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Megan K. Killion

University of Nebraska at Kearney

Steven J. Rothenberger

University of Nebraska at Kearney, rothenberges@unk.edu

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The Vascular Flora of Brown County, Nebraska

Megan K. Killion and Steven J. Rothenberger

Department of Biology, University of Nebraska at Kearney, Kearney, Nebraska 68849-1140

Correspondence: Steven Rothenberger, rothenberges@unk.edu

Brown County, located in north-central Nebraska contains several native vegetation types including sand hills mixed-grass prairie, gravelly mixed-grass prairie, ponderosa pine forests/savannas, sand hills-borders/mixed-grass prairie, upland deciduous forest, and wet lands. The Nebraska Sand Hills, which make up approximately 80% of Brown County, cover about 20,000 square miles of the state. This study reports a total of 726 plant species, subspecies, and varieties for Brown County, representing 105 families and 358 genera. Fourteen new county records were collected. A list of the vascular flora for Brown County is given and an index of similarity is used to compare Brown County to Banner, Dixon, Keith, and Seward Counties. The Niobrara River, which begins in Wyoming and flows 800 km east through Nebraska before it joins with the Missouri River, forms the northern border of Brown County. The river valley contains a rich flora, including many species that are unique within Nebraska. A possible explanation for the relatively high plant diversity of the area is that postglacial forests in the valley serve as a transition zone that supports species with both western and eastern affinities.

Introduction

The earliest records of plant collections in Nebraska date back to 1803, when Lewis and Clark explored the state. Since then, numerous floristic studies have been done for Nebraska, but most were completed during the 20th century. The first attempt to compile a comprehensive plant list for Nebraska was made by Samuel Aughey with the *Catalogue of the Flora of Nebraska* in 1876 (Kaul and Rolfsmeier 1994). The most recently published botanical treatment of Nebraska is *The Flora of Nebraska* by Kaul, Sutherland, and Rolfsmeier, 2006.

Brown County, Nebraska, is located in north-central Nebraska. Its land area is 316,238 Ha (1,221 square miles). Several native vegetation habitats exist in the county (Kaul and Rolfsmeier 1993). Sand Hills mixed-grass prairie makes up most of the vegetation. The Sand Hills' soil is made of fine, loosely consolidated sands forming large dunes. Forbs, bunchgrasses, and rhizomatous grasses are common, and vegetation is sparse compared to tall-grass and mixed-grass prairies (Kaul 1989). An area of gravelly mixed-grass prairie is found in the north-central part of the county. The soil is infertile, well drained, and a mixture of sand and gravel. Vegetation is very sparse. Ponderosa pine forests and savannas surround the Niobrara River Valley and Long Pine Canyon. Finally, there are a few pockets of Sand Hills-borders mixed-grass prairie located in the central and south central parts of the county, containing a mixture of sandhills and sandsage species (Kaul et al. 2006). Several lakes, marshes, and meadows, which are an important natural resource of the Sand Hills, are located throughout the county (Ducey 1991). The Niobrara River forms the north border of the county, while the Calamus River flows from Moon Lake, in western Brown County, to eventually empty into the Calamus Reservoir in Loup County (Bridge and Gabel 1992).

Because of Nebraska's size (200,357 km² [77358 mi²]) and geography, many Nebraska counties have

not been botanically explored in detail. Some counties have been well documented; especially those with nearby universities or colleges, but others have not been as well collected. Although there are many publications on the vascular plants of Nebraska, such as *The Flora of Nebraska*, fieldwork continues to reveal new species for Nebraska counties. The purpose of this study was to survey the vascular plant species of Brown County, Nebraska, and to generate a comprehensive species list for the county that compiles species collected by the authors and those that have previously been reported in the literature. Rare or unusual species are noted, as well as any previously unrecorded species.

The Nebraska Sand Hills, which comprise most of Brown County, cover about 20,000 square miles of the state, making them one of the largest grass-covered dune regions in the world (Bleed and Flowerday 1989, Converse et al. 2002, Kaul et al. 2006). These dunes have been stable for 1500-3000 years (Weller et al. 2000). Since the area is unsuitable for farming, much of it is unplowed and used for cattle grazing. About 600 species of native plants grow in the Sand Hills, which is a large number of plants for a sand dune region (Kantak 1995, Kaul et al. 2006). Warm-season grasses, such as switchgrass (*Panicum virgatum*), Indian grass (*Sorghastrum nutans*), and sand bluestem (*Andropogon gerardii* subsp. *hallii*) comprise between 60% and 90% of the primary productivity of the upland region. Cool-season grasses, such as orchard grass (*Dactylis glomerata*) and smooth brome (*Bromus inermis*) and sedges such as short-beak sedge (*Carex brevior*) comprise between 10% and 40% (Volesky et al. 2005). Wet meadows, located in the broad, flat areas between sand dunes, make up 10% of the Sand Hills' area. Plants that dominate wet meadows include native sedges and rushes along with introduced cool-season grasses and legumes (Volesky et al. 2004). The eastern edge of the Sand Hills is subhumid, with a yearly average of 59 cm of precipitation, while the western edge is

semiarid with a yearly average of 43 cm of yearly precipitation. Most precipitation occurs between April and September (Sridhar et al. 2006).

The Niobrara River, which begins in Wyoming and flows 800 km east through Nebraska before it joins with the Missouri River, forms the north border of Brown County (Gutzmer et al. 1996). The river valley is rich with plant species, many of which are unique for Nebraska (Tolstead 1942). The Pine Ridge, located in northwest Nebraska, and the Niobrara River Valley are the only locations across the modern grasslands where boreal, eastern deciduous, and non-riparian features of the Rocky Mountains come together. A possible reason for the plant distribution of the area is that it results from postglacial forests in the valley. Some species, such as dodder (*Cuscuta gronovii*), field grapefern (*Botrychium campestre*), and wild columbine (*Aquilegia canadensis*) may have migrated from the east after deglaciation. Others, such as pale evening primrose (*Oenothera latifolia*), sprangle-top (*Scolochloa festucacea*), and nothern gooseberry (*Ribes oxycanthoides* subsp. *setosum*) may have migrated from the west as the climate became more arid (Kaul et al. 1988). The Niobrara River Valley introduces species to Brown County that are uncommon to most Sand Hills counties. Examples of some of these species include harebell (*Campanula rotundifolia*), large-flowered tick-clover (*Desmodium glutinosum*), Kentucky bluegrass, alkali bluegrass (*Poa juncifolia*), wild columbine, woods bedstraw (*Galium circaezans* var. *hypomalacum*), prickly ash (*Zanthoxylum americanum*), prairie alumroot (*Heuchera richardsonii*), and sedges, such as bristle-leaf sedge (*Carex eburnea*) and Rocky Mountain sedge (*Carex saximontana*), (Kaul et al. 2006). Paper birch (*Betula papyrifera*) is a very unusual Sand Hills county species. The bark of the mature trunk and branches is white, lending to its common name. It is a northern species and the next nearest populations are in the Black Hills and Pine Ridge (Johnsgard, 2001). Brown County is one of only four Nebraska counties in which the species has been recorded.

The Niobrara Valley Preserve covers 219 km² in Cherry, Keya Paha, and Brown County, along a 50-km stretch of the Niobrara River (Kantak and Churchill 1993). Several plant communities are found within the preserve such as Rocky Mountain pine forest, eastern deciduous forest, paper-birch forest, tall-grass prairie, mixed-grass prairie, and Sand Hills prairie. Five hundred eighty-one species of vascular plants are found there, which is almost one-third of the total number of plants found in Nebraska. Two reasons for the unique plant communities in the preserve are: 1) hydrologic and pedologic conditions created by the surface and

