Total                          | 3,689     | 3,345                               | 3,345            | --             | 344       | --     |
| Pulpwood:                      |           |                                     |                  |                |           |        |
| Softwood                       | 22,071    | 21,416                              | 15,169           | 6,247          | 575       | 80     |
| Hardwood                       | 80,994    | 79,248                              | 37,292           | 41,956         | 334       | 1,190  |
| Total                          | 103,065   | 100,664                             | 52,461           | 48,203         | 909       | 1,270  |
| Misc. industrial products      |           |                                     |                  |                |           |        |
| Cooperage:                     |           |                                     |                  |                |           |        |
| Softwood                       | --        | --                                  | --               | --             | --        | --     |
| Hardwood                       | 209       | 183                                 | 183              | --             | 14        | 12     |
| Total                          | 209       | 183                                 | 183              | --             | 14        | 12     |
| Piling:                        |           |                                     |                  |                |           |        |
| Softwood                       | 17        | 17                                  | 17               | --             | --        | --     |
| Hardwood                       | 58        | 58                                  | 58               | --             | --        | --     |
| Total                          | 75        | 75                                  | 75               | --             | --        | --     |
| Poles:                         |           |                                     |                  |                |           |        |
| Softwood                       | 368       | 368                                 | 310              | 58             | --        | --     |
| Hardwood                       | 19        | 19                                  | 16               | 3              | --        | --     |
| Total                          | 387       | 387                                 | 326              | 61             | --        | --     |
| Posts (round and split):       |           |                                     |                  |                |           |        |
| Softwood                       | 1,027     | 943                                 | 242              | 701            | 9         | 75     |
| Hardwood                       | 1,178     | 734                                 | 310              | 424            | 222       | 222    |
| Total                          | 2,205     | 1,677                               | 552              | 1,125          | 231       | 297    |
| Other: <sup>3/</sup>           |           |                                     |                  |                |           |        |
| Softwood                       | --        | --                                  | --               | --             | --        | --     |
| Hardwood                       | 4,687     | 4,680                               | 3,398            | 1,282          | 5         | 2      |
| Total                          | 4,687     | 4,680                               | 3,398            | 1,282          | 5         | 2      |
| All misc. industrial products: |           |                                     |                  |                |           |        |
| Softwood                       | 1,412     | 1,328                               | 569              | 759            | 9         | 75     |
| Hardwood                       | 6,151     | 5,674                               | 3,965            | 1,709          | 241       | 236    |
| Total                          | 7,563     | 7,002                               | 4,534            | 2,468          | 250       | 311    |
| All industrial products:       |           |                                     |                  |                |           |        |
| Softwood                       | 28,333    | 27,524                              | 20,518           | 7,006          | 647       | 162    |
| Hardwood                       | 131,079   | 126,703                             | 82,999           | 43,704         | 2,040     | 2,009  |
| Total                          | 159,412   | 154,227                             | 103,517          | 50,710         | 2,687     | 2,171  |
| Fuelwood:                      |           |                                     |                  |                |           |        |
| Softwood                       | 433       | 115                                 | 66               | 49             | 22        | 296    |
| Hardwood                       | 21,566    | 5,836                               | 3,391            | 2,445          | 1,210     | 14,520 |
| Total                          | 21,999    | 5,951                               | 3,457            | 2,494          | 1,232     | 14,816 |
| All products:                  |           |                                     |                  |                |           |        |
| Softwood                       | 28,766    | 27,639                              | 20,584           | 7,055          | 669       | 458    |
| Hardwood                       | 152,645   | 132,539                             | 86,390           | 46,149         | 3,250     | 16,529 |
| Total                          | 181,411   | 160,178                             | 106,974          | 53,204         | 3,919     | 16,987 |

<sup>1/</sup> On commercial forest land.

<sup>2/</sup> Includes trees less than 5.0 inches in diameter, tree tops and limbs from commercial forest areas or material from noncommercial forest land or nonforest land such as fence rows or suburban areas.

