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Plant Communities of the LaCrosse Area In Western Wisconsin¹

THOMAS G. HARTLEY

Abstract. Following an areal description, sixteen plant communities of the LaCrosse Area of western Wisconsin are described, and lists of characteristic or otherwise interesting vascular plants are presented for each. These lists include 807 different species of vascular plants. The habitats and numbers of species listed for each are as follows: lakes, ponds, sloughs, rivers, streams, shorelines and marshes, 151; alluvial woods, 35; low, sandy woods, 17; tamarack bogs, 62; seepage bogs, 19; sandy sphagnum meadow, 26; sedge meadows, 32; dry, loamy, upland woods, 59; dry, sandy, upland woods, 65; moist, north- and east-facing, wooded slopes and ravines, 116; dry, sandy prairies, plains and blowouts, 119; steep, west- and south-facing, loamy prairies, 45; dry, limestone ledges and ridges, 8; dry, sandstone ledges and talus, 14; moist, shaded, sandstone ledges, 13; weeds of roadsides, railroads, waste place, fields, yards, etc., 143.

In 1956 this writer made a survey of the vascular plants of the LaCrosse Area (Figure 1) in western Wisconsin. That study was done as a preliminary investigation of the flora of the "Driftless Area." A more extensive study of the entire "Driftless Area" is being made by the author at the present time.

The major field exploration was started in May, 1956, and continued until October, 1956. Over 3,300 collections, representing 1,071 species of vascular plants, were made during that summer afield. The entire first set of these vouchers is deposited in the herbarium of the State University of Iowa and a nearly complete second set in the herbarium of the University of Wisconsin. Since 1956 the author has collected an additional forty-nine species in the LaCrosse Area bringing the total number of species collected to 1,120. Several of these additional species are included in this paper and vouchers will be deposited in the herbarium of the State University of Iowa.

This study was done under the direction of Dr. Robert F. Thorne of the State University of Iowa, whose valuable assistance and advice are gratefully acknowledged here. Thanks are also extended to the author's father, Dr. Richard T. Hartley of the Wisconsin State College at LaCrosse and Mr. Alvin M. Peterson of Onalaska, Wisconsin, for pointing out some excellent areas for study; to Dr.

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Norman H. Russell of Arizona State University, who identified the author's collections of the genus *Viola*; and to Dr. Tom S. Cooper-rider of Kent State University, who checked the author's identifications of the Pteridophytes.

The author is also grateful for funds supplied by the National Science Foundation which alleviated much of the expense of the field work.

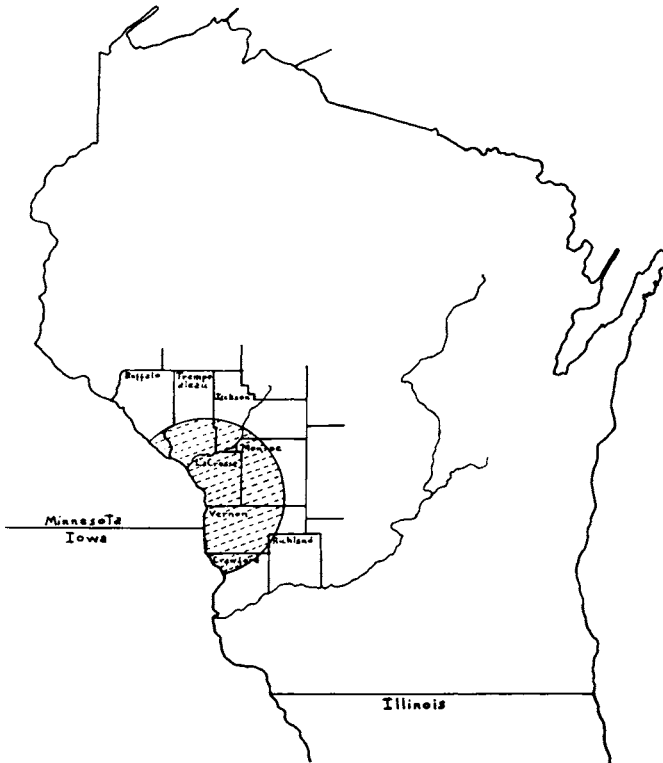


Figure 1. Outline map of Wisconsin. The shaded portion indicates the area considered in this study. It is within a forty mile radius of the city of LaCrosse.

Topography and Geology. The area considered in this study, besides being entirely within the "Driftless Area," is located in the geographical province of Wisconsin known as the Western Upland. As the name indicates, this is a highland region. In many ways it resembles parts of the rugged Allegheny Plateau of eastern United States.

This portion of the Western Upland is a part of a cuesta which is dissected into a maze of ridges and coulees. (The French name coulee is the local designation for valley.) Dissection is very deep

because of the close proximity of the deep gorge of the Mississippi River and the consequent low base level of its tributaries. This cuesta, known as the Lower Magnesian Cuesta, is formed by Prairie du Chien (Lower Magnesian) limestone. In general, it lies parallel to the Mississippi and has an east-facing escarpment. There is a general decrease in elevation from north to south, the highest elevation being 1,403 feet above sea level at Wadels Hill in LaCrosse County. The elevation of the Mississippi floodplain is 649 feet at Trempealeau in the north and 617 feet at DeSoto in the south.

To the north of LaCrosse the streams have long since cut through the more resistant limestone and have entrenched themselves in the weaker Cambrian sandstone. Also, most of the limestone has been eroded from the summits of the ridges. These valleys are often two or so miles wide and are usually separated by broad sandstone ridges.

To the south of LaCrosse, stream erosion has not progressed so far. Although all the valleys have cut through the Prairie du Chien limestone and into the Cambrian sandstone, they are relatively narrow and are separated by steep-sided ridges capped by limestone.

The tremendous gorge cut by the Mississippi River is the most prominent surface feature of this region. Bordered by steep, rugged bluffs, this gorge ranges from three to almost seven miles in width. The broad, flat floodplain and braided pattern of the river channels indicate maturity, whereas the steep cliffs on the bluffs indicate the younger aspect of the river. The fact that the Mississippi River gorge was partly filled with fluvio-glacial deposits during the last period of glacial activity of the Pleistocene accounts for the mature nature of the floodplain in an otherwise youthful gorge. The steep river bluffs reach their greatest development near Trempealeau in the northern part of the region. Here they rise 611 feet above the river floodplain and are exceedingly steep, descending more than 500 feet within a horizontal distance of 800 feet (Martin, 1932).