Table 1. A Key to Collection Sites in Brown County, Nebraska

Site #	Location
1	Long Pine State Park – Long Pine Creek bank and surrounding wooded area. Elevation: 2609 ft., N: 42.54425°, W: 99.70957°.
2	Long Pine State Park – Long Pine Creek riverbank and surrounding wooded area. Elevation: 2244 ft., N: 42.54552°, W: 99.70981°.
3	Long Pine State Park – Wooded area and clearing. Elevation: 2337 ft., N: 42.54519°, W: 99.71105°.
4	Jansen Hay Meadow. Elevation: 2583 ft., N: 42.52620°, W: 99.93127°.
5	Niobrara Valley Preserve – Niobrara River bank. Elevation: 2117 ft., N: 42.78733°, W: 100.03807°.
6	Niobrara Valley Preserve – Wooded area. Elevation: 2184 ft., N: 42.78289°, W: 100.02519°.
7	Roadside ditch. Elevation: 2276 ft., N: 42.77975°, W: 100.03856°.
8	Roadside ditch. Elevation: 2380 ft., N: 42.77258°, W: 100.05461°.
9	Gilg Pasture. Elevation: 2377 ft., N: 42.60604°, W: 99.68130°.
10	Gilg Pasture. Elevation: 2369 ft., N: 42.60731°, W: 99.68273°.
11	Assarsson Pasture. Elevation: 2635 ft., N: 42.42215°, W: 99.89744°.
12	Hay Meadow. Elevation: 2569 ft., N: 42.54980°, W: 99.92993°.
13	Hay Meadow. Elevation: 2568 ft., N: 42.55104°, W: 99.92827°.
14	Hay Meadow. Elevation: 2628 ft., N: 42.55151°, W: 99.92651°.
15	Keller State Park – Wooded area and clearing. Elevation: 2155 ft., N: 42.66659°, W: 99.77802°.
16	Roadside ditch. Elevation: 2572 ft., N: 42.54975°, W: 99.93751°.
17	Roadside ditch. Elevation: 2422 ft., N: 42.56453°, W: 99.75574°.
18	Roadside ditch. Elevation: 2314 ft., N: 42.66496°, W: 99.75850°.
19	Keller State Park – Bone Creek bank and surrounding wooded area. Elevation: 2072 ft., N: 42.66964°, W: 99.76855°.
20	Niobrara Valley Preserve – Wooded area. Elevation: 2190 ft., N: 42.78286°, W: 100.02542°.
21	Niobrara Valley Preserve – Niobrara River bank. Elevation: 2133 ft., N: 42.78383°, W: 100.02426°.

subsurface geology, which allow for plant richness; and 2) Pleistocene and post-Pleistocene climates that have made it possible for co-occurrence of several plant communities (Churchill et al. 1988, Reece et al. 2004).

Methods

Twenty-one sites in Brown County were used for plant collection (Table 1). These sites included 3 locations in Long Pine State Recreation Area, 4 locations at the Nature Conservancy's Niobrara

Valley Preserve in the Niobrara River Valley, 2 locations in Keller State Recreation Area, 4 locations in hay meadows, 3 locations in sandhills mixed-grass prairies, and 5 locations in roadside ditches. A Global Positioning System (© Garmin) was used to identify the location of each site. Plants were collected throughout the 2008 growing season with collecting trips during the spring and summer (late May, early July, and the middle of September). Plants were collected to observe the overall diversity of the county, as well as to identify any rare or previously unrecorded species for the county. After plants were collected, photos were taken of each plant, and they were pressed and dried in a plant press. Nomenclature follows *The Flora of Nebraska* (Kaul et al. 2006). Books and botanical guides by Aichele and Golte-Bechtle (1976), Bare (1979), Brown (1979), Haddock (2005), McCoy (1981), and Owensby (1980) were used to assist in plant identification. A vascular plant species list was made for Brown County compiling species collected by the first author with species reported for Brown County in *The Flora of Nebraska* (Kaul et al. 2006). JACCARD's index of similarity ($ISJ = \text{common species/all species} \times 100$) was used to compare Brown County to Banner, Dixon, Keith, and Seward Counties (Ellenberg and Mueller-Dombois 1974). These counties represent different geographical locations throughout Nebraska

and contain different native vegetation types than Brown County (Kaul et al. 2006).

Results and Discussion

The number of plant species, subspecies, and varieties for Brown County totals 726 (Appendix). There are 105 families, with Poaceae as the largest (Table 2), and 358 genera. *The Flora of Nebraska* (2006) compiled all known species for Brown County from numerous botanical sources. Despite the increased botanical attention concentrated within the Niobrara River Valley, this study added 14 new county records to the list of plants known to Brown County. Most are common throughout Nebraska, but were overlooked in Brown County. One new species, blue scorpion grass (*Myosotis stricta*), is previously known for Nebraska only in Cass County (Kaul et al. 2006).

Brown County plant species were compared to four other counties using JACCARD's index of similarity. Keith County is located just east of the Nebraska panhandle (Figure 1). Cedar Point Biological Station is located there, which makes it of considerable interest to botanists. The land is divided mainly into rangeland and cropland (Rolfsmeier 1989). The North Platte and South Platte Rivers traverse the entire county from west to east. The northern third of the county is sandhills mixed-grass prairie.

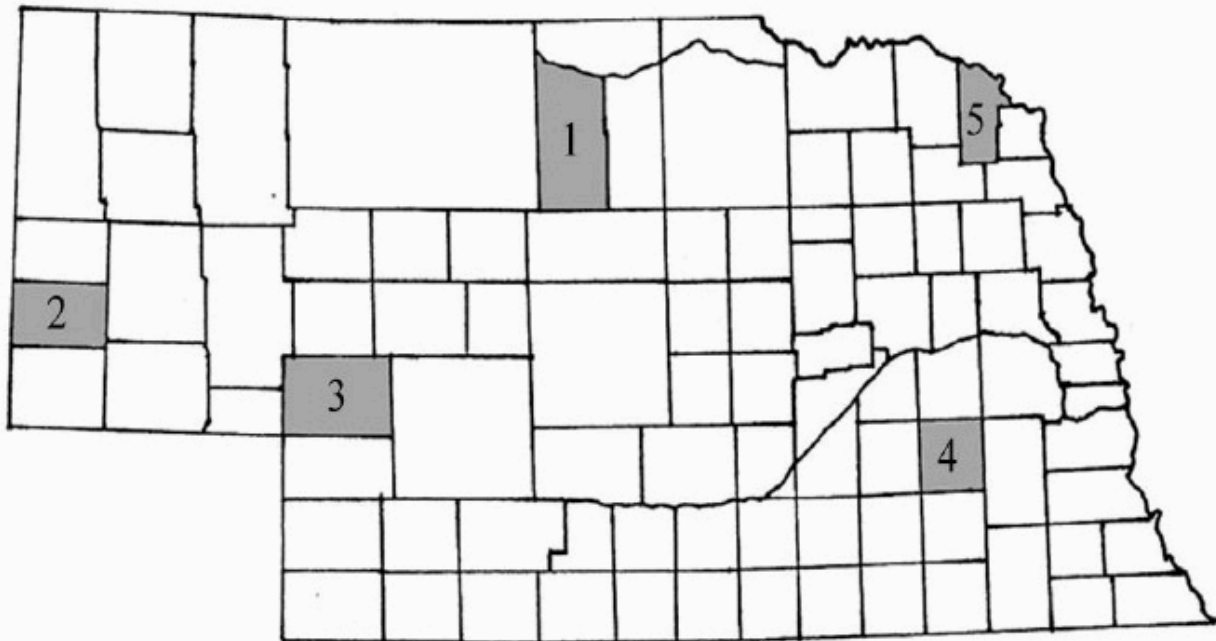


Figure 1. The Five Nebraska Counties Compared in this Study.

1 = Brown County, 2 = Banner County, 3 = Keith County, 4 = Seward County, 5 = Dixon County.

Table 2. The Ten Largest Vascular Plant Families in Brown County

Family	Number of Species	Percent of Total County Flora
Poaceae	110	15.2
Asteraceae	92	12.7
Cyperaceae	59	8.1
Fabaceae	42	5.8
Brassicaceae	24	3.3
Polygonaceae	22	3.0
Scrophulariaceae	21	2.9
Lamiaceae	18	2.5
Rosaceae	18	2.5
Apiaceae	15	2.1

Loess mixed-grass prairie and Sand Hills bordering mixed-grass prairie make up most of the southern part of the county, with a mosaic of mixed-grass and shortgrass prairie in between the North and South Platte Rivers (Kaul et al. 2006). *The Flora of Nebraska* (2006) reports 645 species for Keith County. The index of similarity (ISJ) between Keith County and Brown County (50.4%) was the highest of the representative counties that were compared to Brown County (Table 3).

Seward County, which is located in southeastern Nebraska, had a percentage of similarity with Brown County of 39.1 % (Figure 1, Table 3). The Big Blue River and the west fork of the Big Blue River run through the county. It is almost entirely upland tallgrass prairie, with a few small pockets of upland deciduous forest (Kaul et al. 2006). *The Flora of Nebraska* (2006) reports 613 species for Seward County.

