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# PLANT SPECIES COMPOSITION OF WISCONSIN PRAIRIES

An Aid to Selecting Species for Plantings and Restorations  
Based Upon University of Wisconsin-Madison  
Plant Ecology Laboratory Data



Technical Bulletin No. 188  
Department of Natural Resources  
Madison, WI 53707  
1995

Cover: Drawings by Gary Eldred. Left to right: Pale purple coneflower (*Echinacea pallida*),  
Prairie lily (*Lilium philadelphicum*), and Pomme-de-prairie (*Pedicularis esculentum*).

Photos by author. Left to right: Rattlesnake master (*Eryngium yuccifolium*), Sawtooth  
sunflower (*Helianthus grosserratus*), and Pale purple coneflower (*Echinacea pallida*).

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## ABSTRACT

This bulletin is a reference document designed to be used as a guide in selecting plant species to use in prairie plantings in Wisconsin. It should be especially useful to those wishing to approximate the species composition and structure of native Wisconsin prairie. This bulletin provides, in various tabular formats, quantitative data on the plant species composition of Wisconsin prairie remnants. It presents information about both the average presence/absence of species in prairie remnants of different types, from wet to dry, and the relative density or abundance of species within these prairie types. The bulletin also provides a narrative that discusses both the limitations and usefulness of the data as well as how the user should interpret the data in selecting species for plantings. The data are from the Plant Ecology Laboratory of the University of Wisconsin-Madison and were collected in the 1940s and 50s from 247 remnants across the prairie province of the state.

**Key Words:** Wisconsin, prairie, vegetation, restoration, planting, community composition.

# **Plant Species Composition of Wisconsin Prairies**

An Aid to Selecting Species for Plantings and Restorations  
Based Upon University of Wisconsin-Madison  
Plant Ecology Laboratory Data

By Richard A. Henderson

Technical Bulletin No. 188  
Department of Natural Resources  
P.O. Box 7921  
Madison, WI 53707

1995

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## INTRODUCTION

Ever since the first Midwest Prairie Conference was held in 1968 (becoming the North American Prairie Conference in 1978), there has been a steadily increasing interest, by both the general public and government agencies, in tallgrass prairie ecology, conservation, and restoration. Because this ecosystem is now so exceedingly rare, many local conservation groups, as well as state and federal agencies, have made prairies a high priority for protection and restoration.

Prairie restorations (simply plantings in most cases) have become popular with private landowners for backyards and rural properties and with public agencies for parks, wildlife areas, roadsides, and school grounds. As evidence of this interest, over a half dozen private companies within or very near to Wisconsin's borders are now specializing in native prairie plantings. The University of Wisconsin Arboretum has developed an on going and popular program to assist and train teachers in the use of prairie planting projects as hands-on environmental education opportunities for students. A state-sponsored native seed farm is being planned and developed in Wisconsin to meet the demand for prairie seeding on Department of Natural Resources and Department of Transportation lands. In Dane County alone, approximately 100 acres of serious, species-rich prairie plantings are being planned and carried out each year on private and public (city, county, and state) lands. Modest mixes of native prairie species are also being planted onto Federal Conservation Reserve Program and State Wildlife Habitat Stewardship lands for the purpose of wildlife cover. Many thousands of acres of this habitat will be seeded in the near future statewide.

Most of the interest in planting prairie comes with a desire to make the plantings similar in composition to the original prairie, or at the very least a desire to match appropriate species to the soil and substrates at hand for the best establishment and growth of the plants. Information about the composition of our prairies has been available for sometime (Curtis 1959), but it has never been pulled together into a single comprehensive form that can be easily used in selecting species and their relative ratios for use in prairie plantings. This bulletin attempts to do just that.

The tables provided here are designed to help guide decisions about which species and how much of any one species (relative amount of pure live seed) to use in prairie plantings and restorations in Wisconsin. The tables are based on data from the University of Wisconsin-Madison's Plant Ecology Laboratory (PEL). The data were collected in the 1940s and 1950s from 247 prairie stands located across the state (Fig. 1). The data include all 181 stands used by Curtis (1959) in his classic study of Wisconsin vegetation, plus an additional 66 stands studied by Whitford (1958) and Anderson (1954).

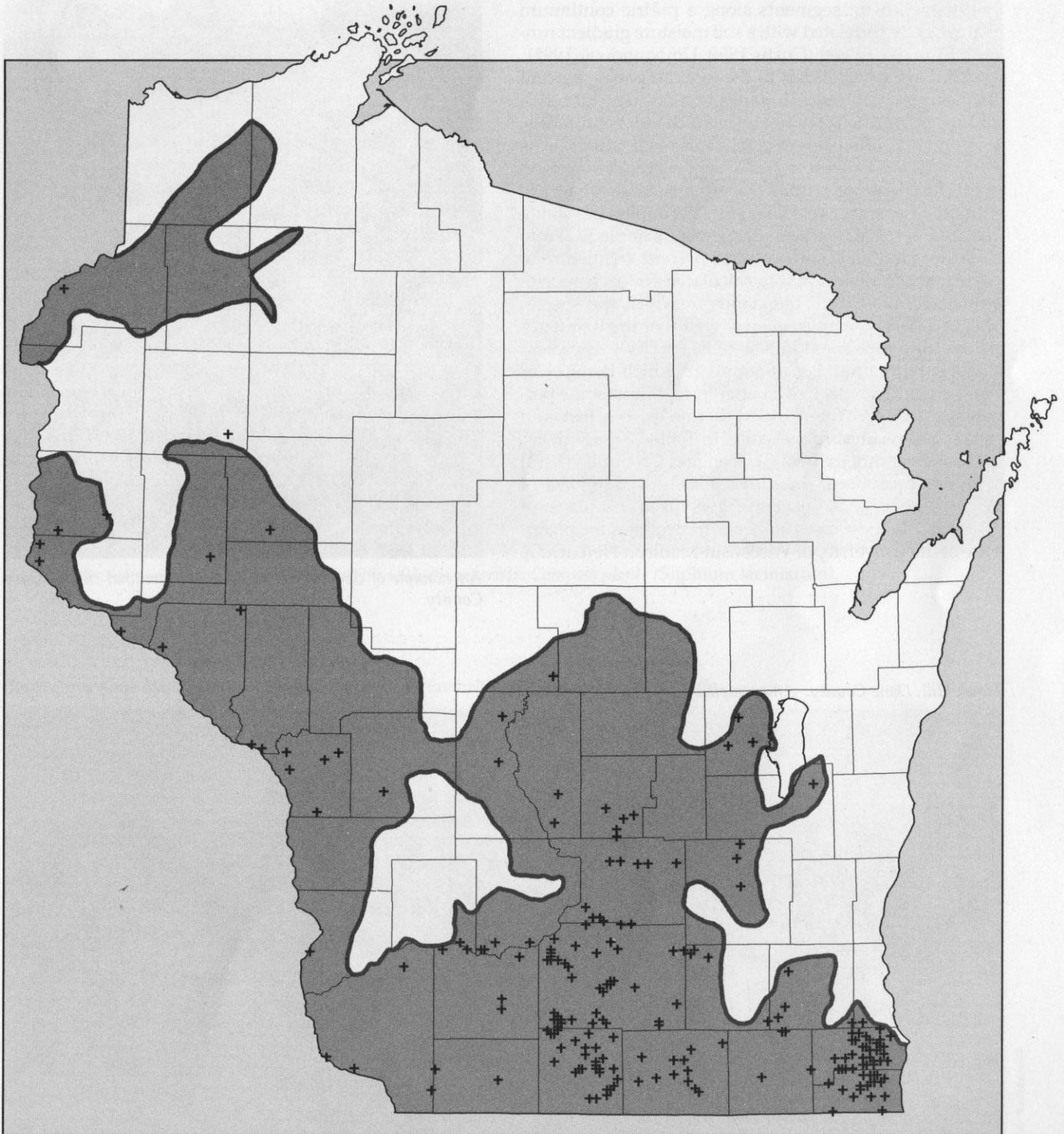
The recent computerization of the PEL data by Umbanhowar (1991) made this report possible. Umbanhowar (1990) also generated regional prairie species lists from these data for the Wisconsin Department of Transportation roadside planting program. Umbanhowar's report and this report are not equivalent summaries of the PEL data, although there is some overlap. Rather than being redundant, the two reports complement each other. For example, the Umbanhowar report does not provide information about the relative density of species within prairie types as is done here. However, it does provide some basic information about the regional variation in species (i.e., range limits), which is mostly lacking here.

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METHODS

The study area was divided into 10 major regions based on the distribution of the dominant species of the prairie and savanna. The regions are: 1. Upper Midwest (northwest), 2. Upper Midwest (central), 3. Upper Midwest (east), 4. Lower Midwest (northwest), 5. Lower Midwest (central), 6. Lower Midwest (east), 7. Lower Midwest (southwest), 8. Lower Midwest (central), 9. Lower Midwest (east), and 10. Lower Midwest (south). The regions are shaded in different colors to indicate their boundaries. Symbols mark the University of Wisconsin Plant Ecology Lab prairie study sites.



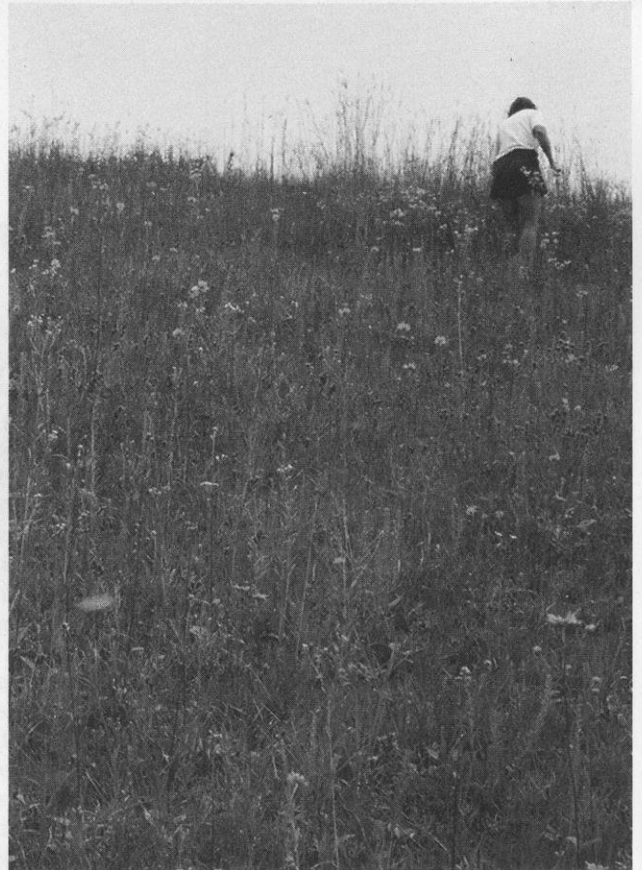
**Figure 1.** The original major regions of prairie and savanna in Wisconsin (after Curtis, 1959). Symbols mark the University of Wisconsin Plant Ecology Lab prairie study sites.

## METHODS

To organize and analyze the information, each of the 247 PEL prairie stands mentioned above were assigned to one of five prairie types on the basis of the same indicator species and methods used by Curtis (1959). These five types (dry, dry-mesic, mesic, wet-mesic, and wet prairie) represent segments along a prairie continuum that is tightly correlated with a soil moisture gradient running from dry to wet (Curtis 1959, Umbanhowar 1992).

After assigning stands to the five categories, percent frequency of occurrence in stands was calculated for each species by prairie type category. In the text and tables, this value is often referred to as *presence*, after Curtis (1959). For 84 of the stands, data were available on species occurrence within one square meter quadrats. In most cases there were 20 quadrats sampled per stand, but in a few cases 40 quadrats were sampled. From these quadrat data, an average percent frequency of occurrence in quadrats was calculated for each species using data only from the stands in which the species was present (average frequency = sum of the frequency values from each stand in which the species was present divided by the number of stands in which the species was present). For lack of a better term, this average percentage value is often called *density* in the text and tables. All results are presented in Tables 1 through 6.

Nomenclature follows Gleason and Cronquist (1991) with two exceptions; *Aster urophyllus* is used in place of *A. sagittifolius* and *Platanthera* is used in place of *Habenaria*. In these cases nomenclature follows the preference of the University of Wisconsin-Madison Herbarium.



An example of dry prairie on gravelly morainal till, in Dane County.

Hawk Hill, Dane County. An example of dry prairie on rocky bluffs.





*An example of dry-mesic prairie on morainal till with characteristic Compass plants (*Silphium laciniatum*).*

*Rush Creek State Natural Area, Crawford County. An example of dry prairie on rocky bluffs.*







PHOTO: R. HENDERSON

Faville Prairie State Natural Area, Jefferson Co. An example of wet-mesic prairie with characteristic Prairie dock (*Silphium terebinthinaceum*).

A dry-mesic prairie with Rosinweed (*Silphium integrifolium*) and Rattlesnake master (*Eryngium yuccifolium*).



PHOTO: R. HENDERSON



PHOTO: F. HENDERSON

*Faville Prairie State Natural Area, Jefferson Co. An example of wet-mesic prairie with characteristic Prairie blazing star (Liatris pycnostachya).*

*An example of mesic prairie in a railroad right-of-way.*



PHOTO: K. HENDERSON

## DESCRIPTIONS AND LIMITATIONS OF TABLES

Table 1 presents the relative "habitat" preference of each species for the different prairie types, with the types compared side-by-side. Table 2 presents the dominance or importance of each species within each prairie type, with the types compared side-by-side. In both Tables 1 and 2, the species are listed in alphabetic order.

Tables 3 through 6, respectively, present the species found in dry, dry-mesic, mesic, and wet-mesic prairie stands. The species are ranked in order of their importance within the type.

Synonyms of recent scientific name changes are included in Tables 1 and 2, but not Tables 3 through 6. There is also a listing of recent taxonomic changes in Appendix A.

Species of limited range within the prairie province of Wisconsin (see Figure 1) are noted as such in all tables. Range-limited species are also listed in Appendix B along with a brief description as to what part of the prairie province they are found.

### TABLE 1: Species Presence Within Prairie Types

The presence values in Table 1 show the likelihood of a given species being present in any given prairie stand (by prairie type) anywhere in the prairie province of Wisconsin (Fig. 1). In other words, a value of 50 in the dry prairie category means that that species was found in 50% of the dry prairie stands visited. Presence values within each of the five prairie types, wet to dry, plus the sand barren community (a very sandy, dry, and sterile "prairie" or grassland type described by Curtis) are reported. Sand barren is included for comparative purposes.

The data in Table 1 are very useful for determining a species "habitat" preference. However, they have major limitations.

First, the sample sizes used in the data collection did not adequately survey rarer species. Thus, caution should be used when drawing conclusions about the habitat preference of any species that did not exceed 10% frequency in at least one prairie type.

Second, the data do not inform the reader as to the importance or dominance of a species within stands of a prairie type. For information on within-stand importance at sites where the species was present, use Table 2.

Lastly, Table 1 does not take into account the fact that many prairie species are not found naturally across the entire prairie province of the state. For example, *Aster oblongifolius* (Aromatic aster) is found only in the western two thirds of the state; *Eryngium yuccifolium* (Rattlesnake master) and *Echinacea pallida* (Pale purple



PHOTOS: R. HENDERSON

Pale purple coneflower (*Echinacea pallida*) (top) and Rattlesnake master (*Eryngium yuccifolium*) (bottom), species of limited range in Wisconsin. All natural populations are within approximately 50 miles of the Illinois-Wisconsin state line.

coneflower) are both restricted to approximately the southern two tiers of counties; *Liatris punctata* (Dotted blazing star) is found only in the northwest; and *Silphium terebinthinaceum* (Prairie dock) is found only in the eastern two thirds of the state. Range-limited species such as these do not have an equal chance of being present in any given stand. Therefore, their values in Table 1 and Tables 3 through 6 underestimate their commonness or importance in prairies that are within their natural range. Species with range limitations (42 of them) are so noted in the tables and are listed in Appendix B. For the best estimates of the commonness of range limited species, use Table 2.<sup>1</sup>

Precisely why ranges end where they do is unknown. The causes are most likely some combination of climatic, soil, substrate, or dispersal history factors. However, the most important consideration regarding range limits in prairie planting/restoration decisions is not why they occur, but the fact that they do occur.

Why be concerned about planting native prairie species outside their natural ranges? Probably the most compelling reason is to protect the long-term integrity of the regional variation of Wisconsin's prairie communities. Consequently, most plant ecologists believe an effort should be made in prairie plantings or restorations to avoid deliberately introducing species outside their natural range. To do otherwise runs the risk of eventually blurring or losing the rich regional variation and diversity of prairie composition that currently exists across the state. Planting species outside their range could also, at some point in the future, compromise our ability to gain further knowledge about the natural history of the species involved.

## TABLE 2: Species Density Within Prairie Types

The density values in Table 2 show the likelihood of a given species being present in any square meter of any stand in which the species is present. In other words, the table shows an estimate of the importance of each species within stands in which the species is present. The table is based on mean frequency of occurrence within one square meter quadrats (called a *density value*). The results are

presented by prairie type. There were 15 stands sampled with quadrats in dry prairie, 30 in dry-mesic prairie, 27 in mesic prairie, and 12 in wet-mesic prairie. No wet prairie stands were sampled with quadrats.

A major limitation of Table 2 is that the density values are averaged from a variable, and often limited, number of stands (see "Methods," above). In the case of non-range-limited species, Tables 3 through 6 provide more useful information on a species' relative importance or dominance in a given prairie type than does Table 2. In the case of range-limited species, the opposite is true.

## TABLES 3 THROUGH 6: Species Presence, Density, and Commonness by Prairie Type

The presence, density, and commonness values in Tables 3 through 6 show species' mean frequency of occurrence in both stands (presence) and quadrats (density) for dry, dry-mesic, mesic, and wet-mesic prairie stands, respectively. Wet prairie was not included because there were no quadrat data from wet stands. In addition, a commonness index (after Anderson 1954) is also presented. This index is the product of the two frequency values (i.e., presence and density). It has a possible range of 0 to 10,000. A commonness index was **not** calculated for species for which average quadrat frequency was based on fewer than three stands in the dry or wet-mesic categories, or fewer than four stands in the dry-mesic or mesic categories. The higher cut off for dry-mesic and mesic sites was due to their sample sizes being larger than those of the dry and wet-mesic sites.

As in Table 1, the information in Tables 3 through 6 has limited value for range-limited species. The commonness index of these species within their range is underestimated by the data because the presence values, which are based on the statewide data, are diluted down by sites in which the range-limited species has no chance of being present.

Tables 3 through 6 also list the plant community in which Curtis (1959) found the species more often than any other plant community. This is referred to by Curtis as the species' *modal community*.

<sup>1</sup> Range maps of prairie and savanna plant species will soon be published as a Technical Bulletin by the Wisconsin DNR and the University of Wisconsin-Madison Herbarium. These maps will be of great aid in selecting species for planting. Until they become available, the regional species lists compiled by Umbanhowar (1990) and Appendix B of this document may be useful.

## OTHER LIMITATIONS OF THE DATA

In addition to the cautions about data interpretation covered in the above discussion about the tabular data in this report, there are other limitations about the data set that need to be kept in mind to minimize misinterpretations about what constitutes native Wisconsin prairie.

1. The data represent only a very small sample of Wisconsin's original extent of prairie vegetation—in fact, only a small subset (possibly 10% to 20% at best) of the very limited prairie still remaining in the state today (approximately 0.2% of original). Consequently, rare or uncommon prairie species are either, as with *Lespedeza leptostachya* (Prairie bush-clover) and *Polygala incarnata* (Pink milkwort), entirely missing from the data set or, as with *Agalinis* (False foxglove) or *Astragalus* (Milkvetch) species, they are not accurately measured as to what prairie type(s) they prefer (see discussion of Table 1).
2. Because the data were collected 100 or more years after the start of European settlement and 2 to 4 decades after people stopped routinely using fire on the land to improve pastures and control brush, tree and shrub species are likely far more prevalent in this data set than they were at the time of settlement. Originally many large tracts of prairie were totally clear of large shrub or tree species, but by 1950 even the best remaining prairie most likely had trees and shrubs beginning to invade. Other compositional changes may have occurred, as well, due to non-native species invasion, domestic livestock grazing, or other post-settlement disturbances.
3. Many species characteristic of non-prairie communities are present in this data set. Thus, a species' presence in this data set should not be interpreted to mean the species occurs exclusively in prairie or even that prairie is its optimal habitat. The modal plant communities listed in Tables 3 through 6 should help to correct this interpretation problem somewhat, but not entirely.
4. Some taxonomic groups, such as *Rosa* spp. (Roses) and *Carex* spp. (Sedges), were either lumped together or overlooked entirely in the original data collection. Thus, some species are totally missing from the tables or are greatly undersampled. For example, *Carex meadii* and *C. umbellata* are very common upland prairie species in Wisconsin, but both are entirely missing from the data set. *Carex meadii* is a very common and major component of mesic and dry-mesic prairie; it likely ranks in the top 20 or 30 most common species for mesic and dry-mesic sites. The same is true for *Carex umbellata* in dry and dry-mesic prairie. *Carex richardsonii* is another upland prairie sedge conspicuously missing from the data set. Less common than *C. meadii* and *C. umbellata*, it is nonetheless present in many dry morainal and limestone bluff prairies, but its low stature and lack of flowering make it very easy to overlook.
5. It has been long recognized that soil moisture, as used in Curtis' (1959) continuum, is the primary but not the only factor in determining where prairie plants will grow or grow best. Soil chemistry and soil physical structure can also play important roles, especially toward the wet and dry ends of the moisture gradient (Umbanhowar 1992). Unfortunately, not enough information has been gathered to develop a Wisconsin prairie classification system that takes both soil type and soil moisture into account. Therefore, Curtis' attempt at prairie classification is still the best system we have.



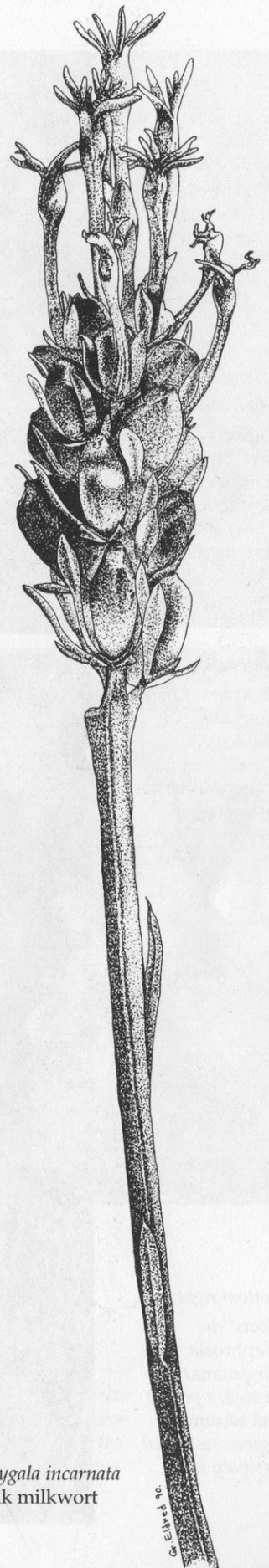
*Lespedeza leptostachya*  
Prairie bush clover

However, a strong case can be made for recognizing at least one modification of the Curtis classification system: the inclusion of dry and dry-mesic "sand prairie." Umbanhowar (1992), in a reanalysis of the PEL data, found a compositional difference between dry and dry-mesic prairies on sandy soil ("sand prairie," often with low pH and low fertility) versus dry and dry-mesic prairie on limestone substrate ("high lime prairie," often with high pH and high fertility). The species Umbanhowar found strongly associated with sandy soil were *Ambrosia psilostachya* (Western ragweed), *Asclepias amplexicaulis* (Blunt-leaved milkweed), *Helianthemum canadense* (Common rockrose), *Hieracium kalmii* (Canada hawkweed), *H. longipilum* (Hairy hawkweed), *Panicum lanuginosum* (Narrow leaved panic-grass), *Polygala polygama* (Purple milkwort), and *Tephrosia virginiana* (Goat's rue). Curtis (1959) commented on the possibility of "sand prairie" deserving its own distinct classification, but believed it could not be justified based upon the available data. However, he did go so far as to list species associated with his dry and dry-mesic classifications "which appear to grow best on sandy substrates." These were *Anemone patens* (Pasque flower), *Aster linariifolius* (Flax-leaved aster), *Chamaecrista fasciculata* (Partridge pea), *Callirhoe triangulata* (Clustered poppy-mallow), *Cirsium hillii* (Prairie thistle), *Penstemon grandiflorus* (Large-flowered beard-tongue), *Prunus pumila* (Sand cherry), and *Viola pedata* (Bird's-foot violet).

It is interesting to note that Curtis' and Umbanhowar's lists have no species in common. This is most likely due to the differing criteria and analyses used by the authors. Curtis and his colleagues did not have available to them the computer analysis capabilities that Umbanhowar used. Also, Umbanhowar lists only species primarily restricted to sand while Curtis lists species that appear to do best on sand but are not necessarily restricted to it. For example, most of the species on Curtis' "sand" list are very common and successful on sandy substrates, but they certainly are not limited to them. In my experience most of them are often common on dry and dry-mesic morainal till and limestone bedrock substrates as well as sand. However, three species on Curtis' list—*Aster linariifolius*, *Callirhoe triangulata*, and *Penstemon grandiflorus*—are, in my experience, nearly exclusive to sandy substrates. The reason these three were not listed in Umbanhowar's work may simply be that they are less common species and were thus not represented well enough in the data set to fall out as statistically significant as preferring sandy substrates. The PEL data set used by Umbanhowar had only 20 stands with sandy substrates. Thus rare species could not be adequately tested for sand preference.

The driest and most infertile phase of this probable "sand prairie" subvariant may be the plant community recognized by Curtis (1959) as *sand barren* (see Table 1). A relationship pointed out by Umbanhowar (1992). Note that five out of eight species Umbanhowar found indicative of sand prairie are also prevalent in Curtis' sand barren community (see Table 1).

