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Analysis of the 1996 Wisconsin Forest Statistics by Habitat Type

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FOREWORD

The forest data commonly reported by the Forest Inventory and Analysis (FIA) program of the USDA Forest Service (e.g., *Wisconsin Forest Statistics, 1996*) are presented by forest types and major species or species groups. These data provide useful estimates of total quantities (e.g., volumes, acres, removals) for the State. But we also need information on how these quantities vary because of differences in site potential. For example, when it is reported that the oak-hickory forest type represents 2.9 million acres and contains 3.5 billion cubic feet of volume (actual numbers), we need to know what proportions represent poor, medium, or high site qualities. We also need to know how much of the oak-hickory type is made up primarily of highly productive and economically valuable red oak and how much is made up of the much less valuable pin or black oak. A reliable site classification system can clarify these differences.

In Wisconsin, a forest habitat type classification system has been developed (Kotar *et al.* 1988, Kotar and Burger 1996). The system classifies stands, or inventory plots, into habitat types by evaluating the composition of the understory plant community. Each habitat type represents a site capability class along a soil moisture/nutrient gradient. The 1996 inventory of Wisconsin's forest resources included the use of the Wisconsin Forest Habitat Type Classification System.

Analyzing the forest inventory by habitat types enables us to show, for example, how much acreage and volume of each forest type occurs on each habitat type. This immediately gives us a picture of the actual species composition of a given forest type across the range of site classes. In the above oak-hickory type example, through habitat type, we can now differentiate between those acreages that are rapidly succeeding to more competitive species and those that offer greater opportunities for maintenance of the oak type. Analysis by habitat type also allows us to compare differences in total volume or volume per acre across the gradient. Much of the same information can also be examined for other forest types and by region, county, or ownership class.

Presenting the vast amounts of available forest statistics in this context can greatly enhance the interpretation of our forest resource base and lead to improved planning.

It is also worth pointing out that combining the forest inventory with the habitat type classification system has improved both these assessment and planning tools. The data from more than 5,000 FIA plots have greatly enhanced the quantitative base of the forest habitat type classification system itself.

ACKNOWLEDGMENTS

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INTRODUCTION

The Habitat Type Classification System

The habitat type system is a method of site classification that uses the floristic composition of a forest community (understory herbs and shrubs, as well as trees) as an integrated indicator of those environmental factors that affect species reproduction, growth, competition, and, therefore, community development. Through sampling across a complete environmental gradient of a region, floristic patterns are identified that reflect different positions on the gradient, such as dry, nutrient-poor; dry-mesic, medium nutrient; and mesic, nutrient-rich.

In practice, keys based on presence or absence of diagnostic plants are used to classify forest stands into habitat types.

The habitat type system serves the following basic functions:

1. Communication—It provides managers and researchers with a common language for describing forest communities and sites.

2. Research—It provides a framework for systematic gathering and interpretation of research data and empirical knowledge.

3. Management interpretation—It allows resource managers to develop long-term management objectives and specific prescriptions for manipulating vegetation, based on knowledge of ecological potential of the land.

The Wisconsin habitat type classification system was developed through the sampling and analysis of more than 2,000 forest stands, representing a range of forest environments from very dry, nutrient-poor, to mesic, nutrient-rich.

Because different combinations of understory plants form communities on the same portion of the environmental gradient in different climatic, or physiographic regions, it is necessary to establish habitat types on a relatively small geographic scale. The Wisconsin system is based on five northern and six southern habitat type regions (fig. 1). The "natural" boundaries between these regions cannot be precisely delineated because landform, soil, and climate boundaries are themselves gradual and, to a large extent, independent of each other. For convenience, counties were grouped into regions so that each region could be characterized, and distinguished from other regions, by at least one major natural feature. (Note: regions 1-5 in figure 1 differ from those used in the original (1988) *Field Guide to Forest Habitat Types of Northern Wisconsin.* The revised edition, to be published in 2000, will use regions as shown in figure 1).

Habitat Type Names

An understanding of habitat type names is not required for using this publication, but an explanation is included here for interested readers.

Habitat type names are based on ecological criteria. Each type is named in part after the tree species that shows the strongest tendency

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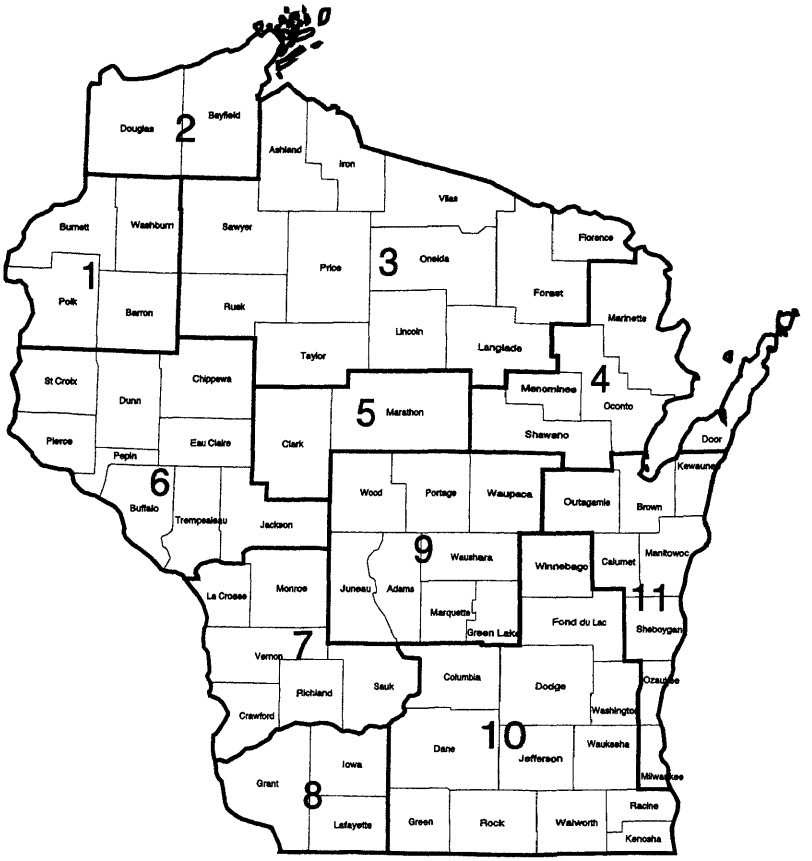


Figure 1.—*Wisconsin's 11 habitat type regions.*

to dominate a community on that site type in the absence of disturbance. This is usually the most shade tolerant species that the site type can support. For example, sugar maple is one of the most shade tolerant trees in Wisconsin, but the range of its environmental tolerance is restricted to mesic and dry-mesic nutrient-rich sites. On drier and less fertile sites, sugar maple grows poorly, or not at all, and dominance is assumed by other, less shade tolerant species such as white pine or red maple. Throughout Wisconsin sugar maple is the potential dominant climax species on all mesic and some dry mesic site types. In many regions, basswood is a common associate of sugar maple, thus the mesic and dry mesic habitat types contain both names, e.g., ***Acer-Tilia***/*Desmodium*. For convenience, the name is abbreviated **ATiDe**. The second part of the name, in this case **De** - for ***Desmodium glutinosum*** (pointed-leaf tick trefoil), is one of the characteristic understory species of a dry-mesic sugar maple association. It is used to distinguish this association (or habitat type) from other mesic sugar maple-basswood types such as, ATi**Sa**, *Acer-Tilia*/***Sanguinaria*** (*Sanguinaria canadensis*, or bloodroot) and ATi**Ca**, *Acer-Tilia*/***Caulophyllum*** (*Caulophyllum thalictroides*, or blue cohosh).

The use of scientific names for habitat types may seem awkward to some, but it is necessary to maintain accuracy and consistency. For everyday use and non-technical communication, it is acceptable to use common names and to simplify the standard abbreviations.

For a complete description and interpretation of habitat types, refer to Kotar *et al.* 1988, Kotar and Burger 1996. Note, however, that some northern habitat types included in this bulletin are not found in the original *Field Guide to Forest Habitat Types of Northern Wisconsin*. They will appear in the new edition of the guide to be published in 2000. Also, some abbreviations of the northern habitat type names have been changed. For a complete list of habitat type names and abbreviations, see appendix B.

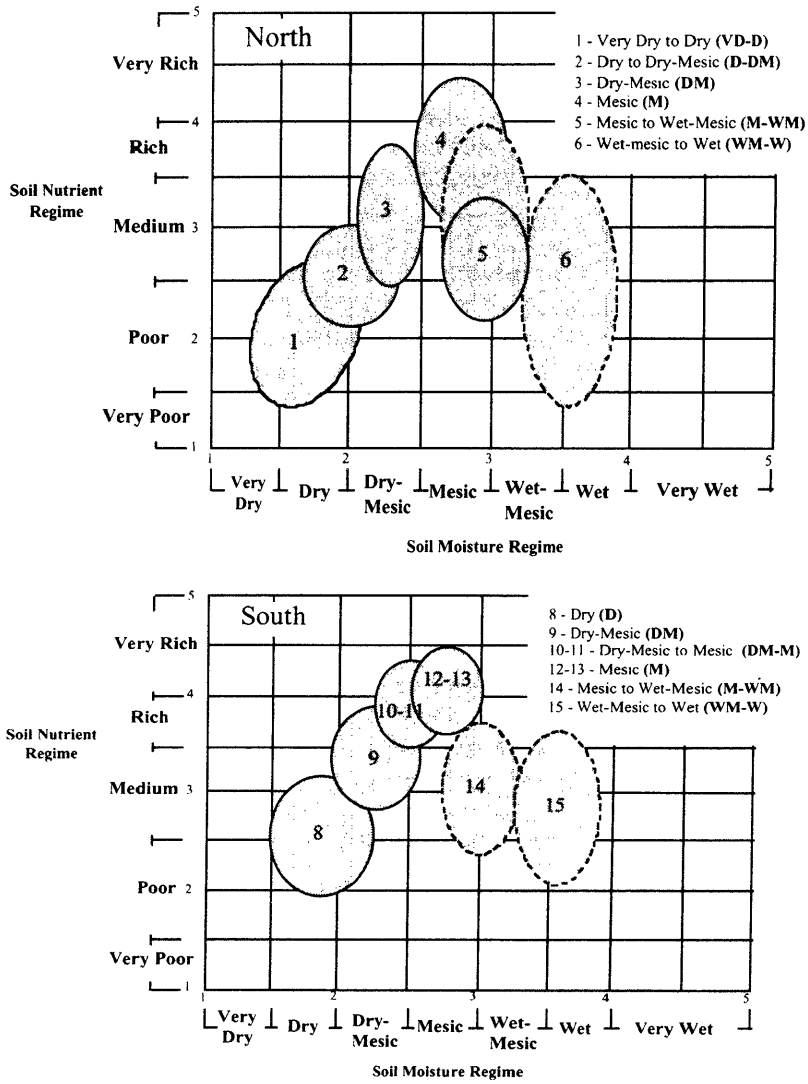


Figure 2.—*Habitat type groups of the northern and southern parts of Wisconsin. The position of each group is a composite of several individual habitat types. The positions of groups and group sections with dotted borders are estimates.*

Habitat Type Groups

To simplify the analysis and discussion of the forest inventory data, the similar habitat types (those representing the same, or similar, position on the moisture-nutrient gradient) were combined. Seven northern and eight southern habitat type groups, each representing a segment of the moisture/nutrient gradient, were delineated (fig. 2).

Soil moisture and nutrient regimes are, for the most part, correlated, because both are to a large extent controlled by soil texture. (This, of course, is not the case where a high water table influences available moisture.) In general, as soil moisture holding capacity increases (up to the mesic conditions), so does the relative abundance of nutrients (fig. 2). However, to keep the terminology as simple as possible, the habitat type groups are referred to only in terms of relative moisture regime. The following is a short description of key characteristics of each habitat type group. (See appendix B for the complete names of habitat types.)

North

1. ***Very dry to dry* (VD-D)**.—This group represents the driest, least fertile soils of the region. Forests are dominated by pines (primarily jack and red pine) and poor quality oak. Red maple is the most shade tolerant species found on these sites and can replace other species in the absence of natural disturbance or management.

   Habitat types: QAc, ArQTr, QArE, QGCe, ArQV, ArQV-Sm, QV, QAp

2. ***Dry to dry-mesic* (D-DM)**.—This group is a step up on the soil moisture-nutrient

gradient from the preceding group. In addition to jack and red pines, white pine thrives on these types, as does red oak. White pine is sufficiently shade tolerant to reproduce naturally in mixed stands of oaks, aspen, red maple, and other pines.

Habitat types: PAm, PAm-At, PMV, PMV-Q, PMV-Vb, PMV-Po

3. ***Dry-mesic* (DM).**—Soil moisture and nutrients are adequate to support shade tolerant, mesic species such as sugar maple, basswood, and white ash, but not at their optimal levels. Following natural disturbance or logging, red oak, red maple, or white pine often assume dominance in the stand. However, without natural disturbance or management, stands on these types tend to succeed to mesic hardwoods.

   Habitat types: FArAa, AVVb, AVDe, ACl-V, ACl, AQVb, AQVb-V, AQVb-Ha, AAt, AFTPo, AVb, AFVb

4. ***Mesic* (M).**—This group represents the most favorable soil moisture-nutrient condition in the region. Shade tolerant, mesic hardwoods (sugar maple, basswood, white ash, American beech) or hemlock dominate most stands. Less shade tolerant species gain temporary dominance only after a major disturbance, especially fire. However, fires are not frequent on these habitat types.

   Habitat types: ATM, AFSt, AAs, ATFD, ATD, ATDH, ACaCi, ACaCi-H, AFAl, AFAd, AViO, AViO-Ca, AH, AHVb, AH-Ci

5. ***Mesic to wet-mesic* (M-WM).**—This group represents a transition from upland to lowland forest. The position of this group in figure 2 is based entirely on one well-represented habitat type (TMC). However, the group includes several additional habitat types for which the data for calculating the moisture-nutrient coordinates were not available. Our estimates strongly indicate that the field in figure 2 should extend further up the nutrient scale as shown by the dashed line. Sites with higher nutrient levels are dominated by mesic hardwoods (e.g., sugar maple, basswood, white ash) and those with lower nutrient levels are dominated by hemlock, white pine, or balsam fir. Aspen or red maple often dominates successional stands on all habitat types of this group.

   Habitat types: ArCo, TMC-V, TMC, TMC-D, ATM-As, ATD-I, ACaCi-I, AViO-I, AH-I

6. ***Wet-mesic to wet* (WM-W).**—These are distinctly lowland sites. No specific habitat types were identified. Forests are dominated by swamp conifers (e.g., northern white-cedar, black spruce, tamarack) or by balsam fir, red maple, black ash, or aspen. The position of the group in figure 2 is estimated.

7. ***Superior clay belt*** (Not presented in figure 2).—The two habitat types in this group represent a special case where clayey soils and climate, modified by Lake Superior, historically supported upland forests dominated by balsam fir and other conifers. These types are difficult to place on the moisture–nutrient gradient, because conditions fluctuate greatly from wet to dry, depending on year-to-year weather patterns. Most of these sites are currently occupied by quaking aspen, but succession to balsam fir, and in some cases white pine, is evident.

   Habitat types: AbArSn, AbASnMi

South

8. ***Dry* (D).**—These types represent the driest, nutrient-poor sandy soils, primarily in the central and western parts of the State. Jack pine, red pine, white pine, oaks, or aspen make up most of the stands. Communities are similar to those of northern dry habitat types, but often include white oak, black oak, and bur oak in addition to red and pin oaks. Red oak typically does not attain merchantable size.

   Habitat types: PVGy, PEu, PVHa, PVCr, PVG, PVRh

9. ***Dry-mesic* (DM).**—These habitat types represent better growth conditions for all species of oak as well as pine. Red maple also competes more strongly on these habitat types than on those of the preceding group. In the absence of natural disturbance or management, it is capable of replacing most other species. Sugar maple does not compete well on these types, and its seed source is generally lacking.

   Habitat types: ArDe-V, AQVb-Gr, ArCi, ArCi-Ph, AArVb, AArL

10. ***Dry-mesic to mesic* (DM-M).**—The soil moisture and nutrient levels on these habitat types are adequate to support moderate growth of mesic hardwoods such as sugar maple and basswood. Red and white oaks grow well on these types and make up the largest volume in present stands. However, in the absence of management, they tend to be replaced by mesic hardwoods if seed sources are present.

    Habitat types: ATiDe-Ha, ATiDe-As, ATiDe, ATiFrCi, ATiFrVb, AFrDe, AFrDeO

11. ***Dry-mesic to mesic, phase* (DM-M phase).**—These types represent soil conditions similar to those of the preceding group, but they experienced more frequent fires in the presettlement time. As a result, mesic hardwoods have been virtually eliminated from the landscape and are not currently replacing oaks or other intolerant species. For these reasons, oak regeneration is relatively easy to achieve.

    Habitat types: ATiDe(Pr), ATiCr(O), ATiCr(As), ATiFrVb(Cr), AFrDe(Vb)

12. ***Mesic* (M).**—This group represents mesic, nutrient-rich sites that experienced relatively little fire disturbance in presettlement time and continue to be dominated by sugar maple, basswood, and white ash. Management by light partial cutting and lack of natural disturbance favor sugar maple dominance.

    Habitat types: ATTr, AFTD, ATiSa-De, ATiSa, ATiFrCa, ATiCa-La, ATiCa, ATiCa-Al, ATiH, AFH, AFAs, AFAs-O

13. ***Mesic, phase* (M phase).**—These habitat types occupy soils similar to those of the preceding group, but they experienced more frequent fires in presettlement time. As a result, stands are dominated by various shade intolerant species, and mesic hardwoods are absent.

    Habitat types: ATiAs(De), ATiFrCa(O)

14. ***Mesic to wet mesic* (M-WM).**—This group represents somewhat poorly drained mineral soils. No specific habitat types have been identified. The best adapted species appear to be red maple and black ash, but many other species occur. The position of the group in figure 2 is estimated.

15. ***Wet-mesic to wet* (WM-W).**—This group represents swampy or boggy conditions with either mineral or organic soils. No specific habitat types have been identified. The best adapted species are green ash, black ash, red maple, and white pine on mineral soils, and tamarack, black spruce, and white cedar on organic soils. The position of the group in figure 2 is estimated.

Survey Procedures

Forest Inventory

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. A detailed description of the procedure for the 1996 inventory of Wisconsin can be found elsewhere (Schmidt 1998). In this publication we provide only a brief summary of the procedures.

The reported summaries are only estimates, and the reliability of these estimates decreases as the data are summarized for smaller areas. The tabulation under Survey Accuracy in appendix B shows how the sampling error (a measure of the reliability) changes for area and net growing-stock volume as these two quantities decrease. These sampling errors mean that the chances are two out of three that if a 100-percent inventory had been made, using the same methods, the results would have been within the limits indicated. For example, if the estimate for the area of forest land in the South dry-mesic habitat type group is 1.036 million acres, then two out of three times the actual value should be between approximately 1.025 and 1.047 million acres (1,036 thousand - 1.11 percent * 1,000 thousand and 1,036 thousand + 1.11 percent * 1,000 thousand, see Survey Accuracy in appendix B).

The kind of inventory data collected depends on the primary use of the land on which sample plots are located. On plots classified as forest land (including reserved forest land,

timberland, and other forest land) wooded pasture, or windbreaks (see appendix B for definitions of these classes), a ground plot was remeasured, updated with a growth model, or established. For other plots, only photo-interpreted data were collected. In this publication we are primarily concerned with forest land. Data from more than 5,000 plots were classified as forest land (table A). For forest land plots, separate forest conditions were identified when there was a distinct change in forest type, stand size class, land use, ownership, or stand density within the sample plot.

Habitat Type Identification of Inventory Plots

The predominant habitat type class was identified for each inventory plot classified as forest land. Approximately 5,600 plots were evaluated. If upland conditions predominated (very dry to wet-mesic), then the plot was reconnoitered, the vegetation recorded (species presence and abundance), and the predominant habitat type identified. Habitat type guides and addenda were used to identify 91 potential habitat types, variants, and phases, as well as 2 undefined hydromesic site classes (see Habitat Type Groups, appendix B). If forested lowland conditions predominated, then the plot was classified as lowland (wet-mesic to wet). If the habitat type could not be identified (approximately 10 percent of the sample), it was placed in the undefined class, and the reasons for the lack of definition were noted.

Habitat type classification requires site evaluation during the summer months when ground flora is present, generally late-May to mid-September in Wisconsin. Forest Service FIA field crews, who work throughout the year, identified habitat types for approximately 15 percent of the plots. DNR field crews, hired and trained solely to accomplish this task, completed about 85 percent of the evaluation and classification.

ANALYSIS

Geographic Distribution of Habitat Type Groups Across Forest Land and Ownership Classes

The distribution of habitat type groups, and to some extent habitat types, across the forested landscape of Wisconsin can be analyzed and interpreted using FIA data. By using included maps and tables, distributional relationships can be examined across forest lands, counties, habitat type regions, Ecoregions of the National Hierarchical Framework of Ecological Units (NHFEU), and ownership classes. Additional distributional factors can be analyzed through additional electronic overlays.

Geographic Distribution

Figure 3 shows the distribution of forest land among 11 habitat type regions. Most regions (1,2,4,6,7,9) contain 5 to 10 percent of the total Wisconsin forest land area. These regions do vary in total land area and percent forest cover. Region 3 contains about 36 percent of the total forest land area, is the largest region geographically, and is one of the most densely forested. The other four regions (5,8,10,11) each contain less than 5 percent of the total forest land area. Regions 5 and 8 are small regions containing a mix of forests and farms, whereas regions 10 and 11 are large but predominantly agricultural and urban.

Table A.—*Distribution of ground plots for the 1996 inventory of Wisconsin's forest resources*

Ground land use class	Old plots remeasured	Old plots updated	New plots	Total plot
Timberland	2,589	450	2,022	5,061
Reserved forest land	66	0	31	97
Other forest land	15	0	5	20
Nonforest with trees	282	25	309	616
Nonforest without trees	2,348	205	2,581	5,134
Water	157	43	148	348
Total	5,457	723	5,096	11,276

Figure 4 shows the approximate area of Wisconsin forest land classified within each habitat type group. Combined, the northern habitat type groups represent about 67 percent of Wisconsin forest land. The northern M, M-WM, and WM-W groups are predominant, and taken together, represent nearly one-half of the total forest land base. The southern habitat type groups represent about 33 percent of Wisconsin forest land. Although no groups predominate, D, DM, and M are most common. The wetter forested site types are much less common in southern Wisconsin than in the northern part of the State.

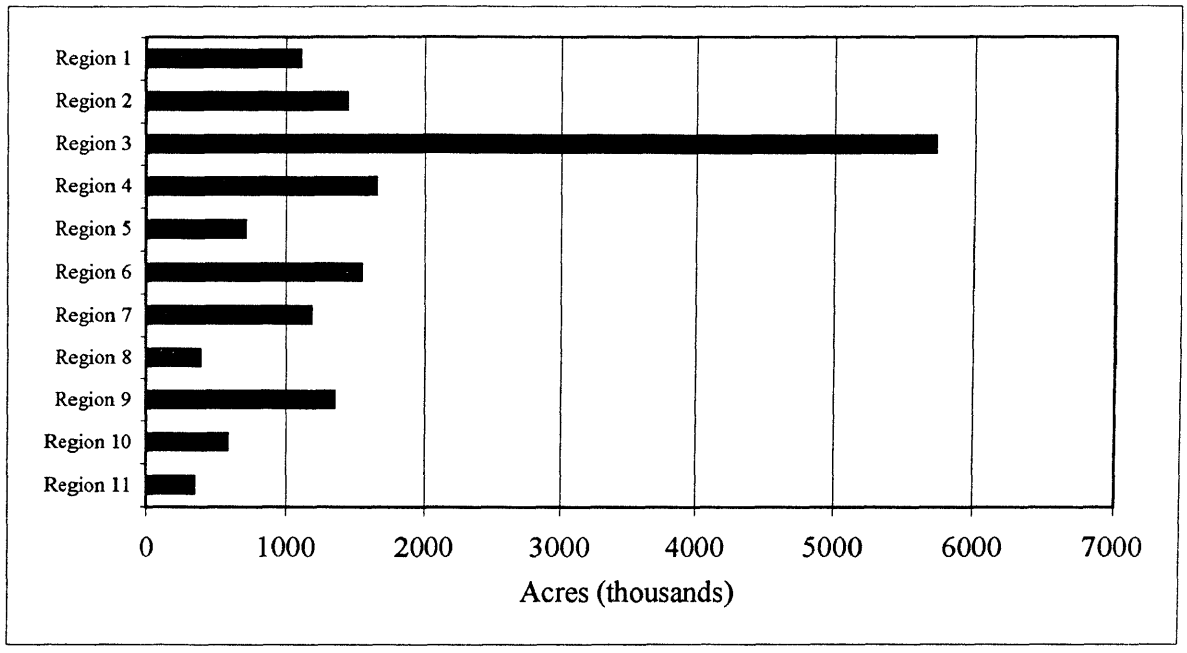
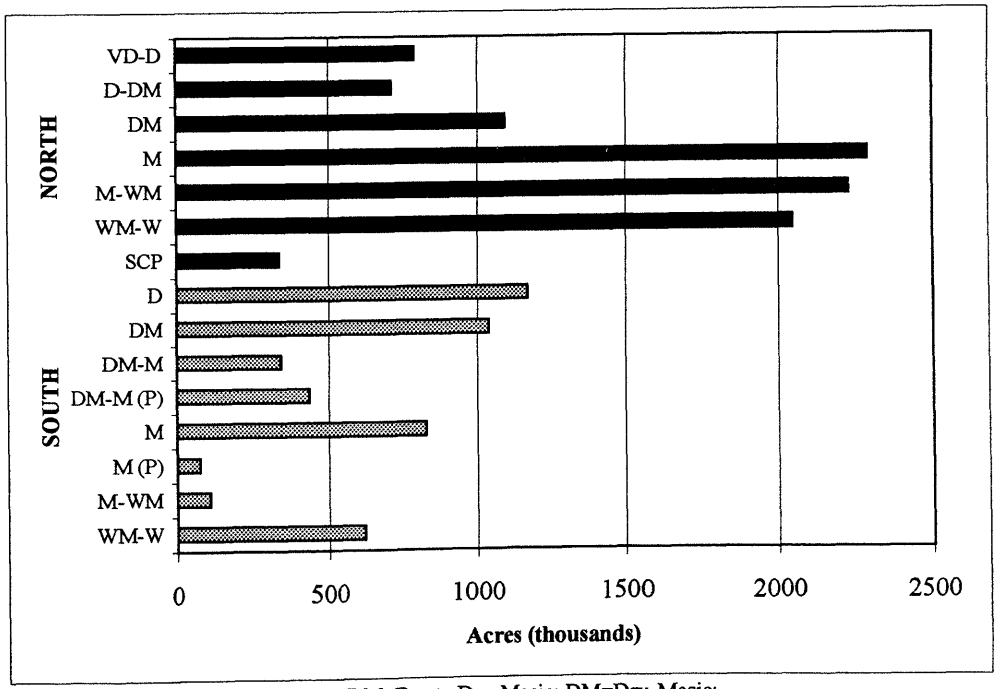


Figure 3.—*Area of forest land by habitat type region.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 4.—*Area of forest land by habitat type group.*

Distribution by Ownership Classes

Comparison of public versus private land ownership by habitat type group can be revealing, especially when northern and southern groups are viewed separately. Figure 4 shows the distribution of forest land by habitat type group, while figures 5 and 6 show these acres divided into public and private ownership classes. The northern habitat type groups represent about 67 percent of Wisconsin forest land; publicly owned forest lands make up 37 percent of this land, and privately owned lands make up 63 percent. Although the majority of the land in northern Wisconsin is private, 25 percent of the forest lands of Wisconsin are public and located mostly in the north. The relative acreage of the seven northern habitat type groups in public and private ownerships is similar. The most common groups are M, M-WM, and WM-W. Proportionally, public lands do have a somewhat larger relative representation of the two driest groups (VD-D, D-DM), with public and private ownership being nearly equal.

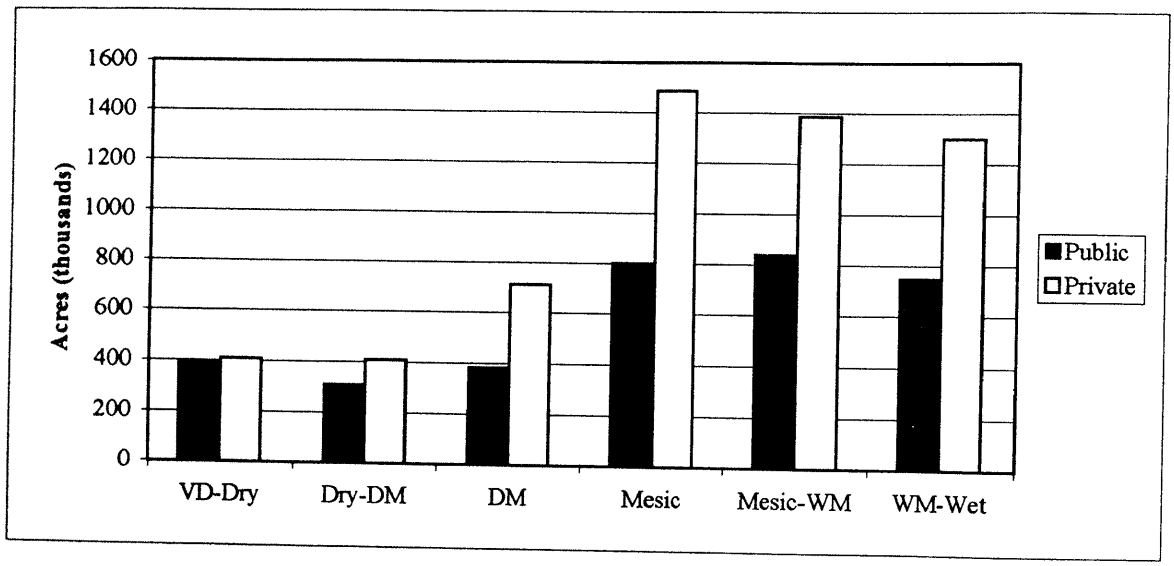


Figure 5.—*Area of forest land of the northern habitat type groups, by ownership class.*

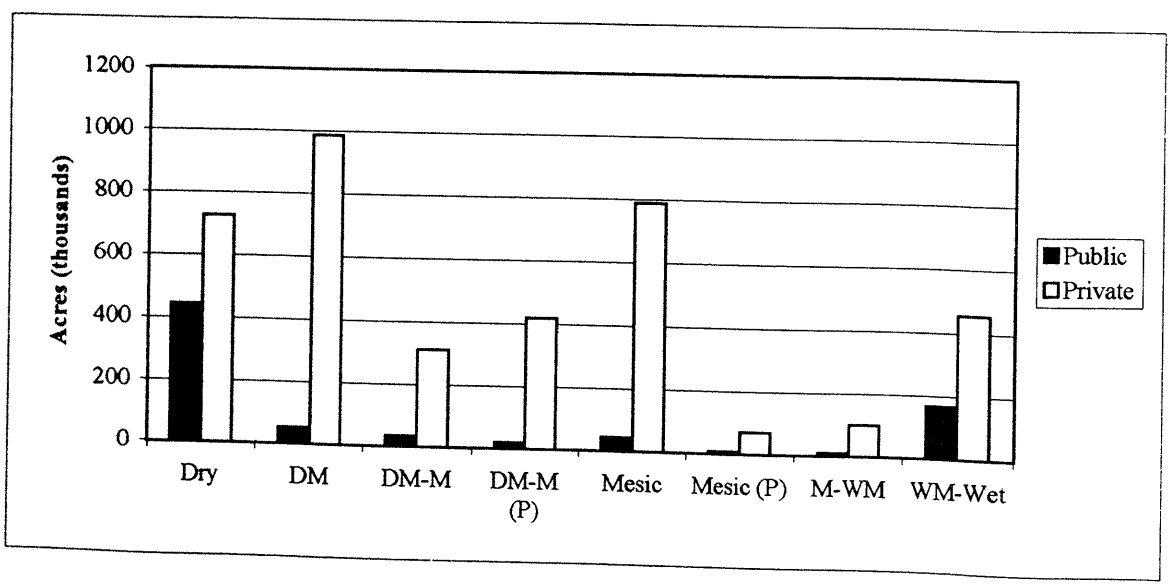


Figure 6.—*Area of forest land of the southern habitat type groups, by ownership class.*

These relationships are very different for the southern habitat type groups, which represent about 33 percent of Wisconsin forest land. Of this, privately owned forest lands represent about 85 percent, and publicly owned lands represent only 15 percent. Also, the general pattern of public ownership of forest lands represented by these groups is extremely skewed and not representative of the occurrence of these groups in the south. The D and WM-W habitat type groups are disproportionately represented, while the other groups are severely underrepresented. These ownership patterns can be examined further by considering more specific ownership classes.

Additional Information Found in Appendices

The set of 14 maps included at the end of this report (appendix D) facilitate distributional analysis and interpretation. Two Wisconsin base maps are included: Map A—Habitat Type Regions with Counties and Map B— Sections and Subsections of the NHFEU (National Hierarchy of Forest Ecosystem Units). Six overlays on each base map are included, each overlay showing two to three habitat type groups and the general plot locations of all FIA plots classified within each group.

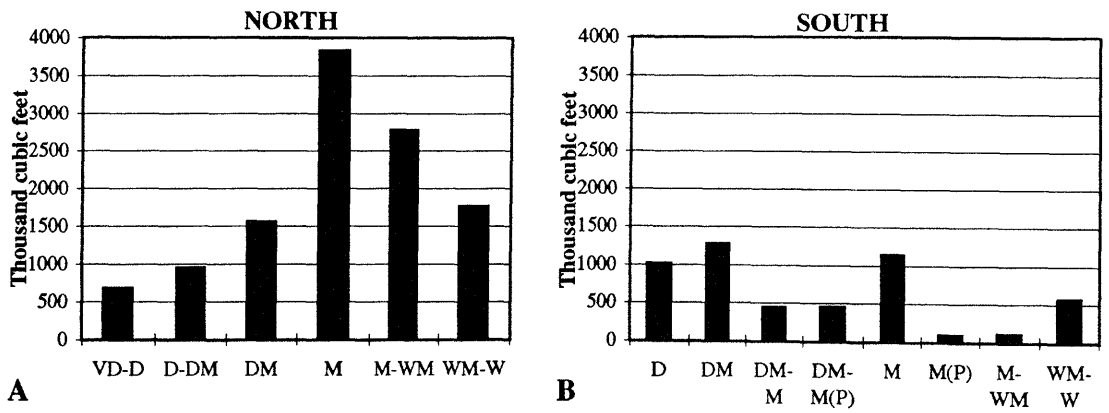
Additional tables, figures, and text give other distributional relationships. Tables 1-11 (appendix C) show the area of forest land by habitat type group, habitat type, county, and habitat type region. Tables 12-16 (appendix C) show the relative frequency of occurrence of habitat type groups and habitat types by NHFEU (National Hierarchy of Forest Ecosystem Units) Sections and Subsections. These tables and maps are further discussed in appendix A.

Habitat Type Group Characteristics

Volume Distribution

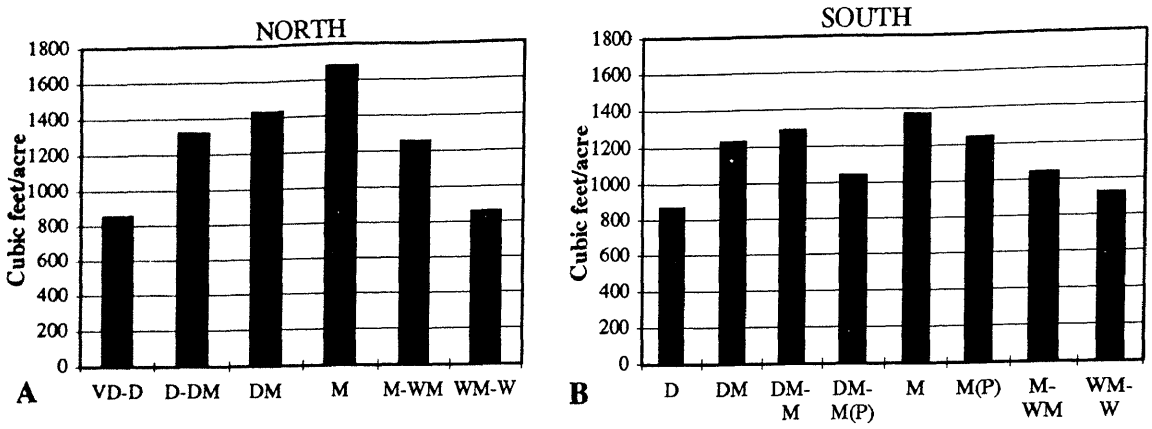
Figure 7 shows the growing-stock distribution across the habitat type groups. Total growing-stock volume for a given habitat type group reflects three factors: total acres in that group, productive capacity of the group, and management history. The relatively low volumes of the southern habitat type groups reflect most strongly the low acreage of forest land in that region.

Figure 8 shows growing-stock volume distribution on a per acre basis. These volumes reflect the productive capacity of habitat type groups and collective management history. Because of the large sample size and systematic allocation of measurement plots, we are assuming that, at least in the north, management history is not affecting the trends seen in figure 8. In the south, the effects of past practices and presettlement conditions are more evident. For example, the southern DM to M habitat type groups have lower volumes per acre than the corresponding northern groups. This probably reflects a more intensive and continuous utilization of the forest resource in the south as compared with the north. The DM-M(P) and M(P) groups are a special case. Stands in these habitat type groups were originally savannas. Presumably, due to intensive use, including grazing, stands on these sites have not reached full stocking.



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 7.—*Total volume of growing stock by habitat type group.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
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M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 8.—*Growing-stock volume per acre by habitat type group.*

Species Composition

Because the habitat type groups represent a gradient of site conditions, we should expect marked differences in species composition among habitat type groups. One way to examine this pattern is to graph volumes of individual species as percent of total volume in each habitat type group. Figures 9 and 10 show patterns of species composition for the northern and southern portions of the State. To make composition patterns more apparent, the species were arranged in order of increasing relative shade tolerance from top to bottom, with conifers listed first.

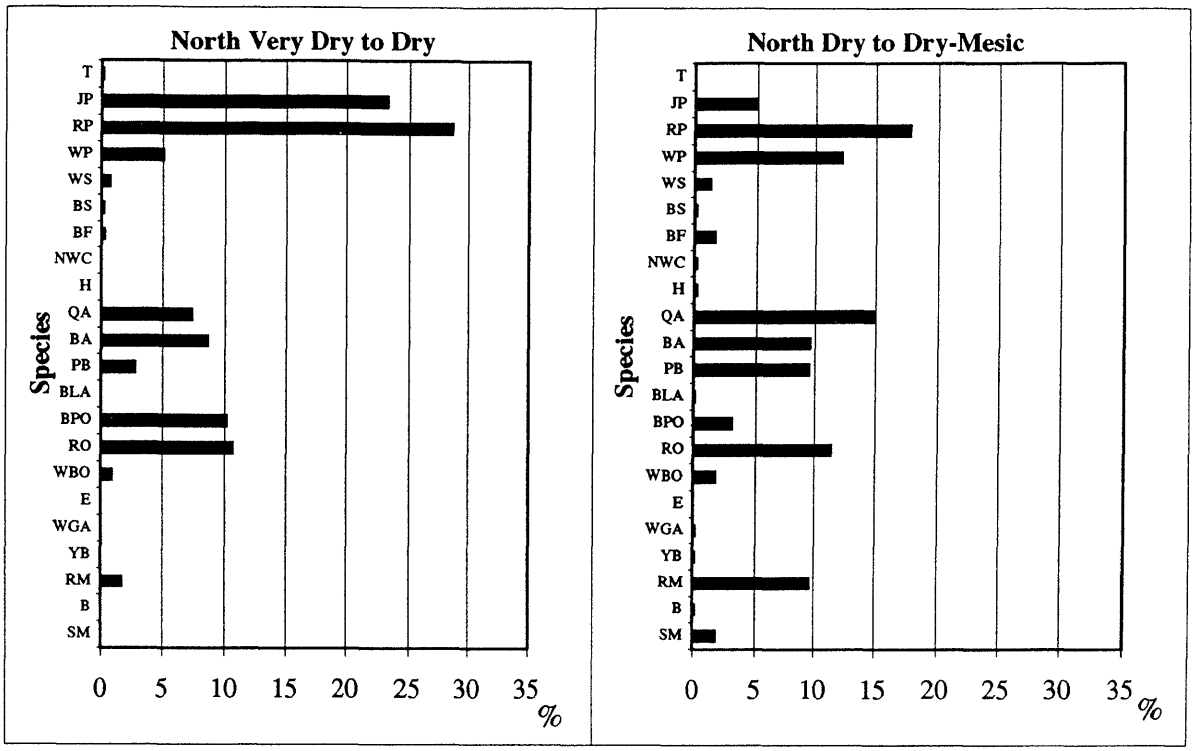
For example, in figure 9 we see that northern VD-D habitat type group is dominated by jack and red pines, with moderate representation of red and pin oaks and the two aspen species. As we move up the moisture-nutrient gradient (D to M), we see the reduction in pine volumes and an increase in red maple, basswood, and sugar maple volumes. Also note that hemlock and yellow birch occur only in the M, M-WM, and WM-W habitat type groups.

In the southern part of the State (fig. 10) the oaks dominate all but the M-WM and WM-W habitat type groups, but relative representation of oak species varies. Black and pin oaks are best represented in the D group and red and white oaks in the DM to M groups. Although the white and bur oak data were lumped in the inventory, data from other sources (Kotar and Burger 1996) show predominance of bur oak in the two habitat type groups representing the presettlement savanna, i.e., DM-M (phase) and M (phase).

Occurrence and Volumes Per Acre of Forest Types

Although species composition is a good way to qualitatively contrast habitat type groups, it is not adequate for management interpretations. Analysis by forest types is more useful for this purpose. Figures 11 and 12 show areal extent and average volumes per acre of various forest types across the habitat type groups. Because composition, structure, and productivity of a given forest type differ across the habitat type groups, it is important to know its relative extent. For example, figure 11 shows that the red pine forest type is far more extensive on the VD-D habitat type group than on the M group, but its per acre growing-stock volume (trees ≥ 5 inch d.b.h.) is almost twice as high on the M type. The contrast for white pine is even greater. The acreage of white pine forest type is very small in both the VD-D and M habitat type groups, but per acre growing-stock volume is again almost twice as high in the M group.

Generally, comparing growing-stock volume per acre between different site types cannot be interpreted as a direct expression of site's productivity, because growing-stock volume is also a function of age and of management history. However, in this case, the volumes are averages for all stands in each habitat type group. If we can assume there is no inherent bias for age and management history among the habitat type groups, then we can interpret the observed differences in growing-stock volume as a rough estimate of differences in productivity. This assumption, however, may not be true in all cases.



SM=sugar maple; B=basswood; RM=red maple; YB=y. birch; WGA=white/green ash; E=elm; WBO=white/bur oak; RO=red oak; BPO=black/pin oak; BLA=black ash; PB=p. birch; BA=b. aspen; QA=q. aspen; H=hemlock; NWC=n. white-cedar; BF=balsam fir; BS=b. spruce; WS=w. spruce; WP=w. pine; RP=r. pine; JP=j. pine; T=tamarack

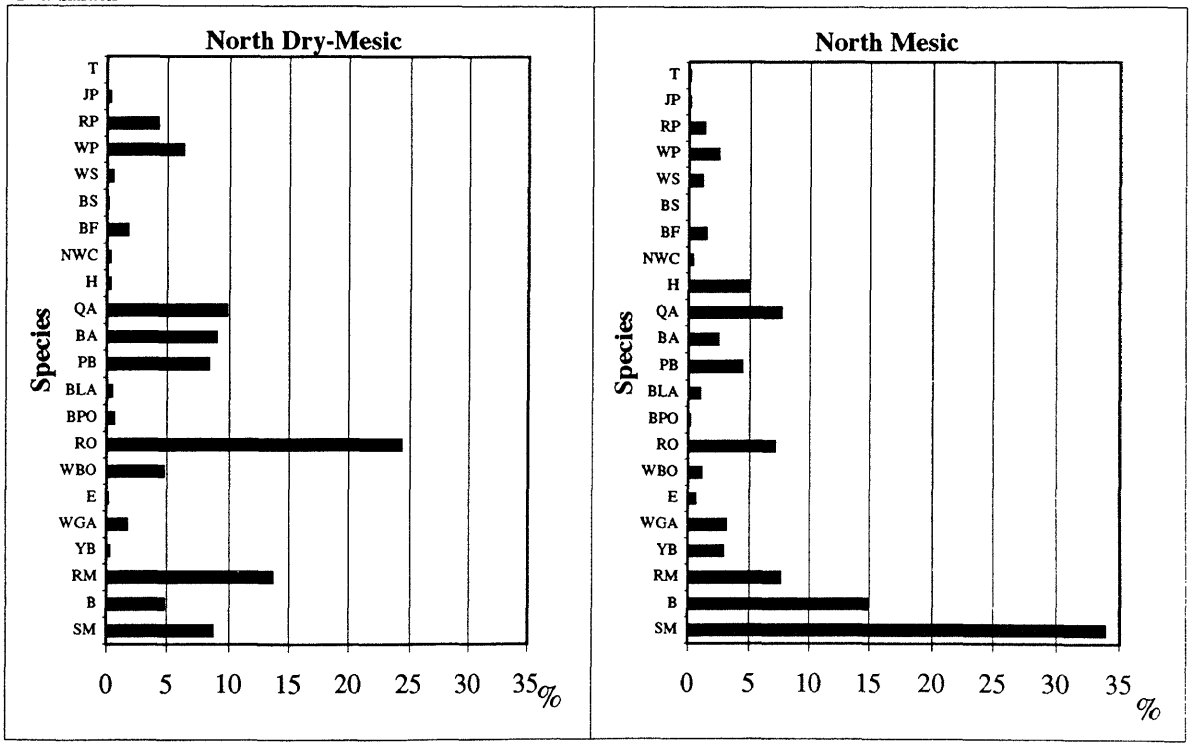
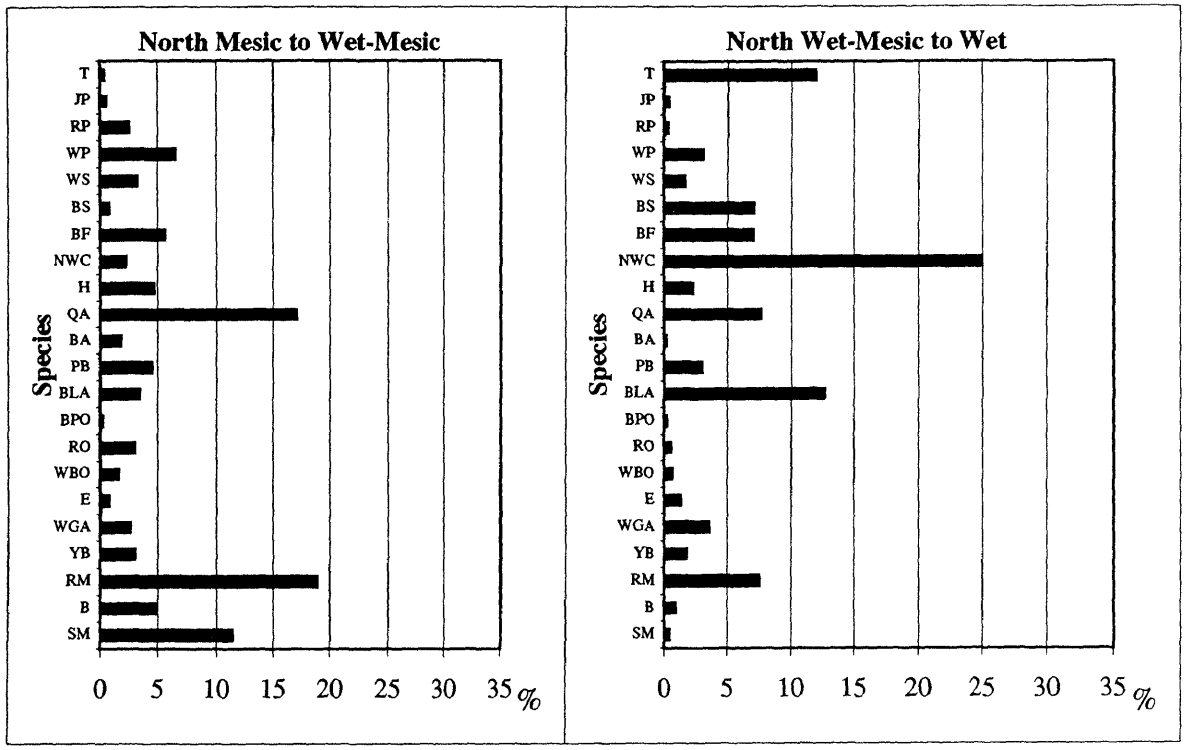


Figure 9.—*Species composition of the northern habitat type groups as a percent of the total group volume.*

(Figure 9 continued on next page)

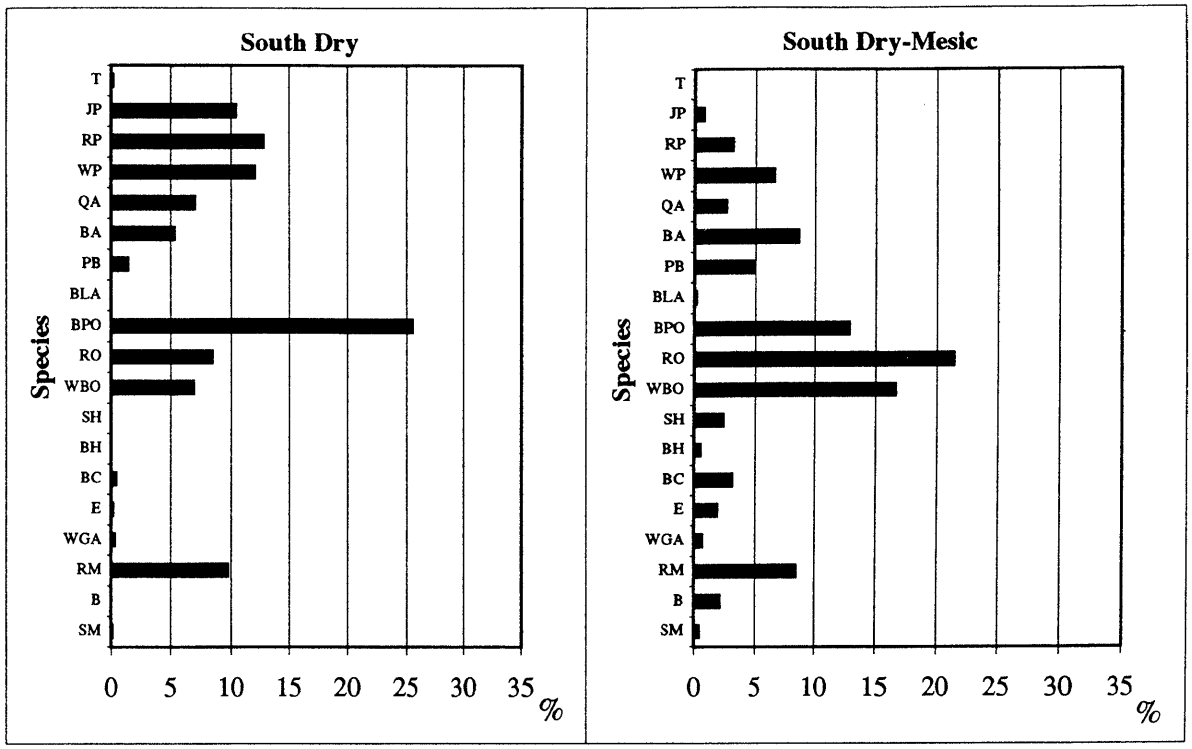
(Figure 9 continued)



SM=sugar maple; B=basswood; RM=red maple; YB=y. birch; WGA=white/green ash; E=elm; WBO=white/bur oak; RO=red oak; BPO=black/pin oak; BLA=black ash; PB=p. birch; BA=b. aspen; QA=q. aspen; H=hemlock; NWC=n. white-cedar; BF=balsam fir; BS=b. spruce; WS=w. spruce; WP=w. pine; RP=r. pine; JP=j. pine; T=tamarack

The examination of the oak-hickory forest type is very significant in light of the economic importance of red oak. In The Wisconsin Forest Statistics Bulletin, we find information on the total area of the oak-hickory type and volumes by species groups. However, additional important information is obtained if we examine the distribution of oak-hickory acreage across the habitat type groups and compare composition and volumes per acre. For example, figure 11 shows that oak-hickory type acreage is nearly the same on the VD-D and DM habitat type groups (just over 200 thousand acres). However, the volume per acre in the DM group is twice that in the VD-D group. In addition, the composition in the DM group is primarily red oak, while that in the VD-D includes pin oak, a much less economically valuable species.

Other patterns, depending on the reader's interests, can be gleaned from figures 11 and 12.



SM=sugar maple; B=basswood; RM=red maple; WGA=white/green ash; E=elm; BC=black cherry; BH=b.hickory; SH=s. hickory; WBO=white/bur oak; RO=red oak; BPO=black/pin oak; BLA=black ash; PB=p. birch; BA=b. aspen; QA=q. aspen; WP=w. pine; RP=r. pine; JP=j. pine; T=tamarack

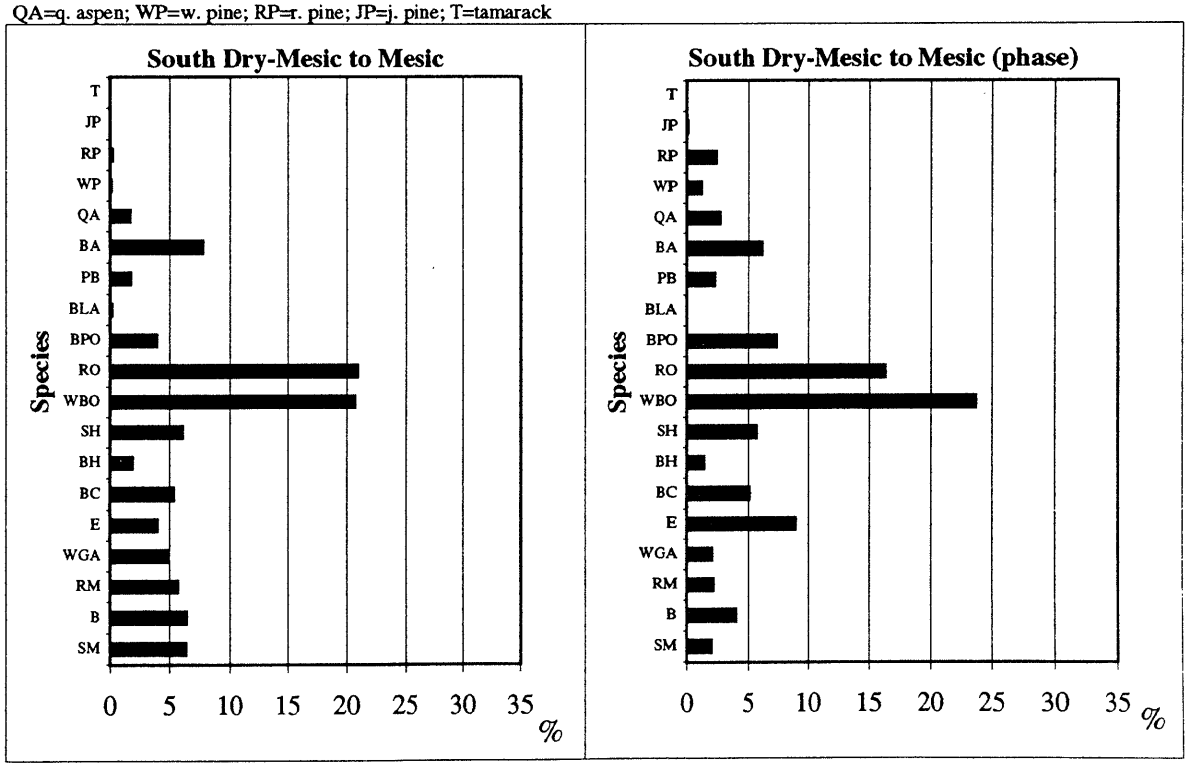
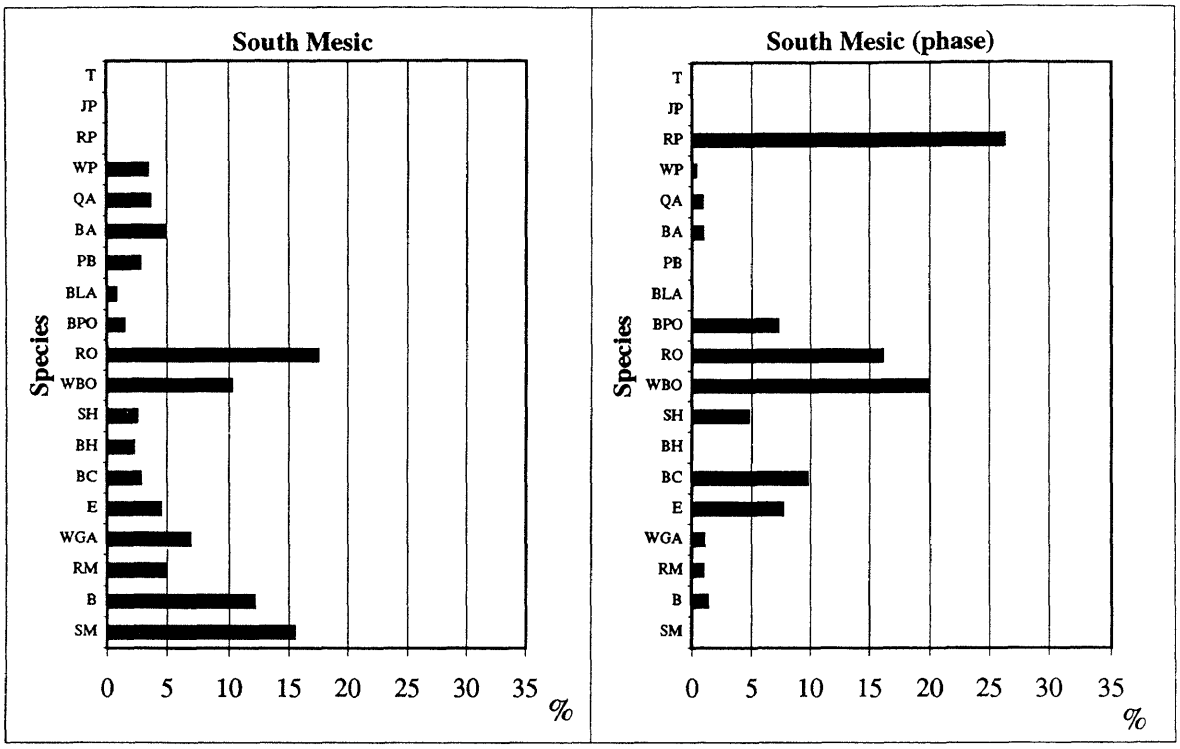


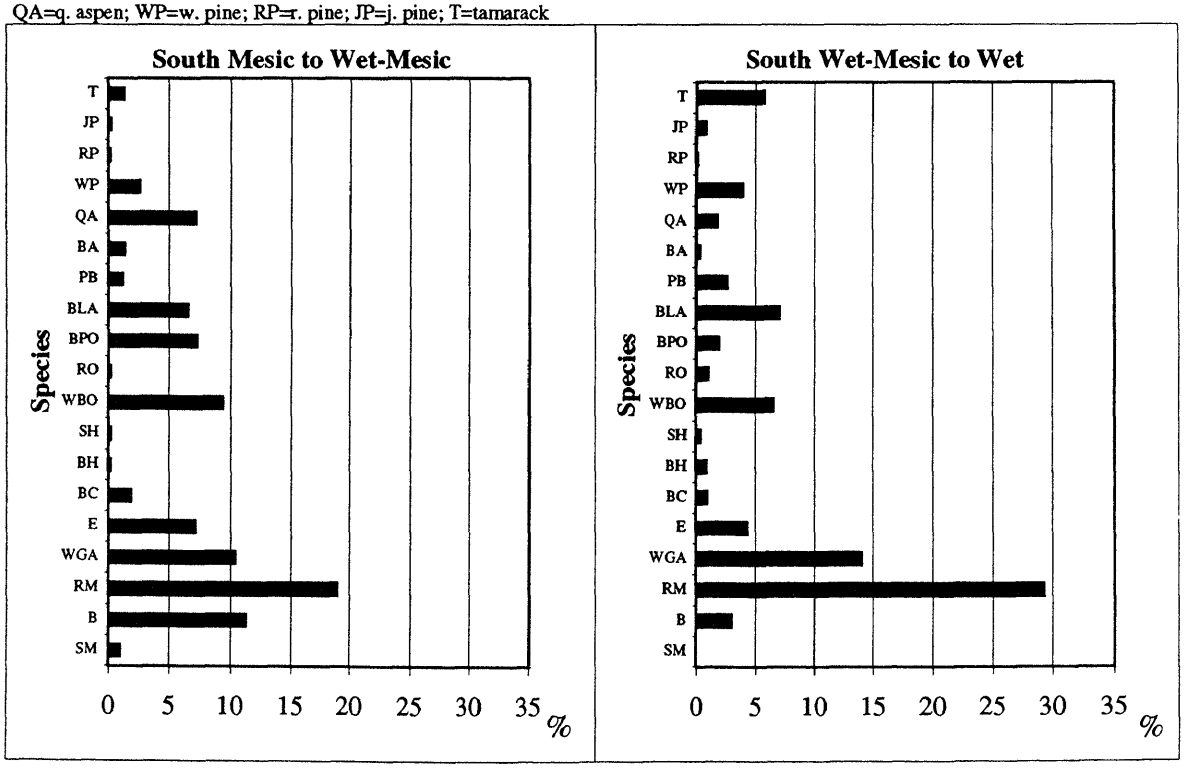
Figure 10.—*Species composition of the southern habitat type groups as a percent of the total group volume.*

(Figure 10 continued on next page)

(Figure 10 continued)



SM=sugar maple; B=basswood; RM=red maple; WGA=white/green ash; E=elm; BC=black cherry; BH=b.hickory; SH=s. hickory; WBO=white/bur oak; RO=red oak; BPO=black/pin oak; BLA=black ash; PB=p. birch; BA=b. aspen; QA=q. aspen; WP=w. pine; RP=r. pine; JP=j. pine; T=tamarack