Dixon County is located in northeast Nebraska (Figure 1), where the Missouri River forms its northern border. Like Seward County, it is made up almost entirely of upland tallgrass prairie. Loess mixed-grass prairie, upland deciduous forest and riparian deciduous forest surround the Missouri River (Kaul et al. 2006). Its percentage of similarity with Brown County is 35.1 % (Table 3). *The Flora of Nebraska* (2006) reports 439 species for the county.

Banner County is located in the southwestern part of Nebraska's panhandle (Figure 1). A mosaic of mixed-grass and shortgrass prairie make up most of the county, with an area of sandhills borders/ mixed-grass prairie spreading across the northern part of the county. An area of ponderosa pine forests and savannas also occurs in the northern part of the county (Kaul et al. 2006). Its percentage of similarity with Brown County is 31.9 % (Table 3). *The Flora of Nebraska* (2006) reports 435 species for the county.

Table 3. The Number of Species in Common With Brown County, and Indices of Similarity of Species Between Brown County and Banner, Dixon, Keith, and Seward Counties

County Compared to Brown County	Number of Species in Common With Brown County	Index of Similarity
Keith	459	50.4%
Seward	376	39.1%
Dixon	302	35.1%
Banner	280	31.9%

Conclusion

Brown County's rich plant diversity results from a combination of factors. These include the dissimilar plant communities that are represented in the county (Sand Hills mixed-prairie, mixed-grass prairie, ponderosa pine forests and savanna, riparian and upland hardwood deciduous forests and wet meadows), and the Niobrara Valley, which represents an east-west transition zone between montane forests of the west and eastern deciduous forests that enter the plains along the Missouri River. Plant and animal species with both northern and southern affinities are found here. With 726 reported plant species, the flora of Brown County has been comprehensively documented. This exceptional amount of botanical attention could be a result of extensive study and environmental impact statements that were completed for the region beginning in the 1970's (U.S. Department of the Interior 2005). While the flora of many Nebraska counties remains under-represented, this study reports 14 newly discovered species and additionally confirms the importance and significance of the flora of Brown County.

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Appendix. A Complete List of Species for Brown County.

The *Collection Site* column indicates site(s) at which the species was collected by the author [*N = new county record based on *The Flora of Nebraska* (Kaul et al. 2006)]. The *Flora* column indicates species not collected by the author, but reported by (Kaul et al. 2006).

Species	Collection Site(s)	Flora
PHYLUM LYCOPODIOPHYTA		
SELAGINELLACEAE (Spike-Moss Family)		
<i>Selaginella rupestris</i> (L.) Spring		X
PHYLUM EQUISETOPHYTA		
EQUISETACEAE (Horsetail Family)		
<i>Equisetum arvense</i> L.	1	
<i>Equisetum x ferrissii</i> Clute		X
<i>Equisetum hyemale</i> L. var. <i>affine</i> (Engelm.) A. A. Eaton		X
<i>Equisetum laevigatum</i> A. Braun		X
PHYLUM POLYPODIOPHYTA		
DRYOPTERIDACEAE (Fern Family)		
<i>Athyrium filix-femina</i> (L.) Roth ex Mert. subsp. <i>cyclosorum</i> (Rupr.) C. Christens.		X
<i>Cystopteris fragilis</i> (L.) Bernh.	2	
<i>Dryopteris carthusiana</i> (Villars) H. P. Fuchs		X
<i>Onoclea sensibilis</i> L.		X
<i>Woodsia oregana</i> D. C. Eaton subsp. <i>cathcartiana</i> (B. L. Robins.) Windham		
OPHIOGLOSSACEAE (Grapefern Family)		
<i>Botrychium campestre</i> W. H. Wagner & D. R. Farrar		X
<i>Botrychium simplex</i> E. Hitchcock		X
<i>Botrychium virginianum</i> (L.) Sw.		X
THELYPTERIDACEAE (Fern Family)		
<i>Thelypteris palustris</i> Schott var. <i>pubescens</i> (G. Laws.) Fernald		X
PHYLUM CONIFEROPHYTA		
CUPRESSACEAE (Cypress Family)		
<i>Juniperus virginiana</i> L.		X
PINACEAE (Pine Family)		
<i>Pinus ponderosa</i> Douglas ex P. Laws. & C. Laws. Var. <i>scopulorum</i> Engelm.		X
PHYLUM MAGNOLIOPHYTA		
ACERACEAE (Maple Family)		
<i>Acer negundo</i> L.		X
<i>Acer saccharinum</i> L.		X
ADOXACEAE (Moschatel Family)		
<i>Sambucus canadensis</i> L.		X
AGAVACEAE (Century-Plant Family)		
<i>Yucca glauca</i> Nutt.	18	

Species	Collection Site(s)	Flora
ALISMATACEAE (Water-Plantain Family)		
<i>Alisma gramineum</i> Lej		X
<i>Alisma triviale</i> Pursh		X
<i>Sagittaria calycina</i> Engelm.		X
<i>Sagittaria cuneata</i> E. Sheld.		X
<i>Sagittaria graminea</i> Michx.		X
<i>Sagittaria latifolia</i> Willd.		X
<i>Sagittaria rigida</i> Pursh		X
AMARANTHACEAE (Amaranth Family)		
<i>Amaranthus albus</i> L.		X
<i>Amaranthus arenicola</i> I. M. Johnston		X
<i>Amaranthus blitoides</i> S. Watson		X
<i>Amaranthus retroflexus</i> L.		X
<i>Froelichia floridana</i> (Nutt.) Moq.		X
<i>Froelichia gracilis</i> (Hook.) Moq.	20	
ANACARDIACEAE (Sumac Family)		
<i>Rhus aromatica</i> Aiton	3	
<i>Rhus glabra</i> L.	1	
<i>Toxicodendron radicans</i> (L.) O. Kuntze var. <i>rydbergii</i> (Small ex Rydb.) Erskine	1	
APIACEAE (Parsley Family)		
<i>Berula erecta</i> (Huds.) Cov. var. <i>incisa</i> (Torr.) Cronq.		X
<i>Cicuta bulbifera</i> L.		X
<i>Cicuta maculata</i> L.		X
<i>Conium maculatum</i> L.	6	
<i>Cymopterus acaulis</i> (Pursh) Raf.		X
<i>Cymopterus montanus</i> Torr. & A. Gray		X
<i>Foeniculum vulgare</i> P. Mill.		X
<i>Heracleum lanatum</i> Michx.		X
<i>Lomatium orientale</i> J. M. Coult. & Rose		X
<i>Musineon divaricatum</i> (Pursh) Nutt. ex Torr. & A. Gray		X
<i>Osmorhiza claytonii</i> (Michx.) C. B. Clarke		X
<i>Osmorhiza longistylis</i> (Torr.) DC.		X
<i>Pastinaca sativa</i> L.		X
<i>Sanicula canadensis</i> L.		X
<i>Sium suave</i> Walt.		X
APOCYNACEAE (Milkweed Family)		
<i>Apocynum androsaemifolium</i> L.		X
<i>Apocynum cannabinum</i> L.	1	
<i>Asclepias arenaria</i> Torr.		X
<i>Asclepias incarnata</i> L.		X
<i>Asclepias lanuginosa</i> Nutt.		X
<i>Asclepias pumila</i> (A. Gray) Vail		X
<i>Asclepias stenophylla</i> A. Gray	13	
<i>Asclepias syriaca</i> L.	12	
<i>Asclepias verticillata</i> L.		X
<i>Asclepias viridiflora</i> Raf.		X