There are also prairie species that may prefer, or are possibly restricted to, calcium/magnesium rich, high-pH substrates, but data confirming or refuting this association are still lacking. Some likely species in this category are *Aquilegia canadensis* (Wild columbine), *Asclepias sullivantii* (Prairie milkweed), *Castilleja sessiliflora* (Downy paintbrush), *Cypripedium candidum* (White lady-slipper), *Gentianopsis procera* (Small fringed gentian), *Lithospermum incisum* (Fringed puccoon), *Parnassia glauca* (Grass-of-Parnassus), *Polygala senega* (Seneca snakeroot), *Potentilla fruticosa* (Shrubby cinquefoil), *Solidago riddellii* (Riddell's goldenrod), *Valeriana edulis* (Valerian), and *Zigadenus elegans* (White camass lily). The wettest phase of this possible prairie type may be the plant community recognized by Curtis (1959) as *fen*.



*Polygala incarnata*  
Pink milkwort

G. Elmer '80

Top left:  
*Bird's-foot violet*  
(*Viola pedata*),  
a prairie and  
savanna species  
limited to well  
drained rocky,  
gravelly, or sandy  
substrates.



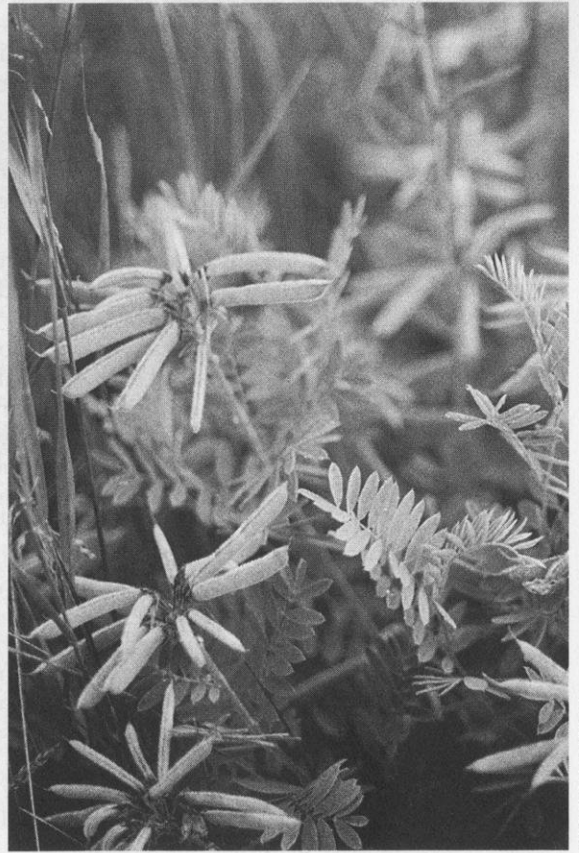
Top right:  
*Carex meadii*,  
a common sedge  
of dry-mesic to  
wet-mesic prairies  
that is missing  
from the data set.



Bottom left:  
*Blunt-leaved milkweed*  
(*Asclepias amplexicaulis*),  
a prairie species  
found most often  
on sandy soils.



Bottom right:  
*Goats' rue*  
(*Tephrosia virginiana*)  
in seed, a prairie  
and savanna  
legume restricted  
to sandy soils.





PHOTOS: R. HENDERSON

*Seneca snakeroot* (*Polygala senega*) (top right), *Valerian* (*Valeriana edulis*) (bottom right), and *Fringed puccoon* (*Lithospermum incisum*) (left), all prairie species that appear to be restricted to calcareous or "limey" substrates.



# PLANNING PRAIRIE SEEDINGS: Selecting Species and Seeding Rates

## Site Assessment

### (What habitat types are present?)

The first step in selecting species is to decide where and how much of the five standard soil moisture regimes or habitat types (i.e., dry, dry-mesic, mesic, wet-mesic, and wet) are present on the site you wish to seed. Next, at least for the dry and wet ends of the spectrum, you should determine whether any special soil fertility conditions exist, such as sandy, low-pH soil or calcium/magnesium rich, high-pH soil. These less common soil types support the specialized flora discussed in the above section, "Other Limitations of the Data."

To aid your decisions about what soil-moisture regimes and types are present, a wide variety of information is available. First and foremost are county soil maps, which provide soil type and substrate information. County or regional maps of glacial till and bedrock can also be helpful. Lastly, site topography and current vegetation (if any) provide the most important clues.

Keep in mind that slope aspect is very important. For example, a steep slope of a certain soil type and substrate may provide dry habitat when it has a south- or southwest-facing aspect, but the same soil and substrate on a north-facing aspect may provide dry-mesic to mesic site conditions.

## Species Selection

### (What species to use?)

Once habitat types have been determined, species lists for each type (wet to dry) can be made using the data in this bulletin. On the lists you develop for each type, I recommend you include at least the top 20-30 species from each of the appropriate Tables 3 through 6 (for wet sites you have only the frequency data in Table 1 to work with). Next I recommend you include all species listed as modal for each of the prairie types in question. For additional species for which you already have seed or species you have a special interest in planting, I recommend you check the data in Table 1 under the habitat type(s) in question and include them in your seeding list(s) if the data indicate they are known to grow in those prairie types.

If you are trying to closely approximate native prairie, don't forget to include sedge species that are missing from the table data. For example, if you are seeding mesic or dry-mesic sites, I encourage you to try to include some *Carex meadii* seed. If you are seeding dry sites, try to obtain some *Carex umbellata* seed.

If you have specialized habitat of exceptionally low or high pH, as discussed above, be sure to include species associated with those special habitats.

Finally, delete from your lists any range-limited species not likely to be natural to the region in which you are planning the seeding. To make this determination easier for you, range-limited species are denoted in the Tables, and Appendix B provides information on approximately where in the state the limitations occur for each of the range-limited species.

## Number of Species

### (How many species to use?)

The number of species you decide to use will of course depend upon your ambition and time, if collecting your own seed, or financial resources, if purchasing seed. The basic recommendation is "the more the better." If you wish to mimic natural prairies, be aware that they are species rich. It has been my experience that any given acre of good quality prairie normally harbors 40-50 prairie species. Remnants of about five acres in size average approximately 60-70 species. If a range of prairie types are present, it is not unusual for a five to ten acre remnant to have 100-150 prairie species. At the extreme, a large (greater than 50 acres) remnant complex with a full range of prairie types can have up to 400 species in Wisconsin.

## Species Packing or Density

### (How much total seed to use?)

As with total number of species, this decision depends on your resources. In my experience, native Wisconsin prairie averages 12-15 species per 1/4 square meter. Exceptionally rich sites can average as many as 22 species per 1/4 square meter. To achieve species densities approaching these, a seeding density as high as 50-60 seeds per square foot may be needed.

This estimate is based on attempting to establish at least one individual of at least 15 different species in each 1/4 square meter. On average, this will require (based on an average seed establishment rate of 10% across all species) at least 150 seeds per 1/4 square meter (or 55 seeds per square foot). However, due to seed cost and availability limitations, most prairie seedings end up using a rate of 20-30 seeds per square foot.

## Seeding Ratios

### (How much seed of each species to use?)

Seeding ratios and rates should be derived using number of live seeds instead of weight, since average seed size and weight varies greatly among species. Once the desired number of seeds are determined for each species, using a combination



*Sawtooth sunflower (Helianthus grosserratus). All Helianthus spp. are aggressive spreaders by rhizomes that should be seeded in proportions far less than the species composition tables indicate.*



*Big bluestem (Andropogon gerardi), a dominant grass in prairies. This is another of those aggressive species that should be seeded in proportions far less than the data in the tables suggest.*

of the method for estimating density, above, and the following method for estimating ratios, desired seed numbers can be converted to ounces or pounds using estimates of clean seeds per ounce that have been compiled by various sources. Appendix C provides estimates for some common species. Estimates are also available from many of the native plant nurseries and in prairie-propagation materials compiled by the University of Wisconsin-Madison Arboretum, the University of Wisconsin-Madison Department of Landscape Architecture, and others.

Seeding ratios of course should reflect the purpose of the planting. If a planting needs to be heavy in certain showy forbs or particular food plants for wildlife, those species should be seeded at high rates. Even if your purpose is to closely approximate native prairie, there is no one particular model that should be used for all plantings on the same habitat type. Seeding ratios can vary greatly and still result in plantings that approximate natural prairies very well. This is in part due to the fact that natural remnants are variable themselves but also to the fact that some species are consistently more aggressive, and easy to establish, and tend to readily self-seed; thus these species eventually end up being well represented in the planting somewhat independent of the amount of seed used initially.

For the average planting, where the purpose is to approximate native prairie, I recommend using the Confidence Interval (CI) values in Tables 3 through 6 as starting points in developing seeding ratios. To do this, take the CI value in a table and move the decimal point one digit to the left and then round it off to the nearest one. For species with resulting CI values of one, zero, or blank, consider their seed ratio value to be one. For the others consider their ratio value to be the decimal-adjusted CI value. For example, in using Table 4 (dry-mesic prairie), for every one seed

of *Heliopsis helianthoides* (False sunflower or ox-eye) planted there should be approximately 350 *Amorpha canescens* (Leadplant) seeds planted.

Once rough ratios are worked out this way, I recommend adjusting them to account for highly aggressive species and species that spread quickly by lateral rhizomes. I recommend cutting the ratio value of these species by at least one-half. Species that should be considered in this group are dominant warm-season grasses, such as *Schizachyrium scoparium* (Little bluestem), and *Andropogon gerardii* (Big bluestem), as well as forbs such as *Coreopsis palmata* (Prairie tickseed), *Helianthus* spp. (Sunflowers), *Solidago missouriensis* (Missouri goldenrod), *Solidago gigantea* (Late goldenrod), and *Aster ericoides* (Heath aster). Conversely, for species that tend to have low establishment rates (i.e., well below the 10% average), I recommend increasing their ratio values. Lastly, if you are seeding into special sandy or high-pH calcareous soils, you should increase the seed ratio values of those species that specialize on those soils as discussed above. For example, using Tables 3 and 4, the ratio for *Tephrosia virginiana* (Goat's rue) for a seeding into sandy dry or dry-mesic soil should increase from 1 up to 50 or more.

To obtain the best adjustments of your seeding ratios for the plant composition you want, I encourage you to seek out further information about species establishment and growth habits from other information sources on prairie propagation. Possible sources include native plant nurseries and their seed catalogs, nature centers, the University of Wisconsin-Madison Arboretum, *Prairie Propagation Handbook* (Rock 1977), and the University of Wisconsin-Madison Department of Landscape Architecture.

### A Short Cut

Some generic seeding mixes and rates are provided in Appendix D.

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## PLANTING ROOTS VERSUS SEEDS

In general the easiest and most cost effective way to plant prairie is with seed. However, this approach may be impractical or very difficult for some species. For example, species for which seed is difficult to come by in substantial quantities or species that require specialized germination conditions that are rare or difficult to produce under field conditions, are probably best planted as root stock rather than seed.

Some species in this seed-difficult group produce little seed (or the seed is very difficult to collect), but they spread readily by root runners or rhizomes. Such species are both easy to produce vegetatively in nurseries and easy to establish from root stock in plantings. Examples are *Carex pensylvanica*, *C. meadii*, *Fragaria virginiana* (Wild strawberry), *Galium boreale* (Northern bedstraw), and *Spartina pectinata* (Prairie cord grass).

Other seed-difficult species rarely establish in field plantings from seed because they require special germination or seedling growing conditions. Examples are *Lithospermum canescens* (Hoary puccoon), *Gentiana puberulenta* (Downy gentian), and *Castilleja sessiliflora* (Downy paintbrush). Specialized nursery rearing and then planting into the field is probably the best approach for these species. **Please do not dig plants from the wild.**

To make the most efficient use of your seed for all the species you wish to establish in your planting, I recommend referring to the other information sources mentioned above for guidance on propagation techniques. These sources often have recommendations on the best establishment techniques and germination requirements for many species.

**TABLE 1.** Species presence within prairie types. Percentage of prairie stands across the state (grouped by prairie type) in which the species were found. Type codes are **SB** = Sand Barren (20 stands), **PD** = Dry Prairie (27 stands), **PDM** = Dry-mesic Prairie (67 stands), **PM** = Mesic Prairie (77 stands), **PWM** = Wet-mesic Prairie (54 stands), **PW** = Wet Prairie (22 stands). Sand Barren is included for comparative purposes.

Scientific Name	Common Name	Prairie Type					
		SB	PD	PDM	PM	PWM	PW
<b>A</b> <i>Achillea millefolium</i>	Yarrow		11	30	62	61	32
<i>Agalinis aspera</i>	Rough false foxglove		4	2	1	0	5
<i>Agalinis gattingeri</i> *	Gattinger's false foxglove	0	0	0	2	0	
<i>Agropyron trachycaulum</i>	= ELYMUS TRACHYCAULUS						
<i>Allium canadense</i>	Wild onion		0	2	30	32	9
<i>Allium cernuum</i> <sup>R</sup>	Nodding wild onion		0	0	14	6	0
<i>Ambrosia artemisiifolia</i>	Common ragweed		56	61	58	62	9
<i>Ambrosia psilostachya</i>	Western ragweed	50	22	10	0	0	0
<i>Ambrosia trifida</i>	Giant ragweed	4	0	7	1	1	5
<i>Amorpha canescens</i>	Leadplant		99	91	66	30	5
<i>Amphicarpaea bracteata</i>	Hog peanut		0	2	8	11	5
<i>Andropogon gerardii</i>	Big bluestem	40	89	99	95	93	73
<i>Andropogon scoparius</i>	= SCHIZACHYRIUM SCOPARIUM						
<i>Anemone canadensis</i>	Meadow anemone		0	0	10	33	32
<i>Anemone cylindrica</i>	Thimbleweed		41	74	60	24	0
<i>Anemone patens</i>	Pasque flower		78	43	7	2	0
<i>Anemone quinquefolia</i>	Wood anemone		0	1	8	7	5
<i>Angelica atropurpurea</i>	Great angelica		0	0	0	4	23
<i>Antennaria</i> spp.	Pussytoes	15	44	61	35	37	14
<i>Apios americana</i>	Ground nut		0	0	1	4	5
<i>Apocynum androsaemifolium</i>	Spreading dogbane		7	39	31	20	0
<i>Apocynum cannabinum</i>	Indian hemp		0	12	36	32	27
<i>Aquilegia canadensis</i>	Wild columbine		15	12	1	2	0
<i>Arabis lyrata</i>	Sand cress	55	30	16	1	0	0
<i>Arenaria lateriflora</i>	Wood sandwort	0	0	1	7	0	
<i>Arenaria stricta</i>	Stiff sandwort		63	33	1	0	0
<i>Aristida basiramea</i>	Three-awn grass	20	0	0	0	0	0
<i>Aronia melanocarpa</i>	Black chokeberry		19	19	0	2	0
<i>Artemisia campestris</i>	Beach wormwood		63	58	8	0	0
<i>Artemisia caudata</i>	= A. CAMPESTRIS						
<i>Artemisia frigida</i> <sup>R</sup>	Prairie sagewort		4	2	0	0	0
<i>Artemisia ludoviciana</i>	White sage		0	10	5	6	0
<i>Artemisia serrata</i>	Saw-toothed sage		0	0	0	4	0
<i>Asclepias amplexicaulis</i> <sup>R</sup>	Blunt-leaved milkweed		0	10	7	7	0
<i>Asclepias hirtella</i> <sup>R</sup>	Tall green milkweed		0	3	0	4	5
<i>Asclepias incarnata</i>	Swamp milkweed		0	0	0	9	32
<i>Asclepias lanuginosa</i> *	Woolly milkweed		26	8	3	0	0
<i>Asclepias ovalifolia</i>	Oval milkweed		0	3	4	4	0
<i>Asclepias purpurascens</i> <sup>R</sup>	Purple milkweed		0	0	3	4	0
<i>Asclepias sullivantii</i> <sup>R</sup>	Prairie milkweed		0	1	17	15	0
<i>Asclepias syriaca</i>	Common milkweed		11	52	80	82	64
<i>Asclepias tuberosa</i>	Butterfly weed		7	24	8	2	0
<i>Asclepias verticillata</i>	Whorled milkweed		59	55	39	22	0
<i>Asclepias viridiflora</i>	Short green milkweed		30	34	7	6	0
<i>Aster azureus</i>	= A. OOLENTANGIENSIS						
<i>Aster ericoides</i>	Heath aster		63	77	80	54	5
<i>Aster firmus</i>	Shining aster		0	0	0	7	27
<i>Aster laevis</i>	Smooth aster		26	45	91	52	5

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Table 1. Continued

Scientific Name	Common Name	Prairie Type					
		SB	PD	PDM	PM	PWM	PW
<i>Aster lanceolatus</i>	Panicked aster		0	3	5	17	55
<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster		7	16	4	6	0
<i>Aster lucidulus</i>	= A. FIRMUS						
<i>Aster novae-angliae</i>	New England aster		0	0	40	80	68
<i>Aster oblongifolius</i> <sup>R</sup>	Aromatic aster		44	45	3	0	0
<i>Aster oolentangiensis</i>	Sky-blue aster		37	66	36	46	14
<i>Aster pilosus</i>	Hairy aster		4	6	27	30	5
<i>Aster ptarmicoides</i>	= SOLIDAGO P.						
<i>Aster sagittifolius</i>	= A. UROPHYLLUS						
<i>Aster sericeus</i>	Silky aster		96	73	12	0	0
<i>Aster simplex</i>	= A. LANCEOLATUS						
<i>Aster umbellatus</i>	Flat-top aster		0	1	1	2	14
<i>Aster urophyllus</i> <sup>*</sup>	Arrow-leaved aster		4	3	12	30	0
<i>Astragalus canadensis</i>	Canadian milkvetch		0	0	9	2	0
<i>Astragalus crassicaerpus</i> <sup>R</sup>	Prairie plum		0	2	0	0	0
<b>B</b> <i>Baptisia bracteata</i>	Cream wild indigo		11	13	29	17	9
<i>Baptisia lactea</i>	White wild indigo		11	8	23	37	9
<i>Baptisia leucantha</i>	= B. LACTEA						
<i>Baptisia leucophaea</i>	= B. BRACTEATA						
<i>Besseyia bullii</i> <sup>R</sup>	Kitten tails		0	5	1	0	0
<i>Betula pumila</i>	Dwarf birch		0	0	0	2	27
<i>Blephilia ciliata</i> <sup>R</sup>	Ohio horse-mint		0	0	1	11	5
<i>Bouteloua curtipendula</i>	Side-oats grama		85	70	8	0	0
<i>Bouteloua hirsuta</i> <sup>R</sup>	Hairy grama grass		44	24	0	0	0
<i>Bromus ciliatus</i>	Fringed brome		0	0	0	2	27
<i>Bromus kalmii</i>	Prairie brome		4	13	12	9	0
<b>C</b> <i>Cacalia atriplicifolia</i> <sup>R</sup>	Pale Indian plantain		0	0	1	2	0
<i>Cacalia plantaginea</i> <sup>R</sup>	Prairie Indian plantain		0	3	8	13	5
<i>Cacalia suaveolens</i> <sup>R</sup>	Sweet Indian plantain		0	0	1	0	5
<i>Cacalia tuberosa</i>	= C. PLANTAGINEA						
<i>Calamagrostis canadensis</i>	Bluejoint grass	0	0	9	54	91	
<i>Callirhoe triangulata</i> <sup>R</sup>	Clustered poppy-mallow		4	3	0	0	0
<i>Caltha palustris</i>	Marsh marigold		0	0	0	4	32
<i>Camassia scilloides</i> <sup>R</sup>	Wild hyacinth		0	0	0	3	0
<i>Campanula aparinoides</i>	Marsh bell-flower		0	0	0	4	18
<i>Campanula rotundifolia</i>	Harebell		19	28	0	0	0
<i>Carex bicknellii</i>	Sedge		0	1	13	15	5
<i>Carex muhlenbergii</i>	Sand sedge	50	0	3	1	0	0
<i>Carex pennsylvanica</i>	Pennsylvania sedge		0	2	5	7	5
<i>Cassia fasciculata</i>	= CHAMAECRISTA F.						
<i>Castilleja coccinea</i>	Indian paintbrush		0	0	1	2	9
<i>Castilleja sessiliflora</i>	Downy paintbrush		30	27	0	0	0
<i>Ceanothus americanus</i>	New Jersey tea		4	31	46	30	5
<i>Ceanothus herbaceus</i>	Inland New Jersey tea		0	3	0	0	0
<i>Ceanothus ovatus</i>	= C. HERBACEUS						
<i>Celastrus scandens</i>	Climbing bittersweet		11	24	4	2	0
<i>Cenchrus longispinus</i>	Sandbur	5	0	0	0	0	0
<i>Chamaecrista fasciculata</i>	Partridge pea		0	2	4	0	0

Scientific Name	Common Name	Prairie Type					
		SB	PD	PDM	PM	PWM	PW
<i>Chelone glabra</i>	Turtlehead		0	0	0	0	18
<i>Chrysopsis villosa</i>	Golden aster	5	4	0	0	0	0
<i>Cicuta maculata</i>	Water-hemlock		0	0	5	32	18
<i>Cirsium discolor</i>	Field thistle		4	31	68	67	27
<i>Cirsium hillii</i> *	Prairie thistle		0	13	3	2	0
<i>Cirsium muticum</i>	Swamp thistle		0	0	0	4	50
<i>Calystegia sepium</i>	Hedge bindweed		11	27	42	30	14
<i>Calystegia spithamea</i>	Low bindweed		0	2	0	0	0
<i>Comandra umbellata</i>	False toadflax		37	60	58	63	36
<i>Convolvulus sepium</i>	= CALYSTEGIA S.						
<i>Convolvulus spithameus</i>	= CALYSTEGIA SPITHAMEA						
<i>Coreopsis palmata</i>	Prairie tickseed		79	79	65	20	9
<i>Cornus racemosa</i>	Gray dogwood		4	8	36	46	9
<i>Cornus sericea</i>	Red-osier dogwood		0	0	0	2	18
<i>Cornus stolonifera</i>	= C. SERICEA						
<i>Corylus americana</i>	American hazelnut		7	15	40	46	23
<i>Croton glandulosus</i>	Sand croton	5	0	0	0	0	0
<i>Cyperus lupulinus</i>	Sand cyperus	35	0	5	0	0	0
<i>Cyperus schweinitzii</i>	Schweinitz's cyperus	45	0	5	0	0	0
<i>Cypripedium calceolus</i>	Yellow lady-slipper		0	0	3	6	5
<i>Cypripedium candidum</i> *	White lady-slipper		0	0	0	4	9
<b>D</b> <i>Dalea candida</i>	White prairie clover		19	40	23	9	0
<i>Dalea purpurea</i>	Purple prairie clover		85	79	56	22	0
<i>Danthonia spicata</i>	Poverty oat grass	40	0	0	0	0	0
<i>Delphinium virescens</i> <sup>R</sup>	Prairie larkspur		0	5	0	0	0
<i>Desmodium canadense</i>	Showy tick-trefoil		0	12	48	56	46
<i>Desmodium illinoense</i>	Illinois tick-trefoil		15	28	36	19	0
<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star		4	31	46	50	41
<i>Draba reptans</i>	Common Whitlow-grass		0	6	0	0	0
<b>E</b> <i>Echinacea pallida</i> <sup>R</sup>	Pale purple coneflower		0	6	8	2	0
<i>Elymus canadensis</i>	Canada wild rye		19	36	33	46	5
<i>Elymus trachycaulus</i>	Slender wheatgrass		0	2	10	11	5
<i>Elymus virginicus</i>	Virginia wild rye		0	0	0	4	0
<i>Equisetum arvense</i>	Field horsetail		0	3	33	54	68
<i>Equisetum hyemale</i>	Common scouring-rush		7	10	1	0	0
<i>Equisetum laevigatum</i>	Smooth scouring-rush		0	15	23	28	14
<i>Eragrostis spectabilis</i>	Purple love-grass	10	0	0	0	0	0
<i>Erigeron philadelphicus</i>	Marsh fleabane		0	0	0	6	5
<i>Erigeron strigosus</i>	Daisy fleabane	40	70	54	33	48	32
<i>Eriophorum virginicum</i>	Rusty cotton-grass		0	0	1	0	23
<i>Eryngium yuccifolium</i> <sup>R</sup>	Rattlesnake master		0	25	48	28	9
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod		0	6	34	44	23
<i>Eupatorium altissimum</i>	Upland boneset		0	0	2	0	0
<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed		0	0	0	4	41
<i>Eupatorium perfoliatum</i>	Common boneset		0	0	0	4	27
<i>Euphorbia corollata</i>	Flowering spurge	75	89	94	68	65	23
<i>Euphorbia maculata</i>	Nodding spurge	20	0	0	0	0	0