Because of the absence of continental glaciation during the Pleistocene, many of the land forms of this area show the effects of millions of years of undisturbed weathering and erosion. The most prominent of these are the picturesque crags, pinnacles, and rock towers. These structures, formed by weathering and wind erosion, are generally absent in glaciated regions. They are common features of the Mississippi River bluffs where columns of rock have been separated from adjacent cliffs. Solitary rock towers, rising above otherwise quite level land are rather common features of the upland regions of sandstone. Monument Rock, in Vernon County, is a rock tower of this sort. It is about forty feet high and twice as wide at the top as at the base (Martin, 1932).

Climatic conditions may have been such that the vegetational cover of this area was greatly reduced during Pleistocene glacial periods. Consequent to this, erosion may have progressed at a greatly accelerated rate, especially in areas of sandy soil. There are several areas of active dunes in the upland regions to the north of LaCrosse which may have formed by accumulation of wind-blown sands during these times.

The silt-like, windblown loess which mantles the bluffs bordering the Mississippi River is considered glacial in origin. This material is thought to have been distributed over these bluffs during and immediately following glacial periods. Intermediate in fineness between clay and sand, the source of much of the loess may have been the finer portions of the fluvio-glacial deposits of the Mississippi.

The extensive, bench-like terraces along the Mississippi are also indirectly glacial in origin. During glacial periods of the Pleistocene epoch this river aggraded its valley more than 200 feet with fluvio-glacial materials. Subsequent meandering of the river upon this sandy plain has cut a series of terraces. The city of LaCrosse is built on such a structure.

The bedrock of this region was formed over 400 million years ago during the early part of the Paleozoic era. The oldest formation is the Upper Cambrian sandstone. Underlying the entire region, this rock is exposed at the surface over most of the area north of the city of LaCrosse and in the valleys to the south of LaCrosse. Prairie du Chien limestone is the next oldest rock of the area. Formed during the Ordovician period, this more resistant rock is prevalent south of LaCrosse where it overlies the Cambrian sandstone on practically every ridge and hill. The most recent rock formation is St. Peter sandstone. Also formed during the Ordovician, this rock is found to the south of LaCrosse in central Vernon County. Here it overlies the Ordovician limestone in the higher upland regions.

Drainage. In accordance with the maturely-dissected topography of this region, drainage is accomplished by a dendritic pattern of rivers and streams. Entirely within the Mississippi River system, the area studied is drained by four secondary river systems—the Trempealeau River, Black River, LaCrosse River, and the Wisconsin River. The northern and central regions are drained by the Trempealeau, Black, and LaCrosse rivers and their tributaries. The southeastern part of the area is drained by the Kickapoo River, a tributary of the Wisconsin River. In the southwest, drainage is effected by several small streams which flow directly into the Mississippi.

The only natural lakes in this region are of the ox-bow type and are located along the rivers.

Climatological Data. The approximate position of this region is between $43^{\circ} 15'$ and $44^{\circ} 15'$ north latitude. Because of its position, about 1,000 miles from both the Atlantic Ocean and the Gulf of Mexico, it has a continental climate expressed by very cold winters and rather hot summers.

The average January temperature along the Mississippi River at LaCrosse is 16.1° F. and the July average is 72.8° F. Approximately fifty miles to the east at Hillsboro (Vernon County) the average January temperature is 14° F. and the July average is 69.6° F. These averages are based on a forty year period of observation. The extreme range for the area is from 109° F. to -51° F.

The average annual precipitation ranges from 31.19 inches at Blaire (Trempealeau County) to 33.19 inches at Viroqua (Vernon County). About half of this comes in May, June, July, and August. Most of the winter precipitation comes in the form of snow, the average annual snowfall being about 40 inches. The overall annual precipitation is sufficient to supply all but the smallest streams of the area with water the year round. Also it supports sufficient vegetation so that the run-off is well regulated except in areas that have been generally modified by settlement.

Records kept at LaCrosse for a period of forty years indicate that the average growing season is 163 days free from killing frost. The average date of the first killing frost in the fall is October 9 and that of the last killing frost in the spring is April 29. Similar records kept at Hillsboro, to the east, indicate a shorter growing season of 129 days with the average date of the first killing frost in the fall September 23 and that of the last killing frost in the spring May 17.

Soils. Pedologists recognize sixteen soil types in this region. A discussion of the nature and distribution of these types, however, is not considered essential to this paper. Rather, the general soil types will be treated here in two categories, transported and residual, and discussed briefly.

Transported soils of this area include those that were carried by winds and by running water. The major portion of the mantle of loess that covers nearly all of the upland to the south and east of LaCrosse was wind-transported. It is extremely silty at the surface with the clay content gradually increasing as the underlying limestone is reached. Covering much of the region to a depth of ten feet or more, this soil is of considerable agricultural value except on the steep slopes. The sandy dunes found in the northern part of the region are also composed of wind-blown material. Agriculturally, these dune areas are wastelands. Their origin was discussed in connection with the geology of this region. The river terraces,

all of which are above the present flood plain, are composed of stream-transported materials ranging from fine sandy loam to gravely sandy loam. They provide some of the finest agricultural land of this region. The present flood plains of these rivers and streams, many areas of which are subject to periodical overflow, possess soil of a mixed nature. Usually too wet to be cultivated, most of these areas are characterized by alluvial forests, marshes, and open meadows.

Most of the residual soil of this area is found where the rapidly-weathering sandstone is at the surface. This soil ranges from very sandy, sterile soil to a sandy loam of relatively high agricultural value. Soil classed as peat may also be treated here as residual. Found in a few low-lying areas, this soil consists of vegetable matter in various stages of decomposition. Because of its wet nature and acidity it is of little use agriculturally.

PLANT COMMUNITIES

The topography and geology of this region is such that there are a number of noteworthy botanical areas. Each of these areas, or habitats, is characterized by various species of plants which make up a particular plant community. Following are descriptions of these various habitats with lists of characteristic or otherwise interesting plants of each. In order to show an over-all picture of the LaCrosse Area flora, composite lists of plants are presented for each habitat. For example, the list of species given as characteristic of tamarack bogs was derived from collection and observation data obtained in the study of six different bogs of the region. Inasmuch as all the vascular plants listed in this paper were collected by the author in 1956 or since, they are representative of the extant flora of the LaCrosse Area.

The nomenclature used is largely that of *Gray's Manual of Botany, 8th Edition*, and the *New Britton and Brown Illustrated Flora*. Species not native to this area are indicated by an asterisk. Although the family names are not listed, the species are listed by families in Englerian sequence.