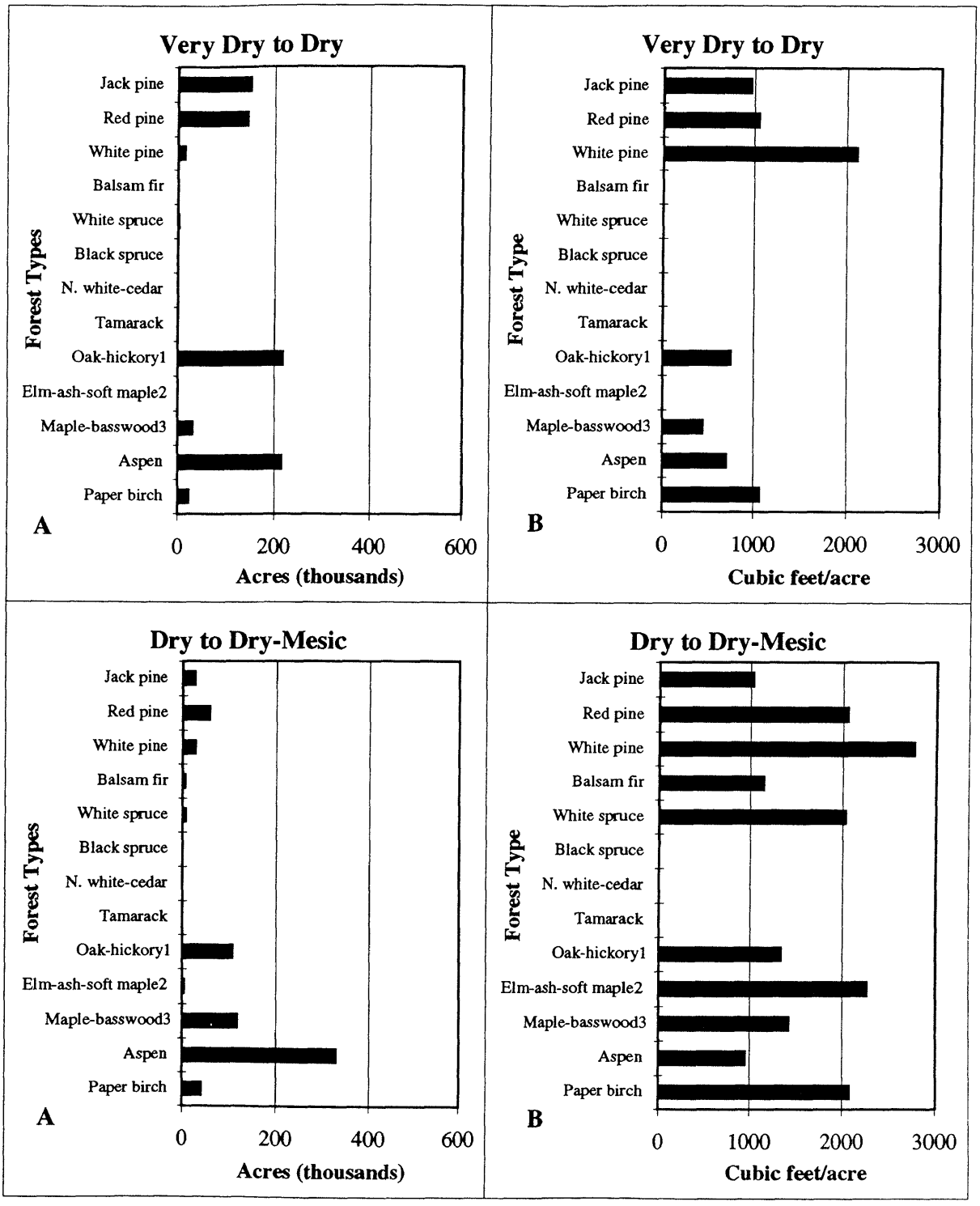


Figure 11.—*Forest type representation in the northern habitat type groups. A, by area; B, by volume of growing stock per acre.*

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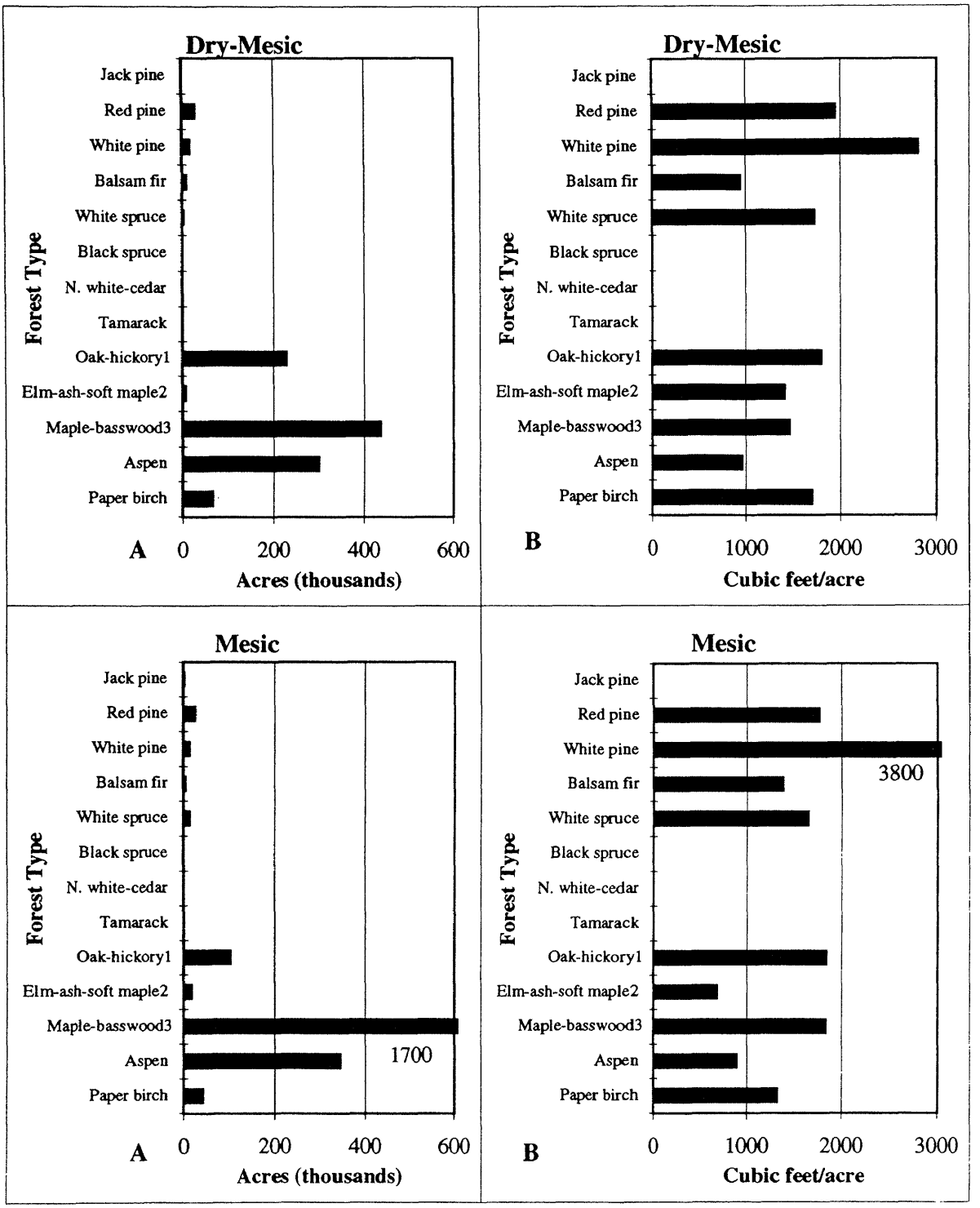

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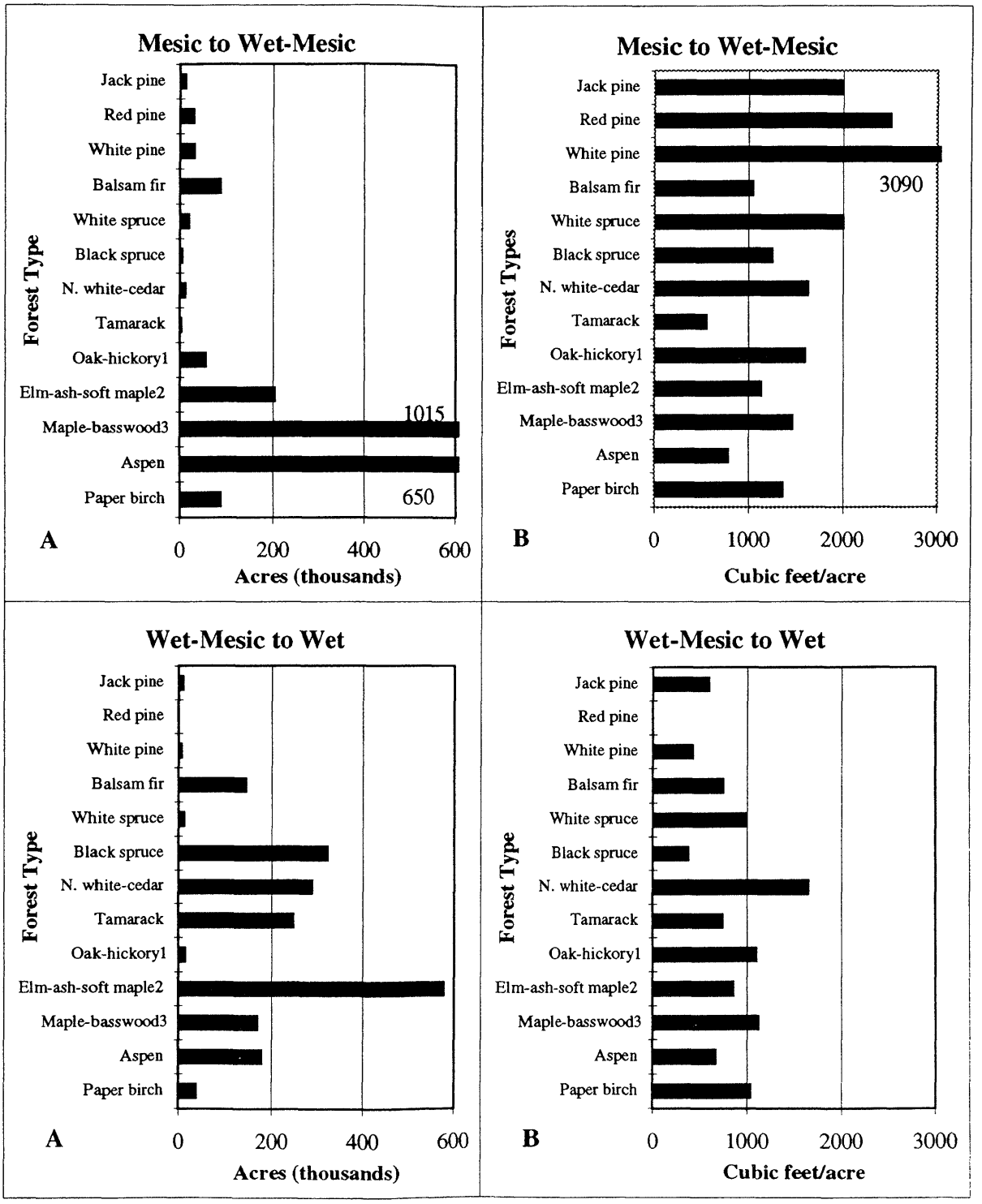

1. Red oak or pin oak on VD-D, red oak elsewhere (no hickory).
2. Red maple only on D-DM, DM, and M.
3. Red maple on VD-D and DM (no basswood); primarily sugar maple on M; sugar maple and red maple on M-WM; red maple on WM-M.

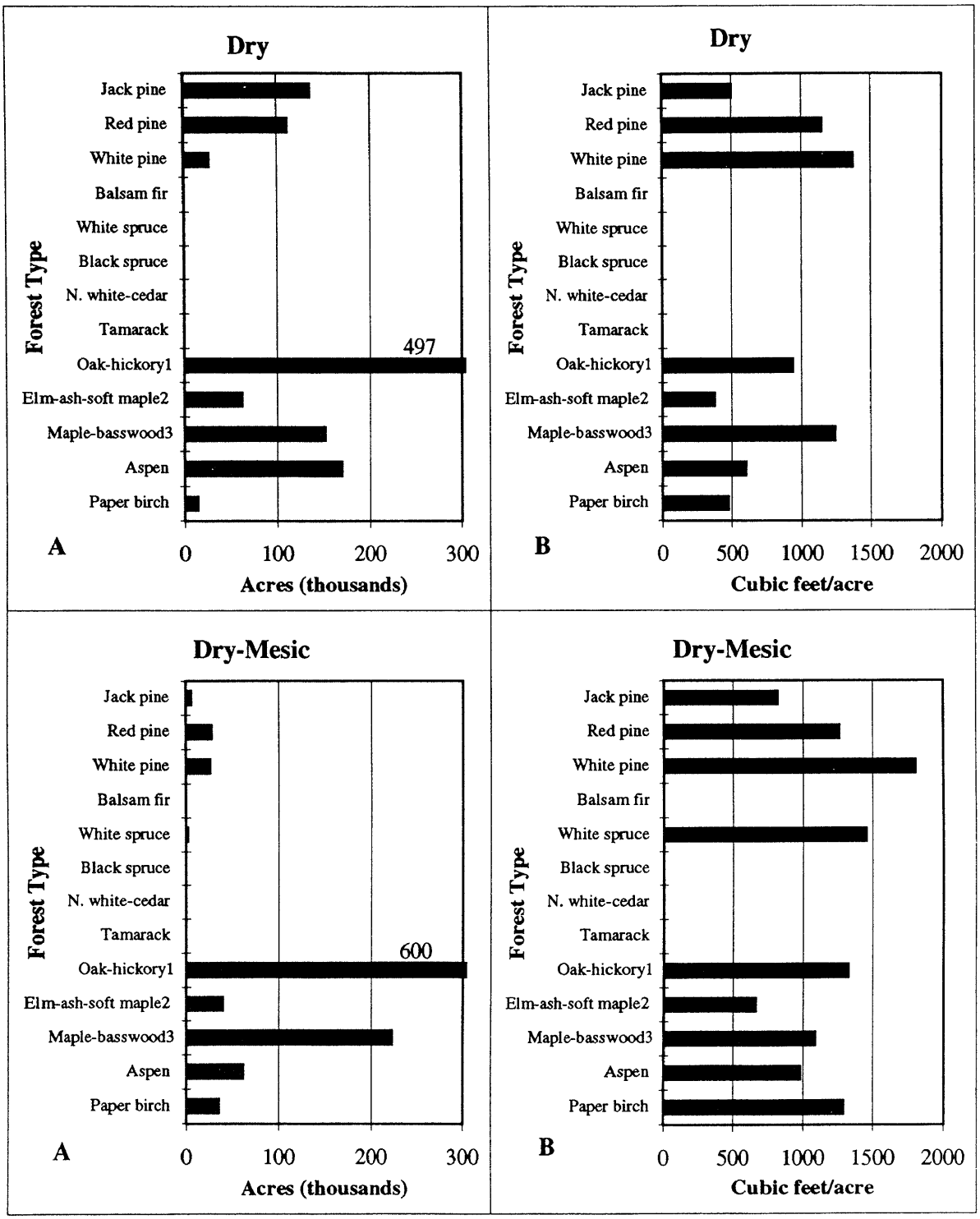

Figure 12.—*Forest type representation in the southern habitat type groups. A, by area; B, by volume of growing stock per acre.*

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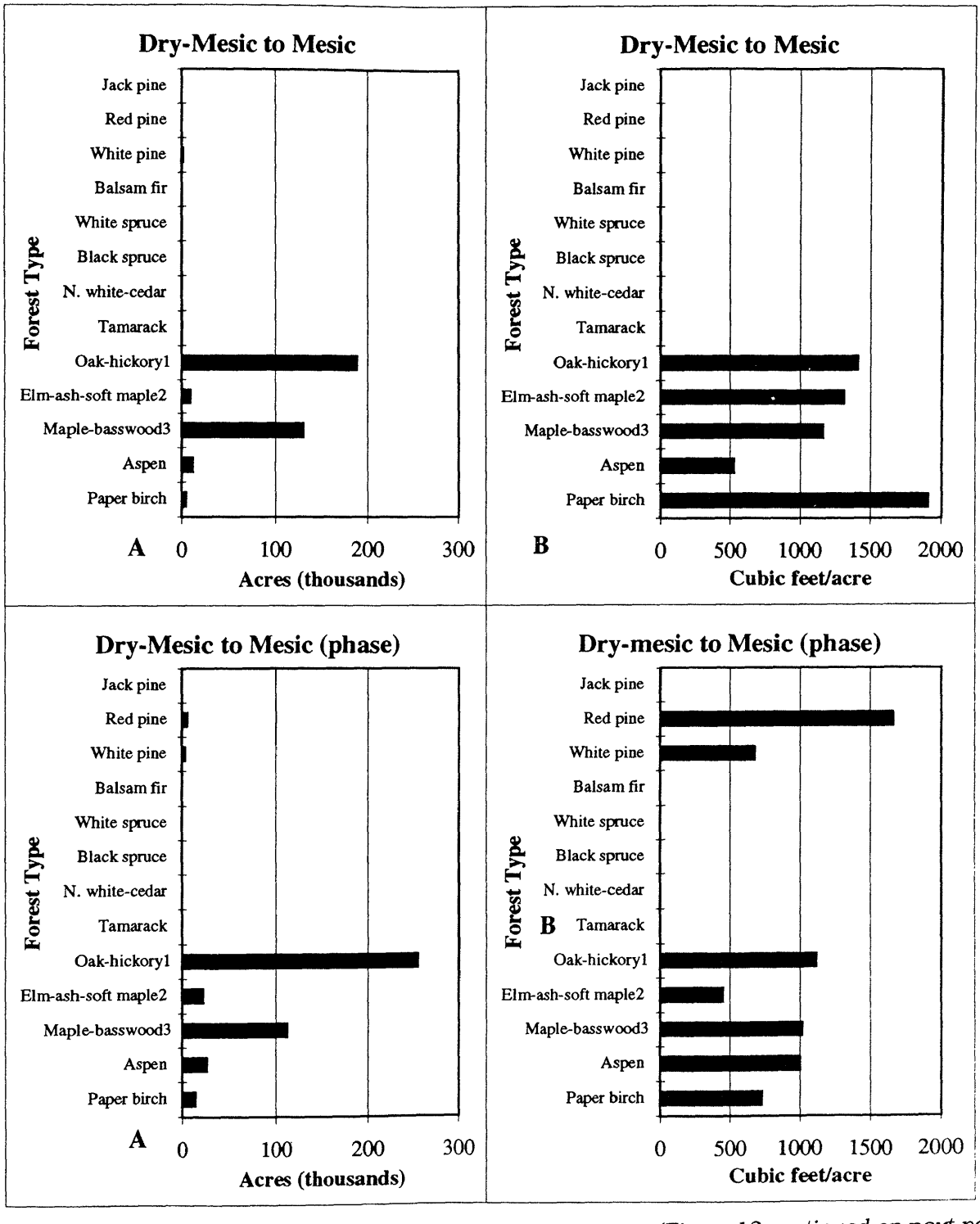
(Figure 12 continued)



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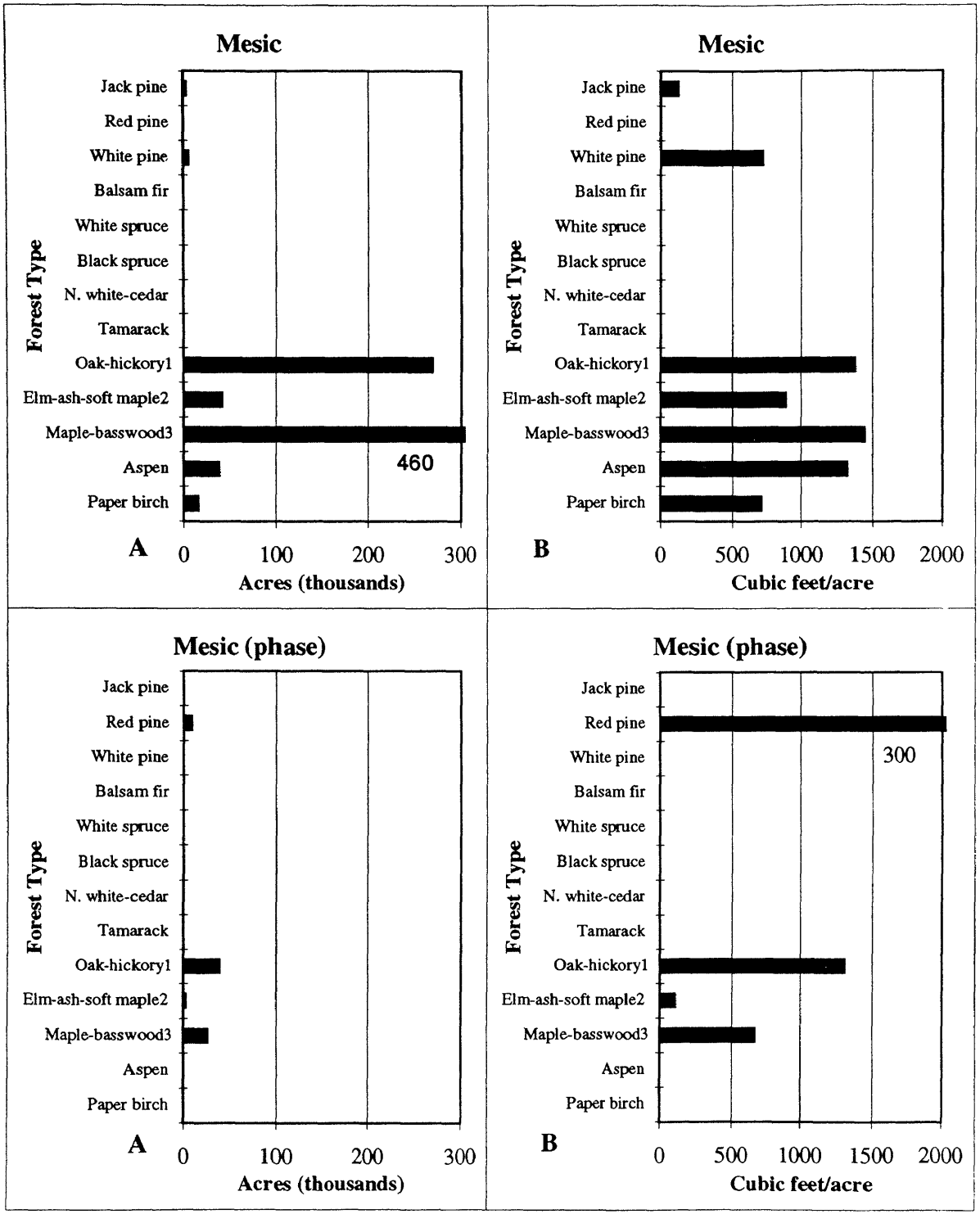

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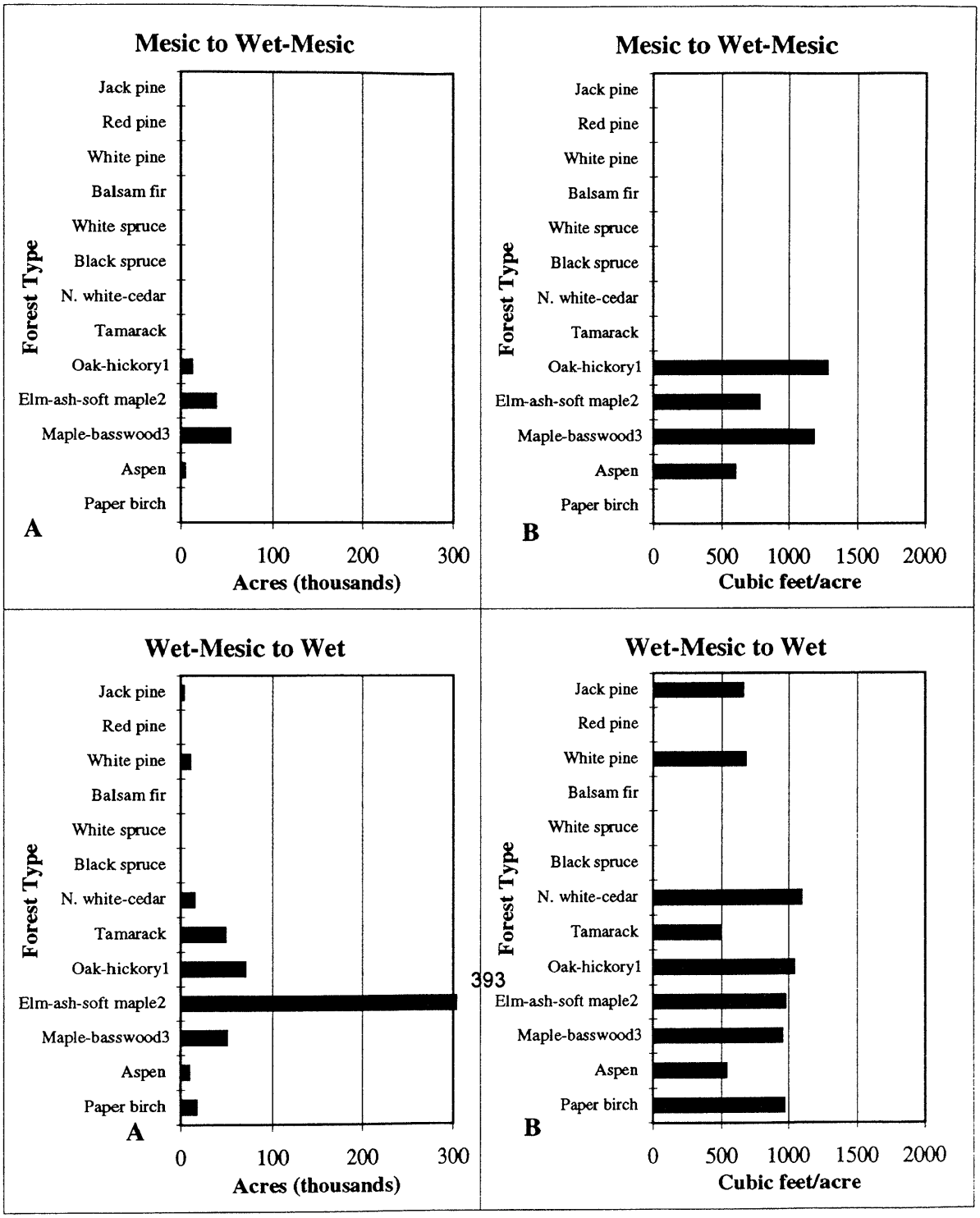


1. Pin, black, or red oak on Dry (no hickory); primarily red or white oak and some shagbark or bitternut hickory on Dry-Mesic, Dry-Mesic to Mesic, and Mesic.
2. Red maple only on all but Wet-Mesic to Wet.
3. Red maple on Dry and Dry-Mesic (no basswood); sugar maple and red maple on Dry-Mesic to Mesic, Mesic and Mesic to Wet-Mesic; red maple on Wet-Mesic to Wet (no basswood).

Summary by Species and Major Forest Types

Some of the data provided by the inventory can be expressed only by forest type (e.g., acres), while others, like volumes per acre, can be calculated for both the forest types and individual species, or, in a few cases, species complexes. Due to great differences in their abundance, some forest types and some individual species have not been sampled adequately to give statistically reliable estimates. This section presents information only for those estimates that were based on adequate samples.

Jack Pine

Jack pine is well represented only in the two driest habitat type groups, both in the north and south (fig. 13). Volume per acre for the jack pine forest type in the two northern habitat type groups (VD-D and D-DM) ranges from slightly under, to just over, 1,000 cubic feet/acre. The difference is only slightly greater between the two southern segments (D and DM): 500 and 700 cubic feet/acre, respectively (figs. 11 and 12).

Adequate samples for site index are available only for the north VD-D (SI 61) and south D (SI 63). See figure 14.

Red Pine

Similar to jack pine, red pine is also concentrated on the two driest habitat type groups,

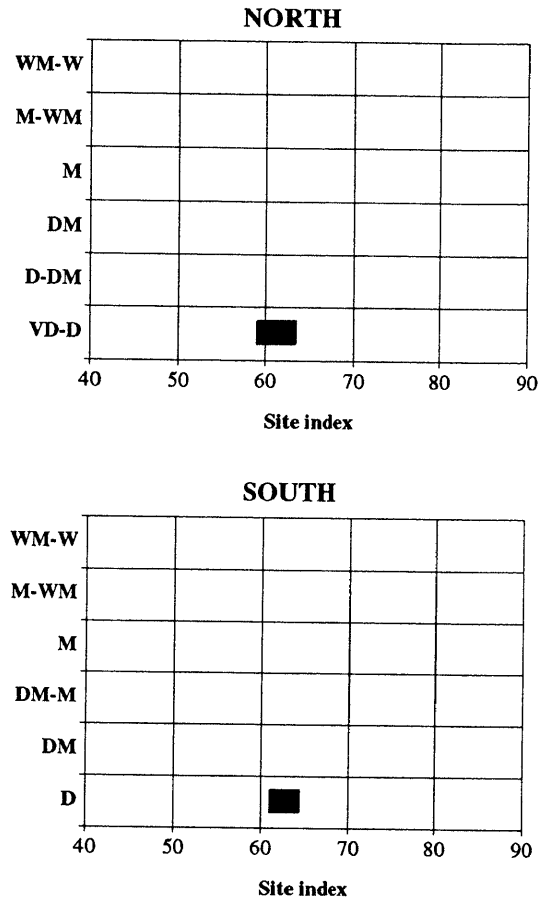
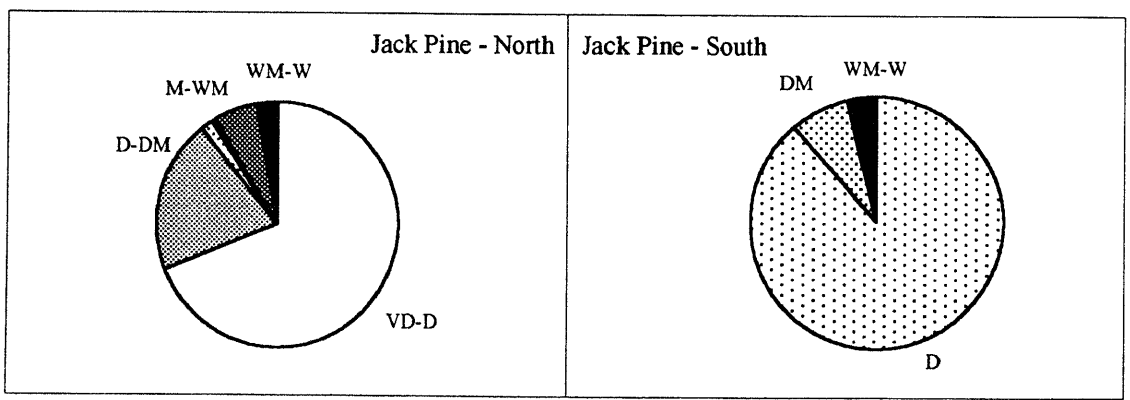


Figure 14.—*Site index for jack pine. Bars indicate the 95 percent confidence limits for the mean.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 13.—*Representation of jack pine across the northern and southern habitat type groups, as a percent of the total jack pine volume in the northern and southern parts of Wisconsin, respectively.*

both in the north and south (fig. 15). It is important to note that plantations make up about one-third of the red pine forest type. In the north, on the driest habitat type group, the volume per acre for the red pine type is only slightly higher than that for jack pine (fig. 11). However, on the D-DM habitat type group, red pine type volume per acre is more than twice that of jack pine (approximately 1,000 cubic feet/acre for jack pine and more than 2,000 cubic feet/acre for red pine). This supports the commonly held view by foresters that red pine is more capable of utilizing "better sites" than is jack pine.

The highest volume per acre for the red pine type (approximately 2,500 cubic feet/acre) was observed on the M-WM habitat type group. This is somewhat surprising, because red pine is considered to be relatively intolerant of wet conditions. However, soils of the M-WM habitat type group are generally classified as only somewhat poorly drained and not poorly drained.

In the south, volumes per acre are significantly lower (generally less than 1,500 cubic feet/acre) than in the north for all habitat type groups except for a small acreage in the Mesic (Phase) where the volume exceeds 3,000 cubic feet/acre (fig. 12). We do not have an explanation for this apparent anomaly.

Average site index for red pine ranges from 64 to 77 in the north and from 70 to 75 in the south (fig. 16).

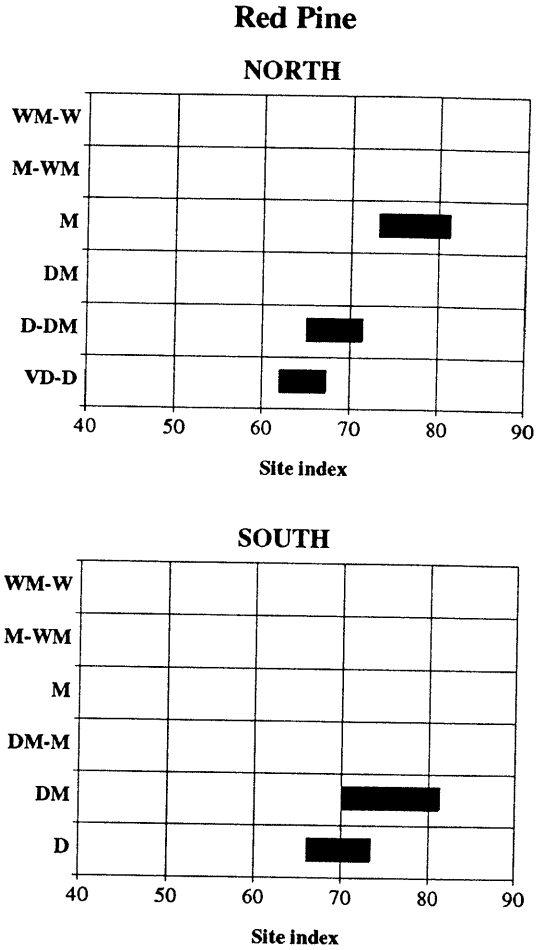
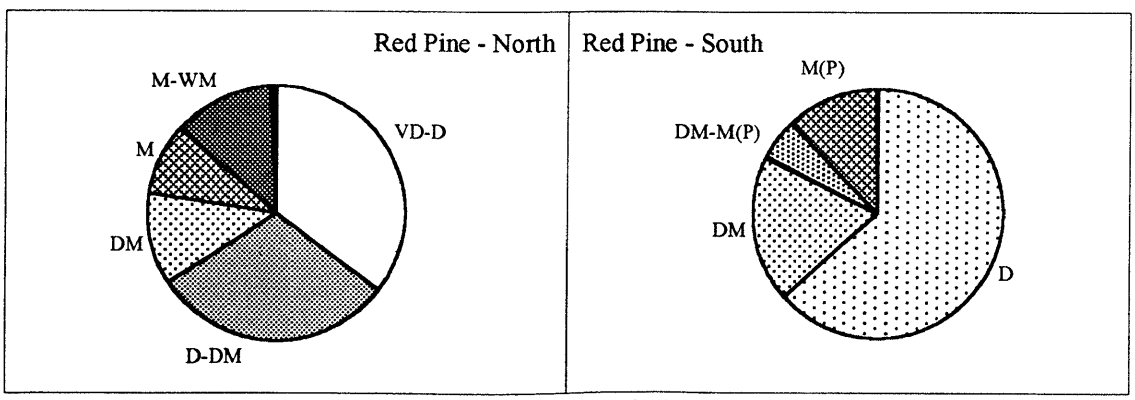


Figure 16.—*Site index for red pine. Bars indicate the 95 percent confidence limits for the mean.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 15.—*Representation of red pine across the northern and southern habitat type groups, as a percent of the total red pine volume in the northern and southern parts of Wisconsin, respectively.*

In the absence of management or natural disturbance, the red pine forest type is succeeded by more shade tolerant species. The direction of change is apparent from the composition of the sapling layer shown in figure 17 (the composition of the tree layer is not shown in this figure because the type is over 85 percent red pine).

The relative abundance of sapling species varies greatly across the range of habitat type groups. In the VD-D group, the oaks and red maple are best represented. Red maple dominates in the D-DM group, and paper birch and red maple dominate in the DM group. In the M and M-WM groups balsam fir and sugar maple become important.

The relatively high percentage of red pine must be interpreted with caution, because in most red pine stands (especially plantations) the red pine "saplings" largely represent the smaller diameter fraction of the main stand and not the regeneration. Likewise, the aspen saplings are largely small trees or suckers with little chance of advancing into the main canopy. However, they apparently do suggest continued presence of the species on the site.

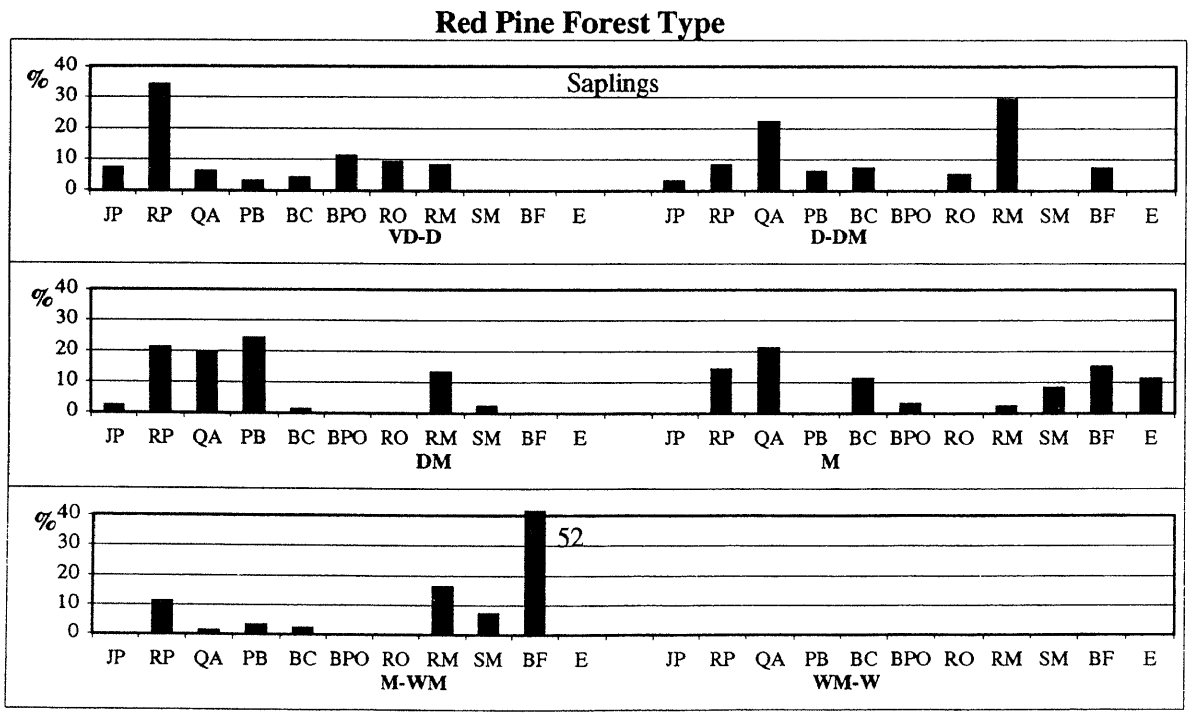
White Pine

In the north, white pine is found as an associate in many forest types and in all habitat type groups (fig. 18). In the south, about one-third of the white pine type is represented by relatively young plantations, mostly in the drier habitat type groups.

The acreage of white pine as a forest type is negligible throughout the State, but its volume per acre is the highest in all northern habitat type groups, except the WM-W (fig. 11). The highest volumes are found in the M and M-WM habitat type groups. These high volumes come largely from plots on the Menominee Indian Reservation, where older white pine stands are still well represented.

White and Black Spruce

White spruce is largely confined to the northern part of the State where it occurs primarily as an associate in other forest types. It is broadly distributed, although most of it is found in the three moister habitat type groups (M, M-WM, and WM-W). Black spruce, on the



JP=jack pine; RP=red pine; QA=quaking aspen; PB=paper birch; BC=black cherry; BPO=black/pin oak; RO=red oak; RM=red maple; SM=sugar maple; BF=balsam fir; E=elm

Figure 17.—*Species composition of the sapling layer on the red pine forest type in the northern habitat type groups, as a percent of the total number of trees.*

other hand, is less well represented in other forest types and is heavily concentrated on the wettest end of the habitat type gradient (fig. 19).

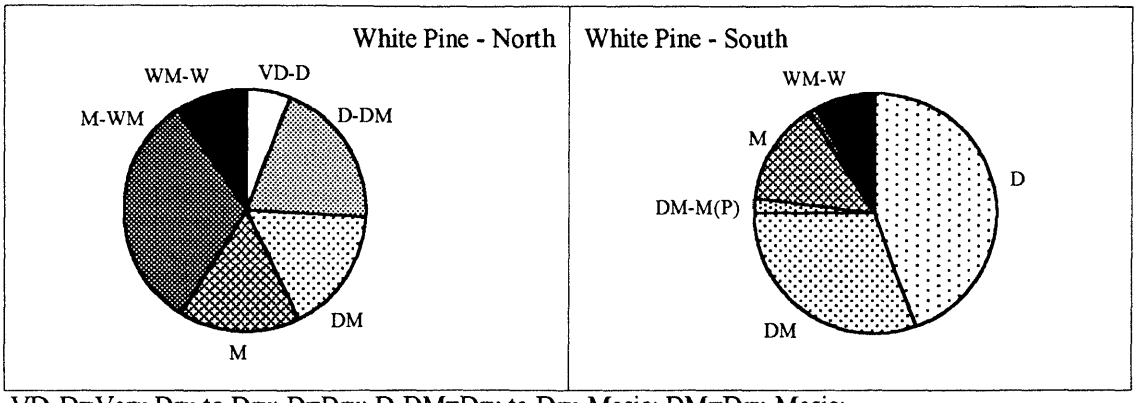
The very small acreage of the white spruce forest type in the northern M and M-WM groups, nevertheless, carries relatively high growing-stock volumes (about 2,000 cubic feet/acre). See figure 11.

Balsam Fir and Northern White-cedar

Similar to spruce, balsam fir and northern white-cedar are also primarily species of the northern part of the State and occur mainly as associates in other forest types. Of the two, balsam fir has a wider distribution on the habitat type gradient (fig. 20). As a forest type, the two species occur in appreciable acreages only on the WM-W habitat type group, and the white-cedar type carries much higher volumes per acre than does balsam fir (fig. 11). However, the difference in volume may be due more to the generally greater age of the white-cedar type than to inherent differences in productivity between the two species.

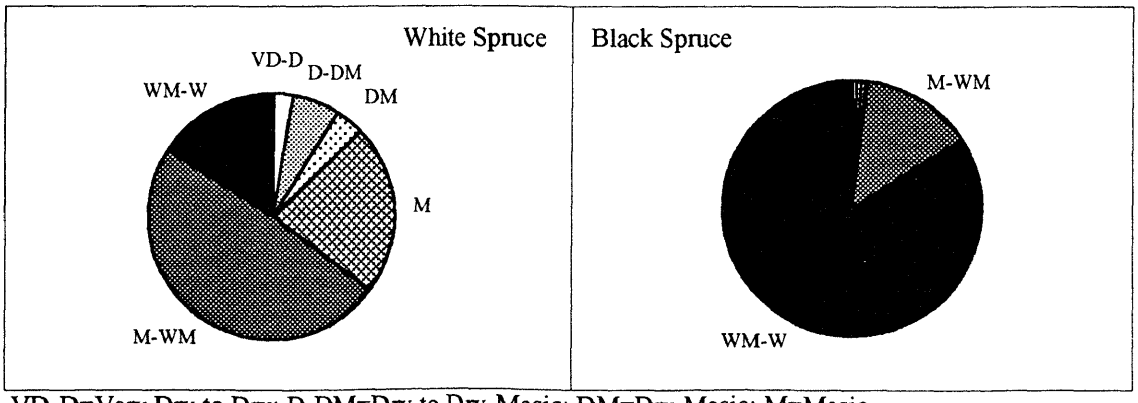
One significant characteristic of balsam fir is that it is found widely as seedlings and saplings in many forest types (particularly aspen and pines) and thus plays an important role in forest succession.

The average site index for balsam fir is 56 in the M-WM habitat type group and 47 in the WM-W group (fig. 21). No site index data were available for white-cedar.



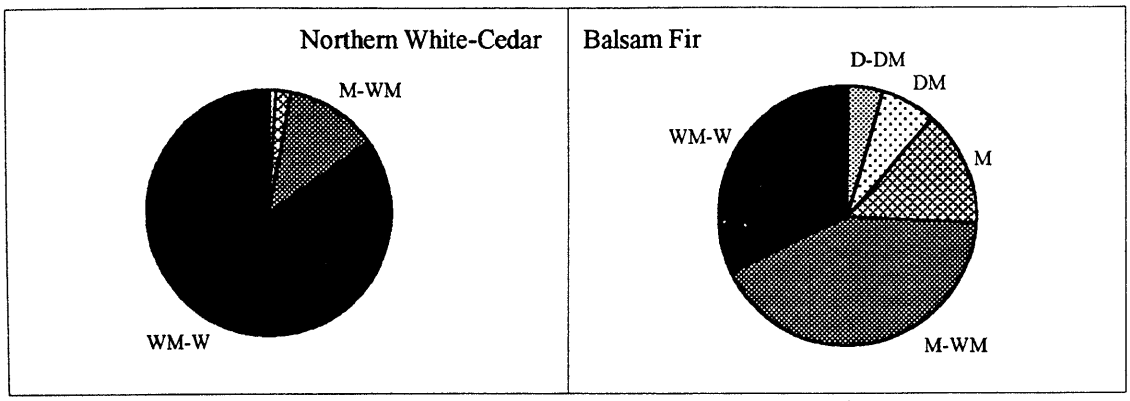
VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 18.—*Representation of white pine across the northern and southern habitat type groups, as a percent of the total white pine volume in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; M=Mesic M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 19.—*Representation of white and black spruce across the northern habitat type groups, as a percent of the total volume of each species.*



VD-D=Very Dry to Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; M=Mesic
M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 20.—*Representation of balsam fir and northern white-cedar across the northern habitat type groups, as a percent of the total volume of each species.*

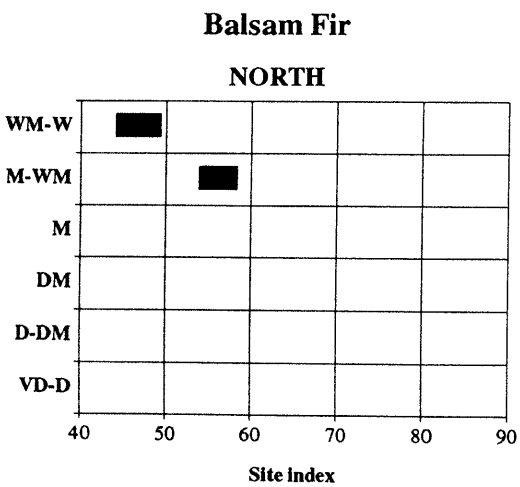


Figure 21.—*Site index for balsam fir. Bars indicate the 95 percent confidence limits for the mean.*

Tamarack

Tamarack is almost exclusively a species of the WM-W habitat type group (fig. 22). Its extent as a forest type is similar to that of black spruce and northern white-cedar (fig. 11).

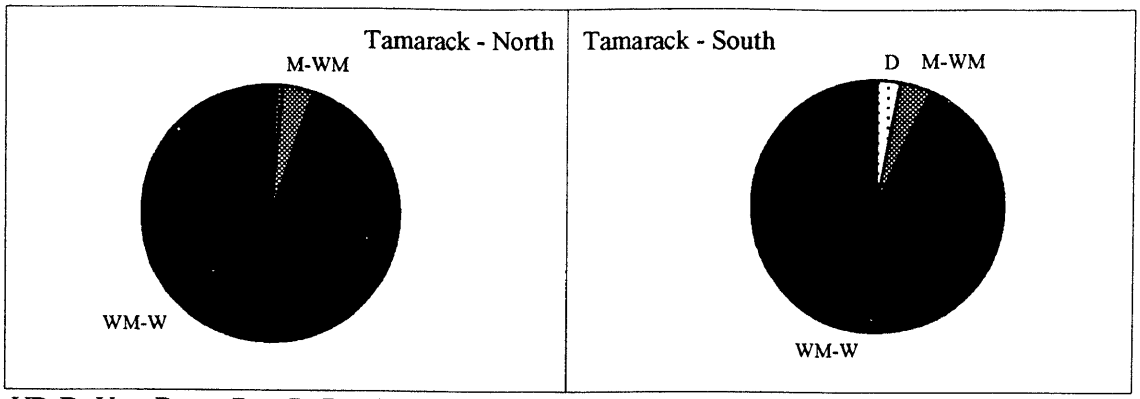
Quaking and Bigtooth Aspen

Both aspen species occur commonly across the entire range of habitat type groups, but their relative representation differs. Quaking aspen is relatively evenly represented in all habitat type groups, while bigtooth aspen is better represented on the drier half of the gradient. This difference is more pronounced in the north than in the south (figs. 23 and 24).

The composition of the aspen forest type in the north is shown in figure 25. Although the aspen forest type is often referred to as aspen-birch, at least in Wisconsin, red maple is the second best represented species more often than paper birch is. In the M-WM and WM-W habitat type groups, balsam fir is also relatively important. Based on the composition of the sapling layer, we can also conclude that red maple and balsam fir are the principal successional species replacing aspen.

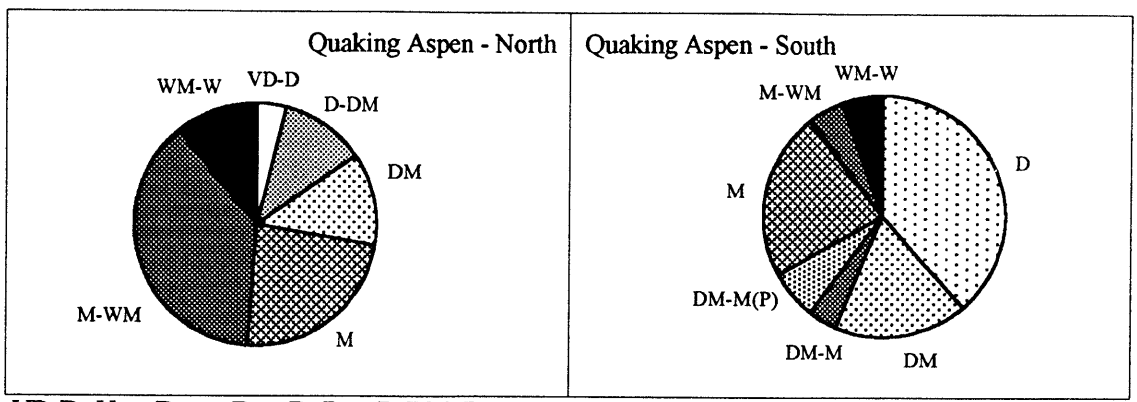
The significance of the large number of aspen saplings in figure 25 is somewhat difficult to interpret. Aspen saplings (actually suckers) are common in most stands where aspen is present. However, because the upper limit for the sapling size class in this survey was set at a relatively high 5 inches d.b.h., we can assume that a large proportion of the "saplings" represents the smaller size class of the main stand and not the "reproduction" in a true sense. At the same time, the presence of aspen saplings cannot be excluded as potential regeneration in case of a disturbance or large-scale natural mortality in the canopy layer.

Volumes per acre of the aspen forest type, at least in terms of cubic feet, are remarkably similar across most of the habitat type gradient. In the north, they range from a low of



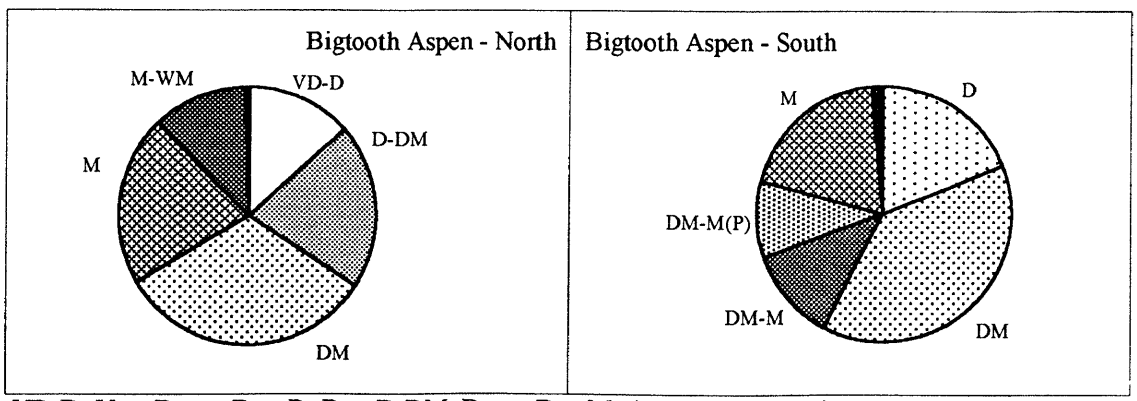
VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 22.—*Representation of tamarack across the northern and southern habitat type groups, as a percent of the total volume of tamarack in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 23.—*Representation of quaking aspen across the northern and southern habitat type groups, as a percent of the total volume of quaking aspen in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 24.—*Representation of bigtooth aspen across the northern and southern habitat type groups, as a percent of the total volume of bigtooth aspen in the northern and southern parts of Wisconsin, respectively.*

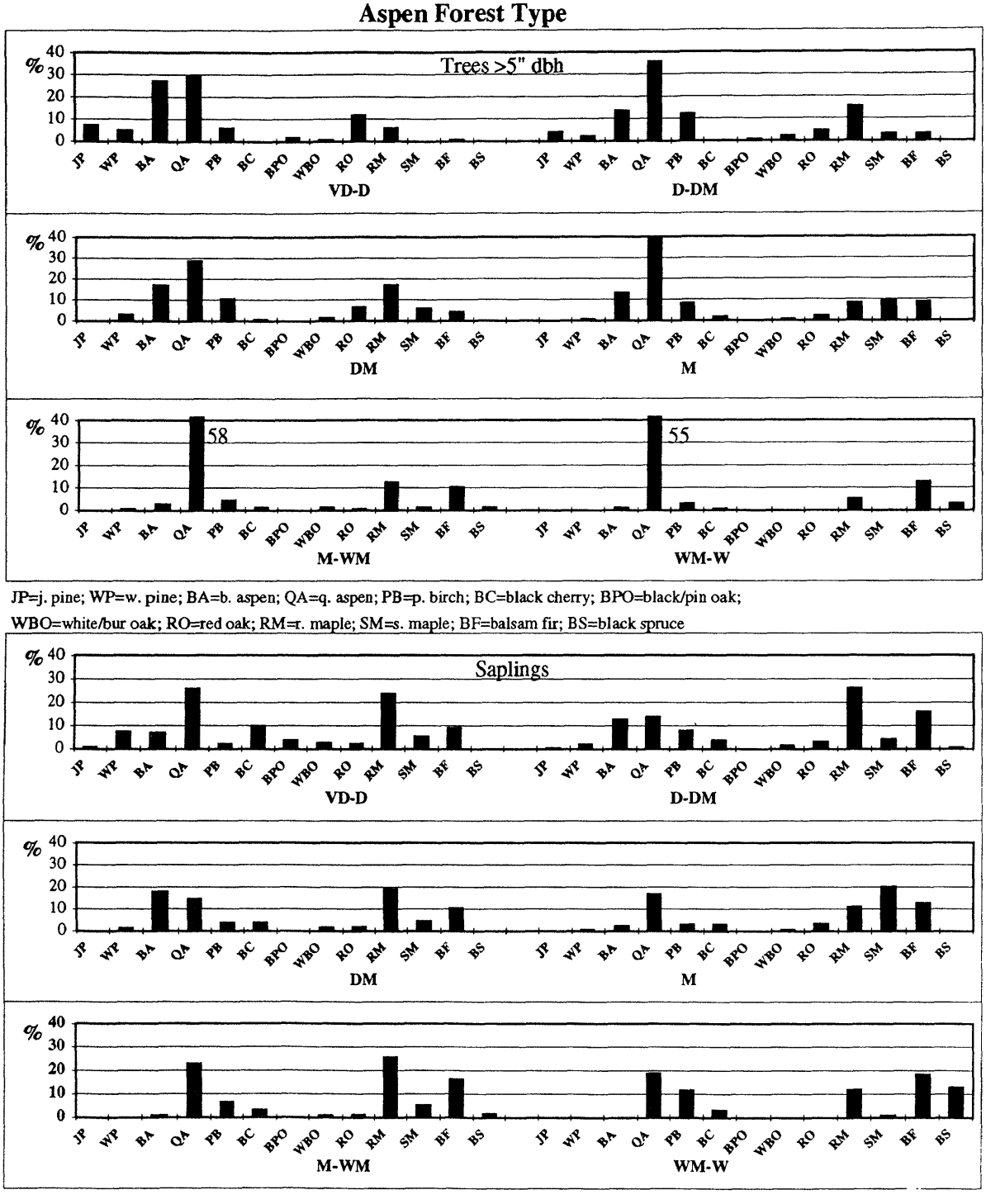


Figure 25.—*Species composition of the aspen forest type in the northern habitat type groups as a percent of the total number of trees (trees > 5" d.b.h. above, saplings below).*

approximately 600 cubic feet/acre in the VD-D and WM-W habitat type groups to just under 1,000 cubic feet/acre in all other groups (fig. 11). In the south, there is a greater difference among the habitat type groups. Volumes per acre of the aspen forest type are lowest in the D, DM-M, M-WM, and WM-W groups (between 500 and 600 cubic feet/acre) and highest in the M group (almost 1,400 cubic feet/acre). In the DM and DM-M (phase) groups volume per acre is approximately 1,000 cubic feet/acre (fig. 12).

In the north, site index of the two aspen species follows a similar pattern across the habitat type groups. However, in the south, the site index of bigtooth aspen is much higher than that of quaking aspen (fig. 26).

Paper Birch

Paper birch, like aspen, occurs in all habitat type groups throughout the State (fig. 27). However, the paper birch forest type is far more abundant in the north than in the south (figs. 11 and 12).

In the north, the volume per acre of the paper birch type exceeds that of aspen type in all habitat type groups. In the D-DM habitat type group, it is over 2,000 cubic feet/acre. In other groups, it ranges from slightly under to slightly over 1,000 cubic feet/acre (fig. 11).

Black Ash

Black ash is a species of the wetter sites. Both in the north and south, over 80 percent of its volume is found in the M-WM and WM-M habitat type groups (fig. 28). Black ash is one of the principal species of the "elm-ash-soft maple" forest type. The other important species is red maple. Due to mortality caused by Dutch elm disease, American elm is no longer well represented in this forest type. The

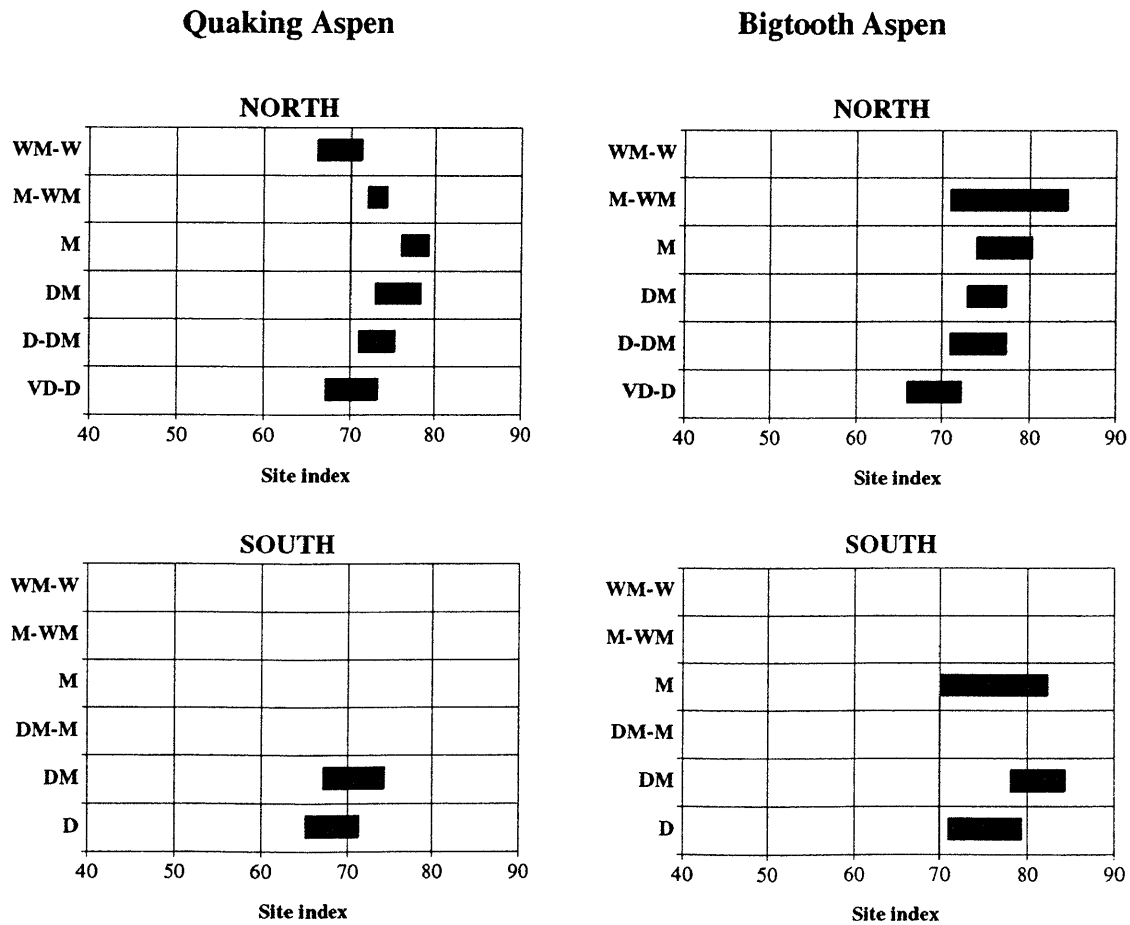
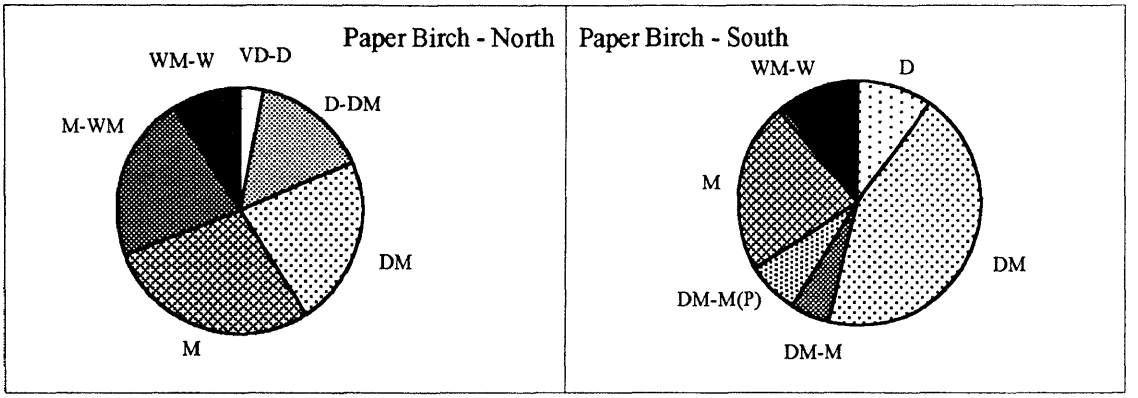
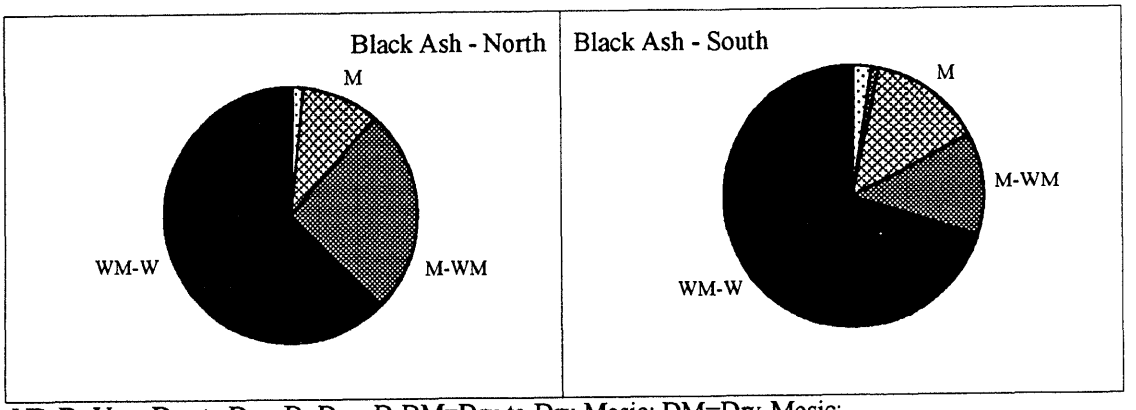


Figure 26.—*Site index for quaking and bigtooth aspen. Bars indicate the 95 percent confidence limits for the mean.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 27.—*Representation of paper birch across the northern and southern habitat type groups as a percent of the total volume of paper birch in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 28.—*Representation of black ash across the northern and southern habitat type groups as a percent of the total volume of black ash in the northern and southern parts of Wisconsin, respectively.*

largest acreage of this type is found in the WM-W habitat type group in the north and the M-WM group in the south (figs. 11 and 12).