Species	Collection Site(s)	Flora	Species	Collection Site(s)	Flora
ARALIACEAE (Ginseng Family)			<i>Dyssodia papposa</i> (Vent.) A. S. Hitchc.		X
<i>Aralia nudicaulis</i> L.		X	<i>Echinacea angustifolia</i> D.C.	14	
ASTERACEAE (Sunflower Family)			<i>Erigeron bellidiastrum</i> Nutt.		X
<i>Achillea millefolium</i> L.	4		<i>Erigeron philadelphicus</i> L.	2, 5	
<i>Ageratina altissima</i> (L.) R. King & H. Robins.		X	<i>Erigeron strigosus</i> Muhl. ex Willd.		X
<i>Ambrosia artemisiifolia</i> L.		X	<i>Eupatorium maculatum</i> L. subsp. <i>bruneri</i> (A. Gray) G. W. Douglas		X
<i>Ambrosia psilostachya</i> DC.		X	<i>Eupatorium perfoliatum</i> L.		X
<i>Antennaria howellii</i> Greene subsp. <i>neodioica</i> (Greene) R. J. Bayer		X	<i>Euthamia gymnospermoides</i> Greene		X
<i>Antennaria neglecta</i> Greene	2, 3, 9		<i>Gnaphalium jaliscense</i> Greenm.		X
<i>Antennaria parvifolia</i> Nutt.		X	<i>Gnaphalium stramineum</i> Kunth		X
<i>Anthemis cotula</i> L.		X	<i>Grindelia squarrosa</i> (Pursh) Dunal var. <i>squarrosa</i>	17	
<i>Arctium minus</i> (Hill) Bernh.		X	<i>Helenium autumnale</i> L.	1	
<i>Artemisia campestris</i> subsp. <i>caudata</i> (Michx.) H. M. Hall & Clem.		X	<i>Helianthus annuus</i> L.		X
<i>Artemisia filifolia</i> Torr.		X	<i>Helianthus grosseserratus</i> M. Martens		X
<i>Artemisia frigida</i> Willd.	3, 12		<i>Helianthus maximiliani</i> Schrad.		X
<i>Artemisia ludoviciana</i> Nutt. var. <i>ludoviciana</i>	3, 9, 12, 19		<i>Helianthus nuttallii</i> Torr. & A. Gray		X
<i>Aster borealis</i> (Torr. & A. Gray) Prov.		X	<i>Helianthus pauciflorus</i> Nutt. subsp. <i>subrhomboideus</i> (Rydb.) O. Spring & E. Schilling		X
<i>Aster ericoides</i> L. subsp. <i>ericoides</i>		X	<i>Helianthus petiolaris</i> Nutt.	12	
<i>Aster ericoides</i> L. subsp. <i>pansus</i> (S. F. Blake) A. G. Jones		X	<i>Helianthus tuberosus</i> L.		X
<i>Aster falcatus</i> Lindl. subsp. <i>commutatus</i> (Torr. & A. Gray) A. G. Jones		X	<i>Heliopsis helianthoides</i> (L.) Sweet var. <i>scabra</i> (Dunal) Fernald		X
<i>Aster laevis</i> L.		X	<i>Heterotheca latifolia</i> Buckley		X
<i>Aster lanceolatus</i> Willd. subsp. <i>hesperius</i> (A. Gray) Semple & Chmiel.		X	<i>Heterotheca stenophylla</i> (A. Gray) Shinnery var. <i>angustifolia</i> (Rydb.) Semple		X
<i>Aster novae-angliae</i> L.		X	<i>Heterotheca stenophylla</i> (A. Gray) Shinnery var. <i>stenophylla</i>		X
<i>Aster oblongifolius</i> Nutt.	20		<i>Heterotheca villosa</i> (Pursh) Shinnery var. <i>villosa</i>	15	
<i>Aster praealtus</i> Poir. var. <i>nebraskensis</i> (Britton) Wiegand		X	<i>Hymenopappus tenuifolius</i> Pursh		X
<i>Bidens cernua</i> L.	21		<i>Iva xanthiifolia</i> Nutt.		X
<i>Bidens frondosa</i> L.		X	<i>Lactuca canadensis</i> L.		X
<i>Bidens trichosperma</i> (Michx.) Britton		X	<i>Lactuca ludoviciana</i> (Nutt.) Riddell	17	
<i>Brickellia eupatorioides</i> (L.) Shinnery var. <i>corymbulosa</i> (Torr. & A. Gray) Shinnery		X	<i>Lactuca pulchella</i> (Pursh) DC.		X
<i>Centaurea cyanus</i> L.		X	<i>Lactuca serriola</i> L.		X
<i>Centaurea diffusa</i> Lam.		X	<i>Liatris aspera</i> Michx.		X
<i>Centaurea stoebe</i> L. subsp. <i>micranthos</i> (S. Gmelin ex W. Gugler)		X	<i>Liatris punctata</i> Hook.	20	
<i>Cirsium altissimum</i> (L.) Spreng.		X	<i>Liatris squarrosa</i> (L.) Michx. var. <i>glabrata</i> (Rydb.) F. C. Gates		X
<i>Cirsium arvense</i> (L.) Scop.	19 *N		<i>Lygodesmia juncea</i> (Pursh) D. Don ex Hook.		X
<i>Cirsium canescens</i> Nutt.		X	<i>Ratibida columnifera</i> (Nutt.) Wootton & Standl.	12	
<i>Cirsium undulatum</i> (Nutt.) Spreng.		X	<i>Rudbeckia hirta</i> L. var. <i>pulcherrima</i> Farw.		X
<i>Conyza canadensis</i> (L.) Cronquist	13, 21		<i>Senecio integerrimus</i> Nutt.		X
<i>Conyza ramosissima</i> Cronquist		X	<i>Senecio plattensis</i> Nutt.		X
<i>Coreopsis tinctoria</i> Nutt.	13 *N		<i>Senecio riddellii</i> Torr. & A. Gray		X
<i>Dieteria canescens</i> (Pursh) Nutt. var. <i>nebraskana</i> (B. L. Turner) D. Morgan & R. L. Hartman		X	<i>Senecio tridentatus</i> Rydb.	11	
<i>Doellingeria umbellata</i> (P. Mill.) Nees var. <i>pubens</i> (A. Gray) Britton		X	<i>Shinneryoseris rostrata</i> (A. Gray) Tomb		X
			<i>Solidago canadensis</i> L.	20	
			<i>Solidago gigantea</i> Aiton		X