1. Lakes, ponds, sloughs, rivers, streams, shorelines and marshes. The Mississippi River, with its associated sloughs and marshes, provides habitats for a large number of marsh, shoreline, and aquatic plants. Lake Onalaska, a large impoundment of the Mississippi and Black rivers backed up behind U. S. Dam and Lock Number 7, probably yields the largest number of these plants in the LaCrosse Area. Covering about sixteen square miles, this lake is rather shallow, has numerous islands, and is bordered on the north and east by extensive marshes and alluvial woods.

<i>Equistum fluviatile</i>	<i>Spirodela polyrhiza</i>
<i>Onoclea sensibilis</i>	<i>Wolffia columbiana</i>
<i>Thelypteris palustris</i>	<i>Wolffia punctata</i>
<i>Azolla mexicana</i>	<i>Heteranthera dubia</i>
<i>Typha latifolia</i>	<i>Pontederia cordata</i>
<i>Sparganium americanum</i>	<i>Iris virginica</i>
(incl. <i>S. androcladum</i>)	var. <i>shrevei</i>
<i>Sparganium chlorocarpum</i>	<i>Salix amygdaloides</i>
<i>Sparganium eurycarpum</i>	<i>Salix discolor</i>
<i>Potamogeton amplifolius</i>	<i>Salix gracilis</i>
* <i>Potamogeton crispus</i>	<i>Salix interior</i>
<i>Potamogeton diversifolius</i>	<i>Salix nigra</i>
<i>Potamogeton epiphydrus</i>	<i>Polygonum amphibium</i>
<i>Potamogeton foliosus</i>	<i>Polygonum arifolium</i>
<i>Potamogeton nodosus</i>	<i>Polygonum coccineum</i>
<i>Potamogeton pectinatus</i>	<i>Polygonum hydropiperoides</i>
<i>Potamogeton pusillus</i>	<i>Polygonum lapathifolium</i>
<i>Potamogeton richardsonii</i>	<i>Polygonum punctatum</i>
<i>Potamogeton vaseyi</i>	<i>Polygonum sagittatum</i>
<i>Potamogeton zosteriformis</i>	<i>Rumex verticillatus</i>
<i>Zannichellia palustris</i>	<i>Amaranthus tamaricinus</i>
<i>Najas flexilis</i>	<i>Amaranthus tuberculatus</i>
<i>Alisma subcordatum</i>	<i>Ceratophyllum demersum</i>
<i>Sagittaria cristata</i>	<i>Nelumbo lutea</i>
<i>Sagittaria cuneata</i>	<i>Nuphar advena</i>
<i>Sagittaria engelmanniana</i>	<i>Nymphaea tuberosa</i>
<i>Sagittaria latifolia</i>	<i>Ranunculus aquatilis</i>
<i>Sagittaria montevidensis</i>	<i>Ranunculus flabellaris</i>
<i>Sagittaria rigida</i>	<i>Ranunculus pennsylvanicus</i>
<i>Elodea canadensis</i>	<i>Ranunculus sceleratus</i>
<i>Elodea nuttallii</i>	* <i>Nasturtium officinale</i>
<i>Vallisneria americana</i>	<i>Rorippa islandica</i>
<i>Echinochloa pungens</i>	<i>Potentilla palustris</i>
<i>Echinochloa walteri</i>	<i>Rosa palustris</i>
<i>Eragrostis hypnoides</i>	<i>Amorpha fruticosa</i>
<i>Glyceria borealis</i>	<i>Callitriche palustris</i>
<i>Glyceria canadensis</i>	* <i>Callitriche stagnalis</i>
<i>Glyceria pallida</i>	<i>Hypericum boreale</i>
<i>Leersia lenticularis</i>	<i>Hypericum majus</i>
<i>Leersia oryzoides</i>	<i>Hypericum virginicum</i>
<i>Panicum philadelphicum</i>	<i>Ludwigia palustris</i>
<i>Phalaris arundinacea</i>	<i>Ludwigia polycarpa</i>
<i>Phragmites communis</i>	<i>Myriophyllum exalbescens</i>
<i>Spartina pectinata</i>	<i>Cicuta bulbifera</i>
<i>Zizania aquatica</i>	<i>Cicuta maculata</i>
<i>Carex cephalantha</i>	<i>Stium suave</i>
<i>Carex comosa</i>	<i>Cuscuta granovii</i>
<i>Carex cristatella</i>	* <i>Myosotis scorpioides</i>
<i>Carex hystericina</i>	<i>Lycopus americana</i>
<i>Carex lacustris</i>	<i>Mentha arvensis</i>
<i>Carex laeviconica</i>	* <i>Mentha cardiaca</i>
<i>Carex lurida</i>	* <i>Mentha spicata</i>
<i>Carex rostrata</i>	<i>Physostegia parviflora</i>
<i>Carex vulpinoidea</i>	<i>Scutellaria epilobiiifolia</i>
<i>Cyperus inflexus</i>	<i>Scutellaria lateriflora</i>
<i>Cyperus rivularis</i>	<i>Stachys hispida</i>
<i>Cyperus strigosus</i>	<i>Stachys tenuifolia</i>
<i>Dulichium arundinaceum</i>	<i>Gerardia tenuifolia</i>
<i>Eleocharis acicularis</i>	<i>Gratiola neglecta</i>
<i>Eleocharis calva</i>	<i>Lindernia anagallidea</i>
<i>Eleocharis obtusa</i>	<i>Lindernia dubia</i>
<i>Eleocharis ovata</i>	<i>Mimulus glabratus</i>
<i>Eleocharis palustris</i>	<i>Mimulus ringens</i>
<i>Hemicarpha micrantha</i>	<i>Veronica americana</i>
<i>Scirpus atrovirens</i>	<i>Veronica scutellata</i>
<i>Scirpus cyperinus</i>	<i>Utricularia intermedia</i>
<i>Scirpus fluviatilis</i>	<i>Utricularia vulgaris</i>
<i>Scirpus pedicellatus</i>	<i>Cephalanthus occidentalis</i>
<i>Scirpus validus</i>	<i>Galium trifidum</i>
(inc. <i>S. acutus</i>)	<i>Campanula aparinoides</i>
<i>Acorus calamus</i>	<i>Bidens cernua</i>
<i>Juncus brevicaudatus</i>	<i>Bidens discoides</i>
<i>Juncus dudleyi</i>	<i>Bidens frondosa</i>
<i>Juncus effusus</i>	<i>Bidens tripartita</i>
<i>Juncus nodosus</i>	<i>Bidens vulgata</i>
<i>Lemna minor</i>	<i>Eupatorium maculatum</i>
<i>Lemna trisulca</i>	<i>Eupatorium perfoliatum</i>

2. Alluvial woods. Bordering the rivers and larger streams of this region, these lowland forests are subject to periodic overflow from the river and are characterized by stream-transported soil

known as alluvium. Very close to the level of the water table, they are generally moist and occasionally swampy. Interesting and extensive woodlands of this type are located along the Black River in Caledonia Township of southern Trempealeau County in an area known locally as the McGilvray Bottoms.