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Table 1. Continued

	Scientific Name	Common Name	Prairie Type						
			SB	PD	PDM	PM	PWM	PW	
F	<i>Fragaria virginiana</i>	Wild strawberry		0	9	75	89	77	
	<i>Froelichia floridana</i>	Large cottonweed	5	0	0	0	0	0	
G	<i>Galium boreale</i>	Northern bedstraw		0	15	34	61	68	
	<i>Galium tinctorium</i>	Stiff bedstraw		0	0	4	17	23	
	<i>Gaura biennis</i>	Biennial gaura		0	2	3	4	0	
	<i>Gentiana alba</i> *	Cream gentian		0	0	4	6	0	
	<i>Gentiana andrewsii</i>	Bottle gentian		0	0	9	37	36	
	<i>Gentiana puberulenta</i>	Downy gentian		4	18	26	9	0	
	<i>Gentianella quinquefolia</i>	Stiff gentian		0	3	1	0	0	
	<i>Gentianopsis crinita</i>	Fringed gentian		0	0	0	6	9	
	<i>Gentianopsis procera</i> <sup>R</sup>	Small fringed gentian		0	0	0	2	9	
	<i>Geranium maculatum</i>	Wild geranium		4	3	26	44	23	
	<i>Gerardia</i> spp.	= AGALINIS							
	<i>Geum aleppicum</i>	Yellow avens		0	0	3	2	0	
	<i>Geum canadense</i>	White avens		0	0	1	0	5	
	<i>Geum triflorum</i>	Prairie smoke			52	27	8	9	0
	<i>Glyceria striata</i>	Fowl meadow-grass		0	0	0	2	32	
	<i>Gnaphalium obtusifolium</i>	Old-field balsam		40	0	12	0	2	0
H	<i>Habenaria</i> spp.	= PLATANThERA							
	<i>Hedeoma hispidum</i>	Rough pennyroyal	40	48	52	5	0	0	
	<i>Hedyotis caerulea</i> <sup>R</sup>	Bluets		0	0	0	0	5	
	<i>Hedyotis longifolia</i>	Long-leaved bluets	15	0	3	0	0	0	
	<i>Helenium autumnale</i>	Sneezeweed		0	0	1	4	14	
	<i>Helianthemum canadense</i>	Common rockrose	60	4	25	14	7	4	
	<i>Helianthus grosseserratus</i>	Sawtooth sunflower		0	10	31	57	55	
	<i>Helianthus laetiflorus</i>	= H. PAUCIFLORUS							
	<i>Helianthus occidentalis</i>	Western sunflower	40	22	46	25	7	0	
	<i>Helianthus pauciflorus</i>	Showy sunflower		52	69	71	35	4	
	<i>Helianthus strumosus</i>	Pale-leaved sunflower		0	6	51	41	4	
	<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)		4	15	30	22	23	
	<i>Heuchera richardsonii</i>	Prairie alum-root		7	37	27	37	41	
	<i>Hieracium canadense</i>	= H. KALMII							
	<i>Hieracium kalmii</i>	Canada hawkweed		0	3	5	6	4	
	<i>Hieracium longipilum</i>	Hairy hawkweed	45	19	19	1	2	0	
	<i>Hierochloa odorata</i>	Sweet grass		0	0	3	9	23	
	<i>Houstonia</i> spp.	= HEDYOTIS							
	<i>Hudsonia tomentosa</i>	False heather	35	0	0	0	0	0	
<i>Hypericum canadense</i> <sup>R</sup>	Canadian St. John's wort		0	0	2	0	0		
<i>Hypericum mutilum</i> <sup>R</sup>	Weak St. John's wort		0	0	2	0	0		
<i>Hypoxis hirsuta</i>	Yellow star-grass		0	9	20	32	55		
I	<i>Iris virginica</i> v. <i>shrevei</i>	Blue flag		0	0	0	31	55	
J	<i>Juncus greenei</i>	Green's rush	5	0	0	0	0	0	
	<i>Juniperus communis</i>	Common juniper		0	3	0	0	0	
K	<i>Koeleria macrantha</i>	June grass	80	56	46	14	9	0	
	<i>Krigia biflora</i>	False dandelion	4	2	7	15	2	7	
	<i>Krigia virginica</i>	Dwarf dandelion	4	0	2	0	0	0	
	<i>Kuhnia eupatorioides</i>	False boneset		70	54	9	4	0	

Scientific Name	Common Name	Prairie Type					
		SB	PD	PDM	PM	PWM	PW
<b>L</b> <i>Lactuca canadensis</i>	Wild lettuce		15	39	34	44	9
<i>Lactuca ludoviciana</i>	Western wild lettuce		19	19	9	4	0
<i>Lathyrus palustris</i>	Marsh vetchling		0	0	7	41	55
<i>Lathyrus venosus</i>	Veiny pea		0	10	58	43	18
<i>Lechea intermedia</i>	Intermediate pinweed		0	2	0	0	0
<i>Lechea tenuifolia</i>	Slender-leaved pinweed	40	4	9	3	0	0
<i>Leptoloma cognatum</i>	Fall witchgrass	50	0	13	1	0	0
<i>Lespedeza capitata</i>	Round-headed bush-clover	65	26	45	62	33	4
<i>Liatris aspera</i>	Rough blazing star	50	52	82	70	13	0
<i>Liatris cylindracea</i>	Dwarf blazing star		52	46	5	0	0
<i>Liatris ligulistylis</i>	Showy blazing star		0	0	3	0	0
<i>Liatris punctata</i> <sup>R</sup>	Dotted blazing star		4	2	0	0	0
<i>Liatris pycnostachya</i>	Prairie blazing star		0	3	7	30	32
<i>Liatris spicata</i> <sup>R</sup>	Marsh blazing star		0	2	10	11	0
<i>Lilium michiganense</i>	Turk's cap lily		0	2	12	41	50
<i>Lilium philadelphicum</i>	Prairie lily		4	8	10	7	9
<i>Linaria canadensis</i>	Blue toadflax	40	0	0	0	0	0
<i>Linum sulcatum</i>	Grooved yellow flax		30	40	3	0	0
<i>Liparis loeselii</i>	Green twayblade		0	0	0	0	9
<i>Lithospermum canescens</i>	Hoary puccoon		33	61	52	39	9
<i>Lithospermum carolinense</i>	Hairy puccoon	55	15	19	4	0	0
<i>Lithospermum incisum</i>	Fringed puccoon		70	40	3	0	0
<i>Lobelia kalmii</i> <sup>R</sup>	Bog lobelia		0	0	0	4	0
<i>Lobelia siphilitica</i>	Great blue lobelia		0	0	0	0	14
<i>Lobelia spicata</i>	Pale spiked lobelia		15	31	21	32	32
<i>Lupinus perennis</i>	Wild lupine		0	2	3	0	0
<i>Lycopus americanus</i>	Common water-horehound		0	0	5	30	36
<i>Lycopus uniflorus</i>	Northern bugle-weed		0	0	0	4	9
<i>Lysimachia ciliata</i>	Fringed loosestrife		0	2	4	13	9
<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife		0	2	3	6	0
<i>Lysimachia quadriflora</i>	Prairie loosestrife		0	2	3	20	18
<i>Lysimachia quadrifolia</i>	Whorled loosestrife		0	0	1	9	9
<i>Lythrum alatum</i>	Winged loosestrife		0	0	3	19	18
<b>M</b> <i>Microseris cuspidata</i> <sup>R</sup>	Prairie dandelion		0	2	1	0	0
<i>Mirabilis nyctaginea</i>	Wild four-O'clock		4	5	16	11	9
<i>Monarda fistulosa</i>	Wild bergamot		41	64	73	76	50
<i>Monarda punctata</i>	Horse mint	50	4	9	0	2	0
<i>Muhlenbergia cuspidata</i> <sup>R</sup>	Prairie satin-grass		26	22	0	2	0
<i>Muhlenbergia racemosa</i>	Upland wild timothy		0	9	13	15	36
<b>N</b> <i>Napaea dioica</i> <sup>R</sup>	Glade mallow		0	0	0	4	4
<b>O</b> <i>Oenothera biennis</i>	Common evening-primrose		37	61	26	37	0
<i>Oenothera clelandii</i>	Sand primrose	40	0	6	0	0	0
<i>Oenothera perennis</i>	Small sundrops		0	0	0	2	14
<i>Oenothera rhombipetala</i>	= O. CLELANDII						
<i>Onoclea sensibilis</i>	Sensitive fern		0	0	0	2	32
<i>Ophioglossum vulgatum</i>	Northern adder's tongue fern		0	0	0	2	14
<i>Opuntia compressa</i> <sup>R</sup>	= O. HUMIFUSA						
<i>Opuntia humifusa</i>	Prickly-pear cactus		7	5	0	0	0

continued on next page



Table 1. Continued

Scientific Name	Common Name	Prairie Type					
		SB	PD	PDM	PM	PWM	PW
<i>Orobanche fasciculata</i> *	Clustered broom-rape		0	2	0	0	0
<i>Oxalis stricta</i>	Tall wood-sorrel		0	0	2	0	0
<i>Oxalis violacea</i>	Violet wood-sorrel		0	9	14	4	14
<i>Oxypolis rigidior</i>	Cowbane		0	0	9	52	73
<b>P</b> <i>Panicum implicatum</i>	= P. LANUGINOSUM						
<i>Panicum lanuginosum</i>	Narrow leaved panic-grass	55	0	0	0	0	0
<i>Panicum leibergii</i>	Prairie panic-grass		19	55	58	41	9
<i>Panicum oligosanthes</i>	Few-flowered panic-grass		30	57	21	7	5
<i>Panicum perlongum</i>	Long-stalked panic-grass		63	54	8	0	0
<i>Panicum praecocius</i>	Early panic-grass		4	16	9	1	1
<i>Panicum virgatum</i>	Switch grass	25	4	12	34	32	4
<i>Parnassia glauca</i>	Grass-of-parnassus		0	0	0	6	23
<i>Parthenium integrifolium</i> * <sup>R</sup>	Wild quinine		0	5	17	2	0
<i>Parthenocissus inserta</i>	= P. VITACEA						
<i>Parthenocissus vitacea</i>	Thicket creeper		4	10	5	7	0
<i>Pedicularis canadensis</i>	Wood betony		7	24	5	9	14
<i>Pedicularis lanceolata</i>	Swamp betony		0	0	0	13	32
<i>Pediomelum argophyllum</i> * <sup>R</sup>	Silvery scurfy pea		0	0	4	0	0
<i>Pediomelum esculentum</i> * <sup>R</sup>	Pomme-de-prairie		26	12	0	0	0
<i>Penstemon digitalis</i>	Foxglove beard-tongue		0	2	2	0	0
<i>Penstemon gracilis</i> * <sup>R</sup>	Slender beard-tongue		0	6	0	0	0
<i>Penstemon hirsutus</i> * <sup>R</sup>	Hairy beard-tongue		0	2	0	0	0
<i>Petalostemum</i> spp.	= DALEA						
<i>Phlox glaberrima</i> * <sup>R</sup>	Marsh phlox		0	3	0	0	0
<i>Phlox pilosa</i>	Prairie phlox		0	27	52	48	59
<i>Physalis heterophylla</i>	Clammy ground-cherry		19	21	21	24	5
<i>Physalis subglabrata</i>	Tall ground-cherry	44	34	8	4	0	
<i>Physalis virginiana</i>	Lance-leaved ground-cherry	45	30	49	46	19	0
<i>Physocarpus opulifolius</i>	Ninebark		4	8	0	0	0
<i>Physostegia virginiana</i>	False dragonhead		0	2	4	6	0
<i>Plantago patagonica</i>	Woolly plantain	20	0	0	0	0	0
<i>Plantago rugelii</i>	Red-stalked plantain		0	2	0	0	0
<i>Platanthera flava</i> *	Tuberled orchid		0	0	0	2	4
<i>Platanthera leucophaea</i> *	Prairie white fringe orchid		0	0	0	15	9
<i>Polemonium reptans</i>	Jacob's ladder		0	0	0	11	23
<i>Polygala polygama</i>	Purple milkwort	45	15	8	1	2	0
<i>Polygala sanguinea</i>	Field milkwort		0	5	1	7	0
<i>Polygala senega</i>	Seneca snakeroot		0	10	22	15	18
<i>Polygala verticillata</i>	Whorled milkwort		0	8	0	0	0
<i>Polygonatum biflorum</i>	Smooth Solomon's seal		7	27	18	11	0
<i>Polygonatum canaliculatum</i>	= P. BIFLORUM						
<i>Polygonella articulata</i>	Jointweed	30	0	0	0	0	0
<i>Polygonum amphibium</i>	Water knotweed		0	0	0	4	14
<i>Polygonum tenue</i>	Slender knotweed		4	5	0	0	0
<i>Polytaenia nuttallii</i> * <sup>R</sup>	Prairie parsley		0	0	10	11	0
<i>Potentilla arguta</i>	Prairie cinquefoil		37	78	52	28	4
<i>Potentilla fruticosa</i>	Shrubby cinquefoil		0	0	0	0	14
<i>Potentilla simplex</i>	Common cinquefoil		0	4	47	43	9
<i>Prenanthes alba</i>	Lion's foot		0	0	1	6	0
<i>Prenanthes aspera</i> *	Rough white lettuce		0	3	1	4	0

Scientific Name	Common Name	Prairie Type						
		SB	PD	PDM	PM	PWM	PW	
<i>Prenanthes crepidinea</i> <sup>R</sup>	Great white lettuce		0	0	0	2	0	
<i>Prenanthes racemosa</i>	Glaucous white lettuce		0	8	17	30	9	
<i>Prunus americana</i>	Wild plum		0	0	3	2	0	
<i>Prunus pumila</i>	Sand cherry		4	5	0	0	0	
<i>Psoralea</i> spp.	= PEDIOMELUM							
<i>Pteridium aquilinum</i>	Bracken fern		0	6	10	9	4	
<i>Pycnanthemum virginianum</i>	Common mountain-mint		0	10	27	83	82	
<i>Pyrus ioensis</i>	Iowa crab		11	13	13	13	0	
Q <i>Quercus macrocarpa</i>	Bur oak		26	39	40	41	18	
R <i>Ranunculus fascicularis</i>	Early buttercup		0	0	1	2	0	
<i>Ranunculus hispidus</i> v. <i>nitidus</i>	Swamp buttercup		0	0	0	2	5	
<i>Ranunculus rhomboideus</i>	Prairie buttercup		0	3	0	0	0	
<i>Ranunculus septentrionalis</i>	= R. HISPIDUS v. NITIDUS							
<i>Ratibida pinnata</i>	Yellow coneflower			26	69	96	87	36
<i>Rhus aromatica</i>	Fragrant sumac	5	0	0	0	0	0	
<i>Rhus glabra</i>	Smooth sumac		37	60	26	50	0	
<i>Rhus radicans</i>	= TOXICODENDRON R.							
<i>Rosa</i> spp.	Wild rose		67	88	91	85	36	
<i>Rubus</i> spp.	Raspberry, Blackberry		0	5	8	0	4	
<i>Rudbeckia hirta</i>	Black-eyed Susan		15	40	38	69	64	
<i>Rudbeckia laciniata</i>	Wild golden-glow		0	0	0	2	4	
<i>Rudbeckia subtomentosa</i> <sup>R</sup>	Sweet black-eyed Susan		0	0	1	4	9	
<i>Rumex verticillatus</i>	Swamp dock		0	0	0	4	0	
S <i>Salix humilis</i>	Prairie willow		4	36	32	50	64	
<i>Salix</i> spp.	Willow		0	0	4	2	4	
<i>Sanicula marilandica</i>	Sanicle		0	0	4	6	9	
<i>Saxifraga pensylvanica</i>	Swamp saxifrage		0	0	3	17	50	
<i>Schizachyrium scoparium</i>	Little bluestem	90	99	91	66	35	0	
<i>Scleria triglomerata</i>	Tall nut-rush		0	2	1	0	5	
<i>Scrophularia lanceolata</i>	Early figwort		0	3	4	6	0	
<i>Scutellaria galericulata</i>	Marsh skullcap		0	0	0	4	0	
<i>Scutellaria leonardii</i>	Small skullcap		48	42	4	11	0	
<i>Selaginella rupestris</i>	Rock spikemoss	45	3	10	1	0	0	
<i>Senecio aureus</i>	Golden ragwort		0	0	1	11	9	
<i>Senecio pauperculus</i>	Balsam ragwort		0	5	0	0	0	
<i>Silene antirrhina</i>	Sleepy catchfly	35	11	10	1	0	0	
<i>Silene stellata</i>	Starry campion		0	2	7	9	0	
<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed		7	30	58	52	18	
<i>Silphium laciniatum</i>	Compass plant		11	31	55	32	5	
<i>Silphium perfoliatum</i>	Cup plant		4	2	3	7	5	
<i>Silphium terebinthinaceum</i> <sup>R</sup>	Prairie dock		0	8	55	56	27	
<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass		44	43	26	28	23	
<i>Sium suave</i>	Water parsnip		0	0	1	6	0	
<i>Smilacina racemosa</i>	False Solomon's seal		0	9	8	4	0	
<i>Smilacina stellata</i>	Starry false Solomon's seal		7	27	29	41	23	
<i>Smilax herbacea</i>	Carrion flower		0	0	7	6	5	
<i>Solidago canadensis</i>	Common goldenrod		0	8	36	59	23	
<i>Solidago gigantea</i>	Late goldenrod		0	6	5	30	68	

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Table 1. Continued

Scientific Name	Common Name	Prairie Type						
		SB	PD	PDM	PM	PWM	PW	
<i>Solidago graminifolia</i>	= EUTHAMIA G.							
<i>Solidago juncea</i>	Early goldenrod		7	27	14	13	5	
<i>Solidago missouriensis</i>	Missouri goldenrod	45	11	40	52	56	0	
<i>Solidago nemoralis</i>	Old-field goldenrod	40	74	79	44	39	0	
<i>Solidago ohioensis</i> <sup>R</sup>	Ohio goldenrod		0	0	0	0	18	
<i>Solidago ptarmicoides</i>	Stiff aster		41	33	8	2	0	
<i>Solidago riddellii</i> <sup>R</sup>	Riddell's goldenrod		0	0	5	33	27	
<i>Solidago rigida</i>	Stiff goldenrod		78	76	83	72	32	
<i>Solidago speciosa</i>	Showy goldenrod		11	37	30	13	0	
<i>Sorghastrum nutans</i>	Indian grass		48	61	52	33	18	
<i>Spartina pectinata</i>	Prairie cord grass		0	2	34	83	96	
<i>Spiraea alba</i>	Meadowsweet		0	0	4	43	59	
<i>Spiranthes cernua</i>	Nodding ladies' tresses		0	0	1	11	9	
<i>Sporobolus asper</i>	Rough dropseed		4	2	1	0	0	
<i>Sporobolus cryptandrus</i>	Sand dropseed		22	12	0	0	0	
<i>Sporobolus heterolepis</i>	Prairie dropseed		78	78	58	41	5	
<i>Sporobolus vaginiflorus</i>	Sheathed dropseed		4	5	0	0	0	
<i>Stachys palustris</i>	Woundwort		0	2	3	24	23	
<i>Stipa spartea</i>	Porcupine grass		52	90	64	20	0	
<i>Symphoricarpos occidentalis</i>	Wolfberry		0	3	3	0	0	
<b>T</b> <i>Taenidia integerrima</i>	Yellow pimpernel		0	0	10	9	0	
<i>Tephrosia virginiana</i>	Goat's rue		7	10	3	0	0	
<i>Teucrium canadense</i>	Germander		0	2	4	9	0	
<i>Thalictrum dasycarpum</i>	Purple meadow-rue		0	0	31	76	86	
<i>Thaspium trifoliatum</i>	Meadow parsnip		0	0	8	7	0	
<i>Thelypteris palustris</i>	Marsh fern		0	0	0	4	55	
<i>Tofieldia glutinosa</i> <sup>R</sup>	False asphodel		0	0	0	0	5	
<i>Toxicodendron radicans</i>	Poison ivy			26	21	13	13	5
<i>Tradescantia ohiensis</i>	Common spiderwort	55	30	49	44	54	41	
<i>Triodanis perfoliata</i>	Venus' looking glass	30	0	5	3	0	0	
<i>Triosteum perfoliatum</i>	Late horse-gentian		0	3	0	2	0	
<b>V</b> <i>Valeriana edulis</i> <sup>R</sup>	Valerian		0	0	3	11	18	
<i>Verbena hastata</i>	Blue vervain		0	2	1	11	0	
<i>Verbena stricta</i>	Hoary vervain		48	21	4	4	4	
<i>Vernonia fasciculata</i>	Common ironweed	0	2	31	5	0		
<i>Veronicastrum virginicum</i>	Culver's root		4	5	33	76	77	
<i>Vicia americana</i>	American vetch		0	9	47	52	18	
<i>Viola cucullata</i>	Hooded violet		0	3	25	33	55	
<i>Viola palmata</i>	Palm-leaved violet		0	0	12	0	0	
<i>Viola pedata</i>	Bird's-foot violet	45	26	49	5	4	0	
<i>Viola pedatifida</i>	Prairie violet		22	48	35	9	4	
<i>Viola sagittata</i>	Arrow-leaved violet		0	2	2	7	0	
<i>Vitis riparia</i>	Riverbank grape		26	36	31	35	4	
<b>Z</b> <i>Zigadenus elegans</i>	White camas lily		4	3	4	2	0	
<i>Zizia aptera</i>	Heart-leaved golden Alexander		0	9	26	13	0	
<i>Zizia aurea</i>	Golden Alexander		0	8	25	63	73	

<sup>R</sup> Range limited within the prairie province of Wisconsin.

\* Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

**TABLE 2.** Species density within prairie types. Mean percent occurrence in one square meter quadrats in prairie stands in which the species was present (grouped by prairie type). Either 20 or 40 quadrats were sampled per stand. Type codes are **PD** = Dry Prairie (15 stands max.), **PDM** = Dry-mesic Prairie (30 stands max.), **PM** = Mesic Prairie (27 stands max.), **PWM** = Wet-mesic Prairie (12 stands max.). There was no quadrat data from wet prairie stands. A value of 0.0 means the species was present in at least one stand of the prairie type (see Table 1), but was not found within any quadrat.

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<b>A</b> <i>Achillea millefolium</i>	Yarrow	4.0	2.0	2.3	11.4
<i>Agalinis aspera</i>	Rough false foxglove	0.0	0.0	0.0	
<i>Agalinis gattingeri</i> *	Gattinger's false foxglove				0.0
<i>Agropyron trachycaulum</i>	= ELYMUS TRACHYCAULUS				
<i>Allium canadense</i>	Wild onion		0.0	13.9	23.0
<i>Allium cernuum</i> <sup>R</sup>	Nodding wild onion			51.0	0.0
<i>Ambrosia artemisiifolia</i>	Common ragweed	24.7	9.4	14.2	19.4
<i>Ambrosia psilostachya</i>	Western ragweed	5.5	15.0		
<i>Ambrosia trifida</i>	Giant ragweed	20.0		5.0	0.0
<i>Amorpha canescens</i>	Leadplant	24.8	38.3	22.2	0.0
<i>Amphicarpaea bracteata</i>	Hog peanut		0.0	5.3	0.0
<i>Andropogon gerardii</i>	Big bluestem	45.8	51.7	35.0	31.9
<i>Andropogon scoparius</i>	= SCHIZACHYRIUM SCOPARIUM				
<i>Anemone canadensis</i>	Meadow anemone			12.5	35.3
<i>Anemone cylindrica</i>	Thimbleweed	3.6	6.3	15.9	10.5
<i>Anemone patens</i>	Pasque flower	7.9	8.6	0.0	0.0
<i>Anemone quinquefolia</i>	Wood anemone		0.0	5.0	15.0
<i>Angelica atropurpurea</i>	Great angelica				0.0
<i>Antennaria</i> spp.	Pussytoes	10.6	13.7	9.4	8.3
<i>Apios americana</i>	Ground nut			0.0	0.0
<i>Apocynum androsaemifolium</i>	Spreading dogbane	0.0	2.4	15.7	70.0
<i>Apocynum cannabinum</i>	Indian hemp		0.0	3.5	15.3
<i>Aquilegia canadensis</i>	Wild columbine	3.3	0.0	0.0	0.0
<i>Arabis lyrata</i>	Sand cress	19.2	9.7	0.0	
<i>Arenaria lateriflora</i>	Wood sandwort			0.0	7.0
<i>Arenaria stricta</i>	Stiff sandwort	39.4	20.0	0.0	
<i>Aronia melanocarpa</i>	Black chokeberry	9.6	7.3		0.0
<i>Artemisia campestris</i>	Beach wormwood	19.4	10.5	0.0	
<i>Artemisia caudata</i>	= A. CAMPESTRIS				
<i>Artemisia frigida</i> <sup>R</sup>	Prairie sagewort	0.0	5.0		
<i>Artemisia ludoviciana</i>	White sage		30.0	5.0	0.0
<i>Artemisia serrata</i>	Saw-toothed sage				0.0
<i>Asclepias amplexicaulis</i> <sup>R</sup>	Blunt-leaved milkweed		5.5	0.0	0.0
<i>Asclepias hirtella</i> <sup>R</sup>	Tall green milkweed		0.0		0.0
<i>Asclepias incarnata</i>	Swamp milkweed				0.0
<i>Asclepias lanuginosa</i> *	Woolly milkweed	14.0	3.0	0.0	
<i>Asclepias ovalifolia</i>	Oval milkweed		0.0	3.0	0.0
<i>Asclepias purpurascens</i> * <sup>R</sup>	Purple milkweed			0.0	0.0
<i>Asclepias sullivantii</i> * <sup>R</sup>	Prairie milkweed		0.0	8.5	6.8
<i>Asclepias syriaca</i>	Common milkweed	0.0	1.9	5.8	12.0
<i>Asclepias tuberosa</i>	Butterfly weed	0.0	1.8	2.0	0.0
<i>Asclepias verticillata</i>	Whorled milkweed	31.1	12.0	7.1	10.0
<i>Asclepias viridiflora</i>	Short green milkweed	1.6	2.3	3.0	0.0
<i>Aster azureus</i>	= A. OOLENTANGIENSIS				