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<i>Solidago missouriensis</i> Nutt.		X	<i>Cardamine bulbosa</i> (Schreb. ex Muhl.) Britton, Sterns & Poggenb.		X
<i>Solidago mollis</i> Bartl.		X	<i>Cardamine pensylvanica</i> Muhl. ex Willd.		X
<i>Solidago nemoralis</i> Aiton subsp. <i>decemflora</i> (DC.) Brammall ex Semple		X	<i>Descurainia pinnata</i> (Walter) Britton		X
<i>Solidago rigida</i> L.	20		<i>Descurainia sophia</i> (L.) Webb ex Prantl		X
<i>Solidago speciosa</i> Nutt. var. <i>rigidiuscula</i> Torr. & A. Gray		X	<i>Draba nemorosa</i> L.		X
<i>Taraxacum officinale</i> G.H. Weber ex F.H. Wigg	1		<i>Draba reptans</i> (Lam.) Fernald		X
<i>Thelesperma filifolium</i> (Hook.) A. Gray var. <i>intermedium</i> (Rydb.) Shinnars		X	<i>Erysimum asperum</i> (Nutt.) DC.	5, 9	
<i>Thelesperma megapotamicum</i> (Spreng.) Kuntze	13		<i>Erysimum cheiranthoides</i> L.		X
<i>Townsendia exscapa</i> (Richardson) Porter		X	<i>Erysimum inconspicuum</i> (S. Watson) MacMill.		X
<i>Tragopogon dubius</i> Scop.	3, 4		<i>Erysimum repandum</i> L.		X
<i>Vernonia fasciculata</i> Michx.		X	<i>Lepidium densiflorum</i> Schrader	12, 4	
<i>Xanthisma spinulosum</i> (Pursh) D. Morgan & R.L. Hartm.	13		<i>Nasturtium officinale</i> R. Br.	1	
<i>Xanthium strumarium</i> L. var. <i>canadense</i> (P. Mill.) Torr. & A. Gray		X	<i>Physaria ludoviciana</i> (Nutt.) O'Kane & Al-Shehbaz	3, 8	
BALSAMINACEAE (Jewel-Weed Family)			<i>Rorippa palustris</i> (L.) Besser var. <i>glabra</i> (O. E. Schulz) Roy L. Taylor & MacBryde		X
<i>Impatiens capensis</i> Meerb.		X	<i>Sinapis alba</i> L.		X
BERBERIDACEAE (Barberry Family)			<i>Sisymbrium altissimum</i> L.	12	
<i>Berberis vulgaris</i> L.		X	<i>Sisymbrium loeselii</i> L.	4, 12	
BETULACEAE (Birch Family)			<i>Thlaspi arvense</i> L.	6 *N	
<i>Betula papyrifera</i> Marsh.	6		CACTACEAE (Cactus Family)		
<i>Corylus americana</i> Walt.		X	<i>Coryphantha missouriensis</i> (Sweet) Britton & Rose		X
<i>Ostrya virginiana</i> (P. Mill.) K. Koch		X	<i>Opuntia fragilis</i> (Nutt.) Haw	19	
BORAGINACEAE (Borage Family)			CAESALPINIACEAE (Caesalpina Family)		
<i>Cryptantha minima</i> Rydb.		X	<i>Gleditsia triacanthos</i> L.	1 *N	
<i>Hackelia deflexa</i> (Wahlenb.) Opiz var. <i>americana</i> (A. Gray) Fernald & I. M. Johnst.		X	CAMPANULACEAE (Bellflower Family)		
<i>Hackelia virginiana</i> (L.) I. M. Johnst.		X	<i>Campanula aparinoides</i> Pursh		X
<i>Lappula redowskii</i> (Hornem.) Greene var. <i>redowskii</i>		X	<i>Campanula rotundifolia</i> L.	2	
<i>Lithospermum arvense</i> L.		X	<i>Lobelia siphilitica</i> L.	21	
<i>Lithospermum carolinense</i> (Walter ex J.F. Gmel.) MacMill.	9		<i>Lobelia spicata</i> Lam.		X
<i>Lithospermum incisum</i> Lehm.	3, 4, 5		<i>Triodanis perfoliata</i> (L.) Nieuwl.		X
<i>Myosotis laxa</i> Lehm.		X	CANNABACEAE (Hemp Family)		
<i>Myosotis stricta</i> Link ex Roem. & J. A. Schult	3 *N		<i>Cannabis sativa</i> L.	6	
<i>Onosmodium molle</i> Michx. var. <i>occidentale</i> (Mack.) I.M. Johnst.	19		CAPRIFOLIACEAE (Honeysuckle Family)		
BRASSICACEAE (Mustard Family)			<i>Symphoricarpos occidentalis</i> Hook.	5, 15	
<i>Arabis glabra</i> (L.) Bernh.		X	CARYOPHYLLACEAE (Pink Family)		
<i>Arabis hirsuta</i> (L.) Scop. var. <i>pyncocarpa</i> (M. Hopkins) Rollins		X	<i>Arenaria lateriflora</i> L.		X
<i>Berteroa incana</i> (L.) DC.	4, 12 *N		<i>Cerastium fontanum</i> Baumg. subsp. <i>vulgare</i> (Hartman) Greuter & Burdet		X
<i>Brassica juncea</i> (L.) Czern.		X	<i>Dianthus armeria</i> L.	13 *N	
<i>Camelina microcarpa</i> DC.	5		<i>Gypsophila paniculata</i> L.		X
<i>Capsella bursa-pastoris</i> (L.) Medik.	3 *N		<i>Saponaria officinalis</i> L.		X
			<i>Silene antirrhina</i> L.		X
			<i>Silene vulgaris</i> (Moench) Garcke	17	
			<i>Stellaria longifolia</i> Muhl. ex Willd.	1, 6, 15	
			<i>Stellaria media</i> (L.) Villars		X

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CELASTRACEAE (Bittersweet Family)			CORNACEAE (Dogwood Family)		
<i>Celastrus scandens</i> L.		X	<i>Cornus sericea</i> L.		X
<i>Euonymus atropurpureus</i> Jacq.		X	CRASSULACEAE (Stonecrop Family)		
CELTIDACEAE (Hackberry Family)			<i>Penthorum sedoides</i> L.		X
<i>Celtis occidentalis</i> L.		X	CYPERACEAE (Sedge Family)		
CERATOPHYLLACEAE (Hornwort Family)			<i>Bolboschoenus fluviatilis</i> (Torrey)		X
<i>Ceratophyllum demersum</i> L.		X	Sojak		
CHENOPODIACEAE (Goosefoot Family)			<i>Bulbostylis capillaris</i> (L.) Kunth ex C. B. Clarke		X
<i>Atriplex hortensis</i> L.		X	<i>Carex atherodes</i> Spreng.		X
<i>Atriplex rosea</i> L.		X	<i>Carex aurea</i> Nutt.		X
<i>Chenopodium album</i> L.	16		<i>Carex blanda</i> C. Dewey	1, 4, 5	
<i>Chenopodium fremontii</i> S. Watson		X	<i>Carex brevior</i> (C. Dewey) Mack. ex Lunell	4, 13, 15	
<i>Chenopodium simplex</i> (Torr.) Raf.		X	<i>Carex comosa</i> F. Boott		X
<i>Chenopodium standleyanum</i> Aellen		X	<i>Carex crawei</i> C. Dewey		X
<i>Chenopodium strictum</i> A. W. Roth		X	<i>Carex cristatella</i> Britton		X
<i>Corispermum americanum</i> (Nutt.) Nutt.		X	<i>Carex diandra</i> Schrank		X
<i>Cycloloma atriplicifolium</i> (Spreng.) J.M. Coult	20		<i>Carex eburnea</i> F. Boott		X
<i>Monolepis nuttalliana</i> (Roem. & Schult.) Greene		X	<i>Carex eleocharis</i> L.H. Bailey	9	
<i>Salsola collina</i> Pallas		X	<i>Carex emoryi</i> C. Dewey	1, 5	
<i>Salsola tragus</i> L.		X	<i>Carex filifolia</i> Nutt.		X
CISTACEAE (Rock-Rose Family)			<i>Carex granularis</i> Muhl. ex Willd. var. <i>haleana</i> (Olney) Porter		X
<i>Helianthemum bicknellii</i> Fernald		X	<i>Carex gravida</i> L. H. Bailey		X
<i>Lechea stricta</i> Legg. ex Britton		X	<i>Carex heliophila</i> Mack.		X
CLEOMACEAE (Cleome Family)			<i>Carex hystericina</i> Muhl. ex Willd.		X
<i>Cleome serrulata</i> Pursh		X	<i>Carex interior</i> L. H. Bailey		X
<i>Polanisia jamesii</i> (Torr. & A. Gray) Ilitis		X	<i>Carex lacustris</i> Willd.		X
CLUSIACEAE (Mangosteen Family)			<i>Carex nebrascensis</i> C. Dewey		X
<i>Hypericum majus</i> (A. Gray) Britton		X	<i>Carex oligocarpa</i> Willd.		X
<i>Hypericum perforatum</i> L.		X	<i>Carex peckii</i> Howe		X
<i>Triadenum fraseri</i> (Spach) Gleason		X	<i>Carex pellita</i> Willd.	5	
COMMELINACEAE (Spiderwort Family)			<i>Carex praegracilis</i> W. Boott	5	
<i>Commelina erecta</i> L. var. <i>angustifolia</i> (Michx.) Fernald 18			<i>Carex prairea</i> C. Dewey		X
<i>Tradescantia bracteata</i> Small ex Britton & Brown	13		<i>Carex sartwellii</i> C. Dewey		X
<i>Tradescantia occidentalis</i> (Britton) Smyth		X	<i>Carex saximontana</i> Mack.		X
CONVOLVULACEAE (Morning-Glory Family)			<i>Carex scoparia</i> Schkuhr ex Willd.		X
<i>Convolvulus arvensis</i> L.		X	<i>Carex spengelii</i> C. Dewey ex Spreng.	6	
<i>Cuscuta campestris</i> Yunck.		X	<i>Carex stipata</i> Muhl. ex Willd.	19	
<i>Cuscuta cephalanthi</i> Engelm.		X	<i>Carex utriculata</i> F. Boott		X
<i>Cuscuta coryli</i> Engelm.		X	<i>Carex vulpinoidea</i> Michx.		X
<i>Cuscuta cuspidata</i> Engelm.		X	<i>Cyperus acuminatus</i> Torr. & Hook. ex Torr.		X
<i>Cuscuta indecora</i> Choisy		X	<i>Cyperus bipartitus</i> Torr.		X
<i>Evolvulus nuttallianus</i> J. A. Schultes		X	<i>Cyperus diandrus</i> Torr.		X
<i>Ipomoea leptophylla</i> Torrey		X	<i>Cyperus engelmannii</i> Steud.		X
			<i>Cyperus erythrorhizos</i> Muhl.		X
			<i>Cyperus odoratus</i> L.	21	
			<i>Cyperus schweinitzii</i> Torr.	15, 18	
			<i>Cyperus squarrosus</i> L.		X
			<i>Cyperus strigosus</i> L.		X
			<i>Dulichium arundinaceum</i> (L.) Britton		X
			<i>Eleocharis acicularis</i> (L.) Roem. & Schultes		X