<i>Calamagrostis canadensis</i>	<i>Betula nigra</i>
<i>Cinna arundinacea</i>	<i>Quercus bicolor</i>
<i>Carex cephaloidea</i>	<i>Ulmus americana</i>
<i>Carex crinita</i>	<i>Laportea canadensis</i>
<i>Carex davisii</i>	<i>Silene nivea</i>
<i>Carex grayii</i>	<i>Isopyrum biternatum</i>
<i>Carex grisea</i>	<i>Ranunculus septentrionalis</i>
<i>Carex intumescens</i>	<i>Gymnocladus dioica</i>
<i>Carex lupulina</i>	<i>Callitriche deflexa</i>
<i>Carex lurida</i>	<i>Euonymus atropurpureus</i>
<i>Carex muskingumensis</i>	<i>Acer saccharinum</i>
<i>Carex tribuloides</i>	* <i>Lysimachia nummularia</i>
(incl. <i>C. projecta</i>)	<i>Fraxinus nigra</i>
<i>Carex tuckermanni</i>	<i>Fraxinus pennsylvanica</i>
<i>Carex typhina</i>	<i>Phlox divaricata</i>
<i>Carex vesicaria</i>	* <i>Galeopsis tetrahit</i>
<i>Arisaema dracontium</i>	<i>Galium obtusum</i>
<i>Populus deltoides</i>	<i>Lobelia cardinalis</i>

3. **Low, sandy woods.** Often abounding with spagnum, these moist woods are found along small streams in the sandy northern part of this region. In many cases they represent old meander scars of the streams in otherwise dry, sandy woods. Good examples of this type of habitat may be found along the north fork of the LaCrosse River in the Camp McCoy Military Reservation in Monroe County and along Robinson Creek in Manchester Township, Jackson County.

<i>Osmunda cinnamomea</i>	<i>Cypripedium acaule</i>
<i>Osmunda regalis</i>	<i>Habernaria psycodes</i>
<i>Dryopteris cristata</i>	<i>Rubus hispida</i>
<i>Dryopteris spinulosa</i>	<i>Ilex verticillata</i>
<i>Cinna latifolia</i>	<i>Acer rubrum</i>
<i>Carex canescens</i>	<i>Panax trifolium</i>
<i>Carex crinita</i>	<i>Hydrocotyle americana</i>
<i>Carex debilis</i>	<i>Aster puniceus</i>
<i>Carex intumescens</i>	

4. **Tamarack bogs.** Tamarack bogs are located in this area along streams in the depressions of old ox-bow lakes or near the headwaters of streams where lakes were once formed as a result of the Mississippi River valley filling with glacial debris during glacial periods. Some of them are quite extensive and have remained relatively undisturbed even in densely settled areas. They provide one of the more interesting aspects of the flora. Such bogs may be found along Tamarack Creek in Arcadia Township, Trempealeau County, and along the LaCrosse River in Barre Township, LaCrosse County.

<i>Sphagnum spp.</i>	<i>Larix laricina</i>
<i>Equisetum palustre</i>	<i>Juniperus communis</i>
<i>Equisetum sylvaticum</i>	<i>Bromus ciliatus</i>
<i>Osmunda cinnamomea</i>	(incl. <i>B. dudleyi</i>)
<i>Osmunda regalis</i>	<i>Muhlenbergia mexicana</i>
<i>Dryopteris cristata</i>	<i>Carex disperma</i>
<i>Dryopteris spinulosa</i>	<i>Carex comosa</i>
<i>Thelypteris palustris</i>	<i>Carex interior</i>
<i>Taxus canadensis</i>	<i>Carex lacustris</i>
<i>Thuja occidentalis</i>	<i>Carex leptalea</i>

<i>Carex tetanica</i>	<i>Rubus pubescens</i>
<i>Calla palustris</i>	<i>Rhus vernix</i>
<i>Symplocarpus foetidus</i>	<i>Ilex verticillata</i>
<i>Clintonia borealis</i>	<i>Nemophanthus mucronata</i>
<i>Mianthemum canadense</i>	<i>Acer rubrum</i>
<i>Polygonatum pubescens</i>	<i>Rhamnus alnifolia</i>
<i>Cypripedium reginae</i>	<i>Viola conspersa</i>
<i>Habenaria hyperborea</i>	<i>Viola incognita</i>
<i>Liparis loeselii</i>	<i>Viola macloskeyi</i>
<i>Salix candida</i>	<i>Viola nephrophylla</i>
<i>Salix pedicellaris</i>	<i>Cornus canadensis</i>
<i>Alnus rugosa</i>	<i>Pyrrola asarifolia</i>
<i>Betula lutea</i>	<i>Lysimachia thyrsoiflora</i>
<i>Betula pumila</i>	<i>Trientalis borealis</i>
<i>Caltha palustris</i>	<i>Galium labradoricum</i>
<i>Coptis groenlandica</i>	<i>Linnaea borealis</i>
<i>Mitella nuda</i>	<i>Aster junceiformis</i>
<i>Ribes hirtellum</i>	<i>Aster lucidulus</i>
<i>Saxifraga pensylvanica</i>	<i>Aster puniceus</i>
<i>Geum rivale</i>	<i>Cacalia suaveolens</i>
<i>Pyrus decora</i>	<i>Cirsium muticum</i>
<i>Pyrus melanocarpa</i>	<i>Solidago uliginosa</i>

5. Seepage bogs. Seepage bogs are generally found in this region at poorly-drained bases of sandy, wooded slopes where there is seepage of cold spring water down through the sandy soil. Good examples of this habitat are located along the base of a wooded bluff bordering the Black River in Section 9, Holland Township, LaCrosse County.