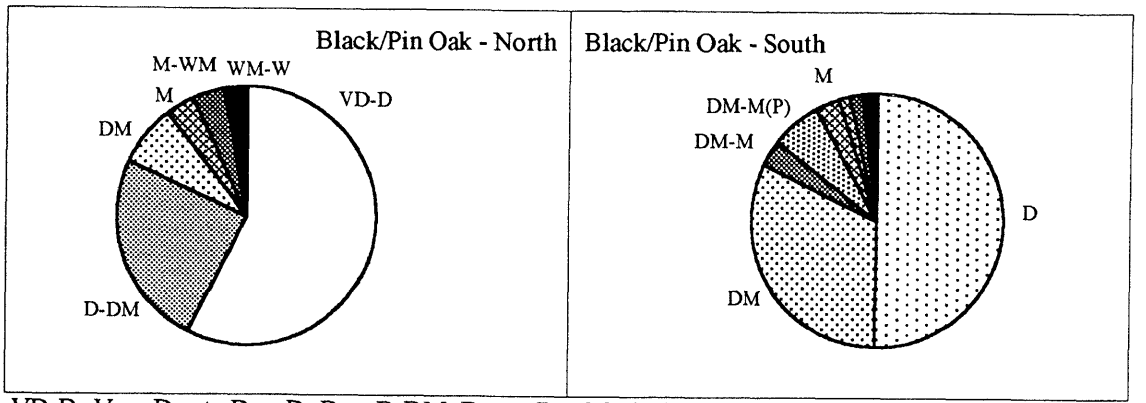
Black Oak and Northern Pin Oak

These two species are combined in this inventory because they are difficult to distinguish in the field. However, their distributions are somewhat distinct. Black oak is largely confined to the southern part of the State, while pin oak is more common in the north. They do, however co-occur in some areas.

The two species, however, differ ecologically. Black oak is found across a relatively wide range of habitats, while pin oak is confined more to the driest habitat types. Thus, in figure 29, the black/pin oak complex is predominantly represented by pin oak in the north and black oak in the south.

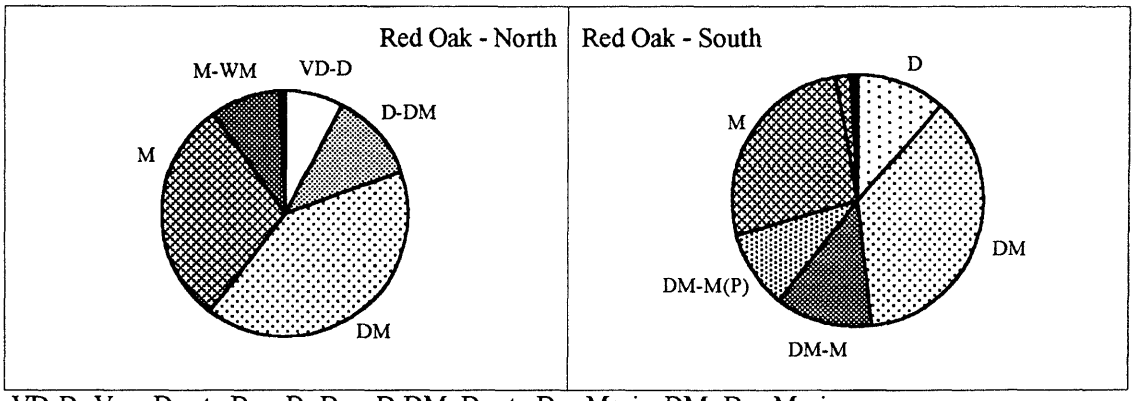
Red Oak

Red oak is found on all but the wettest habitat types (fig. 30). However, its growth potential varies greatly across the habitat type gradient. In the north, the largest acreages of the red oak forest type occur in the DM habitat type group. Volumes per acre range from about 800 cubic feet/acre in the VD-D group to just under 2,000 cubic feet/acre in the DM and M habitat type groups (fig. 11).



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 29.—*Representation of black and northern pin oak complex across the northern and southern habitat type groups as a percent of the total black/pin oak volume in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 30.—*Representation of red oak across the northern and southern habitat type groups as a percent of the total volume of red oak in the northern and southern parts of Wisconsin, respectively.*

In the south, the red oak forest type cannot be separated from the white-bur-oak complex. The acreage of these combined oak types is very large (fig. 12). The highest volumes per acre (about 1,400 cubic feet/acre) are found in the DM-M and M habitat type groups.

Average site index ranges from 53 in the northern VD-D habitat type group to just over 70 in the northern M and southern DM-M habitat type groups (fig. 31).

White and Bur Oak

These two species were combined in the inventory, which makes individual characterization difficult. However, because the geographic distribution of the two species is well known, some interpretation can be provided. Both species are present only in a limited portion of the northern part of the State. In addition, bur oak occurs primarily in the drier portion of the habitat type gradient. Thus, in figure 32 (north), bur oak most probably represents the VD-D and D-DM segments of the gradient and white oak represents the remainder. For the south, the distinction is less clear. The two species co-occur throughout the range of habitat types, but white oak is much more prevalent.

Shagbark and Bitternut Hickory

Both hickory species are restricted primarily to the southern portion of the State, although bitternut hickory is occasionally found in the

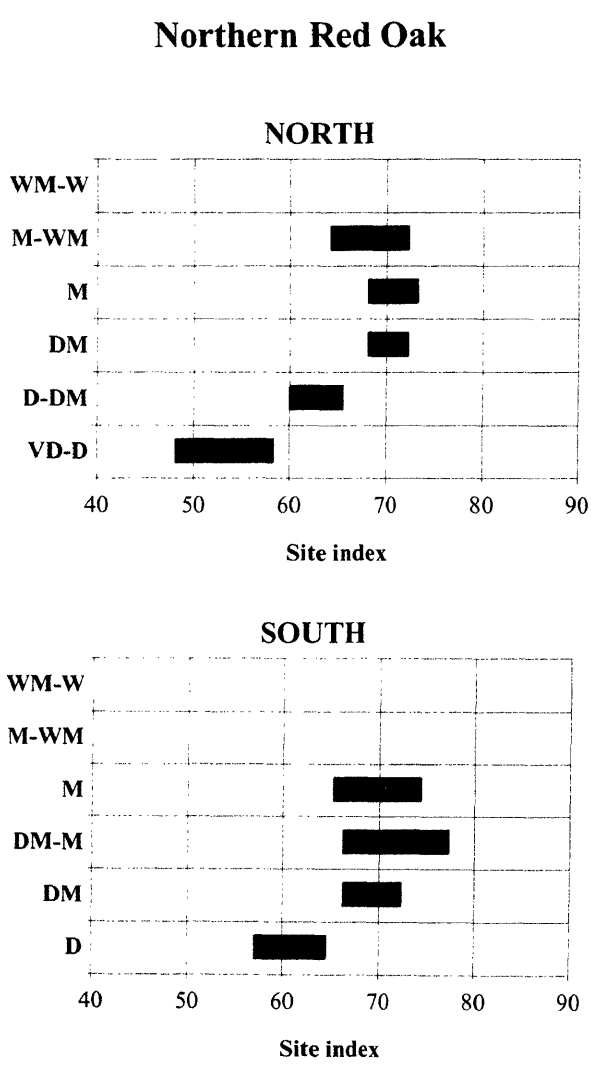


Figure 31.—*Site index for northern red oak. Bars indicate the 95 percent confidence limits for the mean.*

north. The two species are best represented in the DM-M (including the phase) habitat type group, but bitternut hickory is also relatively well represented in the M habitat type group (fig. 33).

In the forest inventory of the eastern United States, the hickories are included with the oaks and treated together as the "oak-hickory forest type." This designation is not always warranted in Wisconsin. In the northern part of the State, hickories are virtually absent, and even in the south they generally represent less than 10 percent of species composition.

The "Oak-Hickory" Forest Type

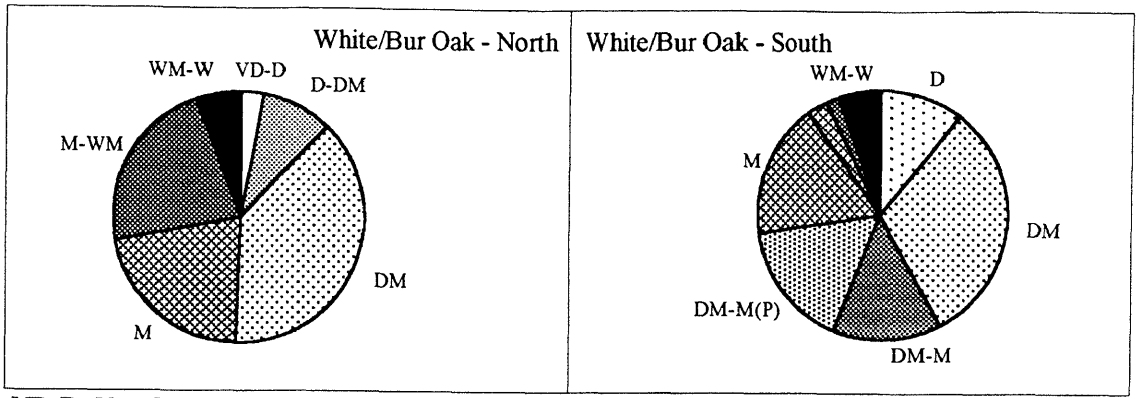
Composition.—The FIA inventory combines all oak-dominated stands into one forest type: the "oak-hickory." To obtain a more useful analysis of this diverse type, it is necessary to separate it into several components according to the representation of the different oak species and occurrence in different habitat type groups.

Figures 34 and 35, showing the relative abundance of different species, clearly illustrate the differences in composition across the habitat type gradient.

Thus, the "oak-hickory" forest type in the northern VD-D and D-DM habitat type groups represents a mixture of pin and red oak, with pin oak predominating in the VD-D group and red oak predominating in the D-DM group. Red oak is also the leading species in all other habitat type groups, except WM-W. Red maple is the most important associate of oaks on all but the VD-D and M habitat type groups. Note that no hickory component is present in any of the northern oak forest types (fig. 34).

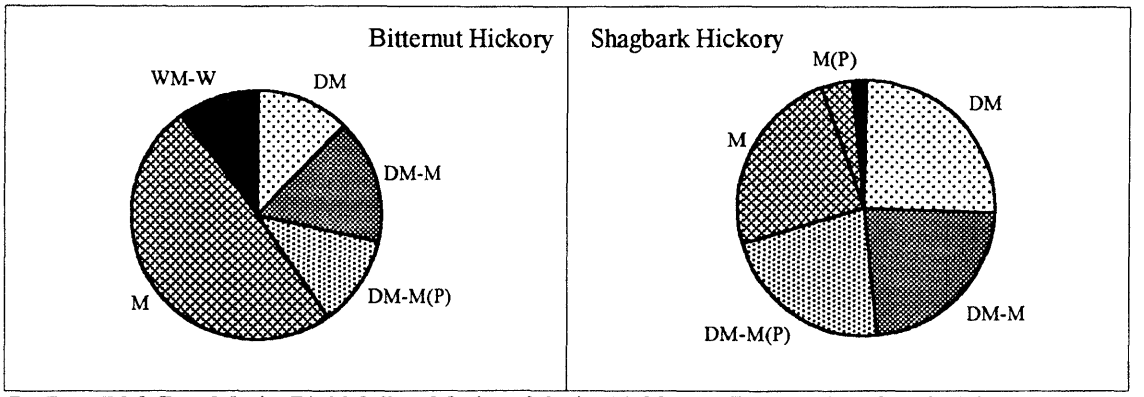
In the south, the prevailing oak species are the white oak and bur oak (these species were combined in the inventory). Only in the D and M-WM habitat type groups is the black-pin oak complex better represented than white-bur oak group. There is no hickory component in these groups (fig. 35). As in the north, red maple is the most important associate of all oak forest types. Shagbark or bitternut hickories are present in significant amounts only in the DM-M (including the "phase") and M habitat type groups.

Regeneration and succession.—Successional trends of any forest type are most apparent in the composition and abundance of the sapling size class. Because all oak species are relatively intolerant of shade, there are very few oak saplings present in most oak forest types. In the north, only in the VD-D habitat type group, where no shade tolerant species grow, is there significant oak regeneration present (fig. 34). In all other habitat type groups, the dominant sapling species is either red maple (D-DM and WM-W) or sugar maple (DM, M, and M-WM). It is evident that without management intervention, most oak forest types will succeed to red or sugar maple.



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

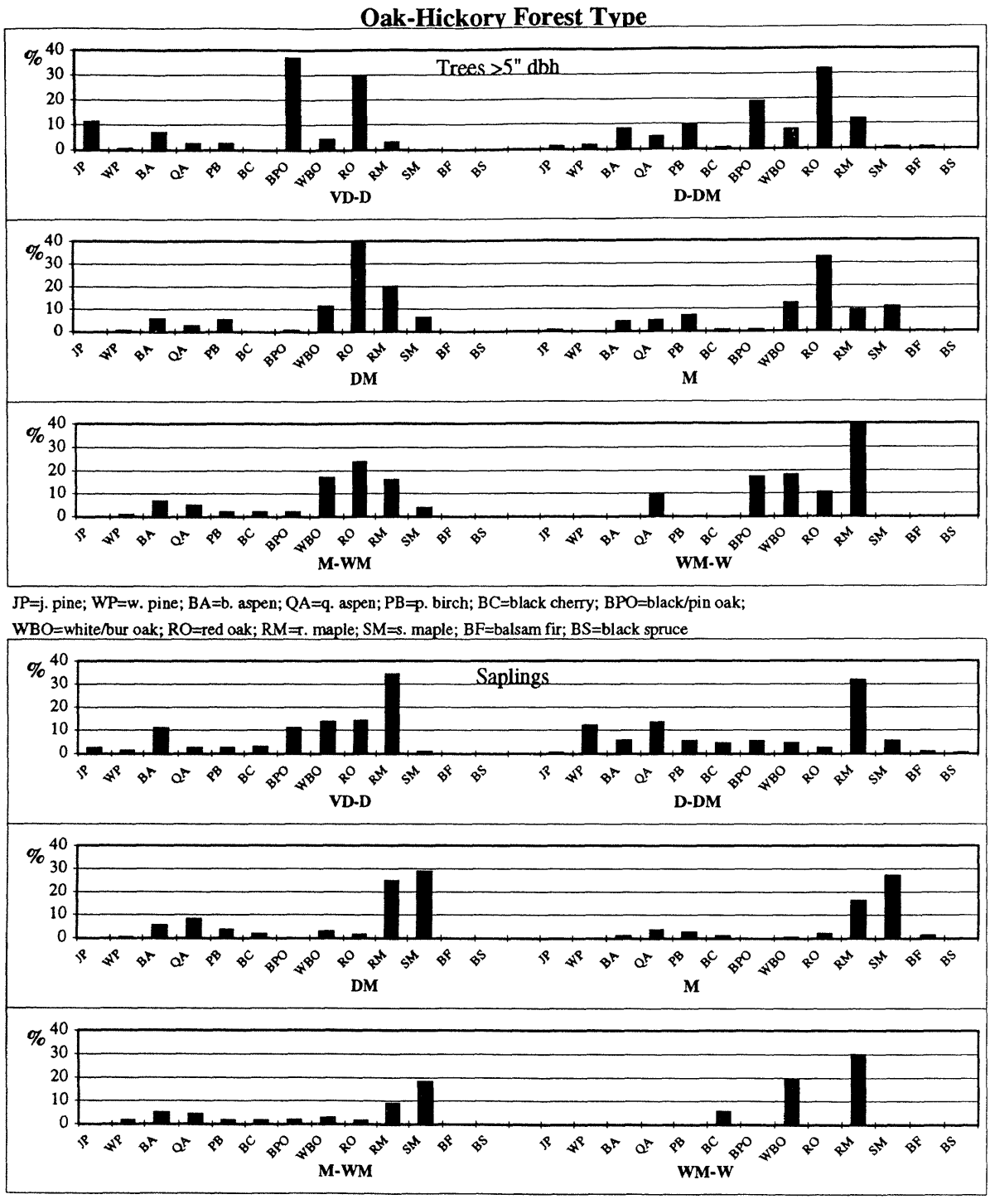
Figure 32.—*Representation of the white/bur oak complex across the northern and southern habitat type groups as a percent of the total white/bur oak volume in the northern and southern parts of Wisconsin, respectively.*



D=Dry; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

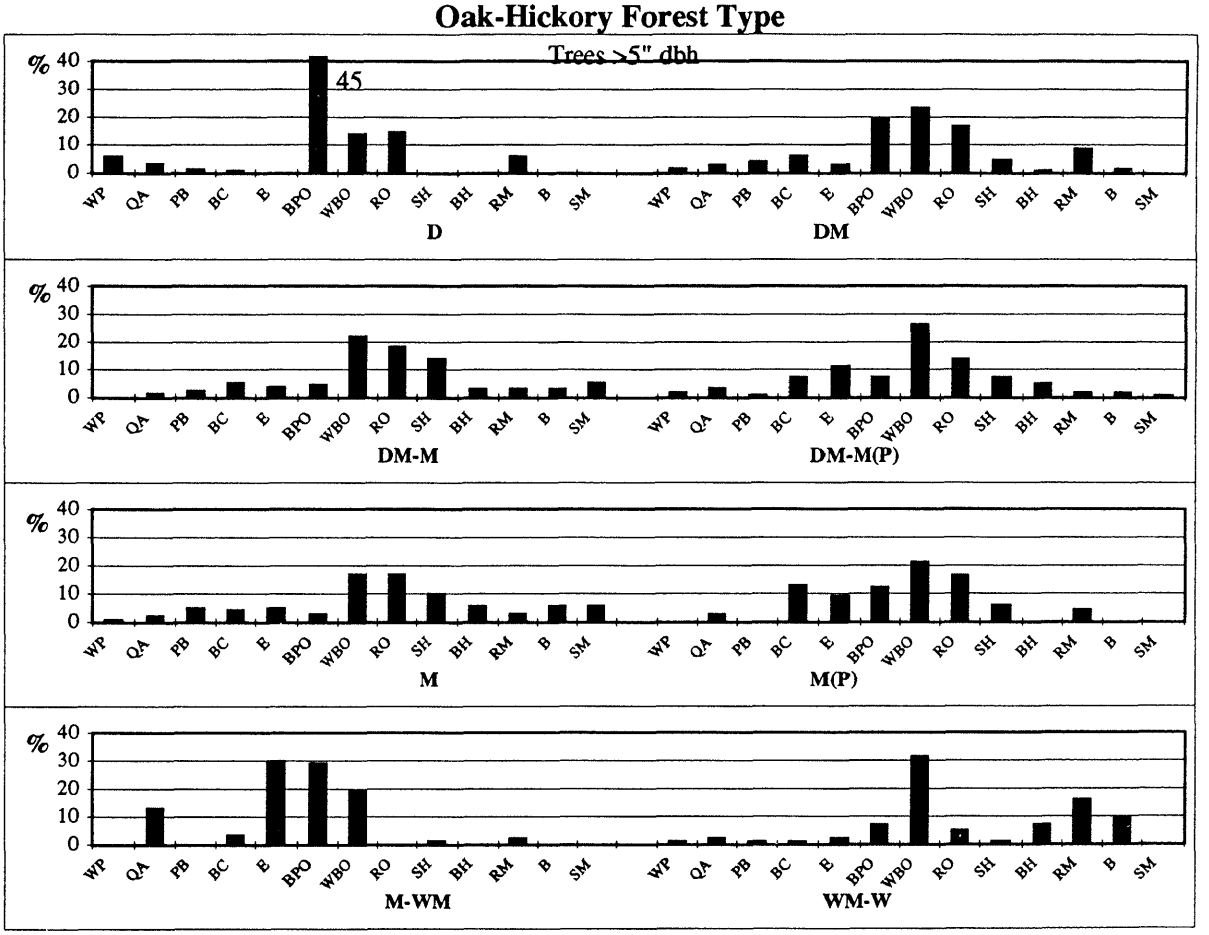
Figure 33.—*Representation of the shagbark/bitternut hickory complex across the southern habitat type groups as a percent of the total hickory volume.*

The situation is very similar in the south (fig. 36). Significant oak regeneration is present only in the D habitat type group, but even there, red maple is the dominant sapling species. In addition to red maple, other important sapling species are black cherry and elm (mostly slippery elm). Shagbark or bitternut hickories are also important in the DM-M, M, and WM-W habitat type groups. Sugar maple is present only in the M and DM-M habitat type groups.



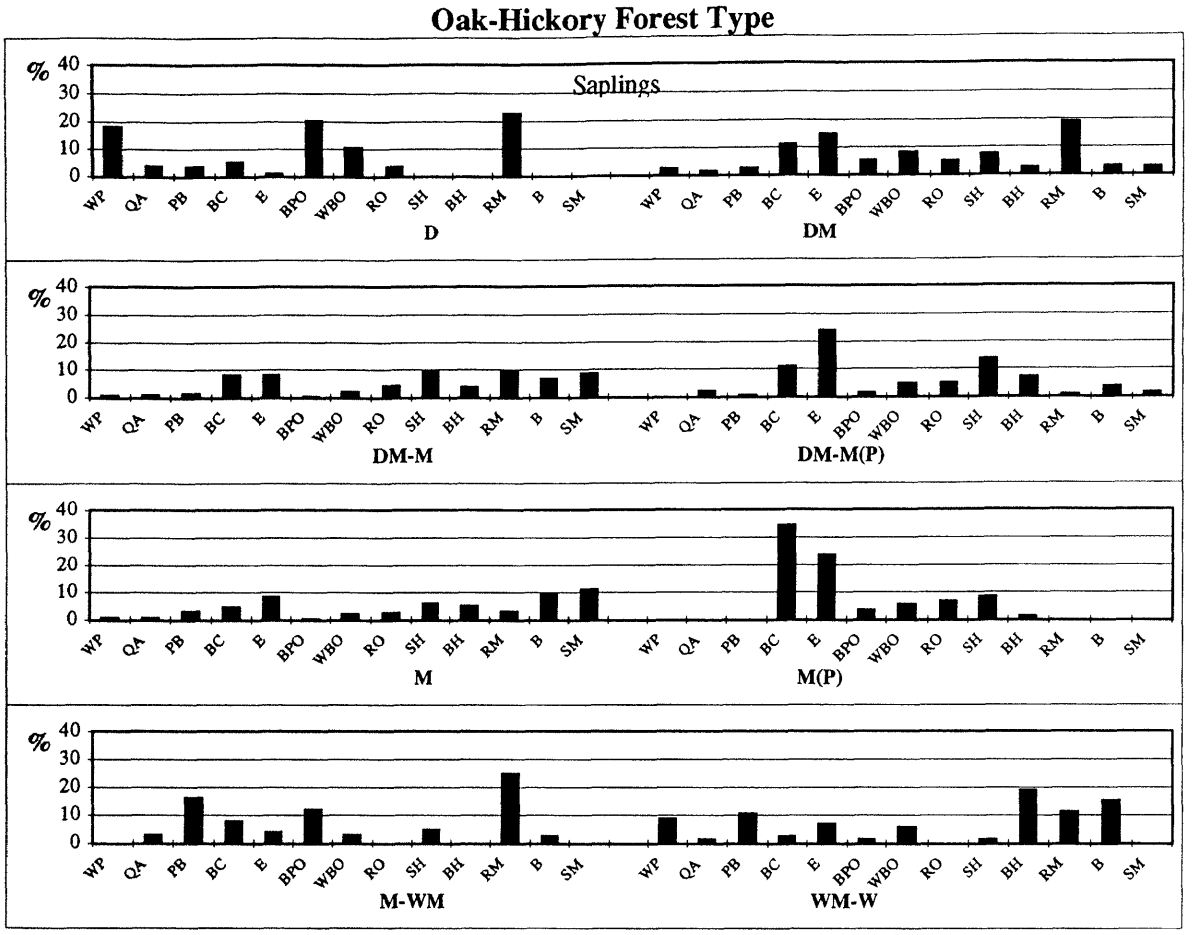
JP=j. pine; WP=w. pine; BA=b. aspen; QA=q. aspen; PB=p. birch; BC=black cherry; BPO=black/pin oak; WBO=white/bur oak; RO=red oak; RM=r. maple; SM=s. maple; BF=balsam fir; BS=black spruce

Figure 34.—*Species composition of the oak-hickory forest type in the northern habitat type groups as a percent of the total number of trees (trees > 5" d.b.h. above, saplings below).*



WP=white pine; QA=quaking aspen; PB=paper birch; BC=black cherry; E=elm; BPO=black/pin oak; WBO=white/bur oak; RO=red oak; SH=shagbark hickory; BH=bitternut hickory; RM=red maple; B=basswood; SM=sugar maple

Figure 35.—*Species composition of the oak-hickory forest type (trees > 5" d.b.h.) in the southern habitat type groups as a percent of the total number of trees.*



WP=white pine; QA=quaking aspen; PB=paper birch; BC=black cherry; E=elm; BPO=black/pin oak; WBO=white/bur oak; RO=red oak; SH=shagbark hickory; BH=bitternut hickory; RM=red maple; B=basswood; SM=sugar maple

Figure 36.—*Species composition of the sapling layer of the oak-hickory forest type in the southern habitat type groups as a percent of the total number of saplings.*

Red Maple

Red maple is one of the most widely occurring species in the State, although no red maple forest type is currently recognized in the forest inventory. Red maple is strongly "bimodal" in its representation across the habitat type gradient. It is best represented in the drier (more so in the north) and the wetter (more so in the south) segments of the gradient (fig. 37). Its relatively low importance in the mesic habitat types appears to be due to competition by other shade tolerant species, particularly sugar maple.

Red maple site index ranges from about 58 in the northern WM-W habitat type group to 75 in the southern DM habitat group (fig. 38).

The Maple-Beech-Birch Forest Type

Because there was no clear distinction made between red and sugar maples in the inventory analysis, problems arise in the delineation of forest types. For example, the "maple-beech-birch" forest type (referred to as "maple-basswood" in this bulletin) is defined as follows: "Forest in which **sugar maple**, yellow birch, American elm, and **red maple**, singly or in combination, comprise a plurality of stocking." Except for red maple, all other species included in this definition are restricted to mesic and wet-mesic habitat types.

If we use the above definition, a red maple-dominated stand in a very dry habitat type would be classified as "maple-beech-birch" (or "maple-basswood"), erroneously implying a mesic or wet-mesic condition. Thus, when in our analysis, the acres or volumes of the "maple-basswood" forest type show up in the VD-D, D-DM, and WM-W habitat type groups (e.g., fig. 11), they are representing a red maple and not a sugar maple-basswood forest type.

Sugar Maple

Sugar maple is heavily concentrated in the M habitat type group (fig. 39). In the north, it is the dominant species in this habitat type group, but in the south, red oak, white oak, and basswood share the dominance (figs. 9 and 10).

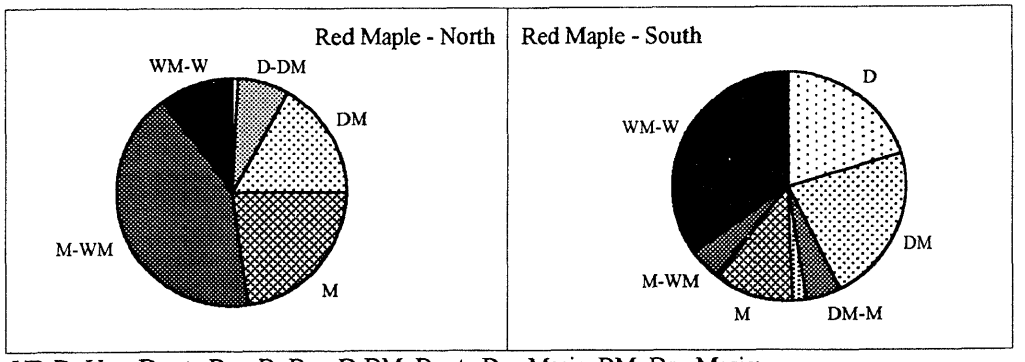
The site index of sugar maple is difficult to estimate accurately for many reasons. Because of a very large sample size, the most accurate estimate (SI 67) is available for the northern M habitat type group (fig. 40). In general, sugar maple site index is low, compared with most other species.

Basswood

In the north, basswood occurs primarily in the M habitat type group, but in the south, it is somewhat more broadly distributed among the groups (fig. 41).

Basswood is the most constant associate of sugar maple, and in the south, its volume exceeds that of maple in all but the mesic habitat type group (figs. 9 and 10).

Average site index ranges from 68 in the north DM habitat type group to 75 in the south M group (fig. 42).



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 37.—*Representation of red maple across the northern and southern habitat type groups as a percent of the total volume of red maple in the northern and southern parts of Wisconsin, respectively.*

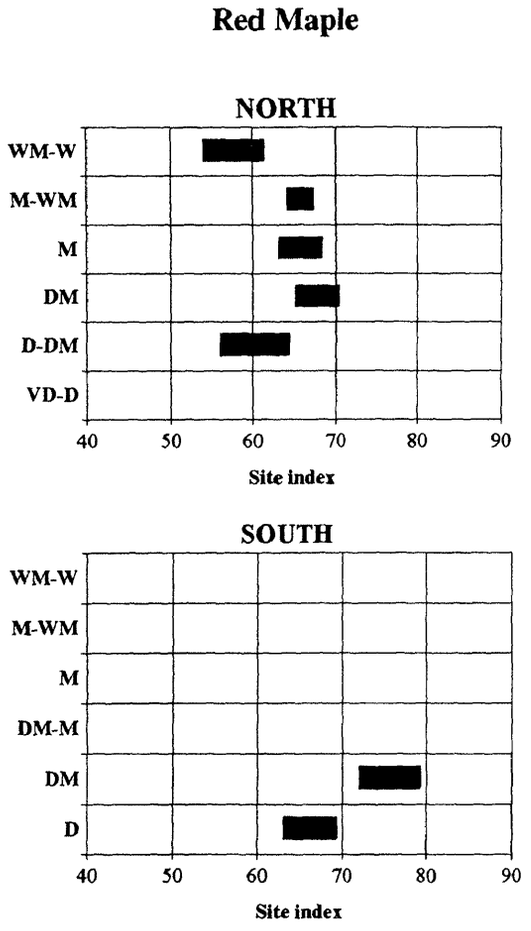


Figure 38.—*Site index for red maple. Bars indicate the 95 percent confidence limits for the mean.*

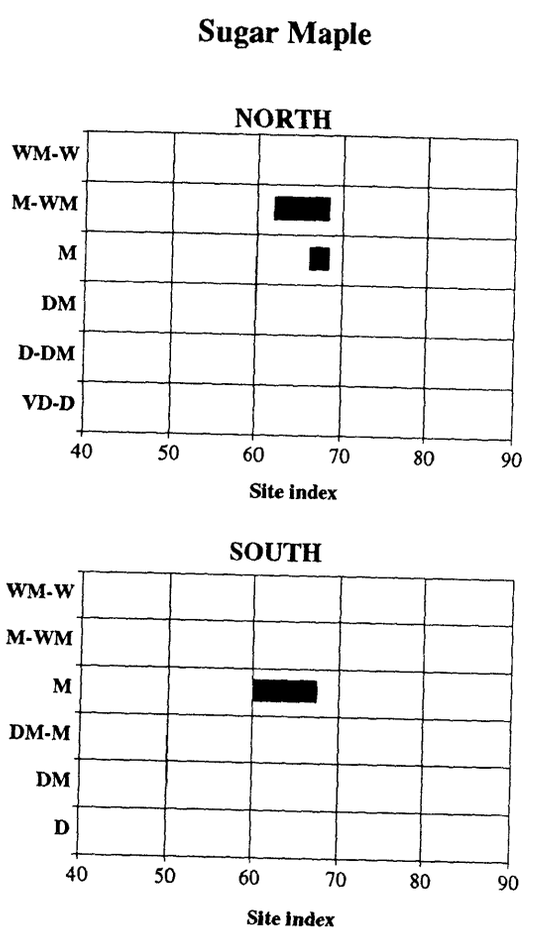
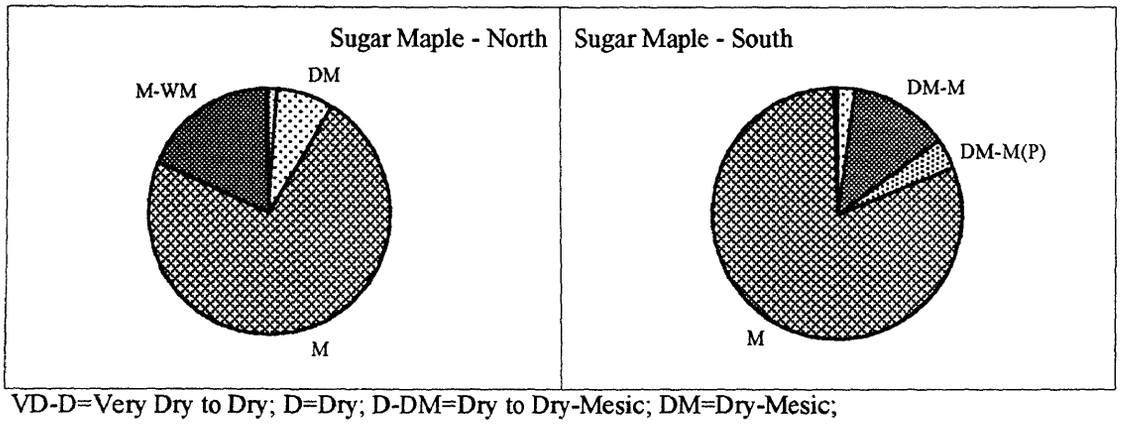
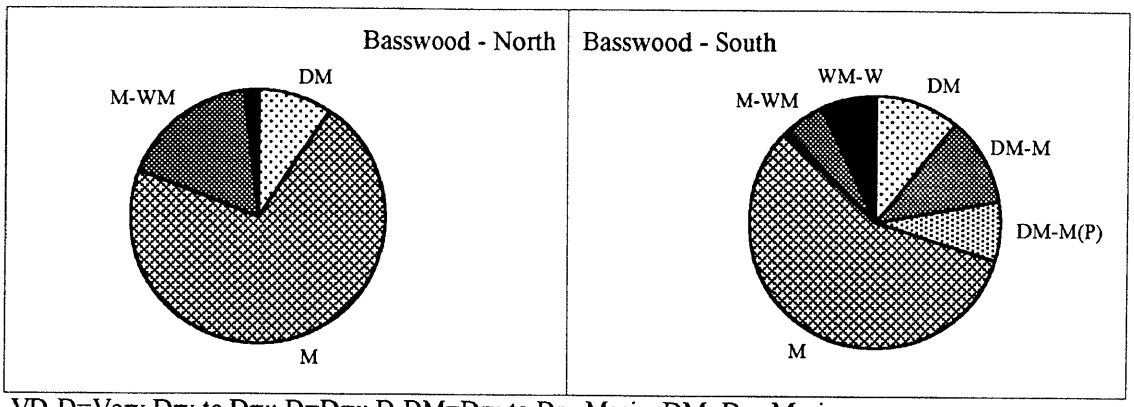


Figure 40.—*Site index for sugar maple. Bars indicate the 95 percent confidence limits for the mean.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 39.—*Representation of sugar maple across the northern and southern habitat type groups as a percent of the total volume of sugar maple in the northern and southern parts of Wisconsin, respectively.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 41.—*Representation of basswood across the northern and southern habitat type groups as a percent of the total volume of basswood in the northern and southern parts of Wisconsin, respectively.*

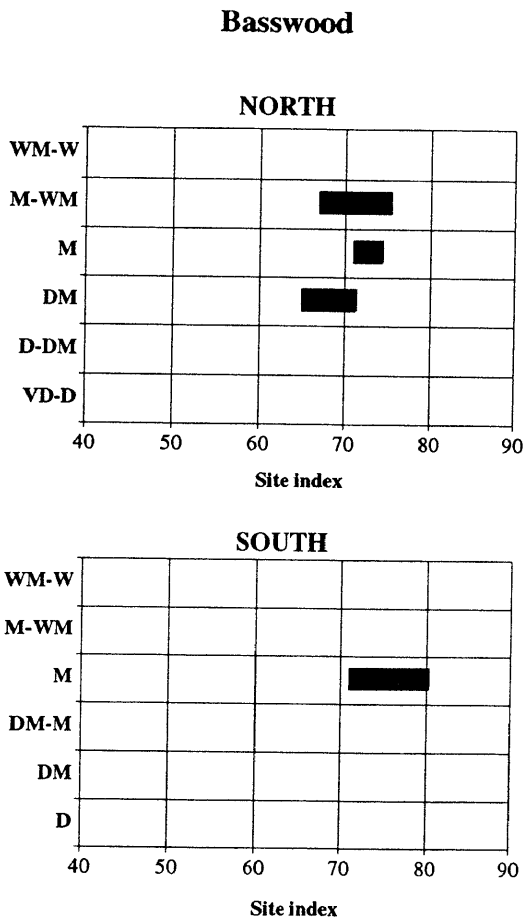


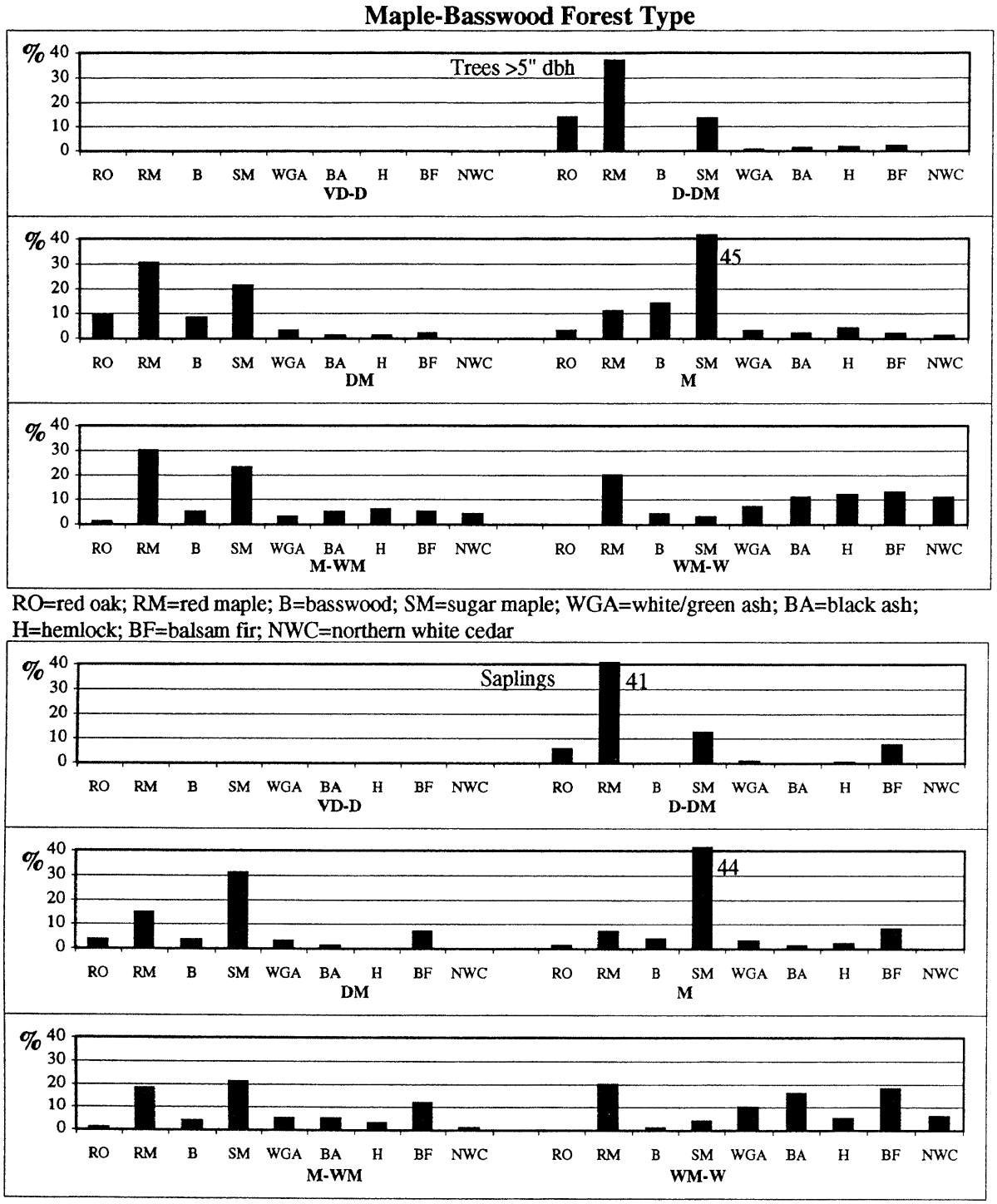
Figure 42.—*Site index for basswood. Bars indicate the 95 percent confidence limits for the mean.*

The Maple-Basswood Forest Type

(Also see comments on the "maple-beech-birch" forest type in the section on red maple.)

Composition.—Sugar maple is the dominant species in the "maple-basswood" forest type only in the northern M habitat type group (fig. 43). In D-DM, DM, and M-WM groups, red maple is dominant. In the D-DM habitat type group, red oak is also important.

Regeneration and succession.—Sugar maple is the most shade tolerant and most competitive species in the M and DM habitat type groups, as shown by the strong dominance of sugar maple saplings in the maple-basswood forest type (fig. 43). Even though red maple is currently more strongly represented in the maple-basswood forest type in the DM habitat type group, sugar maple dominates the sapling layer. It is therefore clear that in the absence of management intervention, the sugar maple forest type is capable of replacing all other forest types in the M and DM habitat type groups.



RO=red oak; RM=red maple; B=basswood; SM=sugar maple; WGA=white/green ash; BA=black ash; H=hemlock; BF=balsam fir; NWC=northern white cedar

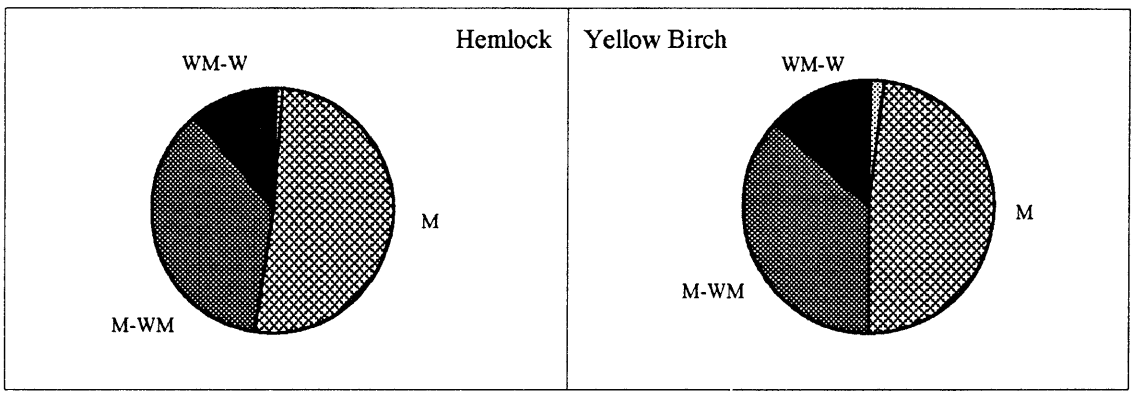
Figure 43.—*Species composition of the maple-basswood forest type in the northern habitat type groups as a percent of the total number of trees (trees > 5" d.b.h. above, saplings below).*

Eastern Hemlock and Yellow Birch

Of all tree species, hemlock and yellow birch show the highest degree of association in all habitat type groups where they occur (fig. 44). This phenomenon is often mentioned, but not documented in the literature. Both species were once important associates of the "northern hardwood" forest complex, but are today relatively poorly represented. Hemlock and yellow birch, together with sugar maple (and American beech in the extreme eastern part of the State), form a distinct forest type, but in this inventory, all of these species were lumped into the "maple-beech-birch" forest type.

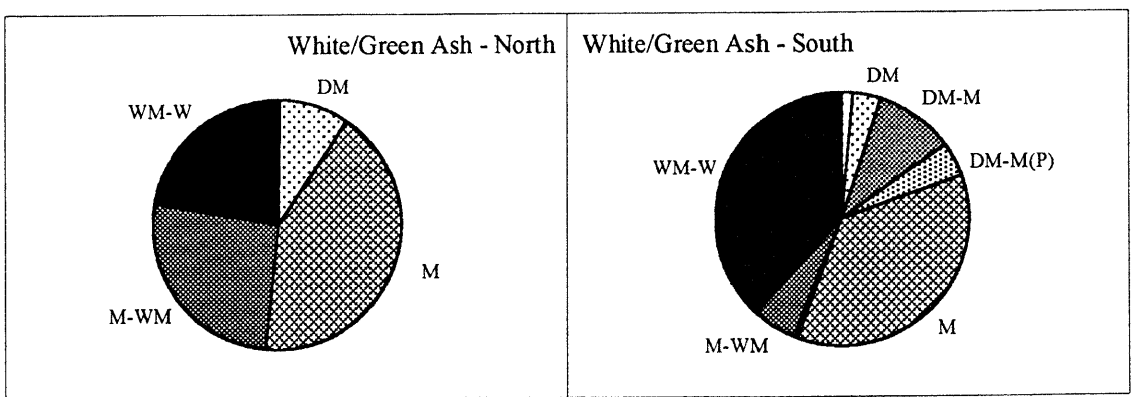
White and Green Ash

These two species were combined in the inventory and cannot be accurately evaluated here. Based on an understanding of the ecological characteristics of the two species, we suggest that in figure 45, green ash is the principal species only in the WM-W habitat type group, both in the north and south. The site index of white ash is among the highest estimated in this inventory (fig. 46).



VD-D=Very Dry to Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; M=Mesic
M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 44.—*Representation of hemlock and yellow birch across the northern habitat type groups as a percent of the total volume of each species.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 45.—*Representation of the white/green ash complex across the northern and southern habitat type groups as a percent of the total white/green ash volume in the northern and southern parts of Wisconsin, respectively.*

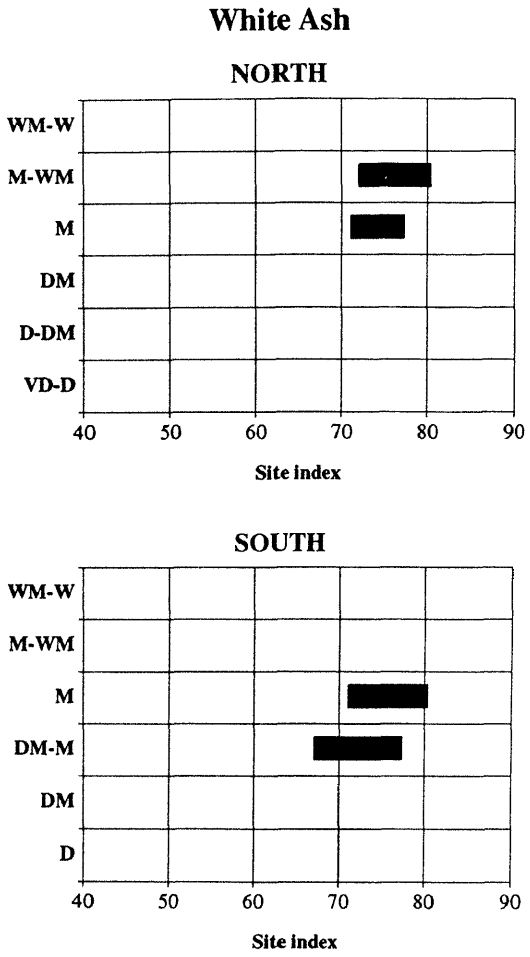
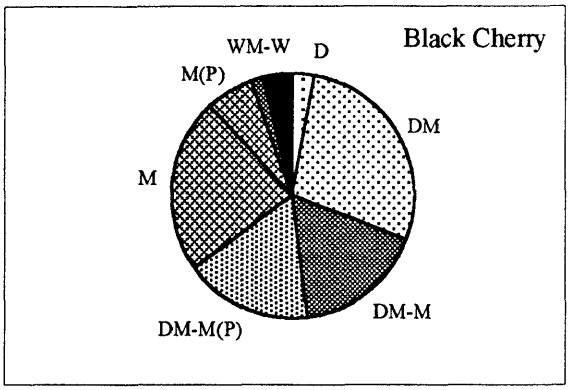


Figure 46.—*Site index for white ash. Bars indicate the 95 percent confidence limits for the mean.*



D=Dry; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phs); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 47.—*Representation of black cherry across the southern habitat type groups as a percent of the total volume of black cherry.*

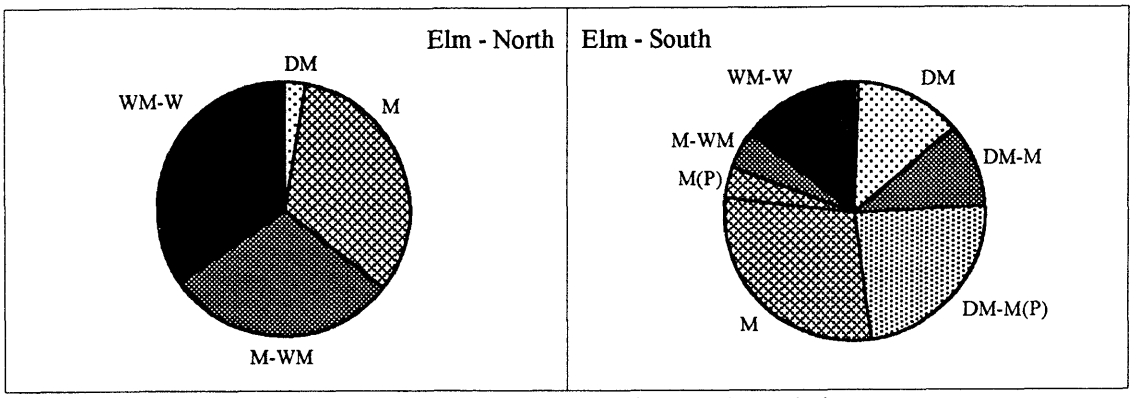
Black Cherry

In the north, black cherry is only an incidental species in the DM and M habitat type groups. In the south, it is a minor associate (less than 5 percent of composition) in all habitat type groups, except for the M (phase) where it approaches 10 percent of species composition (fig. 10).

However, black cherry is well represented in the sapling layer of several forest types, particularly the oak-hickory in the M (phase) habitat type group (fig. 36). Together with red maple, slippery elm, and hickories, it represents the principal successional species in many oak stands. Its relative distribution across the habitat type groups is shown in figure 47.

American and Slippery Elm

These two species were lumped in this inventory. Because American elm has been greatly reduced throughout the State due to Dutch elm disease, slippery elm is probably the main species representing the elm complex in this inventory. Elm is a minor species in the north (fig. 9), where it is best represented in the wetter habitat type groups, most often as a component of the "elm-ash-soft maple" forest type (fig. 11). In the south, it is more common (fig. 10) and is more evenly distributed across habitat type groups (fig. 48).



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 48.—*Representation of the elm complex across the northern and southern habitat type groups as a percent of the total elm volume in the northern and southern parts of Wisconsin, respectively.*

Overview of Individual Species' Productivity Across the Habitat Type Groups

Tables B and C provide a good overview of the range of productive potential of different habitat type groups, as well as the relative performance of each species across the habitat type gradient. The tables show average volumes per tree (by species) for each habitat group. Average volumes by species per acre alone could not show these relationships because the numbers of trees of each species vary greatly across habitat type groups.

Table B is more informative than table C, because of the much larger sample and therefore more complete representation of habitat type groups. Reading the table by rows, we can follow the productivity trends of species across the moisture-nutrient gradient. While volumes per tree are affected by age and spacing as well as by site conditions, we discovered no sampling bias affecting the age and spacing data. We are therefore assuming that differences in volume per tree across the habitat type groups represent differences in a site's potential. Reading down the columns, we can see the relative performance of each species in a given habitat type group. However, in this case, we have to exercise some caution in the interpretation. Management practices do affect the average age of species. For example, hemlock has traditionally been avoided in harvesting because of poor markets. Thus, the average age of hemlock trees is much higher than that of other species. The relatively high volumes for hemlock are, therefore, at least partly due to the higher average age of hemlock.

Note also that the species sequence in the first column follows the moisture gradient, from dry (jack pine), through mesic (sugar maple), to wet (tamarack). The number of columns in which a species is represented also indicates that species' "ecological amplitude," or range of its environmental tolerance.

As predicted by the habitat type classification, most species attain their best growth in the mesic range of the environmental gradient. This is also true for species that do not compete well in that environment and occur there only through management or after a severe natural disturbance (e.g., red pine, white pine, red oak, aspen). The only apparent deviation from this pattern in table B is red pine, which shows the highest volume per tree in the M-WM habitat type group. This would not be expected on the wetter portion of the gradient. However, the M-WM type group includes some habitat types with high early-season moisture conditions, but otherwise well-drained soils (e.g., TMC-V). These conditions appear to be well suited for red pine growth.

Table B.—*Average growing-stock volume per tree (cubic feet), by species and habitat type group (north)*

	Very Dry to Dry	Dry to Dry-Mesic	Dry-Mesic	Mesic	Mesic to Wet-Mesic	Wet-Mesic to Wet
Jack pine	5.6	6.9				
Black/pin oak	7.5					
Red pine	7.8	12.0	9.4	9.3	14.1	
Bigtooth aspen	9.2	12.4	11.7	14.1	11.0	
Quaking aspen	5.6	7.7	8.6	9.2	8.1	7.5
Red oak	7.3	10.3	14.6	19.6	15.9	
White pine		18.3	22.8	43.2	28.1	19.9
Paper birch		7.1	6.8	8.5	7.1	5.7
Red maple		5.1	6.0	7.9	7.0	7.3
White/bur oak			9.7			
Sugar maple			7.7	9.6	8.7	
Basswood			9.3	12.7	12.9	
Yellow birch				10.5	9.7	
Hemlock				15.5	12.9	
Balsam fir				5.4	4.7	3.8
White/green ash				11.2	9.8	8.8
N. white-cedar					6.8	5.2
White spruce					10.4	
Black ash					6.6	5.6
Black spruce						3.6
Tamarack						5.3

Table C.—*Average growing-stock volume per tree (cubic feet), by species and habitat type group (south)*

	Dry	Dry-Mesic	Dry-Mesic to Mesic	Dry-Mesic to Mesic (phase)	Mesic	Mesic (phase)	Mesic to Wet Mesic	Wet-Mesic to Wet
Jack pine	4.7							
Red pine	5.4							
Quaking aspen	7.3							
White pine	11.7	13.2						
Bigtooth aspen	10.2	13.0						
Black/pin oak	9.8	10.8						
White/bur oak	7.2	11.4	19.2	17.9	14.8			
Red oak	8.6	18.1	21.1	17.4	21.3			
Red maple	5.8	8.2			10.4			14.0
Paper birch		7.7						
Basswood					12.1			
Sugar maple					14.7			
White/green ash					11.5			8.7

CONCLUSIONS

Combining the forest inventory with the habitat type classification has yielded benefits for both these assessment and planning tools. Because individual tree species grow and compete differently across the environmental gradient, forest types also differ across the gradient in terms of composition, potential yields, and successional patterns. The habitat type classification system allows us to group inventory plots into segments of environmental gradient (habitat types and habitat type groups, or classes) and enables us to differentiate important characteristics among them.

We now have an estimate of the extent of major habitat type groups in Wisconsin as well as a picture of the relative distribution and productivity of tree species and forest types across these habitat type groups. This information greatly increases our understanding of the forest resource and should lead to improved management.

Finally, the data from over 5,000 forest inventory plots strongly support the original estimates and descriptions of forest habitat type characteristics, thus strengthening the confidence in the utility of this tool.

APPENDIX A

ADDITIONAL ANALYSES

Species Occurrence Across Habitat Type Groups

Figures 49 and 50 show the distribution of tree species across the northern and southern habitat type groups, respectively. These are the same figures as those found in the discussion of individual species, but here they occur together for easy comparison.

Habitat Type Regions and Counties

The maps and tables in this publication provide insights for examining habitat type regions. Individual regions can be evaluated, and different regions can be compared and contrasted. The maps help us quickly see how habitat type groups are distributed geographically within and between regions. Tables 1-11 (appendix C) show the approximate acres of forest land represented by each habitat type group and habitat type within each region. Figures 51 and 52 highlight the relative occurrence of habitat type groups within each region.

Regional composition by habitat type class also can be evaluated using tables 1-11. For example, consider the habitat type composition of region 3 shown in figure 53. Only three habitat types—Lowland, Hydromesic, and ATM—characterize nearly half of the forest land. Add four more—AViO, TMC, TMC-V, and PMV—and 74 percent of the regional composition is characterized. About 21 additional habitat types and variants can be found within region 3.

With care, distributional relationships within and among counties can be analyzed and interpreted. At the county level, sampling errors in FIA data can be large. For the larger and more densely forested counties and the more common habitat type groups and habitat types, errors may be acceptable. Also, trends can become obvious when data are examined in the context of the region, surrounding counties, and other information and data.

Common habitat type groups found within a county and their relative abundance often can be interpreted from the maps and tables 1-11. For example, in Sawyer County within habitat type region 3, four northern habitat type groups predominate: M, M-WM, DM, and WM-W. The other two groups found in the county don't occur very often. Other nearby counties, such as Washburn, exhibit very different trends.

Tables 1-11 also show expected relative frequency of occurrence of habitat types by county. This information can be used to interpret trends within and between counties. Continuing with the Sawyer County example, each of the three most common habitat types (Lowland, Hydromesic, ATM) is expected to represent 10 to 25 percent of forest land area. Twelve other habitat types are of minor occurrence, each representing 1 to 10 percent of forest land. Other habitat types may be found, but are expected to represent less than 1 percent of the forested land area within the county.

When we examine the distribution of specific habitat type groups across habitat type regions and counties, both the maps and tables 1-11 provide insights. Individual habitat type groups can be evaluated, and different groups can be compared and contrasted. Figures 55 and 56 highlight the relative distribution of habitat type groups among habitat type regions.

The general distribution of specific habitat types across regions and counties can be interpreted using tables 1-11 (error values should be monitored). For example, plots classified as ATM are divided among the regions as shown in figure 57. Counties where ATM is expected to be common (10 to 25 percent expected relative frequency of occurrence) are Florence, Forest, Langlade, Lincoln, Taylor, Iron, Sawyer, and Bayfield.

NHFEU Sections and Subsections

The distribution of habitat type groups and habitat types within and between NHFEU Sections and Subsections can be analyzed and interpreted using the maps and tables 12-16 (appendix C). Base map B shows Wisconsin sections and subsections. Map unit codes and names are listed on the next page. The map overlays show the sampled geographic distributions of the habitat type groups. The maps

facilitate rapid observation of how habitat type groups are distributed within and between sections and subsections. Tables 12-16 show the relative frequency of occurrence of habitat type groups and habitat types by NHFEU Sections and Subsections.

Individual sections and subsections can be evaluated and characterized by apparent habitat type group composition. Different sections and subsections can be compared and contrasted. Subsections also can be evaluated for habitat type composition. For example, the following four Subsections can be characterized and contrasted (expected frequency of occurrence classes: Dominant >50 percent, Frequent 25-50 percent, Common 10-25 percent, Minor 1-10 percent):

•212Je - Central and NW WI Loess Plains
- Three habitat type groups (M, M-WM, WM-W) are of frequent occurrence.
- Two habitat types (Hydromesic and Lowland) are frequent, and one (ATM) is common.

•212Jl - Brule and Paint Rivers Drumlinized Ground Moraine
- One group (M) is dominant. Two other groups (M-WM and WM-W) are common.
- One habitat type (AViO) is frequent, and three (ATM, ATD, and Lowland) are common.

•212Jm - Northern Highlands Pitted Outwash
- Most of the northern habitat type groups are common within this subsection.
- Three habitat types (ArQV, PMV, and Lowland) are common; seven others are minor.

•212Ka - Bayfield Sand Plains
- One group (Very Dry to Dry) is dominant, and one group (Dry to Dry-Mesic) is common.
- Four habitat types (QAc, ArQV-Sm, QGCe, and PAm) are common; eight others are minor.

Individual habitat type groups can be evaluated with respect to distribution across sections and subsections. Different groups can be compared and contrasted. For example:

• The N. Mesic habitat type group primarily occurs in Section 212J, where it is of frequent occurrence. It is the dominant group in Subsections Jl and Jb; frequent in Je, Jf, and Jj; and common in most other subsections of J except for Ja (minor) and Jh (<1 percent). This group also is common in Section 212H, specifically Subsections Hb and He. Although the group is of minor occurrence in 212K and Ka, it is common in Subsection Kb. Minor representation also can be found in Subsections 222Md and 222La.