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Table 2. Continued

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Aster ericoides</i>	Heath aster	17.5	25.5	46.1	22.5
<i>Aster firmus</i>	Shining aster				0.0
<i>Aster laevis</i>	Smooth aster	2.9	16.0	52.1	40.3
<i>Aster lanceolatus</i>	Panicled aster		0.0	0.0	0.0
<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster	0.0	17.7	0.0	0.0
<i>Aster lucidulus</i>	= A. FIRMUS				
<i>Aster novae-angliae</i>	New England aster			8.5	15.3
<i>Aster oblongifolius</i> <sup>R</sup>	Aromatic aster	12.6	18.1	0.0	
<i>Aster oolentangiensis</i>	Sky-blue aster	4.0	17.6	17.3	43.3
<i>Aster pilosus</i>	Hairy aster	0.0	5.0	11.9	20.0
<i>Aster ptarmicoides</i>	= SOLIDAGO P.				
<i>Aster sagittifolius</i>	= A. UROPHYLLUS				
<i>Aster sericeus</i>	Silky aster	47.8	46.4	0.0	
<i>Aster simplex</i>	= A. LANCEOLATUS				
<i>Aster umbellatus</i>	Flat-top aster		0.0	0.0	0.0
<i>Aster urophyllus</i>	Arrow-leaved aster	0.0	5.0	17.5	45.0
<i>Astragalus canadensis</i>	Canadian milkvetch		0.0	0.0	0.0
<i>Astragalus crassicaepus</i> <sup>*R</sup>	Prairie plum		15.0		
<b>B</b> <i>Baptisia bracteata</i>	Cream wild indigo	0.0	5.5	4.5	5.0
<i>Baptisia lactea</i>	White wild indigo	0.0	3.3	9.4	3.7
<i>Baptisia leucantha</i>	= B. LACTEA				
<i>Baptisia leucophaea</i>	= B. BRACTEATA				
<i>Besseyia bullii</i> <sup>*R</sup>	Kitten tails		0.0	0.0	
<i>Betula pumila</i>	Dwarf birch				0.0
<i>Blephilia ciliata</i> <sup>R</sup>	Ohio horse-mint			0.0	0.0
<i>Bouteloua curtipendula</i>	Side-oats grama	59.7	63.8	0.0	
<i>Bouteloua hirsuta</i> <sup>R</sup>	Hairy grama grass	57.0	14.4		
<i>Bromus ciliatus</i>	Fringed brome				0.0
<i>Bromus kalmii</i>	Prairie brome	0.0	8.3	0.0	6.7
<b>C</b> <i>Cacalia atriplicifolia</i> <sup>R</sup>	Pale Indian plantain			0.0	0.0
<i>Cacalia plantaginea</i> <sup>*R</sup>	Prairie Indian plantain		0.0	15.0	5.5
<i>Cacalia suaveolens</i> <sup>R</sup>	Sweet Indian plantain			0.0	
<i>Cacalia tuberosa</i>	= C. PLANTAGINEA				
<i>Calamagrostis canadensis</i>	Bluejoint grass			0.0	7.4
<i>Callirhoe triangulata</i> <sup>R</sup>	Clustered poppy-mallow	0.0	0.0		
<i>Caltha palustris</i>	Marsh marigold				0.0
<i>Camassia scilloides</i> <sup>*R</sup>	Wild hyacinth				0.0
<i>Campanula aparinoides</i>	Marsh bell-flower				0.0
<i>Campanula rotundifolia</i>	Harebell	12.2	3.2		
<i>Carex bicknellii</i>	Sedge		0.0	6.2	12.8
<i>Carex muhlenbergii</i>	Sand sedge		0.0	0.0	
<i>Carex pennsylvanica</i>	Pennsylvania sedge		0.0	7.0	45.0
<i>Cassia fasciculata</i>	= CHAMAECRISTA F.				
<i>Castilleja coccinea</i>	Indian paintbrush			0.0	0.0
<i>Castilleja sessiliflora</i>	Downy paintbrush	33.0	12.1		
<i>Ceanothus americanus</i>	New Jersey tea	0.0	3.6	6.5	0.0
<i>Ceanothus herbaceus</i>	Inland New Jersey tea		0.0		
<i>Ceanothus ovatus</i>	= C. HERBACEUS				
<i>Celastrus scandens</i>	Climbing bitter-sweet	0.0	2.1	25.0	0.0
<i>Chamaecrista fasciculata</i>	Partridge pea		0.0	17.5	

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Chrysopsis villosa</i>	Golden aster	0.0		0.0	3.7
<i>Cicuta maculata</i>	Water-hemlock				
<i>Cirsium discolor</i>	Field thistle	0.0	1.8	11.5	11.4
<i>Cirsium hillii</i> *	Prairie thistle		2.0	0.0	0.0
<i>Cirsium muticum</i>	Swamp thistle				0.0
<i>Calystegia sepium</i>	Hedge bindweed	5.3	3.9	12.4	10.5
<i>Calystegia spithamea</i>	Low bindweed		0.0		
<i>Comandra umbellata</i>	False toadflax	10.3	16.7	23.4	34.5
<i>Convolvulus</i> spp.	= CALYSTEGIA				
<i>Coreopsis palmata</i>	Prairie tickseed	26.4	29.8	25.4	0.0
<i>Cornus racemosa</i>	Gray dogwood	0.0	0.0	5.2	10.1
<i>Cornus sericea</i>	Red-osier dogwood				0.0
<i>Cornus stolonifera</i>	= C. SERICEA				
<i>Corylus americana</i>	American hazelnut	0.0	0.0	9.8	3.0
<i>Cyperus lupulinus</i>	Sand cyperus		0.0		
<i>Cyperus schweinitzii</i>	Schweinitzi's cyperus		10.7		
<i>Cypripedium calceolus</i>	Yellow lady-slipper			0.0	0.0
<i>Cypripedium candidum</i> *	White lady-slipper				0.0
<b>D</b> <i>Dalea candida</i>	White prairie clover	0.0	9.7	6.1	0.0
<i>Dalea purpurea</i>	Purple prairie clover	28.1	28.0	13.4	10.4
<i>Delphinium virescens</i> <sup>R</sup>	Prairie larkspur		0.0		
<i>Desmodium canadense</i>	Showy tick-trefoil		0.0	2.9	10.8
<i>Desmodium illinoense</i>	Illinois tick-trefoil	0.0	7.2	21.3	5.0
<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star	0.0	14.8	7.9	9.3
<i>Draba reptans</i>	Common Whitlow-grass		10.0		
<b>E</b> <i>Echinacea pallida</i> <sup>R</sup>	Pale purple coneflower		45.0	26.0	0.0
<i>Elymus canadensis</i>	Canada wild rye	0.0	3.1	5.0	9.0
<i>Elymus trachycaulus</i>	Slender wheatgrass		0.0	13.2	35.0
<i>Elymus virginicus</i>	Virginia wild rye				0.0
<i>Equisetum arvense</i>	Field horsetail		5.0	17.7	22.0
<i>Equisetum hyemale</i>	Common scouring-rush	5.5	18.8	0.0	
<i>Equisetum laevigatum</i>	Smooth scouring-rush		0.0	0.0	0.0
<i>Erigeron philadelphicus</i>	Marsh fleabane				4.5
<i>Erigeron strigosus</i>	Daisy fleabane	5.5	4.1	7.3	7.2
<i>Eriophorum virginicum</i>	Rusty cotton-grass			0.0	
<i>Eryngium yuccifolium</i> <sup>R</sup>	Rattlesnake master		10.3	13.7	10.6
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod		0.0	12.0	16.1
<i>Eupatorium altissimum</i>	Upland boneset			0.0	
<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed				12.0
<i>Eupatorium perfoliatum</i>	Common boneset				19.0
<i>Euphorbia corollata</i>	Flowering spurge	43.5	45.0	47.0	6.7
<b>F</b> <i>Fragaria virginiana</i>	Wild strawberry		4.0	30.1	36.5
<b>G</b> <i>Galium boreale</i>	Northern bedstraw		1.7	9.1	20.2
<i>Galium tinctorium</i>	Stiff bedstraw			10.0	10.3
<i>Gaura biennis</i>	Biennial gaura		0.0	0.0	0.0
<i>Gentiana alba</i> *	Cream gentian			0.0	0.0
<i>Gentiana andrewsii</i>	Bottle gentian			11.0	6.7
<i>Gentiana puberulenta</i>	Downy gentian	0.0	7.3	7.2	0.0

continued on next page

Table 2. Continued

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Gentianella quinquefolia</i>	Stiff gentian		13.0	0.0	
<i>Gentianopsis crinita</i>	Fringed gentian				0.0
<i>Gentianopsis procera</i> <sup>R</sup>	Small fringed gentian				0.0
<i>Geranium maculatum</i>	Wild geranium	0.0	7.0	13.4	5.3
<i>Gerardia</i> spp.	= AGALINIS				
<i>Geum aleppicum</i>	Yellow avens			0.0	0.0
<i>Geum canadense</i>	White avens			5.0	
<i>Geum triflorum</i>	Prairie smoke	7.9	17.4	0.0	5.5
<i>Glyceria striata</i>	Fowl meadow-grass				0.0
<i>Gnaphalium obtusifolium</i>	Old-field balsam		0.0		0.0
<b>H</b> <i>Habenaria</i> spp.	= PLATANThERA				
<i>Hedeoma hispidum</i>	Rough pennyroyal	18.4	9.7	0.0	
<i>Hedyotis longifolia</i>	Long-leaved bluets		0.0		
<i>Helenium autumnale</i>	Sneezeweed			0.0	31.5
<i>Helianthemum canadense</i>	Common rockrose	0.0	6.6	0.0	0.0
<i>Helianthus grosseserratus</i>	Sawtooth sunflower		0.0	6.3	26.0
<i>Helianthus laetiflorus</i>	= H. PAUCIFLORUS				
<i>Helianthus occidentalis</i>	Western sunflower	21.2	33.6	15.0	0.0
<i>Helianthus pauciflorus</i>	Showy sunflower	12.8	39.3	33.9	0.0
<i>Helianthus strumosus</i>	Pale-leaved sunflower		0.0	29.4	26.8
<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)	0.0	0.0	11.9	5.5
<i>Heuchera richardsonii</i>	Prairie alum-root	0.0	5.3	5.1	18.6
<i>Hieracium canadense</i>	= H. KALMII				
<i>Hieracium kalmii</i>	Canada hawkweed		0.0	0.0	0.0
<i>Hieracium longipilum</i>	Hairy hawkweed	0.0	7.4	0.0	0.0
<i>Hierochloa odorata</i>	Sweet grass			0.0	0.0
<i>Houstonia longifolia</i>	= HEDYOTIS L.				
<i>Hypericum canadense</i> <sup>R</sup>	Canadian St. John's wort			0.0	
<i>Hypericum mutilum</i> <sup>R</sup>	Weak St. John's wort			0.0	
<i>Hypoxis hirsuta</i>	Yellow star-grass		0.0	1.4	21.0
<b>I</b> <i>Iris virginica</i> v. <i>shrevei</i>	Blue flag				10.1
<b>J</b> <i>Juniperus communis</i>	Common juniper		0.0		
<b>K</b> <i>Koeleria macrantha</i>	June grass	13.3	9.4	1.7	13.0
<i>Krigia biflora</i>	False dandelion	0.0	0.0	0.0	5.5
<i>Krigia virginica</i>	Dwarf dandelion		10.0		
<i>Kuhnia eupatorioides</i>	False boneset	13.4	13.5	0.0	0.0
<b>L</b> <i>Lactuca canadensis</i>	Wild lettuce	0.0	2.4	6.0	13.5
<i>Lactuca ludoviciana</i>	Western wild lettuce	1.8	1.5	0.0	0.0
<i>Lathyrus palustris</i>	Marsh vetchling			0.0	15.4
<i>Lathyrus venosus</i>	Veiny pea		0.0	28.9	17.0
<i>Lechea intermedia</i>	Intermediate pinweed		0.0		
<i>Lechea tenuifolia</i>	Slender-leaved pinweed	0.0	3.0	0.0	
<i>Leptoloma cognatum</i>	Fall witchgrass		0.0	0.0	
<i>Lespedeza capitata</i>	Round-headed bush-clover	3.0	5.3	16.9	5.0
<i>Liatris aspera</i>	Rough blazing star	26.4	18.4	19.4	0.0
<i>Liatris cylindracea</i>	Dwarf blazing star	36.7	26.9	0.0	
<i>Liatris ligulistylis</i>	Showy blazing star			0.0	

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Liatris punctata</i> <sup>R</sup>	Dotted blazing star	25.0	5.0		
<i>Liatris pycnostachya</i>	Prairie blazing star		5.0	0.0	27.5
<i>Liatris spicata</i> <sup>R</sup>	Marsh blazing star		0.0	3.2	31.2
<i>Lilium michiganense</i>	Turk's cap lily		5.0	6.8	3.3
<i>Lilium philadelphicum</i>	Prairie lily	0.0	5.5	1.8	0.0
<i>Linum sulcatum</i>	Grooved yellow flax	8.1	8.6	0.0	
<i>Lithospermum canescens</i>	Hoary puccoon	6.6	9.0	6.7	11.8
<i>Lithospermum carolinense</i>	Hairy puccoon	0.0	4.0	0.0	
<i>Lithospermum incisum</i>	Fringed puccoon	12.2	9.4	0.0	
<i>Lobelia kalmii</i> <sup>R</sup>	Bog lobelia				0.0
<i>Lobelia spicata</i>	Pale spiked lobelia	9.0	7.6	0.0	2.6
<i>Lupinus perennis</i>	Wild lupine		0.0	0.0	
<i>Lycopus americanus</i>	Common water-horehound			0.0	17.0
<i>Lycopus uniflorus</i>	Northern bugle-weed				0.0
<i>Lysimachia ciliata</i>	Fringed loosestrife		0.0	0.0	0.0
<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife		0.0	0.0	0.0
<i>Lysimachia quadriflora</i>	Prairie loosestrife		0.0	0.0	15.3
<i>Lysimachia quadrifolia</i>	Whorled loosestrife			0.0	0.0
<i>Lythrum alatum</i>	Winged loosestrife			0.0	7.6
<b>M</b> <i>Microseris cuspidata</i> <sup>R</sup>	Prairie dandelion		0.0	0.0	
<i>Mirabilis nyctaginea</i>	Wild four-O'clock	0.0	0.0	0.0	0.0
<i>Monarda fistulosa</i>	Wild bergamot	0.0	5.8	25.2	24.0
<i>Monarda punctata</i>	Horse mint	10.0	0.0		0.0
<i>Muhlenbergia cuspidata</i> <sup>R</sup>	Prairie satin-grass	20.7	30.2		0.0
<i>Muhlenbergia racemosa</i>	Upland wild timothy		0.0	19.0	0.0
<b>N</b> <i>Napaea dioica</i> <sup>R</sup>	Glade mallow				0.0
<b>O</b> <i>Oenothera biennis</i>	Common evening-primrose	5.5	3.3	3.0	8.7
<i>Oenothera clelandii</i>	Sand primrose		0.0		
<i>Oenothera perennis</i>	Small sundrops				0.0
<i>Oenothera rhombipetala</i>	= O. CLELANDII				
<i>Onoclea sensibilis</i>	Sensitive fern				0.0
<i>Ophioglossum vulgatum</i>	Northern adder's tongue fern				0.0
<i>Opuntia compressa</i>	= O. HUMIFUSA				
<i>Opuntia humifusa</i> <sup>R</sup>	Prickly-pear cactus	22.5	10.0		
<i>Orobanche fasciculata</i> <sup>*</sup>	Clustered broom-rape		0.0		
<i>Oxalis stricta</i>	Tall wood-sorrel			0.0	
<i>Oxalis violacea</i>	Violet wood-sorrel		18.0	13.5	0.0
<i>Oxypolis rigidior</i>	Cowbane			0.0	4.9
<b>P</b> <i>Panicum leibergii</i>	Prairie panic-grass	6.4	16.7	32.0	14.7
<i>Panicum oligosanthos</i>	Few-flowered panic-grass	15.8	14.1	19.0	10.0
<i>Panicum perlongum</i>	Long-stalked panic-grass	32.2	33.6	5.0	
<i>Panicum praecocius</i>	Early panic-grass	0.0	14.3	28.3	0.0
<i>Panicum virgatum</i>	Switch grass	0.0	2.3	6.4	35.3
<i>Parnassia glauca</i>	Grass-of-parnassus				0.0
<i>Parthenium integrifolium</i> <sup>*R</sup>	Wild quinine		0.0	6.8	0.0
<i>Parthenocissus inserta</i>	= P. VITACEA				
<i>Parthenocissus vitacea</i>	Thicket creeper	0.0	2.3	2.3	0.0
<i>Pedicularis canadensis</i>	Wood betony	5.0	20.1	0.0	55.0

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Table 2. Continued

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Pedicularis lanceolata</i>	Swamp betony				15.0
<i>Pediomelum argophyllum</i> <sup>R</sup>	Silvery scurfy pea			0.0	
<i>Pediomelum esculentum</i> <sup>R</sup>	Pomme-de-prairie	1.8	3.0		
<i>Penstemon digitalis</i>	Foxglove beard-tongue		0.0	0.0	
<i>Penstemon gracilis</i> <sup>R</sup>	Slender beard-tongue		0.0		
<i>Penstemon hirsutus</i> <sup>R</sup>	Hairy beard-tongue		0.0		
<i>Petalostemum</i> spp.	= DALEA				
<i>Phlox glaberrima</i> <sup>R</sup>	Marsh phlox		12.5	0.0	0.0
<i>Phlox pilosa</i>	Prairie phlox	0.0	23.2	29.9	32.2
<i>Physalis heterophylla</i>	Clammy ground-cherry	1.8	15.0	4.7	5.3
<i>Physalis subglabrata</i>	Tall ground-cherry	8.1	6.2	15.2	5.0
<i>Physalis virginiana</i>	Lance-leaved ground-cherry	0.0	15.7	12.2	3.7
<i>Physocarpus opulifolius</i>	Ninebark	0.0	2.0		
<i>Physostegia virginiana</i>	False dragonhead		0.0	0.0	12.0
<i>Plantago rugelii</i>	Red-stalked plantain		0.0		
<i>Platanthera flava</i> *	Tuberclad orchid				0.0
<i>Platanthera leucophaea</i> *	Prairie white fringe orchid				2.3
<i>Polemonium reptans</i>	Jacob's ladder				0.0
<i>Polygala polygama</i>	Purple milkwort	15.0	3.0	0.0	0.0
<i>Polygala sanguinea</i>	Field milkwort		13.0	0.0	0.0
<i>Polygala senega</i>	Seneca snakeroot		11.4	14.9	35.0
<i>Polygala verticillata</i>	Whorled milkwort		2.6		
<i>Polygonatum biflorum</i>	Smooth Solomon's seal	3.0	0.0	8.8	0.0
<i>Polygonatum canaliculatum</i>	= P. BIFLORUM				
<i>Polygonum amphibium</i>	Water knotweed				7.0
<i>Polygonum tenue</i>	Slender knotweed	0.0	0.0		
<i>Polytaenia nuttallii</i> <sup>R</sup>	Prairie parsley			11.8	10.0
<i>Potentilla arguta</i>	Prairie cinquefoil	9.1	11.6	11.0	5.3
<i>Potentilla simplex</i>	Common cinquefoil		0.0	11.4	15.3
<i>Prenanthes alba</i>	Lion's foot			10.0	0.0
<i>Prenanthes aspera</i> *	Rough white lettuce		0.0	0.0	0.0
<i>Prenanthes crepidinea</i> <sup>R</sup>	Great white lettuce				0.0
<i>Prenanthes racemosa</i>	Glaucous white lettuce		0.0	4.5	8.0
<i>Prunus americana</i>	Wild plum			0.0	0.0
<i>Prunus pumila</i>	Sand cherry	0.0	16.7		
<i>Psoralea</i> spp.	= PEDIOMELUM				
<i>Pteridium aquilinum</i>	Bracken fern		0.0	0.0	0.0
<i>Pycnanthemum virginianum</i>	Common mountain-mint		2.0	5.0	14.3
<i>Pyrus ioensis</i>	Iowa crab	2.3	1.7	3.0	3.0
Q <i>Quercus macrocarpa</i>	Bur oak	3.0	1.9	3.3	0.0
R <i>Ranunculus fascicularis</i>	Early buttercup			0.0	0.0
<i>Ranunculus hispidus</i> v. <i>nitidus</i>	Swamp buttercup				0.0
<i>Ranunculus rhomboideus</i>	Prairie buttercup		0.0		
<i>Ranunculus septentrionalis</i>	= R. HISPIDUS v. NITIDUS				
<i>Ratibida pinnata</i>	Yellow coneflower	5.6	11.8	41.7	59.7
<i>Rhus glabra</i>	Smooth sumac	2.6	5.0	7.1	15.5
<i>Rhus radicans</i>	= TOXICODENDRON R.				
<i>Rosa</i> spp.	Wild rose	21.6	13.4	53.3	33.7

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Rubus</i> spp.	Raspberry, Blackberry		0.0	20.5	
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.3	3.1	6.5	22.3
<i>Rudbeckia laciniata</i>	Wild golden-glow				0.0
<i>Rudbeckia subtomentosa</i> <sup>R</sup>	Sweet black-eyed Susan			0.0	0.0
<i>Rumex verticillatus</i>	Swamp dock				26.0
S <i>Salix humilis</i>	Prairie willow	0.0	5.3	10.4	11.4
<i>Salix</i> spp.	Willow			0.0	0.0
<i>Sanicula marilandica</i>	Sanicle			0.0	8.0
<i>Saxifraga pensylvanica</i>	Swamp saxifrage			0.0	0.0
<i>Schizachyrium scoparium</i>	Little bluestem	74.7	66.3	20.7	34.3
<i>Scleria triglomerata</i>	Tall nut-rush		0.0	0.0	
<i>Scrophularia lanceolata</i>	Early figwort		0.0	0.0	0.0
<i>Scutellaria galericulata</i>	Marsh skullcap				10.0
<i>Scutellaria leonardii</i>	Small skullcap	12.4	10.5	0.0	3.7
<i>Selaginella rupestris</i>	Rock spikemoss	40.0	8.6	0.0	
<i>Senecio aureus</i>	Golden ragwort			0.0	8.3
<i>Senecio pauperculus</i>	Balsam ragwort		0.0		
<i>Silene antirrhina</i>	Sleepy catchfly	2.3	5.5	0.0	
<i>Silene stellata</i>	Starry campion		36.0	9.5	5.0
<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed	0.0	4.8	16.7	17.0
<i>Silphium laciniatum</i>	Compass plant	25.0	18.9	14.2	36.6
<i>Silphium perfoliatum</i>	Cup plant	0.0	0.0	0.0	0.0
<i>Silphium terebinthinaceum</i> <sup>R</sup>	Prairie dock		0.0	30.5	43.9
<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass	15.1	21.9	3.5	11.9
<i>Sium suave</i>	Water parsnip			0.0	5.0
<i>Smilacina racemosa</i>	False Solomon's seal		0.0	0.0	0.0
<i>Smilacina stellata</i>	Starry false Solomon's seal	0.0	6.5	10.4	8.7
<i>Smilax herbacea</i>	Carrion flower			2.0	25.0
<i>Solidago canadensis</i>	Common goldenrod		2.3	3.8	9.9
<i>Solidago gigantea</i>	Late goldenrod		0.0	0.0	31.3
<i>Solidago graminifolia</i>	= EUTHAMIA G.				
<i>Solidago juncea</i>	Early goldenrod	5.0	2.8	14.0	0.0
<i>Solidago missouriensis</i>	Missouri goldenrod	5.0	6.9	14.4	8.6
<i>Solidago nemoralis</i>	Old-field goldenrod	36.5	30.4	7.2	20.7
<i>Solidago ptarmicoides</i>	Stiff aster	18.4	25.8	12.5	5.0
<i>Solidago riddellii</i> <sup>R</sup>	Riddell's goldenrod			0.0	15.2
<i>Solidago rigida</i>	Stiff goldenrod	23.6	18.2	44.5	50.0
<i>Solidago speciosa</i>	Showy goldenrod	0.0	4.3	13.4	0.0
<i>Sorghastrum nutans</i>	Indian grass	2.3	9.9	18.4	20.7
<i>Spartina pectinata</i>	Prairie cord grass		0.0	6.5	12.2
<i>Spiraea alba</i>	Meadowsweet			0.0	16.0
<i>Spiranthes cernua</i>	Nodding ladies' tresses			0.0	0.0
<i>Sporobolus asper</i>	Rough dropseed	0.0	0.0	0.0	
<i>Sporobolus cryptandrus</i>	Sand dropseed	10.4	4.7		
<i>Sporobolus heterolepis</i>	Prairie dropseed	25.0	28.0	21.0	22.4
<i>Sporobolus vaginiflorus</i>	Sheathed dropseed	0.0	31.7		
<i>Stachys palustris</i>	Woundwort		0.0	0.0	21.5
<i>Stipa spartea</i>	Porcupine grass	13.5	25.4	37.2	10.5
<i>Symphoricarpos occidentalis</i>	Wolfberry		0.0	0.0	

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Table 2. Continued

Scientific Name	Common Name	Prairie Type			
		PD	PDM	PM	PWM
<i>Taenidia integerrima</i>	Yellow pimpernel			15.3	12.5
<i>Tephrosia virginiana</i>	Goat's rue	0.0	12.5	0.0	
<i>Teucrium canadense</i>	Germander		0.0	2.3	5.0
<i>Thalictrum dasycarpum</i>	Purple meadow-rue			11.7	20.7
<i>Thaspium trifoliatum</i>	Meadow parsnip			0.0	0.0
<i>Thelypteris palustris</i>	Marsh fern				0.0
<i>Toxicodendron radicans</i>	Poison ivy	1.6	0.0	2.0	0.0
<i>Tradescantia ohiensis</i>	Common spiderwort	25.0	7.1	28.4	9.4
<i>Triodanis perfoliata</i>	Venus' looking glass		75.0	0.0	
<i>Triosteum perfoliatum</i>	Late horse-gentian		0.0		0.0
<b>V</b> <i>Valeriana edulis</i> <sup>R</sup>	Valerian			0.0	6.0
<i>Verbena hastata</i>	Blue vervain		0.0	0.0	21.7
<i>Verbena stricta</i>	Hoary vervain	9.7	6.9	0.0	0.0
<i>Vernonia fasciculata</i>	Common ironweed		0.0	0.0	8.7
<i>Veronicastrum virginicum</i>	Culver's root	60.0	0.0	8.3	18.4
<i>Vicia americana</i>	American vetch		0.0	16.3	25.2
<i>Viola cucullata</i>	Hooded violet		0.0	21.3	36.0
<i>Viola palmata</i>	Palm-leaved violet			11.4	
<i>Viola pedata</i>	Bird's-foot violet	25.7	20.8	25.0	0.0
<i>Viola pedatifida</i>	Prairie violet	32.0	11.1	23.8	8.7
<i>Viola sagittata</i>	Arrow-leaved violet		0.0	0.0	3.0
<i>Vitis riparia</i>	Riverbank grape	2.5	1.7	2.9	3.7
<b>Z</b> <i>Zigadenus elegans</i>	White camas lily	0.0	0.0	0.0	0.0
<i>Zizia aptera</i>	Heart-leaved golden Alexander		14.0	18.1	80.0
<i>Zizia aurea</i>	Golden Alexander		18.3	3.2	7.1

<sup>R</sup> Range limited within the prairie province of Wisconsin.

\* Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

**TABLE 3.** Dry prairie stands: species presence, density, and commonness. **Modal** is the code of the plant community (see key below) in which the species was found more often than any other plant community by Curtis (1959). **Stand** is the % frequency of occurrence in all 27 dry prairie stands (i.e., presence value). **Quad** is the average % frequency of occurrence in 20 (a few cases 40) one square meter quadrats per stand for stands in which the species was found and quadrat data were collected. **N** is the number of stands that met both these conditions and was thus the denominator used in calculating the Quad value (i.e., density value). **CI** is a "commonness index" (Anderson 1954) derived by multiplying stand frequency times average quadrat frequency. CI was calculated only where  $N > 2$ . Plants are presented in order of the most important species first (ranked by CI values) followed by the less important species (ranked by stand frequency).

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PD	<i>Schizachyrium scoparium</i>	Little bluestem	100	74.7	15	7,470
PD	<i>Bouteloua curtipendula</i>	Side-oats grama	85	59.7	15	5,075
PD	<i>Aster sericeus</i>	Silky aster	96	47.7	15	4,579
PM	<i>Andropogon gerardii</i>	Big bluestem	89	45.7	14	4,067
OB	<i>Euphorbia corollata</i>	Flowering spurge	89	43.5	13	3,872
PD	<i>Solidago nemoralis</i>	Old-field goldenrod	74	36.3	15	2,686
PD	<i>Bouteloua hirsuta</i> <sup>R</sup>	Hairy grama grass	44	57.0	5	2,508
PD	<i>Arenaria stricta</i>	Stiff sandwort	63	39.3	14	2,476
PD	<i>Amorpha canescens</i>	Leadplant	100	24.7	15	2,470
PD	<i>Dalea purpurea</i>	Purple prairie clover	85	28.0	15	2,380
PD	<i>Coreopsis palmata</i>	Prairie tickseed	79	26.3	12	2,078
PD	<i>Panicum perlongum</i>	Long-stalked panic-grass	63	32.1	14	2,022
PD	<i>Sporobolus heterolepis</i>	Prairie dropseed	78	25.0	11	1,950
PD	<i>Liatrix cylindracea</i>	Dwarf blazing star	52	36.7	9	1,908
PWM	<i>Solidago rigida</i>	Stiff goldenrod	78	23.6	11	1,841
PD	<i>Asclepias verticillata</i>	Whorled milkweed	59	30.8	13	1,817
	<i>Rosa</i> spp.	Wild rose	67	21.5	13	1,441
PD	<i>Ambrosia artemisiifolia</i>	Common ragweed	56	24.6	13	1,378
PM	<i>Liatrix aspera</i>	Rough blazing star	52	26.0	5	1,352
PD	<i>Artemisia campestris</i>	Beach wormwood	63	19.3	14	1,216
PDM	<i>Aster ericoides</i>	Heath aster	63	17.3	13	1,090
PD	<i>Castilleja sessiliflora</i>	Downy paintbrush	30	32.9	7	987
PD	<i>Kuhnia eupatorioides</i>	False boneset	70	13.1	13	917
PD	<i>Hedeoma hispidum</i>	Rough pennyroyal	48	18.3	12	878
PD	<i>Lithospermum incisum</i>	Fringed puccoon	70	12.0	15	840
PD	<i>Solidago ptarmicoides</i>	Stiff aster	41	18.3	9	750
CG	<i>Tradescantia ohioensis</i>	Common spiderwort	30	25.0	3	750
SB	<i>Koeleria macrantha</i>	June grass	56	13.1	8	734
PM	<i>Viola pedatifida</i>	Prairie violet	22	32.0	5	704
PDM	<i>Stipa spartea</i>	Porcupine grass	52	13.3	9	692
PDM	<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass	44	15.0	9	660
PM	<i>Helianthus pauciflorus</i>	Showy sunflower	52	12.5	8	650
CG	<i>Viola pedata</i>	Bird's-foot violet	26	25.0	3	650
PD	<i>Anemone patens</i>	Pasque flower	78	7.7	15	601
CG	<i>Scutellaria leonardii</i>	Small skullcap	48	12.2	9	586
CG	<i>Arabis lyrata</i>	Sand cress	30	19.2	6	576
PD	<i>Aster oblongifolius</i> <sup>R</sup>	Aromatic aster	44	12.5	10	550
PDM	<i>Muhlenbergia cuspidata</i> <sup>R</sup>	Prairie satin-grass	26	20.7	7	538
PDM	<i>Panicum oligosanthes</i>	Few-flowered panic-grass	30	15.8	6	474
	<i>Antennaria</i> spp.	Pussytoes	44	10.6	9	466
PM	<i>Helianthus occidentalis</i>	Western sunflower	22	21.0	5	462
PD	<i>Verbena stricta</i>	Hoary vervain	48	9.0	10	432
PD	<i>Geum triflorum</i>	Prairie smoke	52	7.7	9	400
OB	<i>Comandra umbellata</i>	False toadflax	37	10.0	8	370
PD	<i>Asclepias lanuginosa</i> <sup>*</sup>	Woolly milkweed	26	13.8	4	359

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Table 3. Continued

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PD	<i>Erigeron strigosus</i>	Daisy fleabane	70	5.0	15	350
PD	<i>Physalis subglabrata</i>	Tall ground-cherry	44	7.7	11	339
PM	<i>Potentilla arguta</i>	Prairie cinquefoil	37	9.0	10	333
PDM	<i>Linum sulcatum</i>	Grooved yellow flax	30	7.9	7	237
CG	<i>Campanula rotundifolia</i>	Harebell	19	12.0	5	228
CG	<i>Sporobolus cryptandrus</i>	Sand dropseed	22	10.0	5	220
OB	<i>Lithospermum canescens</i>	Hoary puccoon	33	6.4	7	211
PDM	<i>Oenothera biennis</i>	Common evening-primrose	37	5.0	8	185
PD	<i>Aronia melanocarpa</i>	Black chokeberry	19	9.0	5	171
CG	<i>Anemone cylindrica</i>	Thimbleweed	41	3.3	8	135
PDM	<i>Aster oolentangiensis</i>	Sky-blue aster	37	3.6	7	133
CG	<i>Lobelia spicata</i>	Pale spiked lobelia	15	8.8	4	132
PWM	<i>Ratibida pinnata</i>	Yellow coneflower	26	5.0	5	130
PM	<i>Panicum leibergii</i>	Prairie panic-grass	19	6.0	5	114
PDM	<i>Sorghastrum nutans</i>	Indian grass	48	1.7	3	82
PDM	<i>Rhus glabra</i>	Smooth sumac	37	2.0	5	74
OO	<i>Quercus macrocarpa</i>	Bur oak	26	2.5	4	65
PM	<i>Aster laevis</i>	Smooth aster	26	2.1	7	55
PM	<i>Calystegia sepium</i>	Hedge bindweed	11	5.0	3	55
SW	<i>Vitis riparia</i>	Riverbank grape	26	1.7	6	44
CG	<i>Aquilegia canadensis</i>	Wild columbine	15	2.5	4	38
PM	<i>Achillea millefolium</i>	Yarrow	11	3.3	3	36
PD	<i>Pediomelum esculentum</i> <sup>R</sup>	Pomme-de-prairie	26	1.0	5	26
PWM	<i>Rudbeckia hirta</i>	Black-eyed Susan	15	1.7	3	26
PD	<i>Asclepias viridiflora</i>	Short green milkweed	30	0.7	7	21
PDM	<i>Lactuca ludoviciana</i>	Western wild lettuce	19	1.0	5	19
PD	<i>Physalis heterophylla</i>	Clammy ground-cherry	19	1.0	5	19
	<i>Pyrus ioensis</i>	Iowa crab	11	1.7	3	19
CLE	<i>Silene antirrhina</i>	Sleepy catchfly	11	1.7	3	19
SW	<i>Toxicodendron radicans</i>	Poison ivy	26	0.7	7	18
CG	<i>Monarda fistulosa</i>	Wild bergamot	41	0.0	10	0
OB	<i>Physalis virginiana</i>	Lance-leaved ground-cherry	30	0.0	4	0
OB	<i>Lespedeza capitata</i>	Round-headed bush-clover	26	2.5	2	
SB	<i>Ambrosia psilostachya</i>	Western ragweed	22	5.0	2	
PWM	<i>Elymus canadensis</i>	Canada wild rye	19	0.0	3	0
SB	<i>Hieracium longipilum</i>	Hairy hawkweed	19	0.0	2	
CG	<i>Dalea candida</i>	White prairie clover	19	0.0	2	
PM	<i>Desmodium illinoense</i>	Illinois tick-trefoil	15	0.0	3	0
PM	<i>Lactuca canadensis</i>	Wild lettuce	15	0.0	3	0
SB	<i>Lithospermum carolinense</i>	Hairy puccoon	15			
SB	<i>Polygala polygama</i>	Purple milkwort	15	15.0	1	
PWM	<i>Asclepias syriaca</i>	Common milkweed	11	0.0	2	
PWM	<i>Baptisia lactea</i>	White wild indigo	11	0.0	1	
PM	<i>Baptisia bracteata</i>	Cream wild indigo	11			
SDM	<i>Celastrus scandens</i>	Climbing bittersweet	11	0.0	2	
PWM	<i>Silphium laciniatum</i>	Compass plant	11	25.0	2	
PM	<i>Solidago missouriensis</i>	Missouri goldenrod	11	5.0	1	
PM	<i>Solidago speciosa</i>	Showy goldenrod	11	0.0	1	
ND	<i>Apocynum androsaemifolium</i>	Spreading dogbane	7	0.0	2	
PDM	<i>Asclepias tuberosa</i>	Butterfly weed	7			
OB	<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster	7	0.0	1	
SD	<i>Corylus americana</i>	American hazelnut	7			
DUN	<i>Equisetum hyemale</i>	Common scouring-rush	7	5.0	2	

Modal	Scientific Name	Common Name	% Frequency			CI
			Stand	Quad	N	
CG	<i>Heuchera richardsonii</i>	Prairie alum-root	7	0.0	2	
CG	<i>Opuntia humifusa</i> <sup>R</sup>	Prickly-pear cactus	7	22.5	2	
CG	<i>Pedicularis canadensis</i>	Wood betony	7	5.0	1	
OB	<i>Polygonatum biflorum</i>	Smooth Solomon's seal	7	2.5	2	
PWM	<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed	7	0.0	1	
SD	<i>Smilacina stellata</i>	Starry false Solomon's seal	7	0.0	2	
PM	<i>Solidago juncea</i>	Early goldenrod	7	5.0	1	
OB	<i>Tephrosia virginiana</i>	Goat's rue	7			
PW	<i>Agalinis aspera</i>	Rough false foxglove	4			
SW	<i>Ambrosia trifida</i>	Giant ragweed	4	20.0	1	
PDM	<i>Artemisia frigida</i> <sup>R</sup>	Prairie sagewort	4	0.0	1	
PDM	<i>Aster pilosus</i>	Hairy aster	4	0.0	1	
SDM	<i>Aster urophyllus</i>	Arrow-leaved aster	4	0.0	1	
BG	<i>Bromus kalmii</i>	Prairie brome	4	0.0	1	
PDM	<i>Callirhoe triangulata</i> <sup>R</sup>	Clustered poppy-mallow	4			
PM	<i>Ceanothus americanus</i>	New Jersey tea	4	0.0	1	
SB	<i>Chrysopsis villosa</i>	Golden aster	4			
PM	<i>Cirsium discolor</i>	Field thistle	4	0.0	1	
SD	<i>Cornus racemosa</i>	Gray dogwood	4			
PWM	<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star	4			
PM	<i>Gentiana puberulenta</i>	Downy gentian	4			
SDM	<i>Geranium maculatum</i>	Wild geranium	4	0.0	1	
OB	<i>Helianthemum canadense</i>	Common rockrose	4			
PM	<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)	4	0.0	1	
PW	<i>Krigia biflora</i>	False dandelion	4	0.0	1	
SB	<i>Lechea tenuifolia</i>	Slender-leaved pinweed	4	0.0	1	
PDM	<i>Liatris punctata</i> <sup>R</sup>	Dotted blazing star	4	25.0	1	
PM	<i>Lilium philadelphicum</i>	Prairie lily	4	0.0	1	
	<i>Mirabilis nyctaginea</i>	Wild four-O'clock	4			
SB	<i>Monarda punctata</i>	Horse mint	4	10.0	1	
OB	<i>Panicum praecocius</i>	Early panic-grass	4			
SB	<i>Panicum virgatum</i>	Switch grass	4			
SD	<i>Parthenocissus vitacea</i>	Thicket creeper	4	0.0	1	
CLE	<i>Physocarpus opulifolius</i>	Ninebark	4	0.0	1	
CLE	<i>Polygonum tenue</i>	Slender knotweed	4	0.0	1	
	<i>Prunus pumila</i>	Sand cherry	4			
PW	<i>Salix humilis</i>	Prairie willow	4			
SB	<i>Selaginella rupestris</i>	Rock spikemoss	4	40.0	1	
SW	<i>Silphium perfoliatum</i>	Cup plant	4			
PD	<i>Sporobolus asper</i>	Rough dropseed	4	0.0	1	
CG	<i>Sporobolus vaginiflorus</i>	Sheathed dropseed	4	0.0	1	
PWM	<i>Veronicastrum virginicum</i>	Culver's root	4	60.0	1	
OO	<i>Zigadenus elegans</i>	White camas lily	4	0.0	1	

#### Modal Community Abbreviations

BG	Bracken-Grassland	ND	Northern Dry Forest	PDM	Dry-Mesic Prairie	SB	Sand Barren
CG	Cedar Glade	OB	Oak Barrens	PM	Mesic Prairie	SD	Southern Dry Forest
CLE	Exposed Cliff	OO	Oak Opening	PW	Wet Prairie	SDM	Southern Dry-Mesic Forest
DUN	Lake Dune	PD	Dry Prairie	PWM	Wet-Mesic Prairie	SW	Southern Wet Forest

<sup>R</sup> Range limited within the prairie province of Wisconsin.

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**TABLE 4.** Dry-mesic prairie stands: species presence, density, and commonness. **Modal** is the code of the plant community (see key below) in which the species was found more often than any other plant community by Curtis (1959). **Stand** is the % frequency of occurrence in all 67 dry-mesic prairie stands (i.e., presence value). **Quad** is the average % frequency of occurrence in 20 (a few cases 40) one square meter quadrats per stand for stands in which the species was found **and** quadrat data were collected. **N** is the number of stands that met both these conditions and was thus the denominator used in calculating the Quad value (i.e., density value). **CI** is a "commonness index" (Anderson 1954) derived by multiplying stand frequency times average quadrat frequency. CI was calculated only where  $N > 3$ . Plants are presented in order of the most important species first (ranked by CI values) followed by the less important species (ranked by stand frequency).

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PD	<i>Schizachyrium scoparium</i>	Little bluestem	91	66.3	30	6,033
PM	<i>Andropogon gerardii</i>	Big bluestem	99	51.7	30	5,118
PD	<i>Bouteloua curtipendula</i>	Side-oats grama	70	63.8	26	4,466
OB	<i>Euphorbia corollata</i>	Flowering spurge	94	44.9	29	4,221
PD	<i>Amorpha canescens</i>	Leadplant	91	38.1	30	3,467
PD	<i>Aster sericeus</i>	Silky aster	73	46.3	26	3,380
PM	<i>Helianthus pauciflorus</i>	Showy sunflower	69	39.3	22	2,712
PD	<i>Solidago nemoralis</i>	Old-field goldenrod	79	30.4	27	2,402
PD	<i>Coreopsis palmata</i>	Prairie tickseed	79	29.8	26	2,354
PDM	<i>Stipa spartea</i>	Porcupine grass	90	25.3	28	2,277
PD	<i>Dalea purpurea</i>	Purple prairie clover	79	28.0	26	2,212
PD	<i>Sporobolus heterolepis</i>	Prairie dropseed	78	28.0	27	2,184
PDM	<i>Aster ericoides</i>	Heath aster	77	25.4	25	1,956
PD	<i>Panicum perlongum</i>	Long-stalked panic-grass	54	33.6	28	1,814
PM	<i>Helianthus occidentalis</i>	Western sunflower	46	33.4	14	1,536
PM	<i>Liatris aspera</i>	Rough blazing star	82	18.3	26	1,501
PWM	<i>Solidago rigida</i>	Stiff goldenrod	76	18.0	25	1,368
PD	<i>Liatris cylindracea</i>	Dwarf blazing star	46	26.7	21	1,228
	<i>Rosa</i> spp.	Wild rose	88	13.2	29	1,162
PDM	<i>Aster oolentangiensis</i>	Sky-blue aster	66	17.5	24	1,155
CG	<i>Viola pedata</i>	Bird's-foot violet	49	20.3	16	995
OB	<i>Comandra umbellata</i>	False toadflax	60	16.5	20	990
PDM	<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass	43	21.8	19	937
PM	<i>Panicum leibergii</i>	Prairie panic-grass	55	16.5	25	908
PM	<i>Potentilla arguta</i>	Prairie cinquefoil	78	11.4	26	889
PD	<i>Solidago ptarmicoides</i>	Stiff aster	33	25.7	15	848
	<i>Antennaria</i> spp.	Pussytoes	61	13.3	26	811
PWM	<i>Ratibida pinnata</i>	Yellow coneflower	69	11.5	27	794
PDM	<i>Panicum oligosanthos</i>	Few-flowered panic-grass	57	13.9	18	792
OB	<i>Physalis virginiana</i>	Lance-leaved ground-cherry	49	15.4	7	755
PD	<i>Aster oblongifolius</i> <sup>R</sup>	Aromatic aster	40	17.9	17	716
PD	<i>Kuhnia eupatorioides</i>	False boneset	54	13.1	21	707
PM	<i>Aster laevis</i>	Smooth aster	45	15.6	14	702
PD	<i>Arenaria stricta</i>	Stiff sandwort	33	20.0	14	660
PDM	<i>Muhlenbergia cuspidata</i> <sup>R</sup>	Prairie satin-grass	22	30.0	13	660
PD	<i>Asclepias verticillata</i>	Whorled milkweed	55	11.4	22	627
PDM	<i>Phlox pilosa</i>	Prairie phlox	27	22.7	11	613
PDM	<i>Sorghastrum nutans</i>	Indian grass	61	9.7	20	592
PD	<i>Artemisia campestris</i>	Beach wormwood	58	10.2	22	592
PWM	<i>Silphium laciniatum</i>	Compass plant	31	18.7	12	580
PD	<i>Ambrosia artemisiifolia</i>	Common ragweed	61	9.0	26	549
OB	<i>Lithospermum canescens</i>	Hoary puccoon	61	8.7	27	531
PM	<i>Viola pedatifida</i>	Prairie violet	48	10.8	20	518
PD	<i>Hedeoma hispidum</i>	Rough pennyroyal	52	9.3	21	484
CG	<i>Pedicularis canadensis</i>	Wood betony	24	20.0	10	480

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PD	<i>Geum triflorum</i>	Prairie smoke	27	17.0	10	459
PWM	<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star	31	14.6	12	453
CG	<i>Scutellaria leonardii</i>	Small skullcap	42	10.3	20	433
CG	<i>Anemone cylindrica</i>	Thimbleweed	74	5.8	24	429
SB	<i>Koeleria macrantha</i>	June grass	46	8.9	14	409
PD	<i>Lithospermum incisum</i>	Fringed puccoon	40	9.2	19	368
CG	<i>Dalea candida</i>	White prairie clover	40	9.2	13	368
PD	<i>Anemone patens</i>	Pasque flower	43	8.2	22	353
CG	<i>Monarda fistulosa</i>	Wild bergamot	64	5.5	22	352
PD	<i>Bouteloua hirsuta</i> <sup>R</sup>	Hairy grama grass	24	14.1	11	338
PDM	<i>Linum sulcatum</i>	Grooved yellow flax	40	8.3	18	332
CG	<i>Tradescantia ohioensis</i>	Common spiderwort	49	6.5	14	319
PD	<i>Castilleja sessiliflora</i>	Downy paintbrush	27	11.8	14	319
OB	<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster	16	17.9	7	286
PM	<i>Solidago missouriensis</i>	Missouri goldenrod	40	6.5	15	260
PDM	<i>Rhus glabra</i>	Smooth sumac	60	4.3	22	258
PM	<i>Eryngium yuccifolium</i> <sup>R</sup>	Rattlesnake master	25	9.9	9	248
CG	<i>Lobelia spicata</i>	Pale spiked lobelia	31	7.2	16	223
OB	<i>Panicum praecocius</i>	Early panic-grass	16	13.8	4	221
OB	<i>Lespedeza capitata</i>	Round-headed bush-clover	45	4.6	12	207
PD	<i>Physalis subglabrata</i>	Tall ground-cherry	34	5.8	20	197
PD	<i>Erigeron strigosus</i>	Daisy fleabane	54	3.6	22	194
DUN	<i>Equisetum hyemale</i>	Common scouring-rush	10	18.8	4	188
PM	<i>Desmodium illinoense</i>	Illinois tick-trefoil	28	6.5	13	182
CG	<i>Heuchera richardsonii</i>	Prairie alum-root	37	4.7	15	174
PDM	<i>Oenothera biennis</i>	Common evening-primrose	61	2.8	20	171
PW	<i>Salix humilis</i>	Prairie willow	36	4.6	12	166
SD	<i>Smilacina stellata</i>	Starry false Solomon's seal	27	6.0	10	162
OB	<i>Helianthemum canadense</i>	Common rockrose	25	6.0	5	150
CG	<i>Arabis lyrata</i>	Sand cress	16	9.3	7	149
PW	<i>Zizia aurea</i>	Golden Alexander	8	17.5	4	140
PM	<i>Solidago speciosa</i>	Showy goldenrod	37	3.7	6	137
SB	<i>Hieracium longipilum</i>	Hairy hawkweed	19	7.1	7	135
PD	<i>Verbena stricta</i>	Hoary vervain	21	6.4	11	134
PD	<i>Aronia melanocarpa</i>	Black chokeberry	19	7.0	10	133
PM	<i>Gentiana puberulenta</i>	Downy gentian	18	6.9	8	124
PWM	<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed	30	4.1	11	123
FN	<i>Polygala senega</i>	Seneca snakeroot	10	11.0	5	110
BG	<i>Bromus kalmii</i>	Prairie brome	13	7.5	6	98
PWM	<i>Rudbeckia hirta</i>	Black-eyed Susan	40	2.4	17	96
PWM	<i>Elymus canadensis</i>	Canada wild rye	36	2.5	10	90
PM	<i>Ceanothus americanus</i>	New Jersey tea	31	2.9	12	90
PM	<i>Calystegia sepium</i>	Hedge bindweed	27	3.2	11	86
SB	<i>Selaginella rupestris</i>	Rock spikemoss	10	8.0	5	80
CG	<i>Campanula rotundifolia</i>	Harebell	28	2.7	13	76

continued on next page



Table 4. Continued

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
ND	<i>Apocynum androsaemifolium</i>	Spreading dogbane	39	1.7	17	66
PM	<i>Lactuca canadensis</i>	Wild lettuce	39	1.7	12	66
PWM	<i>Asclepias syriaca</i>	Common milkweed	52	1.2	13	62
PD	<i>Asclepias viridiflora</i>	Short green milkweed	34	1.7	9	58
PM	<i>Solidago juncea</i>	Early goldenrod	27	1.9	8	51
CG	<i>Sporobolus cryptandrus</i>	Sand dropseed	12	4.2	6	50
OO	<i>Quercus macrocarpa</i>	Bur oak	39	1.0	15	39
PM	<i>Achillea millefolium</i>	Yarrow	30	1.3	4	39
PM	<i>Cirsium discolor</i>	Field thistle	31	1.1	13	34
SDM	<i>Celastrus scandens</i>	Climbing bittersweet	24	1.3	12	31
PD	<i>Pediomelum esculentum</i> <sup>R</sup>	Pomme-de-prairie	12	2.5	6	30
SW	<i>Vitis riparia</i>	Riverbank grape	36	0.8	18	29
PDM	<i>Asclepias tuberosa</i>	Butterfly weed	24	1.0	10	24
PD	<i>Asclepias lanuginosa</i> *	Woolly milkweed	8	2.5	4	20
PWM	<i>Baptisia lactea</i>	White wild indigo	8	2.5	4	20
PDM	<i>Cirsium hillii</i> *	Prairie thistle	13	1.3	4	17
CG	<i>Polygala verticillata</i>	Whorled milkwort	8	2.0	5	16
PWM	<i>Pycnanthemum virginianum</i>	Common mountain-mint	10	1.3	4	13
FN	<i>Galium boreale</i>	Northern bedstraw	15	0.8	6	12
PDM	<i>Lactuca ludoviciana</i>	Western wild lettuce	19	0.6	8	11
	<i>Pyrus ioensis</i>	Iowa crab	13	0.8	6	10
CLE	<i>Physocarpus opulifolius</i>	Ninebark	8	1.3	4	10
OB	<i>Polygonatum biflorum</i>	Smooth Solomon's seal	27	0.0	10	0
PD	<i>Physalis heterophylla</i>	Clammy ground-cherry	21	15.0	1	
SW	<i>Toxicodendron radicans</i>	Poison ivy	21	0.0	9	0
SB	<i>Lithospermum carolinense</i>	Hairy puccoon	19	3.3	3	
SD	<i>Corylus americana</i>	American hazelnut	15	0.0	1	
PWM	<i>Equisetum laevigatum</i>	Smooth scouring-rush	15			
PM	<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)	15	0.0	9	0
PM	<i>Baptisia bracteata</i>	Cream wild indigo	13	5.0	2	
SB	<i>Leptoloma cognatum</i>	Fall witchgrass	13			
PM	<i>Apocynum cannabinum</i>	Indian hemp	12	0.0	1	
CG	<i>Aquilegia canadensis</i>	Wild columbine	12	0.0	7	0
PWM	<i>Desmodium canadense</i>	Showy tick-trefoil	12			
SB	<i>Gnaphalium obtusifolium</i>	Old-field balsam	12	0.0	2	
SB	<i>Panicum virgatum</i>	Switch grass	12	1.7	3	
SB	<i>Ambrosia psilostachya</i>	Western ragweed	10	15.0	1	
PDM	<i>Artemisia ludoviciana</i>	White sage	10	30.0	1	
OB	<i>Asclepias amplexicaulis</i> <sup>R</sup>	Blunt-leaved milkweed	10	5.0	2	
PWM	<i>Helianthus grosseserratus</i>	Sawtooth sunflower	10			
PWM	<i>Lathyrus venosus</i>	Veiny pea	10			
SD	<i>Parthenocissus vitacea</i>	Thicket creeper	10	1.7	3	
CLE	<i>Silene antirrhina</i>	Sleepy catchfly	10	5.0	2	
OB	<i>Tephrosia virginiana</i>	Goat's rue	10	12.5	2	
ND	<i>Fragaria virginiana</i>	Wild strawberry	9	3.3	3	
PW	<i>Hypoxis hirsuta</i>	Yellow star-grass	9	0.0	1	
SB	<i>Lechea tenuifolia</i>	Slender-leaved pinweed	9	2.5	2	
SB	<i>Monarda punctata</i>	Horse mint	9	0.0	3	
BG	<i>Muhlenbergia racemosa</i>	Upland wild timothy	9	0.0	1	
PM	<i>Oxalis violacea</i>	Violet wood-sorrel	9	17.5	2	
SD	<i>Smilacina racemosa</i>	False Solomon's seal	9	0.0	2	
PWM	<i>Vicia americana</i>	American vetch	9	0.0	1	
PM	<i>Zizia aptera</i>	Heart-leaved golden Alexander	9	13.7	3	