<i>Osmunda cinnamomea</i>	<i>Cardamine bulbosa</i>
<i>Dryopteris cristata</i>	<i>Cardamine pensylvanica</i>
<i>Dryopteris spinulosa</i>	<i>Chrysosplenium americanum</i>
<i>Poa alsodes</i>	<i>Floerkea proserpinacoides</i>
<i>Carex bromoides</i>	<i>Impatiens pallida</i>
<i>Symplocarpus foetidus</i>	<i>Viola cucullata</i>
<i>Lilium michiganense</i>	<i>Viola macloskeyi</i>
<i>Alnus rugosa</i>	<i>Viola nephrophylla</i>
<i>Laportea canadensis</i>	<i>Senecio aureus</i>
<i>Caltha palustris</i>	

6. Sandy sphagnum meadow. This type of habitat is rather characteristic of the sandy bed of old Glacial Lake Wisconsin of west-central Wisconsin. The only such meadow known to the author in the LaCrosse Area is near County Trunk A, Section 9, Farmington Township, LaCrosse County. It is characterized by a rather shallow mat of sphagnum that covers approximately ten acres. Bordering the meadow are active sand dunes and sandy, jack pine-jack oak woods. Since this habitat is rare in the region, many of its species of plants are likewise rare. Thus it provides several interesting additions to the flora.

<i>Sphagnum</i> spp.	<i>Salix gracilis</i>
<i>Equisetum sylvaticum</i>	<i>Salix tristis</i>
<i>Osmunda regalis</i>	<i>Betula pumila</i>
<i>Carex longii</i>	<i>XBetula sandbergi</i>
<i>Eriophorum virginicum</i>	<i>Spiraea tomentosa</i>
<i>Rhynchospora capitellata</i>	<i>Polygala cruciata</i>
<i>Scleria triglomerata</i>	<i>Hypericum kalmianum</i>
<i>Juncus canadensis</i>	<i>Viola lanceolata</i>
<i>Juncus greenii</i>	<i>Chamaedaphne calyculata</i>
<i>Aletris larinosa</i>	<i>Vaccinium macrocarpon</i>
<i>Calopogon pulchellus</i>	<i>Bartonia virginica</i>
<i>Habenaria lacera</i>	<i>Aster umbellatus</i>
<i>Spiranthes cernua</i>	<i>Bidens coronata</i>
<i>Salix bebbiana</i>	

7. Sedge meadows. Less acid than the sandy sphagnum meadow described above, this habitat is found bordering the tamarack bogs

and in other open, poorly-drained areas. The extensive meadow bordering the Tamarack Creek bog in Arcadia Township, Trempealeau County, is a good example.

Carex emoryi
Carex haydenii
Carex lasiocarpa
 (incl. *C. lanuginosa*)
Carex prairea
Carex vesicaria
Scirpus atrovirens
Scirpus cyperinus
Allium canadense
Lilium michiganense
Cypripedium calceolus
 var. *parviflorum*
Habenaria flava
Salix bebbiana
Salix discolor
Salix gracilis
Salix lucida

Salix sericea
Stellaria longifolia
Geum aleppicum
Spiraea alba
Oenothera perennis
Angelica atropurpurea
Oxypolis rigidior
Cornus stolonifera
Gentiana andrewsii
Pedicularis lanceolata
Galium asprellum
Campanula aparinoides
Campanula uliginosa
Aster umbellatus
Bidens coronata
Eupatorium perfoliatum
Prenanthes racemosa

8. Dry, loamy, upland woods. This type of woodland, dominated by hardwoods, is prevalent in upland regions to the south and east of LaCrosse. These are, for the most part, areas where the covering of loess still remains and where the underlying rock is limestone. The Bohemian Valley region, Section 25, Washington Township, LaCrosse County, and Koethe's Woods, Section 3, Hamburg Township, Vernon County, are good examples of this type of habitat.

Botrychium virginianum
Pteridium aquilinum
Brachyelytrum erectum
Bromus purgans
Elymus villosus
Hystrix patula
Panicum latifolium
Carex cephalophora
Carex pensylvanica
Uvularia grandiflora
Goodyera pubescens
Populus grandidentata
Populus tremuloides
Carya cordiformis
Carya ovata
Corylus americana
Betula papyrifera
Quercus alba
Quercus macrocarpa
Quercus rubra
Quercus velutina
Ulmus rubra
Anemone quinquefolia
Anemone virginiana
 (incl. *A. riparia*)
Anemonella thalictroides
Podophyllum peltatum
Arabis canadensis
Prunus serotina
Prunus virginiana

Amphicarpa bracteata
Astragalus canadensis
Desmodium cuspidatum
Desmodium glutinosum
Desmodium nudiflorum
Geranium maculatum
Polygala senega
Celastrus scandens
Ceanothus americanus
Vitis aestivalis
Osmorhiza claytoni
Sanicula marilandica
Sanicula canadensis
Fraxinus americana
Gentiana flavida
Gentiana quinquefolia
Conopholis americana
Phryma leptostachya
Galium boreale
Galium circaezans
Triosteum aurantiacum
Triosteum perfoliatum
Lobelia inflata
Antennaria neglecta
Antennaria plantaginifolia
Aster cordifolius
Aster drummondii
Aster sagittifolius
Erigeron pulchellus
Solidago ulmifolia

9. Dry, sandy, upland woods. Woodlands of this type are found in the sandy regions to the north and northeast of LaCrosse. They are characterized by jack pine (*Pinus banksiana*) and jack oak (*Quercus ellipsoidalis*) and are strikingly different from the loamy woods to the south. Good examples of this type of habitat may be found in the Camp McCoy Military Reservation in Monroe County.