• In contrast, the N. Very Dry to Dry habitat type group is frequent in Section 212K. It is the dominant group in Subsection Ka, but only minor in Kb. Although this group is only of minor occurrence within Section 212J, it is common in Subsections Jm and Jk. This group is of minor occurrence within Section 212H, specifically Subsections Hb and He.

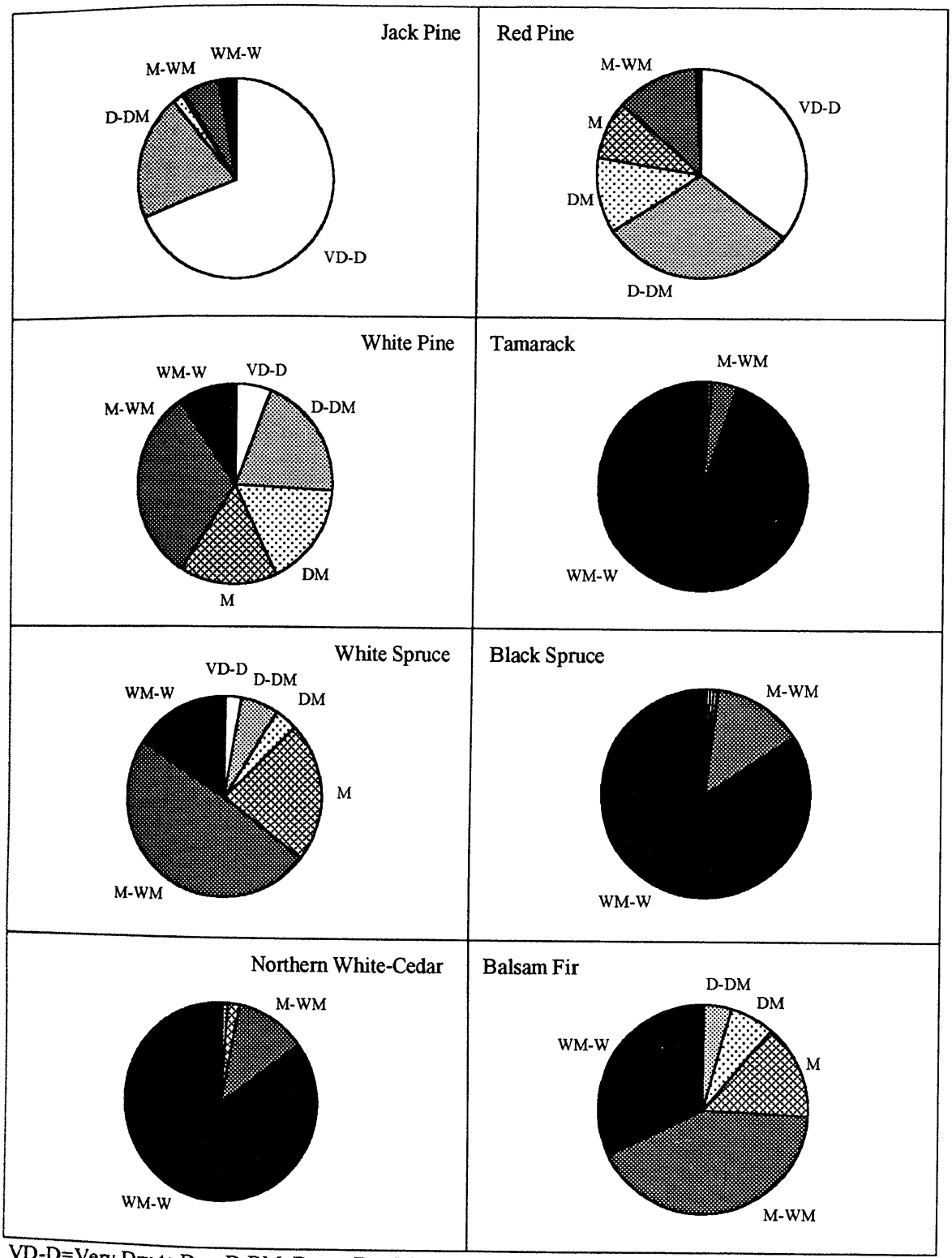
Individual habitat types also can be evaluated with respect to distribution across sections and subsections. Different habitat types can be compared and contrasted. For example:

1. N. Mesic Habitat type group examples:
   • **ATM**: Within Section J, this habitat type is frequent in Jb; common in Je, Jf, and Jl; minor in seven other subsections. The type also can be found with minor occurrence in Subsections Ka and Hb.
   • **AViO**: Found only within Section J. It is frequent in Jl, common in Jb, and minor in seven other subsections.
   • **AH**: Found predominantly within Section J. It is common in Subsections Ji, Jj, and Js; minor in five other subsections; and found <1 percent in six subsections.

2. N. Very Dry to Dry Habitat type group examples:
   • **QV**: Common in Subsection Jk, and minor in Hb and He.
   • **ArQV**: Common in Subsection Jm, and minor in Jk and Jl.
   • **ArQV-Sm**: Common in Subsection Ka, and minor in Kb.
   • **QGCe**: Common in Subsection Ka.

List of Map Units for Ecoregions and Subregions of Wisconsin (National Hierarchical Framework Of Ecological Units—NHFEU)

200-Humid Temperate Domain
- 210-Warm Continental Division (differentiates N & S WI)
  - 212-Laurentian Mixed Forest Province
    - 212H-Northern Great Lakes Section
      - 212Hb-West Green Bay Till Plain Subsection
      - 212Hc-Green Bay Clayey & Silty Lake Plain Subsection
      - 212Hd-Manitowoc Till Plain Subsection
      - 212He-Door and Escanaba Peninsulas & Lake Plain Subsection
    - 212I-Lake Superior Section
      - 212Ia-Lake Superior and Islands Subsection
    - 212J-Southern Superior Uplands Section
      - 212Ja-Lake Superior Clay Plain Subsection
      - 212Jb-Gogebic-Penokee Iron Range Subsection
      - 212Jc-Winegar Moraines Subsection
      - 212Jd-St. Croix Moraines Subsection
      - 212Je-Central and NW Wisconsin Loess Plains Subsection
      - 212Jf-Perkinstown End Moraine Subsection
      - 212Jg-Lincoln Formation Till Plain, Mixed Hardwoods Subsection
      - 212Jh-Neillsville Sandstone Plateau Subsection
      - 212Ji-Rib Mountain Rolling Ridges Subsection
      - 212Jj-Green Bay Lobe Stagnation Moraine Subsection
      - 212Jk-Spread Eagle-Dunbar Barrens Subsection
      - 212Jl-Brule & Paint Rivers Drumlinized Ground Moraine Subsection
      - 212Jm-Northern Highlands Pitted Outwash Subsection
      - 212Js-Lincoln Formation Till Plain, Hemlock-Hardwoods Subsection
    - 212K-Western Superior Uplands Section
      - 212Ka-Bayfield Sand Plains Subsection
      - 212Kb-Mille Lacs Uplands Subsection
    - 212O-Lake Michigan Section
      - 212Oa-Lake Michigan and Islands Subsection
      - 212Ob-Green Bay Subsection
  - 220-Hot Continental Division (differentiates S & N WI)
    - 222-Eastern Broadleaf Forest (Continental) Province
      - 222K-Southwestern Great Lakes Morainal Section
        - 222Ka-Central Wisconsin Sand Plain Subsection
        - 222Kb-Central Wisconsin Moraines and Outwash Subsection
        - 222Kc-Lake Winnebago Clay Plain Subsection
        - 222Kd-South Central Wisconsin Prairie and Savannah Subsection
        - 222Ke-Southern Green Bay Lobe Subsection
        - 222Kf-Geneva-Darien Moraines and Till Plains Subsection
        - 222Kg-Kenosha-Lake Michigan Plain and Moraines
        - 222Kh-Rock River Old Drift Country Subsection
      - 222L-North Central U.S. Driftless and Escarpment Section
        - 222La-Menominee Eroded Pre-Wisconsinan Till Subsection
        - 222Lb-Melrose Oak Forest and Savannah Subsection
        - 222Lc-Mississippi-Wisconsin River Ravines Subsection
        - 222Ld-Kickapoo-Wisconsin River Ravines Subsection
        - 222Le-Mineral Point Prairie-Savannah Subsection
      - 222M-Minnesota and Northeast Iowa Morainal Section
        - 222Md-Rosemont-Baldwin Plains and Moraines Subsection



VD-D=Very Dry to Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; M=Mesic
M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 49.—*Representation of tree species across the northern habitat type groups, as a percent of each species' total volume in the northern portion of the State.*

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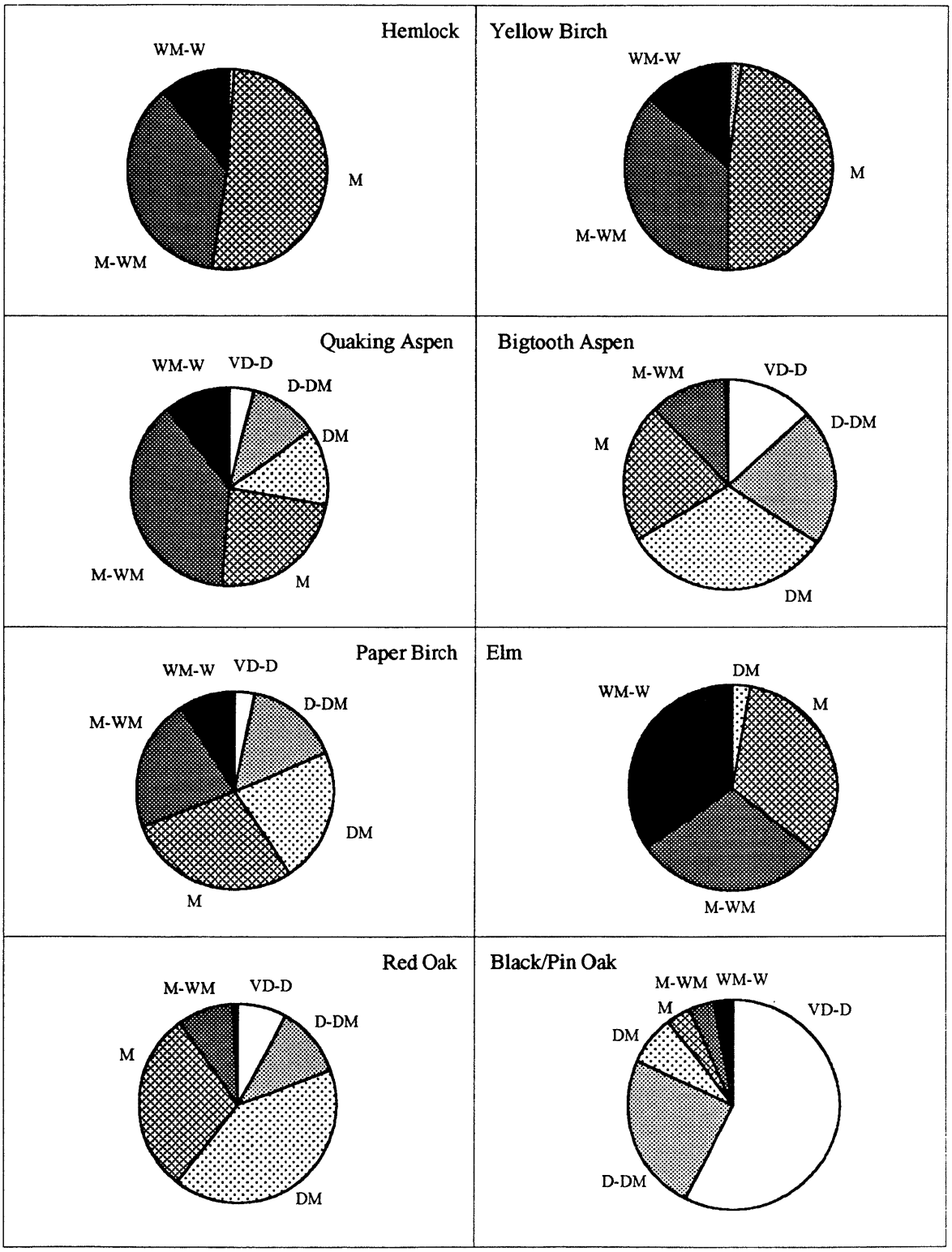

VD-D=Very Dry to Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic; M=Mesic
M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

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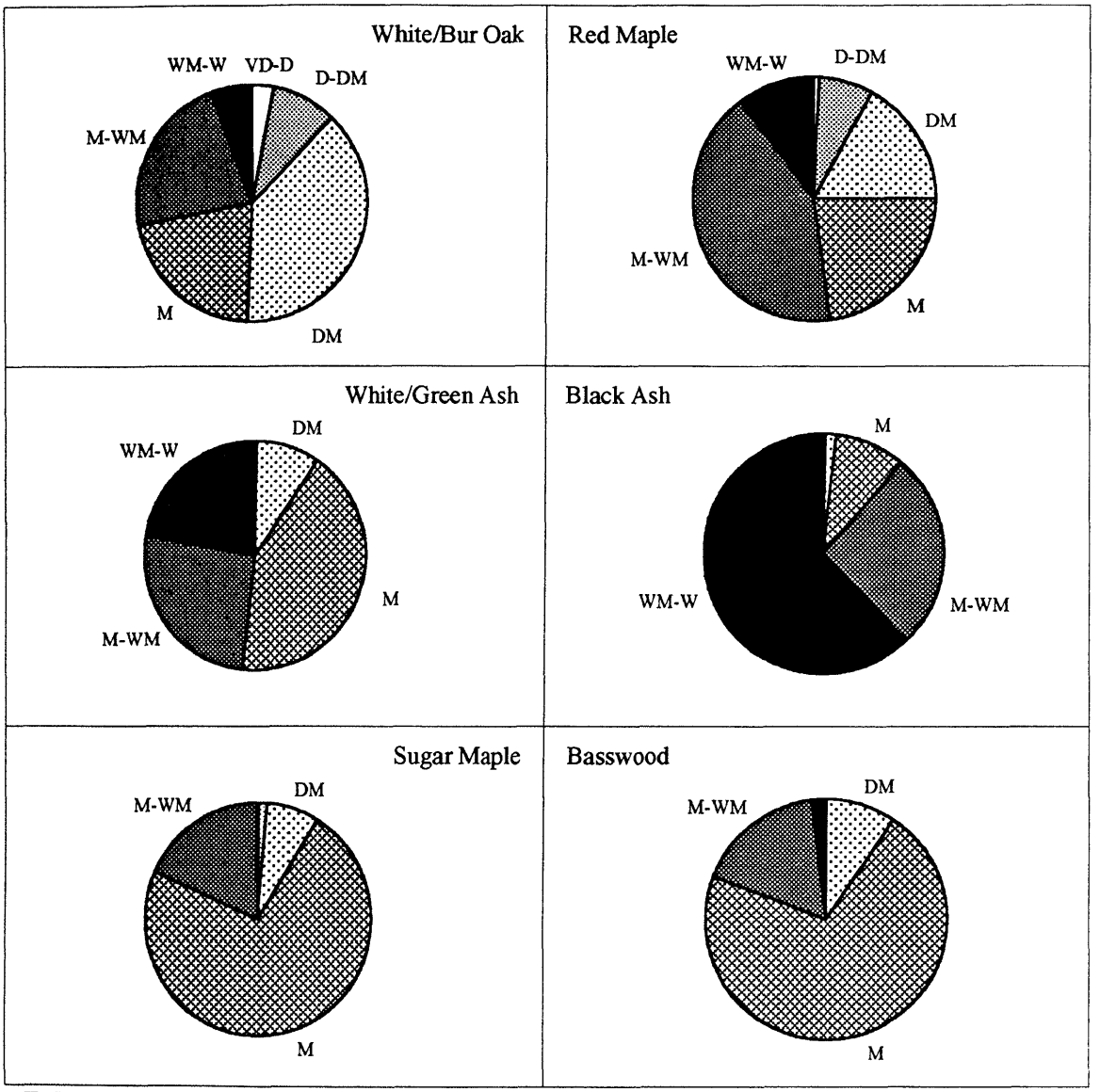

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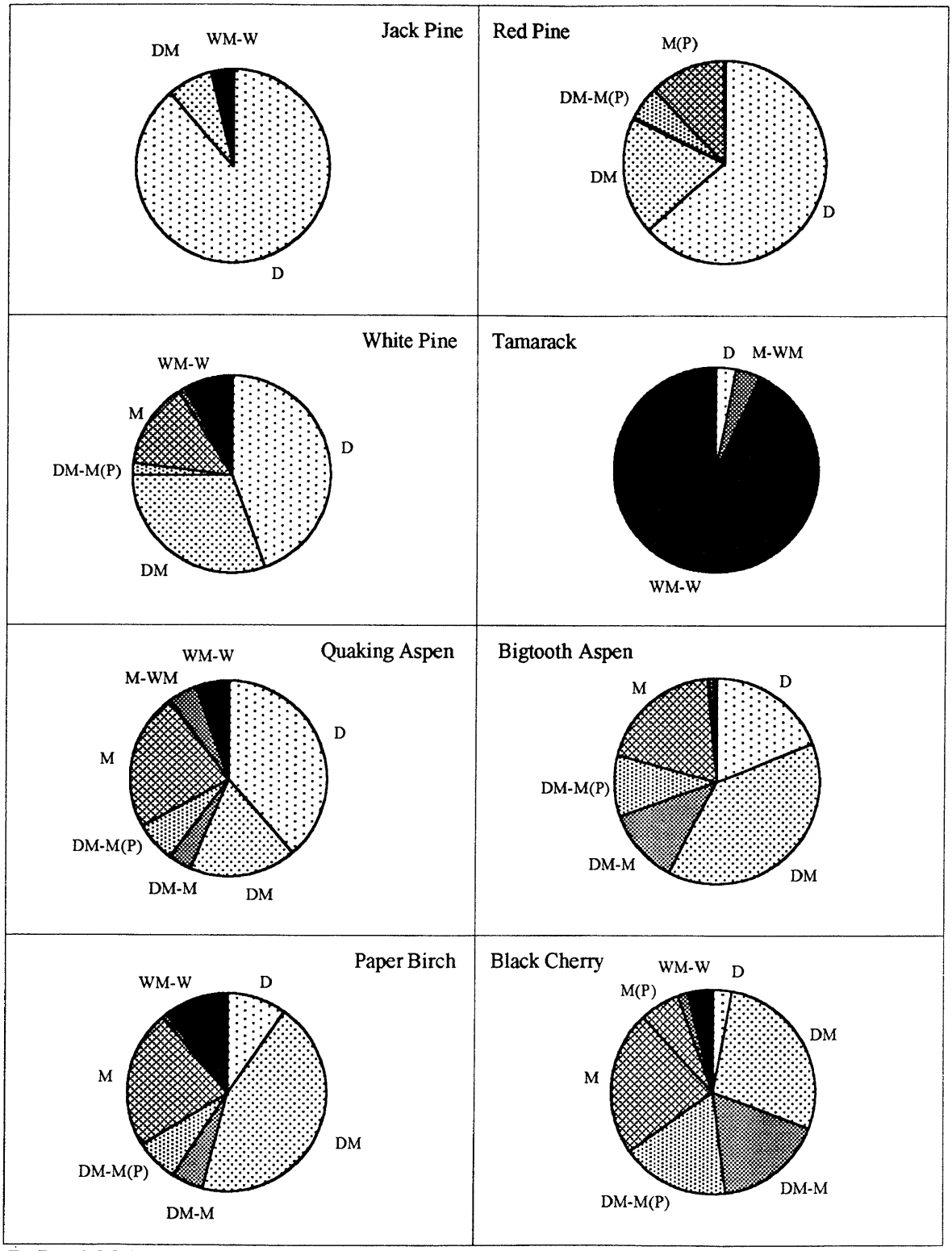
M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

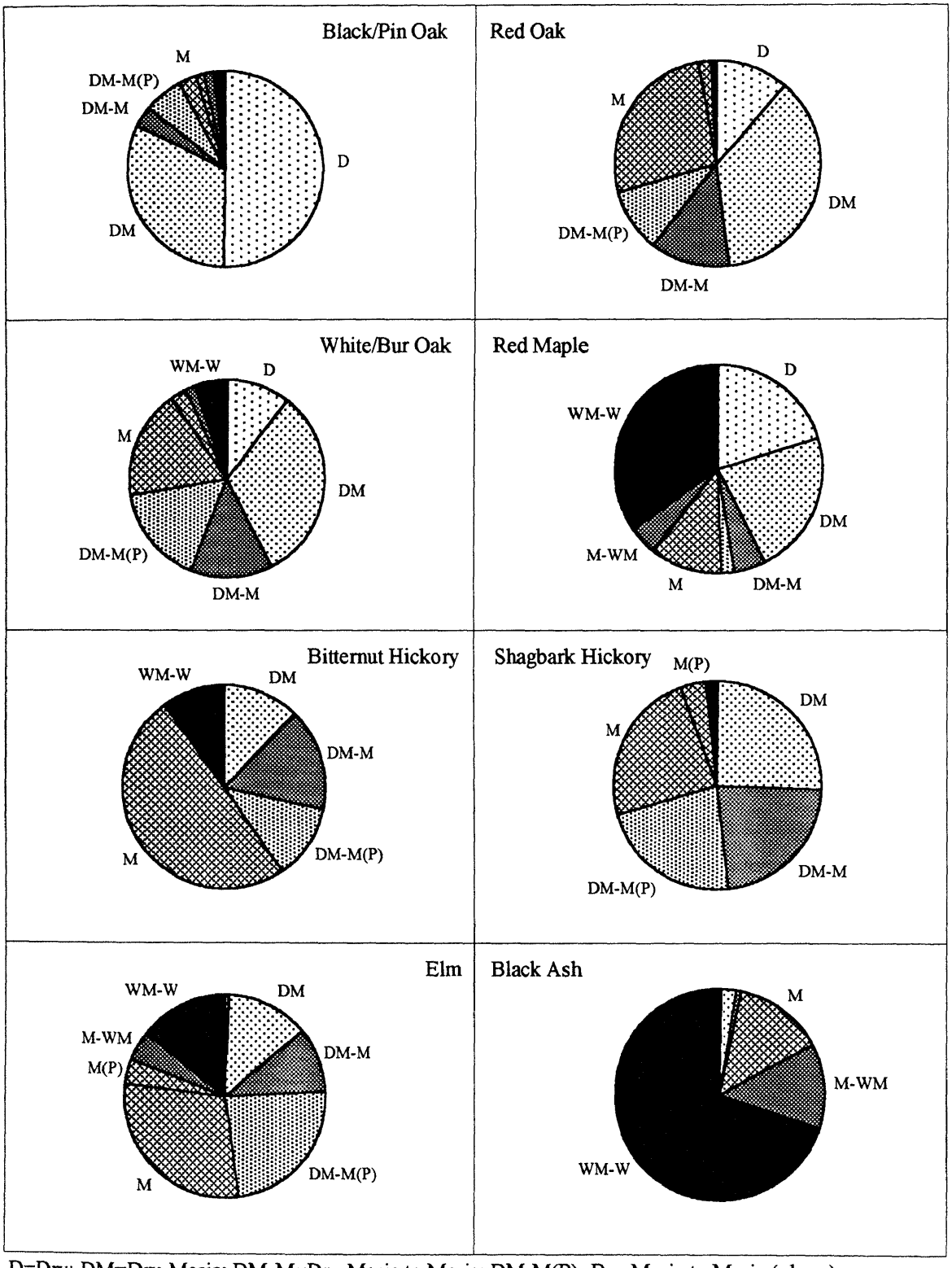


D=Dry; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 50.—*Representation of tree species across the southern habitat type groups, as a percent of each species' volume in the southern portion of the State.*

(Figure 50 continued on next page)

(Figure 50 continued)



D=Dry; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

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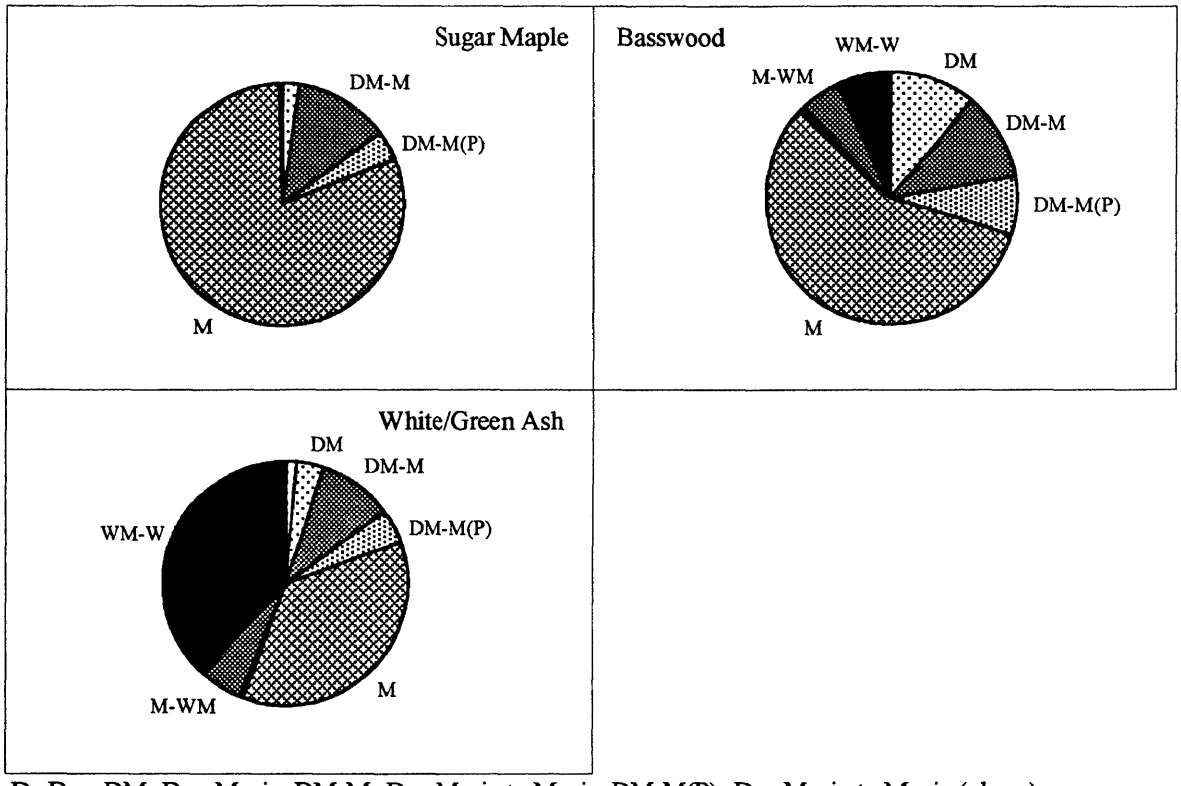
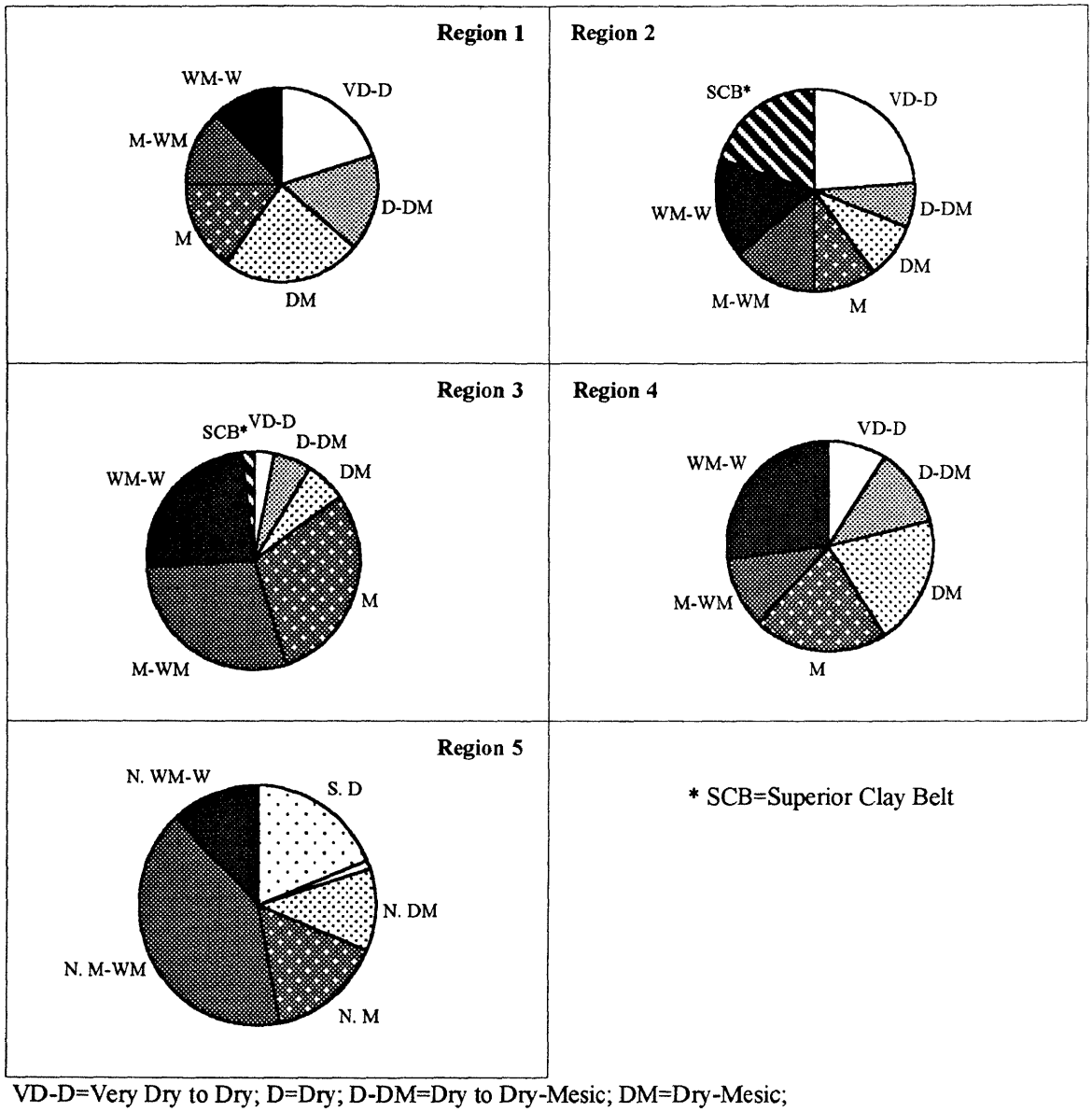
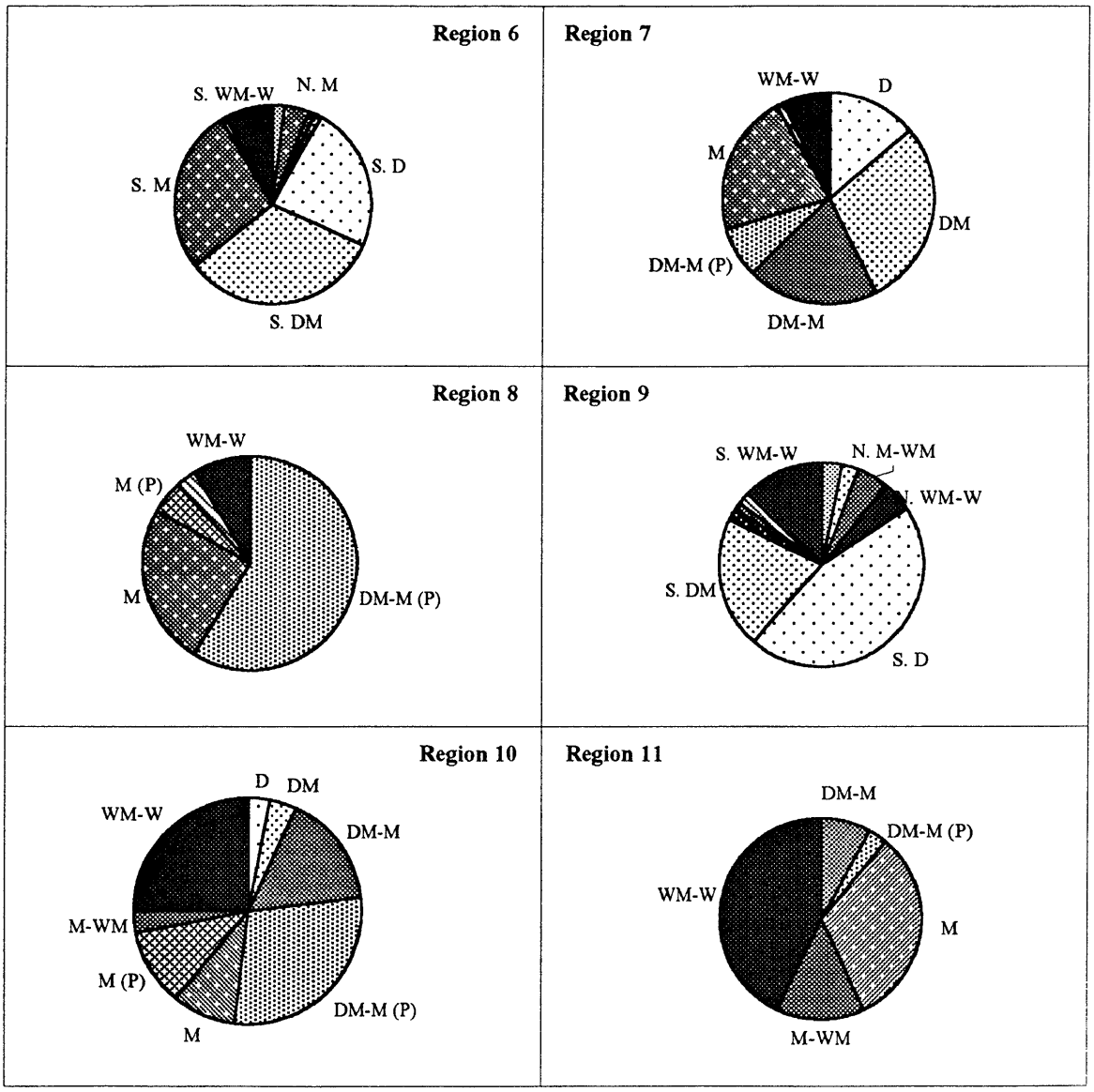


D=Dry; DM=Dry-Mesic; DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase); M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 51.—*Relative occurrence of habitat type groups in the northern habitat type regions (see map of regions).*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 52.—*Relative occurrence of habitat type groups in the southern habitat type regions (see map of regions).*

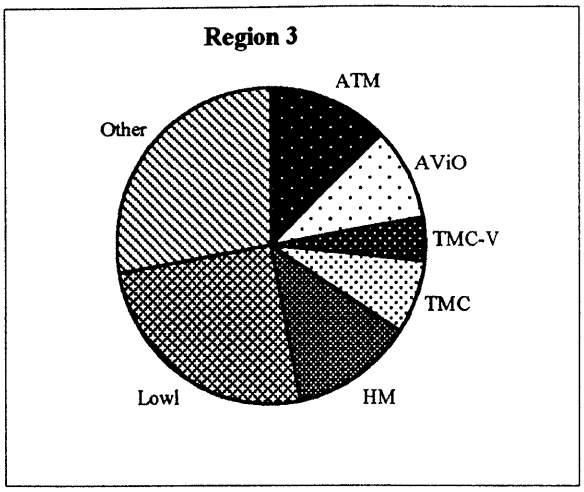
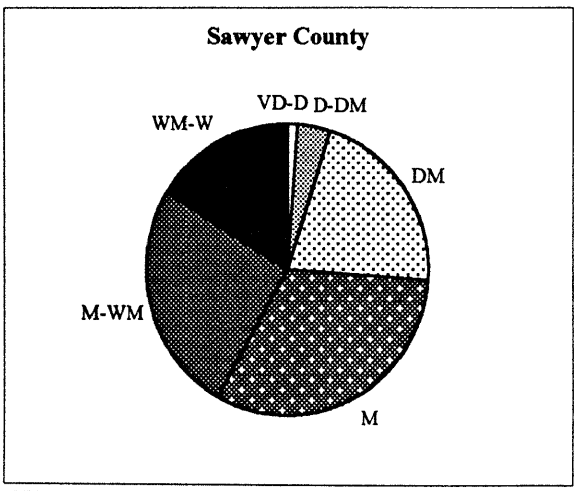


Figure 53.—*Relative occurrence of habitat types in region 3.*



VD-D=Very Dry to Dry; D=Dry; D-DM=Dry to Dry-Mesic; DM=Dry-Mesic;
DM-M=Dry-Mesic to Mesic; DM-M(P)=Dry-Mesic to Mesic (phase);
M=Mesic; M(P)=Mesic (phase); M-WM=Mesic to Wet-Mesic; WM-W=Wet-Mesic to Wet

Figure 54.—*Relative occurrence of habitat type groups in Sawyer County (region 3).*

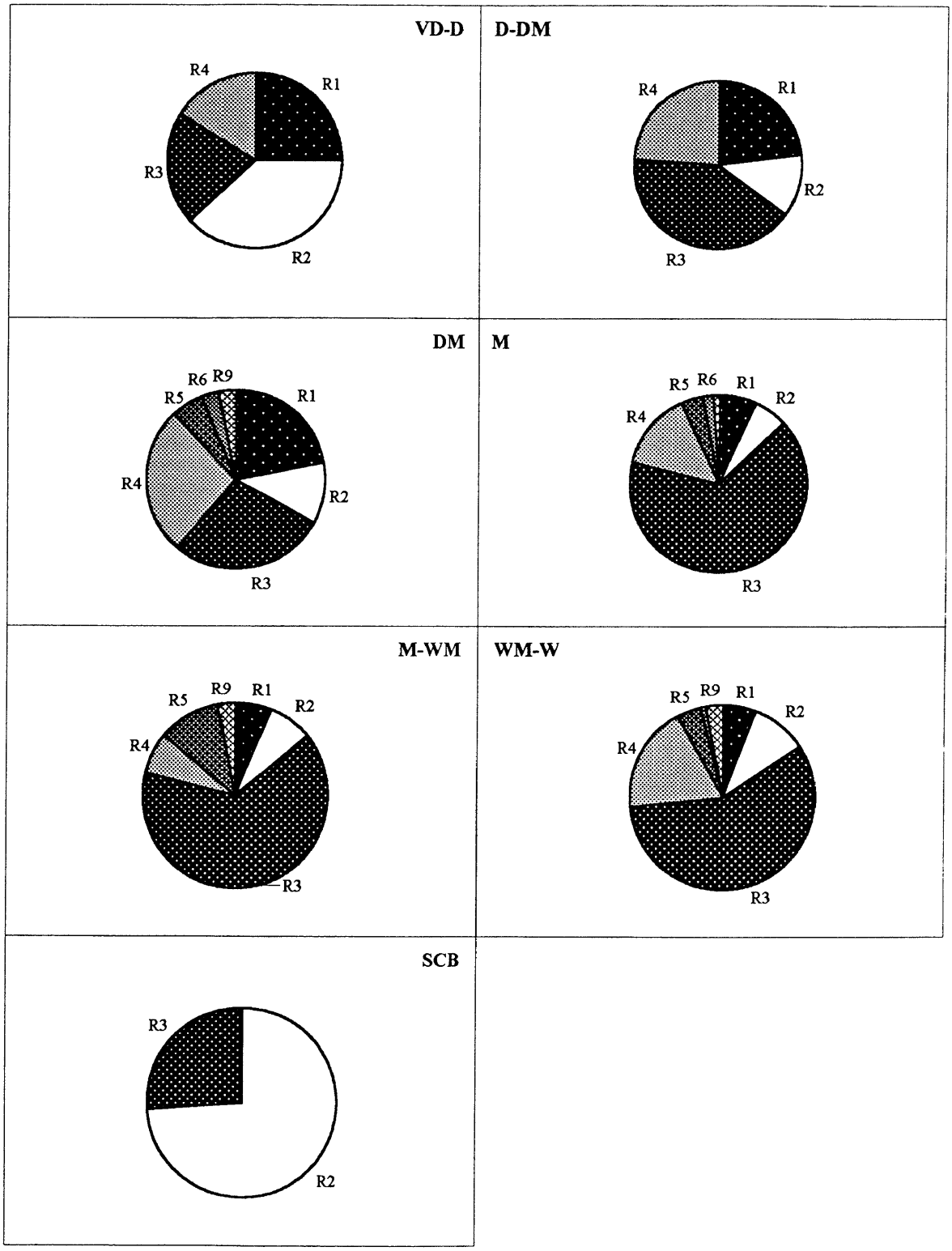


Figure 55.—*Representation of the northern habitat type groups within habitat type regions (see map of regions).*

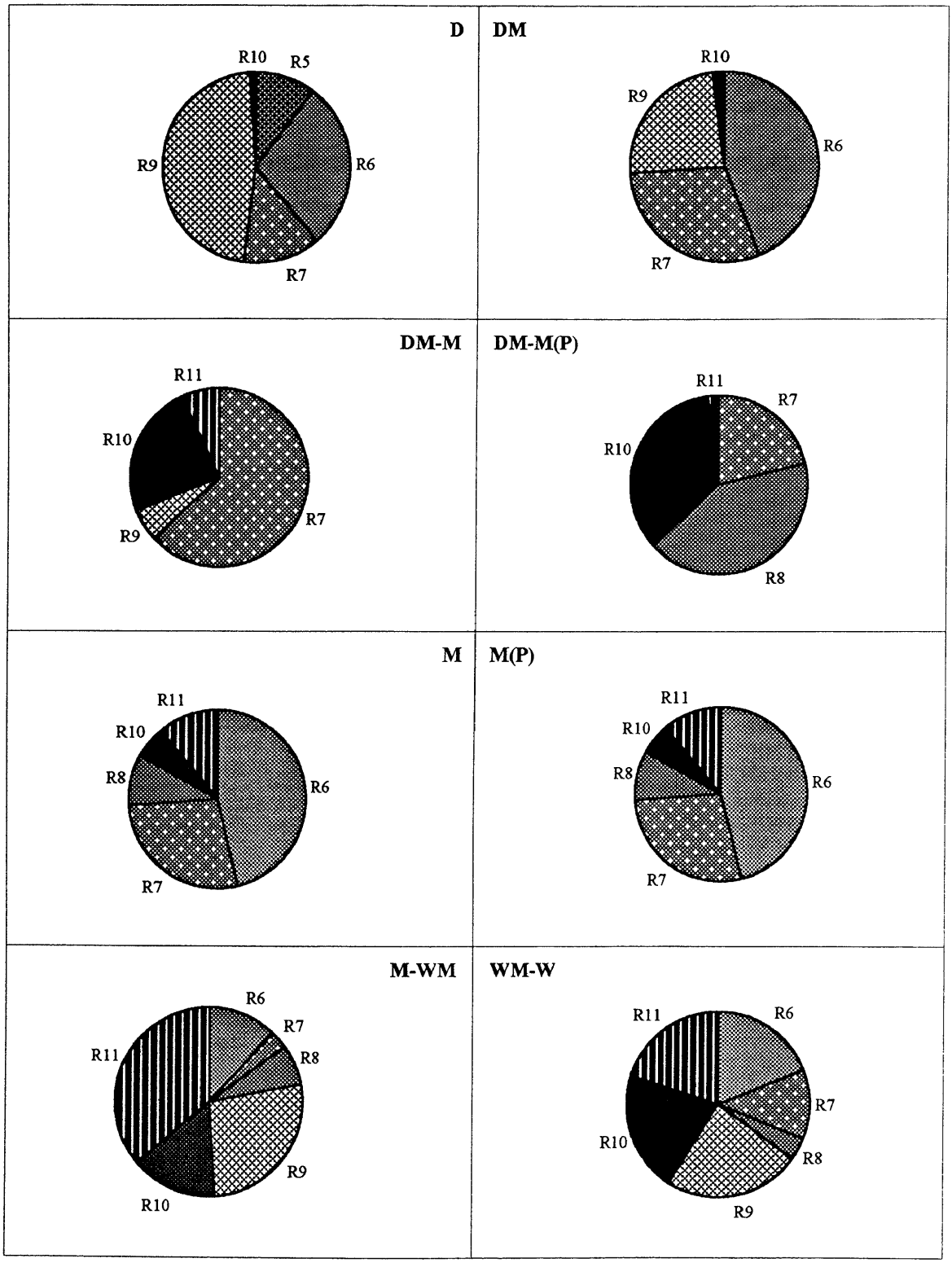


Figure 56.—*Representation of the southern habitat type groups within habitat type regions (see map of regions).*

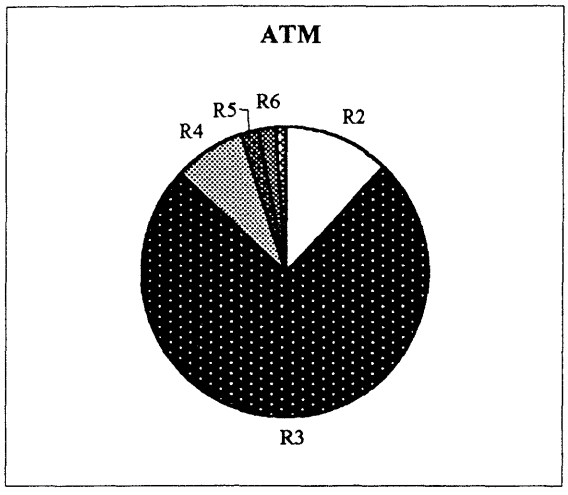


Figure 57.—*Relative occurrence of the ATM habitat type across habitat type regions (see map of regions).*

APPENDIX B

MISCELLANEOUS INFORMATION

Habitat Type Groups

1. North, very dry to dry (VD-D)

QAc	Quercus macrocarpa/ Arctostaphylos uva-ursi
ArQTr	Acer rubrum-Quercus ellipsoidalis/Trientalis borealis
QArE	Quercus rubra-Acer rubrum/Epigaea repens
QGCe	Quercus ellipsoidalis/ Gaultheria procumbens-Ceanothus americanus
ArQV	Acer rubrum-Quercus rubra/Vaccinium angustifolium
ArQV-Sm	Acer rubrum-Quercus rubra/Vaccinium angustifolium, Smilacina racemosa variant
QV	Quercus ellipsoidalis/ Vaccinium angustifolium
QAp	Quercus alba-Quercus ellipsoidalis/Amorpha canescens

2. North, dry to dry-mesic (D-DM)

PAm	Pinus strobus/Amphicarpa bracteata
PAm-At	Pinus strobus/Amphicarpa bracteata, Athyrium filix-femina variant
PMV	Pinus strobus/ Maianthemum canadense-Vaccinium angustifolium
PMV-Q	Pinus strobus/ Maianthemum canadense-Vaccinium angustifolium, Quercus ellipsoidalis variant
PMV-Vb	Pinus strobus/ Maianthemum canadense-Vaccinium angustifolium, Viburnum acerifolium variant
PMV-Po	Pinus strobus/ Maianthemum canadense-Vaccinium angustifolium, Polygonatum pubescens variant

3. North, dry-mesic (DM)

FArAa	Fagus grandifolia-Acer rubrum/Aralia nudicaulis
AVVb	Acer saccharum/Vaccinium angustifolium-Viburnum acerifolium
AVDe	Acer saccharum/Vaccinium angustifolium-Desmodium glutinosum
ACl-V	Acer saccharum/Clintonia borealis, Vaccinium spp. variant
ACl	Acer saccharum/Clintonia borealis
AQVb-V	Acer saccharum-Quercus rubra/Viburnum acerifolium, Vaccinium angustifolium variant
AQVb	Acer saccharum-Quercus rubra/Viburnum acerifolium
AQVb-Ha	Acer saccharum-Quercus rubra/Viburnum acerifolium, Hamamelis virginiana variant
AAt	Acer saccharum/Athyrium filix-femina
AFTPo	Acer saccharum-Fagus grandifolia-Tsuga canadensis/Polygonatum pubescens
AVb	Acer saccharum/Viburnum acerifolium
AFVb	Acer saccharum-Fagus grandifolia/Viburnum acerifolium

4. North, mesic (M)

ATM	Acer saccharum-Tsuga canadensis/ Maianthemum canadense
AFSt	Acer saccharum-Fagus grandifolia/Streptopus roseus
AAs	Acer saccharum/Arisaema atrorubens
ATFD	Acer saccharum-Tsuga canadensis-Fagus grandifolia/Dryopteris spinulosa
ATD	Acer saccharum-Tsuga canadensis/Dryopteris spinulosa

ATDH	Acer saccharum-Tsuga canadensis/Dryopteris spinulosa-Hydrophyllum virginianum
ACaCi	Acer saccharum/ Caulophyllum thalictroides-Circaea quadrisulcata
ACaCi-H	Acer saccharum/ Caulophyllum thalictroides-Circaea quadrisulcata, Hydrophyllum virginianum variant
AFAl	Acer saccharum-Fagus grandifolia/Allium tricoccum
AFAd	Acer saccharum-Fagus grandifolia/Adiantum pedatum
AViO	Acer saccharum/Viola pubescens-Osmorhiza claytoni
AViO-Ca	Acer saccharum/Viola pubescens-Osmorhiza claytoni, Caulophyllum thalictroides variant
AHVb	Acer saccharum/ Hydrophyllum virginianum-Viburnum acerifolium
AH-Ci	Acer saccharum/ Hydrophyllum virginianum, Circaea quadrisulcata variant
AH	Acer saccharum/ Hydrophyllum virginianum

5. North, mesic to wet-mesic (M-WM)

ArCo	Acer rubrum/Cornus canadensis
TMC-V	Tsuga canadensis/ Maianthemum canadense-Coptis groenlandica, Vaccinium spp. variant
TMC	Tsuga canadensis/ Maianthemum canadense-Coptis groenlandica
TMC-D	Tsuga canadensis/ Maianthemum canadense-Coptis groenlandica, Dryopteris spinulosa variant
ATM-As	Acer saccharum-Tsuga canadensis/ Maianthemum canadense, Arisaema atrorubens variant
ATD-I	Acer saccharum-Tsuga canadensis/Dryopteris spinulosa, Impatiens capensis variant
ACaCi-I	Acer saccharum/ Caulophyllum thalictroides-Circaea quadrisulcata, Impatiens capensis variant
AViO-I	Acer saccharum/Viola pubescens-Osmorhiza claytoni, Impatiens capensis variant
AH-I	Acer saccharum/ Hydrophyllum virginianum, Impatiens capensis variant
HM	Hydromesic site; no specific habitat type defined

6. North, wet-mesic to wet (WM-W)

No specific habitat types were defined

7. Superior clay belt (SCB)

AbArSn	Abies balsamea-Acer rubrum/Sanicula marilandica
AbASnMi	Abies balsamea-Acer spp./ Sanicula marilandica-Mitchella repens

8. South, dry (D)

PVGy	Pinus strobus/Vaccinium angustifolium-Gaylussacia baccata
PEu	Pinus strobus/Euphorbia corollata
PVHa	Pinus strobus/Vaccinium angustifolium-Hamamelis virginiana
PVCr	Pinus strobus/Vaccinium angustifolium-Cornus racemosa
PVG	Pinus strobus/Vaccinium angustifolium-Gaultheria procumbens
PVRh	Pinus strobus/Vaccinium angustifolium-Rubus hispidus

9. South, dry-mesic (DM)

ArDe-V	Acer rubrum/Desmodium glutinosum, Vaccinium angustifolium variant
ArDe	Acer rubrum/Desmodium glutinosum
AQVb-Gr	Acer saccharum-Quercus rubra/Viburnum acerifolium, Geranium maculatum variant
ArCi	Acer rubrum/Circaea quadrisulcata
ArCi-Ph	Acer rubrum/Circaea quadrisulcata, Phryma leptostachya variant
AArVb	Acer saccharum-Acer rubrum/Viburnum acerifolium
AArL	Acer saccharum-Acer rubrum/Lysimachia quadrifolia

10. South, dry-mesic to mesic (DM-M)

ATiDe-Ha	Acer saccharum-Tilia americana/Desmodium glutinosum, Hamamelis virginiana variant
ATiDe	Acer saccharum-Tilia americana/Desmodium glutinosum
ATiDe-As	Acer saccharum-Tilia americana/Desmodium glutinosum, Arisaema atrorubens variant
ATiFrCi	Acer saccharum-Tilia americana-Fraxinus americana/Circaea quadrisulcata
ATiFrVb	Acer saccharum-Tilia americana-Fraxinus americana/Viburnum spp.
AFrDe	Acer saccharum-Fraxinus americana/Desmodium glutinosum
AFrDeO	Acer saccharum-Fraxinus americana/Desmodium glutinosum-Osmorhiza claytoni

11. South, dry-mesic to mesic (phase) DM-M (phase)

ATiDe(Pr)	Acer saccharum-Tilia americana/Desmodium glutinosum, Prunus serotina phase
ATiCr(O)	Acer saccharum-Tilia americana/Cornus racemosa, Osmorhiza claytoni phase
ATiCr(As)	Acer saccharum-Tilia americana/Cornus racemosa, Arisaema atrorubens phase
ATiFrVb(Cr)	Acer saccharum-Tilia americana-Fraxinus americana/Viburnum spp., Cornus racemosa phase
AFrDe(Vb)	Acer saccharum-Fraxinus americana/Desmodium glutinosum, Viburnum spp. phase

12. South, mesic (M)

ATTr	Acer saccharum-Tsuga canadensis/Trientalis borealis
AFTD	Acer saccharum-Fagus grandifolia-Tsuga canadensis/Dryopteris spinulosa
ATiSa-De	Acer saccharum-Tilia americana/Sanguinaria canadensis, Desmodium glutinosum variant
ATiSa	Acer saccharum-Tilia americana/Sanguinaria canadensis
ATiFrCa	Acer saccharum-Tilia americana-Fraxinus americana/Caulophyllum thalictroides
ATiCa-La	Acer saccharum-Tilia americana/Caulophyllum thalictroides, Laportea canadensis variant
ATiCa	Acer saccharum-Tilia americana/Caulophyllum thalictroides
ATiCa-Al	Acer saccharum-Tilia americana/Caulophyllum thalictroides, Allium tricoccum variant
ATiH	Acer saccharum-Tilia americana/Hydrophyllum virginianum
AFH	Acer saccharum-Fagus grandifolia/Hydrophyllum virginianum
AFAs	Acer saccharum-Fagus grandifolia/Arisaema atrorubens

AFAs-O	Acer saccharum-Fagus grandifolia/Arisaema atrorubens, Osmorhiza claytoni variant

13. South, mesic (phase) M (phase)

ATiAs(De)	Acer saccharum-Tilia americana/Arisaema atrorubens, Desmodium glutinosum phase
ATiFrCa(O)	Acer saccharum-Tilia americana-Fraxinus americana/Caulophyllum thalictroides, Osmorhiza claytoni phase

14. South, mesic to wet-mesic (M-WM)

Hydromesic sites; no specific habitat types defined

15. South, wet-mesic to wet (WM-W)

Lowland sites; no specific habitat types defined

16. No type identified

No habitat type was identified on the plot location

Terms and Definitions

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

Commercial species.—Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam or pin cherry.)

County and municipal land.—Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Diameter class.—A classification of trees based on diameter outside bark, measured at breast height 4.5 feet above the ground. (Note: d.b.h. is the common abbreviation for diameter at breast height.) Two-inch diameter classes are commonly used in Forest Inventory and Analysis, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h.

Environmental gradient.—An entire range of site conditions in a given climatic region, expressed in terms of available soil moisture and nutrients. The following segments (synonym: physiographic classes) of the gradient are used in this report:

Dry (Xeric) sites.—Very dry soils where excessive drainage seriously limits both growth and species occurrence. Example: sandy jack pine plains.

Dry-mesic (Xeromesic) sites.—Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. (Intermediate, between dry and mesic.) Example: red oak-red maple forest.

Mesic-sites.—Sites characterized by intermediate moisture regime, i.e., neither decidedly wet nor dry. Growth and species occurrence are limited only by climate. Example: typical sugar maple-basswood forest.

Wet-mesic (Hydromesic) sites.—Moderately wet soils where insufficient drainage or occasional flooding limits growth and species occurrence to some extent. Example: moderately drained bottomland hardwood sites.

Wet (Hydric) sites.—Very wet sites where excess water seriously limits both growth and species occurrence. Example: black ash and black spruce swamps.

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

Forest land.—Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and/or number of trees, age or size, and spacing.) The minimum area for classification of forest land is 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, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide. (See Timberland, Reserved forest land, Other forest land, and Stocking.)

Forest type.—A classification of forest land based on the species forming a plurality of live tree stocking. The associated species for each forest type are based on net volume of growing stock and all live biomass by species group. Major forest types in the State are:

Jack pine.—Forests in which jack pine comprises a plurality of the stocking. Species commonly associated with the jack pine forest type in Wisconsin include red pine, red oaks, aspen, and eastern white pine.

Red pine.—Forests in which red pine comprises a plurality of the stocking. Species commonly associated with the red pine forest type in Wisconsin include eastern white pine, jack pine, and aspen.

White pine.—Forests in which eastern white pine comprises a plurality of the stocking. Species commonly associated with the eastern white pine forest type in Wisconsin include red pine, aspen, red maple, paper birch, and red oak.

Balsam fir.—Forests in which balsam fir and white spruce comprise a plurality of the stocking, with balsam fir the most common. Species commonly associated with the balsam fir forest type in Wisconsin include white spruce, aspen, northern white-cedar, tamarack, paper birch, red maple, black spruce, and eastern white pine.

White spruce.—Forests in which white spruce and balsam fir comprise a plurality of the stocking, with white spruce the most common. Species commonly associated with the white spruce forest type in Wisconsin include aspen, paper birch, balsam fir, eastern white pine, red maple, and northern white-cedar.

Black spruce.—Forests in which swamp conifers comprise a plurality of the stocking, with black spruce the most common. Species commonly associated with the black spruce forest type in Wisconsin include tamarack, balsam fir, eastern white pine, northern white-cedar, aspen, jack pine, and paper birch.

Northern white-cedar.—Forests in which swamp conifers comprise a plurality of the stocking, with northern white-cedar the most common. Species commonly associated with the northern white-cedar forest type in Wisconsin include balsam fir, paper birch, black spruce, tamarack, black ash, red maple, and aspen.

Tamarack.—Forests in which swamp conifers comprise a plurality of the stocking, with tamarack the most common. Species commonly associated with the tamarack forest type in Wisconsin include northern white-cedar, black spruce, red maple, white pine, balsam fir, and paper birch.

Oak-hickory.—Forests in which northern red oak, white oak, bur oak, or hickories, singly or in combination, comprise a plurality of the stocking. Species commonly associated with the oak-hickory forest type in Wisconsin include red maple, aspen, and black cherry.

Elm-ash-soft maple.—Forests in which lowland elm, ash, red maple, silver maple, and cottonwood, singly or in combination, comprise a plurality of the stocking. Species commonly associated with the elm-ash-soft maple forest type in Wisconsin include northern white-cedar, aspen, cottonwood, and balsam fir.

Maple-basswood.—Forests in which sugar maple, yellow birch, American elm, and red maple, singly or in combination, comprise a plurality of the stocking. Species commonly associated with the maple-beech-birch forest type in Wisconsin include basswood, eastern hemlock, green and white ash, aspen, black cherry, and select red oaks.

Aspen.—Forests in which quaking aspen or bigtooth aspen, singly or in combination, comprise a plurality of the stocking. Species commonly associated with the aspen forest type in Wisconsin include red maple, paper birch, balsam fir, and select red oaks.

Paper birch.—Forests in which paper birch comprises a plurality of the stocking. Species commonly associated with the paper birch forest type in Wisconsin include aspen, red maple, balsam fir, northern white-cedar, sugar maple, and balsam poplar.

Balsam poplar.—Forests in which balsam poplar comprises a plurality of the stocking. Species commonly associated with the balsam poplar forest type in Wisconsin include balsam fir, aspen, northern white-cedar, paper birch, black ash, and white spruce.

Growing-stock tree.—A live tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.—Net volume in cubic feet of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Habitat type.—An aggregation of units of land capable of producing similar plant communities at climax, and having similar potential productivity.

Habitat type group.—A group of habitat types characterized by similar soil moisture and nutrient regimes and similar potential productivity.

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

Miscellaneous Federal land.—Federal land other than National Forest and land administered by the Bureau of Land Management or Bureau of Indian Affairs.

National Forest land.—Federal land that has been legally designated as National Forest or purchase units, and other land administered by the USDA Forest Service.

Net volume.—Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

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

Nonforest land.—Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, active Christmas tree plantations as indicated by annual shearing, orchards, nurseries, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land.) If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in area to qualify as nonforest land.

Nonforest land without trees.—Nonforest land with no live trees present.

Nonforest land with trees.—Nonforest land with one or more trees per acre at least 5 inches d.b.h.

Nonstocked land.—Timberland less than 16.7 percent stocked with all live trees.

Other forest land.—Forest land not capable of producing 20 cubic feet per acre per year of industrial wood crops under natural conditions and not associated with urban or rural development. Many of these sites contain tree species that are not currently utilized for industrial wood production or trees of poor form, small size, or inferior quality that are unfit for most industrial products. Unproductivity may be the result of adverse site conditions such as sterile soil, dry climate, poor drainage, high elevation, and rockiness. This land is not withdrawn from timber utilization.

Ownership size class.—The amount of timberland owned by one owner, regardless of the number of parcels.

Plantation.—An artificially reforested area sufficiently productive to qualify as timberland. The planted species is not necessarily predominant. Christmas tree plantations, which are considered cropland, are not included.

Poletimber tree.—A live tree of commercial species at least 5.0 inches d.b.h., but smaller than sawtimber size.

Potential productivity class.—A classification of forest land in terms of inherent capacity to grow crops of industrial wood. The class identifies the potential growth in merchantable cubic feet/acre/year at culmination of mean annual increment of fully stocked natural stands.

Reserved forest land.—Forest land withdrawn from timber utilization through statute, administrative regulation, or designation. Note: historically, Christmas tree plantations were classified as reserved forest land. However, Christmas tree plantations are now classified as cropland.

Sapling.—A live tree 1.0 to 5.0 inches d.b.h.

Sapling-seedling stand.—(See Stand-size class.)

Sawtimber stand.—(See Stand-size class.)

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

Sawtimber volume.—Net volume of the sawlog portion of live sawtimber in board feet, International 1/4-inch rule (unless specified otherwise), from stump to a minimum 7.0 inches top d.o.b. for softwoods and a minimum 9.0 inches top d.o.b. for hardwoods.

Seedling.—A live tree less than 1.0 inch d.b.h. that is expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

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.

Softwoods.—Coniferous trees, usually evergreen, having needles or scale-like leaves.

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

Stand-age class.—A classification based on age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-size class.—A classification of stocked (see Stocking) forest land based on the size class of live trees on the area: that is, sawtimber, poletimber, or seedlings and saplings.

Sawtimber stands.—Stands with half or more of live tree stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Poletimber stands.—Stands with half or more of live tree stocking in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

Sapling-seedling stands.—Stands with more than half of the live tree stocking in saplings and/or seedlings.

Stocking.—The degree of occupancy of land by live trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land.