<sup>3/</sup> Includes roundwood used in manufacturing molded products, heading, lath, shavings, particle board, excelsior, charcoal, etc.

Table 66. — A comparison of the number of primary wood-using plants operating in 1956 and 1967 by Forest Survey Unit, Wisconsin  
(In number of plants)

| Kind of mill <sup>1/</sup> | All units |      | Northeastern unit |      | Northwestern unit |      | Central unit |      | Southwestern unit |      | Southeastern unit |      |
|----------------------------|-----------|------|-------------------|------|-------------------|------|--------------|------|-------------------|------|-------------------|------|
|                            | 1956      | 1967 | 1956              | 1967 | 1956              | 1967 | 1956         | 1967 | 1956              | 1967 | 1956              | 1967 |
| Sawmills:                  |           |      |                   |      |                   |      |              |      |                   |      |                   |      |
| Large <sup>2/</sup>        | 8         | 6    | 5                 | 5    | --                | --   | 3            | 1    | --                | --   | --                | --   |
| Medium <sup>3/</sup>       | 55        | 73   | 13                | 17   | 17                | 12   | 7            | 14   | 13                | 23   | 5                 | 7    |
| Small                      | 1,565     | 739  | 306               | 125  | 340               | 130  | 403          | 182  | 301               | 175  | 215               | 127  |
| Total                      | 1,628     | 818  | 324               | 147  | 357               | 142  | 413          | 197  | 314               | 198  | 220               | 134  |
| Veneer mills               |           |      |                   |      |                   |      |              |      |                   |      |                   |      |
| Standard grade             | 21        | 16   | 8                 | 6    | 3                 | 4    | 6            | 3    | 1                 | --   | 3                 | 3    |
| Container                  | 26        | 10   | 4                 | 1    | 3                 | 2    | 6            | 1    | 4                 | 1    | 9                 | 5    |
| Total                      | 47        | 26   | 12                | 7    | 6                 | 6    | 12           | 4    | 5                 | 1    | 12                | 8    |
| Cooperage mills            | 5         | 3    | --                | --   | --                | --   | --           | --   | 2                 | 3    | 3                 | --   |
| Handle plants              | --        | --   | --                | --   | --                | --   | --           | --   | --                | --   | --                | --   |
| Pulp mills                 | 29        | 27   | 7                 | 7    | 3                 | 3    | 10           | 9    | --                | --   | 9                 | 8    |
| Charcoal plants            | 4         | 2    | --                | --   | 1                 | --   | 1            | --   | 1                 | 1    | 1                 | 1    |
| Misc. plants <sup>4/</sup> | 40        | 22   | 6                 | 4    | 8                 | 7    | 9            | 4    | 9                 | 6    | 8                 | 1    |
| TOTAL                      | 1,753     | 898  | 349               | 165  | 375               | 158  | 445          | 214  | 331               | 209  | 253               | 152  |

<sup>1/</sup> Excludes idle mills.

<sup>2/</sup> Annual lumber output of 5 million board feet or more.

<sup>3/</sup> Annual lumber output from 1 million to 4.999 million board feet.

<sup>4/</sup> Includes lath, particleboard, shaving, excelsior, fence plants, and specialty plants.

Table 67. — Volume of unused residues at primary manufacturing plants, by industry, type of residue, and softwoods and hardwoods, Wisconsin, 1968

(Thousand cubic feet)

| Species and type of residue | All industries | Lumber | Veneer | Cooperage | Other |
|-----------------------------|----------------|--------|--------|-----------|-------|
| Softwoods                   |                |        |        |           |       |
| Course <sup>1/</sup>        | 131            | 131    | --     | --        | --    |
| Fine <sup>2/</sup>          | 427            | 427    | --     | --        | --    |
| Total                       | 558            | 558    | --     | --        | --    |
| Hardwoods                   |                |        |        |           |       |
| Course <sup>1/</sup>        | 816            | 780    | 25     | 6         | 5     |
| Fine <sup>2/</sup>          | 2,669          | 2,540  | 110    | 12        | 7     |
| Total                       | 3,485          | 3,320  | 135    | 18        | 12    |
| All species                 |                |        |        |           |       |
| Course <sup>1/</sup>        | 947            | 911    | 25     | 6         | 5     |
| Fine <sup>2/</sup>          | 3,096          | 2,967  | 110    | 12        | 7     |
| Total                       | 4,043          | 3,878  | 135    | 18        | 12    |

<sup>1/</sup> Material suitable for chipping such as slabs, edgings, and veneer cores.