Lycopodium clavatum
Lycopodium complanatum

Lycopodium tristachyum
Lycopodium obscurum

<i>Selaginella rupestris</i>	<i>Lathyrus ochroleucus</i>
<i>Botrychium dissectum</i>	<i>Lathyrus venosus</i>
<i>Botrychium multifidum</i>	<i>Lupinus perennis</i>
<i>Botrychium virginianum</i>	<i>Celastrus scandens</i>
<i>Pteridium aquilinum</i>	<i>Ceanothus americanus</i>
<i>Pinus banksiana</i>	<i>Helianthemum bicknellii</i>
<i>Pinus resinosa</i>	<i>Helianthemum canadense</i>
<i>Agrostis scabra</i>	<i>Lechea stricta</i>
<i>Danthonia spicata</i>	<i>Arctostaphylos uva-ursi</i>
<i>Panicum depauperatum</i>	<i>Chimaphila umbellata</i>
<i>Schizachne purpurescens</i>	<i>Epigaea repens</i>
<i>Carex backii</i>	<i>Gaultheria procumbens</i>
<i>Carex pensylvanica</i>	<i>Gaylussacia haccata</i>
<i>Luzula campestris</i>	<i>Monotropa hypopitys</i>
<i>Lilium philadelphicum</i>	<i>Vaccinium angustifolium</i>
<i>Goodyera pubescens</i>	<i>Vaccinium myrtilloides</i>
<i>Populus grandidentata</i>	<i>Convolvulus spithameus</i>
<i>Populus tremuloides</i>	<i>Gerardia pedicularia</i>
<i>Salix humilis</i>	<i>Galium boreale</i>
<i>Comptonia peregrina</i>	<i>Houstonia longifolia</i>
<i>Corylus americana</i>	<i>Mitchella repens</i>
<i>Quercus ellipsoidalis</i>	<i>Antennaria neglecta</i>
<i>Quercus macrocarpa</i>	<i>Antennaria plantaginifolia</i>
<i>Quercus velutina</i>	<i>Aster macrophyllus</i>
<i>Quercus rubra</i>	<i>Aster sagittifolius</i>
<i>Paronychia canadensis</i>	<i>Hieracium canadense</i>
<i>Paronychia fastigiata</i>	<i>Hieracium scabrum</i>
<i>Arabis lyrata</i>	<i>Krigia biflora</i>
<i>Prunus serotina</i>	<i>Solidago hispida</i>
<i>Prunus virginiana</i>	<i>Solidago ulmifolia</i>
<i>Baptisia leucophaea</i>	

10. Moist, north- and east-facing, wooded slopes and ravines.

Since sandstone underlies this entire region, the deep stream dissection that produces steep slopes and ravines exposes a sandy substrate. This ranges from a rather sandy loam, characteristic of areas where limestone and loess remain on adjacent ridges, to rather sterile sand found in regions where the limestone and loess have long since been eroded away. Somewhat loamy, wooded slopes may be found in Perrot State Park in Trempealeau County; Bohemian Valley, Section 24, Washington Township, LaCrosse County; and Koethe's Woods, Section 3, Hamburg Township, Vernon County. Wooded slopes characterized by very sandy soil may be found bordering Robinson Creek, Section 24, Manchester Township, Jackson County; and bordering the Black River in Holland Township, LaCrosse County.

Listed below are vascular plants typical of the rather loamy, wooded slopes and ravines of this region.

<i>Equisetum scirpoides</i>	<i>Habernaria hookeri</i>
<i>Athyrium pycnocarpon</i>	<i>Orchis spectabilis</i>
<i>Dryopteris goldiana</i>	<i>Ulmus thomasi</i>
<i>Thelypteris hexagonoptera</i>	<i>Actaea pachypoda</i>
<i>Taxus canadensis</i>	<i>Hepatica acutiloba</i>
<i>Brachyelytrum erectum</i>	<i>Dicentra canadensis</i>
<i>Milium effusum</i>	<i>Arabis canadensis</i>
<i>Oryzopsis racemosa</i>	<i>Arabis laevigata</i>
<i>Poa sylvestris</i>	<i>Dentaria laciniata</i>
<i>Carex albursina</i>	<i>Staphylea trifolia</i>
<i>Carex careyana</i>	<i>Acer saccharum</i>
<i>Carex communis</i>	<i>Tilia americana</i>
<i>Carex digitalis</i>	<i>Viola pubescens</i>
<i>Carex jamesii</i>	<i>Dirca palustris</i>
<i>Carex pedunculata</i>	<i>Panax quinquefolius</i>
<i>Carex plantaginea</i>	<i>Sanicula trifoliata</i>
<i>Carex scabrata</i>	<i>Asclepias exaltata</i>
<i>Carex sparganoides</i>	<i>Hydrophyllum apendiculatum</i>
<i>Carex spengelii</i>	<i>Hydrophyllum virginianum</i>
<i>Carex woodii</i>	<i>Blephilia hirsuta</i>
<i>Allium tricoccum</i>	<i>Viburnum opulus</i>
<i>Erythronium americanum</i>	<i>Polymnia canadensis</i>

The following are vascular plants most characteristic of the very sandy, wooded slopes and ravines of this region.

Equisetum pratense
Lycopodium clavatum
Lycopodium lucidulum
Pinus strobus
Tsuga canadensis
Oryzopsis pungens
Clintonia borealis
Mianthemum canadense
Streptopus roseus
Uvularia sessilifolia
Cypripedium acaule

Malaxis unifolia
Clematis verticillaris
Hepatica americana
Corydalis sempervirens
Vicia caroliniana
Cornus canadensis
Pyrola rotundifolia
Lysimachia quadrifolia
Viburnum acerifolium
Aster macrophyllum

The following are species that occur on both sandy and rather loamy, wooded slopes and ravines in this region.

Osmunda claytoniana
Adiantum pedatum
Athyrium filix-femina
Athyrium thelypteroides
Cystopteris bulbifera
Cystopteris fragilis
Matteuccia struthiopteris
Festuca obtusa
Oryzopsis asperifolia
Carex blanda
Carex rosea
Arisaema triphyllum
Luzula acuminata
Erythronium albidum
Polygonatum canaliculatum
Polygonatum pubescens
Smilacina racemosa
Trillium flexipes
Trillium grandiflorum
Uvularia grandiflora
Cypripedium calceolus
 var. *pubescens*
Liparis liliifolia
Carya cordiformis
Juglans cinerea
Betula lutea
Carpinus caroliniana
Ostrya virginiana
Corylus cornuta

Asarum canadense
Claytonia virginica
Actaea rubra
Anemone quinquefolia
Anemonella thalictroides
Ranunculus recurvatus
Thalictrum dioicum
Caulophyllum thalictroides
Dicentra cucullaria
Sanguinaria canadensis
Mitella diphylla
Hamamelis virginiana
Geranium maculatum
Euonymus atropurpureus
Acer spicatum
Aralia nudicaulis
Aralia racemosa
Osmorhiza longistylis
Sanicula gregaria
Sanicula marilandica
Cornus alternifolia
Cornus rugosa
Monotropa uniflora
Pyrola elliptica
Fraxinus nigra
Dicella lonicera
Sambucus pubens
Viburnum rafinesquianum
Solidago flexicaulis

11. Dry sandy prairies, plains and blowouts. The dry, open sands of the Mississippi River terraces and the upland regions to the north and northeast of LaCrosse support a distinctive sand flora. An excellent sandy prairie is the Midway Prairie State Scientific Area located one-half mile south of the town of Midway, Section 30, Onalaska Township, LaCrosse County. Interesting sandy plains and blowouts are found on the Mississippi River terrace on French Island near the city of LaCrosse; bordering Wisconsin Highway 108, Section 31, Melrose Township, Jackson County; and along County Trunk A, Section 9, Farmington Township, LaCrosse County.