Timberland.—Forest land that is producing, or is capable of producing, more than 20 cubic feet per acre per year of industrial wood crops under natural conditions, that is not withdrawn from timber utilization, and that is not associated with urban or rural development. Currently inaccessible and inoperable areas are included. (Timberland was formerly called commercial forest land.

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

Tree Species Groups in Wisconsin (Little 1981)

FIA species group/species	Species group synonym	Scientific name
Softwoods		
Balsam fir		*Abies balsamea*
Eastern redcedar		*Juniperus virginiana*
Tamarack		*Larix laricina*
White spruce		*Picea glauca*
Black spruce		*Picea mariana*
White pine		*Pinus strobus*
Red pine		*Pinus resinosa*
Jack pine		*Pinus banksiana*
Northern white-cedar		*Thuja occidentalis*
Hemlock		*Tsuga canadensis*
Other softwoods		
European larch†		*Larix decidua*
Norway spruce		*Picea abies*
Colorado spruce†		*Picea pungens*
Scotch pine		*Pinus sylvestris*

FIA species group/species	Species group synonym	Scientific name
Hardwoods		
Hard maples	Sugar maple	
Black maple†		*Acer nigrum*
Sugar maple		*Acer saccharum*
Soft maples	Red maple	
Red maple		*Acer rubrum*
Silver maple†		*Acer saccharinum*
Yellow birch		*Betula alleghaniensis*
River birch		*Betula nigra*
Paper birch		*Betula papyrifera*
Select hickory	Shagbark hickory	*Carya ovata*
Other hickory	Bitternut hickory	*C. cordiformis*
Hackberry		*Celtis occidentalis*
Beech		*Fagus grandifolia*
White and green ash		*Fraxinus americana, F. pennsylvanica*
Black ash		*Fraxinus nigra*
Butternut		*Juglans cinerea*
Black walnut		*Juglans nigra*
Balsam poplar		*Populus balsamifera*
Cottonwood		*Populus deltoides*
Bigtooth aspen		*Populus grandidentata*
Quaking aspen		*Populus tremuloides*
Black cherry		*Prunus serotina*
Select white oaks	White/bur oak	
White oak		*Quercus alba*
Swamp white oak†		*Quercus bicolor*
Bur oak		*Quercus macrocarpa*
Chinkapin oak†		*Quercus muehlenbergii*
Select red oak	Northern red oak	*Quercus rubra*
Other red oaks	Black/n. pin oak	
Northern pin oak		*Quercus ellipsoidalis*
Black oak		*Quercus velutina*
Willow		*Salix nigra*
Basswood		*Tilia americana*
Elms		
American elm		*Ulmus americana*
Siberian elm†		*Ulmus pumila*
Slippery elm		*Ulmus rubra*
Rock elm†		*Ulmus thomasii*
Other hardwoods	Other hardwoods	
Boxelder		*Acer negundo*
Northern catalpa†		*Catalpa speciosa*
Honeylocust†		*Gleditsia triacanthos*
Red mulberry†		*Morus rubra*
Black tupelo†		*Nyssa sylvatica* var. *sylvatica*
White poplar†		*Populus alba*
Black locust		*Robinia pseudoacacia*
Noncommercial species	Noncommercial species	
Striped maple†		*Acer pensylvanicum*
Mountain maple		*Acer spicatum*
Ailanthus†		*Ailanthus altissima*

American hornbeam	*Carpinus caroliniana*
Flowering dogwood†	*Cornus florida*
Hawthorn	*Crataegus* spp.
Apple†	*Malus* spp.
Eastern hophornbeam	*Ostrya virginiana*
Pincherry	*Prunus pennsylvanica*
Wild plum†	*Prunus* spp.
Chokecherry	*Prunus virginiana*
Peachleaf willow†	*Salix amygdaloides*
Diamond willow†	*Salix bebbiana*
American mountain ash†	*Sorbus americana*

† Minor component of species group.

Survey Accuracy

The following tabulation shows how sampling errors decrease as area and net growing-stock volume increase. (See Survey Procedures in the Introduction)

Area of forest land		Net growing-stock volume	
Thousand acres	Sampling error (percent)	Thousand cubic feet	Sampling error (percent)
15,964.8	0.28	18,763,426	0.77
15,000.0	0.29	16,000,000	0.84
10,000.0	0.35	14,000,000	0.90
5,000.0	0.50	12,000,000	0.97
3,000.0	0.64	10,000,000	1.06
1,000.0	1.11	8,000,000	1.19
800.0	1.24	6,000,000	1.37
600.0	1.43	4,000,000	1.68
400.0	1.75	2,000,000	2.37
200.0	2.48	1,000,000	3.35
100.0	3.51	800,000	3.75
80.0	3.92	600,000	4.33
60.0	4.53	400,000	5.30
40.0	5.55	200,000	7.50
20.0	7.85	100,000	10.60
10.0	11.10	75,000	12.24
8.0	12.41	50,000	14.99
6.0	14.32	25,000	21.20
4.0	17.54	10,000	33.52
2.0	24.81	7,500	38.71
1.0	35.09	5,000	47.41
0.5	49.62		

Note: smaller areas and growing-stock volumes have errors > 50 percent.

Underrepresented Habitat Types

These types were not adequately represented in the sample. Data from these types contributed to habitat type group pools, but comparisons among individual habitat types are not statistically valid.

QAc	Quercus macrocarpa/ Arctostaphylos uva-ursi
ArQTr	Acer rubrum-Quercus ellipsoidalis/Trientalis borealis
QArE	Quercus rubra-Acer rubrum/ Epigaea repens
QAp	Quercus alba-Quercus ellipsoidalis/Amorpha canescens
PAm-At	Pinus strobus/Amphicarpa bracteata, Athyrium filix-femina variant
PMV-Q	Pinus strobus/Maianthemum canadense-Vaccinium angustifolium, Quercus ellipsoidalis variant
FArAa	Fagus grandifolia-Acer rubrum/ Aralia nudicaulis
ACl-V	Acer saccharum/Clintonia borealis, Vaccinium spp. variant
ACl	Acer saccharum/Clintonia borealis
AFTPo	Acer saccharum-Fagus grandifolia-Tsuga canadensis/Polygonatum pubescens
AVb	Acer saccharum/Viburnum acerifolium
AFSt	Acer saccharum-Fagus grandifolia/Streptopus roseus
AAs	Acer saccharum/Arisaema atrorubens
AFAl	Acer saccharum-Fagus grandifolia/Allium tricoccum
AHVb	Acer saccharum/Hydrophyllum virginianum-Viburnum acerifolium
AH-Ci	Acer saccharum/Hydrophyllum virginianum, Circaea quadrisulcata variant
ArCo	Acer rubrum/Cornus canadensis
AArVb	Acer saccharum-Acer rubrum/ Viburnum acerifolium
AArL	Acer saccharum-Acer rubrum/ Lysimachia quadrifolia
ATiDe-Ha	Acer saccharum-Tilia americana/Desmodium glutinosum, Hamamelis virginiana variant
ATiDe-As	Acer saccharum-Tilia americana/Desmodium glutinosum, Arisaema atrorubens variant
ATiFrCi	Acer saccharum-Tilia americana-Fraxinus americana/Circaea quadrisulcata
AFrDe	Acer saccharum-Fraxinus americana/Desmodium glutinosum
AFrDeO	Acer saccharum-Fraxinus americana/Desmodium glutinosum-Osmorhiza claytoni
AFrDe(Vb)	Acer saccharum-Fraxinus americana/Desmodium glutinosum, Viburnum spp. phase
ATTr	Acer saccharum-Tsuga canadensis/Trientalis borealis
AFTD	Acer saccharum-Fagus grandifolia-Tsuga canadensis/Dryopteris spinulosa
ATiFrCa	Acer saccharum-Tilia americana-Fraxinus americana/Caulophyllum thalictroides
ATiCa-Al	Acer saccharum-Tilia americana/Caulophyllum thalictroides, Allium tricoccum variant
AFAs-O	Acer saccharum-Fagus grandifolia/Arisaema atrorubens, Osmorhiza claytoni variant

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APPENDIX C

DATA TABLES

Tables 1-25 present the raw data from which most of the graphs and charts in this report were prepared.

Table 1.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 1, Wisconsin, 1996

Table 2.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 2, Wisconsin, 1996

Table 3.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 3, Wisconsin, 1996

Table 4.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 4, Wisconsin, 1996

Table 5.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 5, Wisconsin, 1996

Table 6.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 6, Wisconsin, 1996

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Table 11.—Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 11, Wisconsin, 1996

Table 12.—Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212H and its Subsections, Wisconsin, 1996

Table 13.—Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212J and its Subsections, Wisconsin, 1996

Table 14.—Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212K and its Subsections, Wisconsin, 1996

Table 15.—Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 222K and its Subsections, Wisconsin, 1996

Table 16.—Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 222L and 222M and their Subsections, Wisconsin, 1996

Table 17.—Area of forest land by habitat type group and habitat type by owner, Wisconsin, 1996

Table 18.—Area of forest land by habitat type group, land class, and forest type, Wisconsin, 1996

Table 1.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 1, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County			
		Barron	Burnett	Polk	Washburn
1. North very dry to dry					
QGCe	152.3	--	***	--	**
QAp	42.5	--	*	*	--
Total	194.8	0.0	112.5	18.9	63.4
2. North dry to dry-mesic					
PAm	156.1	*	**	*	**
PAm-At	6.4	--	*	--	--
Total	162.5	11.7	75.1	12.0	63.7
3. North dry-mesic					
AVDe	106.3	**	*	*	**
AAt	131.4	**	*	**	**
Total	237.7	39.7	24.5	44.0	129.5
4. North mesic					
AAs	6.0	--	*	--	--
ACaCi	114.2	**	*	**	*
ACaCi-H	22.1	**	--	--	--
AViO	6.3	--	--	--	*
Total	148.6	46.6	19.2	62.0	20.8
5. North mesic to wet-mesic					
ArCo	1.4	--	--	--	--
ACaCi-I	77.5	*	*	**	*
Hydromesic north	53.4	*	*	--	*
Total	132.3	26.1	24.1	62.5	19.6
6. North wet-mesic to wet					
Lowland north	120.7	**	**	*	**
Total	120.7	21.6	36.3	15.7	47.1
16. No type identified	103.7	8.1	29.1	42.4	24.1
All habitat types	1,100.3	153.8	320.8	257.5	368.2

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 2.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 2, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County	
		Bayfield	Douglas
1. North very dry to dry			
QAc	97.5	--	**
ArQTr	46.4	*	*
ArQV	1.0	--	--
ArQV-Sm	156.9	**	*
Total	301.8	152.8	149.0
2. North dry to dry-mesic			
PMV	14.7	*	--
PMV-Po	67.5	*	--
Total	82.2	82.2	0.0
3. North dry-mesic			
AVVb	43.3	*	--
ACl-V	45.8	--	*
ACl	27.3	--	*
Total	116.4	43.3	73.1
4. North mesic			
ATM	95.8	**	*
AAs	25.4	--	*
ATD	4.4	--	--
AViO	4.0	--	--
Total	129.6	91.5	38.1
5. North mesic to wet-mesic			
ArCo	48.7	--	*
TMC-V	9.1	*	--
TMC	17.8	*	--
TMC-D	1.7	--	--
ATD-I	5.7	--	--
AViO-I	3.9	--	--
Hydromesic north	87.6	*	*
Total	174.5	87.2	87.3
6. North wet-mesic to wet			
Lowland north	204.0	*	**
Total	204.0	77.8	126.2
7. Superior clay belt			
AbArSn	158.8	*	**
AbASnMi	91.2	*	*
Total	250.0	144.4	105.6
16. No type identified	186.2	116.0	70.2
All habitat types	1,444.7	795.2	649.5

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 3.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 3, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County											
		Ashland	Florence	Forest	Iron	Langlade	Lincoln	Oneida	Price	Rusk	Sawyer	Taylor	Vilas
1. North very dry to dry													
QArE	3.3	--	--	--	--	--	--	--	--	--	--	--	--
ArQV	163.2	--	*	--	--	--	*	**	--	--	--	--	**
Total	166.5	0.0	25.0	0.0	0.0	0.0	7.1	60.5	0.0	0.0	4.0	0.0	69.9
2. North dry to dry-mesic													
PAm	7.4	--	--	--	--	--	--	--	--	--	*	--	--
PMV	287.2	--	*	*	*	*	*	**	--	*	*	--	**
Total	294.6	3.0	7.6	14.2	8.8	4.3	22.1	90.4	6.0	5.9	25.1	0.0	107.2
3. North dry-mesic													
AVVb	153.4	*	*	--	--	--	*	**	--	*	*	*	*
AVDe	48.8	--	--	--	--	--	--	--	--	*	*	--	--
AQVb	15.2	--	*	--	--	*	*	--	--	--	--	--	--
AQVb-Ha	4.5	--	--	--	--	*	--	--	--	--	--	--	--
AAt	79.6	--	--	--	--	--	--	--	--	*	*	--	--
Total	301.5	5.3	10.2	1.5	0.0	12.9	7.2	53.6	2.4	48.9	124.5	10.3	24.7
4. North mesic													
ATM	594.1	*	**	**	**	**	**	*	*	*	**	**	*
ATD	185.9	*	*	**	*	--	--	*	*	--	*	--	*
ATDH	21.7	--	--	--	--	*	--	--	--	--	--	--	--
ACaCi	31.3	--	--	--	--	--	--	--	--	*	*	--	--
ACaCi-H	50.2	--	--	--	--	--	--	--	--	**	*	--	--
AViO	455.4	*	***	***	*	*	*	*	*	*	*	*	*
AViO-Ca	27.6	*	--	--	*	--	--	--	--	--	--	--	--
AH	145.1	--	--	*	--	**	*	--	--	*	--	*	--
Total	1,511.3	69.9	123.2	318.4	108.2	195.2	103.4	53.5	83.3	106.4	185.7	84.8	79.3
5. North mesic to wet-mesic													
TMC-V	202.3	--	*	*	*	*	*	*	*	--	*	*	*
TMC	341.9	*	*	*	**	*	**	*	*	--	*	*	*
TMC-D	56.6	*	*	*	*	--	*	--	--	--	*	*	--
ATD-I	43.5	*	*	--	*	--	--	--	--	--	--	--	--
ACaCi-I	13.3	--	--	--	--	--	--	--	--	*	--	--	--
AViO-I	122.7	*	*	*	*	--	*	--	*	*	--	--	--
AH-I	48.1	--	--	--	--	*	*	--	--	*	--	*	--
Hydromesic north	617.1	**	*	*	**	*	*	*	***	**	**	**	*
Total	1,445.5	133.6	49.4	82.1	182.6	63.1	109.0	106.6	237.5	118.1	154.7	127.1	81.7
6. North wet-mesic to wet													
Lowland north	1,186.6	**	**	**	**	***	**	**	***	**	**	**	**
Total	1,186.6	125.0	28.5	114.6	98.8	107.3	83.8	138.3	208.2	53.0	96.7	70.4	62.0
7. Superior clay belt													
AbArSn	63.3	**	--	--	--	--	--	--	--	--	--	--	--
AbASnMi	25.8	*	--	--	--	--	--	--	--	--	--	--	--
Total	89.1	82.2	0.0	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16. No type identified	719.5	119.9	29.8	61.8	36.0	26.6	64.4	70.7	63.4	53.3	76.8	75.5	41.3
All habitat types	5,714.6	538.9	273.7	592.6	441.3	409.4	397.0	573.6	600.8	385.6	667.5	368.1	466.1

Frequency of occurrence classes

* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 4.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 4, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County				
		Door	Marinette	Menominee	Oconto	Shawano
1. North very dry to dry						
QV	129.0	--	**	*	*	*
Total	129.0	0.0	104.5	5.5	15.7	3.3
2. North dry to dry-mesic						
PMV-Q	26.2	--	--	*	--	*
PMV-Vb	147.5	--	**	--	*	--
Total	173.7	0.0	133.0	10.3	17.8	12.6
3. North dry-mesic						
FArAa	8.6	*	--	--	--	--
AVVb	3.3	--	--	--	--	--
AQVb	138.7	--	*	*	**	*
AQVb-Ha	55.7	--	--	*	*	*
AFTPo	7.3	*	--	--	--	--
AFVb	81.2	--	*	**	*	*
Total	294.8	12.8	92.5	51.9	115.0	22.6
4. North mesic						
ATM	63.1	--	*	*	*	*
AFSt	10.0	*	--	--	--	--
ATFD	48.5	--	--	*	*	*
ATD	2.6	--	--	--	--	--
ATDH	38.8	--	--	**	*	*
AFAl	22.6	**	--	--	--	--
AFAd	36.5	--	*	*	*	*
AViO	18.0	--	*	--	--	--
AH	72.4	--	*	**	--	**
Total	312.5	32.6	67.9	91.9	63.3	56.8
5. North mesic to wet-mesic						
TMC-V	28.7	--	*	--	--	--
TMC	29.4	--	*	*	*	--
AH-l	3.3	--	--	--	--	*
Hydromesic north	95.8	*	*	*	*	*
Total	157.2	8.5	79.7	19.4	21.7	27.9
6. North wet-mesic to wet						
Lowland north	387.2	***	**	**	***	***
Total	387.2	41.3	109.6	25.3	121.4	89.6
12. South mesic						
AFH	1.7	--	--	--	--	--
Total	1.7	1.7	0.0	0.0	0.0	0.0
16. No type identified	190.0	17.0	73.2	11.6	27.8	60.4
All habitat types	1,646.1	113.9	660.4	215.9	382.7	273.2

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 5.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 5, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County	
		Clark	Marathon
2. North dry to dry-mesic			
PMV-Q	2.4	--	--
Total	2.4	0.0	2.4
3. North dry-mesic			
AQVb-V	30.1	*	--
AQVb	17.7	--	*
AVb	22.4	*	--
Total	70.2	52.5	17.7
4. North mesic			
ATM	15.0	--	*
AHVb	15.1	--	*
AH	71.0	*	**
Total	101.1	13.2	87.9
5. North mesic to wet-mesic			
TMC-V	1.9	--	--
TMC	13.6	--	*
TMC-D	5.6	--	*
ATM-As	90.4	--	**
AViO-I	3.3	--	--
AH-I	87.1	**	*
Hydromesic north	52.0	**	*
Total	253.9	104.6	149.3
6. North wet-mesic to wet			
Lowland north	76.5	*	**
Total	76.5	19.4	57.1
8. South dry			
PEu	0.0	--	--
PVHa	36.5	**	--
PVG	1.6	--	--
PVRh	80.4	**	--
Total	118.5	116.9	1.6
16. No type identified	74.5	14.4	60.1
All habitat types	697.1	321.0	376.1

Frequency of occurrence classes

* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 6.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 6, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County								
		Buffalo	Chippewa	Dunn	Eau Claire	Jackson	Pepin	Pierce	St.Croix	Trempealeau
3. North dry-mesic										
AQVb-V	35.2	--	**	--	--	--	--	--	--	--
Total	35.2	0.0	35.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. North mesic										
ATM	17.3	--	*	--	--	--	--	--	--	--
AH	35.8	--	**	--	--	--	--	--	--	--
Total	53.1	0.0	53.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5. North mesic to wet-mesic										
Hydromesic north	2.5	--	*	--	--	--	--	--	--	--
Total	2.5	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6. North wet-mesic to wet										
Lowland north	11.6	--	*	--	--	--	--	--	--	--
Total	11.6	0.0	11.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8. South dry										
PVGy	115.0	--	--	--	*	***	--	--	--	--
PVHa	48.9	--	*	--	**	*	--	--	--	--
PVCr	59.1	--	--	*	**	*	--	--	--	*
PVRh	110.4	--	--	--	**	**	--	--	--	--
Total	333.4	0.0	11.1	4.2	85.0	227.8	0.0	0.0	0.0	5.3
9. South dry-mesic										
ArDe-V	85.7	--	*	*	**	*	--	--	--	*
ArCi	71.6	*	*	**	*	--	***	*	*	*
ArCi-Ph	257.6	***	*	*	**	**	**	*	*	***
AArVb	44.0	--	*	*	*	*	--	--	--	--
Total	458.9	68.1	40.1	66.8	63.7	77.3	29.6	8.8	8.4	96.1
12. South mesic										
ATiSa-De	319.5	***	**	**	--	*	***	****	***	***
ATiCa-La	61.3	*	--	**	--	--	*	*	**	--
Total	380.8	89.0	32.4	57.4	0.0	5.8	22.1	72.5	52.9	48.7
14. South mesic to wet-mesic										
Hydromesic south	13.4	--	*	--	--	--	--	--	--	--
Total	13.4	0.5	12.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0
15. South wet-mesic to wet										
Lowland south	116.3	*	*	**	*	**	*	*	*	*
Total	116.3	17.1	1.6	27.5	3.4	38.6	6.1	6.9	3.1	12.0
16. No type identified	142.7	14.7	32.3	29.1	10.3	17.3	3.3	9.9	14.5	11.3
All habitat types	1,547.9	189.4	232.4	185.4	162.4	366.8	61.1	98.1	78.9	173.4

Frequency of occurrence classes

* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 7.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 7, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County					
		Crawford	La Crosse	Monroe	Richland	Sauk	Vernon
8. South dry							
PVGy	68.8	--	*	**	--	*	--
PVCr	39.8	--	--	**	--	*	--
PVRh	46.9	--	--	**	--	*	--
Total	155.5	0.0	10.2	134.8	0.0	10.5	0.0
9. South dry-mesic							
ArDe-V	51.1	--	*	*	*	*	*
ArCi-Ph	258.2	**	****	**	**	***	**
AArL	4.8	--	--	--	--	*	--
Total	314.1	39.1	79.2	67.2	25.5	67.0	36.1
10. South dry-mesic to mesic							
ATiDe-Ha	17.1	--	--	--	--	*	--
ATiDe-As	17.2	--	--	--	--	*	--
ATiDe	181.8	**	*	*	***	**	***
Total	216.1	33.7	2.4	14.5	45.8	60.9	58.8
11. South dry-mesic to mesic (phase)							
ATiDe(Pr)	92.4	*	*	*	*	*	**
Total	92.4	10.8	12.9	9.8	11.9	13.0	34.0
12. South mesic							
ATTr	0.0	--	--	--	--	--	--
ATiSa	42.8	*	--	*	**	--	*
ATiCa	183.9	**	*	*	**	*	***
ATiCa-Al	7.7	--	--	--	--	*	--
Total	234.4	37.8	10.2	29.2	60.3	16.3	80.6
14. South mesic to wet-mesic							
Hydromesic south	3.0	*	--	--	--	--	--
Total	3.0	3.0	0.0	0.0	0.0	0.0	0.0
15. South wet-mesic to wet							
Lowland south	73.4	*	**	*	*	*	*
Total	73.4	7.8	16.4	12.2	13.5	18.4	5.1
16. No type identified	93.1	52.2	5.2	5.7	10.0	9.1	10.9
All habitat types	1,182.0	184.4	136.5	273.4	167.0	195.2	225.5

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 8.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 8, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County		
		Grant	Iowa	Lafayette
11. South dry-mesic to mesic (phase)				
ATiCr(O)	166.7	***	***	****
ATiCr(As)	17.1	--	*	*
Total	183.8	93.5	66.1	24.2
12. South mesic				
ATiH	75.0	**	**	*
Total	75.0	48.2	23.3	3.5
13. South mesic (phase)				
ATiAs(De)	16.9	*	*	*
Total	16.9	9.0	5.8	2.1
14. South mesic to wet-mesic				
Hydromesic south	8.4	*	*	*
Total	8.4	3.2	2.9	2.3
15. South wet-mesic to wet				
Lowland south	27.7	*	**	--
Total	27.7	11.7	16.0	0.0
16. No type identified	62.1	30.1	25.4	6.6
All habitat types	373.9	195.7	139.5	38.7

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 9.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 9, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County							
		Adams	Green Lake	Juneau	Marquette	Portage	Waupaca	Waushara	Wood
3. North dry-mesic									
AVVb	3.3	--	--	--	--	--	--	--	--
AQVb-V	9.8	--	--	--	--	--	--	--	*
AQVb	13.4	--	--	--	--	*	--	--	--
AVb	5.2	--	--	--	--	--	--	--	*
AFVb	3.7	--	--	--	--	--	*	--	--
Total	35.4	0.0	0.0	0.0	0.0	16.7	3.7	0.0	15.0
4. North mesic									
ATM	6.8	--	--	--	--	*	*	--	*
AFAd	3.7	--	--	--	--	--	*	--	--
AHVb	2.7	--	--	--	--	--	--	--	*
AH	17.8	--	--	--	--	*	*	--	*
Total	31.0	0.0	0.0	0.0	0.0	6.5	16.1	0.0	8.4
5. North mesic to wet-mesic									
TMC	3.4	--	--	--	--	--	*	--	--
ATM-As	15.7	--	--	--	--	*	--	--	*
Hydromesic north	39.9	--	--	--	--	*	**	--	*
Total	59.0	0.0	0.0	0.0	0.0	0.0	27.1	0.0	31.9
6. North wet-mesic to wet									
Lowland north	60.8	--	--	--	--	*	**	--	*
Total	60.8	0.0	0.0	0.0	0.0	16.2	27.9	0.0	16.7
8. South dry									
PVGy	13.4	--	--	*	--	--	--	--	--
PEu	235.0	***	--	**	***	**	*	*	*
PVHa	22.7	--	--	--	--	--	--	--	**
PVCr	2.8	--	--	--	--	--	--	--	--
PVG	174.9	***	**	**	**	**	*	*	**
PVRh	97.1	--	--	**	--	--	--	--	**
Total	545.9	180.0	3.3	157.3	41.9	48.8	8.6	13.0	93.0
9. South dry-mesic									
ArDe-V	2.9	--	--	--	--	--	--	--	--
ArDe	157.5	**	*	--	***	**	*	****	*
AQVb-Gr	56.1	--	--	--	--	*	**	--	--
ArCi-Ph	26.7	--	--	*	--	--	--	--	--
Total	243.2	36.3	1.8	29.6	23.7	36.6	49.2	63.3	2.7
10. South dry-mesic to mesic									
ATiFrCi	22.4	--	***	--	--	--	*	*	--
Total	22.4	0.0	14.2	0.0	0.0	1.0	3.6	3.6	0.0
12. South mesic									
ATiSa	2.8	--	--	--	--	--	--	--	--
Total	2.8	0.0	0.0	2.8	0.0	0.0	0.0	0.0	0.0
14. South mesic to wet-mesic									
Hydromesic south	29.1	*	*	*	*	*	*	*	*
Total	29.1	6.3	0.0	8.7	4.8	0.0	0.0	6.0	3.3
15. South wet-mesic to wet									
Lowland south	150.1	*	***	**	**	*	**	**	*
Total	150.1	15.0	9.8	39.8	12.2	16.7	26.3	24.3	6.0
16. No type identified	171.4	15.5	1.1	33.5	13.2	31.3	20.9	17.5	38.4
All habitat types	1,351.1	253.1	30.2	271.7	95.8	173.8	183.4	127.7	215.4

Frequency of occurrence classes

* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 10.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 10, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County												
		Columbia	Dane	Dodge	Fond du Lac	Green	Jefferson	Kenosha	Racine	Rock	Walworth	Washington	Waukesha	Winnebago
8. South dry														
PVG	14.2	**	--	--	--	--	--	--	--	--	--	--	--	--
Total	14.2	14.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9. South dry-mesic														
ArDe	20.1	**	--	--	--	--	--	--	--	--	--	--	--	--
Total	20.1	20.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10. South dry-mesic to mesic														
ATiFrVb	82.3	*	*	**	***	--	*	***	****	**	***	*	***	--
Total	82.3	6.0	1.7	4.3	9.9	0.0	2.7	12.7	12.5	6.5	12.5	0.0	13.5	0.0
11. South dry-mesic to mesic (phase)														
ATiCr(O)	41.1	--	***	--	--	**	--	--	--	--	--	--	--	--
ATiCr(As)	26.6	--	**	--	--	**	--	--	--	--	--	--	--	--
ATiFrVb(Cr)	85.6	**	*	**	**	--	**	***	**	**	***	**	**	--
Total	153.3	21.7	53.9	5.6	2.7	17.7	7.3	8.1	1.8	7.3	11.1	10.7	5.4	0.0
12. South mesic														
ATiFrCa	24.4	--	*	*	*	--	*	--	--	--	*	**	--	**
ATiH	4.4	--	*	--	--	*	--	--	--	--	--	--	--	--
AFAs	16.0	--	--	--	*	--	--	--	--	--	--	**	--	--
AFAs-O	2.4	--	--	--	*	--	--	--	--	--	--	*	--	--
Total	47.2	0.0	9.7	2.7	5.5	0.9	3.3	0.0	0.0	0.0	2.2	18.4	0.0	4.5
13. South mesic (phase)														
ATiAs(De)	0.4	--	--	--	--	*	--	--	--	--	--	--	--	--
ATiFrCA(O)	57.6	***	*	--	--	--	**	--	--	***	*	--	*	--
Total	58.0	28.7	3.1	0.0	0.0	0.4	8.2	0.0	0.0	10.3	3.7	0.0	3.6	0.0
14. South mesic to wet-mesic														
Hydromesic south	15.9	--	--	*	*	--	*	--	--	--	--	*	--	***
Total	15.9	0.0	0.0	0.9	3.4	0.0	2.1	0.0	0.0	0.0	0.0	3.2	0.0	6.3
15. South wet-mesic to wet														
Lowland south	133.0	*	*	****	***	***	***	**	**	*	*	***	***	***
Total	133.0	4.3	3.6	24.6	10.5	11.2	22.4	3.1	4.0	2.3	1.2	18.8	17.7	9.3
16. No type identified	46.0	3.0	9.8	1.7	1.3	10.2	1.3	0.0	0.5	9.1	8.4	0.7	0.0	0.0
All habitat types	570.0	98.0	81.8	39.8	33.3	40.4	47.3	23.9	18.8	35.5	39.1	51.8	40.2	20.1

Frequency of occurrence classes

* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 11.--Area of forest land and estimated frequency of occurrence by habitat type group and habitat type by county for habitat type region 11, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	County							
		Brown	Calumet	Kewaunee	Manitowoc	Milwaukee	Outagamie	Ozaukee	Sheboygen
10. South dry-mesic to mesic									
ATiFrVb	7.5	--	--	--	--	--	--	**	*
AFrDe	0.0	--	--	--	--	--	--	--	*
AFrDeO	15.8	--	--	--	--	--	--	--	**
Total	23.3	0.0	0.0	0.0	0.0	0.0	0.0	4.1	19.2
11. South dry-mesic to mesic (phase)									
AFrDe(Vb)	7.4	--	--	--	--	--	--	--	**
Total	7.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
12. South mesic									
AFTD	5.2	*	--	**	*	--	--	--	--
AFH	47.5	**	**	*	***	--	*	**	*
AFAs	28.4	*	***	--	*	--	*	**	**
AFAs-O	8.2	**	*	--	*	--	--	*	*
Total	89.3	13.2	9.4	7.2	30.7	0.0	8.4	6.9	13.5
14. South mesic to wet-mesic									
Hydromesic south	38.9	**	*	*	**	****	**	**	*
Total	38.9	9.4	0.0	2.5	9.5	8.1	6.7	2.7	0.0
15. South wet-mesic to wet									
Lowland south	121.6	**	***	****	**	**	****	***	***
Total	121.6	8.0	5.2	26.2	15.3	0.0	41.1	5.5	20.3
16. No type identified	56.6	16.6	3.1	9.3	12.2	0.0	11.0	2.6	1.8
All habitat types	337.1	47.2	17.7	45.2	67.7	8.1	67.2	21.8	62.2

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 12. Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212H and its Subsections, Wisconsin, 1996

Habitat type group and habitat type	212H	Subsection			
		Hb	Hc	Hd	He
1. N. very dry to dry	*	*	-	-	*
QV		*	-	-	*
2. N. dry to dry-mesic	*	**	-	-	*
PMV-Q		*	-	-	-
PMV-Vb		*	-	-	*
3. N. dry-mesic	**	**	**	-	*
FArAa		-	-	-	*
AQVb		*	*	-	-
AQVb-Ha		*	*	-	-
AFTPo		-	-	-	*
AFVb		*	*	-	-
4. N. mesic	**	**	-	-	**
ATM		*	-	-	-
AFSt		-	-	-	*
ATFD		*	-	-	-
AFAl		-	-	-	**
AFAd		*	-	-	-
AH		*	-	-	-
5. N. mesic to wet-mesic	**	**	**	*	**
TMC-V		-	-	-	*
TMC		*	-	-	-
Hydromesic north		**	**	*	**
6. N. wet-mesic to wet	***	***	****	***	***
Lowland north		***	****	***	***
12. S. mesic	*	-	*	***	*
AFTD		-	-	*	*
AFH		-	*	***	*
AFAs		-	*	*	*
AFAs-O		-	*	*	*

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 13. Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212J and its Subsections, Wisconsin, 1996

Habitat type group and habitat type	212J	Subsection													
		Ja	Jb	Jc	Jd	Je	Jf	Jg	Jh	Ji	Jj	Jk	Jl	Jm	Js
1. N. very dry to dry	*	*	-	*	-	-	-	-	-	-	-	**	*	**	-
ArQV		-	-	-	-	-	-	-	-	-	-	*	*	**	-
QV		-	-	-	-	-	-	-	-	-	-	**	-	-	-
2. N. dry to dry-mesic	*	*	-	*	*	-	*	*	-	*	*	**	*	**	-
PAm		-	-	-	*	-	-	*	-	-	-	-	-	-	-
PMV		-	-	*	-	-	*	-	-	-	-	*	*	**	-
PMV-Q		-	-	-	-	-	-	-	-	*	-	-	-	-	-
PMV-Vb		-	-	-	-	-	-	-	-	-	*	**	*	-	-
PMV-Po		*	-	-	-	-	-	-	-	-	-	-	-	-	-
3. N. dry-mesic	**	*	-	*	***	*	**	**	*	*	**	**	*	*	*
AVVb		*	-	*	-	-	*	-	-	-	-	-	*	*	-
AVDe		-	-	*	**	-	*	*	-	-	-	-	-	-	-
AQVb-V		-	-	-	-	-	*	*	*	*	-	-	-	-	-
AQVb		-	-	-	-	-	-	-	-	*	**	*	*	-	*
AQVb-Ha		-	-	-	-	-	-	-	-	-	*	-	-	-	-
AAt		-	-	*	***	*	*	*	-	-	-	-	-	-	-
AVb		-	-	-	-	-	-	*	*	-	-	-	-	-	-
AFVb		-	-	-	-	-	-	-	-	-	*	*	-	-	-
4. N. mesic	***	*	****	**	**	***	***	**	-	**	***	**	****	**	**
ATM		*	***	*	-	**	**	-	-	*	*	*	**	*	*
ATFD		-	-	-	-	-	-	-	-	-	*	-	-	-	-
ATD		-	**	*	-	*	-	-	-	-	-	-	**	*	-
ATDH		-	-	-	-	-	-	-	-	-	*	-	-	-	-
ACaCi		-	-	-	**	-	*	*	-	-	-	-	-	-	-
ACaCi-H		-	-	-	-	*	*	*	-	-	-	-	-	-	-
AFAd		-	-	-	-	-	-	-	-	-	*	-	-	-	-
AViO		*	**	*	-	*	*	-	-	-	-	*	***	*	*
AHVb		-	-	-	-	-	-	-	-	*	-	-	-	-	-
AH		-	-	-	-	*	*	*	-	**	**	*	*	-	**
5. N. mesic to wet-mesic	***	**	**	***	**	***	**	***	*	***	**	**	**	**	***
TMC-V		-	-	*	-	*	*	-	-	-	-	*	*	*	*
TMC		*	*	**	-	*	*	-	-	*	*	*	*	*	*
TMC-D		-	-	*	-	*	-	-	-	-	-	-	*	-	-
ATM-As		-	-	-	-	-	-	-	-	***	-	-	-	-	*
ATD-I		-	*	*	-	*	-	-	-	-	-	-	-	-	-
ACaCi-I		-	-	-	**	*	-	*	-	-	-	-	-	-	-
AViO-I		-	*	*	-	*	-	-	-	-	-	-	*	-	*
AH-I		-	-	-	-	*	-	**	-	*	*	-	-	-	*
Hydromesic north		**	*	**	*	***	*	**	*	*	*	*	*	*	**
6. N. wet-mesic to wet	**	**	**	**	***	*	***	**	**	**	**	**	**	**	**	***
Lowland north		**	**	***	*	***	**	**	**	**	**	**	**	**	***
7. Superior clay belt	*	****	*	-	-	-	-	-	-	-	-	-	-	-	-
AbArSn		***	-	-	-	-	-	-	-	-	-	-	-	-	-
AbASnMi		**	*	-	-	-	-	-	-	-	-	-	-	-	-

(Table 13 continued on next page)

(Table 13 continued)

Habitat type group and habitat type	212J	Subsection Ja	Jb	Jc	Jd	Je	Jf	Jg	Jh	Ji	Jj	Jk	Jl	Jm	Js
8. S. dry	*	-	-	-	-	-	-	*	****	*	-	-	-	-	-
PVGy		-	-	-	-	-	-	-	*	-	-	-	-	-	-
PVHa		-	-	-	-	-	-	*	***	-	-	-	-	-	-
PVCr		-	-	-	-	-	-	*	*	-	-	-	-	-	-
PVG		-	-	-	-	-	-	-	-	*	-	-	-	-	-
PVRh		-	-	-	-	-	-	*	***	-	-	-	-	-	-
9. S. dry-mesic	-	-	-	-	-	-	-	*	-	*	*	-	-	-	-
ArDe-V		-	-	-	-	-	-	*	-	-	-	-	-	-	-
AQVb-Gr		-	-	-	-	-	-	-	-	*	*	-	-	-	-
ArCi		-	-	-	-	-	-	*	-	-	-	-	-	-	-
ArCi-Ph		-	-	-	-	-	-	*	-	-	-	-	-	-	-
AArVb		-	-	-	-	-	-	*	-	-	-	-	-	-	-
12. S. mesic	-	-	-	-	-	-	*	*	-	-	-	-	-	-	-
ATiSa-De		-	-	-	-	-	*	*	-	-	-	-	-	-	-

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 14. Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 212K and its Subsections, Wisconsin, 1996

Habitat type group and habitat type	212K	Subsection Ka	Subsection Kb
1. N. very dry to dry	***	****	*
QAc		**	-
ArQTr		**	-
QGCe		**	-
ArQV-Sm		**	*
QAp		*	-
2. N. dry to dry-mesic	**	**	*
PAm		**	*
PMV-Po		*	-
3. N. dry-mesic	*	*	**
AVDe		*	-
ACl-V		*	**
ACl		-	**
AAt		*	-
4. N. mesic	*	*	**
ATM		*	-
AAs		-	**
5. N. mesic to wet-mesic	**	*	***
ArCo		*	**
Hydromesic north		*	**
6. N. wet-mesic to wet	**	*	***
Lowland north		*	***

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 15. Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Section 222K and its Subsections, Wisconsin, 1996

Habitat type group and habitat type	222K	Subsection Ka	Kb	Kc	Kd	Ke	Kf	Kg	Kh
8. S. dry	***	****	**	-	**	-	-	-	-
PEu		**	**	-	-	-	-	-	-
PVGy		**	-	-	-	-	-	-	-
PVCr		*	-	-	-	-	-	-	-
PVHa		*	-	-	-	-	-	-	-
PVG		**	**	-	**	-	-	-	-
PVRh		**	-	-	-	-	-	-	-
9. S. dry-mesic	**	*	****	*	**	-	-	-	-
ArDe		*	***	*	**	-	-	-	-
AQVb-Gr		-	**	-	-	-	-	-	-
ArCi-Ph		*	-	-	-	-	-	-	-
10. S. dry-mesic to mesic	*	-	*	*	**	**	***	***	**
ATiFrCi		-	*	*	**	*	-	-	-
ATiFrVb		-	-	*	*	**	***	***	**
AFrDe		-	-	-	-	*	*	-	-
AFrDeO		-	-	-	-	*	*	-	-
11. S. dry-mesic to mesic (phase)	*	-	-	-	**	**	***	*	**
ATiFrVb(Cr)		-	-	-	**	**	**	*	**
AFrDe(Vb)		-	-	-	-	*	*	-	-
12. S. mesic	*	-	-	*	*	**	*	*	*
ATiFrCa		-	-	*	*	*	*	*	*
AFH		-	-	-	-	*	-	-	-
AFAs		-	-	-	-	*	*	-	-
AFAs-O		-	-	-	-	*	*	-	-
13. S. mesic (phase)	*	-	-	-	**	**	-	-	***
ATiFrCa(O)		-	-	-	**	**	-	-	***
14. S. mesic to wet-mesic	*	*	*	***	*	*	*	**	*
Hydromesic south		*	*	***	*	*	*	**	*
15. S. wet-mesic to wet	**	**	**	****	**	***	***	**	***
Lowland south		**	**	****	**	***	***	**	***

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 16. Estimated frequency of occurrence of habitat type group and habitat type on forest land by NHFEU Sections 222L and 222M and their Subsections, Wisconsin, 1996

Habitat type group and habitat type	222L	Subsection La	Lb	Lc	Ld	Le	222M	Subsection Md
4. N. mesic	-	*	-	-	-	-	*	*
ACaCi		*	-	-	-	-		*
ACaCi-H		*	-	-	-	-		-
5. N. mesic to wet-mesic	-	*	-	-	-	-	*	*
ACaCi-I		*	-	-	-	-		*
8. S. dry	*	*	***	-	-	-		-
PVGy		-	**	-	-	-		-
PVCr		*	**	-	-	-		-
PVRh		-	*	-	-	-		-
9. S. dry-mesic	***	***	****	**	**	-	*	*
ArDe-V		**	**	-	*	-		-
ArCi		**	*	*	-	-		*
ArCi-Ph		*	***	**	**	-		*
AArVb		*	*	-	-	-		-
AArL		-	-	-	*	-		-
10. S. dry-mesic to mesic	**	-	-	**	***	-		-
ATiDe-Ha		-	-	-	*	-		-
ATiDe-As		-	-	-	*	-		-
ATiDe		-	-	**	***	-		-
11. S. dry-mesic to mesic (phase)	**	-	-	***	*	****		-
ATiDe(Pr)		-	-	*	*	-		-
ATiCr(O)		-	-	**	-	***		-
ATiCr(As)		-	-	*	-	**		-
12. S. mesic	***	***	**	***	***	***	****	****
ATiSa-De		**	*	**	-	-		****
ATiSa		-	-	*	**	-		-
ATiCa-La		**	-	*	-	-		**
ATiCa		-	*	*	***	-		-
ATiCa-Al		-	-	-	*	-		-
ATiH		-	-	*	-	***		-
13. S. mesic (phase)		-	-	*	-	*		-
ATiAs(De)		-	-	*	-	*		-
14. S. mesic to wet-mesic		*	-	*	-	*	*	*
Hydromesic south		*	-	*	-	*		*
15. S. wet-mesic to wet	*	**	*	**	*	*	*	*
Lowland south		**	*	**	*	*		*

Frequency of occurrence classes
* = 1-10%, ** = 10-25%, *** = 25-50%, **** = >50%

Table 17.--Area of forest land by habitat type group and habitat type by owner, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	Owner							
		National forest	Misc. federal	State	County and municipal	Indian	Forest industry	Corporate	Individual
1. North very dry to dry									
QAc	97.5	1.2	--	7.2	15.8	--	55.8	6.9	10.6
ArQTr	46.4	26.5	--	3.6	5.9	--	4.2	--	6.2
QArE	3.3	--	--	--	--	--	3.3	--	--
QGCe	152.3	--	--	20.4	58.9	--	13.2	2.6	57.2
ArQV	164.2	5.8	--	26.6	25.6	6.5	29.4	16.0	54.3
ArQV-Sm	156.9	44.0	--	10.4	55.0	--	8.5	8.3	30.7
QV	129.0	4.2	--	--	58.7	5.5	--	15.9	44.7
QAp	42.5	--	--	--	16.2	--	--	--	26.3
Total	792.1	81.7	0.0	68.2	236.1	12.0	114.4	49.7	230.0
2. North dry to dry-mesic									
PAm	163.5	--	7.0	3.1	34.3	--	3.6	--	115.5
PAm-At	6.4	--	1.5	--	1.8	--	--	--	3.1
PMV	301.9	36.3	3.4	55.3	29.4	14.0	50.3	8.2	105.0
PMV-Q	28.6	--	--	--	--	9.8	--	0.5	18.3
PMV-Vb	147.5	13.8	--	--	68.7	--	3.3	--	61.7
PMV-Po	67.5	38.1	--	--	16.2	--	--	--	13.2
Total	715.4	88.2	11.9	58.4	150.4	23.8	57.2	8.7	316.8
3. North dry-mesic									
FArAa	8.6	--	--	0.8	--	--	--	--	7.8
AVVb	203.3	30.8	3.4	32.1	16.2	3.4	17.6	11.0	88.8
AVDe	155.1	--	2.5	5.1	48.8	--	2.8	8.6	87.3
ACl-V	45.8	--	--	--	17.9	--	6.1	3.4	18.4
ACl	27.3	--	--	--	9.0	--	3.0	--	15.3
AQVb-V	75.1	--	--	3.2	32.6	--	12.3	--	27.0
AQVb	185.0	26.8	--	--	37.8	14.7	2.2	3.2	100.3
AQVb-Ha	60.2	24.9	--	--	--	14.5	--	4.0	16.8
AAt	211.0	--	--	2.8	46.9	15.4	--	6.1	139.8
AFTPo	7.3	--	--	1.3	--	--	--	--	6.0
AVb	27.6	--	--	--	7.2	--	--	--	20.4
AFVb	84.9	9.0	--	--	21.2	25.9	--	--	28.8
Total	1091.2	91.5	5.9	45.3	237.6	73.9	44.0	36.3	556.7
4. North mesic									
ATM	792.1	168.5	1.2	17.3	111.7	22.2	96.8	44.9	329.5
AFSt	10.0	--	--	1.4	--	--	--	3.0	5.6
AAs	31.4	--	--	--	21.7	--	--	6.7	3.0
ATFD	48.5	4.5	--	--	--	20.5	--	1.9	21.6
ATD	192.9	67.8	--	21.4	13.0	2.6	27.7	12.9	47.5
ATDH	60.5	10.1	--	--	1.0	24.9	3.3	--	21.2
ACaCi	145.5	--	--	6.3	20.4	--	--	7.4	111.4
ACaCi-H	72.3	--	--	--	12.9	--	9.6	6.6	43.2
AFAl	22.6	--	--	1.4	--	--	--	2.0	19.2
AFAd	40.2	--	--	--	--	14.7	--	--	25.5
AViO	483.7	154.9	--	7.4	72.5	2.7	102.3	15.2	128.7
AViO-Ca	27.6	12.4	--	--	3.3	--	--	--	11.9
AHVb	17.8	--	--	3.3	2.9	--	--	--	11.6
AH	342.1	23.4	--	13.3	25.8	32.0	45.3	9.6	192.7
Total	2287.2	441.6	1.2	71.8	285.2	119.6	285.0	110.2	972.6

(Table 17 continued on next page)

(Table 17 continued)

Habitat type group and habitat type	Total	Owner: National forest	Misc. federal	State	County and municipal	Indian	Forest industry	Corporate	Individual
5. North mesic to wet-mesic									
ArCo	50.1	--	--	3.0	15.9	--	--	--	31.2
TMC-V	242.0	55.5	--	33.8	66.5	3.4	26.8	8.7	47.3
TMC	406.1	73.1	--	24.0	64.4	19.1	57.1	9.9	158.5
TMC-D	63.9	16.9	1.2	9.8	3.7	--	15.5	3.4	13.4
ATM-As	106.1	--	--	--	8.5	--	0.6	2.0	95.0
ATD-I	49.2	7.3	--	--	10.5	--	10.2	3.4	17.8
ACaCi-I	90.8	--	2.5	2.2	4.1	--	--	4.2	77.8
AViO-I	129.9	36.5	--	--	24.8	--	13.0	13.1	42.5
AH-I	138.5	3.7	--	6.7	2.8	--	14.0	3.2	108.1
Hydromesic north	948.3	125.8	1.2	33.2	201.2	7.3	77.1	26.2	476.3
Total	2224.9	318.8	4.9	112.7	402.4	29.8	214.3	74.1	1067.9
6. North wet-mesic to wet									
Lowland north	2047.4	268.2	17.3	87.7	375.3	36.9	153.1	89.5	1019.4
Total	2047.4	268.2	17.3	87.7	375.3	36.9	153.1	89.5	1019.4
7. Superior clay belt									
AbArSn	222.1	--	--	19.8	42.1	14.2	21.5	6.0	118.5
AbASnMi	117.0	2.1	--	3.7	9.0	11.3	11.3	2.9	76.7
Total	339.1	2.1	0.0	23.5	51.1	25.5	32.8	8.9	195.2
8. South dry									
PVGy	197.2	--	30.2	15.1	45.9	--	--	4.9	101.1
PEu	235.0	--	2.5	0.7	8.2	--	22.9	13.7	187.0
PVHa	108.1	--	--	9.1	51.1	--	3.4	--	44.5
PVCr	101.7	--	10.8	0.9	19.2	--	--	6.1	64.7
PVG	190.7	--	2.6	15.7	20.5	--	14.4	12.8	124.7
PVRh	334.8	--	46.2	19.0	144.1	--	2.6	13.8	109.1
Total	1167.5	0.0	92.3	60.5	289.0	0.0	43.3	51.3	631.1
9. South dry-mesic									
ArDe-V	139.7	--	2.7	4.6	--	--	--	7.1	125.3
ArDe	177.6	--	2.4	6.0	5.0	--	2.7	17.9	143.6
AQVb-Gr	56.1	--	--	--	1.2	--	--	--	54.9
ArCi	71.6	--	--	4.3	--	--	--	4.1	63.2
ArCi-Ph	542.5	--	6.5	9.5	--	--	3.6	9.0	513.9
AArVb	44.0	--	--	--	3.1	--	--	0.6	40.3
AArL	4.8	--	--	4.8	--	--	--	--	--
Total	1036.3	0.0	11.6	29.2	9.3	0.0	6.3	38.7	941.2
10. South dry-mesic to mesic									
ATiDe-Ha	17.1	--	--	--	--	--	--	3.6	13.5
ATiDe-As	17.2	--	--	5.7	--	--	--	3.6	7.9
ATiDe	181.8	--	--	1.1	--	--	--	--	180.7
ATiFrCi	22.4	--	--	--	--	--	--	--	22.4
ATiFrVb	89.8	--	--	9.9	5.1	--	3.1	4.7	67.0
AFrDeO	15.8	--	--	10.7	--	--	--	--	5.1
Total	344.1	0.0	0.0	27.4	5.1	0.0	3.1	11.9	296.6
11. South dry-mesic to mesic (phase)									
ATiDe(Pr)	92.4	--	--	--	3.8	--	--	2.6	86.0
ATiCr(O)	207.8	--	--	9.5	2.6	--	--	4.6	191.1
ATiCr(As)	43.7	--	--	--	--	--	--	--	43.7
ATiFrVb(Cr)	85.6	--	--	0.3	0.8	--	--	11.7	72.8
AFrDe(Vb)	7.4	--	--	2.0	--	--	--	--	5.4
Total	436.9	0.0	0.0	11.8	7.2	0.0	0.0	18.9	399.0

(Table 17 continued on next page)

(Table 17 continued)

Habitat type group and habitat type	Total	Owner							
		National forest	Misc. federal	State	County and municipal	Indian	Forest industry	Corporate	Individual
12. South mesic									
AFTD	5.2	--	--	--	--	--	2.4	--	2.8
ATiSa-De	319.5	--	0.7	9.9	0.5	--	3.1	14.0	291.3
ATiSa	45.6	--	--	--	--	--	--	--	45.6
ATiFrCa	24.4	--	--	--	--	--	--	2.6	21.8
ATiCa-La	61.3	--	--	5.3	--	--	--	2.4	53.6
ATiCa	183.9	--	4.7	9.4	3.5	--	--	6.8	159.5
ATiCa-Al	7.7	--	--	2.4	--	--	--	--	5.3
ATiH	79.4	--	--	--	--	--	--	6.0	73.4
AFH	49.2	--	--	--	4.7	--	--	--	44.5
AFAs	44.4	--	--	--	0.7	--	--	--	43.7
AFAs-O	10.6	--	--	--	--	--	--	--	10.6
Total	831.2	0.0	5.4	27.0	9.4	0.0	5.5	31.8	752.1
13. South mesic (phase)									
ATiAs(De)	17.3	--	--	2.9	--	--	--	--	14.4
ATiFrCA(O)	57.6	--	--	3.2	--	--	--	--	54.4
Total	74.9	0.0	0.0	6.1	0.0	0.0	0.0	0.0	68.8
14. South mesic to wet-mesic									
Hydromesic south	108.7	--	--	5.4	4.0	--	--	12.7	86.6
Total									
15. South wet-mesic to wet									
Lowland south	622.1	--	31.9	117.4	18.2	2.2	15.4	46.3	390.7
Total									
16. No type identified	1845.8	129.3	39.5	71.4	220.5	23.2	131.2	105.6	1125.1
All habitat types	15964.8	1421.4	221.9	823.8	2300.8	346.9	1105.6	694.6	9049.8

Table 18.--Area of forest land by habitat type group, land class, and forest type, Wisconsin, 1996

(In thousand acres)

Habitat type group and land class	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
1. North very dry to dry																
Timberland	792.1	149.3	143.3	13.5	0.0	1.1	0.0	0.0	0.0	218.1	0.0	30.8	213.9	21.9	0.0	0.2
Reserved forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	792.1	149.3	143.3	13.5	0.0	1.1	0.0	0.0	0.0	218.1	0.0	30.8	213.9	21.9	0.0	0.2
2. North dry to dry-mesic																
Timberland	708.4	22.8	56.1	23.3	4.9	5.9	0.0	0.0	0.0	106.1	3.3	116.0	328.9	41.1	0.0	0.0
Reserved forest land	7.0	3.6	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	715.4	26.4	56.1	26.7	4.9	5.9	0.0	0.0	0.0	106.1	3.3	116.0	328.9	41.1	0.0	0.0
3. North dry-mesic																
Timberland	1,083.6	0.0	26.3	16.3	7.6	1.4	0.0	0.0	0.0	223.3	6.4	436.5	301.4	64.4	0.0	0.0
Reserved forest land	7.6	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	5.5	0.0	1.3	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	1,091.2	0.0	26.3	16.3	7.6	2.2	0.0	0.0	0.0	228.8	6.4	437.8	301.4	64.4	0.0	0.0
4. North mesic																
Timberland	2,251.0	1.0	24.4	12.5	3.1	12.6	0.0	0.0	0.0	101.9	15.2	1,703.5	331.3	39.7	1.6	4.2
Reserved forest land	36.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	1.0	21.0	14.2	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	2,287.2	1.0	24.4	12.5	3.1	12.6	0.0	0.0	0.0	101.9	16.2	1,724.5	345.5	39.7	1.6	4.2
5. North mesic to wet-mesic																
Timberland	2,204.5	10.4	28.6	24.5	87.6	15.0	3.8	10.8	2.1	52.9	202.2	1,013.6	651.5	86.8	5.7	9.0
Reserved forest land	20.4	0.9	0.0	5.2	0.0	2.7	0.0	0.0	0.0	2.5	0.9	1.5	4.5	2.2	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	2,224.9	11.3	28.6	29.7	87.6	17.7	3.8	10.8	2.1	55.4	203.1	1,015.1	656.0	89.0	5.7	9.0
6. North wet-mesic to wet																
Timberland	2,000.0	9.4	0.3	5.4	142.6	10.9	319.3	279.0	247.3	13.9	565.6	168.7	174.8	36.9	14.7	11.2
Reserved forest land	27.6	0.0	0.0	0.6	1.9	0.0	1.9	8.8	0.0	0.0	11.5	0.0	1.9	1.0	0.0	0.0
Other forest land	19.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.8
Total forest land	2,047.4	9.4	0.3	6.0	144.5	10.9	321.2	287.8	247.3	13.9	577.1	168.7	176.7	37.9	14.7	31.0
7. Superior clay belt																
Timberland	339.1	0.0	7.3	0.0	18.7	7.1	0.0	0.0	0.0	0.0	21.1	52.8	190.0	31.7	6.6	3.8
Reserved forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	339.1	0.0	7.3	0.0	18.7	7.1	0.0	0.0	0.0	0.0	21.1	52.8	190.0	31.7	6.6	3.8

(Table 18 continued on next page)

(Table 18 continued)

Habitat type group and land class	Total	Forest type															
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
15. South wet-mesic to wet																
Timberland	614.3	2.8	0.0	9.9	0.0	0.0	0.0	14.8	48.8	69.9	385.4	50.8	8.8	17.3	0.0	5.8
Reserved forest land	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.8	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	622.1	2.8	0.0	9.9	0.0	0.0	0.0	14.8	48.8	69.9	393.2	50.8	8.8	17.3	0.0	5.8
16. No type identified																
Timberland	1,753.7	47.7	164.5	25.0	44.9	25.4	7.3	14.7	3.7	255.9	119.1	577.1	376.4	74.4	0.0	17.6
Reserved forest land	51.2	0.0	2.5	1.9	2.0	0.0	0.0	7.6	0.0	2.5	7.4	19.5	2.4	5.4	0.0	0.0
Other forest land	40.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9
Total forest land	1,845.8	47.7	167.0	26.9	46.9	25.4	7.3	22.3	3.7	258.4	126.5	596.6	378.8	79.8	0.0	58.5
All habitat types																
Timberland	15,702.5	387.4	602.8	191.5	309.4	80.9	330.4	319.3	301.9	2,885.5	1,528.8	5,299.7	2,885.7	493.7	29.1	56.4
Reserved forest land	201.6	4.5	2.5	11.1	3.9	3.5	1.9	16.4	0.0	42.7	30.6	49.0	24.7	9.1	0.0	1.7
Other forest land	60.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.7
Total forest land	15,964.8	391.9	605.3	202.6	313.3	84.4	332.3	335.7	301.9	2,928.2	1,559.4	5,348.7	2,910.4	502.8	29.1	118.8

(Table 18 continued on next page)

(Table 18 continued)

Habitat type group and land class	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
8. South dry																
Timberland	1,162.9	135.7	111.3	26.2	0.0	0.0	0.0	0.0	0.0	492.5	61.7	150.8	169.2	13.0	0.0	2.5
Reserved forest land	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	1,167.5	135.7	111.3	26.2	0.0	0.0	0.0	0.0	0.0	497.1	61.7	150.8	169.2	13.0	0.0	2.5
9. South dry-mesic																
Timberland	1,024.4	4.8	27.0	24.9	0.0	1.5	0.0	0.0	0.0	606.6	39.2	223.4	61.2	33.7	0.0	2.1
Reserved forest land	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.7	0.0	0.0	0.0	0.5	0.0	1.7
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	1,036.3	4.8	27.0	24.9	0.0	1.5	0.0	0.0	0.0	616.3	39.2	223.4	61.2	34.2	0.0	3.8
10. South dry-mesic to mesic																
Timberland	336.5	0.0	0.2	1.5	0.0	0.0	0.0	0.0	0.0	181.3	8.7	130.0	10.7	4.1	0.0	0.0
Reserved forest land	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.9	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	344.1	0.0	0.2	1.5	0.0	0.0	0.0	0.0	0.0	188.0	8.7	130.0	11.6	4.1	0.0	0.0
11. South dry-mesic to mesic (phase)																
Timberland	429.7	0.0	5.3	3.4	0.0	0.0	0.0	0.0	0.0	249.5	19.8	111.7	26.2	13.8	0.0	0.0
Reserved forest land	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	2.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	436.9	0.0	5.3	3.4	0.0	0.0	0.0	0.0	0.0	254.7	21.8	111.7	26.2	13.8	0.0	0.0
12. South mesic																
Timberland	818.7	3.5	0.1	5.1	0.0	0.0	0.0	0.0	0.0	262.8	40.6	454.3	37.4	14.9	0.0	0.0
Reserved forest land	12.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	5.7	0.8	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	831.2	3.5	0.1	5.1	0.0	0.0	0.0	0.0	0.0	268.8	40.6	460.0	38.2	14.9	0.0	0.0
13. South mesic (phase)																
Timberland	74.9	0.0	8.1	0.0	0.0	0.0	0.0	0.0	0.0	38.7	2.5	25.6	0.0	0.0	0.0	0.0
Reserved forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	74.9	0.0	8.1	0.0	0.0	0.0	0.0	0.0	0.0	38.7	2.5	25.6	0.0	0.0	0.0	0.0
14. South mesic to wet-mesic																
Timberland	108.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	38.0	54.1	4.0	0.0	0.5	0.0
Reserved forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other forest land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total forest land	108.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	38.0	54.1	4.0	0.0	0.5	0.0

Table 19.--Area of forest land by habitat type group and habitat type by forest type, Wisconsin, 1996

(In thousand acres)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
1. North very dry to dry																
QAc	97.5	23.0	32.5	--	--	--	--	--	--	40.6	--	--	1.2	--	--	0.2
ArQTr	46.4	12.3	14.9	--	--	--	--	--	--	15.0	--	3.1	1.1	--	--	--
QArE	3.3	3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QGCe	152.3	38.5	23.3	--	--	--	--	--	--	58.6	--	--	31.9	--	--	--
ArQV	164.2	31.3	27.4	9.5	--	--	--	--	--	6.5	--	2.6	76.7	10.2	--	--
ArQV-Sm	156.9	12.4	28.9	1.2	--	1.1	--	--	--	34.0	--	8.2	59.4	11.7	--	--
QV	129.0	19.0	16.3	2.8	--	--	--	--	--	37.0	--	10.3	43.6	--	--	--
QAp	42.5	9.5	--	--	--	--	--	--	--	26.4	--	6.6	--	--	--	--
Total	792.1	149.3	143.3	13.5	0.0	1.1	0.0	0.0	0.0	218.1	0.0	30.8	213.9	21.9	0.0	0.2
2. North dry to dry-mesic																
PAm	163.5	11.5	4.1	3.4	--	--	--	--	--	52.1	--	21.5	69.1	1.8	--	--
PAm-At	6.4	--	--	--	--	--	--	--	--	--	--	1.5	4.9	--	--	--
PMV	301.9	7.0	31.1	16.0	4.9	5.9	--	--	--	20.3	--	40.0	141.5	35.2	--	--
PMV-Q	28.6	4.8	3.1	0.5	--	--	--	--	--	9.3	--	3.0	7.1	0.8	--	--
PMV-Vb	147.5	--	12.6	3.4	--	--	--	--	--	15.1	3.3	25.6	84.2	3.3	--	--
PMV-Po	67.5	3.1	5.2	3.4	--	--	--	--	--	9.3	--	24.4	22.1	--	--	--
Total	715.4	26.4	56.1	26.7	4.9	5.9	0.0	0.0	0.0	106.1	3.3	116.0	328.9	41.1	0.0	0.0
3. North dry-mesic																
FArAa	8.6	--	--	--	0.4	0.8	--	--	--	--	--	7.4	--	--	--	--
AVVb	203.3	--	4.0	3.8	6.0	1.4	--	--	--	17.0	3.3	61.2	87.4	19.2	--	--
AVDe	155.1	--	--	6.0	--	--	--	--	--	54.0	--	58.3	32.8	4.0	--	--
ACl-V	45.8	--	3.0	--	--	--	--	--	--	--	--	15.6	15.7	11.5	--	--
ACl	27.3	--	--	--	1.2	--	--	--	--	4.9	--	15.0	2.8	3.4	--	--
AQVb-V	75.1	--	5.7	--	--	--	--	--	--	25.9	--	23.4	13.8	6.3	--	--
AQVb	185.0	--	6.8	0.5	--	--	--	--	--	29.4	--	69.3	62.4	16.6	--	--
AQVb-Ha	60.2	--	3.1	--	--	--	--	--	--	14.8	--	20.8	19.9	1.6	--	--
AAt	211.0	--	3.7	1.1	--	--	--	--	--	57.6	3.1	107.8	35.9	1.8	--	--
AFTPo	7.3	--	--	1.8	--	--	--	--	--	--	--	4.4	1.1	--	--	--
AVb	27.6	--	--	--	--	--	--	--	--	11.4	--	3.1	13.1	--	--	--
AFVb	84.9	--	--	3.1	--	--	--	--	--	13.8	--	51.5	16.5	--	--	--
Total	1,091.2	0.0	26.3	16.3	7.6	2.2	0.0	0.0	0.0	228.8	6.4	437.8	301.4	64.4	0.0	0.0