<sup>2/</sup> Residues not suitable for chipping, such as sawdust and shavings.

Table 68. — Value of timber products to producer, by Forest Survey Unit, Wisconsin, 1968<sup>1</sup>  
(Thousand dollars)

| Survey unit       | All products | Product  |               |              |
|-------------------|--------------|----------|---------------|--------------|
|                   |              | Pulpwood | Lumber : logs | All : others |
| Northeastern unit | 15,685       | 10,420   | 3,855         | 1,410        |
| Northwestern unit | 10,720       | 7,970    | 1,605         | 1,145        |
| Central unit      | 7,000        | 3,170    | 2,655         | 1,175        |
| Southwestern unit | 4,325        | 65       | 2,905         | 1,355        |
| Southeastern unit | 2,015        | 70       | 1,495         | 450          |
| All units         | 39,745       | 21,695   | 12,515        | 5,535        |

<sup>1/</sup> Value delivered to the mill.

Table 69. — Removals,<sup>1</sup> net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and low removals option projections<sup>2</sup> to 1998

GROWING STOCK

| Year                               | Removals      |               |               | Growth        |               |               | Inventory     |               |               |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                    | All : species | Soft- : woods | Hard- : woods | All : species | Soft- : woods | Hard- : woods | All : species | Soft- : woods | Hard- : woods |
| (Million cubic feet)               |               |               |               |               |               |               |               |               |               |
| 1968                               | 233.2         | 30.0          | 203.2         | 500.1         | 123.1         | 377.0         | 10,996.1      | 2,474.7       | 8,521.4       |
| 1978                               | 270.1         | 45.0          | 225.1         | 538.4         | 143.3         | 395.1         | 13,701.7      | 3,440.8       | 10,260.9      |
| 1988                               | 333.7         | 72.0          | 261.7         | 552.4         | 148.7         | 403.7         | 16,157.8      | 4,331.9       | 11,825.9      |
| 1998                               | 426.3         | 109.9         | 316.4         | 545.3         | 144.4         | 400.9         | 17,826.4      | 4,874.7       | 12,951.7      |
| SAWTIMBER                          |               |               |               |               |               |               |               |               |               |
| (Million board feet) <sup>3/</sup> |               |               |               |               |               |               |               |               |               |
| 1968                               | 650           | 100           | 550           | 1,264         | 338           | 926           | 21,756        | 6,497         | 15,259        |
| 1978                               | 766           | 164           | 602           | 1,600         | 469           | 1,131         | 29,291        | 9,174         | 20,117        |
| 1988                               | 1,019         | 269           | 750           | 1,863         | 560           | 1,303         | 37,880        | 12,259        | 25,621        |
| 1998                               | 1,387         | 423           | 964           | 1,997         | 594           | 1,403         | 45,202        | 14,568        | 30,634        |

1/ Timber removals includes volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

2/ Based on the following assumptions: (a) that the removals rate will be lower than that for the high removals option, (b) that timber removals for products will increase during the 30-year period at an increasing rate each 10-year period, (c) that the total area of commercial forest land will continue to decline at a rate of 0.141 percent per year, (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees, (e) that the intensity of forest management practiced will continue at the rate indicated by recent trends, (f) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

3/ International 1/4-inch rule.