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
SD	<i>Cornus racemosa</i>	Gray dogwood	8			
PM	<i>Lilium philadelphicum</i>	Prairie lily	8	5.0	2	
SB	<i>Polygala polygama</i>	Purple milkwort	8	2.5	2	
PWM	<i>Prenanthes racemosa</i>	Glaucous white lettuce	8	0.0	3	
PWM	<i>Silphium terebinthinaceum</i> <sup>R</sup>	Prairie dock		8	0	
AT	<i>Solidago canadensis</i>	Common goldenrod	8	1.7	3	
PDM	<i>Aster pilosus</i>	Hairy aster	6	5.0	1	
CLE	<i>Draba reptans</i>	Common Whitlow-grass	6	10.0	1	
PM	<i>Echinacea pallida</i> <sup>*R</sup>	Pale purple coneflower	6	45.0	2	
SD	<i>Helianthus strumosus</i>	Pale-leaved sunflower	6			
SB	<i>Oenothera clelandii</i>	Sand primrose	6			
OB	<i>Penstemon gracilis</i> <sup>R</sup>	Slender beard-tongue	6			
BG	<i>Pteridium aquilinum</i>	Bracken fern	6			
PW	<i>Solidago gigantea</i>	Late goldenrod	6	0.0	1	
NS	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	6	0.0	1	
OO	<i>Besseyia bullii</i> <sup>*R</sup>	Kitten tails	5			
SB	<i>Cyperus lupulinus</i>	Sand cyperus	5			
SB	<i>Cyperus schweinitzii</i>	Schweinitzi's cyperus	5	10.0	3	
PDM	<i>Delphinium virescens</i> <sup>R</sup>	Prairie larkspur	5			
	<i>Mirabilis nyctaginea</i>	Wild four-O'clock	5	0.0	1	
CG	<i>Opuntia humifusa</i> <sup>R</sup>	Prickly-pear cactus	5	10.0	2	
PWM	<i>Parthenium integrifolium</i> <sup>*R</sup>	Wild quinine	5			
CG	<i>Polygala sanguinea</i>	Field milkwort	5	12.5	2	
CLE	<i>Polygonum tenue</i>	Slender knotweed	5			
	<i>Prunus pumila</i>	Sand cherry	5	16.7	3	
	<i>Rubus</i> spp.	Raspberry, Blackberry	5	0.0	2	
BG	<i>Senecio pauperculus</i>	Balsam ragwort	5			
CG	<i>Sporobolus vaginiflorus</i>	Sheathed dropseed	5	31.7	3	
SB	<i>Triodanis perfoliata</i>	Venus' looking glass	5	75.0	1	
PWM	<i>Veronicastrum virginicum</i>	Culver's root	5	0.0	1	
SD	<i>Potentilla simplex</i>	Common cinquefoil	4	0.0	1	
PWM	<i>Asclepias hirtella</i>	Tall green milkweed	3			
SD	<i>Asclepias ovalifolia</i> <sup>R</sup>	Oval milkweed	3			
SDM	<i>Aster urophyllus</i>	Arrow-leaved aster	3	5.0	1	
FN	<i>Aster lanceolatus</i>	Panicled aster	3			
PM	<i>Astragalus canadensis</i>	Canadian milkvetch	3	0.0	1	
PWM	<i>Cacalia plantaginea</i> <sup>*R</sup>	Prairie Indian plantain	3	0.0	1	
PDM	<i>Callirhoe triangulata</i> <sup>R</sup>	Clustered poppy-mallow	3	0.0	1	
SB	<i>Carex muhlenbergii</i>	Sand sedge	3	0.0	1	
PB	<i>Ceanothus herbaceus</i>	Inland New Jersey tea	3			
PW	<i>Equisetum arvense</i>	Field horsetail	3	5.0	1	
PDM	<i>Gentianella quinquefolia</i>	Stiff gentian	3	12.5	2	
SDM	<i>Geranium maculatum</i>	Wild geranium	3	7.0	1	
BG	<i>Hieracium kalmii</i>	Canada hawkweed	3			
SB	<i>Hedyotis longifolia</i>	Long-leaved bluets	3			
DUN	<i>Juniperus communis</i>	Common juniper	3			
PWM	<i>Liatris pycnostachya</i>	Prairie blazing star	3	5.0	1	
OO	<i>Phlox glaberrima</i> <sup>*R</sup>	Marsh phlox	3	12.5	2	
PWM	<i>Prenanthes aspera</i> <sup>*</sup>	Rough white lettuce	3	0.0	1	
CLE	<i>Ranunculus rhomboideus</i>	Prairie buttercup	3			
CG	<i>Scrophularia lanceolata</i>	Early figwort	3			
OO	<i>Symphoricarpos occidentalis</i>	Wolfberry	3			
SDM	<i>Triosteum perfoliatum</i>	Late horse-gentian	3	0.0	2	

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Table 4. Continued

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
SDM	<i>Viola cucullata</i>	Hooded violet	3			
OO	<i>Zigadenus elegans</i>	White camas lily	3			
PW	<i>Agalinis aspera</i>	Rough false foxglove	2			
PWM	<i>Allium canadense</i>	Wild onion	2			
SDM	<i>Amphicarpaea bracteata</i>	Hog peanut	2			
NDM	<i>Anemone quinquefolia</i>	Wood anemone	2			
PDM	<i>Artemisia frigida</i> <sup>R</sup>	Prairie sagewort	2	5.0	1	
FN	<i>Asclepias sullivantii</i> <sup>R</sup>	Prairie milkweed	2	0.0	1	
BG	<i>Aster umbellatus</i>	Flat-top aster	2			
PDM	<i>Astragalus crassicaarpus</i> <sup>R</sup>	Prairie plum	2	15.0	1	
PWM	<i>Carex bicknellii</i>	Sedge	2			
SDM	<i>Carex pensylvanica</i>	Pennsylvania sedge	2	0.0	1	
PDM	<i>Chamaecrista fasciculata</i>	Partridge pea	2			
ND	<i>Calystegia spithamea</i>	Low bindweed	2			
BG	<i>Elymus trachycaulus</i>	Slender wheatgrass	2			
PM	<i>Gaura biennis</i>	Biennial gaura	2			
PW	<i>Krigia biflora</i>	False dandelion	2			
SB	<i>Krigia virginica</i>	Dwarf dandelion	2	10.0	1	
BG	<i>Lechea intermedia</i>	Intermediate pinweed	2			
PDM	<i>Liatris punctata</i> <sup>R</sup>	Dotted blazing star	2	5.0	1	
PM	<i>Liatris spicata</i>	Marsh blazing star	2	0.0	1	
PW	<i>Lilium michiganense</i>	Turk's cap lily	2	5.0	1	
OB	<i>Lupinus perennis</i>	Wild lupine	2			
SWM	<i>Lysimachia ciliata</i>	Fringed loosestrife	2			
SC	<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife	2			
FN	<i>Lysimachia quadriflora</i>	Prairie loosestrife	2			
PDM	<i>Microseris cuspidata</i> <sup>R</sup>	Prairie dandelion	2			
BEA	<i>Orobanche fasciculata</i> <sup>*</sup>	Clustered broom-rape	2			
PM	<i>Penstemon digitalis</i>	Foxglove beard-tongue	2			
CLE	<i>Penstemon hirsutus</i> <sup>R</sup>	Hairy beard-tongue	2			
PWM	<i>Physostegia virginiana</i>	False dragonhead	2	0.0	1	
PDM	<i>Plantago rugelii</i>	Red-stalked plantain	2			
PW	<i>Scleria triglomerata</i>	Tall nut-rush	2			
CG	<i>Silene stellata</i>	Starry campion	2	36.0	1	
SW	<i>Silphium perfoliatum</i>	Cup plant	2	0.0	2	
PW	<i>Spartina pectinata</i>	Prairie cord grass	2			
PD	<i>Sporobolus asper</i>	Rough dropseed	2			
SS	<i>Stachys palustris</i>	Woundwort	2			
SW	<i>Teucrium canadense</i>	Germander	2	0.0	1	
NS	<i>Verbena hastata</i>	Blue vervain	2			
PWM	<i>Vernonia fasciculata</i>	Common ironweed	2			
OB	<i>Viola sagittata</i>	Arrow-leaved violet	2			

## Modal Community Abbreviations

AT	Alder Thicket	FN	Fen	PB	Pine Barrens	SB	Sand Barren
BEA	Lake Beach	ND	Northern Dry Forest	PD	Dry Prairie	SC	Shrub Carr
BG	Bracken-Grassland	NDM	Northern Dry-Mesic Forest	PDM	Dry-Mesic Prairie	SD	Southern Dry Forest
CG	Cedar Glade	NS	Northern Sedge Meadow	PM	Mesic Prairie	SDM	Southern Dry-Mesic Forest
CLE	Exposed Cliff	OB	Oak Barrens	PW	Wet Prairie	SS	Southern Sedge Meadow
DUN	Lake Dune	OO	Oak Opening	PWM	Wet-Mesic Prairie	SW	Southern Wet Forest
						SWM	Southern Wet-Mesic Forest

<sup>R</sup> Range limited within the prairie province of Wisconsin.

<sup>\*</sup> Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

**TABLE 5.** Mesic prairie stands: species presence, density, and commonness. **Modal** is the code of the plant community (see key below) in which the species was found more often than any other plant community by Curtis (1959). **Stand** is the % frequency of occurrence in all 77 mesic prairie stands (i.e., presence value). **Quad** is the average % frequency of occurrence in 20 (a few cases 40) one square meter quadrats per stand for stands in which the species was found and quadrat data was collected. **N** is the number of stands that met both these conditions and was thus the denominator used in calculating the Quad value (i.e., density value). **CI** is a "commonness index" (Anderson 1954) derived by multiplying stand frequency times average quadrat frequency. CI was calculated only where  $N > 3$ . Plants are presented in order of the most important species first (ranked by CI values) followed by the less important species (ranked by stand frequency).

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
	<i>Rosa</i> spp.	Wild rose	91	53.3	26	4,850
PM	<i>Aster laevis</i>	Smooth aster	91	52.0	26	4,732
PWM	<i>Ratibida pinnata</i>	Yellow coneflower	96	41.7	27	4,003
PWM	<i>Solidago rigida</i>	Stiff goldenrod	83	44.4	26	3,685
PDM	<i>Aster ericoides</i>	Heath aster	80	46.0	27	3,680
PM	<i>Andropogon gerardii</i>	Big bluestem	95	34.9	27	3,316
OB	<i>Euphorbia corollata</i>	Flowering spurge	68	46.8	21	3,182
PM	<i>Helianthus pauciflorus</i>	Showy sunflower	71	33.7	16	2,393
PDM	<i>Stipa spartea</i>	Porcupine grass	64	37.0	22	2,368
ND	<i>Fragaria virginiana</i>	Wild strawberry	75	30.5	23	2,288
PM	<i>Panicum leibergii</i>	Prairie panic-grass	58	31.9	21	1,850
CG	<i>Monarda fistulosa</i>	Wild bergamot	73	24.9	18	1,818
PWM	<i>Silphium terebinthinaceum</i> <sup>R</sup>	Prairie dock	55	30.2	22	1,661
PWM	<i>Lathyrus venosus</i>	Veiny pea	58	28.6	18	1,659
PD	<i>Coreopsis palmata</i>	Prairie tickseed	65	25.3	19	1,645
PDM	<i>Phlox pilosa</i>	Prairie phlox	52	29.6	21	1,539
SD	<i>Helianthus strumosus</i>	Pale-leaved sunflower	51	29.2	19	1,489
PD	<i>Amorpha canescens</i>	Leadplant	66	22.0	18	1,452
PD	<i>Schizachyrium scoparium</i>	Little bluestem	66	20.6	23	1,360
OB	<i>Comandra umbellata</i>	False toadflax	58	23.4	23	1,357
PM	<i>Liatris aspera</i>	Rough blazing star	70	19.2	23	1,344
CG	<i>Tradescantia ohioensis</i>	Common spiderwort	44	28.3	10	1,245
PD	<i>Sporobolus heterolepis</i>	Prairie dropseed	58	20.7	22	1,201
OB	<i>Lespedeza capitata</i>	Round-headed bush-clover	62	17.0	17	1,054
PDM	<i>Aster oolentangiensis</i>	Sky-blue aster	36	27.2	9	979
PWM	<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed	58	16.3	24	945
CG	<i>Anemone cylindrica</i>	Thimbleweed	60	15.7	23	942
PDM	<i>Sorghastrum nutans</i>	Indian grass	52	18.1	19	941
PM	<i>Viola pedatifida</i>	Prairie violet	35	23.8	12	833
PD	<i>Ambrosia artemisiifolia</i>	Common ragweed	58	13.8	17	800
PM	<i>Desmodium illinoense</i>	Illinois tick-trefoil	36	21.2	9	763
PM	<i>Cirsium discolor</i>	Field thistle	68	11.2	20	762
PWM	<i>Vicia americana</i>	American vetch	47	16.2	19	761
PWM	<i>Silphium laciniatum</i>	Compass plant	55	13.8	21	759
PM	<i>Solidago missouriensis</i>	Missouri goldenrod	52	14.2	17	738
PD	<i>Dalea purpurea</i>	Purple prairie clover	56	13.0	20	728
PM	<i>Allium cernuum</i> <sup>R</sup>	Nodding wild onion	14	50.8	6	711
PM	<i>Eryngium yuccifolium</i> <sup>R</sup>	Rattlesnake master	48	13.4	17	643
PW	<i>Equisetum arvense</i>	Field horsetail	33	17.6	14	581
OB	<i>Physalis virginiana</i>	Lance-leaved ground-cherry	46	12.1	18	557
PM	<i>Potentilla arguta</i>	Prairie cinquefoil	52	10.7	13	556
SDM	<i>Viola cucullata</i>	Hooded violet	25	21.3	16	533
SD	<i>Potentilla simplex</i>	Common cinquefoil	47	11.3	19	531
PM	<i>Calystegia sepium</i>	Hedge bindweed	42	12.2	15	512
ND	<i>Apocynum androsaemifolium</i>	Spreading dogbane	31	15.3	11	474

continued on next page

Table 5. Continued

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PM	<i>Zizia aptera</i>	Heart-leaved golden Alexander	26	18.0	14	468
PWM	<i>Asclepias syriaca</i>	Common milkweed	80	5.4	22	432
PWM	<i>Allium canadense</i>	Wild onion	30	13.3	15	399
NS	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	34	11.7	9	398
PM	<i>Solidago speciosa</i>	Showy goldenrod	30	13.1	7	393
PDM	<i>Panicum oligosanthos</i>	Few-flowered panic-grass	21	18.6	7	391
SD	<i>Corylus americana</i>	American hazelnut	40	9.4	9	376
PM	<i>Helianthus occidentalis</i>	Western sunflower	25	14.6	7	365
FN	<i>Thalictrum dasycarpum</i>	Purple meadow-rue	31	11.4	11	353
PM	<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)	30	11.5	10	345
PWM	<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star	46	7.4	17	340
SDM	<i>Geranium maculatum</i>	Wild geranium	26	13.0	5	338
OB	<i>Lithospermum canescens</i>	Hoary puccoon	52	6.3	20	328
PWM	<i>Aster novae-angliae</i>	New England aster	40	8.2	11	328
FN	<i>Polygala senega</i>	Seneca snakeroot	22	14.5	10	319
PDM	<i>Aster pilosus</i>	Hairy aster	27	11.7	9	316
	<i>Antennaria</i> spp.	Pussytoes	35	9.0	7	315
PW	<i>Salix humilis</i>	Prairie willow	32	9.8	13	314
PD	<i>Solidago nemoralis</i>	Old-field goldenrod	44	6.9	13	304
FN	<i>Galium boreale</i>	Northern bedstraw	34	8.6	9	292
SD	<i>Smilacina stellata</i>	Starry false Solomon's seal	29	10.0	8	290
PM	<i>Ceanothus americanus</i>	New Jersey tea	46	6.1	11	281
PD	<i>Asclepias verticillata</i>	Whorled milkweed	39	6.5	10	254
PWM	<i>Veronicastrum virginicum</i>	Culver's root	33	7.5	8	248
BG	<i>Muhlenbergia racemosa</i>	Upland wild timothy	13	18.8	4	244
PWM	<i>Rudbeckia hirta</i>	Black-eyed Susan	38	6.0	10	228
PD	<i>Erigeron strigosus</i>	Daisy fleabane	33	6.9	7	228
PM	<i>Echinacea pallida</i> <sup>R</sup>	Pale purple coneflower	8	26.0	4	208
PW	<i>Spartina pectinata</i>	Prairie cord grass	34	6.0	15	204
PWM	<i>Baptisia lactea</i>	White wild indigo	23	8.8	8	202
SB	<i>Panicum virgatum</i>	Switch grass	34	5.8	12	197
PM	<i>Oxalis violacea</i>	Violet wood-sorrel	14	13.8	4	193
PM	<i>Lactuca canadensis</i>	Wild lettuce	34	5.6	9	190
PM	<i>Solidago juncea</i>	Early goldenrod	14	13.3	6	186
PWM	<i>Helianthus grosseserratus</i>	Sawtooth sunflower	31	5.7	7	177
PM	<i>Gentiana puberulenta</i>	Downy gentian	26	6.8	9	177
SD	<i>Cornus racemosa</i>	Gray dogwood	36	4.5	11	162
	<i>Rubus</i> spp.	Raspberry, Blackberry	8	20.0	4	160
PDM	<i>Rhus glabra</i>	Smooth sumac	26	6.0	6	156
SD	<i>Taenidia integerrima</i>	Yellow pimpernel	10	15.0	7	150
OB	<i>Polygonatum biflorum</i>	Smooth Solomon's seal	18	8.0	5	144
PWM	<i>Elymus canadensis</i>	Canada wild rye	33	4.3	9	142
FN	<i>Asclepias sullivantii</i> <sup>R</sup>	Prairie milkweed	17	8.1	8	138
	<i>Viola palmata</i>	Palm-leaved violet	12	11.4	7	137
CG	<i>Dalea candida</i>	White prairie clover	23	5.7	7	131
BG	<i>Elymus trachycaulus</i>	Slender wheatgrass	10	13.0	5	130
CG	<i>Heuchera richardsonii</i>	Prairie alum-root	27	4.6	9	124
PWM	<i>Pycnanthemum virginianum</i>	Common mountain-mint	27	4.5	10	122
PD	<i>Physalis subglabrata</i>	Tall ground-cherry	8	15.0	5	120
OO	<i>Quercus macrocarpa</i>	Bur oak	40	2.8	9	112
AT	<i>Solidago canadensis</i>	Common goldenrod	36	3.1	8	112
PM	<i>Baptisia bracteata</i>	Cream wild indigo	29	3.8	8	110
PWM	<i>Polytaenia nuttallii</i> <sup>R</sup>	Prairie parsley	10	11.0	4	110
PWM	<i>Parthenium integrifolium</i> <sup>R</sup>	Wild quinine	17	6.3	8	107

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PWM	<i>Desmodium canadense</i>	Showy tick-trefoil	48	2.2	18	106
PM	<i>Achillea millefolium</i>	Yarrow	62	1.7	15	105
PM	<i>Apocynum cannabinum</i>	Indian hemp	36	2.7	11	97
PWM	<i>Gentiana andrewsii</i>	Bottle gentian	9	10.8	6	97
PD	<i>Physalis heterophylla</i>	Clammy ground-cherry	21	4.3	7	90
PDM	<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass	26	3.0	10	78
PWM	<i>Carex bicknellii</i>	Sedge	13	6.0	5	78
PW	<i>Lilium michiganense</i>	Turk's cap lily	12	6.3	4	76
SW	<i>Vitis riparia</i>	Riverbank grape	31	2.2	9	68
PWM	<i>Prenanthes racemosa</i>	Glaucous white lettuce	17	3.8	4	65
PW	<i>Zizia aurea</i>	Golden Alexander	25	2.5	6	63
SDM	<i>Amphicarpaea bracteata</i>	Hog peanut	8	5.0	4	40
PM	<i>Liatris spicata</i> <sup>R</sup>	Marsh blazing star	10	2.5	6	25
SW	<i>Toxicodendron radicans</i>	Poison ivy	13	1.3	4	17
PW	<i>Hypoxis hirsuta</i>	Yellow star-grass	20	0.6	9	12
SB	<i>Koeleria macrantha</i>	June grass	14	0.8	6	11
PM	<i>Lilium philadelphicum</i>	Prairie lily	10	1.0	5	10
PDM	<i>Asclepias tuberosa</i>	Butterfly weed	8	1.3	4	10
SD	<i>Smilax herbacea</i>	Carrion flower	7	1.3	4	9
PDM	<i>Oenothera biennis</i>	Common evening-primrose	26	2.5	2	
PWM	<i>Equisetum laevigatum</i>	Smooth scouring-rush	23	0.0	1	
CG	<i>Lobelia spicata</i>	Pale spiked lobelia	21	0.0	3	
	<i>Mirabilis nyctaginea</i>	Wild four-O'clock	16	0.0	1	
OB	<i>Helianthemum canadense</i>	Common rockrose	14	0.0	1	
	<i>Pyrus ioensis</i>	Iowa crab	13	2.5	2	
SDM	<i>Aster urophyllus</i>	Arrow-leaved aster	12	17.5	2	
PD	<i>Aster sericeus</i>	Silky aster	12	0.0	2	
BG	<i>Bromus kalmii</i>	Prairie brome	12	0.0	3	
SS	<i>Anemone canadensis</i>	Meadow anemone	10	12.5	2	
BG	<i>Pteridium aquilinum</i>	Bracken fern	10	0.0	2	
PM	<i>Astragalus canadensis</i>	Canadian milkvetch	9	0.0	1	
FN	<i>Calamagrostis canadensis</i>	Bluejoint grass	9	0.0	3	
PD	<i>Kuhnia eupatorioides</i>	False boneset	9	0.0	2	
PDM	<i>Lactuca ludoviciana</i>	Western wild lettuce	9	0.0	2	
PW	<i>Oxypolis rigidior</i>	Cowbane	9	0.0	3	
OB	<i>Panicum praecocius</i>	Early panic-grass	9	28.3	3	
NDM	<i>Anemone quinquefolia</i>	Wood anemone	8	5.0	2	
PD	<i>Artemisia campestris</i>	Beach wormwood	8			
PD	<i>Solidago ptarmicoides</i>	Stiff aster	8	12.5	2	
PD	<i>Bouteloua curtipendula</i>	Side-oats grama	8			
PWM	<i>Cacalia plantaginea</i> <sup>R</sup>	Prairie Indian plantain	8	15.0	1	
PD	<i>Geum triflorum</i>	Prairie smoke	8			
PD	<i>Panicum perlongum</i>	Long-stalked panic-grass	8	5.0	1	
SD	<i>Smilacina racemosa</i>	False Solomon's seal	8	0.0	2	
PM	<i>Thaspium trifoliatum</i>	Meadow parsnip	8	0.0	1	
SW	<i>Ambrosia trifida</i>	Giant ragweed	7	5.0	2	
PD	<i>Anemone patens</i>	Pasque flower	7			
OB	<i>Asclepias amplexicaulis</i> <sup>R</sup>	Blunt-leaved milkweed	7	0.0	2	
PD	<i>Asclepias viridiflora</i>	Short green milkweed	7	2.5	2	
PW	<i>Krigia biflora</i>	False dandelion	7			
SS	<i>Lathyrus palustris</i>	Marsh vetchling	7	0.0	2	
PWM	<i>Liatris pycnostachya</i>	Prairie blazing star	7	0.0	1	
CG	<i>Silene stellata</i>	Starry campion	7	9.5	2	
PDM	<i>Artemisia ludoviciana</i>	White sage	5	5.0	1	