(Table 19 continued on next page)

(Table 19 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
4. North mesic																
ATM	792.1	1.0	11.9	8.8	3.1	4.2	--	--	--	26.3	7.5	516.0	193.8	19.1	--	0.4
AFSt	10.0	--	--	--	--	--	--	--	--	--	--	4.3	2.7	3.0	--	--
AAs	31.4	--	--	--	--	--	--	--	--	3.0	3.0	9.5	12.7	3.2	--	--
ATFD	48.5	--	--	--	--	--	--	--	--	0.5	--	39.7	8.3	--	--	--
ATD	192.9	--	--	--	--	--	--	--	--	--	--	181.9	11.0	--	--	--
ATDH	60.5	--	1.9	--	--	--	--	--	--	--	--	45.2	9.1	4.3	--	--
ACaCi	145.5	--	--	3.7	--	--	--	--	--	46.2	--	70.1	17.9	7.6	--	--
ACaCi-H	72.3	--	5.6	--	--	--	--	--	--	9.6	--	46.3	5.0	2.0	--	3.8
AFAl	22.6	--	--	--	--	--	--	--	--	--	--	21.0	1.6	--	--	--
AFAd	40.2	--	--	--	--	--	--	--	--	3.6	--	36.6	--	--	--	--
AViO	483.7	--	5.0	--	--	8.4	--	--	--	--	3.3	399.9	66.6	0.5	--	--
AViO-Ca	27.6	--	--	--	--	--	--	--	--	--	--	27.6	--	--	--	--
AHVb	17.8	--	--	--	--	--	--	--	--	2.9	--	13.7	1.2	--	--	--
AH	342.1	--	--	--	--	--	--	--	--	9.8	2.4	312.7	15.6	--	1.6	--
Total	2,287.2	1.0	24.4	12.5	3.1	12.6	0.0	0.0	0.0	101.9	16.2	1,724.5	345.5	39.7	1.6	4.2
5. North mesic to wet-mesic																
ArCo	50.1	--	3.0	--	6.4	3.8	--	--	2.1	--	2.8	1.5	30.5	--	--	--
TMC-V	242.0	2.8	9.3	9.6	26.4	3.7	3.6	2.2	--	--	10.3	37.6	121.8	14.7	--	--
TMC	406.1	6.0	8.9	10.2	38.6	2.1	0.2	1.0	--	2.8	34.5	186.1	84.5	29.0	--	2.2
TMC-D	63.9	--	--	--	--	3.2	--	3.7	--	--	6.2	44.0	4.0	2.8	--	--
ATM-As	106.1	--	--	--	3.2	--	--	--	--	0.8	11.7	76.0	11.6	2.8	--	--
ATD-l	49.2	--	--	--	--	--	--	--	--	--	--	47.8	1.4	--	--	--
ACaCi-l	90.8	--	--	--	--	--	--	--	--	19.7	7.0	34.5	29.6	--	--	--
AViO-l	129.9	--	--	--	--	--	--	--	--	--	--	120.8	9.1	--	--	--
AH-l	138.5	--	--	7.9	--	--	--	--	--	3.0	11.8	96.0	17.6	2.2	--	--
Hydromesic north	948.3	2.5	7.4	2.0	13.0	4.9	--	3.9	--	29.1	118.8	370.8	345.9	37.5	5.7	6.8
Total	2,224.9	11.3	28.6	29.7	87.6	17.7	3.8	10.8	2.1	55.4	203.1	1,015.1	656.0	89.0	5.7	9.0
6. North wet-mesic to wet																
Lowland north	2,047.4	9.4	0.3	6.0	144.5	10.9	321.2	287.8	247.3	13.9	577.1	168.7	176.7	37.9	14.7	31.0
Total	2,047.4	9.4	0.3	6.0	144.5	10.9	321.2	287.8	247.3	13.9	577.1	168.7	176.7	37.9	14.7	31.0
7. Superior clay belt																
AbArSn	222.1	--	4.2	--	15.0	7.1	--	--	--	--	7.0	11.3	148.6	18.5	6.6	3.8
AbASnMi	117.0	--	3.1	--	3.7	--	--	--	--	--	14.1	41.5	41.4	13.2	--	--
Total	339.1	0.0	7.3	0.0	18.7	7.1	0.0	0.0	0.0	0.0	21.1	52.8	190.0	31.7	6.6	3.8

(Table 19 continued on next page)

(Table 19 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
8. South dry																
PVGy	197.2	25.7	24.7	8.4	--	--	--	--	--	101.1	4.3	11.9	21.1	--	--	--
PEu	235.0	47.3	50.2	1.4	--	--	--	--	--	133.1	--	--	3.0	--	--	--
PVHa	108.1	2.1	0.5	0.6	--	--	--	--	--	38.7	12.0	26.6	24.9	2.7	--	--
PVCr	101.7	26.7	15.5	--	--	--	--	--	--	49.1	--	8.8	1.6	--	--	--
PVG	190.7	14.6	13.7	3.8	--	--	--	--	--	86.3	12.6	26.0	28.4	3.9	--	1.4
PVRh	334.8	19.3	6.7	12.0	--	--	--	--	--	88.8	32.8	77.5	90.2	6.4	--	1.1
Total	1,167.5	135.7	111.3	26.2	0.0	0.0	0.0	0.0	0.0	497.1	61.7	150.8	169.2	13.0	0.0	2.5
9. South dry-mesic																
ArDe-V	139.7	--	1.5	3.6	--	--	--	--	--	102.9	0.2	16.4	6.7	6.7	--	1.7
ArDe	177.6	4.8	18.2	6.8	--	--	--	--	--	119.5	3.1	15.0	10.2	--	--	--
AQVb-Gr	56.1	--	--	3.5	--	--	--	--	--	19.1	2.9	29.4	1.2	--	--	--
ArCi	71.6	--	3.2	--	--	1.5	--	--	--	38.3	0.2	17.5	8.5	2.4	--	--
ArCi-Ph	542.5	--	4.1	11.0	--	--	--	--	--	306.7	32.8	137.6	23.1	25.1	--	2.1
AArVb	44.0	--	--	--	--	--	--	--	--	25.0	--	7.5	11.5	--	--	--
AArL	4.8	--	--	--	--	--	--	--	--	4.8	--	--	--	--	--	--
Total	1,036.3	4.8	27.0	24.9	0.0	1.5	0.0	0.0	0.0	616.3	39.2	223.4	61.2	34.2	0.0	3.8
10. South dry-mesic to mesic																
ATiDe-Ha	17.1	--	--	--	--	--	--	--	--	13.4	--	3.7	--	--	--	--
ATiDe-As	17.2	--	--	--	--	--	--	--	--	12.1	--	4.2	0.9	--	--	--
ATiDe	181.8	--	--	--	--	--	--	--	--	98.1	3.0	70.4	6.2	4.1	--	--
ATiFrCi	22.4	--	--	0.6	--	--	--	--	--	13.3	0.4	8.1	--	--	--	--
ATiFrVb	89.8	--	--	0.6	--	--	--	--	--	40.9	5.3	38.5	4.5	--	--	--
AFrDeO	15.8	--	0.2	0.3	--	--	--	--	--	10.2	--	5.1	--	--	--	--
Total	344.1	0.0	0.2	1.5	0.0	0.0	0.0	0.0	0.0	188.0	8.7	130.0	11.6	4.1	0.0	0.0
11. South dry-mesic to mesic (phase)																
ATiDe(Pr)	92.4	--	--	--	--	--	--	--	--	58.3	8.8	11.5	8.5	5.3	--	--
ATiCr(O)	207.8	--	--	--	--	--	--	--	--	135.3	9.5	54.0	6.6	2.4	--	--
ATiCr(As)	43.7	--	--	--	--	--	--	--	--	21.2	--	16.4	--	6.1	--	--
ATiFrVb (Cr)	85.6	--	5.3	--	--	--	--	--	--	37.9	3.5	27.8	11.1	--	--	--
AFrDe(Vb)	7.4	--	--	3.4	--	--	--	--	--	2.0	--	2.0	--	--	--	--
Total	436.9	0.0	5.3	3.4	0.0	0.0	0.0	0.0	0.0	254.7	21.8	111.7	26.2	13.8	0.0	0.0

(Table 19 continued on next page)

(Table 19 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
12. South mesic																
AFTD	5.2	--	--	--	--	--	--	--	--	--	--	5.2	--	--	--	--
ATiSa-De	319.5	--	0.1	--	--	--	--	--	--	128.9	23.0	128.0	28.8	10.7	--	--
ATiSa	45.6	--	--	--	--	--	--	--	--	29.5	--	16.1	--	--	--	--
ATiFrCa	24.4	--	--	--	--	--	--	--	--	5.9	0.2	18.3	--	--	--	--
ATiCa-La	61.3	--	--	--	--	--	--	--	--	6.6	9.1	41.4	3.4	0.8	--	--
ATiCa	183.9	3.5	--	5.1	--	--	--	--	--	49.4	2.7	119.8	--	3.4	--	--
ATiCa-Al	7.7	--	--	--	--	--	--	--	--	2.4	--	5.3	--	--	--	--
ATiH	79.4	--	--	--	--	--	--	--	--	40.3	--	39.1	--	--	--	--
AFH	49.2	--	--	--	--	--	--	--	--	1.6	5.6	36.0	6.0	--	--	--
AFAs	44.4	--	--	--	--	--	--	--	--	4.2	--	40.2	--	--	--	--
AFAs-O	10.6	--	--	--	--	--	--	--	--	--	--	10.6	--	--	--	--
Total	831.2	3.5	0.1	5.1	0.0	0.0	0.0	0.0	0.0	268.8	40.6	460.0	38.2	14.9	0.0	0.0
13. South mesic (phase)																
ATiAs(De)	17.3	--	--	--	--	--	--	--	--	5.8	--	11.5	--	--	--	--
ATiFrCa (O)	57.6	--	8.1	--	--	--	--	--	--	32.9	2.5	14.1	--	--	--	--
Total	74.9	0.0	8.1	0.0	0.0	0.0	0.0	0.0	0.0	38.7	2.5	25.6	0.0	0.0	0.0	0.0
14. South mesic to wet-mesic																
Hydromesic south	108.7	--	--	--	--	--	--	--	--	12.1	38.0	54.1	4.0	--	0.5	--
	108.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.1	38.0	54.1	4.0	0.0	0.5	0.0
15. South wet-mesic to wet																
Lowland south	622.1	2.8	--	9.9	--	--	--	14.8	48.8	69.9	393.2	50.8	8.8	17.3	--	5.8
Total	622.1	2.8	0.0	9.9	0.0	0.0	0.0	14.8	48.8	69.9	393.2	50.8	8.8	17.3	0.0	5.8
16. No type identified	1,845.8	47.7	167.0	26.9	46.9	25.4	7.3	22.3	3.7	258.4	126.5	596.6	378.8	79.8	0.0	58.5
All habitat types	15,964.8	391.9	605.3	202.6	313.3	84.4	332.3	335.7	301.9	2,928.2	1,559.4	5,348.7	2,910.4	502.8	29.1	118.8

Table 20.--Net growing-stock volume on forest land by habitat type group and habitat type by forest type, Wisconsin, 1996

(In thousand cubic feet)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
1. North very dry to dry																
QAc	39,876	21,819	13,071	--	--	--	--	--	--	4,986	--	--	--	--	--	--
ArQTr	25,074	8,848	9,224	--	--	--	--	--	--	4,570	--	189	2,243	--	--	--
QArE	2,502	2,502	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QGCe	120,950	36,341	20,980	--	--	--	--	--	--	47,033	--	--	16,596	--	--	--
ArQV	174,887	30,060	36,484	20,284	--	--	--	--	--	5,024	--	1,768	66,794	14,473	--	--
ArQV-Sm	165,043	16,620	46,715	1,971	--	2,917	--	--	--	34,124	--	3,762	50,138	8,796	--	--
QV	104,295	15,584	23,212	6,181	--	--	--	--	--	42,450	--	2,880	13,988	--	--	--
QAp	42,038	12,030	--	--	--	--	--	--	--	25,085	--	4,923	--	--	--	--
Total	674,665	143,804	149,686	28,436	0	2,917	0	0	0	163,272	0	13,522	149,759	23,269	0	0
2. North dry to dry-mesic																
PAm	203,358	8,897	8,782	7,607	--	--	--	--	--	65,052	--	38,664	74,356	--	--	--
PAm-At	3,501	--	--	--	--	--	--	--	--	--	--	1,072	2,429	--	--	--
PMV	438,055	10,647	49,016	47,869	5,600	11,968	--	--	--	36,800	--	50,395	148,810	76,950	--	--
PMV-Q	38,334	4,871	3,697	2,322	--	--	--	--	--	10,750	--	5,174	11,249	271	--	--
PMV-Vb	160,084	--	36,656	9,831	--	--	--	--	--	13,921	7,464	30,939	53,411	7,862	--	--
PMV-Po	100,618	2,869	16,766	6,442	--	--	--	--	--	14,622	--	37,964	21,955	--	--	--
Total	943,950	27,284	114,917	74,071	5,600	11,968	0	0	0	141,145	7,464	164,208	312,210	85,083	0	0
3. North dry-mesic																
FArAa	6,282	--	--	--	276	250	--	--	--	--	--	5,756	--	--	--	--
AVVb	280,110	--	2,758	7,921	3,896	3,538	--	--	--	32,038	4,340	78,390	103,292	43,937	--	--
AVDe	212,590	--	--	15,655	--	--	--	--	--	90,549	--	75,805	26,424	4,157	--	--
ACl-V	61,163	--	7,671	--	--	--	--	--	--	--	--	19,812	10,418	23,262	--	--
ACl	37,518	--	--	--	2,963	--	--	--	--	8,292	--	24,376	229	1,658	--	--
AQVb-V	93,358	--	6,268	--	--	--	--	--	--	46,406	--	28,110	8,860	3,714	--	--
AQVb	213,368	--	18,097	--	--	--	--	--	--	44,107	--	83,859	38,933	28,372	--	--
AQVb-Ha	117,466	--	5,862	--	--	--	--	--	--	29,633	--	48,042	31,334	2,595	--	--
AAt	328,496	--	10,496	2,963	--	--	--	--	--	107,745	4,615	167,885	33,759	1,033	--	--
AFTPo	12,697	--	--	369	--	--	--	--	--	--	--	8,570	3,758	--	--	--
AVb	29,756	--	--	--	--	--	--	--	--	14,448	--	5,264	10,044	--	--	--
AFVb	165,646	--	--	18,945	--	--	--	--	--	37,068	--	88,177	21,456	--	--	--
Total	1,558,450	0	51,152	45,853	7,135	3,788	0	0	0	410,286	8,955	634,046	288,507	108,728	0	0

(Table 20 continued on next page)

(Table 20 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
4. North mesic																
ATM	1,195,524	--	27,105	36,279	4,244	9,518	--	--	--	50,658	6,803	849,014	180,820	31,083	--	--
AFSt	14,621	--	--	--	--	--	--	--	--	--	--	3,759	4,590	6,272	--	--
AAs	29,036	--	--	--	--	--	--	--	--	6,892	2,299	11,961	7,884	--	--	--
ATFD	125,723	--	--	--	--	--	--	--	--	1,188	--	108,693	15,842	--	--	--
ATD	376,517	--	--	--	--	--	--	--	--	--	--	373,219	3,298	--	--	--
ATDH	114,561	--	3,500	--	--	--	--	--	--	--	--	98,126	9,000	3,935	--	--
ACaCi	230,501	--	--	12,633	--	--	--	--	--	76,842	--	114,743	17,759	8,524	--	--
ACaCi-H	113,806	--	1,145	--	--	--	--	--	--	18,630	--	81,201	10,540	2,290	--	--
AFAl	36,362	--	--	--	--	--	--	--	--	--	--	34,398	1,964	--	--	--
AFAd	85,455	--	--	--	--	--	--	--	--	8,738	--	76,717	--	--	--	--
AViO	796,476	--	11,138	--	--	11,111	--	--	--	--	1,315	725,164	47,748	-	--	--
AViO-Ca	51,871	--	--	--	--	--	--	--	--	--	--	51,871	--	--	--	--
AHVb	27,441	--	--	--	--	--	--	--	--	3,704	--	23,737	-	--	--	--
AH	630,353	--	--	--	--	--	--	--	--	20,588	613	599,129	7,259	--	2,764	--
Total	3,828,247	0	42,888	48,912	4,244	20,629	0	0	0	187,240	11,030	3,151,732	306,704	52,104	2,764	0
5. North mesic to wet-mesic																
ArCo	34,445	--	4,931	--	5,398	-	--	--	1,144	--	552	860	21,560	--	--	--
TMC-V	274,618	7,075	22,040	27,392	21,944	10,993	4,767	3,111	--	--	9,206	51,351	85,511	31,228	--	--
TMC	565,974	10,947	32,030	37,821	46,648	1,927	-	2,939	--	4,570	38,018	279,568	60,482	50,193	--	831
TMC-D	111,913	--	--	--	--	10,153	--	4,245	--	--	8,030	75,023	7,068	7,394	--	--
ATM-As	140,608	--	--	--	1,763	--	--	--	--	--	12,781	113,531	11,990	543	--	--
ATD-I	79,036	--	--	--	--	--	--	--	--	--	--	78,715	321	--	--	--
ACaCi-I	109,203	--	--	--	--	--	--	--	--	37,744	3,582	35,748	32,129	--	--	--
AViO-I	219,821	--	--	--	--	--	--	--	--	--	--	214,062	5,759	--	--	--
AH-I	192,529	--	--	21,699	--	--	--	--	--	4,968	18,398	126,563	20,901	-	--	--
Hydromesic north	1,057,999	4,334	12,579	4,881	15,545	12,148	--	7,322	--	41,206	139,702	514,931	267,524	31,776	4,829	1,222
Total	2,786,146	22,356	71,580	91,793	91,298	35,221	4,767	17,617	1,144	88,488	230,269	1,490,352	513,245	121,134	4,829	2,053
6. North wet-mesic to wet																
Lowland north	1,755,676	5,435	1,163	2,437	106,672	10,738	116,900	474,426	181,909	15,277	491,643	188,686	115,624	39,233	3,793	1,740
Total	1,755,676	5,435	1,163	2,437	106,672	10,738	116,900	474,426	181,909	15,277	491,643	188,686	115,624	39,233	3,793	1,740
7. Superior clay belt																
AbArSn	203,397	--	6,189	--	17,900	3,477	--	--	--	--	1,768	13,282	135,223	21,756	3,802	--
AbASnMi	167,750	--	10,409	--	1,558	--	--	--	--	--	17,885	53,351	59,312	25,235	--	--
Total	371,147	0	16,598	0	19,458	3,477	0	0	0	0	19,653	66,633	194,535	46,991	3,802	0

(Table 20 continued on next page)

(Table 20 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
8. South dry																
PVGy	146,142	9,355	26,469	10,881	--	--	--	--	--	74,497	1,174	6,679	17,087	--	--	--
PEu	179,483	20,309	58,373	6,299	--	--	--	--	--	94,502	--	--	-	--	--	--
PVHa	114,803	-	834	139	--	--	--	--	--	50,999	777	37,703	22,582	1,769	--	--
PVCr	89,845	12,254	24,238	--	--	--	--	--	--	45,601	--	7,335	417	--	--	--
PVG	191,000	12,292	10,187	8,814	--	--	--	--	--	107,483	10,078	28,383	11,737	2,026	--	--
PVRh	293,063	13,788	7,638	9,863	--	--	--	--	--	91,387	10,912	106,946	50,131	2,398	--	--
Total	1,014,336	67,998	127,739	35,996	0	0	0	0	0	464,469	22,941	187,046	101,954	6,193	0	0
9. South dry-mesic																
ArDe-V	168,283	--	2,874	4,526	--	--	--	--	--	128,112	--	19,308	12,919	544	--	--
ArDe	209,311	3,917	22,106	16,499	--	--	--	--	--	140,950	4,231	14,532	7,076	--	--	--
AQVb-Gr	107,919	--	--	8,398	--	--	--	--	--	38,650	-	60,238	633	--	--	--
ArCi	85,529	--	9,030	--	--	2,186	--	--	--	53,856	-	16,742	2,967	748	--	--
ArCi-Ph	648,597	--	-	15,432	--	--	--	--	--	408,505	21,752	128,816	31,190	42,902	--	-
AArVb	46,376	--	--	--	--	--	--	--	--	38,068	--	3,313	4,995	--	--	--
AArL	7,577	--	--	--	--	--	--	--	--	7,577	--	--	--	--	--	--
Total	1,273,592	3,917	34,010	44,855	0	2,186	0	0	0	815,718	25,983	242,949	59,780	44,194	0	0
10. South dry-mesic to mesic																
ATiDe-Ha	36,517	--	--	--	--	--	--	--	--	31,851	--	4,666	--	--	--	--
ATiDe-As	32,608	--	--	--	--	--	--	--	--	19,629	--	12,070	909	--	--	--
ATiDe	190,313	--	--	--	--	--	--	--	--	114,737	2,163	61,967	3,635	7,811	--	--
ATiFrCi	27,400	--	--	--	--	--	--	--	--	11,423	--	15,977	--	--	--	--
ATiFrVb	128,281	--	--	615	--	--	--	--	--	69,042	9,251	47,783	1,590	--	--	--
AFrDeO	27,568	--	193	411	--	--	--	--	--	18,375	--	8,589	--	--	--	--
Total	442,687	0	193	1,026	0	0	0	0	0	265,057	11,414	151,052	6,134	7,811	0	0
11. South dry-mesic to mesic (phase)																
ATiDe(Pr)	87,178	--	--	--	--	--	--	--	--	66,617	3,516	5,149	8,908	2,988	--	--
ATiCr(O)	224,568	--	--	--	--	--	--	--	--	147,096	6,268	58,158	11,001	2,045	--	--
ATiCr(As)	66,502	--	--	--	--	--	--	--	--	27,412	--	34,041	--	5,049	--	--
ATiFrVb(Cr)	70,396	--	8,821	--	--	--	--	--	--	40,443	-	14,961	6,171	--	--	--
AFrDe(Vb)	4,595	--	--	2,305	--	--	--	--	--	1,499	--	791	--	--	--	--
Total	453,239	0	8,821	2,305	0	0	0	0	0	283,067	9,784	113,100	26,080	10,082	0	0

(Table 20 continued on next page)

(Table 20 continued)

Habitat type group and habitat type	Total	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
12. South mesic																
AFTD	12,114	--	--	--	--	--	--	--	--	--	--	12,114	--	--	--	--
ATiSa-De	383,915	--	--	--	--	--	--	--	--	171,904	21,201	143,120	41,713	5,977	--	-
ATiSa	69,518	--	--	--	--	--	--	--	--	42,152	--	27,366	--	--	--	--
ATiFrCa	45,401	--	--	--	--	--	--	--	--	6,758	--	38,643	--	--	--	--
ATiCa-La	83,450	--	--	--	--	--	--	--	--	11,119	7,004	63,948	1,183	196	--	--
ATiCa	249,063	453	--	3,660	--	--	--	--	--	70,171	637	169,729	--	4,413	--	--
ATiCa-Al	10,486	--	--	--	--	--	--	--	--	5,654	--	4,832	--	--	--	--
ATiH	96,768	--	--	--	--	--	--	--	--	56,178	--	40,590	--	--	--	--
AFH	86,594	--	--	--	--	--	--	--	--	2,870	7,240	68,589	7,895	--	--	--
AFAs	84,577	--	--	--	--	--	--	--	--	4,869	--	79,708	--	--	--	--
AFAs-O	16,040	--	--	--	--	--	--	--	--	--	--	16,040	--	--	--	--
Total	1,137,926	453	0	3,660	0	0	0	0	0	371,675	36,082	664,679	50,791	10,586	0	0
13. South mesic (phase)																
ATiAs(De)	11,919	--	--	--	--	--	--	--	--	4,258	--	7,661	--	--	--	--
ATiFrCA(O)	80,850	--	24,375	--	--	--	--	--	--	46,687	275	9,513	--	--	--	--
Total	92,769	0	24,375	0	0	0	0	0	0	50,945	275	17,174	0	0	0	0
14. South mesic to wet-mesic																
Hydromesic south	112,826	--	--	--	--	--	--	--	--	15,487	29,683	64,177	2,390	--	1,089	--
Total	112,826	0	0	0	0	0	0	0	0	15,487	29,683	64,177	2,390	0	1,089	0
15. South wet-mesic to wet																
Lowland south	573,885	1,840	--	6,671	--	--	--	16,219	23,667	72,783	382,956	48,309	4,725	16,715	--	--
Total	573,885	1,840	0	6,671	0	0	0	16,219	23,667	72,783	382,956	48,309	4,725	16,715	0	0
16. No type identified	1,743,885	39,737	243,373	23,758	39,735	18,377	1,538	33,845	3,026	234,188	92,726	703,342	230,114	79,826	--	300
All habitat types	18,763,426	312,824	886,495	409,773	274,142	109,301	123,205	542,107	209,746	3,579,097	1,380,858	7,901,007	2,362,552	651,949	16,277	4,093

Table 21.--Average growing-stock volume per acre on forest land by habitat type group and habitat type by forest type, Wisconsin, 1996

(In cubic feet/acre)

		Forest type														
	Habitat type avg.	Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
1. North very dry to dry																
QAc	409	949	402	--	--	--	--	--	--	123	--	--	--	--	--	--
ArQTr	540	719	619	--	--	--	--	--	--	305	--	61	2,039	--	--	--
QArE	758	758	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QGCe	794	944	900	--	--	--	--	--	--	803	--	--	520	--	--	--
ArQV	1,065	960	1,332	2,135	--	--	--	--	--	773	--	680	871	1,419	--	--
ArQV-Sm	1,052	1,340	1,616	1,643	--	2,652	--	--	--	1,004	--	459	844	752	--	--
QV	808	820	1,424	2,208	--	--	--	--	--	1,147	--	280	321	--	--	--
QAp	989	1,266	--	--	--	--	--	--	--	950	--	746	--	--	--	--
Group average	852	963	1,045	2,106	--	2,652	--	--	--	749	--	439	700	1,063	--	0
2. North dry to dry-mesic																
PAm	1,244	774	2,142	2,237	--	--	--	--	--	1,249	--	1,798	1,076	--	--	--
PAm-At	547	--	--	--	--	--	--	--	--	--	--	715	496	--	--	--
PMV	1,451	1,521	1,576	2,992	1,143	2,028	--	--	--	1,813	--	1,260	1,052	2,186	--	--
PMV-Q	1,340	1,015	1,193	4,644	--	--	--	--	--	1,156	--	1,725	1,584	339	--	--
PMV-Vb	1,085	--	2,909	2,891	--	--	--	--	--	922	2,262	1,209	634	2,382	--	--
PMV-Po	1,491	925	3,224	1,895	--	--	--	--	--	1,572	--	1,556	993	--	--	--
Group average	1,319	1,033	2,048	2,774	1,143	2,028	--	--	--	1,330	2,262	1,416	949	2,070	--	--
3. North dry-mesic																
FArAa	730	--	--	--	690	313	--	--	--	--	--	778	--	--	--	--
AVVb	1,378	--	690	2,084	649	2,527	--	--	--	1,885	1,315	1,281	1,182	2,288	--	--
AVDe	1,371	--	--	2,609	--	--	--	--	--	1,677	--	1,300	806	1,039	--	--
ACl-V	1,335	--	2,557	--	--	--	--	--	--	--	--	1,270	664	2,023	--	--
ACl	1,374	--	--	--	2,469	--	--	--	--	1,692	--	1,625	82	488	--	--
AQVb-V	1,243	--	1,100	--	--	--	--	--	--	1,792	--	1,201	642	590	--	--
AQVb	1,153	--	2,661	--	--	--	--	--	--	1,500	--	1,210	624	1,709	--	--
AQVb-Ha	1,951	--	1,891	--	--	--	--	--	--	2,002	--	2,310	1,575	1,622	--	--
AAt	1,557	--	2,837	2,694	--	--	--	--	--	1,871	1,489	1,557	940	574	--	--
AFTPo	1,739	--	--	205	--	--	--	--	--	--	--	1,948	3,416	--	--	--
AVb	1,078	--	--	--	--	--	--	--	--	1,267	--	1,698	767	--	--	--
AFVb	1,951	--	--	6,111	--	--	--	--	--	2,686	--	1,712	1,300	--	--	--
Group average	1,428	--	1,945	2,813	939	1,722	--	--	--	1,793	1,399	1,448	957	1,688	--	--

(Table 21 continued on next page)

(Table 21 continued)

	Habitat type avg.	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
4. North mesic																
ATM	1,509	--	2,278	4,123	1,369	2,266	--	--	--	1,926	907	1,645	933	1,627	--	--
AFSt	1,462	--	--	--	--	--	--	--	--	--	--	874	1,700	2,091	--	--
AAs	925	--	--	--	--	--	--	--	--	2,297	766	1,259	621	--	--	--
ATFD	2,592	--	--	--	--	--	--	--	--	2,376	--	2,738	1,909	--	--	--
ATD	1,952	--	--	--	--	--	--	--	--	--	--	2,052	300	--	--	--
ATDH	1,894	--	1,842	--	--	--	--	--	--	--	--	2,171	989	915	--	--
ACaCi	1,584	--	--	3,414	--	--	--	--	--	1,663	--	1,637	992	1,122	--	--
ACaCi-H	1,574	--	204	--	--	--	--	--	--	1,941	--	1,754	2,108	1,145	--	--
AFAl	1,609	--	--	--	--	--	--	--	--	--	--	1,638	1,228	--	--	--
AFAd	2,126	--	--	--	--	--	--	--	--	2,427	--	2,096	--	--	--	--
AViO	1,647	--	2,228	--	--	1,323	--	--	--	--	398	1,813	717	--	--	--
AViO-Ca	1,879	--	--	--	--	--	--	--	--	--	--	1,879	--	--	--	--
AHVb	1,542	--	--	--	--	--	--	--	--	1,277	--	1,733	--	--	--	--
AH	1,843	--	--	--	--	--	--	--	--	2,101	255	1,916	465	--	1,728	--
Group average	1,674	0	1,758	3,913	1,369	1,637	--	--	--	1,837	681	1,828	888	1,312	1,728	0
5. North mesic to wet-mesic																
ArCo	688	--	1,644	--	843	--	--	--	545	--	197	573	707	--	--	--
TMC-V	1,135	2,527	2,370	2,853	831	2,971	1,324	1,414	--	--	894	1,366	702	2,124	--	--
TMC	1,394	1,825	3,599	3,708	1,208	918	--	2,939	--	1,632	1,102	1,502	716	1,731	--	378
TMC-D	1,751	--	--	--	--	3,173	--	1,147	--	--	1,295	1,705	1,767	2,641	--	--
ATM-As	1,325	--	--	--	551	--	--	--	--	--	1,092	1,494	1,034	194	--	--
ATD-l	1,606	--	--	--	--	--	--	--	--	--	--	1,647	229	--	--	--
ACaCi-l	1,203	--	--	--	--	--	--	--	--	1,916	512	1,036	1,085	--	--	--
AViO-l	1,692	--	--	--	--	--	--	--	--	--	--	1,772	633	--	--	--
AH-l	1,390	--	--	2,747	--	--	--	--	--	1,656	1,559	1,318	1,188	--	--	--
Hydromesic north	1,116	1,734	1,700	2,441	1,196	2,479	--	1,877	--	1,416	1,176	1,389	773	847	847	180
Group average	1,252	1,978	2,503	3,091	1,042	1,990	1,254	1,631	545	1,597	1,134	1,468	782	1,361	847	228
6. North wet-mesic to wet																
Lowland north	858	578	3,877	406	738	985	364	1,648	736	1,099	852	1,118	654	1,035	258	56
Group average	858	578	3,877	406	738	985	364	1,648	736	1,099	852	1,118	654	1,035	258	56
7. Superior clay belt																
AbArSn	916	--	1,474	--	1,193	490	--	--	--	--	253	1,175	910	1,176	576	--
AbASnMi	1,434	--	3,358	--	421	--	--	--	--	--	1,268	1,286	1,433	1,912	--	--
Group average	1,095	--	2,274	--	1,041	490	--	--	--	--	931	1,262	1,024	1,482	576	0

(Table 21 continued on next page)

(Table 21 continued)

	Habitat type avg.	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
8. South dry																
PVGy	741	364	1,072	1,295	--	--	--	--	--	737	273	561	810	--	--	--
PEu	764	429	1,163	4,499	--	--	--	--	--	710	--	--	--	--	--	--
PVHa	1,062	--	1,668	232	--	--	--	--	--	1,318	65	1,417	907	655	--	--
PVCr	883	459	1,564	--	--	--	--	--	--	929	--	834	261	--	--	--
PVG	1,002	842	744	2,319	--	--	--	--	--	1,245	800	1,092	413	519	--	--
PVRh	875	714	1,140	822	--	--	--	--	--	1,029	333	1,380	556	375	--	--
Group average	869	501	1,148	1,374	--	--	--	--	--	934	372	1,240	603	476	--	0
9. South dry-mesic																
ArDe-V	1,205	--	1,916	1,257	--	--	--	--	--	1,245	--	1,177	1,928	81	--	--
ArDe	1,179	816	1,215	2,426	--	--	--	--	--	1,179	1,365	969	694	--	--	--
AQVb-Gr	1,924	--	--	2,399	--	--	--	--	--	2,024	--	2,049	528	--	--	--
ArCi	1,195	--	2,822	--	--	1,457	--	--	--	1,406	--	957	349	312	--	--
ArCi-Ph	1,196	--	--	1,403	--	--	--	--	--	1,332	663	936	1,350	1,709	--	--
AArVb	1,054	--	--	--	--	--	--	--	--	1,523	--	442	434	--	--	--
AArL	1,579	--	--	--	--	--	--	--	--	1,579	--	--	--	--	--	--
Group average	1,229	816	1,260	1,801	--	1,457	--	--	--	1,324	663	1,088	977	1,292	--	0
10. South dry-mesic to mesic																
ATiDe-Ha	2,135	--	--	--	--	--	--	--	--	2,377	--	1,261	--	--	--	--
ATiDe-As	1,896	--	--	--	--	--	--	--	--	1,622	--	2,874	1,010	--	--	--
ATiDe	1,047	--	--	--	--	--	--	--	--	1,170	721	880	586	1,905	--	--
ATiFrCi	1,223	--	--	--	--	--	--	--	--	859	--	1,972	--	--	--	--
ATiFrVb	1,429	--	--	1,025	--	--	--	--	--	1,688	1,745	1,241	353	--	--	--
AFrDeO	1,745	--	965	1,370	--	--	--	--	--	1,801	--	1,684	--	--	--	--
Group average	1,287	--	965	684	--	--	--	--	--	1,410	1,312	1,162	529	1,905	--	--
11. South dry-mesic to mesic (phase)																
ATiDe(Pr)	943	--	--	--	--	--	--	--	--	1,143	400	448	1,048	564	--	--
ATiCr(O)	1,081	--	--	--	--	--	--	--	--	1,087	660	1,077	1,667	852	--	--
ATiCr(As)	1,522	--	--	--	--	--	--	--	--	1,293	--	2,076	--	828	--	--
ATiFrVb(Cr)	822	--	1,664	--	--	--	--	--	--	1,067	--	538	556	--	--	--
AFrDe(Vb)	621	--	--	678	--	--	--	--	--	750	--	396	--	--	--	--
Group average	1,037	--	1,664	678	--	--	--	--	--	1,111	449	1,013	995	731	--	--

(Table 21 continued on next page)

(Table 21 continued)

	Habitat type avg.	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
12. South mesic																
AFTD	2,330	--	--	--	--	--	--	--	--	--	--	2,330	--	--	--	--
ATiSa-De	1,202	--	--	--	--	--	--	--	--	1,334	922	1,118	1,448	559	--	--
ATiSa	1,525	--	--	--	--	--	--	--	--	1,429	--	1,700	--	--	--	--
ATiFrCa	1,861	--	--	--	--	--	--	--	--	1,145	--	2,112	--	--	--	--
ATiCa-La	1,361	--	--	--	--	--	--	--	--	1,685	770	1,545	348	245	--	--
ATiCa	1,354	129	--	718	--	--	--	--	--	1,420	236	1,417	--	1,298	--	--
ATiCa-Al	1,362	--	--	--	--	--	--	--	--	2,356	--	912	--	--	--	--
ATiH	1,219	--	--	--	--	--	--	--	--	1,394	--	1,038	--	--	--	--
AFH	1,760	--	--	--	--	--	--	--	--	1,794	1,293	1,905	1,316	--	--	--
AFAs	1,905	--	--	--	--	--	--	--	--	1,159	--	1,983	--	--	--	--
AFAs-O	1,513	--	--	--	--	--	--	--	--	--	--	1,513	--	--	--	--
Group average	1,369	129	0	718	--	--	--	--	--	1,383	889	1,445	1,330	710	--	--
13. South mesic (phase)																
ATiAs(De)	689	--	--	--	--	--	--	--	--	734	--	666	--	--	--	--
ATiFrCA(O)	1,404	--	3,009	--	--	--	--	--	--	1,419	110	675	--	--	--	--
Group average	1,239	--	3,009	--	--	--	--	--	--	1,316	110	671	--	--	--	--
14. South mesic to wet-mesic																
Hydromesic south	1,038	--	--	--	--	--	--	--	--	1,280	781	1,186	598	--	2,178	--
Group average	1,038	--	--	--	--	--	--	--	--	1,280	781	1,186	598	--	2,178	--
15. South wet-mesic to wet																
Lowland south	922	657	--	674	--	--	--	1,096	485	1,041	974	951	537	966	--	--
Group average	922	657	--	674	--	--	--	1,096	485	1,041	974	951	537	966	--	0
16. No type identified	945	833	1,457	883	847	724	211	1,518	818	906	733	1,179	607	1,000	--	5
All habitat types	1,175	798	1,465	2,023	875	1,295	371	1,615	695	1,222	886	1,477	812	1,297	559	34

Table 22.--Average total live tree biomass per acre on forest land by habitat type group and habitat type by forest type, Wisconsin, 1996

(In green tons/acre)

Habitat type group and habitat type	Habitat type avg.	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
1. North very dry to dry																
QAc	18.5	40.2	17.9	--	--	--	--	--	--	7.4	--	--	1.6	--	--	--
ArQTr	33.4	30.2	28.4	--	--	--	--	--	--	42.3	--	5.6	90.6	--	--	--
QArE	31.3	31.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
QGCe	45.4	40.0	37.2	--	--	--	--	--	--	57.3	--	--	36.2	--	--	--
ArQV	49.3	41.2	47.8	82.6	--	--	--	--	--	39.5	--	35.2	47.6	69.6	--	--
ArQV-Sm	56.5	48.8	61.4	77.9	--	90.5	--	--	--	67.7	--	42.8	52.6	43.7	--	--
QV	44.3	34.1	58.0	101.7	--	--	--	--	--	68.0	--	21.5	25.3	--	--	--
QAp	54.5	58.4	--	--	--	--	--	--	--	57.0	--	39.0	--	--	--	--
Group average	44.6	40.4	41.2	86.2	--	90.5	--	--	--	49.9	--	30.5	42.7	55.7	--	0.0
2. North dry to dry-mesic																
PAm	71.6	36.7	73.1	80.9	--	--	--	--	--	80.7	--	93.5	65.0	--	--	--
PAm-At	47.8	--	--	--	--	--	--	--	--	--	--	39.1	50.4	--	--	--
PMV	70.8	58.8	55.4	107.8	60.1	105.3	--	--	--	100.8	--	66.8	58.1	103.7	--	--
PMV-Q	63.7	46.2	41.0	170.5	--	--	--	--	--	66.5	--	85.2	69.2	26.9	--	--
PMV-Vb	57.4	--	101.0	117.6	--	--	--	--	--	57.2	94.9	66.7	41.0	140.1	--	--
PMV-Po	84.6	33.4	110.4	66.9	--	--	--	--	--	96.0	--	95.7	71.5	--	--	--
Group average	69.0	43.9	71.2	101.6	60.1	105.3	--	--	--	81.3	94.9	77.9	56.2	100.6	--	--
3. North dry-mesic																
FArAa	51.8	--	--	--	28.2	19.7	--	--	--	--	--	56.6	--	--	--	--
AVVb	77.5	--	24.9	82.4	36.6	116.3	--	--	--	99.2	65.3	77.9	69.5	115.3	--	--
AVDe	83.0	--	--	98.3	--	--	--	--	--	102.6	--	85.5	46.9	56.6	--	--
ACl-V	73.6	--	93.6	--	--	--	--	--	--	--	--	77.5	43.8	103.7	--	--
ACl	99.3	--	--	--	112.9	--	--	--	--	122.9	--	119.1	18.4	39.8	--	--
AQVb-V	73.4	--	47.3	--	--	--	--	--	--	101.1	--	72.9	48.6	39.5	--	--
AQVb	65.4	--	94.2	--	--	--	--	--	--	85.2	--	70.1	43.1	84.4	--	--
AQVb-Ha	98.6	--	60.7	--	--	--	--	--	--	106.1	--	113.6	84.5	84.1	--	--
AAt	90.9	--	105.0	91.0	--	--	--	--	--	110.8	78.5	91.2	59.6	56.1	--	--
AFTPo	86.3	--	--	12.9	--	--	--	--	--	--	--	104.3	134.3	--	--	--
AVb	65.9	--	--	--	--	--	--	--	--	72.2	--	88.4	55.1	--	--	--
AFVb	99.1	--	--	208.2	--	--	--	--	--	134.7	--	92.7	68.6	--	--	--
Group average	81.3	--	71.0	102.5	48.2	81.2	--	--	--	103.1	71.7	85.5	58.2	87.8	--	--

(Table 22 continued on next page)

(Table 22 continued)

Habitat type group and habitat type	Habitat type avg.	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
4. North mesic																
ATM	85.7	--	81.1	139.4	70.6	95.7	--	--	--	114.0	53.6	95.3	55.6	92.1	--	--
AFSt	83.5	--	--	--	--	--	--	--	--	--	--	42.4	104.2	123.7	--	--
AAs	64.1	--	--	--	--	--	--	--	--	127.2	34.9	94.7	49.4	--	--	--
ATFD	129.0	--	--	--	--	--	--	--	--	154.0	--	134.7	100.7	--	--	--
ATD	112.6	--	--	--	--	--	--	--	--	--	--	117.7	28.4	--	--	--
ATDH	95.0	--	74.5	--	--	--	--	--	--	--	--	104.9	64.5	64.3	--	--
ACaCi	94.4	--	--	139.1	--	--	--	--	--	101.1	--	96.8	71.7	64.2	--	--
ACaCi-H	91.8	--	22.2	--	--	--	--	--	--	113.8	--	103.7	102.3	56.2	--	--
AFAl	97.7	--	--	--	--	--	--	--	--	--	--	100.4	62.8	--	--	--
AFAd	113.3	--	--	--	--	--	--	--	--	130.7	--	111.5	--	--	--	--
AViO	91.6	--	91.8	--	--	66.8	--	--	--	--	41.5	99.4	51.0	29.4	--	--
AViO-Ca	109.3	--	--	--	--	--	--	--	--	--	--	109.3	--	--	--	--
AHVb	84.5	--	--	--	--	--	--	--	--	77.8	--	91.2	24.0	--	--	--
AH	99.0	--	--	--	--	--	--	--	--	121.0	15.7	102.1	37.1	--	79.1	--
Group average	93.7	0.0	69.3	139.3	70.6	76.5	--	--	--	108.9	42.1	101.7	55.9	76.1	79.1	0.0
5. North mesic to wet-mesic																
ArCo	43.0	--	86.3	--	63.0	1.7	--	--	42.0	--	15.3	74.2	40.8	--	--	--
TMC-V	58.6	102.9	89.7	103.4	39.9	108.8	62.7	61.9	--	--	59.7	69.5	44.2	111.2	--	--
TMC	73.9	72.8	133.9	142.9	64.0	40.0	30.1	120.1	--	90.1	70.3	82.1	43.0	90.0	--	17.4
TMC-D	93.6	--	--	--	--	117.4	--	53.4	--	--	83.5	94.7	90.0	130.1	--	--
ATM-As	74.7	--	--	--	27.4	--	--	--	--	4.0	63.2	84.1	56.5	15.8	--	--
ATD-I	97.8	--	--	--	--	--	--	--	--	--	--	99.2	49.4	--	--	--
ACaCi-I	72.9	--	--	--	--	--	--	--	--	107.5	38.8	66.4	65.4	--	--	--
AViO-I	96.4	--	--	--	--	--	--	--	--	--	--	100.5	41.9	--	--	--
AH-I	79.2	--	--	98.5	--	--	--	--	--	105.9	84.2	81.2	61.0	3.8	--	--
Hydromesic north	64.0	60.6	60.3	93.9	56.5	98.1	--	101.0	--	74.2	67.8	79.9	47.3	48.0	47.4	8.3
Group average	70.1	77.6	95.5	115.0	54.2	76.2	61.0	78.5	42.0	87.6	67.3	83.9	47.4	72.6	47.4	10.5
6. North wet-mesic to wet																
Lowland north	47.0	27.4	125.0	25.5	42.0	57.2	26.8	75.1	37.6	73.9	50.3	61.7	37.9	55.5	19.5	2.2
Group average	47.0	27.4	125.0	25.5	42.0	57.2	26.8	75.1	37.6	73.9	50.3	61.7	37.9	55.5	19.5	2.2
7. Superior clay belt																
AbArSn	49.9	--	55.9	--	59.2	17.8	--	--	--	--	26.3	62.1	51.2	61.6	30.1	--
AbASnMi	79.4	--	131.8	--	35.1	--	--	--	--	--	73.0	76.2	79.0	98.1	--	--
Group average	60.1	--	88.1	--	54.5	17.8	--	--	--	--	57.5	73.1	57.3	76.8	30.1	0.0

(Table 22 continued on next page)

(Table 22 continued)

Habitat type group and habitat type	Habitat type avg.	Forest type: Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
8. South dry																
PVGy	47.7	20.1	43.0	66.1	--	--	--	--	--	57.3	17.1	35.8	46.6	--	--	--
PEu	47.8	25.6	48.9	146.1	--	--	--	--	--	54.9	--	--	16.6	--	--	--
PVHa	62.5	5.1	59.7	10.2	--	--	--	--	--	83.1	7.9	73.7	52.2	52.6	--	--
PVCr	50.4	22.3	57.2	--	--	--	--	--	--	64.1	--	53.6	15.3	--	--	--
PVG	57.8	39.6	35.4	87.7	--	--	--	--	--	75.8	48.8	59.7	28.5	27.6	--	--
PVRh	51.6	36.2	46.3	31.3	--	--	--	--	--	63.3	25.3	75.3	38.4	21.1	--	--
Group average	52.1	26.6	47.0	56.3	--	--	--	--	--	63.6	26.1	67.9	39.2	29.6	--	0.0
9. South dry-mesic																
ArDe-V	76.1	--	62.1	53.6	--	--	--	--	--	79.2	--	86.8	95.9	19.0	--	--
ArDe	73.2	41.4	57.1	96.9	--	--	--	--	--	79.4	103.1	60.8	37.2	--	--	--
AQVb-Gr	97.2	--	--	95.6	--	--	--	--	--	114.3	2.3	98.5	28.2	--	--	--
ArCi	80.1	--	108.3	--	--	51.2	--	--	--	101.6	79.5	61.2	24.5	51.6	--	--
ArCi-Ph	77.2	--	10.4	65.3	--	--	--	--	--	85.3	54.3	65.0	76.9	97.8	--	0.2
AArVb	69.2	--	--	--	--	--	--	--	--	98.2	--	31.3	31.0	--	--	--
AArL	92.3	--	--	--	--	--	--	--	--	92.3	--	--	--	--	--	--
Group average	77.4	41.4	56.4	76.5	--	51.2	--	--	--	85.6	54.1	69.3	55.5	79.1	--	0.1
10. South dry-mesic to mesic																
ATiDe-Ha	123.4	--	--	--	--	--	--	--	--	135.0	--	81.5	--	--	--	--
ATiDe-As	110.3	--	--	--	--	--	--	--	--	96.9	--	157.0	72.0	--	--	--
ATiDe	69.6	--	--	--	--	--	--	--	--	77.0	33.2	60.6	41.0	115.0	--	--
ATiFrCi	71.3	--	--	--	--	--	--	--	--	53.4	--	109.5	--	--	--	--
ATiFrVb	84.7	--	--	74.5	--	--	--	--	--	97.3	92.5	76.4	33.0	--	--	--
AFrDeO	92.7	--	65.0	44.2	--	--	--	--	--	99.7	--	82.7	--	--	--	--
Group average	79.4	--	65.0	38.7	--	--	--	--	--	86.4	67.8	72.9	40.3	115.0	--	--
11. South dry-mesic to mesic (phase)																
ATiDe(Pr)	68.6	--	--	--	--	--	--	--	--	77.5	32.4	57.3	71.8	50.7	--	--
ATiCr(O)	77.4	--	--	--	--	--	--	--	--	79.0	56.1	76.1	89.3	61.9	--	--
ATiCr(As)	87.8	--	--	--	--	--	--	--	--	80.4	--	111.6	--	49.7	--	--
ATiFrVb(Cr)	52.3	--	54.7	--	--	--	--	--	--	67.9	5.8	39.3	45.2	--	--	--
AFrDe(Vb)	37.6	--	--	39.8	--	--	--	--	--	36.7	--	34.6	--	--	--	--
Group average	71.0	--	54.7	39.8	--	--	--	--	--	76.8	38.4	69.5	64.9	52.2	--	--

(Table 22 continued on next page)

(Table 22 continued)

Habitat type group and habitat type	Habitat type avg.	Forest type														
		Jack pine	Red pine	White pine	Balsam fir	White spruce	Black spruce	Northern white-cedar	Tamarack	Oak-hickory	Elm-ash-soft maple	Maple-basswood	Aspen	Paper birch	Balsam poplar	Non-stocked
12. South mesic																
AFTD	103.8	--	--	--	--	--	--	--	--	--	--	103.8	--	--	--	--
ATiSa-De	76.0	--	--	--	--	--	--	--	--	87.8	60.9	67.8	81.9	49.6	--	--
ATiSa	93.1	--	--	--	--	--	--	--	--	91.0	--	96.8	--	--	--	--
ATiFrCa	108.3	--	--	--	--	--	--	--	--	72.3	--	121.1	--	--	--	--
ATiCa-La	78.0	--	--	--	--	--	--	--	--	100.4	46.9	86.3	26.7	33.7	--	--
ATiCa	80.1	17.6	--	41.0	--	--	--	--	--	87.4	12.0	81.7	--	93.8	--	--
ATiCa-Al	78.6	--	--	--	--	--	--	--	--	124.3	--	57.9	--	--	--	--
ATiH	74.0	--	--	--	--	--	--	--	--	82.3	--	65.4	--	--	--	--
AFH	94.3	--	--	--	--	--	--	--	--	85.1	74.9	101.3	73.2	--	--	--
AFAs	112.2	--	--	--	--	--	--	--	--	87.1	--	114.8	--	--	--	--
AFAs-O	87.6	--	--	--	--	--	--	--	--	--	--	87.6	--	--	--	--
Group average	82.1	17.6	0.0	41.0	--	--	--	--	--	87.5	56.1	83.5	75.6	58.8	--	--
13. South mesic (phase)																
ATiAs(De)	54.6	--	--	--	--	--	--	--	--	54.5	--	54.7	--	--	--	--
ATiFrCA(O)	79.4	--	103.1	--	--	--	--	--	--	89.9	29.7	50.1	--	--	--	--
Group average	73.7	--	103.1	--	--	--	--	--	--	84.6	29.7	52.1	--	--	--	--
14. South mesic to wet-mesic																
Hydromesic south	60.4	--	--	--	--	--	--	--	--	71.5	48.4	67.8	31.5	--	121.2	--
Group average	60.4	--	--	--	--	--	--	--	--	71.5	48.4	67.8	31.5	--	121.2	--
15. South wet-mesic to wet																
Lowland south	55.5	28.7	--	27.5	--	--	--	56.7	27.8	60.7	58.1	73.1	28.6	53.9	--	--
Group average	55.5	28.7	--	27.5	--	--	--	56.7	27.8	60.7	58.1	73.1	28.6	53.9	--	0.0
16. No type identified	53.8	37.1	53.2	36.5	44.7	33.7	16.6	70.8	37.4	60.4	47.8	70.1	38.7	57.8	--	0.4
All habitat types	67.3	35.9	55.6	78.4	47.3	58.0	27.0	74.2	36.0	77.8	53.6	84.9	49.2	71.1	32.4	1.6

Table 23.-- Net growing-stock volume on forest land by species group by habitat type group and habitat type, Wisconsin, 1996

(In thousand cubic feet)

	1. North very dry to dry								
Species group	QAc	ArQTr	QArE	QGCe	ArQV	ArQV-Sm	QV	QAp	**Group total**
Jack pine	22,950	8,353	2,502	38,434	29,296	11,866	17,111	26,384	**156,896**
Red pine	15,126	10,307	--	26,687	53,193	59,418	28,412	--	**193,143**
White pine	--	62	--	1,235	20,377	6,413	5,620	--	**33,707**
White spruce	--	--	--	--	1,614	2,917	--	--	**4,531**
Black spruce	--	--	--	--	890	--	--	--	**890**
Balsam fir	--	--	--	--	471	601	484	--	**1,556**
Hemlock	--	--	--	--	--	--	--	--	**0**
Tamarack	--	--	--	--	--	758	--	--	**758**
Eastern redcedar	--	--	--	--	--	--	--	--	**0**
N. white-cedar	--	--	--	--	--	--	--	--	**0**
Other softwoods	--	--	--	--	261	--	--	--	**261**
Total softwoods	38,076	18,722	2,502	66,356	106,102	81,973	51,627	26,384	**391,742**
Select white oak	--	--	--	2,828	--	--	896	2,243	**5,967**
Select red oak	558	1,355	--	21,950	11,713	31,555	1,894	2,140	**71,165**
Other red oak	392	3,292	--	12,660	3,057	453	37,279	10,904	**68,037**
Select hickory	--	--	--	--	--	--	--	--	**0**
Other hickory	--	--	--	--	--	--	--	--	**0**
Basswood	--	--	--	--	--	--	--	--	**0**
Beech	--	--	--	--	--	--	--	--	**0**
Yellow birch	--	--	--	--	--	--	--	--	**0**
Hard maple	--	--	--	--	--	--	--	--	**0**
Soft maple	--	--	--	--	5,021	2,821	3,598	--	**11,440**
Elm	--	--	--	--	--	--	--	--	**0**
Black ash	--	--	--	--	--	--	--	--	**0**
White & green ash	--	--	--	--	--	--	--	--	**0**
Cottonwood	--	--	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	**0**
Balsam poplar	--	--	--	--	217	194	--	--	**411**
Bigtooth aspen	--	1,410	--	6,014	20,629	28,081	1,090	367	**57,591**
Quaking aspen	850	295	--	10,063	20,951	10,519	6,836	--	**49,514**
Paper birch	--	--	--	1,079	6,777	9,447	1,075	--	**18,378**
River birch	--	--	--	--	--	--	--	--	**0**
Black cherry	--	--	--	--	420	--	--	--	**420**
Black walnut	--	--	--	--	--	--	--	--	**0**
Butternut	--	--	--	--	--	--	--	--	**0**
Other hardwoods	--	--	--	--	--	--	--	--	**0**
Total hardwoods	1,800	6,352	0	54,594	68,785	83,070	52,668	15,654	**282,923**
All species	39,876	25,074	2,502	120,950	174,887	165,043	104,295	42,038	**674,665**

(Table 23 continued on next page)

(Table 23 continued)

Species group	2. North dry to dry-mesic						Group total
	PAm	PAm-At	PMV	PMV-Q	PMV-Vb	PMV-Po	
Jack pine	15,703	--	13,905	9,759	1,220	5,969	**46,556**
Red pine	28,194	264	78,477	6,410	37,092	16,091	**166,528**
White pine	20,064	563	60,605	4,171	16,179	12,402	**113,984**
White spruce	245	--	9,947	--	1,426	333	**11,951**
Black spruce	--	--	884	--	--	--	**884**
Balsam fir	1,337	--	9,003	--	3,742	1,193	**15,275**
Hemlock	--	--	394	--	962	--	**1,356**
Tamarack	168	--	--	--	--	--	**168**
Eastern redcedar	--	--	--	--	--	--	**0**
N. white-cedar	--	--	--	--	1,632	--	**1,632**
Other softwoods	--	--	--	--	--	--	**0**
Total softwoods	65,711	827	173,215	20,340	62,253	35,988	**358,334**
Select white oak	14,964	520	237	194	1,259	--	**17,174**
Select red oak	34,213	251	41,733	465	10,172	19,877	**106,711**
Other red oak	9,429	--	1,642	9,171	6,645	1,952	**28,839**
Select hickory	--	--	--	--	--	--	**0**
Other hickory	--	--	--	--	--	--	**0**
Basswood	586	--	--	--	273	--	**859**
Beech	--	--	--	--	248	--	**248**
Yellow birch	--	--	669	--	155	--	**824**
Hard maple	2,419	--	9,870	--	261	5,047	**17,597**
Soft maple	13,158	263	45,253	1,800	23,936	5,946	**90,356**
Elm	--	--	--	--	--	--	**0**
Black ash	--	--	--	--	599	--	**599**
White & green ash	--	--	664	--	190	--	**854**
Cottonwood	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	**0**
Balsam poplar	249	--	--	--	872	--	**1,121**
Bigtooth aspen	22,649	--	38,990	674	14,099	13,284	**89,696**
Quaking aspen	35,272	1,012	59,928	5,690	28,227	10,703	**140,832**
Paper birch	4,708	628	65,854	--	10,410	7,821	**89,421**
River birch	--	--	--	--	--	--	**0**
Black cherry	--	--	--	--	485	--	**485**
Black walnut	--	--	--	--	--	--	**0**
Butternut	--	--	--	--	--	--	**0**
Other hardwoods	--	--	--	--	--	--	**0**
Total hardwoods	137,647	2,674	264,840	17,994	97,831	64,630	**585,616**
All species	203,358	3,501	438,055	38,334	160,084	100,618	**943,950**

(Table 23 continued on next page)

(Table 23 continued)

Species group	3. North dry-mesic												Group total
	FArAa	AVVb	AVDe	ACl-V	ACl	AQVb-V	AQVb	AQVb-Ha	AAt	AFTPo	AVb	AFVb	
Jack pine	--	--	1,038	--	--	--	2,252	--	296	--	--	--	**3,586**
Red pine	90	13,165	6,980	4,717	--	5,171	15,813	6,163	10,459	--	--	2,099	**64,657**
White pine	129	22,050	13,759	1,687	373	1,970	10,453	11,928	13,020	666	262	20,887	**97,184**
White spruce	250	1,175	255	2,361	--	--	1,341	1,080	--	--	--	381	**6,843**
Black spruce	--	221	--	--	308	--	--	--	--	--	--	--	**529**
Balsam fir	--	10,145	1,584	3,021	2,650	466	3,081	2,174	434	--	--	2,173	**25,728**
Hemlock	--	--	--	--	--	--	613	456	--	385	--	1,524	**2,978**
Tamarack	--	--	--	--	--	--	--	--	339	--	--	--	**339**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	**0**
N. white-cedar	57	--	--	--	--	--	976	208	--	2,189	--	--	**3,430**
Other softwoods	--	2,363	--	--	--	--	--	--	1,836	--	--	--	**4,199**
Total softwoods	526	49,119	23,616	11,786	3,331	7,607	34,529	22,009	26,384	3,240	262	27,064	**209,473**
Select white oak	252	261	21,623	--	188	9,320	3,310	2,715	29,460	--	3,009	2,158	**72,296**
Select red oak	984	62,467	66,723	1,769	7,362	26,306	47,065	30,721	91,436	94	8,685	34,002	**377,614**
Other red oak	1,157	770	--	301	--	--	2,629	--	3,883	--	--	--	**8,740**
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Other hickory	--	--	449	--	--	1,256	753	--	2,071	--	--	922	**5,451**
Basswood	--	3,999	7,558	2,225	1,105	7,843	6,350	7,970	20,664	319	1,102	14,143	**73,278**
Beech	--	149	--	--	--	--	169	453	--	266	--	1,790	**2,827**
Yellow birch	--	--	201	--	950	268	450	245	1,310	--	--	--	**3,424**
Hard maple	--	26,318	7,221	2,851	14,523	3,439	11,171	4,895	29,651	4,750	3,319	26,602	**134,740**
Soft maple	1,584	28,117	33,056	11,781	4,800	14,275	46,226	13,488	35,350	--	3,860	19,815	**212,352**
Elm	--	--	151	--	--	300	215	255	700	--	143	--	**1,764**
Black ash	--	697	1,783	419	305	--	--	--	1,222	82	892	--	**5,400**
White & green ash	--	726	1,976	--	--	2,564	5,445	1,788	8,007	94	1,989	3,239	**25,828**
Cottonwood	--	--	128	--	--	--	--	--	--	--	--	--	**128**
Willow	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam poplar	--	--	--	--	--	--	--	274	--	--	--	489	**763**
Bigtooth aspen	681	30,605	25,540	226	1,381	10,276	21,461	7,449	25,545	427	648	14,607	**138,846**
Quaking aspen	917	36,261	12,058	9,626	229	5,215	12,088	18,787	38,323	124	4,777	13,844	**152,249**
Paper birch	181	40,369	10,247	20,179	3,344	4,689	20,278	6,195	12,914	3,301	1,070	5,755	**128,522**
River birch	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Black cherry	--	252	--	--	--	--	--	222	906	--	--	--	**1,380**
Black walnut	--	--	260	--	--	--	--	--	--	--	--	--	**260**
Butternut	--	--	--	--	--	--	1,229	--	536	--	--	1,216	**2,981**
Other hardwoods	--	--	--	--	--	--	--	--	134	--	--	--	**134**
Total hardwoods	5,756	230,991	188,974	49,377	34,187	85,751	178,839	95,457	302,112	9,457	29,494	138,582	**1,348,977**
All species	6,282	280,110	212,590	61,163	37,518	93,358	213,368	117,466	328,496	12,697	29,756	165,646	**1,558,450**