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<i>Eleocharis atropurpurea</i> (Retz.) J. Presl & C. Presl		X	<i>Dalea cylindriceps</i> Barneby		X
<i>Eleocharis compressa</i> Sullivant		X	<i>Dalea leporina</i> (Aiton) Bullock		X
<i>Eleocharis elliptica</i> Kunth		X	<i>Dalea purpurea</i> Venten. var. <i>purpurea</i>		X
<i>Eleocharis engelmannii</i> Steud.		X	<i>Dalea villosa</i> (Nutt.) Sprengel		X
<i>Eleocharis erythropoda</i> Steud.		X	<i>Desmodium canadense</i> (L.) DC.	21	
<i>Eleocharis palustris</i> (L.) Roem. & Schultes		X	<i>Desmodium glutinosum</i> (Muhl. ex Willd.)		X
<i>Eleocharis wolfii</i> (A. Gray) A. Gray		X	<i>Glycyrrhiza lepidota</i> Pursh	15	
<i>Lipocarpha aristulata</i> (Coville) G. C. Tucker		X	<i>Lathyrus polymorphus</i> Nutt var. <i>polymorphus</i>	7	
<i>Lipocarpha drummondii</i> (Nees) G. C. Tucker		X	<i>Lespedeza capitata</i> Michx.		X
<i>Schoenoplectus acutus</i> (Muhl. ex Bigelow) A. Love & D. Love		X	<i>Lotus tenuis</i> Walldst. & Kit. ex Willd.	1 *N	
<i>Schoenoplectus hallii</i> (A. Gray) S. G. Smith		X	<i>Lotus purshianus</i> (Benth.) F. Clements & E. Clements ex Otley		X
<i>Schoenoplectus heterochaetus</i> (Chase) Sojak		X	<i>Medicago lupulina</i> L.	14	
<i>Schoenoplectus pungens</i> (Vahl) Palla	1		<i>Medicago sativa</i> L. subsp. <i>sativa</i>	13	
<i>Schoenoplectus tabernaemontani</i> (C.C. Gmel.) Palla 13		X	<i>Melilotus albus</i> Medikus		X
<i>Scirpus pallidus</i> (Britton) Fernald		X	<i>Melilotus officinalis</i> (L.) Pallas	16	
ELAEAGNACEAE (Oleaster Family)			<i>Oxytropis lambertii</i> Pursh	10	
<i>Shepherdia argentea</i> (Pursh) Nutt.		X	<i>Pediomelum argophyllum</i> (Pursh) Grimes	2, 13, 19	
ELATINACEAE (Waterwort Family)			<i>Pediomelum digitatum</i> (Nutt. ex Torr. & A. Gray) Isley.		X
<i>Elatine rubella</i> Rydb.		X	<i>Pediomelum hypogaeum</i> (Nutt. ex Torr. & A. Gray) Rydb.		X
ERICACEAE (Heather Family)			<i>Psoralidium lanceolatum</i> (Pursh) Rydb.		X
<i>Pterospora andromedea</i> Nutt.		X	<i>Psoralidium tenuiflorum</i> (Pursh) Rydb.		X
<i>Pyrola elliptica</i> Nutt.		X	<i>Robinia pseudoacacia</i> L.		X
EUPHORBIACEAE (Spurge Family)			<i>Securigera varia</i> (L.) Lassen	1 *N	
<i>Croton texensis</i> (Klotzsch) Mull. Arg.		X	<i>Strophostyles helvola</i> (L.) Elliott		X
<i>Euphorbia esula</i> L. var. <i>esula</i>	4		<i>Strophostyles leiosperma</i> (Torr. & A. Gray) Piper		X
<i>Euphorbia geyeri</i> Engelm.		X	<i>Trifolium hybridum</i> L.		X
<i>Euphorbia glyptosperma</i> Engelm.		X	<i>Trifolium pratense</i> L.	14	
<i>Euphorbia hexagona</i> Nutt. ex Spreng.		X	<i>Trifolium repens</i> L.	1	
<i>Euphorbia maculata</i> L.		X	<i>Vicia americana</i> Muhl. ex Willd. var. <i>minor</i> Hook.		X
<i>Euphorbia missurica</i> Raf. var. <i>petaloidea</i> (Engelm.) L. C. Dorn		X	<i>Vicia villosa</i> Roth	12	
<i>Euphorbia nutans</i> Lag.		X	FAGACEAE (Oak Family)		
FABACEAE (Pea Family)			<i>Quercus macrocarpa</i> Michx.	1	
<i>Amorpha canescens</i> Nutt. ex Pursh		X	FUMARIACEAE (Fumitory Family)		
<i>Amorpha fruticosa</i> L.		X	<i>Corydalis curvisiliqua</i> Engelm. subsp. <i>occidentalis</i> (Engelm. ex A.Gray) W.A.Weber	9	
<i>Amphicarpaea bracteata</i> (L.) Fernald		X	GENTIANACEAE (Gentian Family)		
<i>Apios americana</i> Medikus		X	<i>Gentiana andrewsii</i> Griseb. var. <i>dakotica</i> A. Nelson		X
<i>Astragalus canadensis</i> L.		X	<i>Gentiana puberulenta</i> J. S. Pringle		X
<i>Astragalus crassicaarpus</i> Nutt.		X	GERANIACEAE (Geranium Family)		
<i>Astragalus laxmannii</i> Jacq. var. <i>robustior</i> (Hook.) Barneby & Welsh		X	<i>Geranium carolinianum</i> L.		X
<i>Astragalus lotiflorus</i> Hook.		X	<i>Geranium maculatum</i> L.		X
<i>Astragalus missouriensis</i> Nutt.		X	<i>Geranium pusillum</i> L.		X
<i>Astragalus plattensis</i> Nutt. ex Torr. & A. Gray		X			
<i>Dalea aurea</i> Nutt. ex Pursh		X			
<i>Dalea candida</i> Michx. ex Willd. var. <i>oligophylla</i> (Torr.) Shinnors		X			