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Table 5. Continued

Modal	Scientific Name	Common Name	% Frequency			CI
			Stand	Quad	N	
FN	<i>Aster lanceolatus</i>	Panicked aster	5			
SDM	<i>Carex pensylvanica</i>	Pennsylvania sedge	5	6.7	3	
PWM	<i>Cicuta maculata</i>	Water-hemlock	5			
PD	<i>Hedeoma hispidum</i>	Rough pennyroyal	5			
BG	<i>Hieracium kalmii</i>	Canada hawkweed	5			
PD	<i>Liatris cylindracea</i>	Dwarf blazing star	5			
FN	<i>Lycopus americanus</i>	Common water-horehound	5	0.0	2	
SD	<i>Parthenocissus vitacea</i>	Thicket creeper	5	1.7	3	
CG	<i>Pedicularis canadensis</i>	Wood betony	5	0.0	1	
PW	<i>Solidago gigantea</i>	Late goldenrod	5			
FN	<i>Solidago riddellii</i> <sup>R</sup>	Riddell's goldenrod	5	0.0	2	
CG	<i>Viola pedata</i>	Bird's foot violet	5	25.0	1	
SD	<i>Asclepias ovalifolia</i>	Oval milkweed	4	2.5	2	
OB	<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster	4	0.0	1	
PDM	<i>Chamaecrista fasciculata</i>	Partridge pea	4	17.5	2	
SDM	<i>Celastrus scandens</i>	Climbing bittersweet	4	25.0	1	
PW	<i>Galium tinctorium</i>	Stiff bedstraw	4	10.0	1	
PM	<i>Gentiana alba</i> *	Cream gentian	4			
SB	<i>Lithospermum carolinense</i>	Hairy puccoon	4	0.0	1	
SWM	<i>Lysimachia ciliata</i>	Fringed loosestrife	4	0.0	2	
PWM	<i>Physostegia virginiana</i>	False dragonhead	4	0.0	1	
PM	<i>Pedimelum argophyllum</i> <sup>R</sup>	Silvery scurfy pea	4			
	<i>Salix</i> spp.	Willow	4			
BF	<i>Sanicula marilandica</i>	Sanicle	4	0.0	1	
CG	<i>Scrophularia lanceolata</i>	Early figwort	4	0.0	1	
CG	<i>Scutellaria leonardii</i>	Small skullcap	4	0.0	2	
AT	<i>Spiraea alba</i>	Meadowsweet	4			
SW	<i>Teucrium canadense</i>	Germander	4	1.7	3	
PD	<i>Verbena stricta</i>	Hoary vervain	4	0.0	3	
OO	<i>Zigadenus elegans</i>	White camas lily	4			
PD	<i>Asclepias lanuginosa</i> *	Woolly milkweed	3	0.0	1	
PWM	<i>Asclepias purpurascens</i> <sup>R</sup>	Purple milkweed	3	0.0	1	
PD	<i>Aster oblongifolius</i> <sup>R</sup>	Aromatic aster	3			
PDM	<i>Cirsium hillii</i> *	Prairie thistle	3			
SD	<i>Cypripedium calceolus</i>	Yellow lady-slipper	3			
PM	<i>Gaura biennis</i>	Biennial gaura	3			
AT	<i>Geum aleppicum</i>	Yellow avens	3	0.0	1	
PW	<i>Hierochloa odorata</i>	Sweet grass	3			
SB	<i>Lechea tenuifolia</i>	Slender-leaved pinweed	3			
PM	<i>Liatris ligulistylis</i>	Showy blazing star	3			
PDM	<i>Linum sulcatum</i>	Grooved yellow flax	3			
PD	<i>Lithospermum incisum</i>	Fringed puccoon	3			
OB	<i>Lupinus perennis</i>	Wild lupine	3			
SC	<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife	3			
FN	<i>Lysimachia quadriflora</i>	Prairie loosestrife	3			
PWM	<i>Lythrum alatum</i>	Winged loosestrife	3			
	<i>Prunus americana</i>	Wild plum	3	0.0	1	
PW	<i>Saxifraga pensylvanica</i>	Swamp saxifrage	3			
SW	<i>Silphium perfoliatum</i>	Cup plant	3	0.0	1	
SS	<i>Stachys palustris</i>	Woundwort	3			
OO	<i>Symphoricarpos occidentalis</i>	Wolfberry	3			
OB	<i>Tephrosia virginiana</i>	Goat's rue	3			
SB	<i>Triodanis perfoliata</i>	Venus' looking glass	3			
FN	<i>Valeriana edulis</i> <sup>R</sup>	Valerian	3	0.0	1	

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PWM	<i>Vernonia fasciculata</i>	Common ironweed	3			
PM	<i>Eupatorium altissimum</i>	Upland boneset	2	0.0	1	
PM	<i>Hypericum canadense</i> <sup>R</sup>	Canadian St. John's wort	2			
PM	<i>Hypericum mutilum</i> <sup>R</sup>	Weak St. John's wort	2			
PDM	<i>Oxalis stricta</i>	Tall wood-sorrel	2			
PM	<i>Penstemon digitalis</i>	Foxglove beard-tongue	2			
OB	<i>Viola sagittata</i>	Arrow-leaved violet	2			
PW	<i>Agalinis aspera</i>	Rough false foxglove	1			
SW	<i>Apios americana</i>	Ground nut	1	0.0	1	
CG	<i>Aquilegia canadensis</i>	Wild columbine	1			
CG	<i>Arabis lyrata</i>	Sand cress	1			
SWM	<i>Arenaria lateriflora</i>	Wood sandwort	1			
PD	<i>Arenaria stricta</i>	Stiff sandwort	1			
BG	<i>Aster umbellatus</i>	Flat-top aster	1			
OO	<i>Besseyia bullii</i> <sup>*R</sup>	Kitten tails	1			
PWM	<i>Blephilia ciliata</i> <sup>R</sup>	Ohio horse-mint	1			
PW	<i>Cacalia atriplicifolia</i> <sup>R</sup>	Pale Indian plantain	1	0.0	1	
PW	<i>Cacalia suaveolens</i> <sup>R</sup>	Sweet Indian plantain	1			
SB	<i>Carex muhlenbergii</i>	Sand sedge	1			
FN	<i>Castilleja coccinea</i>	Indian paintbrush	1			
DUN	<i>Equisetum hyemale</i>	Common scouring-rush	1			
NW	<i>Eriophorum virginicum</i>	Rusty cotton-grass	1	10.0	1	
PDM	<i>Gentianella quinquefolia</i>	Stiff gentian	1			
SDM	<i>Geum canadense</i>	White avens	1	5.0	1	
PW	<i>Helenium autumnale</i>	Sneezeweed	1			
SB	<i>Hieracium longipilum</i>	Hairy hawkweed	1			
SB	<i>Leptoloma cognatum</i>	Fall witchgrass	1			
PB	<i>Lysimachia quadrifolia</i>	Whorled loosestrife	1			
PDM	<i>Microseris cuspidata</i> <sup>R</sup>	Prairie dandelion	1			
SB	<i>Polygala polygama</i>	Purple milkwort	1			
CG	<i>Polygala sanguinea</i>	Field milkwort	1			
SDM	<i>Prenanthes alba</i>	Lion's foot	1	10.0	1	
PWM	<i>Prenanthes aspera</i> <sup>*</sup>	Rough white lettuce	1	0.0	1	
OO	<i>Ranunculus fascicularis</i>	Early buttercup	1			
PWM	<i>Rudbeckia subtomentosa</i> <sup>R</sup>	Sweet black-eyed Susan	1			
PW	<i>Scleria triglomerata</i>	Tall nut-rush	1			
SB	<i>Selaginella rupestris</i>	Rock spikemoss	1			
PWM	<i>Senecio aureus</i>	Golden ragwort	1			
CLE	<i>Silene antirrhina</i>	Sleepy catchfly	1			
CG	<i>Sium suave</i>	Water parsnip	1			
FN	<i>Spiranthes cernua</i>	Nodding ladies' tresses	1			
PD	<i>Sporobolus asper</i>	Rough dropseed	1			
NS	<i>Verbena hastata</i>	Blue vervain	1			

#### Modal Community Abbreviations

AT	Alder Thicket	FN	Fen	PD	Dry Prairie	SC	Shrub Carr
BG	Bracken-Grassland	ND	Northern Dry Forest	PDM	Dry-Mesic Prairie	SD	Southern Dry Forest
BF	Boreal Forest	NS	Northern Sedge Meadow	PM	Mesic Prairie	SDM	Southern Dry-Mesic Forest
CG	Cedar Glade	NW	Northern Wet Forest	PW	Wet Prairie	SS	Southern Sedge Meadow
CLE	Exposed Cliff	OB	Oak Barrens	PWM	Wet-Mesic Prairie	SW	Southern Wet Forest
DUN	Lake Dune	OO	Oak Opening	SB	Sand Barren	SWM	Southern Wet-Mesic Forest

<sup>R</sup> Range limited within the prairie province of Wisconsin.

<sup>\*</sup> Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.



**TABLE 6.** Wet-mesic prairie stands: species presence, density, and commonness. **Modal** is the code of the plant community (see key below) in which the species was found more often than any other plant community by Curtis (1959). **Stand** is the % frequency of occurrence in all 54 wet-mesic prairie stands (i.e., presence value). **Quad** is the average % frequency of occurrence in 20 (a few cases 40) one square meter quadrats per stand for stands in which the species was found and quadrat data were collected. **N** is the number of stands that met both conditions and was thus the denominator used in calculating the Quad value (i.e., density value). **CI** is a "commonness index" (Anderson 1954) derived by multiplying stand frequency times average quadrat frequency. CI was calculated only where N > 2. Plants are presented in order of the most important species first (ranked by CI values) followed by the less important species (ranked by stand frequency).

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PWM	<i>Ratibida pinnata</i>	Yellow coneflower	87	59.7	12	5,194
PWM	<i>Solidago rigida</i>	Stiff goldenrod	72	49.9	11	3,593
ND	<i>Fragaria virginiana</i>	Wild strawberry	89	36.4	12	3,240
PM	<i>Andropogon gerardii</i>	Big bluestem	93	31.7	11	2,948
	<i>Rosa</i> spp.	Wild rose	85	33.7	10	2,865
PWM	<i>Silphium terebinthinaceum</i> <sup>R</sup>	Prairie dock	56	43.8	9	2,453
OB	<i>Comandra umbellata</i>	False toadflax	63	34.5	8	2,174
PM	<i>Aster laevis</i>	Smooth aster	52	40.0	3	2,080
PDM	<i>Aster oolentangiensis</i>	Sky-blue aster	46	43.3	6	1,992
CG	<i>Monarda fistulosa</i>	Wild bergamot	76	23.6	7	1,794
PDM	<i>Phlox pilosa</i>	Prairie phlox	48	32.2	10	1,546
FN	<i>Thalictrum dasycarpum</i>	Purple meadow-rue	76	20.3	10	1,543
PWM	<i>Rudbeckia hirta</i>	Black-eyed Susan	69	22.2	12	1,532
PWM	<i>Helianthus grosseserratus</i>	Sawtooth sunflower	57	26.0	7	1,482
PWM	<i>Veronicastrum virginicum</i>	Culver's root	76	18.3	8	1,391
SDM	<i>Aster urophyllus</i>	Arrow-leaved aster	30	45.0	4	1,350
PWM	<i>Vicia americana</i>	American vetch	52	25.0	9	1,300
PWM	<i>Aster novae-angliae</i>	New England aster	80	15.3	9	1,224
FN	<i>Galium boreale</i>	Northern bedstraw	61	20.0	5	1,220
PDM	<i>Aster ericoides</i>	Heath aster	54	22.5	6	1,215
PD	<i>Schizachyrium scoparium</i>	Little bluestem	35	34.3	6	1,201
PD	<i>Ambrosia artemisiifolia</i>	Common ragweed	62	19.3	7	1,197
SDM	<i>Viola cucullata</i>	Hooded violet	33	35.9	10	1,185
PW	<i>Equisetum arvense</i>	Field horsetail	54	21.9	8	1,183
PWM	<i>Pycnanthemum virginianum</i>	Common mountain-mint	83	14.1	11	1,170
SS	<i>Anemone canadensis</i>	Meadow anemone	33	35.3	6	1,165
PWM	<i>Silphium laciniatum</i>	Compass plant	32	36.3	7	1,162
SB	<i>Panicum virgatum</i>	Switch grass	32	35.0	4	1,120
SD	<i>Helianthus strumosus</i>	Pale-leaved sunflower	41	26.7	6	1,095
PW	<i>Spartina pectinata</i>	Prairie cord grass	83	11.9	12	988
PWM	<i>Asclepias syriaca</i>	Common milkweed	82	12.0	12	984
PW	<i>Solidago gigantea</i>	Late goldenrod	30	31.3	4	939
PD	<i>Sporobolus heterolepis</i>	Prairie dropseed	41	22.0	5	902
PWM	<i>Silphium integrifolium</i> <sup>R</sup>	Rosinweed	52	16.8	8	874
PWM	<i>Liatris pycnostachya</i>	Prairie blazing star	30	27.3	4	819
PD	<i>Solidago nemoralis</i>	Old-field goldenrod	39	20.6	10	803
PDM	<i>Rhus glabra</i>	Smooth sumac	50	15.0	4	750
PM	<i>Cirsium discolor</i>	Field thistle	67	11.0	10	737
PWM	<i>Allium canadense</i>	Wild onion	32	22.5	6	720
PWM	<i>Lathyrus venosus</i>	Veiny pea	43	16.7	3	718
NS	<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	44	15.7	7	691
CG	<i>Heuchera richardsonii</i>	Prairie alum-root	37	18.6	5	688
PM	<i>Achillea millefolium</i>	Yarrow	61	11.2	9	683
AT	<i>Spiraea alba</i>	Meadowsweet	43	15.8	5	679
PDM	<i>Sorghastrum nutans</i>	Indian grass	33	20.5	6	677
PW	<i>Hypoxis hirsuta</i>	Yellow star-grass	32	20.6	7	659
SD	<i>Potentilla simplex</i>	Common cinquefoil	43	15.3	8	658
SS	<i>Lathyrus palustris</i>	Marsh vetchling	41	15.0	7	615
PDM	<i>Aster pilosus</i>	Hairy aster	30	20.0	5	600

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
PM	<i>Panicum leibergii</i>	Prairie panic-grass	41	14.5	6	595
PM	<i>Lactuca canadensis</i>	Wild lettuce	44	13.3	6	585
AT	<i>Solidago canadensis</i>	Common goldenrod	59	9.6	7	566
PWM	<i>Desmodium canadense</i>	Showy tick-trefoil	56	10.0	5	560
PW	<i>Salix humilis</i>	Prairie willow	50	11.0	8	550
SS	<i>Stachys palustris</i>	Woundwort	24	21.5	4	516
FN	<i>Lycopus americanus</i>	Common water-horehound	30	16.8	8	504
FN	<i>Solidago riddellii</i> <sup>R</sup>	Riddell's goldenrod	33	14.9	10	492
PM	<i>Apocynum cannabinum</i>	Indian hemp	32	15.3	6	490
CG	<i>Tradescantia ohioensis</i>	Common spiderwort	54	9.0	5	486
SD	<i>Cornus racemosa</i>	Gray dogwood	46	10.0	7	460
OB	<i>Lithospermum canescens</i>	Hoary puccoon	39	11.7	6	456
PM	<i>Solidago missouriensis</i>	Missouri goldenrod	56	8.1	8	454
PWM	<i>Dodecatheon meadia</i> <sup>R</sup>	Shooting star	50	8.9	8	445
PW	<i>Zizia aurea</i>	Golden Alexander	63	6.9	8	435
OB	<i>Euphorbia corollata</i>	Flowering spurge	65	6.3	10	410
PWM	<i>Elymus canadensis</i>	Canada wild rye	46	8.3	3	382
FN	<i>Calamagrostis canadensis</i>	Bluejoint grass	54	7.0	5	378
SD	<i>Smilacina stellata</i>	Starry false Solomon's seal	41	8.7	3	357
PD	<i>Erigeron strigosus</i>	Daisy fleabane	48	7.2	9	346
PM	<i>Liatris spicata</i> <sup>R</sup>	Marsh blazing star	11	31.0	5	341
PDM	<i>Sisyrinchium campestre</i>	Prairie blue-eyed grass	28	11.6	7	325
PM	<i>Calystegia sepium</i>	Hedge bindweed	30	10.5	6	315
PDM	<i>Oenothera biennis</i>	Common evening-primrose	37	8.3	3	307
FN	<i>Lysimachia quadriflora</i>	Prairie loosestrife	20	15.2	6	304
FN	<i>Iris virginica</i> v. <i>shrevei</i>	Blue flag	31	9.7	7	301
	<i>Antennaria</i> spp.	Pussytoes	37	8.1	8	300
PM	<i>Eryngium yuccifolium</i> <sup>R</sup>	Rattlesnake master	28	10.0	5	280
NS	<i>Verbena hastata</i>	Blue vervain	11	21.7	3	239
PWM	<i>Gentiana andrewsii</i>	Bottle gentian	37	6.3	7	233
PW	<i>Oxypolis rigidior</i>	Cowbane	52	4.4	8	229
PD	<i>Dalea purpurea</i>	Purple prairie clover	22	10.2	5	224
SDM	<i>Geranium maculatum</i>	Wild geranium	44	5.0	3	220
PD	<i>Asclepias verticillata</i>	Whorled milkweed	22	10.0	4	220
PWM	<i>Carex bicknellii</i>	Sedge	15	12.8	4	192
PW	<i>Galium tinctorium</i>	Stiff bedstraw	17	10.1	7	172
OB	<i>Lespedeza capitata</i>	Round-headed bush-clover	33	4.7	3	155
PWM	<i>Lythrum alatum</i>	Winged loosestrife	19	7.4	5	141
PM	<i>Potentilla arguta</i>	Prairie cinquefoil	28	5.0	6	140
PWM	<i>Vernonia fasciculata</i>	Common ironweed	15	8.3	3	125
PWM	<i>Baptisia lactea</i>	White wild indigo	37	3.3	3	122
PD	<i>Physalis heterophylla</i>	Clammy ground-cherry	24	5.0	4	120
SW	<i>Vitis riparia</i>	Riverbank grape	35	3.3	3	116
PWM	<i>Cicuta maculata</i>	Water-hemlock	32	3.3	3	106
PW	<i>Lilium michiganense</i>	Turk's cap lily	41	2.5	6	103
FN	<i>Asclepias sullivantii</i> <sup>R</sup>	Prairie milkweed	15	6.8	4	102
PWM	<i>Senecio aureus</i>	Golden ragwort	11	8.3	4	91
PM	<i>Viola pedatifida</i>	Prairie violet	9	8.3	3	75
PWM	<i>Blephilia ciliata</i> <sup>R</sup>	Ohio horse-mint	11	6.5	4	72

continued on next page

Table 6. Continued

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
CG	<i>Lobelia spicata</i>	Pale spiked lobelia	32	2.0	7	64
FN	<i>Valeriana edulis</i> <sup>R</sup>	Valerian	11	5.8	4	64
OB	<i>Physalis virginiana</i>	Lance-leaved ground-cherry	19	3.3	3	63
BG	<i>Bromus kalmii</i>	Prairie brome	9	6.7	3	60
SW	<i>Teucrium canadense</i>	Germander	9	5.0	5	45
CG	<i>Scutellaria leonardii</i>	Small skullcap	11	3.3	3	36
PWM	<i>Platanthera leucophaea</i> *	Prairie white fringe orchid	15	1.7	3	26
SD	<i>Corylus americana</i>	American hazelnut	46	2.5	2	
OO	<i>Quercus macrocarpa</i>	Bur oak	41	0.0	1	
PM	<i>Helianthus pauciflorus</i>	Showy sunflower	35	0.0	2	
PD	<i>Amorpha canescens</i>	Leadplant	30	0.0	2	
PM	<i>Ceanothus americanus</i>	New Jersey tea	30	0.0	3	0
PWM	<i>Prenanthes racemosa</i>	Glaucous white lettuce	30	7.5	2	
PWM	<i>Equisetum laevigatum</i>	Smooth scouring-rush	28	0.0	3	0
CG	<i>Anemone cylindrica</i>	Thimbleweed	24	10.0	2	
PM	<i>Heliopsis helianthoides</i>	False sunflower (Ox-eye)	22	5.0	2	
ND	<i>Apocynum androsaemifolium</i>	Spreading dogbane	20	70.0	1	
PD	<i>Coreopsis palmata</i>	Prairie tickseed	20	0.0	1	
PDM	<i>Stipa spartea</i>	Porcupine grass	20	10.0	2	
PM	<i>Desmodium illinoense</i>	Illinois tick-trefoil	19	5.0	1	
FN	<i>Aster lanceolatus</i>	Panicled aster	17	0.0	2	
PM	<i>Baptisia bracteata</i>	Cream wild indigo	17	5.0	1	
PW	<i>Saxifraga pensylvanica</i>	Swamp saxifrage	17			
PW	<i>Krigia biflora</i>	False dandelion	15	5.0	2	
BG	<i>Muhlenbergia racemosa</i>	Upland wild timothy	15	0.0	2	
FN	<i>Polygala senega</i>	Seneca snakeroot	15	35.0	1	
PWM	<i>Cacalia plantaginea</i> <sup>R</sup>	Prairie Indian plantain	13	5.0	2	
PM	<i>Liatris aspera</i>	Rough blazing star	13			
SWM	<i>Lysimachia ciliata</i>	Fringed loosestrife	13			
FN	<i>Pedicularis lanceolata</i>	Swamp betony	13	15.0	1	
	<i>Pyrus ioensis</i>	Iowa crab	13	2.5	2	
SW	<i>Toxicodendron radicans</i>	Poison ivy	13			
PM	<i>Solidago juncea</i>	Early goldenrod	13			
PM	<i>Solidago speciosa</i>	Showy goldenrod	13			
PM	<i>Zizia aptera</i>	Heart-leaved golden Alexander	13	80.0	2	
SW	<i>Ambrosia trifida</i>	Giant ragweed	11			
SDM	<i>Amphicarpa bracteata</i>	Hog peanut	11	5.0	2	
BG	<i>Elymus trachycaulus</i>	Slender wheatgrass	11	35.0	2	
	<i>Mirabilis nyctaginea</i>	Wild four-O'clock	11			
SDM	<i>Polemonium reptans</i>	Jacob's ladder	11			
OB	<i>Polygonatum biflorum</i>	Smooth Solomon's seal	11			
PWM	<i>Polytaenia nuttallii</i> <sup>R</sup>	Prairie parsley	11	10.0	1	
FN	<i>Spiranthes cernua</i>	Nodding ladies' tresses	11	0.0	2	
FN	<i>Asclepias incarnata</i>	Swamp milkweed	9	0.0	2	
PM	<i>Gentiana puberulenta</i>	Downy gentian	9			
PD	<i>Geum triflorum</i>	Prairie smoke	9	5.0	2	
PW	<i>Hierochloa odorata</i>	Sweet grass	9	0.0	1	
SB	<i>Koeleria macrantha</i>	June grass	9	12.5	2	
PB	<i>Lysimachia quadrifolia</i>	Whorled loosestrife	9			
CG	<i>Pedicularis canadensis</i>	Wood betony	9	55.0	1	
CG	<i>Dalea candida</i>	White prairie clover	9			
BG	<i>Pteridium aquilinum</i>	Bracken fern	9			
CG	<i>Silene stellata</i>	Starry campion	9	5.0	1	
SD	<i>Taenidia integerrima</i>	Yellow pimpernel	9	12.5	2	
NDM	<i>Anemone quinquefolia</i>	Wood anemone	7	15.0	1	
SWM	<i>Arenaria lateriflora</i>	Wood sandwort	7	7.0	2	

Modal	Scientific Name	Common Name	% Frequency			
			Stand	Quad	N	CI
OB	<i>Asclepias amplexicaulis</i> <sup>R</sup>	Blunt-leaved milkweed	7	5.0	1	
FN	<i>Aster firmus</i>	Shining aster	7	0.0	1	
SDM	<i>Carex pensylvanica</i>	Pennsylvania sedge	7	45.0	2	
OB	<i>Helianthemum canadense</i>	Common rockrose	7	10.0	1	
PM	<i>Helianthus occidentalis</i>	Western sunflower	7			
PM	<i>Lilium philadelphicum</i>	Prairie lily	7	0.0	1	
PDM	<i>Panicum oligosanthos</i>	Few-flowered panic-grass	7	10.0	1	
SD	<i>Parthenocissus vitacea</i>	Thicket creeper	7			
CG	<i>Polygala sanguinea</i>	Field milkwort	7			
SW	<i>Silphium perfoliatum</i>	Cup plant	7			
PM	<i>Thaspium trifoliatum</i>	Meadow parsnip	7			
OB	<i>Viola sagittata</i>	Arrow-leaved violet	7	2.5	2	
PM	<i>Allium cernuum</i> <sup>R</sup>	Nodding wild onion	6	0.0	2	
PDM	<i>Artemisia ludoviciana</i>	White sage	6			
PD	<i>Asclepias viridiflora</i>	Short green milkweed	6			
OB	<i>Aster linariifolius</i> <sup>R</sup>	Flax-leaved aster	6	10.0	1	
SD	<i>Cypripedium calceolus</i>	Yellow lady-slipper	6			
SC	<i>Erigeron philadelphicus</i>	Marsh fleabane	6	4.5	2	
PM	<i>Gentiana alba</i> *	Cream gentian	6			
PWM	<i>Gentianopsis crinita</i>	Fringed gentian	6	0.0	1	
BG	<i>Hieracium kalmii</i>	Canada hawkweed	6			
SC	<i>Lysimachia lanceolata</i>	Lance-leaved loosestrife	6			
FN	<i>Parnassia glauca</i>	Grass-of-Parnassus	6	0.0	1	
PWM	<i>Physostegia virginiana</i>	False dragonhead	6	12.0	1	
SDM	<i>Prenanthes alba</i>	Lion's foot	6			
BF	<i>Sanicula marilandica</i>	Sanicle		6	7.5	2
CG	<i>Scrophularia lanceolata</i>	Early figwort	6			
CG	<i>Sium suave</i>	Water parsnip	6	4.5	2	
SD	<i>Smilax herbacea</i>	Carrion flower	6	25.0	1	
SS	<i>Angelica atropurpurea</i>	Great angelica	4			
SW	<i>Apios americana</i>	Ground nut	4			
PWM	<i>Artemisia serrata</i>	Saw-toothed sage	4			
PWM	<i>Asclepias hirtella</i> <sup>R</sup>	Tall green milkweed	4			
SD	<i>Asclepias ovalifolia</i>	Oval milkweed	4	5.0	1	
PWM	<i>Asclepias purpurascens</i> <sup>R</sup>	Purple milkweed	4	0.0	1	
FN	<i>Caltha palustris</i>	Marsh marigold	4	0.0	1	
FN	<i>Campanula aparinoides</i>	Marsh bell-flower	4	0.0	1	
PW	<i>Cirsium muticum</i>	Swamp thistle	4			
FN	<i>Cypripedium candidum</i> *	White lady-slipper	4	0.0	1	
SW	<i>Elymus virginicus</i>	Virginia wild rye	4			
AT	<i>Eupatorium maculatum</i>	Spotted Joe-pye-weed	4	11.5	2	
FN	<i>Eupatorium perfoliatum</i>	Common boneset	4	19.0	2	
PM	<i>Gaura biennis</i>	Biennial gaura	4			
PW	<i>Helenium autumnale</i>	Sneezeweed	4	31.5	2	
PD	<i>Kuhnia eupatorioides</i>	False boneset	4			
PDM	<i>Lactuca ludoviciana</i>	Western wild lettuce	4	0.0	1	
FN	<i>Lobelia kalmii</i> <sup>R</sup>	Bog lobelia	4	0.0	1	
NS	<i>Lycopus uniflorus</i>	Northern bugle-weed	4	0.0	1	
PWM	<i>Napaea dioica</i> <sup>R</sup>	Glade mallow	4			
PM	<i>Oxalis violacea</i>	Violet wood-sorrel	4			
PD	<i>Physalis subglabrata</i>	Tall ground-cherry	4	5.0	1	
	<i>Polygonum amphibium</i>	Water knotweed	4	7.0	2	
PWM	<i>Prenanthes aspera</i> *	Rough white lettuce	4	0.0	1	
PWM	<i>Rudbeckia subtomentosa</i> <sup>R</sup>	Sweet black-eyed Susan	4			
NWM	<i>Rumex verticillatus</i>	Swamp dock	4	26.0	2	