Table 70. — Removals,<sup>1</sup> net annual growth, and inventory of growing stock and sawtimber on commercial forest land, Wisconsin, 1968, and high removals option projections<sup>2</sup> to 1998

GROWING STOCK

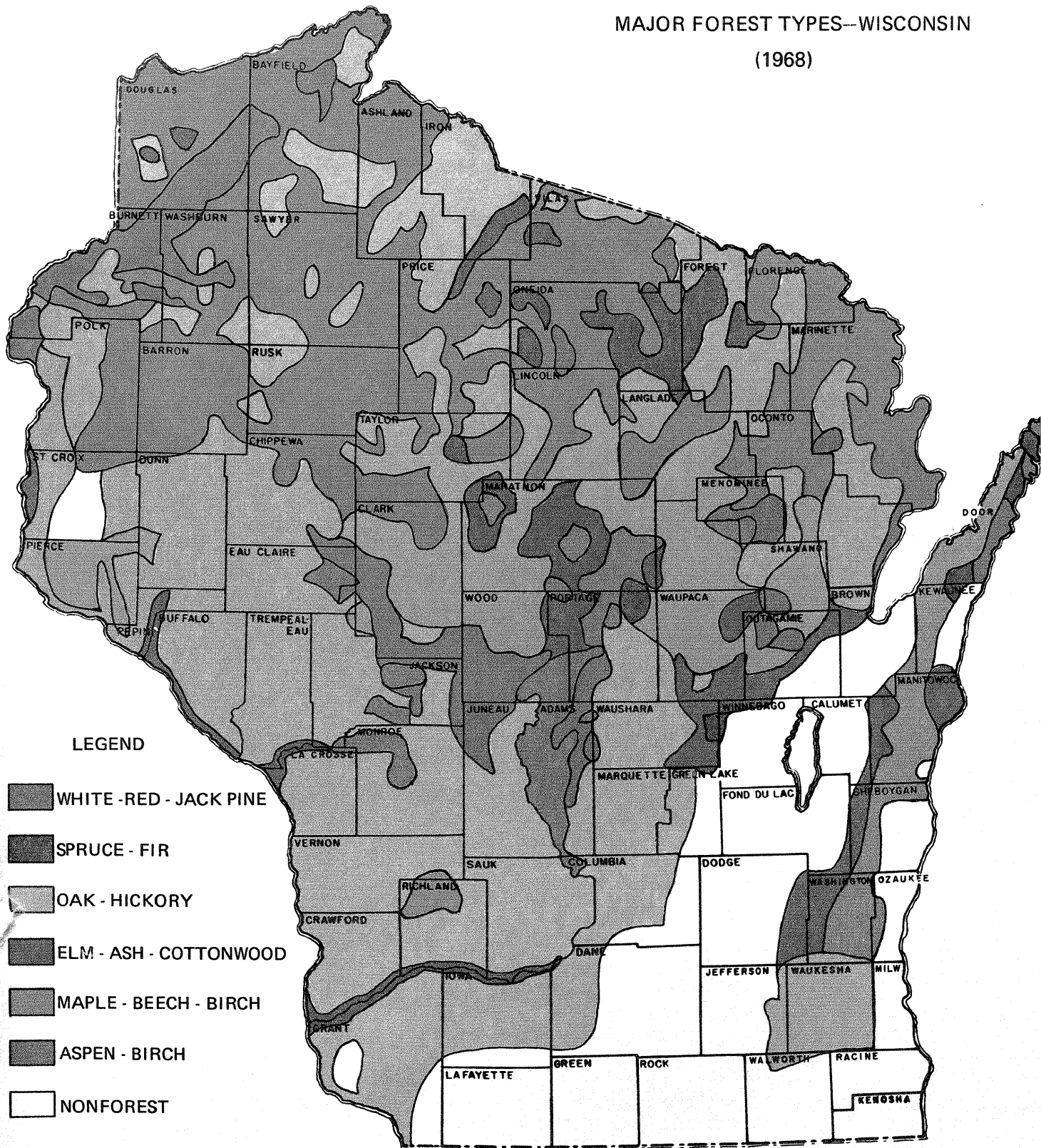
| Year                               | Removals      |               |               | Growth        |               |               | Inventory     |               |               |
|------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                                    | All : species | Soft- : woods | Hard- : woods | All : species | Soft- : woods | Hard- : woods | All : species | Soft- : woods | Hard- : woods |
| (Million cubic feet)               |               |               |               |               |               |               |               |               |               |
| 1968                               | 233.2         | 30.0          | 203.2         | 500.1         | 123.1         | 377.0         | 10,996.1      | 2,474.7       | 8,521.4       |
| 1978                               | 305.8         | 53.4          | 252.4         | 533.5         | 142.1         | 391.4         | 13,514.6      | 3,398.2       | 10,116.4      |
| 1988                               | 407.9         | 100.0         | 307.9         | 538.3         | 145.2         | 393.1         | 15,298.0      | 4,076.0       | 11,222.0      |
| 1998                               | 507.2         | 139.9         | 367.3         | 527.6         | 141.3         | 386.3         | 16,003.4      | 4,281.0       | 11,722.4      |
| SAWTIMBER                          |               |               |               |               |               |               |               |               |               |
| (Million board feet) <sup>3/</sup> |               |               |               |               |               |               |               |               |               |
| 1968                               | 650           | 100           | 550           | 1,264         | 338           | 926           | 21,756        | 6,497         | 15,259        |
| 1978                               | 867           | 195           | 672           | 1,584         | 464           | 1,120         | 28,759        | 9,020         | 19,739        |
| 1988                               | 1,244         | 370           | 874           | 1,803         | 541           | 1,262         | 35,272        | 11,308        | 23,964        |
| 1998                               | 1,624         | 525           | 1,099         | 1,895         | 564           | 1,331         | 39,369        | 12,300        | 27,069        |