Species	Collection Site(s)	Flora	Species	Collection Site(s)	Flora
GROSSULARIACEAE (Gooseberry Family)			<i>Prunella vulgaris</i> L. var. <i>lanceolata</i> (W. Barton) Fernald X		
<i>Ribes americanum</i> P. Mill.		X	<i>Pycnanthemum virginianum</i> (L.) Dur. & Jackson ex Robins. & Fernald X		
<i>Ribes missouriense</i> Nutt.	1,2		<i>Salvia nemorosa</i> L. X		
<i>Ribes odoratum</i> H. L. Wendl.		X	<i>Scutellaria galericulata</i> L. X		
HALORAGACEAE (Water-Milfoil Family)			<i>Scutellaria lateriflora</i> L. X		
<i>Myriophyllum sibiricum</i> Komarov		X	<i>Scutellaria parvula</i> Michx. var. <i>missouriensis</i> (Torr.) Goodman & C. A. Lawson X		
HYDROCHARITACEAE (Frogbit Family)			<i>Stachys pilosa</i> Nutt. var. <i>pilosa</i> X		
<i>Elodea canadensis</i> Michx.		X	<i>Teucrium canadense</i> L. var. <i>occidentale</i> (A. Gray) McClint & Epling X		
<i>Elodea nuttallii</i> (Planch.) H. St. John		X	LEMNACEAE (Duckweed Family)		
<i>Najas flexilis</i> (Willd.) Rostk. & Schmidt		X	<i>Lemna trisulca</i> L. X		
<i>Najas guadalupensis</i> (Spreng.) Magnus		X	<i>Spirodela polyrrhiza</i> (L.) Schleid. X		
HYDROPHYLLACEAE (Waterleaf Family)			<i>Wolffia borealis</i> (Engelm. ex Hegelm.) Landolt X		
<i>Ellisia nyctelea</i> (L.) L.	1		<i>Wolffia columbiana</i> H. Karsten X		
IRIDACEAE (Iris Family)			LENTIBULARIACEAE (Bladderwort Family)		
<i>Sisyrinchium montanum</i> Greene		X	<i>Urticularia macrorrhiza</i> Leconte X		
JUGLANDACEAE (Walnut Family)			LILIACEAE (Lily Family)		
<i>Juglans nigra</i> L.		X	<i>Allium perdulce</i> S.V. Fraser 9		
JUNCACEAE (Rush Family)			<i>Maianthemum canadense</i> Desf. var. <i>interius</i> Fernald X		
<i>Juncus alpinoarticulatus</i> Chaix		X	<i>Polygonatum biflorum</i> (Walter) Elliott X		
<i>Juncus arcticus</i> Willd. var. <i>balticus</i> (Willd.) Trautv.		X	<i>Smilacina stellata</i> (L.) Desf. 1		
<i>Juncus brachyphyllus</i> Wieg.		X	LINACEAE (Flax Family)		
<i>Juncus bufonius</i> L.		X	<i>Linum compactum</i> A. Nelson X		
<i>Juncus canadensis</i> J. Gay		X	<i>Linum rigidum</i> Pursh var. <i>rigidum</i> 18		
<i>Juncus dudleyi</i> Wieg.	18		<i>Linum sulcatum</i> Riddell X		
<i>Juncus interior</i> Wieg.	19		LOASACEAE (Stickleaf Family)		
<i>Juncus longistylis</i> Torr.		X	<i>Mentzelia nuda</i> (Pursh) Torr. & A. Gray var. <i>stricta</i> (Osterh.) H. D. Harr. X		
<i>Juncus marginatus</i> Rostk.		X	LYTHRACEAE (Loosestrife Family)		
<i>Juncus nodosus</i> L.		X	<i>Anmannia robusta</i> Heer & Regel X		
<i>Juncus scirpoides</i> Lam.		X	<i>Lythrum alatum</i> Pursh X		
<i>Juncus torreyi</i> Coville		X	<i>Lythrum salicaria</i> L. 21		
JUNCAGINACEAE (Arrow-Grass Family)			<i>Rotala ramosior</i> (L.) Koehne var. <i>interior</i> Fernald & Grisc. 5		
<i>Triglochin maritima</i> L.		X	MALVACEAE (Mallow Family)		
<i>Triglochin palustris</i> L.		X	<i>Callirhoe involucrata</i> (Torr. & A. Gray) A. Gray X		
LAMIACEAE (Mint Family)			<i>Malva neglecta</i> Wallr. X		
<i>Glechoma hederacea</i> L.	1, 3		<i>Malva pusilla</i> J. E. Smith X		
<i>Hedeoma hispida</i> Pursh		X	<i>Sphaeralcea coccinea</i> (Nutt.) Rydb. X		
<i>Lycopus americanus</i> Muhl. ex W. Barton		X	MARSILEACEAE (Pepperwort Family)		
<i>Lycopus asper</i> Greene		X	<i>Marsilea vestita</i> Hook. & Grev. X		
<i>Lycopus uniflorus</i> Michx.		X	MENYANTHACEAE (Bog-Bean Family)		
<i>Mentha arvensis</i> L.		X	<i>Menyanthes trifoliata</i> L. X		
<i>Mentha x piperita</i> L.		X			
<i>Monarda fistulosa</i> L. var. <i>mollis</i> (L.) Benth.		X			
<i>Monarda pectinata</i> Nutt.		X			
<i>Nepeta cataria</i> L.	3				

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MOLLUGINACEAE (Carpet-Weed Family)			<i>Agrostis hyemalis</i> (Walter) Britton, Sterns, & Poggenb.		X
<i>Mollugo verticillata</i> L.		X	<i>Agrostis scabra</i> Willd.		X
MORACEAE (Mulberry or Fig Family)			<i>Agrostis stolonifera</i> L.	19	
<i>Morus alba</i> L.	1		<i>Alopecurus aequalis</i> Sobol.		X
NYCTAGINACEAE (Four-o'clock Family)			<i>Alopecurus carolinianus</i> Walter		X
<i>Mirabilis hirsuta</i> (Pursh) MacMill.		X	<i>Andropogon gerardii</i> Vitman subsp. <i>gerardii</i>		X
<i>Mirabilis linearis</i> (Pursh) Heimerl		X	<i>Andropogon gerardii</i> Vitman subsp. <i>hallii</i> (Hack.) J. Wipff		X
OLEACEAE (Olive Family)			<i>Aristida basiramea</i> Engelm. ex Vasey		X
<i>Fraxinus pennsylvanica</i> Marshall	2, 19		<i>Aristida curtissii</i> (A. Gray ex S. Watson & Coult.) Nash		X
ONAGRACEAE (Evening-Primrose Family)			<i>Aristida oligantha</i> Michx.		X
<i>Calylophus serrulatus</i> (Nutt.) P.H. Raven	14		<i>Aristida purpurea</i> Nutt. var. <i>longiseta</i> (Steud.) Vasey		X
<i>Circaea lutetiana</i> L. subsp. <i>canadensis</i> (L.) Asch. & Magnus		X	<i>Aristida purpurea</i> Nutt. var. <i>robusta</i> (Merr.) A. H. Holmgren & N. H. Holmgren		X
<i>Epilobium ciliatum</i> Raf.		X	<i>Beckmannia syzigachne</i> (Steud.) Fernald		X
<i>Epilobium coloratum</i> Biehler		X	<i>Bouteloua curtipendula</i> (Michx.) Torr.		X
<i>Epilobium leptophyllum</i> Raf.		X	<i>Bouteloua gracilis</i> (Willd. ex Kunth) Lag. ex Griffiths		X
<i>Gaura coccinea</i> Pursh	14		<i>Bouteloua hirsuta</i> Lag.		X
<i>Ludwigia polycarpa</i> Short & R. Peter		X	<i>Bromus ciliatus</i> L.		X
<i>Oenothera biennis</i> L., <i>sens. lat.</i>		X	<i>Bromus inermis</i> Leyss.	1, 4, 12, 13	
<i>Oenothera laciniata</i> Hill	3		<i>Bromus japonicus</i> Thunb. ex Murr.	3	
<i>Oenothera latifolia</i> (Rydb.) Munz		X	<i>Bromus latiglumis</i> (Shear) A. S. Hitchc.		X
<i>Oenothera nuttallii</i> Sweet		X	<i>Bromus secalinus</i> L.		X
<i>Oenothera rhombipetala</i> Nutt. ex Torr. & A. Gray	15		<i>Bromus squarrosus</i> L.	12	
ORCHIDACEAE (Orchid Family)			<i>Bromus tectorum</i> L.	5, 12	
<i>Cypripedium candidum</i> Muhl. ex Willd.		X	<i>Buchloe dactyloides</i> (Nutt.) Engelm.		X
<i>Liparis loeselii</i> (L.) Rich.		X	<i>Calamagrostis canadensis</i> (Michx.) P. Beauv.		X
<i>Platanthera aquilonis</i> Sheviak		X	<i>Calamagrostis stricta</i> (Timm.) Koeler		X
<i>Spiranthes cernua</i> (L.) Rich.		X	<i>Calamovilfa longifolia</i> (Hook.) Scribn.		X
<i>Spiranthes magnicamporum</i> Sheviak		X	<i>Catabrosa aquatica</i> (L.) P. Beauv.		X
OXALIDACEAE (Wood-Sorrel Family)			<i>Cenchrus longispinus</i> (Hack.) Fernald		X
<i>Oxalis dillenii</i> Jacq.	3		<i>Cinna arundinaceae</i> L.		X
<i>Oxalis stricta</i> L.		X	<i>Dactylis glomerata</i> L.	1, 4	
<i>Oxalis violacea</i> L.		X	<i>Digitaria ischaemum</i> (Schreb.) Muhl.		X
PAPAVERACEAE (Poppy Family)			<i>Digitaria sanguinalis</i> (L.) Scop.		X
<i>Argemone polyanthemus</i> (Fedde) G. Ownbey	18		<i>Distichlis spicata</i> (L.) Greene		X
PHRYMACEAE (Lopseed Family)			<i>Echinochloa crusgalli</i> (L.) P. Beauv.		X
<i>Phryma leptostachya</i> L.		X	<i>Echinochloa muricata</i> (P. Beauv.) Fernald var. <i>microstachya</i> Wiegand		X
PLANTAGINACEAE (Plantain Family)			<i>xElyhordeum macounii</i> (Vasey) Barkworth & D. R. Dewey		X
<i>Plantago major</i> L.		X	<i>Elymus canadensis</i> L.	1	
<i>Plantago patagonica</i> Jacq. var. <i>patagonica</i>	5, 11, 12		<i>Elymus elongatus</i> (Host) Runem.	13 *N	
POACEAE (Grass Family)			<i>Elymus smithii</i> (Rydb.) Gould	12	
<i>Agropyron cristatum</i> (L.) Gaertn.	13		<i>Elymus trachycaulus</i> (Link) Gould ex Shinners subsp. <i>trachycaulus</i>		X
<i>Agrostis exarata</i> Trin. subsp. <i>minor</i> (Hook.) C. L. Hitchc.		X	<i>Elymus villosus</i> Muhl. ex Willd.		X
			<i>Elymus virginicus</i> L.		X