(Table 23 continued on next page)

(Table 23 continued)

Species group	4. North mesic														Group total
	ATM	AFSt	AAs	ATFD	ATD	ATDH	ACaCi	ACaCi-H	AFAl	AFAd	AViO	AViO-Ca	AHVb	AH	
Jack pine	811	--	--	--	--	--	--	--	--	--	--	--	736	--	**1,547**
Red pine	29,059	--	--	--	985	4,976	4,651	1,145	--	--	7,867	--	--	--	**48,683**
White pine	63,487	163	628	6,145	586	4,325	9,395	3,692	344	880	1,548	--	--	133	**91,326**
White spruce	25,422	--	--	--	1,264	--	--	--	--	--	11,993	--	--	2,298	**40,977**
Black spruce	439	--	--	--	--	--	--	--	--	--	167	--	--	--	**606**
Balsam fir	34,650	--	2,601	357	3,273	1,074	--	1,211	--	--	8,490	206	--	2,260	**54,122**
Hemlock	52,627	1,986	--	19,984	29,824	15,392	--	--	669	10,352	29,503	1,238	--	21,630	**183,205**
Tamarack	418	--	--	1,158	--	--	--	--	--	--	--	--	--	194	**1,770**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
N. white-cedar	3,674	1,455	--	--	2,014	76	--	--	--	1,162	1,709	123	--	277	**10,490**
Other softwoods	445	--	--	--	--	--	449	--	--	--	--	--	--	--	**894**
Total softwoods	211,032	3,604	3,229	27,644	37,946	25,843	14,495	6,048	1,013	12,394	61,277	1,567	736	26,792	**433,620**
Select white oak	4,794	--	490	--	--	--	22,232	3,975	--	--	407	--	966	6,953	**39,817**
Select red oak	91,669	1,488	5,519	4,259	11,083	9,893	52,539	12,692	1,574	11,292	18,089	170	8,621	42,332	**271,220**
Other red oak	--	--	--	--	--	--	4,269	--	--	--	--	--	--	--	**4,269**
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Other hickory	636	--	--	--	--	--	3,189	6,920	--	2,577	--	--	180	7,490	**20,992**
Basswood	94,287	--	2,599	11,891	46,759	21,970	25,457	17,716	2,823	12,662	174,773	11,700	2,170	141,925	**566,732**
Beech	236	--	--	13,209	337	1,034	--	--	3,152	7,199	1,011	--	--	--	**26,178**
Yellow birch	31,641	--	722	6,765	27,546	5,595	1,090	936	--	557	18,370	683	--	17,122	**111,027**
Hard maple	291,986	470	6,574	21,429	184,171	31,045	24,861	29,911	18,736	28,824	346,585	31,829	3,275	273,641	**1,293,337**
Soft maple	156,051	353	1,875	12,879	26,989	704	14,527	7,403	--	646	34,330	1,980	4,624	23,722	**286,083**
Elm	1,665	--	321	179	2,842	423	1,827	734	--	387	4,112	423	--	8,813	**21,726**
Black ash	13,111	--	2,278	--	919	169	5,280	2,699	--	--	6,035	790	--	3,334	**34,615**
White & green ash	23,603	--	207	778	6,332	6,118	8,866	7,736	1,753	3,060	24,240	186	2,805	33,467	**119,151**
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam poplar	2,242	--	--	--	--	407	--	--	227	--	2,877	--	--	1,863	**7,616**
Bigtooth aspen	47,657	2,662	--	10,563	752	381	17,277	309	1,738	--	2,415	--	2,979	6,028	**92,761**
Quaking aspen	134,525	533	3,272	8,470	11,475	6,519	15,138	10,792	583	3,838	68,191	1,729	903	22,742	**288,710**
Paper birch	83,549	5,511	1,950	7,441	11,572	4,113	16,833	3,640	4,517	949	19,020	814	--	5,325	**165,234**
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Black cherry	6,840	--	--	216	7,615	347	1,535	--	246	--	14,359	--	--	8,189	**39,347**
Black walnut	--	--	--	--	179	--	--	505	--	--	--	--	--	--	**684**
Butternut	--	--	--	--	--	--	1,086	1,790	--	1,070	385	--	182	615	**5,128**
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Total hardwoods	984,492	11,017	25,807	98,079	338,571	88,718	216,006	107,758	35,349	73,061	735,199	50,304	26,705	603,561	**3,394,627**
All species	1,195,524	14,621	29,036	125,723	376,517	114,561	230,501	113,806	36,362	85,455	796,476	51,871	27,441	630,353	**3,828,247**

(Table 23 continued on next page)

(Table 23 continued)

Species group	5. North mesic to wet-mesic										Group total
	ArCo	TMC-V	TMC	TMC-D	ATM-As	ATD-I	ACaCi-I	AViO-I	AH-I	Hydromesic north	
Jack pine	--	2,525	4,645	--	--	--	--	--	--	6,163	**13,333**
Red pine	4,114	23,518	28,007	791	204	--	--	526	455	12,255	**69,870**
White pine	213	49,563	55,163	3,349	5,773	--	2,751	677	39,107	25,036	**181,632**
White spruce	789	24,334	19,932	11,033	1,488	--	--	2,493	--	29,839	**89,908**
Black spruce	1,315	11,040	5,032	--	--	--	--	--	--	2,644	**20,031**
Balsam fir	5,895	26,494	58,778	5,500	2,099	1,121	253	1,722	2,244	52,896	**157,002**
Hemlock	--	5,264	66,744	12,672	5,506	8,216	--	10,232	627	20,847	**130,108**
Tamarack	673	870	1,539	--	--	--	--	--	--	5,588	**8,670**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	**0**
N. white-cedar	--	3,948	24,300	8,189	--	113	--	1,914	--	23,327	**61,791**
Other softwoods	--	--	--	--	--	--	--	--	--	--	**0**
Total softwoods	12,999	147,556	264,140	41,534	15,070	9,450	3,004	17,564	42,433	178,595	**732,345**
Select white oak	--	--	1,577	--	880	--	17,619	198	5,994	16,392	**42,660**
Select red oak	799	3,673	5,514	841	7,179	1,319	24,822	1,884	7,574	29,957	**83,562**
Other red oak	--	890	888	118	355	--	743	--	--	1,523	**4,517**
Select hickory	--	--	--	--	--	--	--	--	--	--	**0**
Other hickory	--	--	--	--	--	--	306	--	2,933	3,692	**6,931**
Basswood	--	--	2,005	734	14,990	12,431	10,297	30,910	18,242	46,447	**136,056**
Beech	--	--	535	--	--	--	--	--	--	--	**535**
Yellow birch	--	409	19,457	8,637	6,232	2,995	258	9,936	1,926	33,864	**83,714**
Hard maple	--	3,016	29,957	10,538	8,417	33,067	6,103	104,094	45,588	77,282	**318,062**
Soft maple	2,179	31,026	97,549	32,342	52,660	10,728	6,341	21,277	22,220	249,171	**525,493**
Elm	--	168	987	--	2,556	--	1,953	1,736	3,710	8,523	**19,633**
Black ash	183	143	13,079	1,930	2,380	2,264	6,229	7,392	6,034	54,434	**94,068**
White & green ash	--	--	404	1,094	4,318	3,645	7,748	11,080	8,846	36,065	**73,200**
Cottonwood	--	--	--	--	--	--	--	--	--	77	**77**
Willow	--	--	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	**0**
Balsam poplar	--	110	245	--	--	--	--	--	--	5,965	**6,320**
Bigtooth aspen	242	6,279	12,944	1,454	1,238	--	6,073	--	--	21,901	**50,131**
Quaking aspen	16,184	51,493	64,845	8,925	22,967	2,876	15,372	10,965	25,095	254,463	**473,185**
Paper birch	1,708	29,773	50,554	3,250	1,054	261	1,424	2,201	--	34,912	**125,137**
River birch	--	--	--	--	--	--	--	--	--	--	**0**
Black cherry	151	82	1,294	516	--	--	684	584	650	4,560	**8,521**
Black walnut	--	--	--	--	312	--	--	--	--	--	**312**
Butternut	--	--	--	--	--	--	227	--	1,284	--	**1,511**
Other hardwoods	--	--	--	--	--	--	--	--	--	176	**176**
Total hardwoods	21,446	127,062	301,834	70,379	125,538	69,586	106,199	202,257	150,096	879,404	**2,053,801**
All species	34,445	274,618	565,974	111,913	140,608	79,036	109,203	219,821	192,529	1,057,999	**2,786,146**

(Table 23 continued on next page)

(Table 23 continued)

Species group	6. North wet-mesic to wet		7. Superior clay belt			8. South dry						
	Lowland north	**Group total**	AbArSn	AbASnMi	**Group total**	PVGy	PEu	PVHa	PVCr	PVG	PVRh	**Group total**
Jack pine	6,209	**6,209**	--	--	**0**	23,535	28,592	677	13,851	17,476	21,103	**105,234**
Red pine	4,340	**4,340**	6,822	7,245	**14,067**	17,099	57,692	3,637	24,516	12,567	13,822	**129,333**
White pine	53,948	**53,948**	10,858	8,001	**18,859**	17,428	14,539	11,515	1,760	29,186	47,387	**121,815**
White spruce	28,743	**28,743**	10,079	5,011	**15,090**	--	--	--	--	--	--	**0**
Black spruce	122,412	**122,412**	2,218	--	**2,218**	--	--	--	--	--	--	**0**
Balsam fir	121,242	**121,242**	27,567	19,175	**46,742**	--	--	--	--	--	--	**0**
Hemlock	39,312	**39,312**	--	--	**0**	--	--	--	--	--	--	**0**
Tamarack	210,701	**210,701**	--	--	**0**	--	--	--	--	1,032	--	**1,032**
Eastern redcedar	--	**0**	--	--	**0**	--	--	--	--	177	--	**177**
N. white-cedar	434,868	**434,868**	1,625	1,688	**3,313**	--	--	--	--	--	--	**0**
Other softwoods	964	**964**	--	--	**0**	--	135	--	--	--	--	**135**
Total softwoods	1,022,739	**1,022,739**	59,169	41,120	**100,289**	58,062	100,958	15,829	40,127	60,438	82,312	**357,726**
Select white oak	10,408	**10,408**	1,367	389	**1,756**	5,474	7,984	17,289	7,972	19,371	10,997	**69,087**
Select red oak	8,371	**8,371**	543	8,754	**9,297**	29,056	3,080	14,209	9,881	8,264	20,359	**84,849**
Other red oak	3,697	**3,697**	--	2,258	**2,258**	33,176	63,206	18,656	23,834	65,856	53,673	**258,401**
Select hickory	--	**0**	--	--	**0**	--	--	--	175	--	--	**175**
Other hickory	191	**191**	--	--	**0**	--	--	--	--	--	--	**0**
Basswood	15,366	**15,366**	1,710	4,107	**5,817**	--	--	--	--	--	--	**0**
Beech	--	**0**	--	--	**0**	--	--	--	--	--	--	**0**
Yellow birch	31,139	**31,139**	--	--	**0**	--	--	--	--	--	--	**0**
Hard maple	7,278	**7,278**	2,471	11,632	**14,103**	--	--	287	--	--	--	**287**
Soft maple	130,635	**130,635**	8,450	20,950	**29,400**	4,011	353	20,384	2,017	13,414	57,861	**98,040**
Elm	22,880	**22,880**	1,257	213	**1,470**	--	--	--	235	410	286	**931**
Black ash	222,702	**222,702**	4,203	6,670	**10,873**	--	--	200	--	--	--	**200**
White & green ash	62,917	**62,917**	1,459	4,877	**6,336**	--	--	--	2,010	953	--	**2,963**
Cottonwood	3,298	**3,298**	--	--	**0**	--	--	--	190	--	--	**190**
Willow	1,384	**1,384**	--	--	**0**	--	--	--	--	190	--	**190**
Hackberry	--	**0**	--	--	**0**	--	--	--	--	--	--	**0**
Balsam poplar	18,975	**18,975**	4,096	3,420	**7,516**	--	--	--	--	--	--	**0**
Bigtooth aspen	2,739	**2,739**	7,469	4,212	**11,681**	11,087	1,911	13,513	2,585	4,479	20,105	**53,680**
Quaking aspen	133,437	**133,437**	89,975	48,200	**138,175**	3,889	827	11,559	494	13,735	39,254	**69,758**
Paper birch	52,937	**52,937**	21,228	10,083	**31,311**	1,387	--	2,877	--	2,074	7,180	**13,518**
River birch	--	**0**	--	--	**0**	--	--	--	--	138	218	**356**
Black cherry	3,182	**3,182**	--	--	**0**	--	1,164	--	180	1,532	818	**3,694**
Black walnut	328	**328**	--	--	**0**	--	--	--	--	--	--	**0**
Butternut	903	**903**	--	--	**0**	--	--	--	--	--	--	**0**
Other hardwoods	170	**170**	--	865	**865**	--	--	--	145	146	--	**291**
Total hardwoods	732,937	**732,937**	144,228	126,630	**270,858**	88,080	78,525	98,974	49,718	130,562	210,751	**656,610**
All species	1,755,676	**1,755,676**	203,397	167,750	**371,147**	146,142	179,483	114,803	89,845	191,000	293,063	**1,014,336**

(Table 23 continued on next page)

(Table 23 continued)

Species group	9. South dry-mesic							Group total
	ArDe-V	ArDe	AQVb-Gr	ArCi	ArCi-Ph	AArVb	AArL	
Jack pine	1,006	6,266	--	--	1,524	--	--	**8,796**
Red pine	2,874	20,385	2,281	10,652	2,421	--	--	**38,613**
White pine	5,630	21,948	23,457	3,054	28,739	--	441	**83,269**
White spruce	--	449	--	2,186	246	--	--	**2,881**
Black spruce	--	--	--	--	415	--	--	**415**
Balsam fir	--	--	1,594	--	177	--	--	**1,771**
Hemlock	--	191	--	--	--	--	--	**191**
Tamarack	--	--	--	--	--	--	--	**0**
Eastern redcedar	182	--	--	179	--	--	--	**361**
N. white-cedar	--	--	180	--	--	--	--	**180**
Other softwoods	--	2,541	--	--	--	--	--	**2,541**
Total softwoods	9,692	51,780	27,512	16,071	33,522	0	441	**139,018**
Select white oak	28,842	34,711	20,398	13,511	98,081	12,198	3,247	**210,988**
Select red oak	35,450	19,089	19,916	22,709	152,848	18,180	3,564	**271,756**
Other red oak	38,418	64,799	1,540	13,090	41,451	3,475	--	**162,773**
Select hickory	975	587	--	699	26,754	--	165	**29,180**
Other hickory	--	--	--	--	5,983	163	--	**6,146**
Basswood	358	--	257	--	24,918	260	--	**25,793**
Beech	--	--	--	--	--	--	--	**0**
Yellow birch	199	--	--	--	264	--	--	**463**
Hard maple	984	176	579	--	2,288	636	--	**4,663**
Soft maple	17,390	8,359	24,713	6,610	44,347	5,843	--	**107,262**
Elm	547	95	--	353	21,262	585	--	**22,842**
Black ash	300	--	--	--	872	--	--	**1,172**
White & green ash	--	--	578	1,041	4,654	1,348	160	**7,781**
Cottonwood	--	3,867	--	--	4,988	--	--	**8,855**
Willow	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	1,263	--	--	**1,263**
Balsam poplar	--	--	--	--	220	--	--	**220**
Bigtooth aspen	25,372	9,221	8,334	2,933	62,633	732	--	**109,225**
Quaking aspen	3,640	7,545	2,472	2,433	15,268	532	--	**31,890**
Paper birch	3,637	836	1,405	3,531	51,322	1,404	--	**62,135**
River birch	--	--	--	--	--	--	--	**0**
Black cherry	2,271	4,084	215	1,571	29,993	295	--	**38,429**
Black walnut	--	317	--	--	5,685	--	--	**6,002**
Butternut	--	--	--	--	3,443	--	--	**3,443**
Other hardwoods	208	3,845	--	977	16,538	725	--	**22,293**
Total hardwoods	158,591	157,531	80,407	69,458	615,075	46,376	7,136	**1,134,574**
All species	168,283	209,311	107,919	85,529	648,597	46,376	7,577	**1,273,592**

(Table 23 continued on next page)

(Table 23 continued)

Species group	10. South dry-mesic to mesic							11. South dry-mesic to mesic (phase)					
	ATiDe-Ha	ATiDe-As	ATiDe	ATiFrCi	ATiFrVb	AFrDeO	**Group total**	ATiDe(Pr)	ATiCr(O)	ATiCr(As)	ATiFrVb(Cr)	AFrDe(Vb)	**Group total**
Jack pine	--	--	--	--	--	--	**0**	201	--	--	--	--	**201**
Red pine	--	--	--	--	--	604	**604**	--	--	--	8,821	1,659	**10,480**
White pine	--	--	--	--	354	--	**354**	523	2,968	--	--	1,652	**5,143**
White spruce	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Black spruce	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Balsam fir	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Hemlock	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Tamarack	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Eastern redcedar	--	--	559	294	--	--	**853**	691	470	--	1,776	--	**2,937**
N. white-cedar	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Other softwoods	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Total softwoods	0	0	559	294	354	604	**1,811**	1,415	3,438	0	10,597	3,311	**18,761**
Select white oak	9,733	1,461	39,528	6,178	32,603	1,934	**91,437**	25,996	44,797	18,872	17,425	--	**107,090**
Select red oak	10,544	13,735	45,824	1,723	13,181	7,404	**92,411**	19,082	42,741	7,393	3,738	493	**73,447**
Other red oak	293	--	6,781	2,377	7,532	304	**17,287**	2,777	13,349	6,550	10,653	--	**33,329**
Select hickory	--	1,496	11,907	1,874	9,515	1,599	**26,391**	7,762	11,642	286	6,049	--	**25,739**
Other hickory	1,093	343	5,319	--	1,441	--	**8,196**	1,985	3,120	447	477	--	**6,029**
Basswood	789	543	12,225	4,693	9,076	437	**27,763**	1,346	4,076	10,993	1,391	--	**17,806**
Beech	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Yellow birch	--	--	--	--	--	--	**0**	--	--	697	--	--	**697**
Hard maple	3,004	290	12,063	3,432	2,753	6,075	**27,617**	--	5,132	3,644	--	--	**8,776**
Soft maple	4,159	3,508	4,371	3,117	6,475	3,104	**24,734**	3,405	4,126	826	1,026	--	**9,383**
Elm	156	868	10,660	--	5,792	--	**17,476**	4,298	28,642	5,767	1,765	--	**40,472**
Black ash	--	--	--	--	583	--	**583**	--	--	--	--	--	**0**
White & green ash	1,167	2,877	3,639	813	10,849	1,688	**21,033**	982	3,341	--	3,881	791	**8,995**
Cottonwood	--	--	1,553	--	--	--	**1,553**	2,615	2,739	941	294	--	**6,589**
Willow	--	--	--	--	3,251	--	**3,251**	--	--	--	--	--	**0**
Hackberry	--	--	519	--	--	--	**519**	267	1,293	1,404	--	--	**2,964**
Balsam poplar	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Bigtooth aspen	3,326	3,802	18,194	994	6,297	1,328	**33,941**	4,183	20,225	3,085	487	--	**27,980**
Quaking aspen	--	--	4,548	--	1,842	928	**7,318**	2,172	6,170	811	2,615	--	**11,768**
Paper birch	1,089	--	3,420	--	741	2,163	**7,413**	4,775	3,192	1,946	--	--	**9,913**
River birch	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Black cherry	1,164	3,685	3,343	1,402	13,881	--	**23,475**	3,199	10,459	1,722	7,635	--	**23,015**
Black walnut	--	--	3,339	--	669	--	**4,008**	--	13,529	--	199	--	**13,728**
Butternut	--	--	1,705	321	--	--	**2,026**	--	--	--	--	--	**0**
Other hardwoods	--	--	816	182	1,446	--	**2,444**	919	2,557	1,118	2,164	--	**6,758**
Total hardwoods	36,517	32,608	189,754	27,106	127,927	26,964	**440,876**	85,763	221,130	66,502	59,799	1,284	**434,478**
All species	36,517	32,608	190,313	27,400	128,281	27,568	**442,687**	87,178	224,568	66,502	70,396	4,595	**453,239**

(Table 23 continued on next page)

(Table 23 continued)

Species group	12. South mesic											Group total
	AFTD	ATiSa-De	ATiSa	ATiFrCa	ATiCa-La	ATiCa	ATiCa-Al	ATiH	AFH	AFAs	AFAs-O	
Jack pine	--	--	--	--	--	--	--	--	--	--	--	**0**
Red pine	--	--	--	--	--	--	--	--	--	--	--	**0**
White pine	--	5,247	--	--	13,186	5,588	--	4,320	8,663	1,038	--	**38,042**
White spruce	--	--	--	--	--	--	--	--	--	--	--	**0**
Black spruce	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	**0**
Hemlock	643	--	--	--	--	--	--	--	--	85	278	**1,006**
Tamarack	--	--	--	--	--	--	--	--	--	--	--	**0**
Eastern redcedar	--	445	--	--	--	--	--	254	--	--	--	**699**
N. white-cedar	1,937	--	--	--	--	--	--	--	--	--	--	**1,937**
Other softwoods	--	--	--	--	--	453	--	--	--	--	--	**453**
Total softwoods	2,580	5,692	0	0	13,186	6,041	0	4,574	8,663	1,123	278	**42,137**
Select white oak	--	50,154	8,497	3,495	4,701	22,840	407	16,726	6,153	3,441	--	**116,414**
Select red oak	--	79,039	16,974	8,618	11,270	45,090	4,163	18,635	6,219	8,508	--	**198,516**
Other red oak	--	12,186	--	567	1,152	--	--	1,567	--	--	--	**15,472**
Select hickory	--	10,423	3,832	2,622	--	7,948	272	1,103	330	962	--	**27,492**
Other hickory	--	5,665	1,871	758	655	12,585	151	2,021	--	628	708	**25,042**
Basswood	--	44,560	3,870	12,463	9,960	35,434	1,635	13,195	6,214	8,246	1,801	**137,378**
Beech	--	--	--	--	--	--	--	--	1,651	11,458	--	**13,109**
Yellow birch	--	1,492	--	--	743	--	260	--	893	--	--	**3,388**
Hard maple	246	25,610	18,731	5,999	15,893	52,886	1,482	12,931	8,351	25,796	7,776	**175,701**
Soft maple	737	12,893	4,289	1,696	1,838	9,315	--	--	20,900	2,047	654	**54,369**
Elm	--	15,175	--	1,849	4,577	12,183	594	10,713	738	3,763	482	**50,074**
Black ash	--	1,859	--	--	4,376	251	--	268	887	216	--	**7,857**
White & green ash	4,256	13,175	5,010	3,496	3,393	12,753	909	5,370	11,046	15,908	1,933	**77,249**
Cottonwood	--	1,676	--	--	2,378	287	--	--	--	--	--	**4,341**
Willow	--	--	--	--	--	810	--	--	--	--	--	**810**
Hackberry	--	709	--	--	--	645	--	--	--	--	--	**1,354**
Balsam poplar	--	804	--	--	--	--	--	--	488	--	--	**1,292**
Bigtooth aspen	987	27,114	4,150	1,574	1,226	12,871	613	982	5,090	52	486	**55,145**
Quaking aspen	1,314	26,089	--	--	2,777	1,760	--	431	7,506	--	717	**40,594**
Paper birch	1,561	18,707	2,294	--	1,024	6,899	--	394	495	--	--	**31,374**
River birch	--	323	--	--	--	--	--	--	--	--	--	**323**
Black cherry	433	17,146	--	1,915	1,252	5,313	--	1,797	970	2,271	235	**31,332**
Black walnut	--	581	--	349	--	401	--	5,812	--	--	--	**7,143**
Butternut	--	4,912	--	--	984	2,164	--	249	--	--	970	**9,299**
Other hardwoods	--	7,931	--	--	2,065	567	--	--	--	158	--	**10,721**
Total hardwoods	9,534	378,223	69,518	45,401	70,264	243,022	10,486	92,194	77,931	83,454	15,762	**1,095,789**
All species	12,114	383,915	69,518	45,401	83,450	249,063	10,486	96,768	86,594	84,577	16,040	**1,137,926**

(Table 23 continued on next page)

(Table 23 continued)

Species group	13. South mesic (phase) ATiAs(De)	ATiFrCA(O)	Group total	14. South mesic to wet-mes Hydromesic south	Group total	15. South wet-mes. to wet Lowland south	Group total	16. No type identified	All habitat types
Jack pine	--	--	**0**	236	**236**	4,165	**4,165**	38,416	**385,175**
Red pine	--	24,375	**24,375**	180	**180**	407	**407**	227,010	**992,290**
White pine	222	--	**222**	2,886	**2,886**	22,018	**22,018**	81,513	**945,902**
White spruce	--	--	**0**	--	**0**	--	**0**	43,807	**244,731**
Black spruce	--	--	**0**	--	**0**	1,146	**1,146**	7,551	**156,682**
Balsam fir	--	--	**0**	--	**0**	1,071	**1,071**	54,269	**478,778**
Hemlock	--	--	**0**	--	**0**	644	**644**	52,560	**411,360**
Tamarack	--	--	**0**	1,432	**1,432**	32,719	**32,719**	7,416	**265,005**
Eastern redcedar	--	368	**368**	--	**0**	--	**0**	1,641	**7,036**
N. white-cedar	--	--	**0**	2,206	**2,206**	33,136	**33,136**	40,900	**593,883**
Other softwoods	--	366	**366**	--	**0**	280	**280**	2,964	**13,057**
Total softwoods	222	25,109	**25,331**	6,940	**6,940**	95,586	**95,586**	558,047	**4,493,899**
Select white oak	4,947	13,489	**18,436**	10,598	**10,598**	37,204	**37,204**	86,009	**937,341**
Select red oak	1,451	13,423	**14,874**	206	**206**	5,641	**5,641**	101,846	**1,771,486**
Other red oak	869	5,800	**6,669**	8,172	**8,172**	10,645	**10,645**	29,019	**662,124**
Select hickory	876	3,475	**4,351**	189	**189**	1,775	**1,775**	16,392	**131,684**
Other hickory	--	--	**0**	186	**186**	4,950	**4,950**	4,693	**88,807**
Basswood	164	1,057	**1,221**	12,752	**12,752**	16,855	**16,855**	70,915	**1,108,591**
Beech	--	--	**0**	--	**0**	--	**0**	6,187	**49,084**
Yellow birch	--	--	**0**	--	**0**	5,294	**5,294**	29,178	**269,148**
Hard maple	--	--	**0**	1,045	**1,045**	--	**0**	185,982	**2,189,188**
Soft maple	--	842	**842**	21,326	**21,326**	168,279	**168,279**	165,777	**1,935,771**
Elm	2,468	4,566	**7,034**	8,052	**8,052**	24,647	**24,647**	30,908	**269,909**
Black ash	--	--	**0**	7,354	**7,354**	40,080	**40,080**	36,271	**461,774**
White & green ash	--	956	**956**	11,711	**11,711**	80,286	**80,286**	40,859	**540,119**
Cottonwood	--	--	**0**	3,786	**3,786**	12,669	**12,669**	9,012	**50,498**
Willow	--	--	**0**	--	**0**	12,931	**12,931**	3,344	**21,910**
Hackberry	474	--	**474**	--	**0**	2,182	**2,182**	959	**9,715**
Balsam poplar	--	--	**0**	1,826	**1,826**	243	**243**	5,039	**51,342**
Bigtooth aspen	448	395	**843**	1,499	**1,499**	1,498	**1,498**	37,576	**764,832**
Quaking aspen	--	804	**804**	8,076	**8,076**	10,267	**10,267**	188,383	**1,744,960**
Paper birch	--	--	**0**	1,318	**1,318**	14,764	**14,764**	100,837	**852,212**
River birch	--	--	**0**	511	**511**	11,821	**11,821**	--	**13,011**
Black cherry	--	8,949	**8,949**	2,058	**2,058**	5,329	**5,329**	13,591	**203,207**
Black walnut	--	1,072	**1,072**	1,251	**1,251**	1,626	**1,626**	12,312	**48,726**
Butternut	--	--	**0**	--	**0**	107	**107**	2,872	**28,270**
Other hardwoods	--	913	**913**	3,970	**3,970**	9,206	**9,206**	7,877	**65,818**
Total hardwoods	11,697	55,741	**67,438**	105,886	**105,886**	478,299	**478,299**	1,185,838	**14,269,527**
All species	11,919	80,850	**92,769**	112,826	**112,826**	573,885	**573,885**	1,743,885	**18,763,426**

Table 24.--Average growing-stock volume per acre on forest land by species group by habitat type group and habitat type, Wisconsin, 1996
(In cubic feet per acre)

	1. North very dry to dry									2. North dry to dry-mesic						
Species group	QAc	ArQTr	QArE	QGCe	ArQV	ArQV-Sm	QV	QAp	**Group avg.**	PAm	PAm-At	PMV	PMV-Q	PMV-Vb	PMV-Po	**Group avg.**
Jack pine	235	180	758	252	178	76	133	621	**198**	96	--	46	341	8	88	**65**
Red pine	155	222	--	175	324	379	220	--	**244**	172	41	260	224	251	238	**233**
White pine	--	1	--	8	124	41	44	--	**43**	123	88	201	146	110	184	**159**
White spruce	--	--	--	--	10	19	--	--	**6**	1	--	33	--	10	5	**17**
Black spruce	--	--	--	--	5	--	--	--	**1**	--	--	3	--	--	--	**1**
Balsam fir	--	--	--	--	3	4	4	--	**2**	8	--	30	--	25	18	**21**
Hemlock	--	--	--	--	--	--	--	--	**0**	--	--	1	--	7	--	**2**
Tamarack	--	--	--	--	--	5	--	--	**1**	1	--	--	--	--	--	**0**
Eastern redcedar	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
N. white-cedar	--	--	--	--	--	--	--	--	**0**	--	--	--	--	11	--	**2**
Other softwoods	--	--	--	--	2	--	--	--	**0**	--	--	--	--	--	--	**0**
Total softwoods	391	403	758	436	646	522	400	621	**495**	402	129	574	711	422	533	**501**
Select white oak	--	--	--	19	--	--	7	53	**8**	92	81	1	7	9	--	**24**
Select red oak	6	29	--	144	71	201	15	50	**90**	209	39	138	16	69	294	**149**
Other red oak	4	71	--	83	19	3	289	257	**86**	58	--	5	321	45	29	**40**
Select hickory	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Other hickory	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Basswood	--	--	--	--	--	--	--	--	**0**	4	--	--	--	2	--	**1**
Beech	--	--	--	--	--	--	--	--	**0**	--	--	--	--	2	--	**0**
Yellow birch	--	--	--	--	--	--	--	--	**0**	--	--	2	--	1	--	**1**
Hard maple	--	--	--	--	--	--	--	--	**0**	15	--	33	--	2	75	**25**
Soft maple	--	--	--	--	31	18	28	--	**14**	80	41	150	63	162	88	**126**
Elm	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Black ash	--	--	--	--	--	--	--	--	**0**	--	--	--	--	4	--	**1**
White & green ash	--	--	--	--	--	--	--	--	**0**	--	--	2	--	1	--	**1**
Cottonwood	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Balsam poplar	--	--	--	--	1	1	--	--	**1**	2	--	--	--	6	--	**2**
Bigtooth aspen	--	30	--	39	126	179	8	9	**73**	139	--	129	24	96	197	**125**
Quaking aspen	9	6	--	66	128	67	53	--	**63**	216	158	199	199	191	159	**197**
Paper birch	--	--	--	7	41	60	8	--	**23**	29	98	218	--	71	116	**125**
River birch	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Black cherry	--	--	--	--	3	--	--	--	**1**	--	--	--	--	3	--	**1**
Black walnut	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Butternut	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Other hardwoods	--	--	--	--	--	--	--	--	**0**	--	--	--	--	--	--	**0**
Total hardwoods	18	137	0	358	419	529	408	368	**357**	842	418	877	629	663	957	**819**
All species	409	540	758	794	1065	1052	808	989	**852**	1244	547	1451	1340	1085	1491	**1319**

(Table 24 continued on next page)

(Table 24 continued)

Species group	3. North dry-mesic												
	FArAa	AVVb	AVDe	ACl-V	ACl	AQVb-V	AQVb	AQVb-Ha	AAt	AFTPo	AVb	AFVb	**Group avg.**
Jack pine	--	--	7	--	--	--	12	--	1	--	--	--	**3**
Red pine	10	65	45	103	--	69	85	102	50	--	--	25	**59**
White pine	15	108	89	37	14	26	57	198	62	91	9	246	**89**
White spruce	29	6	2	52	--	--	7	18	--	--	--	4	**6**
Black spruce	--	1	--	--	11	--	--	--	--	--	--	--	**0**
Balsam fir	--	50	10	66	97	6	17	36	2	--	--	26	**24**
Hemlock	--	--	--	--	--	--	3	8	--	53	--	18	**3**
Tamarack	--	--	--	--	--	--	--	--	2	--	--	--	**0**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	**0**
N. white-cedar	7	--	--	--	--	--	5	3	--	300	--	--	**3**
Other softwoods	--	12	--	--	--	--	--	--	9	--	--	--	**4**
Total softwoods	61	242	152	257	122	101	187	366	125	444	9	319	**192**
Select white oak	29	1	139	--	7	124	18	45	140	--	109	25	**66**
Select red oak	114	307	430	39	270	350	254	510	433	13	315	400	**346**
Other red oak	135	4	--	7	--	--	14	--	18	--	--	--	**8**
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Other hickory	--	--	3	--	--	17	4	--	10	--	--	11	**5**
Basswood	--	20	49	49	40	104	34	132	98	44	40	167	**67**
Beech	--	1	--	--	--	--	1	8	--	36	--	21	**3**
Yellow birch	--	--	1	--	35	4	2	4	6	--	--	--	**3**
Hard maple	--	129	47	62	532	46	60	81	141	651	120	313	**123**
Soft maple	184	138	213	257	176	190	250	224	168	--	140	233	**195**
Elm	--	--	1	--	--	4	1	4	3	--	5	--	**2**
Black ash	--	3	11	9	11	--	--	--	6	11	32	--	**5**
White & green ash	--	4	13	--	--	34	29	30	38	13	72	38	**24**
Cottonwood	--	--	1	--	--	--	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam poplar	--	--	--	--	--	--	--	5	--	--	--	6	**1**
Bigtooth aspen	79	151	165	5	51	137	116	124	121	58	23	172	**127**
Quaking aspen	107	178	78	210	8	69	65	312	182	17	173	163	**140**
Paper birch	21	199	66	441	122	62	110	103	61	452	39	68	**118**
River birch	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Black cherry	--	1	--	--	--	--	--	4	4	--	--	--	**1**
Black walnut	--	--	2	--	--	--	--	--	--	--	--	--	**0**
Butternut	--	--	--	--	--	--	7	--	3	--	--	14	**3**
Other hardwoods	--	--	--	--	--	--	--	--	1	--	--	--	**0**
Total hardwoods	669	1136	1218	1078	1252	1142	967	1586	1432	1295	1069	1632	**1236**
All species	730	1378	1371	1335	1374	1243	1153	1951	1557	1739	1078	1951	**1428**

(Table 24 continued on next page)

(Table 24 continued)

Species group	4. North mesic														
	ATM	AFSt	AAs	ATFD	ATD	ATDH	ACaCi	ACaCi-H	AFAl	AFAd	AViO	AViO-Ca	AHVb	AH	**Group avg.**
Jack pine	1	--	--	--	--	--	--	--	--	--	--	--	41	--	**1**
Red pine	37	--	--	--	5	82	32	16	--	--	16	--	--	--	**21**
White pine	80	16	20	127	3	71	65	51	15	22	3	--	--	0	**40**
White spruce	32	--	--	--	7	--	--	--	--	--	25	--	--	7	**18**
Black spruce	1	--	--	--	--	--	--	--	--	--	0	--	--	--	**0**
Balsam fir	44	--	83	7	17	18	--	17	--	--	18	7	--	7	**24**
Hemlock	66	199	--	412	155	254	--	--	30	258	61	45	--	63	**80**
Tamarack	1	--	--	24	--	--	--	--	--	--	--	--	--	1	**1**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
N. white-cedar	5	146	--	--	10	1	--	--	--	29	4	4	--	1	**5**
Other softwoods	1	--	--	--	--	--	3	--	--	--	--	--	--	--	**0**
Total softwoods	266	360	103	570	197	427	100	84	45	308	127	57	41	78	**190**
Select white oak	6	--	16	--	--	--	153	55	--	--	1	--	54	20	**17**
Select red oak	116	149	176	88	57	164	361	176	70	281	37	6	484	124	**119**
Other red oak	--	--	--	--	--	--	29	--	--	--	--	--	--	--	**2**
Select hickory	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Other hickory	1	--	--	--	--	--	22	96	--	64	--	--	10	22	**9**
Basswood	119	--	83	245	242	363	175	245	125	315	361	424	122	415	**248**
Beech	0	--	--	272	2	17	--	--	139	179	2	--	--	--	**11**
Yellow birch	40	--	23	139	143	92	7	13	--	14	38	25	--	50	**49**
Hard maple	369	47	209	442	955	513	171	414	829	717	717	1153	184	800	**565**
Soft maple	197	35	60	266	140	12	100	102	--	16	71	72	260	69	**125**
Elm	2	--	10	4	15	7	13	10	--	10	9	15	--	26	**9**
Black ash	17	--	73	--	5	3	36	37	--	--	12	29	--	10	**15**
White & green ash	30	--	7	16	33	101	61	107	78	76	50	7	158	98	**52**
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Willow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam poplar	3	--	--	--	--	7	--	--	10	--	6	--	--	5	**3**
Bigtooth aspen	60	266	--	218	4	6	119	4	77	--	5	--	167	18	**41**
Quaking aspen	170	53	104	175	59	108	104	149	26	95	141	63	51	66	**126**
Paper birch	105	551	62	153	60	68	116	50	200	24	39	29	--	16	**72**
River birch	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Black cherry	9	--	--	4	39	6	11	--	11	--	30	--	--	24	**17**
Black walnut	--	--	--	--	1	--	--	7	--	--	--	--	--	--	**0**
Butternut	--	--	--	--	--	--	7	25	--	27	1	--	10	2	**2**
Other hardwoods	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0**
Total hardwoods	1243	1102	822	2022	1755	1466	1485	1490	1564	1817	1520	1823	1500	1764	**1484**
All species	1509	1462	925	2592	1952	1894	1584	1574	1609	2126	1647	1879	1542	1843	**1674**

(Table 24 continued on next page)

(Table 24 continued)

Species group	5. North mesic to wet-mesic										6. North wet-mesic to wet			7. Superior clay belt		
	ArCo	TMC-V	TMC	TMC-D	ATM-As	ATD-I	ACaCi-I	AViO-I	AH-I	Hydromesic north	**Group avg.**	Lowland north	**Group avg.**	AbArSn	AbASnMi	**Group avg.**
Jack pine	--	10	11	--	--	--	--	--	--	6	**6**	3	**3**	--	--	**0**
Red pine	82	97	69	12	2	--	--	4	3	13	**31**	2	**2**	31	62	**41**
White pine	4	205	136	52	54	--	30	5	282	26	**82**	26	**26**	49	68	**56**
White spruce	16	101	49	173	14	--	--	19	--	31	**40**	14	**14**	45	43	**45**
Black spruce	26	46	12	--	--	--	--	--	--	3	**9**	60	**60**	10	--	**7**
Balsam fir	118	109	145	86	20	23	3	13	16	56	**71**	59	**59**	124	164	**138**
Hemlock	--	22	164	198	52	167	--	79	5	22	**58**	19	**19**	--	--	**0**
Tamarack	13	4	4	--	--	--	--	--	--	6	**4**	103	**103**	--	--	**0**
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	**0**	--	**0**	--	--	**0**
N. white-cedar	--	16	60	128	--	2	--	15	--	25	**28**	212	**212**	7	14	**10**
Other softwoods	--	--	--	--	--	--	--	--	--	--	**0**	0	**0**	--	--	**0**
Total softwoods	259	610	650	650	142	192	33	135	306	188	**329**	500	**500**	266	351	**296**
Select white oak	--	--	4	--	8	--	194	2	43	17	**19**	5	**5**	6	3	**5**
Select red oak	16	15	14	13	68	27	273	15	55	32	**38**	4	**4**	2	75	**27**
Other red oak	--	4	2	2	3	--	8	--	--	2	**2**	2	**2**	--	19	**7**
Select hickory	--	--	--	--	--	--	--	--	--	--	**0**	--	**0**	--	--	**0**
Other hickory	--	--	--	--	--	--	3	--	21	4	**3**	0	**0**	--	--	**0**
Basswood	--	--	5	11	141	253	113	238	132	49	**61**	8	**8**	8	35	**17**
Beech	--	--	1	--	--	--	--	--	--	--	**0**	--	**0**	--	--	**0**
Yellow birch	--	2	48	135	59	61	3	76	14	36	**38**	15	**15**	--	--	**0**
Hard maple	--	12	74	165	79	672	67	801	329	81	**143**	4	**4**	11	99	**42**
Soft maple	43	128	240	506	496	218	70	164	160	263	**236**	64	**64**	38	179	**87**
Elm	--	1	2	--	24	--	22	13	27	9	**9**	11	**11**	6	2	**4**
Black ash	4	1	32	30	22	46	69	57	44	57	**42**	109	**109**	19	57	**32**
White & green ash	--	--	1	17	41	74	85	85	64	38	**33**	31	**31**	7	42	**19**
Cottonwood	--	--	--	--	--	--	--	--	--	0	**0**	2	**2**	--	--	**0**
Willow	--	--	--	--	--	--	--	--	--	--	**0**	1	**1**	--	--	**0**
Hackberry	--	--	--	--	--	--	--	--	--	--	**0**	--	**0**	--	--	**0**
Balsam poplar	--	0	1	--	--	--	--	--	--	6	**3**	9	**9**	18	29	**22**
Bigtooth aspen	5	26	32	23	12	--	67	--	--	23	**23**	1	**1**	34	36	**34**
Quaking aspen	323	213	160	140	216	58	169	84	181	268	**213**	65	**65**	405	412	**407**
Paper birch	34	123	124	51	10	5	16	17	--	37	**56**	26	**26**	96	86	**92**
River birch	--	--	--	--	--	--	--	--	--	--	**0**	--	**0**	--	--	**0**
Black cherry	3	0	3	8	--	--	8	4	5	5	**4**	2	**2**	--	--	**0**
Black walnut	--	--	--	--	3	--	--	--	--	--	**0**	0	**0**	--	--	**0**
Butternut	--	--	--	--	--	--	3	--	9	--	**1**	0	**0**	--	--	**0**
Other hardwoods	--	--	--	--	--	--	--	--	--	0	**0**	0	**0**	--	7	**3**
Total hardwoods	428	525	743	1101	1183	1414	1170	1557	1084	927	**923**	358	**358**	649	1082	**799**
All species	688	1135	1394	1751	1325	1606	1203	1692	1390	1116	**1252**	858	**858**	916	1434	**1095**

(Table 24 continued on next page)

(Table 24 continued)

Species group	8. South dry							9. South dry-mesic							
	PVGy	PEu	PVHa	PVCr	PVG	PVRh	**Group avg.**	ArDe-V	ArDe	AQVb-Gr	ArCi	ArCi-Ph	AArVb	AArL	**Group avg.**
Jack pine	119	122	6	136	92	63	**90**	7	35	--	--	3	--	--	**8**
Red pine	87	245	34	241	66	41	**111**	21	115	41	149	4	--	--	**37**
White pine	88	62	107	17	153	142	**104**	40	124	418	43	53	--	92	**80**
White spruce	--	--	--	--	--	--	**0**	--	3	--	31	0	--	--	**3**
Black spruce	--	--	--	--	--	--	**0**	--	--	--	--	1	--	--	**0**
Balsam fir	--	--	--	--	--	--	**0**	--	--	28	--	0	--	--	**2**
Hemlock	--	--	--	--	--	--	**0**	--	1	--	--	--	--	--	**0**
Tamarack	--	--	--	--	5	--	**1**	--	--	--	--	--	--	--	**0**
Eastern redcedar	--	--	--	--	1	--	**0**	1	--	--	3	--	--	--	**0**
N. white-cedar	--	--	--	--	--	--	**0**	--	--	3	--	--	--	--	**0**
Other softwoods	--	1	--	--	--	--	**0**	--	14	--	--	--	--	--	**2**
Total softwoods	294	430	146	395	317	246	**306**	69	292	490	224	62	0	92	**134**
Select white oak	28	34	160	78	102	33	**59**	206	195	364	189	181	277	676	**204**
Select red oak	147	13	131	97	43	61	**73**	254	107	355	317	282	413	743	**262**
Other red oak	168	269	173	234	345	160	**221**	275	365	27	183	76	79	--	**157**
Select hickory	--	--	--	2	--	--	**0**	7	3	--	10	49	--	34	**28**
Other hickory	--	--	--	--	--	--	**0**	--	--	--	--	11	4	--	**6**
Basswood	--	--	--	--	--	--	**0**	3	--	5	--	46	6	--	**25**
Beech	--	--	--	--	--	--	**0**	--	--	--	--	--	--	--	**0**
Yellow birch	--	--	--	--	--	--	**0**	1	--	--	--	0	--	--	**0**
Hard maple	--	--	3	--	--	--	**0**	7	1	10	--	4	14	--	**4**
Soft maple	20	2	189	20	70	173	**84**	124	47	441	92	82	133	--	**104**
Elm	--	--	--	2	2	1	**1**	4	1	--	5	39	13	--	**22**
Black ash	--	--	2	--	--	--	**0**	2	--	--	--	2	--	--	**1**
White & green ash	--	--	--	20	5	--	**3**	--	--	10	15	9	31	33	**8**
Cottonwood	--	--	--	2	--	--	**0**	--	22	--	--	9	--	--	**9**
Willow	--	--	--	--	1	--	**0**	--	--	--	--	--	--	--	**0**
Hackberry	--	--	--	--	--	--	**0**	--	--	--	--	2	--	--	**1**
Balsam poplar	--	--	--	--	--	--	**0**	--	--	--	--	0	--	--	**0**
Bigtooth aspen	56	8	125	25	23	60	**46**	182	52	149	41	115	17	--	**105**
Quaking aspen	20	4	107	5	72	117	**60**	26	42	44	34	28	12	--	**31**
Paper birch	7	--	27	--	11	21	**12**	26	5	25	49	95	32	--	**60**
River birch	--	--	--	--	1	1	**0**	--	--	--	--	--	--	--	**0**
Black cherry	--	5	--	2	8	2	**3**	16	23	4	22	55	7	--	**37**
Black walnut	--	--	--	--	--	--	**0**	--	2	--	--	10	--	--	**6**
Butternut	--	--	--	--	--	--	**0**	--	--	--	--	6	--	--	**3**
Other hardwoods	--	--	--	1	1	--	**0**	1	22	--	14	30	16	--	**22**
Total hardwoods	447	334	916	489	685	629	**562**	1135	887	1433	970	1134	1054	1487	**1095**
All species	741	764	1062	883	1002	875	**869**	1205	1179	1924	1195	1196	1054	1579	**1229**

(Table 24 continued on next page)

(Table 24 continued)

Species group	10. South dry-mesic to mesic							11. South dry-mesic to mesic (phase)					
	ATiDe-Ha	ATiDe-As	ATiDe	ATiFrCi	ATiFrVb	AFrDeO	**Group avg.**	ATiDe(Pr)	ATiCr(O)	ATiCr(As)	ATiFrVb(Cr)	AFrDe(Vb)	**Group avg.**
Jack pine	--	--	--	--	--	--	**0**	2	--	--	--	--	**0**
Red pine	--	--	--	--	--	38	**2**	--	--	--	103	224	**24**
White pine	--	--	--	--	4	--	**1**	6	14	--	--	223	**12**
White spruce	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Black spruce	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Balsam fir	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Hemlock	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Tamarack	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Eastern redcedar	--	--	3	13	--	--	**2**	7	2	--	21	--	**7**
N. white-cedar	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Other softwoods	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Total softwoods	0	0	3	13	4	38	**5**	15	17	0	124	447	**43**
Select white oak	569	85	217	276	363	122	**266**	281	216	432	204	--	**245**
Select red oak	617	799	252	77	147	469	**269**	207	206	169	44	67	**168**
Other red oak	17	--	37	106	84	19	**50**	30	64	150	124	--	**76**
Select hickory	--	87	65	84	106	101	**77**	84	56	7	71	--	**59**
Other hickory	64	20	29	--	16	--	**24**	21	15	10	6	--	**14**
Basswood	46	32	67	210	101	28	**81**	15	20	252	16	--	**41**
Beech	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Yellow birch	--	--	--	--	--	--	**0**	--	--	16	--	--	**2**
Hard maple	176	17	66	153	31	384	**80**	--	25	83	--	--	**20**
Soft maple	243	204	24	139	72	196	**72**	37	20	19	12	--	**21**
Elm	9	50	59	--	64	--	**51**	47	138	132	21	--	**93**
Black ash	--	--	--	--	6	--	**2**	--	--	--	--	--	**0**
White & green ash	68	167	20	36	121	107	**61**	11	16	--	45	107	**21**
Cottonwood	--	--	9	--	--	--	**5**	28	13	22	3	--	**15**
Willow	--	--	--	--	36	--	**9**	--	--	--	--	--	**0**
Hackberry	--	--	3	--	--	--	**2**	3	6	32	--	--	**7**
Balsam poplar	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Bigtooth aspen	195	221	100	44	70	84	**99**	45	97	71	6	--	**64**
Quaking aspen	--	--	25	--	21	59	**21**	24	30	19	31	--	**27**
Paper birch	64	--	19	--	8	137	**22**	52	15	45	--	--	**23**
River birch	--	--	--	--	--	--	**0**	--	--	--	--	--	**0**
Black cherry	68	214	18	63	155	--	**68**	35	50	39	89	--	**53**
Black walnut	--	--	18	--	7	--	**12**	--	65	--	2	--	**31**
Butternut	--	--	9	14	--	--	**6**	--	--	--	--	--	**0**
Other hardwoods	--	--	4	8	16	--	**7**	10	12	26	25	--	**15**
Total hardwoods	2135	1896	1044	1210	1425	1707	**1281**	928	1064	1522	699	174	**994**
All species	2135	1896	1047	1223	1429	1745	**1287**	943	1081	1522	822	621	**1037**

(Table 24 continued on next page)

(Table 24 continued)

Species group	12. South mesic											Group avg.
	AFTD	ATiSa-De	ATiSa	ATiFrCa	ATiCa-La	ATiCa	ATiCa-Al	ATiH	AFH	AFAs	AFAs-O	
Jack pine	--	--	--	--	--	--	--	--	--	--	--	**0**
Red pine	--	--	--	--	--	--	--	--	--	--	--	**0**
White pine	--	16	--	--	215	30	--	54	176	23	--	**46**
White spruce	--	--	--	--	--	--	--	--	--	--	--	**0**
Black spruce	--	--	--	--	--	--	--	--	--	--	--	**0**
Balsam fir	--	--	--	--	--	--	--	--	--	--	--	**0**
Hemlock	124	--	--	--	--	--	--	--	--	2	26	**1**
Tamarack	--	--	--	--	--	--	--	--	--	--	--	**0**
Eastern redcedar	--	1	--	--	--	--	--	3	--	--	--	**1**
N. white-cedar	373	--	--	--	--	--	--	--	--	--	--	**2**
Other softwoods	--	--	--	--	--	2	--	--	--	--	--	**1**
Total softwoods	496	18	0	0	215	33	0	58	176	25	26	**51**
Select white oak	--	157	186	143	77	124	53	211	125	78	--	**140**
Select red oak	--	247	372	353	184	245	541	235	126	192	--	**239**
Other red oak	--	38	--	23	19	--	--	20	--	--	--	**19**
Select hickory	--	33	84	107	--	43	35	14	7	22	--	**33**
Other hickory	--	18	41	31	11	68	20	25	--	14	67	**30**
Basswood	--	139	85	511	162	193	212	166	126	186	170	**165**
Beech	--	--	--	--	--	--	--	--	34	258	--	**16**
Yellow birch	--	5	--	--	12	--	34	--	18	--	--	**4**
Hard maple	47	80	411	246	259	288	192	163	170	581	734	**211**
Soft maple	142	40	94	70	30	51	--	--	425	46	62	**65**
Elm	--	47	--	76	75	66	77	135	15	85	45	**60**
Black ash	--	6	--	--	71	1	--	3	18	5	--	**9**
White & green ash	818	41	110	143	55	69	118	68	225	358	182	**93**
Cottonwood	--	5	--	--	39	2	--	--	--	--	--	**5**
Willow	--	--	--	--	--	4	--	--	--	--	--	**1**
Hackberry	--	2	--	--	--	4	--	--	--	--	--	**2**
Balsam poplar	--	3	--	--	--	--	--	--	10	--	--	**2**
Bigtooth aspen	190	85	91	65	20	70	80	12	103	1	46	**66**
Quaking aspen	253	82	--	--	45	10	--	5	153	--	68	**49**
Paper birch	300	59	50	--	17	38	--	5	10	--	--	**38**
River birch	--	1	--	--	--	--	--	--	--	--	--	**0**
Black cherry	83	54	--	78	20	29	--	23	20	51	22	**38**
Black walnut	--	2	--	14	--	2	--	73	--	--	--	**9**
Butternut	--	15	--	--	16	12	--	3	--	--	92	**11**
Other hardwoods	--	25	--	--	34	3	--	--	--	4	--	**13**
Total hardwoods	1833	1184	1525	1861	1146	1321	1362	1161	1584	1880	1487	**1318**
All species	2330	1202	1525	1861	1361	1354	1362	1219	1760	1905	1513	**1369**

(Table 24 continued on next page)

(Table 24 continued)

Species group	13. South mesic (phase) ATiAs(De)	ATiFrCA(O)	Group avg.	14. S mes. to wet-mes. Hydromesic south	Group avg.	15. S wet-mes./wet Lowland south	Group avg.	16. No type identified	All habitat avg.
Jack pine	--	--	**0**	2	**2**	7	**7**	21	**24**
Red pine	--	423	**325**	2	**2**	1	**1**	123	**62**
White pine	13	--	**3**	27	**27**	35	**35**	44	**59**
White spruce	--	--	**0**	--	**0**	--	**0**	24	**15**
Black spruce	--	--	**0**	--	**0**	2	**2**	4	**10**
Balsam fir	--	--	**0**	--	**0**	2	**2**	29	**30**
Hemlock	--	--	**0**	--	**0**	1	**1**	28	**26**
Tamarack	--	--	**0**	13	**13**	53	**53**	4	**17**
Eastern redcedar	--	6	**5**	--	**0**	--	**0**	1	**0**
N. white-cedar	--	--	**0**	20	**20**	53	**53**	22	**37**
Other softwoods	--	6	**5**	--	**0**	0	**0**	2	**1**
Total softwoods	13	436	**338**	64	**64**	154	**154**	302	**281**
Select white oak	286	234	**246**	97	**97**	60	**60**	47	**59**
Select red oak	84	233	**199**	2	**2**	9	**9**	55	**111**
Other red oak	50	101	**89**	75	**75**	17	**17**	16	**41**
Select hickory	51	60	**58**	2	**2**	3	**3**	9	**8**
Other hickory	--	--	**0**	2	**2**	8	**8**	3	**6**
Basswood	9	18	**16**	117	**117**	27	**27**	38	**69**
Beech	--	--	**0**	--	**0**	--	**0**	3	**3**
Yellow birch	--	--	**0**	--	**0**	9	**9**	16	**17**
Hard maple	--	--	**0**	10	**10**	--	**0**	101	**137**
Soft maple	--	15	**11**	196	**196**	271	**271**	90	**121**
Elm	143	79	**94**	74	**74**	40	**40**	17	**17**
Black ash	--	--	**0**	68	**68**	64	**64**	20	**29**
White & green ash	--	17	**13**	108	**108**	129	**129**	22	**34**
Cottonwood	--	--	**0**	35	**35**	20	**20**	5	**3**
Willow	--	--	**0**	--	**0**	21	**21**	2	**1**
Hackberry	27	--	**6**	--	**0**	4	**4**	1	**1**
Balsam poplar	--	--	**0**	17	**17**	0	**0**	3	**3**
Bigtooth aspen	26	7	**11**	14	**14**	2	**2**	20	**48**
Quaking aspen	--	14	**11**	74	**74**	17	**17**	102	**109**
Paper birch	--	--	**0**	12	**12**	24	**24**	55	**53**
River birch	--	--	**0**	5	**5**	19	**19**	--	**1**
Black cherry	--	155	**119**	19	**19**	9	**9**	7	**13**
Black walnut	--	19	**14**	12	**12**	3	**3**	7	**3**
Butternut	--	--	**0**	--	**0**	0	**0**	2	**2**
Other hardwoods	--	16	**12**	37	**37**	15	**15**	4	**4**
Total hardwoods	676	968	**900**	974	**974**	769	**769**	642	**894**
All species	689	1404	**1239**	1038	**1038**	922	**922**	945	**1175**

Table 25.--Average site index and 95% confidence interval of site index on forest land by habitat type group by site index species, Wisconsin, 1996

(In feet)

Habitat type group	Site index species								
	Jack pine	Red pine	White pine	Balsam fir	Tamarack	White spruce	Black spruce	Northern red oak	Black oak
	Average site index (observations) / 95% confidence interval								
1. North very dry to dry	61 (94)	64 (94)	--	--	--	--	--	53 (14)	--
	59 to 63	62 to 67	--	--	--	--	--	48 to 58	--
2. North dry to dry-mesic	69 (13)	68 (48)	66 (7)	--	--	--	--	62 (34)	--
	63 to 76	65 to 71	50 to 81	--	--	--	--	60 to 65	--
3. North dry-mesic	--	76 (17)	69 (9)	--	--	--	--	70 (72)	--
	--	70 to 81	56 to 82	--	--	--	--	68 to 72	--
4. North mesic	--	77 (24)	68 (9)	59 (14)	--	64 (10)	--	71 (50)	--
	--	73 to 81	59 to 77	54 to 64	--	58 to 70	--	68 to 73	--
5. North mesic to wet-mesic	--	69 (19)	72 (20)	56 (53)	54 (10)	58 (15)	45 (8)	68 (18)	--
	--	62 to 75	65 to 80	54 to 58	41 to 68	51 to 65	39 to 51	64 to 72	--
6. North wet-mesic to wet	--	--	61 (9)	47 (87)	45 (233)	--	38 (101)	--	--
	--	--	46 to 76	44 to 49	44 to 47	--	36 to 40	--	--
7. Superior clay belt	--	62 (6)	--	48 (6)	--	--	--	--	--
	--	59 to 64	--	40 to 56	--	--	--	--	--
8. South dry	63 (142)	70 (54)	62 (33)	--	--	--	--	61 (28)	57 (50)
	61 to 64	66 to 73	58 to 66	--	--	--	--	57 to 64	54 to 59
9. South dry-mesic	74 (9)	75 (25)	74 (18)	--	--	--	--	69 (50)	60 (35)
	65 to 84	70 to 81	65 to 83	--	--	--	--	66 to 72	57 to 63
10. S. dry-mes to mesic	--	--	--	--	--	--	--	71 (13)	--
	--	--	--	--	--	--	--	66 to 77	--
11. S. dry-mes to mes(phase)	--	--	--	--	--	--	--	70 (19)	68 (9)
	--	--	--	--	--	--	--	66 to 74	62 to 75
12. South mesic	--	--	76 (6)	--	--	--	--	69 (33)	--
	--	--	57 to 95	--	--	--	--	65 to 74	--
13. South mesic(phase)	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
14. South mesic to wet-mesic	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--
15. South wet-mesic to wet	66 (6)	--	--	--	53 (28)	--	--	--	--
	51 to 81	--	--	--	48 to 58	--	--	--	--
16. No type identified	64 (27)	71 (101)	74 (18)	56 (33)	49 (15)	80 (11)	--	69 (35)	64 (9)
	60 to 69	68 to 74	64 to 85	52 to 60	37 to 61	63 to 97	--	66 to 73	54 to 73

(Table 25 continued on next page)

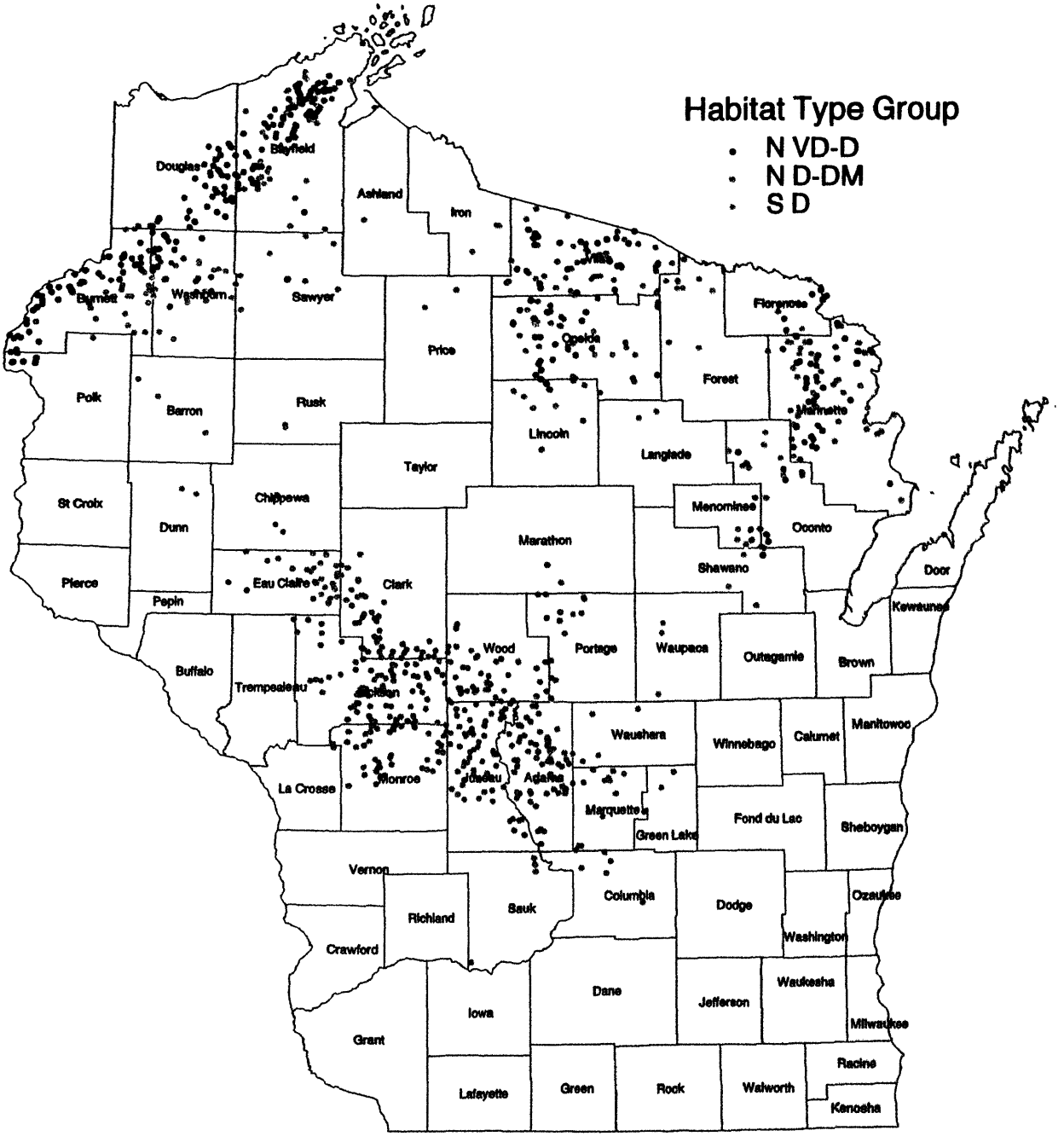
(Table 25 continued)