1/ Timber removals includes volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

2/ Based on the following assumptions: (a) that the removals rate will be higher than that for the low removals option, (b) that timber removals for products will increase during the 30-year period but at a decreasing rate each 10-year period, (c) that the total area of commercial forest land will continue to decline at a rate of 0.141 percent per year, (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees, (e) that the intensity of forest management practiced will continue at the rate indicated by recent trends, (f) that use of both hardwoods and softwoods for pulpwood will increase, but use of hardwoods will increase at a slower rate for most of the projection period.

3/ International 1/4-inch rule.

# MAJOR FOREST TYPES--WISCONSIN (1968)



**TWO OTHER REPORTS DEALING WITH WISCONSIN'S  
TIMBER RESOURCE  
PUBLISHED RECENTLY ARE:**

Forest area in Wisconsin counties, 1968, by Burton L. Essex. USDA For. Serv. Res. Note NC-135, 4 p., illus. 1972.

Timber volume in Wisconsin counties, by Arnold J. Ostrom. USDA For. Serv. Res. Note NC-145, 4 p., illus. 1972.

**ABOUT THE FOREST SERVICE . . .**

As our Nation grows, people expect and need more from their forests—more wood; more water, fish, and wildlife; more recreation and natural beauty; more special forest products and forage. The Forest Service of the U.S. Department of Agriculture helps to fulfill these expectations and needs through three major activities:



- Conducting forest and range research at over 75 locations ranging from Puerto Rico to Alaska to Hawaii.
- Participating with all State forestry agencies in cooperative programs to protect, improve, and wisely use our Country's 395 million acres of State, local, and private forest lands.
- Managing and protecting the 187-million acre National Forest System.

The Forest Service does this by encouraging use of the new knowledge that research scientists develop; by setting an example in managing, under sustained yield, the National Forests and Grasslands for multiple use purposes; and by cooperating with all States and with private citizens in their efforts to achieve better management, protection, and use of forest resources.

Traditionally, Forest Service people have been active members of the communities and towns in which they live and work. They strive to secure for all, continuous benefits from the Country's forest resources.

For more than 60 years, the Forest Service has been serving the Nation as a leading natural resource conservation agency.