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Table 6. Continued

Modal	Scientific Name	Common Name	% Frequency			CI
			Stand	Quad	N	
NS	<i>Scutellaria galericulata</i>	Marsh skullcap	4	9.5	2	
SD	<i>Smilacina racemosa</i>	False Solomon's seal	4			
AT	<i>Thelypteris palustris</i>	Marsh fern	4	0.0	1	
PD	<i>Verbena stricta</i>	Hoary vervain	4			
CG	<i>Viola pedata</i>	Bird's foot violet	4			
PWM	<i>Camassia scilloides</i> <sup>R</sup>	Wild hyacinth	3			
ND	<i>Agalinis gattingeri</i> <sup>*</sup>	Gattinger's false foxglove	2			
PD	<i>Anemone patens</i>	Pasque flower	2			
CG	<i>Aquilegia canadensis</i>	Wild columbine	2			
PD	<i>Aronia melanocarpa</i>	Black chokeberry	2			
PDM	<i>Asclepias tuberosa</i>	Butterfly weed	2			
PD	<i>Solidago ptarmicoides</i>	Stiff aster	2	5.0	1	
BG	<i>Aster umbellatus</i>	Flat-top aster	2			
PM	<i>Astragalus canadensis</i>	Canadian milkvetch	2			
BOG	<i>Betula pumila</i>	Dwarf birch	2			
AT	<i>Bromus ciliatus</i>	Fringed brome	2			
PW	<i>Cacalia atriplicifolia</i> <sup>R</sup>	Pale Indian plantain	2			
FN	<i>Castilleja coccinea</i>	Indian paintbrush	2			
SDM	<i>Celastrus scandens</i>	Climbing bittersweet	2			
PDM	<i>Cirsium hillii</i> <sup>*</sup>	Prairie thistle	2			
SC	<i>Cornus sericea</i>	Red-osier dogwood	2			
PM	<i>Echinacea pallida</i> <sup>R</sup>	Pale purple coneflower	2			
FN	<i>Gentianopsis procera</i> <sup>R</sup>	Small-fringed gentian	2	0.0	1	
AT	<i>Geum aleppicum</i>	Yellow avens	2			
FN	<i>Glyceria striata</i>	Fowl meadow-grass	2			
SB	<i>Gnaphalium obtusifolium</i>	Old-field balsam	2			
SB	<i>Hieracium longipilum</i>	Hairy hawkweed	2			
SB	<i>Monarda punctata</i>	Horse mint	2	70.0	1	
PDM	<i>Muhlenbergia cuspidata</i> <sup>R</sup>	Prairie satin-grass	2	10.0	1	
PW	<i>Oenothera perennis</i>	Small sundrops	2			
AT	<i>Onoclea sensibilis</i>	Sensitive fern	2			
FN	<i>Ophioglossum vulgatum</i>	Northern adder's tongue fern	2			
OB	<i>Panicum praecocius</i>	Early panic-grass	2			
PWM	<i>Parthenium integrifolium</i> <sup>R</sup>	Wild quinine	2			
PWM	<i>Platanthera flava</i> <sup>*</sup>	Tuberclad orchid	2			
SB	<i>Polygala polygama</i>	Purple milkwort	2			
PWM	<i>Prenanthes crepidinea</i> <sup>R</sup>	Great white lettuce	2			
	<i>Prunus americana</i>	Wild plum	2	15.0	1	
OO	<i>Ranunculus fascicularis</i>	Early buttercup	2			
SWM	<i>Ranunculus hispidus</i> v. <i>nitidus</i>	Swamp buttercup	2			
SW	<i>Rudbeckia laciniata</i>	Wild golden-glow	2			
	<i>Salix</i> spp.	Willow		2	0	
SDM	<i>Triosteum perfoliatum</i>	Late horse-gentian	2			
OO	<i>Zigadenus elegans</i>	White camas lily	2			

## Modal Community Abbreviations

AOST	Alder Thicket	ND	Northern Dry Forest	PD	Dry Prairie	SC	Shrub Carr
BG	Bracken-Grassland	NDM	Northern Dry-Mesic Forest	PDM	Dry-Mesic Prairie	SD	Southern Dry Forest
BF	Boreal Forest	NS	Northern Sedge Meadow	PM	Mesic Prairie	SDM	Southern Dry-Mesic Forest
BOG	Open Bog	NWM	Northern Wet-Mesic Forest	PW	Wet Prairie	SS	Southern Sedge Meadow
CG	Cedar Glade	OB	Oak Barrens	PWM	Wet-Mesic Prairie	SW	Southern Wet Forest
FN	Fen	OO	Oak Opening	SB	Sand Barren	SWM	Southern Wet-Mesic Forest

<sup>R</sup> Range limited within the prairie province of Wisconsin.

<sup>\*</sup> Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

# APPENDIXES

## APPENDIX A. Recent scientific name changes.

New name	Old name
<i>Agalinis aspera</i>	<i>Gerardia a.</i>
<i>Agalinis gattingeri</i>	<i>Gerardia g.</i>
<i>Artemisia campestris</i>	<i>A. caudata</i>
<i>Aster firmus</i>	<i>A. lucidulus</i>
<i>Aster lanceolatus</i>	<i>A. simplex</i>
<i>Aster oolentangiensis</i>	<i>A. azureus</i>
<i>Aster urophyllus</i>	<i>A. sagittifolius</i>
<i>Baptisia bracteata</i>	<i>B. leucophaea</i>
<i>Baptisia lactea</i>	<i>B. leucantha</i>
<i>Cacalia plantaginea</i>	<i>C. tuberosa</i>
<i>Ceanothus herbaceus</i>	<i>C. ovatus</i>
<i>Chamaecrista fasciculata</i>	<i>Cassia f.</i>
<i>Calystegia sepium</i>	<i>Convolvulus s.</i>
<i>Calystegia spithamea</i>	<i>Convolvulus spithameus</i>
<i>Cornus sericea</i>	<i>C. stolonifera</i>
<i>Dalea candida</i>	<i>Petalostemum candidum</i>
<i>Dalea purpurea</i>	<i>Petalostemum purpureum</i>
<i>Elymus trachycaulus</i>	<i>Agropyron trachycaulum</i>
<i>Euthamia graminifolia</i>	<i>Solidago g.</i>
<i>Gentiana puberulenta</i>	<i>G. puberula</i>
<i>Hedyotis caerulea</i>	<i>Houstonia c.</i>
<i>Hedyotis longifolia</i>	<i>Houstonia l.</i>
<i>Helianthus pauciflorus</i>	<i>H. laetiflorus</i>
<i>Hieracium kalmii</i>	<i>H. canadense</i>
<i>Koeleria macrantha</i>	<i>K. cristata</i>
<i>Oenothera clelandii</i>	<i>O. rhombipetala</i>
<i>Opuntia humifusa</i>	<i>O. compressa</i>
<i>Panicum lanuginosum</i>	<i>P. implicatum</i>
<i>Parthenocissus vitacea</i>	<i>P. inserta</i>
<i>Pediemelum argophyllum</i>	<i>Psoralea argophylla</i>
<i>Pediemelum esculentum</i>	<i>Psoralea esculenta</i>
<i>Platanthera flava</i>	<i>Habenaria f.</i>
<i>Platanthera leucophaea</i>	<i>Habenaria l.</i>
<i>Polygonatum biflorum</i>	<i>P. canaliculatum</i>
<i>Ranunculus hispidus</i> v. <i>nitidus</i>	<i>R. septentrionalis</i>
<i>Schizachyrium scoparium</i>	<i>Andropogon scoparius</i>
<i>Solidago ptarmicoides</i>	<i>Aster p.</i>
<i>Toxicodendron radicans</i>	<i>Rhus r.</i>

**APPENDIX B.** *Species of limited range within the prairie province of Wisconsin.*

Species	Degree of Limitation	Location Within Prairie Province*
<i>Allium cernuum</i>	Extreme	In southern and eastern edges
<i>Artemisia frigida</i>	Slight	Missing from southwest
<i>Asclepias amplexicaulis</i>	Slight	Missing from northwest
<i>Asclepias hirtella</i>	Slight	Missing from western 1/4
<i>Asclepias purpurascens</i>	Moderate	In south and east
<i>Asclepias sullivantii</i>	Moderate	In southeast
<i>Aster linariifolius</i>	Moderate	In north central and south
<i>Aster oblongifolius</i>	Moderate	In western 2/3
<i>Astragalus crassicaarpus</i>	Extreme	In northwest corner
<i>Besseya bullii</i>	Moderate	Split; in NW and SE 1/4s
<i>Blephilia ciliata</i>	Moderate	In southeast
<i>Bouteloua hirsuta</i>	Slight	Missing from eastern 1/4
<i>Cacalia atriplicifolia</i>	Slight	Missing from NW 1/3
<i>Cacalia plantaginea</i>	Moderate	In southern two tiers of counties
<i>Cacalia suaveolens</i>	Slight	In south 1/2
<i>Callirhoe triangulata</i>	Moderate	In southwest
<i>Camassia scilloides</i>	Extreme	In south edge
<i>Delphinium virescens</i>	Moderate	In northwest
<i>Dodecatheon meadia</i>	Moderate	Missing from northwest 1/2
<i>Echinacea pallida</i>	Moderate	In southern two tiers of counties
<i>Eryngium yuccifolium</i>	Moderate	In southern two tiers of counties
<i>Gentianopsis procera</i>	Moderate	Split; in NW 1/4 and E 1/2
<i>Hedyotis caerulea</i>	Extreme	In southeast
<i>Hypericum canadense</i>	Moderate	In west central
<i>Hypericum mutilum</i>	Moderate	In west central
<i>Liatris punctata</i>	Extreme	In northwest corner
<i>Liatris spicata</i>	Extreme	In southeast corner
<i>Lobelia kalmii</i>	Slight	Missing from southwest
<i>Microseris cuspidata</i>	Slight	Missing from eastern 1/3
<i>Muhlenbergia cuspidata</i>	Moderate	In western 1/2
<i>Napaea dioica</i>	Slight	Missing from eastern 1/4
<i>Opuntia humifusa</i>	Slight	Missing from northeast
<i>Parthenium integrifolium</i>	Moderate	In southern 1/4
<i>Pediomelum argophyllum</i>	Extreme	In northwest corner
<i>Pediomelum esculentum</i>	Moderate	In western 2/3
<i>Penstemon gracilis</i>	Slight	Missing from southeast
<i>Penstemon hirsutus</i>	Moderate	In southeast 1/4
<i>Phlox glaberrima</i>	Extreme	In southeast 1/4
<i>Polytaenia nuttallii</i>	Slight	Missing from western 1/3
<i>Prenanthes crepidinea</i>	Moderate	In southwest
<i>Rudbeckia subtomentosa</i>	Moderate	In southern 1/4
<i>Silphium integrifolium</i>	Slight	Missing from northwest 1/3
<i>Silphium terebinthinaceum</i>	Moderate	In eastern 2/3
<i>Solidago ohioensis</i>	Extreme	In southeast corner
<i>Solidago riddellii</i>	Moderate	In eastern 1/2
<i>Tofieldia glutinosa</i>	Moderate	In eastern 1/2
<i>Valeriana edulis</i>	Slight	Missing from northwest 1/3

\* See Figure 1 for the boundaries of the prairie province of Wisconsin. The descriptors of south, southeast, north, etc. are in reference to this area of the state and not the entire state.

**APPENDIX C.** Estimates of average number of clean seeds per unit weight.<sup>1</sup>

Species	Seeds/gram	Seeds/ounce	Seeds/pound
<i>Allium cernuum</i>	271	7,680	122,900
<i>Amorpha canescens</i>	599	16,950	271,700
<i>Andropogon gerardii</i>	289	8,180	131,100
<i>Asclepias incarnata</i>	159	4,500	72,100
<i>Asclepias tuberosa</i>	123	3,480	55,800
<i>Aster laevis</i>	1,690	47,830	766,600
<i>Aster novae-angliae</i>	2,470	69,900	1,120,400
<i>Aster oolentangiensis</i>	2,890	81,800	1,310,900
<i>Aster sericeus</i>	952	26,940	431,800
<i>Astragalus canadensis</i>	564	15,960	255,800
<i>Baptisia bracteata</i>	60	1,700	27,200
<i>Baptisia lactea</i>	56	1,585	25,400
<i>Bouteloua curtipendula</i>	282	7,980	127,900
<i>Coreopsis palmata</i>	423	11,970	191,900
<i>Dalea candida</i>	560	15,850	254,000
<i>Dalea purpurea</i>	705	19,950	319,800
<i>Desmodium canadense</i>	159	4,500	72,100
<i>Echinacea pallida</i>	176	4,580	79,800
<i>Elymus canadensis</i>	148	4,190	67,100
<i>Eryngium yuccifolium</i>	282	7,980	127,900
<i>Euphorbia corollata</i>	352	9,960	159,700
<i>Helianthus pauciflorus</i>	162	4,580	73,500
<i>Helianthus occidentalis</i>	458	12,960	207,700
<i>Heliopsis helianthoides</i>	229	6,480	103,900
<i>Lespedeza capitata</i>	352	9,960	159,700
<i>Liatris aspera</i>	476	13,470	215,900
<i>Liatris pycnostachya</i>	423	11,970	191,900
<i>Lupinus perennis</i>	35	990	15,900
<i>Monarda fistulosa</i>	2,750	77,800	1,247,400
<i>Monarda punctata</i>	3,310	93,700	1,501,400
<i>Panicum virgatum</i>	634	17,940	287,600
<i>Parthenium integrifolium</i>	240	6,790	108,900
<i>Penstemon gracilis</i>	7,330	207,400	3,325,000
<i>Penstemon grandiflorus</i>	388	10,980	176,000
<i>Ratibida pinnata</i>	952	26,940	431,800
<i>Rudbeckia hirta</i>	3,520	99,600	1,597,000
<i>Rudbeckia subtomentosa</i>	1,620	45,850	734,800
<i>Schizachyrium scoparium</i>	310	8,770	140,600
<i>Silphium integrifolium</i>	141	3,990	64,000
<i>Silphium laciniatum</i>	23	650	10,400
<i>Silphium terebinthinaceum</i>	39	1,110	17,700
<i>Solidago rigida</i>	1,620	45,850	734,800
<i>Solidago speciosa</i>	3,700	104,700	1,678,000
<i>Sorghastrum nutans</i>	293	8,290	132,900
<i>Sporobolus heterolepis</i>	493	13,950	223,600
<i>Thalictrum dasycarpum</i>	490	13,870	222,300
<i>Tradescantia ohiensis</i>	282	7,980	127,900
<i>Verbena stricta</i>	1,130	31,980	512,600
<i>Zizia aurea</i>	423	11,970	191,900

<sup>1</sup> Estimates were compiled by Scott Weber, Bureau of Endangered Resources, Wisconsin Department of Natural Resources.



APPENDIX D. Some suggested generic seeding rates and mixes (grams/acre).<sup>1</sup>

Species	Sites			
	Dry	Dry-mesic	Mesic	Wet-mesic
<i>Allium canadense</i>			30	45
<i>Allium cernuum</i> <sup>R</sup>			60	
<i>Amorpha canescens</i>	90	120	50	
<i>Anemone canadensis</i>				30
<i>Anemone cylindrica</i>	10	15	20	
<i>Anemone patens</i>	25	10		
<i>Andropogon gerardii</i>	145	170	130	105
<i>Apocynum androsaemifolium</i>		2	15	
<i>Arenaria stricta</i>	10	2		
<i>Artemisia campestris</i>	25	12		
<i>Artemisia ludoviciana</i>		1		
<i>Asclepias hirtella</i> <sup>R</sup>				5
<i>Asclepias sullivantii</i> <sup>*R</sup>			15	20
<i>Asclepias tuberosa</i>		5	1	
<i>Asclepias viridiflora</i>	3	8		
<i>Asclepias verticillata</i>	80	30	20	15
<i>Aster ericoides</i>	5	10	20	5
<i>Aster laevis</i>	1	8	55	25
<i>Aster linariifolius</i> <sup>R</sup>		5		
<i>Aster novae-angliae</i>			3	10
<i>Aster oblongifolius</i> <sup>R</sup>	14	10	7	
<i>Aster oolentangiensis</i>	1	8		15
<i>Aster sericeus</i>	100	70		
<i>Aster urophyllus</i>				10
<i>Astragalus canadensis</i>			1	
<i>Baptisia bracteata</i>			30	
<i>Baptisia lactea</i>		7	70	55
<i>Blephilia ciliata</i> <sup>R</sup>				1
<i>Bouteloua curtipendula</i>	380	325		
<i>Bouteloua hirsuta</i> <sup>R</sup>	100	20		
<i>Calamagrostis canadensis</i>				13
<i>Campanula rotundifolia</i>	2	1		
<i>Carex bicknellii</i>				5
<i>Carex meadii</i>		15	20	5
<i>Carex umbellata</i>	20	5		
<i>Castilleja sessiliflora</i>	10	7		
<i>Cicuta maculata</i>				4

Species	Sites			
	Dry	Dry-mesic	Mesic	Wet-mesic
<i>Cirsium discolor</i>		2	30	20
<i>Cirsium hillii</i> *		2		
<i>Ceanothus americanus</i>		20	10	
<i>Comandra umbellata</i>	5	50	10	25
<i>Coreopsis palmata</i>	45	55	35	
<i>Dalea candida</i>		13	5	
<i>Dalea purpurea</i>	90	70	20	7
<i>Desmodium canadense</i>			12	70
<i>Desmodium illinoense</i>		25	100	
<i>Dodecatheon meadia</i> <sup>R</sup>		5	5	5
<i>Echinacea pallida</i> <sup>R</sup>			45	
<i>Elymus canadensis</i>		13	10	15
<i>Eryngium yuccifolium</i> <sup>R</sup>		18	70	20
<i>Eupatorium altissimum</i>			1	
<i>Euphorbia corollata</i>	180	180	135	15
<i>Euthamia graminifolia</i>			3	5
<i>Fragaria virginiana</i>			15	20
<i>Galium boreale</i>			5	30
<i>Gaura biennis</i>			5	
<i>Gentiana alba</i> *			1	
<i>Gentiana andrewsii</i>			1	2
<i>Gentiana puberulenta</i>		2	2	
<i>Gentianella quinquefolia</i>		1		
<i>Geranium maculatum</i>				5
<i>Geum triflorum</i>	15	25		
<i>Helianthus occidentalis</i>	20	30	15	
<i>Helianthus pauciflorus</i>	30	160	50	
<i>Helianthus strumosus</i>			20	20
<i>Heliopsis helianthoides</i>			30	
<i>Heuchera richardsonii</i>		3	2	7
<i>Hieracium longipilum</i>		3		
<i>Hypoxis hirsuta</i>			1	7
<i>Koeleria macrantha</i>	50	10		
<i>Kuhnia eupatorioides</i>	10	6		
<i>Lactuca ludoviciana</i>		1		
<i>Lathyrus palustris</i>				20
<i>Lathyrus venosus</i>			60	45

continued on next page

Appendix 4. Continued

Species	Sites			
	Dry	Dry-mesic	Mesic	Wet-mesic
<i>Lespedeza capitata</i>		11	60	8
<i>Liatris aspera</i>	60	60	55	
<i>Liatris cylindracea</i>	100	50		
<i>Liatris pycnostachya</i>				
<i>Lilium michiganense</i>			1	1
<i>Lilium philadelphicum</i>			1	
<i>Linum sulcatum</i>	20	8		
<i>Lithospermum canescens</i>	15	20	20	15
<i>Lithospermum incisum</i>	40	15		
<i>Lobelia spicata</i>	1	2		1
<i>Lysimachia quadriflora</i>				10
<i>Lythrum alatum</i>				1
<i>Microseris cuspidata</i> <sup>R</sup>		1		
<i>Monarda fistulosa</i>		3	12	13
<i>Monarda punctata</i>				
<i>Muhlenbergia cuspidata</i>	20	20		
<i>Muhlenbergia racemosa</i>			5	
<i>Oenothera biennis</i>	5	3	2	5
<i>Oxalis violacea</i>			2	
<i>Oxypolis rigidior</i>				10
<i>Panicum leibergii</i>	3	25	50	15
<i>Panicum oligosanthos</i>	15	20	10	
<i>Panicum perlongum</i>	60	45		
<i>Panicum praecocius</i>		4		
<i>Panicum virgatum</i>			5	25
<i>Parthenium integrifolium</i> <sup>*R</sup>			10	2
<i>Pedicularis canadensis</i>		25		
<i>Penstemon digitalis</i>			1	
<i>Penstemon gracilis</i> <sup>R</sup>				
<i>Phlox pilosa</i>		20	50	40
<i>Polygala senega</i>		1	10	
<i>Polytaenia nuttallii</i> <sup>*R</sup>			10	1
<i>Potentilla arguta</i>	15	10	10	1
<i>Potentilla simplex</i>				3
<i>Prenanthes racemosa</i>			3	2
<i>Pycnanthemum virginianum</i>		1	10	25

Species	Sites			
	Dry	Dry-mesic	Mesic	Wet-mesic
<i>Ratibida pinnata</i>	3	17	80	110
<i>Rosa</i> spp.	200	220	180	100
<i>Rudbeckia hirta</i>	1	2	2	8
<i>Rudbeckia subtomentosa</i> <sup>R</sup>				1
<i>Schizachyrium scoparium</i>	340	260	60	75
<i>Senecio aureus</i>				2
<i>Silphium integrifolium</i> <sup>R</sup>		28	150	125
<i>Silphium laciniatum</i>		520	650	980
<i>Silphium terebinthinaceum</i> <sup>R</sup>			960	1,260
<i>Sisyrinchium campestre</i>	10	10	1	5
<i>Smilacina stellata</i>				70
<i>Solidago missouriensis</i>		2	5	3
<i>Solidago nemoralis</i>	15	15	3	6
<i>Solidago riddellii</i> <sup>R</sup>				5
<i>Solidago rigida</i>	20	17	45	45
<i>Solidago ptarmicoides</i>	10	15		
<i>Solidago speciosa</i>		2	3	
<i>Sorghastrum nutans</i>	6	40	65	50
<i>Spartina pectinata</i>			5	20
<i>Sporobolus cryptandrus</i>	5			
<i>Sporobolus heterolepis</i>	105	100	55	50
<i>Stachys palustris</i>				2
<i>Stipa spartea</i>	450	1,000	450	
<i>Taenidia integerrima</i>			4	
<i>Tephrosia virginiana</i>		3		
<i>Thalictrum dasycarpum</i>			15	60
<i>Tradescantia ohiensis</i>	55	20	85	35
<i>Verbena stricta</i>	7			
<i>Vernonia fasciculata</i>				1
<i>Veronicastrum virginicum</i>			8	45
<i>Vicia americana</i>			30	40
<i>Viola cucullata</i>			5	30
<i>Viola pedata</i>	20	30		
<i>Viola pedatifida</i>	20	20	30	1
<i>Zizia aptera</i>			35	
<i>Zizia aurea</i>			3	20

<sup>1</sup> Calculated to provide a total seeding rate of approximately 30 seeds per square foot.

<sup>R</sup> Range limited within the prairie province of Wisconsin.

\* Listed as Endangered or Threatened in Wisconsin. A permit is required to sell, propagate, or collect seeds of these species. Planting of these species into sites that may be confused with natural prairie remnants in the future is allowed **only** if documentation of the planting is provided to the Bureau of Endangered Resources, Wisconsin Department of Natural Resources.

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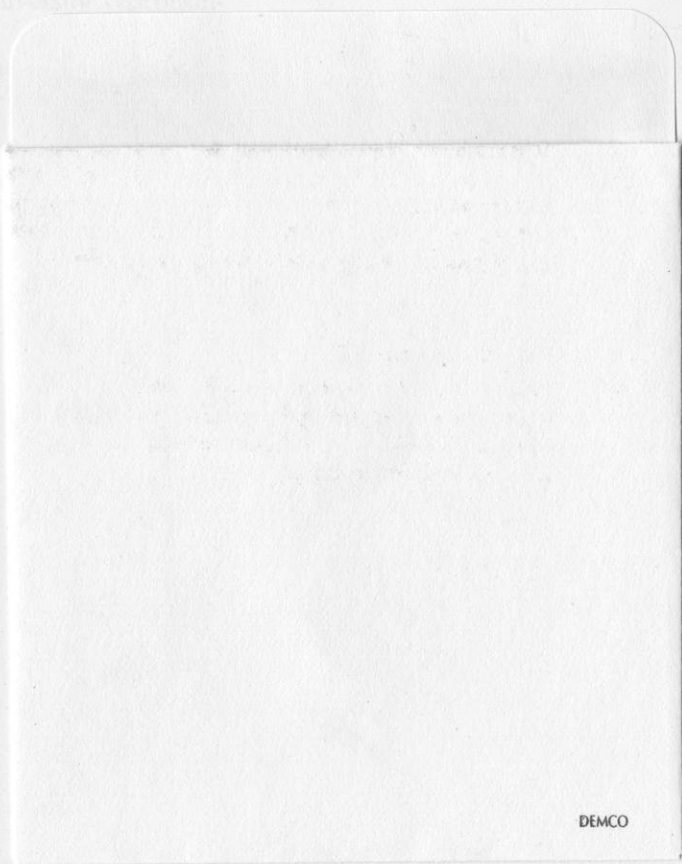
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