Equisetum laevigatum
Selaginella rupestris
Agrostis hyemalis
Andropogon gerardi
Andropogon scoparius
Aristida basiramea
Aristida intermedia
Aristida oligantha
Aristida tuberculosa
Bouteloua curtipendula
Bouteloua hirsuta

Calamovilfa longifolia
Cenchrus longispinus
Eragrostis spectabilis
Festuca octoflora
Koeleria cristata
Leptoloma cognatum
Panicum commonianum
Panicum oligosanthos
Panicum perlongum
Paspalum ciliatifolium
Sorghastrum nutans

<i>Sporobolus cryptandrus</i>	<i>Tephrosia virginiana</i>
<i>Sporobolus heterolepis</i>	<i>Linum sulcatum</i>
<i>Stipa spartea</i>	<i>Oxalis violacea</i>
<i>Bulbostylis capillaris</i>	<i>Polygala polygama</i>
<i>Carex abdita</i>	<i>Euphorbia corollata</i>
<i>Carex annectens</i>	<i>Euphorbia geyeri</i>
<i>Carex bicknellii</i>	<i>Ceanothus ovatus</i>
<i>Carex brevior</i>	<i>Callirhoe triangulata</i>
<i>Carex festucacea</i>	<i>Hypericum gentianoides</i>
<i>Carex joenea</i>	<i>Helianthemum bicknellii</i>
<i>Carex meadii</i>	<i>Helianthemum canadense</i>
<i>Carex muhlenbergii</i>	<i>Hudsonia tomentosa</i>
<i>Carex pennsylvanica</i>	<i>Lechea stricta</i>
<i>Carex tosa</i>	<i>Lechea tenuifolia</i>
<i>Cyperus filiculmis</i>	<i>Viola pedata</i>
<i>Cyperus schweinitzii</i>	<i>Viola pedatifida</i>
<i>Tradescantia ohioensis</i>	<i>Opuntia humifusa</i>
<i>Hypoxis hirsuta</i>	<i>Oenothera rhombipetala</i>
<i>Polygonella articulata</i>	<i>Asclepias amplexicaulis</i>
<i>Polygonum tenue</i>	<i>Asclepias hirtella</i>
* <i>Rumex acetosella</i>	<i>Asclepias viridiflora</i>
<i>Cycloloma atriplicifolium</i>	<i>Lithospermum canescens</i>
<i>Proelichia floridana</i>	<i>Lithospermum croceum</i>
<i>Mirabilis hirsuta</i>	<i>Hedeoma hispida</i>
<i>Talinum rugospermum</i>	<i>Monarda punctata</i>
* <i>Schleranthus annuus</i>	<i>Scutellaria parvula</i>
<i>Silene antirrhina</i>	<i>Physalis heterophylla</i>
<i>Anemone patens</i>	<i>Physalis virginiana</i>
<i>Delphinium virescens</i>	<i>Linaria canadensis</i>
<i>Ranunculus fascicularis</i>	<i>Penstemon digitalis</i>
<i>Ranunculus rhomboideus</i>	<i>Penstemon gracilis</i>
<i>Corydalis micrantha</i>	<i>Penstemon grandiflorus</i>
<i>Draba nemorosa</i>	<i>Plantago aristata</i>
<i>Draba reptans</i>	<i>Plantago purshii</i>
<i>Erysimum inconspicuum</i>	<i>Houstonia longifolia</i>
<i>Potentilla arguta</i>	<i>Triodanis perfoliata</i>
<i>Prunus pumila</i>	<i>Ambrosia psilostachya</i>
<i>Amorpha canescens</i>	<i>Artemisia ludoviciana</i>
<i>Baptisia leucantha</i>	<i>Aster azureus</i>
<i>Baptisia leucophaea</i>	<i>Aster ericoides</i>
<i>Crotalaria sagittalis</i>	<i>Aster sericeus</i>
<i>Glycyrrhiza lepidota</i>	<i>Coreopsis palmata</i>
<i>Lespedeza capitata</i>	<i>Erigeron strigosus</i>
<i>Lupinus perennis</i>	<i>Helianthus occidentalis</i>
<i>Petalostemon candidus</i>	* <i>Hieracium aurantiacum</i>
<i>Petalostemon purpureus</i>	<i>Hieracium longipilum</i>
<i>Petalostemon villosus</i>	<i>Kuhnia eupatorioides</i>
<i>Strophostyles helvola</i>	<i>Liatris aspera</i>
<i>Strophostyles leiosperma</i>	<i>Solidago rigida</i>

12. Steep, west- and south-facing loamy prairies. Steep, rocky prairies are characteristic features of the Mississippi River bluffs of this region. Locally known as "goat prairies," they are extremely dry because of the angle of the sun's rays and the prevailing winds. Two of the better examples are the prairie on Brady Bluff in Perrot State Park, Trempealeau County (a State Scientific Area) and the prairie on a Mississippi River bluff one mile south of the town of Victory in Wheatland Township, Vernon County.

<i>Andropogon gerardi</i>	<i>Amorpha canescens</i>
<i>Andropogon scoparius</i>	<i>Petalostemon candidus</i>
<i>Bouteloua curtipendula</i>	<i>Petalostemon purpureus</i>
<i>Bouteloua hirsuta</i>	<i>Linum sulcatum</i>
<i>Bromus kalmii</i>	<i>Viola pedata</i>
<i>Eragrostis capillaris</i>	<i>Viola pedatifida</i>
<i>Muhlenbergia cuspidata</i>	<i>Gentiana puberula</i>
<i>Muhlenbergia racemosa</i>	<i>Asclepias viridiflora</i>
<i>Panicum leibergii</i>	<i>Lithospermum incisum</i>
<i>Panicum perlongum</i>	<i>Pycnanthemum virginianum</i>
<i>Panicum wilcoxianum</i>	<i>Scutellaria parvula</i>
<i>Sporobolus heterolepis</i>	<i>Castilleja sessiliflora</i>
<i>Sporobolus neglectus</i>	<i>Gerardia aspera</i>
<i>Zizadenus elegans</i>	<i>Artemisia caudata</i>
<i>Spiranthes cernua</i>	<i>Artemisia dracunculus</i>
<i>Salix humilis</i>	<i>Aster ericoides</i>
<i>Geum triflorum</i>	<i>Aster oblongifolius</i>
<i>Potentilla arguta</i>	<i>Aster ptarmicoides</i>

Aster sericeus
Cirsium hillii
Erigeron strigosus
Kuhnia eupatorioides
Liatris aspera

Liatris cylindracea
Ratibida pinnata
Silphium laciniatum
Solidago rigida

13. Dry, limestone ledges and ridges. Exposed limestone forms the "rimrock" on most of the Mississippi River bluffs in Vernon and Crawford counties. Especially good outcrops are found on the bluff one mile south of Victory in Vernon County.