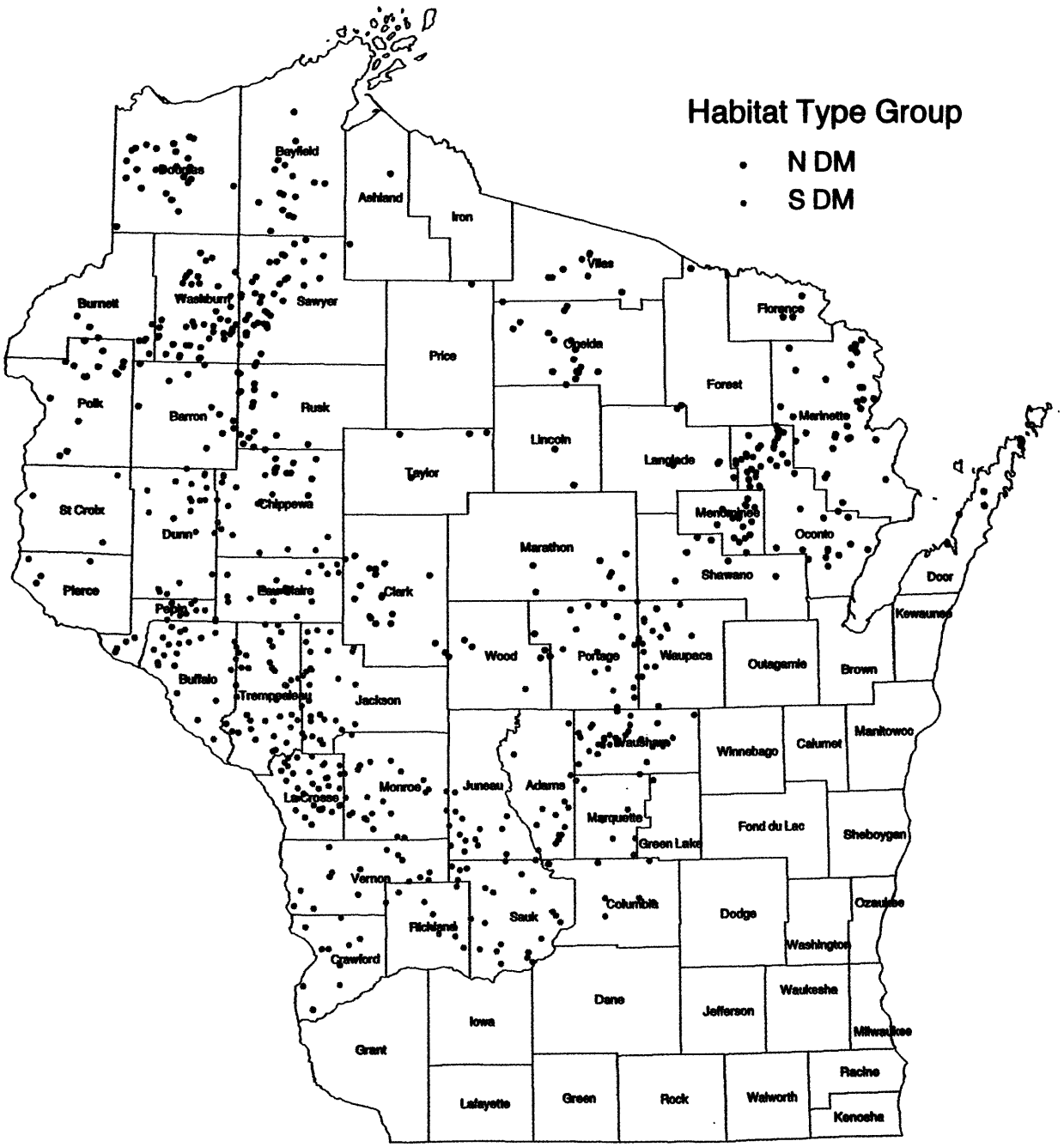
Habitat type group	Site index species									
	Basswood	Sugar maple	Red maple	American elm	Black ash	Green ash	White ash	Bigtooth aspen	Quaking aspen	Paper birch
	Average site index (observations) / 95% confidence interval									
1. North very dry to dry	--	--	--	--	--	--	--	69 (46)	70 (52)	55 (9)
	--	--	--	--	--	--	--	66 to 72	67 to 73	49 to 60
2. North dry to dry-mesic	--	--	60 (21)	--	--	--	--	74 (40)	73 (88)	65 (19)
	--	--	56 to 64	--	--	--	--	71 to 77	71 to 75	61 to 69
3. North dry-mesic	68 (21)	65 (15)	68 (52)	--	--	--	70 (12)	75 (77)	75 (73)	70 (28)
	65 to 71	60 to 71	65 to 70	--	--	--	65 to 75	73 to 77	73 to 78	66 to 74
4. North mesic	72 (131)	67 (209)	66 (72)	67 (8)	65 (9)	69 (9)	74 (61)	77 (45)	77 (167)	67 (29)
	71 to 74	66 to 68	63 to 68	55 to 78	56 to 74	60 to 78	71 to 77	74 to 80	76 to 79	64 to 70
5. North mesic to wet-mesic	71 (41)	65 (49)	66 (146)	68 (18)	62 (25)	68 (27)	76 (30)	77 (20)	73 (319)	62 (44)
	67 to 75	62 to 68	64 to 67	59 to 77	59 to 66	64 to 72	72 to 80	71 to 84	72 to 74	59 to 65
6. North wet-mesic to wet	--	--	58 (42)	71 (13)	49 (119)	64 (48)	--	--	68 (77)	56 (33)
	--	--	54 to 61	59 to 82	47 to 51	60 to 67	--	--	66 to 71	52 to 60
7. Superior clay belt	--	--	64 (9)	--	--	--	--	69 (6)	71 (64)	60 (6)
	--	--	58 to 69	--	--	--	--	58 to 79	68 to 74	53 to 67
8. South dry	--	--	66 (58)	--	--	--	--	75 (23)	68 (48)	59 (8)
	--	--	63 to 69	--	--	--	--	71 to 79	65 to 71	52 to 66
9. South dry-mesic	78 (10)	--	75 (50)	79 (28)	--	--	--	81 (64)	71 (37)	74 (20)
	72 to 84	--	72 to 79	74 to 83	--	--	--	78 to 84	67 to 74	66 to 82
10. S. dry-mes to mesic	77 (17)	--	79 (6)	--	--	--	72 (24)	79 (12)	--	--
	71 to 82	--	62 to 95	--	--	--	67 to 77	71 to 86	--	--
11. S. dry-mes to mes(phase)	69 (7)	--	--	81 (22)	--	--	70 (6)	84 (13)	73 (17)	--
	57 to 81	--	--	74 to 88	--	--	55 to 84	77 to 91	66 to 79	--
12. South mesic	75 (28)	63 (33)	83 (10)	82 (23)	--	76 (14)	75 (38)	76 (21)	75 (17)	71 (10)
	71 to 80	60 to 67	75 to 92	75 to 89	--	68 to 83	71 to 80	70 to 82	68 to 83	62 to 79
13. South mesic(phase)	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
14. South mesic to wet-mesic	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
15. South wet-mesic to wet	--	--	77 (14)	70 (38)	68 (19)	72 (55)	--	--	63 (14)	--
	--	--	68 to 86	64 to 76	61 to 74	68 to 76	--	--	55 to 71	--
16. No type identified	71 (23)	64 (34)	65 (46)	71 (57)	48 (16)	79 (23)	68 (25)	73 (30)	71 (192)	63 (33)
	67 to 75	61 to 68	62 to 67	66 to 76	40 to 56	71 to 87	62 to 74	68 to 77	70 to 72	60 to 66

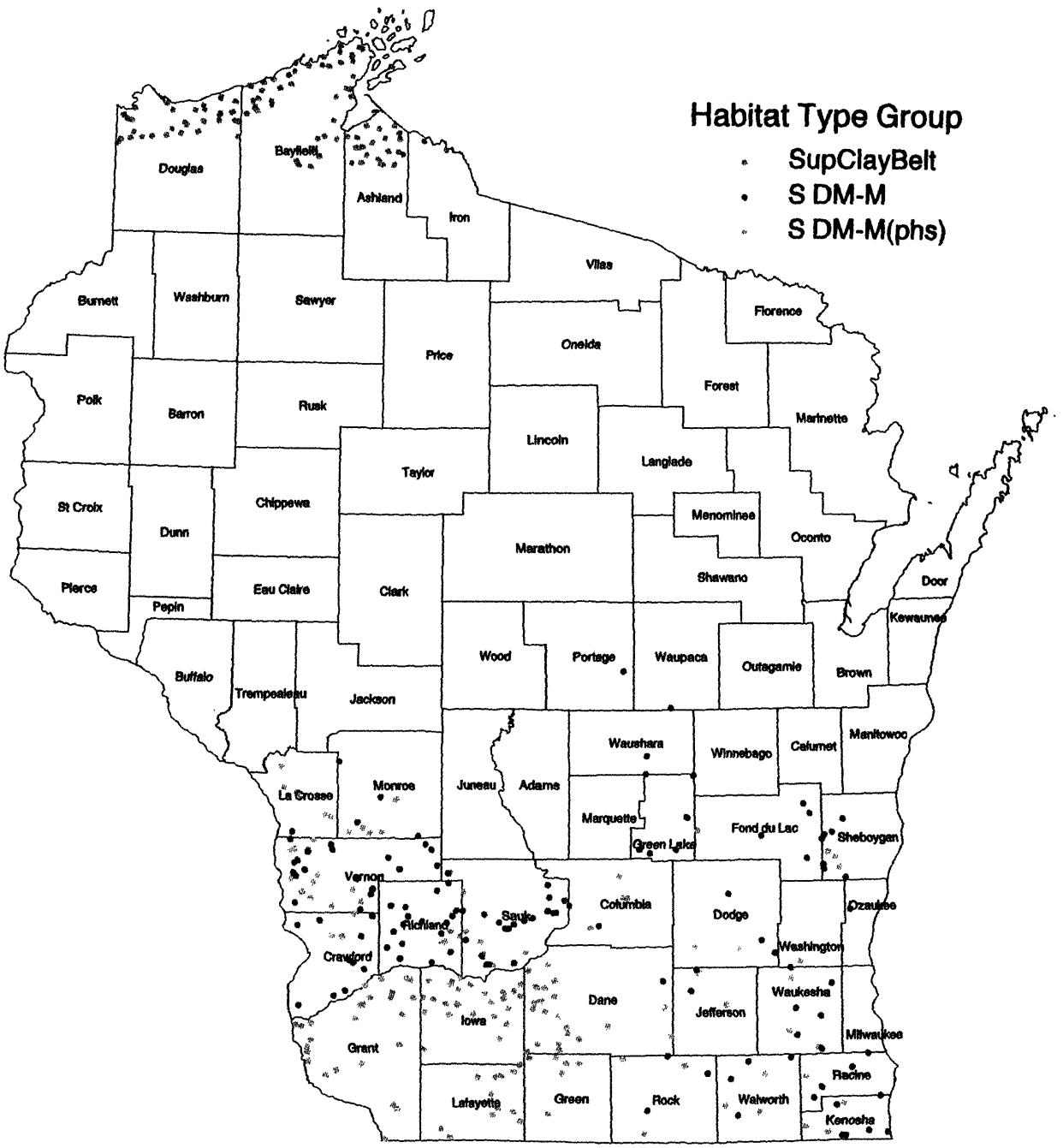
APPENDIX D

MAPS

These maps are also available on the web at **www.ncfes.umn.edu/4801/**.


Habitat Type Group
N VD-D
N D-DM
S D
Douglas
Bayfield
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Price
Oneida
Forest
Marinette
Polk
Barron
Rusk
Lincoln
Langlade
Taylor
St Croix
Dunn
Chippewa
Menominee
Oconto
Marathon
Pierce
Pepin
Eau Claire
Clark
Shawano
Door
Kewaunee
Buffalo
Trempealeau
Wood
Portage
Waupaca
Outagamie
Brown
Jackson
Waushara
Winnebago
Calumet
Manitowoc
La Crosse
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Sheboygan
Vernon
Columbia
Ozaukee
Richland
Sauk
Dodge
Washington
Crawford
Dane
Waukesha
Iowa
Jefferson
Milwaukee
Grant
Racine
Lafayette
Green
Rock
Walworth
Kenosha


Habitat Type Group
N DM
S DM
Douglas
Bayfield
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Price
Oneida
Forest
Marinette
Polk
Barron
Rusk
Lincoln
Langlade
Taylor
St Croix
Dunn
Chippewa
Menominee
Oconto
Marathon
Pierce
Pepin
Eau Claire
Clark
Shawano
Door
Kewaunee
Buffalo
Trempealeau
Jackson
Wood
Portage
Waupaca
Outagamie
Brown
Manitowoc
Winnebago
Calumet
La Crosse
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Sheboygan
Vernon
Richland
Sauk
Columbia
Dodge
Ozaukee
Washington
Crawford
Dane
Waukesha
Jefferson
Milwaukee
Iowa
Grant
Racine
Lafayette
Green
Rock
Walworth
Kenosha


Habitat Type Group
SupClayBelt
S DM-M
S DM-M(phs)
Douglas
Bayfield
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Price
Oneida
Forest
Marinette
Polk
Barron
Rusk
Lincoln
Langlade
Taylor
St Croix
Dunn
Chippewa
Menominee
Oconto
Marathon
Shawano
Door
Pierce
Pepin
Eau Claire
Clark
Kewaunee
Wood
Portage
Waupaca
Outagamie
Brown
Buffalo
Trempealeau
Jackson
Waushara
Winnebago
Calumet
Manitowoc
La Crosse
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Sheboygan
Vernon
Columbia
Dodge
Ozaukee
Richland
Sauk
Washington
Crawford
Dane
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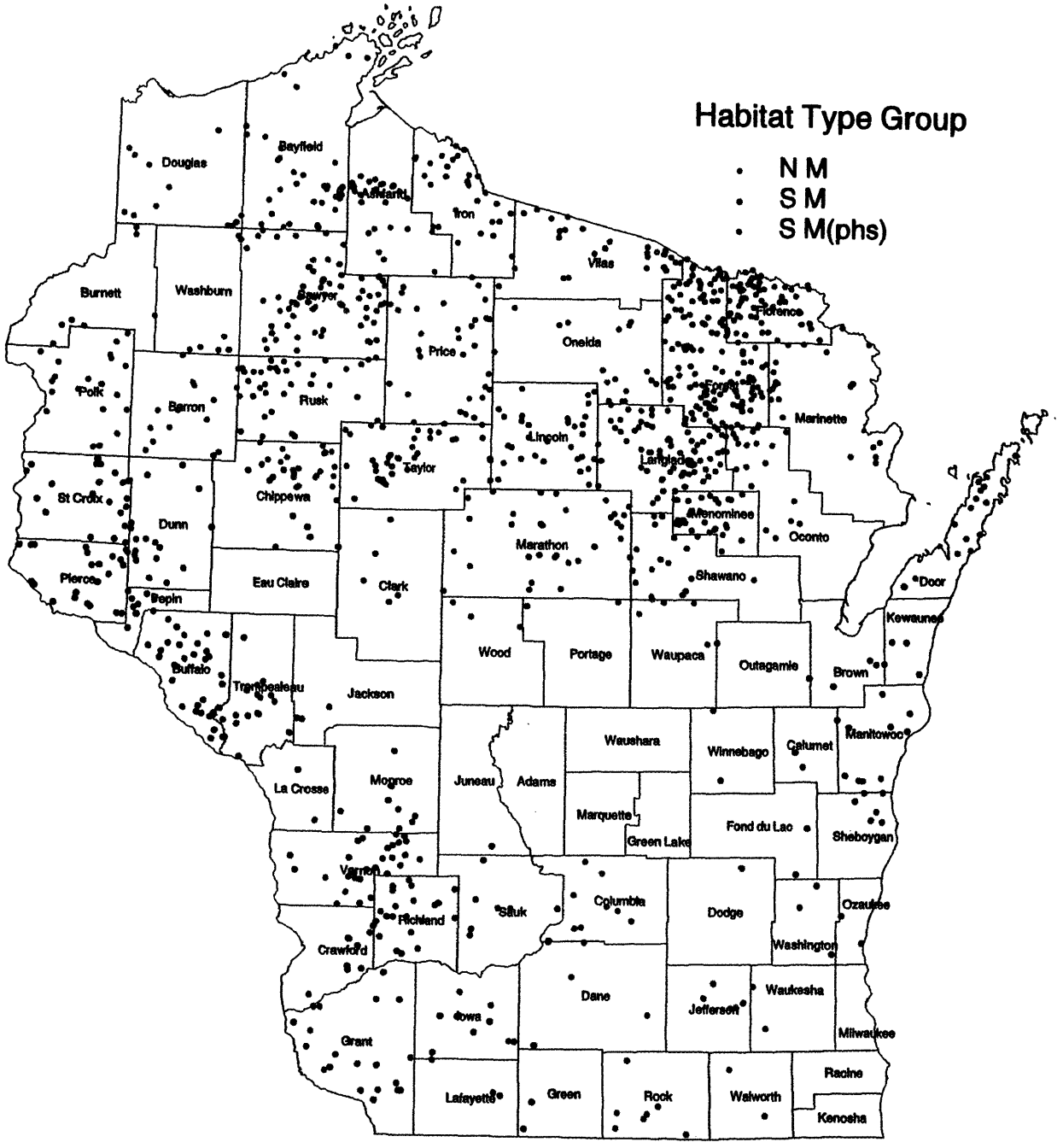
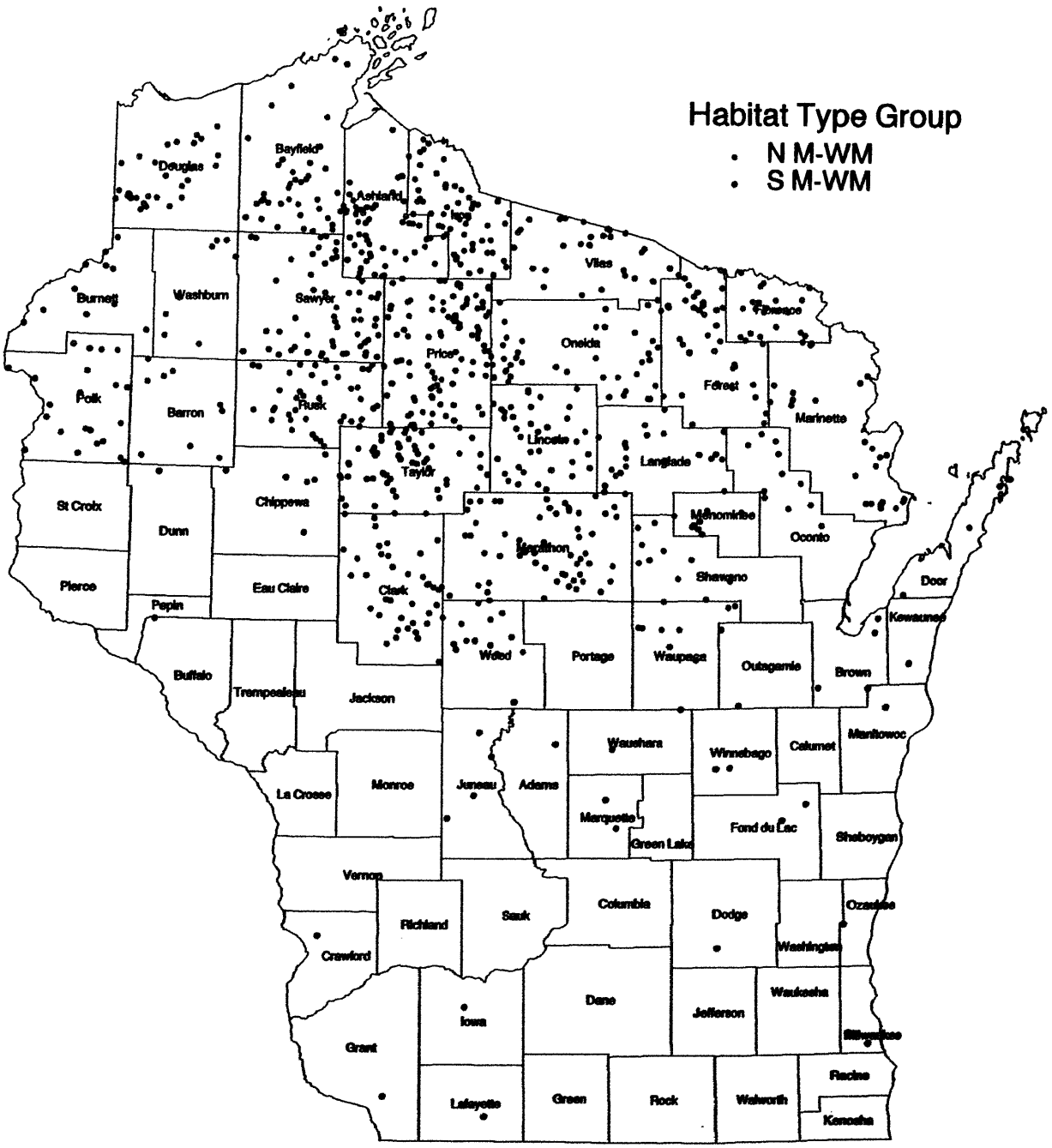
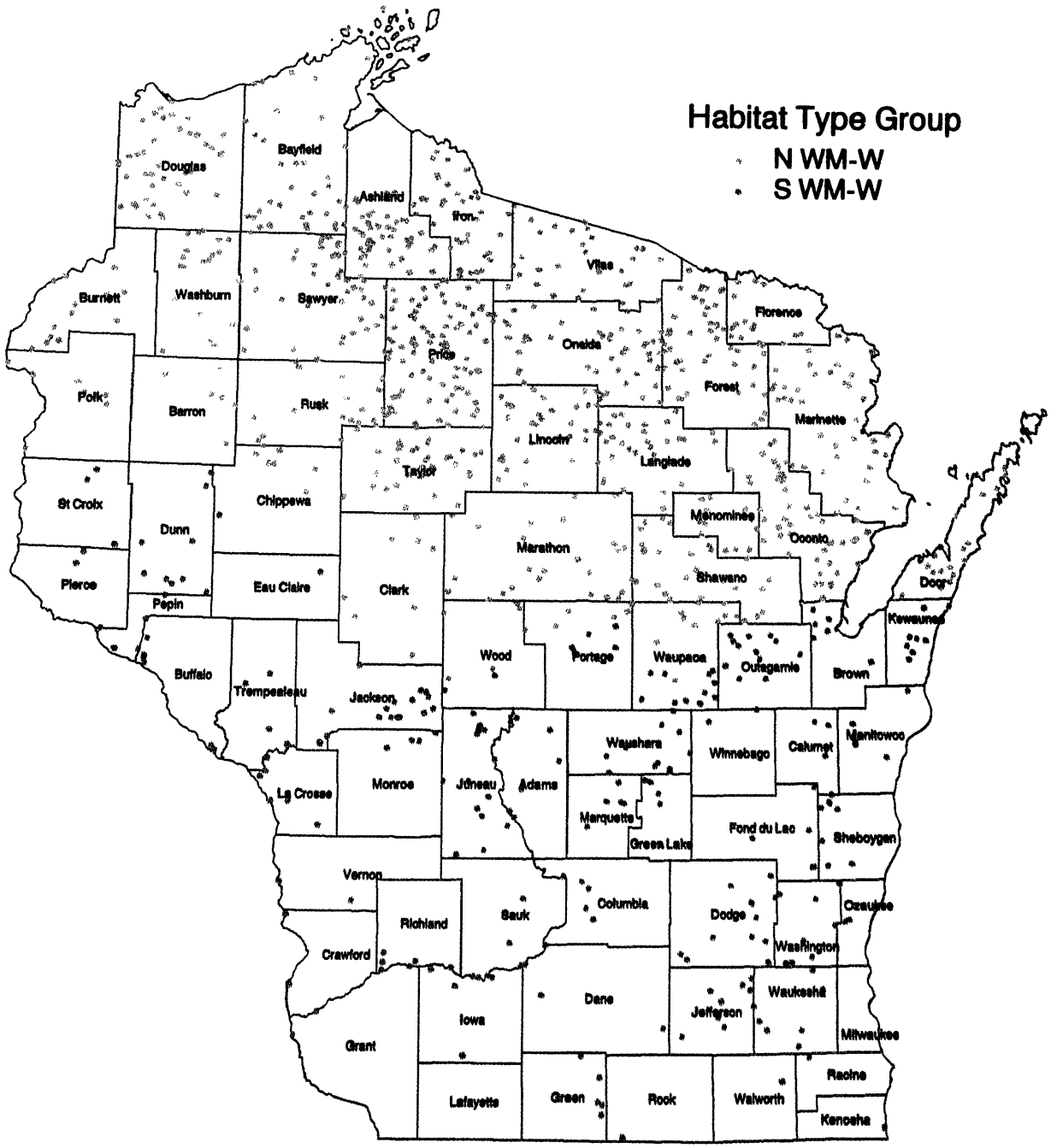
Jefferson
Iowa
Milwaukee
Grant
Racine
Lafayette
Green
Rock
Walworth
Kenosha


Habitat Type Group
N M
S M
S M(phs)
Douglas
Bayfield
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Price
Oneida
Forest
Marinette
Polk
Barron
Rusk
Lincoln
Langlade
Taylor
St Croix
Dunn
Chippewa
Menominee
Oconto
Marathon
Pierce
Pepin
Eau Claire
Clark
Shawano
Door
Kewaunee
Wood
Portage
Waupaca
Outagamie
Brown
Buffalo
Trempealeau
Jackson
Waushara
Winnebago
Calumet
Manitowoc
La Crosse
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Sheboygan
Vernon
Richland
Sauk
Columbia
Dodge
Ozaukee
Crawford
Washington
Dane
Waukesha
Jefferson
Iowa
Grant
Milwaukee
Racine
Lafayette
Green
Rock
Walworth
Kenosha


Habitat Type Group
N M-WM
S M-WM
Douglas
Bayfield
Ashland
Iron
Vilas
Burnett
Washburn
Sawyer
Price
Oneida
Florence
Forest
Marinette
Polk
Barron
Rusk
Taylor
Lincoln
Langlade
Menominee
Oconto
St Croix
Dunn
Chippewa
Marathon
Shawano
Door
Pierce
Pepin
Eau Claire
Clark
Wood
Portage
Waupaca
Outagamie
Brown
Kewaunee
Buffalo
Trempealeau
Jackson
Waushara
Winnebago
Calumet
Manitowoc
La Crosse
Monroe
Juneau
Adams
Marquette
Green Lake
Fond du Lac
Sheboygan
Vernon
Richland
Sauk
Columbia
Dodge
Ozaukee
Washington
Crawford
Dane
Jefferson
Waukesha
Iowa
Grant
Lafayette
Green
Rock
Walworth
Racine
Kenosha


Habitat Type Group
N WM-W
S WM-W
Douglas
Bayfield
Ashland
Iron
Vilas
Florence
Burnett
Washburn
Sawyer
Price
Oneida
Forest
Marinette
Polk
Barron
Rusk
Lincoln
Langlade
Taylor
St Croix
Dunn
Chippewa
Menominee
Oconto
Marathon
Pierce
Pepin
Eau Claire
Clark
Shawano
Door
Kewaunee
Wood
Portage
Waupaca
Outagamie
Brown
Buffalo
Trempealeau
Jackson
Waushara
Winnebago
Calumet
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Lafayette
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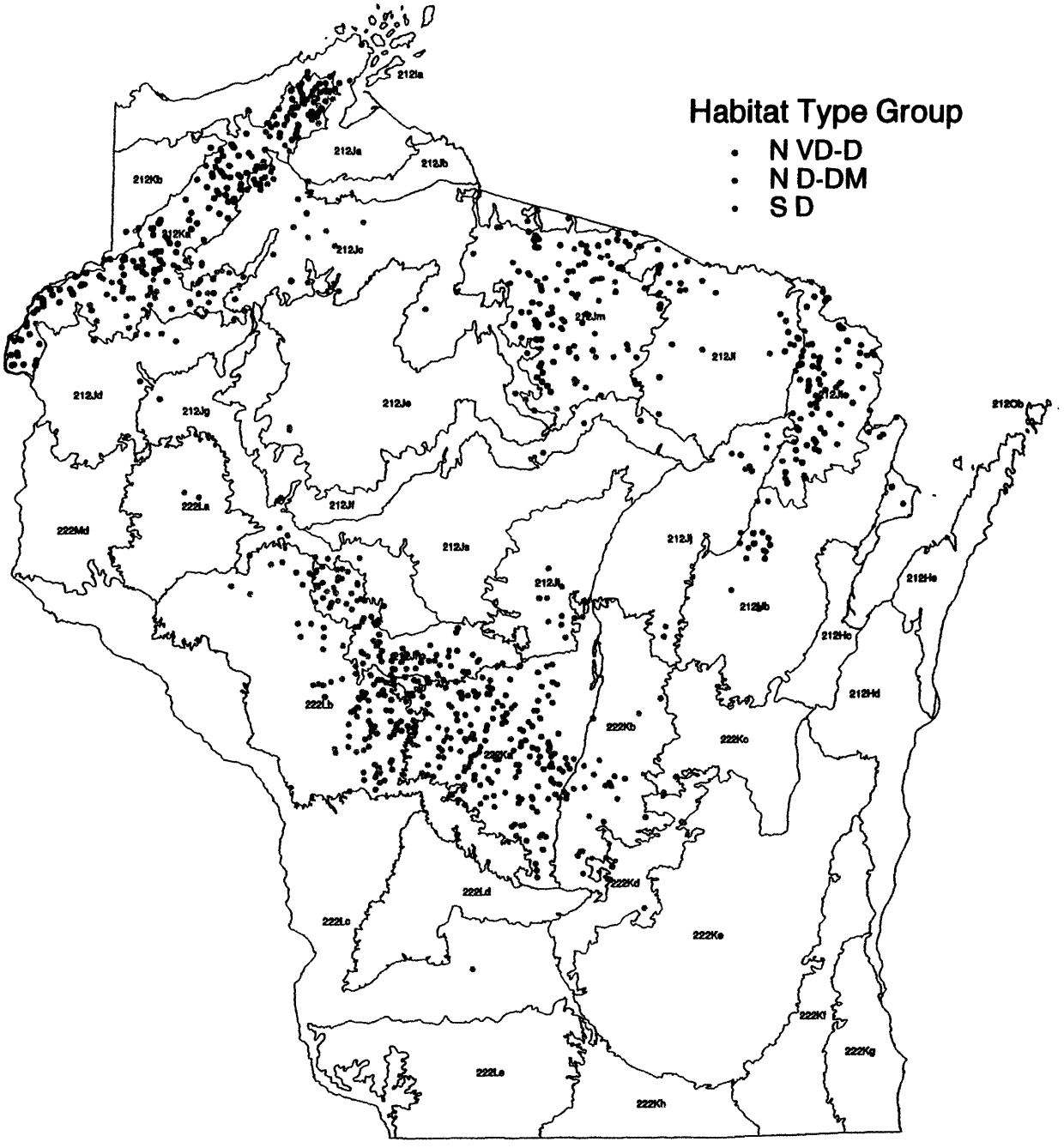
Walworth
Kenosha


Habitat Type Group
N VD-D
N D-DM
S D
212Ia
212Ib
212Ic
212Id
212Ie
212If
212Ig
212Ih
212Ii
212Ij
212Ik
212Il
212Im
212In
212Io
212Ip
212Iq
212Ir
212Is
212It
212Iu
212Iv
212Iw
212Ix
212Iy
212Iz
212Ja
212Jb
212Jc
212Jd
212Je
212Jf
212Jg
212Jh
212Ji
212Jj
212Jk
212Jl
212Jm
212Jn
212Jo
212Jp
212Jq
212Jr
212Js
212Jt
212Ju
212Jv
212Jw
212Jx
212Jy
212Jz
212Ka
212Kb
212Kc
212Kd
212Ke
212Kf
212Kg
212Kh
212Ki
212Kj
212Kk
212Kl
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212Ko
212Kp
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212Ks
212Kt
212Ku
212Kv
212Kw
212Kx
212Ky
212Kz
212La
212Lb
212Lc
212Ld
212Le
212Lf
212Lg
212Lh
212Li
212Lj
212Lk
212Ll
212Lm
212Ln
212Lo
212Lp
212Lq
212Lr
212Ls
212Lt
212Lu
212Lv
212Lw
212Lx
212Ly
212Lz
212Ma
212Mb
212Mc
212Md
212Me
212Mf
212Mg
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212Mj
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212Mm
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212Mo
212Mp
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212Ms
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212Mv
212Mw
212Mx
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212Mz
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212Nu
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212Ny
212Nz
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222Kd
222Ke
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222Kg
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222Ki
222Kj
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222Km
222Kn
222Ko
222Kp
222Kq
222Kr
222Ks
222Kt
222Ku
222Kv
222Kw
222Kx
222Ky
222Kz
222La
222Lb
222Lc
222Ld
222Le
222Lf
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222Lm
222Ln
222Lo
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222Lq
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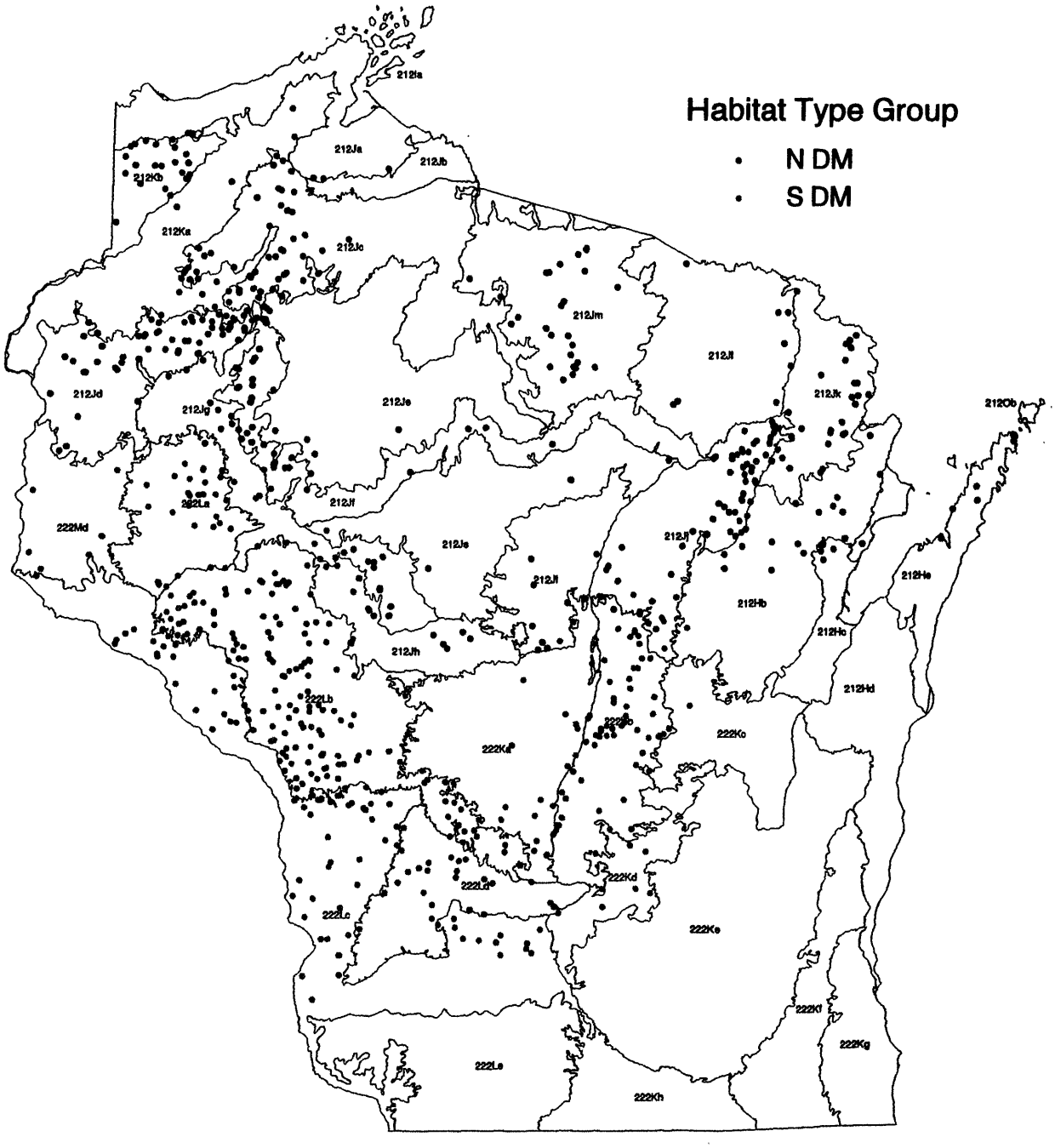
Habitat Type Group
N DM
S DM
212Ia
212Ja
212Jb
212Kb
212Ka
212Jc
212Jm
212Jl
212Jd
212Je
212Jk
212Ob
212Jg
212Jf
222La
222Md
212Ja
212Ji
212Hb
212He
212Hc
212Jh
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222Lb
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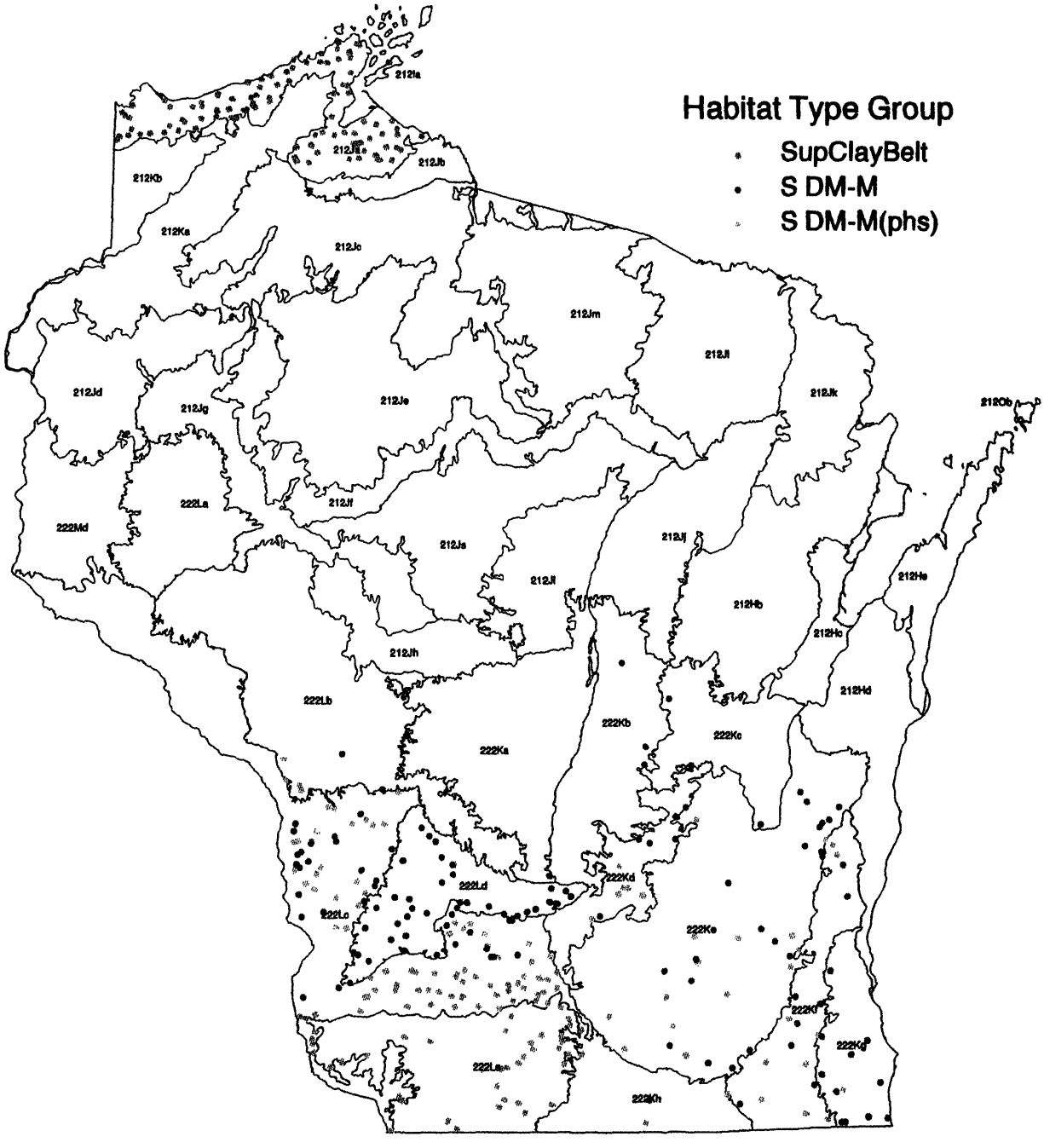
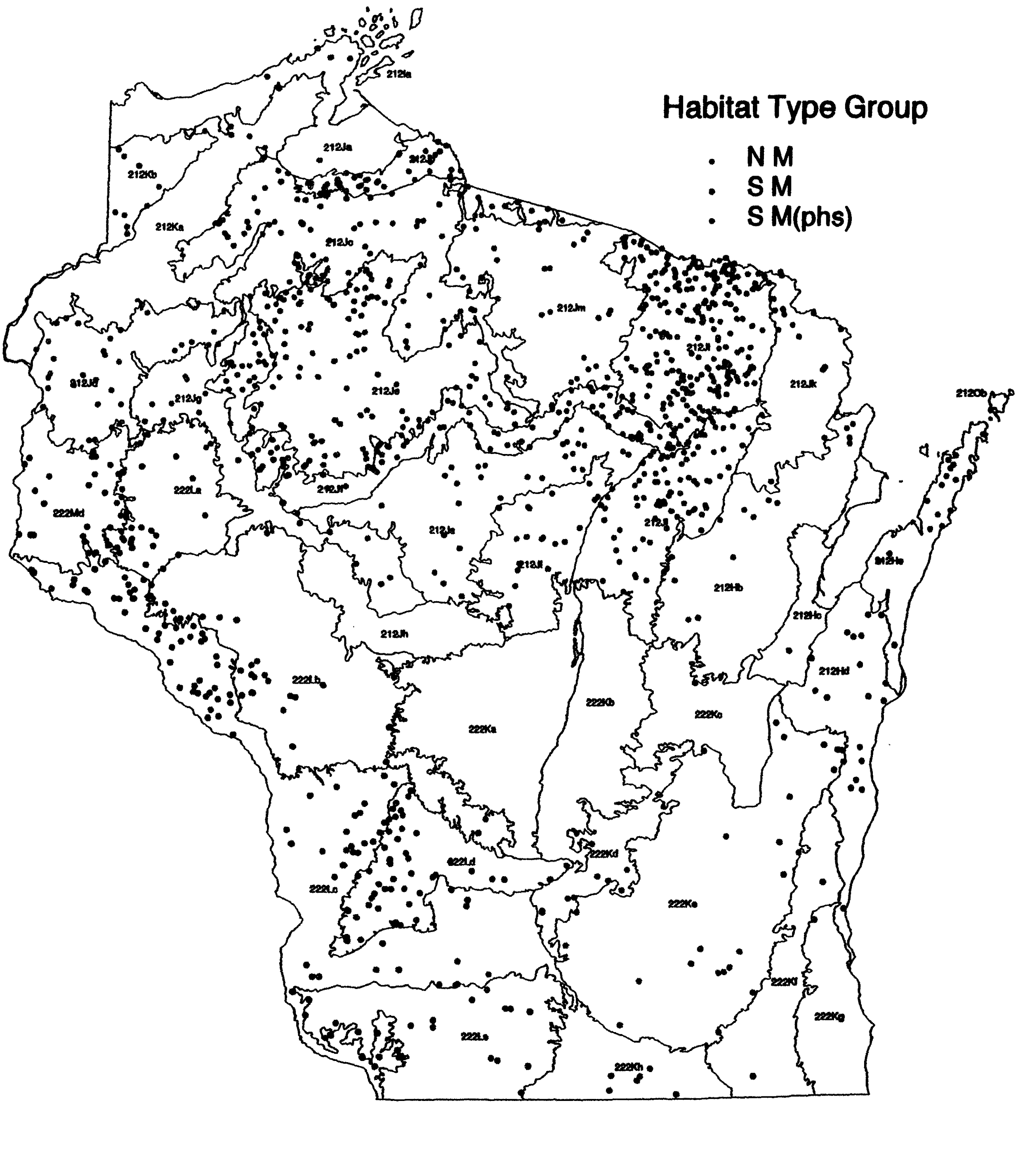
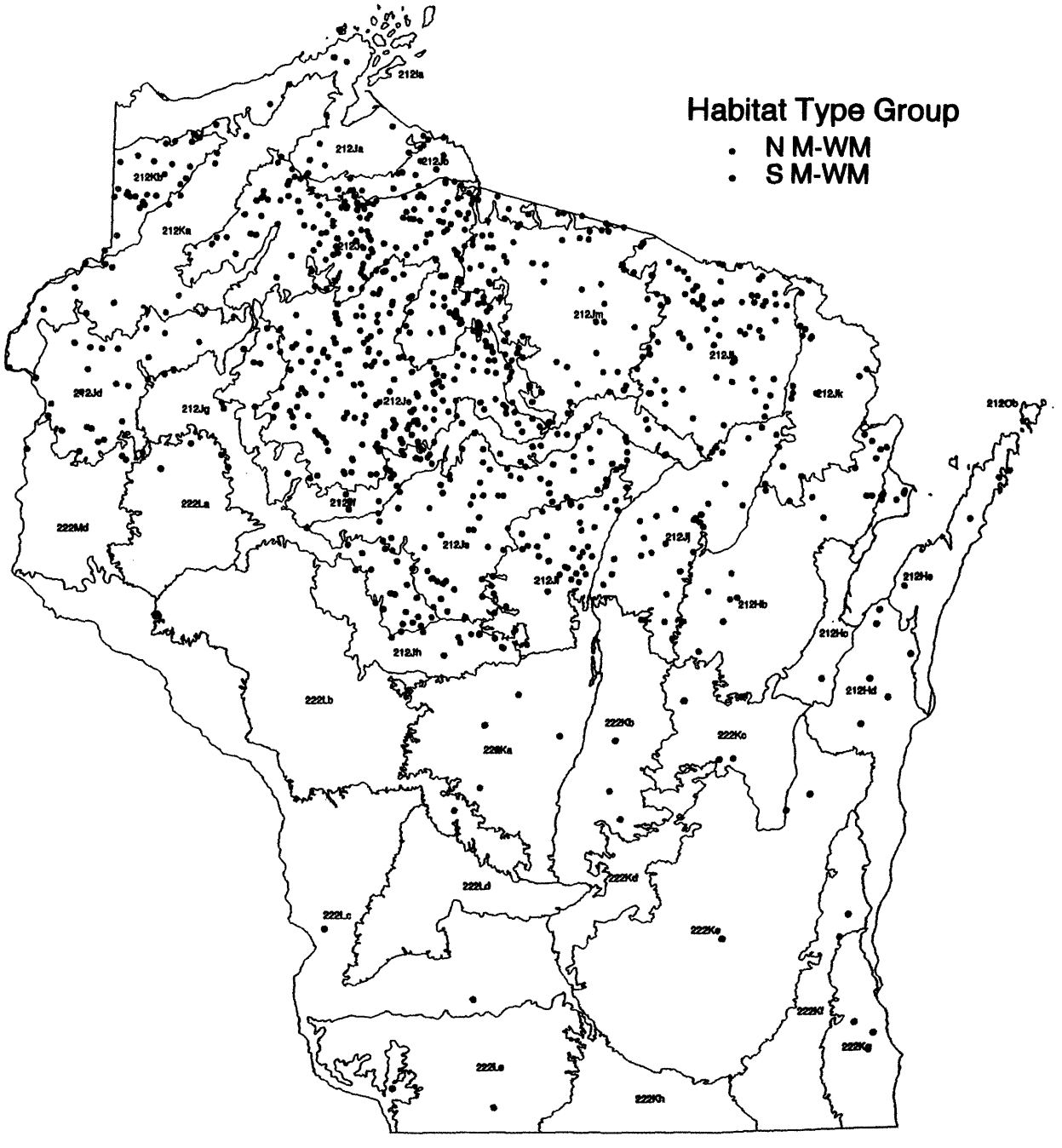
222Ko
222Kd
222Le
222Ke
222Kf
222Kg
222Lc
222Kh


Habitat Type Group
SupClayBelt
S DM-M
S DM-M(phs)
212Ia
212Ib
212Ic
212Id
212Ie
212If
212Ig
212Ih
212Ii
212Ij
212Ik
212Il
212Im
212Ja
212Jb
212Jc
212Jd
212Je
212Jf
212Jg
212Jh
212Ji
212Jj
212Jk
212Jl
212Jm
212Ka
212Kb
212Ob
212He
212Hb
212Hc
212Hd
221Lb
222La
222Md
222Ka
222Kb
222Kc
222Kd
222Ke
222Kf
222Kg
222Lc
222Ld
222Le
222Lm
222Kh


Habitat Type Group
N M
S M
S M(phs)


Habitat Type Group
N M-WM
S M-WM
212Ia
212Ja
212Jb
212Kb
212Ka
212Jc
212Jm
212Jl
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212Jg
212Jo
212Jk
212Ob
222Md
222La
212Jf
212Je
212Ji
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212He
212Hb
212Jh
212Hc
212Hd
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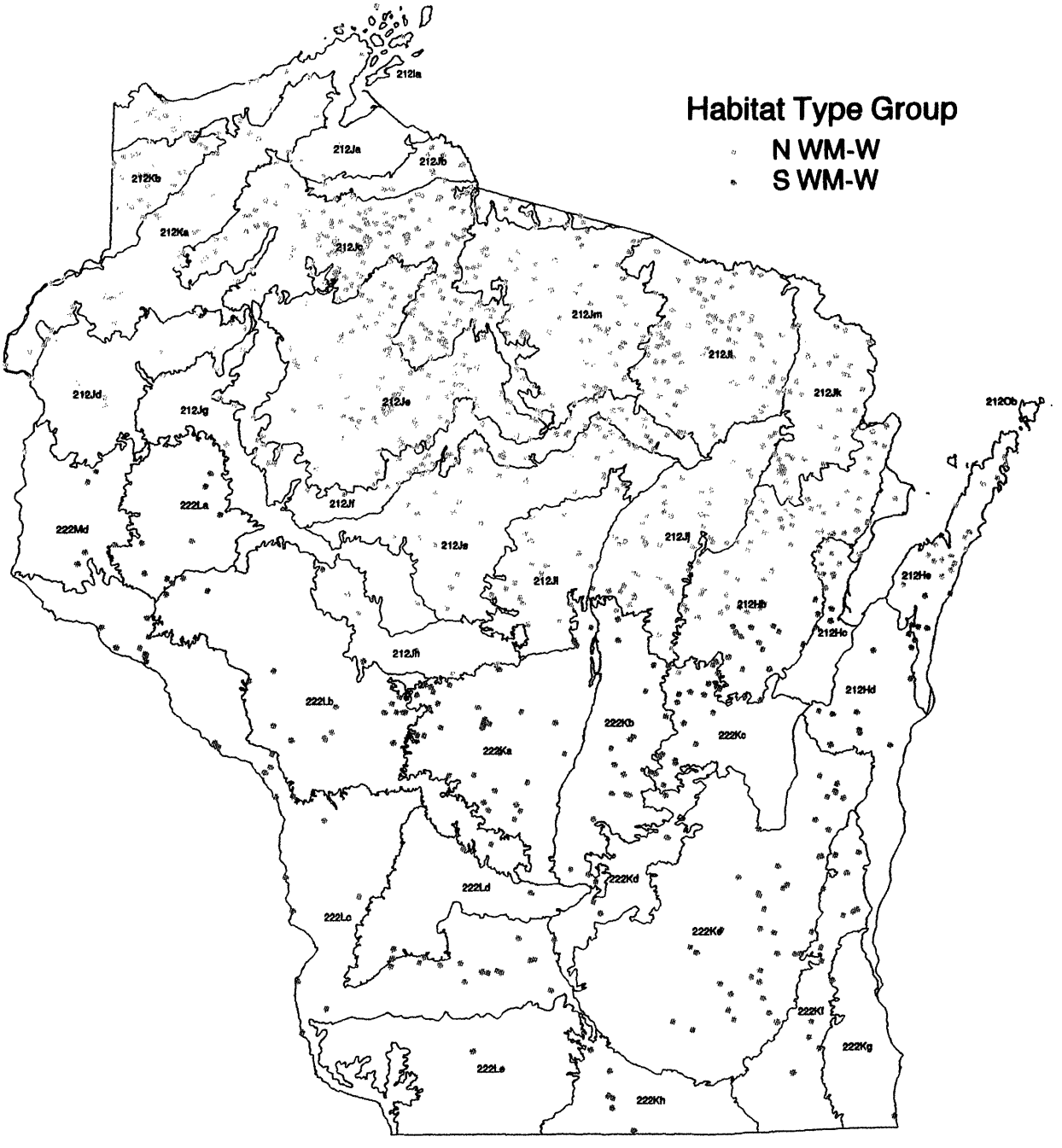
Habitat Type Group
N WM-W
S WM-W
212Ia
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212Jb
212Kb
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212Jl
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212Je
212Jk
212Ob
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222Md
212Ja
212Jj
212Ji
212He
212Jh
212Hc
212Jh
212Hd
222Lb
222Kb
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221Ld
222Lc
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222Kl
222Kg
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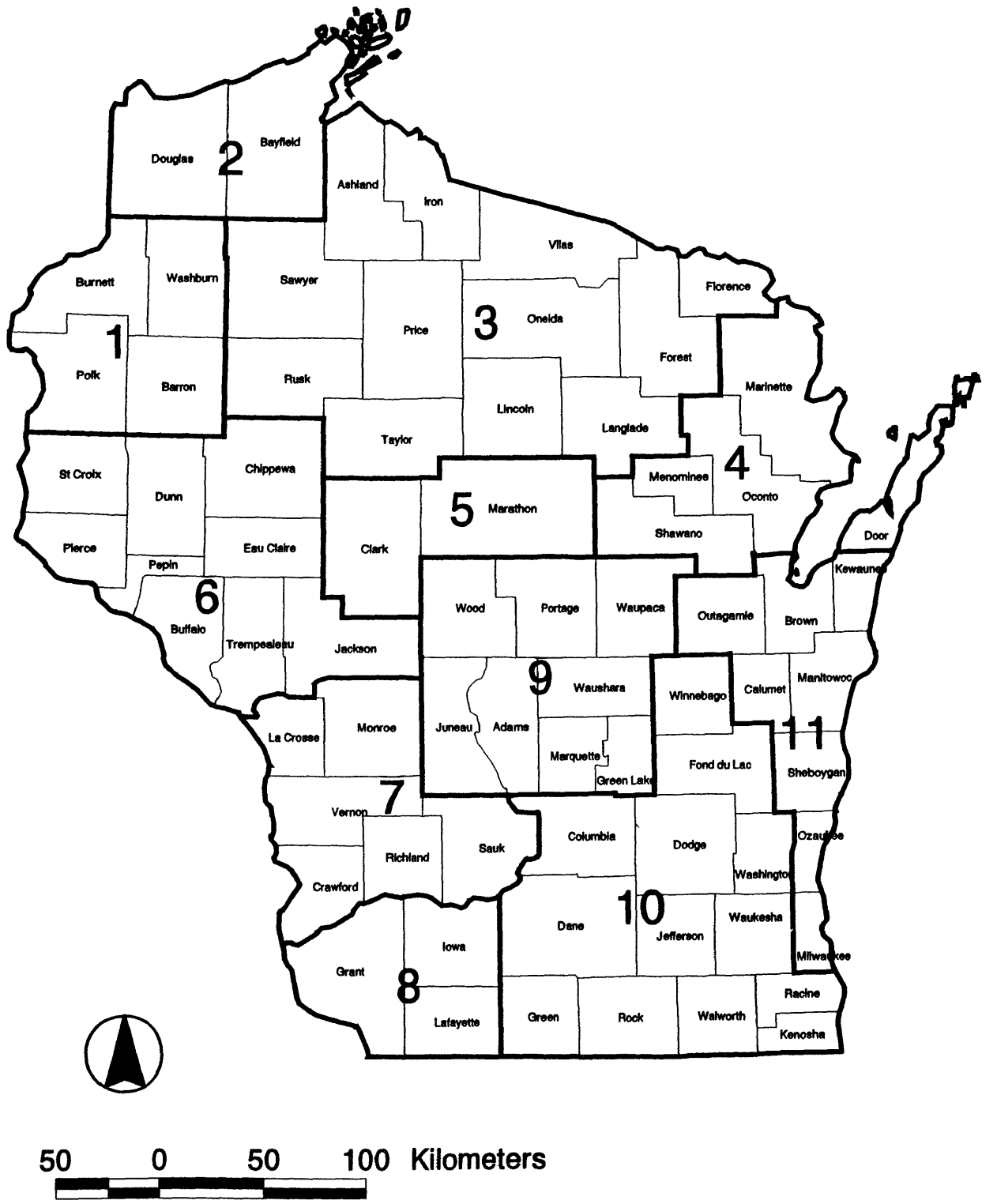
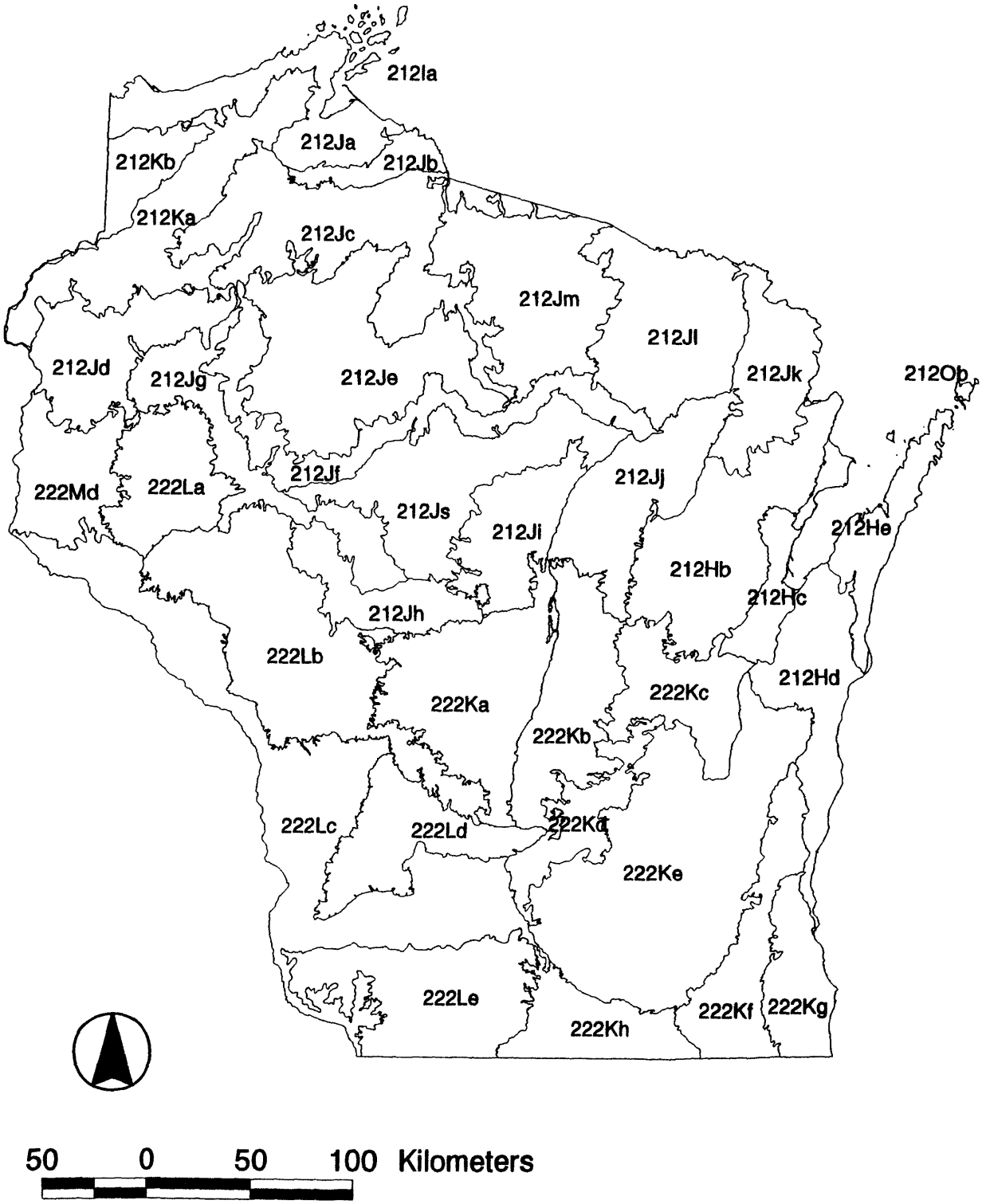
222Kh

Habitat Type Regions of Wisconsin



NHFEU Sections and Subsections of Wisconsin



Kotar, John; Kovach, Joseph A.; Brand, Gary.
1999. **Analysis of the 1996 Wisconsin forest statistics by habitat type**. Gen. Tech. Rep. NC-207. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 166 p.

The fifth inventory of Wisconsin's forests is presented from the perspective of habitat type as a classification tool. Habitat type classifies forests based on the species composition of the understory plant community. Various forest attributes are summarized by habitat type and management implications are discussed.

KEY WORDS: Forest area, timber volume, biomass, site index, moisture gradient, nutrient gradient.