Cheilanthes feei
Pellaea glabella
Woodсия oregana
Juniperus communis

Juniperus virginiana
Carex eburnea
Potentilla fruticosa
Parietaria pensylvanica

14. Dry, sandstone ledges and talus. Good examples of this type of habitat are on Brady Bluff and Trempeleau Mountain in Perrot State Park, Trempeleau County.

Selaginella rupestris
Asplenium platyneuron
Polypodium vulgare
Woodсия ilvensis
Woodсия obtusa
Juniperus communis
Juniperus virginiana

Pellaea atropurpurea
Pellaea glabella
Arenaria stricta
Arabis lyrata
Symphoricarpos albus
Campanula rotundifolia
Solidago sciaphila

15. Moist, shaded, sandstone ledges. Good examples of this habitat are located in Perrot State Park, Trempeleau County, and along the Kickapoo River in Wildcat Mountain State Park, Vernon County.

Lycopodium selago
 var. *patens*
Camptosorus rhizophyllus
Cryptogramma stelleri
Cystopteris bulbifera
Cystopteris fragilis
Gymnocarpium dryopteris

Polypodium vulgare
Thelypteris phegopteris
Saxifraga forbesii
Sullivantia renifolia
Circaea alpina
Doelicateon radicatum
Adoxa moschatellina

16. Weeds of roadsides, railroads, waste places, fields, yards, etc.

Equisetum arvense
 **Carex spicata*
 **Agropyron desertorum*
 **Agropyron repens*
 **Agrostis alba*
 **Bromus inermis*
 **Bromus tectorum*
 **Buchloe dactyloides*
 **Cenchrus longispinus*
 **Dactylis glomerata*
 **Digitaria ischaemum*
 **Digitaria sanguinalis*
 **Distichlis stricta*
 **Elymus canadensis*
 **Eragrostis cilianensis*
 **Eragrostis pectinacea*
 **Hordeum jubatum*
 **Lolium multiflorum*
 **Lolium perenne*
 **Panicum capillare*
 **Panicum dichotomiflorum*
 **Phleum pratense*
 **Poa pratensis*
 **Setaria lutescens*
 **Setaria viridis*
 **Commelina communis*
 **Asparagus officinalis*
 **Cannabis sativa*
 **Urtica dioica*
 **Polygonum aviculare*

**Polygonum convolvulus*
 **Polygonum pennsylvanicum*
 **Polygonum persicaria*
 **Rumex altissimus*
 **Rumex crispus*
 **Rumex patientia*
 **Chenopodium album*
 **Chenopodium gigantespermum*
 **Kochia scoparia*
 **Salsola kali*
 **Amaranthus albus*
 **Amaranthus graecizans*
 **Amaranthus retroflexus*
 **Mirabilis nyctaginea*
 **Mollugo verticillata*
 **Portulaca oleracea*
 **Lychnis alba*
 **Saponaria officinalis*
 **Silene armeria*
 **Silene cserei*
 **Silene noctiflora*
 **Stellaria media*
 **Barbarea vulgaris*
 **Berteroa incana*
 **Brassica juncea*
 **Brassica kaber*
 **Brassica nigra*
 **Capsella bursa-pastoris*
 **Descurainia pinnata*
 **Descurainia sophia*

- **Lepidium densiflorum*
- Lepidium virginicum*
- **Raphanus raphanistrum*
- **Sisymbrium altissimum*
- **Sisymbrium officinale*
- **Thlaspi arvense*
- **Potentilla argentea*
- **Potentilla recta*
- **Medicago lupulina*
- **Medicago sativa*
- **Melilotus alba*
- **Melilotus officinalis*
- **Trifolium agaricum*
- **Trifolium arvense*
- **Trifolium hybridum*
- **Trifolium pratense*
- **Trifolium procumbens*
- **Trifolium repens*
- **Vicia angustifolia*
- **Vicia villosa*
- **Euphorbia cyparissias*
- Euphorbia dentata*
- **Euphorbia esula*
- Euphorbia maculata*
- **Euphorbia marginata*
- Euphorbia supina*
- **Achillea millefolium*
- **Hibiscus trionum*
- **Malva neglecta*
- **Carum carvi*
- **Daucus carota*
- **Pastinaca sativa*
- **Convolvulus arvensis*
- Convolvulus sepium*
- **Ipomoea purpurea*
- **Phlox paniculata*
- Verbena bracteata*
- Verbena stricta*
- Verbena urticifolia*
- **Leonurus cardiaca*
- **Datura stramonium*
- Physalis pruinosa*
- Solanum carolinense*
- **Solanum dulcamara*
- **Solanum nigrum*
(incl. *S. americanum*)
- **Solanum rostratum*
- **Chaenorrhinum minus*
- **Linaria vulgaris*
- **Verbascum thapsus*
- **Plantago lanceolata*
- **Plantago major*
- **Plantago media*
- Plantago rugelii*
- **Campanula rapunculoides*
- **Achillea millefolium*
- Ambrosia artemisiifolia*
- Ambrosia trifida*
- **Anthemis cotula*
- **Arctium minus*
- **Artemisia biennis*
- **Artemisia frigida*
- Aster novae-angliae*
- **Chrysanthemum leucanthemum*
- **Cichorium intybus*
- **Cirsium arvense*
- Erigeron canadensis*
- **Galinsoga ciliata*
- **Grindelia squarrosa*
- **Helianthus annuus*
- **Iva xanthifolia*
- **Lactuca scariola*
- **Matricaria matricarioides*
- Solidago altissima*
- Solidago canadensis*
- **Sonchus asper*
- **Sonchus oleraceus*
- **Sonchus uliginosus*
- **Tanacetum vulgare*
- **Taraxacum erythrospermum*
- **Taraxacum officinale*
- **Tragopogon dubius*
- **Tragopogon pratensis*
- **Xanthium strumarium*

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