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<i>Eragrostis cilianensis</i> (All.) Vignolo ex Janch.		X	<i>Schedonnardus paniculatus</i> (Nutt.) Trel.		X
<i>Eragrostis hypnoides</i> (Lam.) Britton, Sterns & Poggenb.		X	<i>Schizachne purpurascens</i> (Torr.) Swallen		X
<i>Eragrostis pectinacea</i> (Michx.) Nees ex Steud.		X	<i>Schizachyrium scoparium</i> (Michx.) Nash	20	
<i>Eragrostis pilosa</i> (L.) P. Beauv. var. <i>perplexa</i> (L. H. Harvey) S. D. Koch		X	<i>Scolochloa festucacea</i> (Willd.) Link		X
<i>Eragrostis spectabilis</i> (Pursh) Steud.		X	<i>Setaria pumila</i> (Poir.) Roem. & Schult.		X
<i>Eragrostis trichodes</i> (Nutt.) A. W. Wood		X	<i>Setaria viridis</i> (L.) P. Beauv.		X
<i>Festuca subverticillata</i> (Persoon) E. Alexeev		X	<i>Sorghastrum nutans</i> (L.) Nash	21	
<i>Glyceria grandis</i> S. Watson		X	<i>Sorghum bicolor</i> (L.) Moench		X
<i>Glyceria striata</i> (Lam.) A. S. Hitchc.		X	<i>Spartina gracilis</i> Trin.		X
<i>Hordeum jubatum</i> L.	13		<i>Spartina pectinata</i> Link		X
<i>Hordeum pusillum</i> Nutt.	17		<i>Sphenopholis obtusata</i> (Michx.) Scribn. var. <i>obtusata</i>		X
<i>Koeleria macrantha</i> (Ledeb.) Schult.	11, 14		<i>Sporobolus compositus</i> (Poir.) Merr.		X
<i>Leersia virginica</i> Willd.		X	<i>Sporobolus cryptandrus</i> (Torr.) A. Gray		X
<i>Lolium perenne</i> L. var. <i>perenne</i>		X	<i>Sporobolus heterolepis</i> (A. Gray) A. Gray		X
<i>Lolium pratense</i> (Hudson) S. J. Darbyshire		X	<i>Sporobolus neglectus</i> Nash		X
<i>Muhlenbergia cuspidata</i> (Torr. ex Hook.) Rydb.		X	<i>Sporobolus vaginiflorus</i> (Torr. ex A. Gray) A. W. Wood		X
<i>Muhlenbergia frondosa</i> (Poir.) Fernald		X	<i>Stipa comata</i> Trin. & Rupr.	19	
<i>Muhlenbergia glomerata</i> (Willd.) Trin.		X	<i>Stipa hymenoides</i> Roem. & Schult.		X
<i>Muhlenbergia mexicana</i> (L.) Trin.		X	<i>Stipa spartea</i> Trin.		X
<i>Muhlenbergia pungens</i> Thurb. ex A. Gray		X	<i>Stipa viridula</i> Trin.		X
<i>Muhlenbergia racemosa</i> (Michx.) Britton, Sterns, & Poggenb.		X	<i>Triplasis purpurea</i> (Walter) Chapm.		X
<i>Munroa squarrosa</i> (Nutt.) Torr.		X	<i>Vulpia octoflora</i> (Walter) Rydb.	11	
<i>Oryzopsis micrantha</i> (Trin. & Rupr.) Thurb.		X	<i>Zizania palustris</i> L.		X
<i>Panicum acuminatum</i> Sw.		X	POLEMONIACEAE (Phlox Family)		
<i>Panicum capillare</i> L.		X	<i>Collomia linearis</i> Nutt.		X
<i>Panicum dichotomiflorum</i> Michx.		X	<i>Ipomopsis longiflora</i> (Torr.) V. E. Grant		X
<i>Panicum oligosanthos</i> Schult. var. <i>scribnerianum</i> (Nash) Fernald	9		POLYGALACEAE (Milkwort Family)		
<i>Panicum virgatum</i> L.		X	<i>Polygala alba</i> Nutt.		X
<i>Panicum wilcoxianum</i> Vasey		X	<i>Polygala verticillata</i> L. var. <i>isocycla</i> Fernald		X
<i>Paspalum setaceum</i> Michx. var. <i>stramineum</i> (Nash) D. J. Banks		X	POLYGONACEAE (Buckwheat Family)		
<i>Phalaris arundinacea</i> L.	1		<i>Eriogonum annuum</i> Nutt.	20	
<i>Phleum pratense</i> L.	4, 17		<i>Polygonum amphibium</i> L.		X
<i>Phragmites australis</i> (Cav.) Trin. ex Steud.		X	<i>Polygonum bicornes</i> Raf.	21	
<i>Poa arida</i> Vasey		X	<i>Polygonum coccineum</i> Muhl. ex Willd.		X
<i>Poa bulbosa</i> L.	1,3 *N		<i>Polygonum convolvulus</i> L.	16	
<i>Poa compressa</i> L.		X	<i>Polygonum hydropiper</i> L.		X
<i>Poa interior</i> Rydb.	1		<i>Polygonum hydropiperoides</i> Michx. var. <i>opelousanum</i> (Ridd. ex J. K. Small) Ridd. ex W. Stone		X
<i>Poa juncifolia</i> Scribn.		X	<i>Polygonum lapathifolium</i> L.		X
<i>Poa pratensis</i> L.	4, 14		<i>Polygonum persicaria</i> L.		X
<i>Poa trivialis</i> L.		X	<i>Polygonum punctatum</i> Elliott		X
<i>Polypogon monspeliensis</i> (L.) Desf.		X	<i>Polygonum ramosissimum</i> Michx.		X
<i>Puccinellia nuttalliana</i> (Schult.) A. S. Hitchc.		X	<i>Polygonum sagittatum</i> L.		X

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<i>Polygonum scandens</i> L.		X	<i>Ranunculus sceleratus</i> L. var. <i>sceleratus</i>		X
<i>Polygonum tenue</i> Michx.		X	<i>Ranunculus testiculatus</i> Crantz	1 *N	
<i>Rumex acetosella</i> L.		X	<i>Thalictrum dasycarpum</i> Fisch. & Ave-Lall.		X
<i>Rumex altissimus</i> Alph. Wood		X	RHAMNACEAE (Buckthorn Family)		
<i>Rumex britannica</i> L.		X	<i>Ceanothus herbaceus</i> Raf. var. <i>pubescens</i> (Torr. & A. Gray) Shinnery		X
<i>Rumex crispus</i> L.	13		ROSACEAE (Rose Family)		
<i>Rumex fueginus</i> Philippi		X	<i>Agrimonia gryposepala</i> Wallr.		X
<i>Rumex obtusifolius</i> L.		X	<i>Amelanchier alnifolia</i> (Nutt.) Nutt. ex M. Roemer		X
<i>Rumex triangulivalois</i> (Danser) Rech.		X	<i>Drymocallis arguta</i> (Pursh) Rydb.		X
<i>Rumex venosus</i> Pursh		X	<i>Fragaria vesca</i> L. subsp. <i>americana</i> (Porter) Staudt		X
PONTEDERIACEAE (PickereI-Weed Family)			<i>Fragaria virginiana</i> P. Mill.		X
<i>Zosterella dubia</i> (Jacq.) J. K. Small		X	<i>Geum canadense</i> Jacq.		X
PORTULACACEAE (Purslane Family)			<i>Physocarpus opulifolius</i> (L.) Maxim. var. <i>intermedius</i> (Rydb.) Robins.		X
<i>Phemeranthus calycinus</i> (Engelm.) Kiger		X	<i>Potentilla norvegica</i> L.	15	
<i>Phemeranthus parviflorus</i> (Nutt.) Kiger		X	<i>Potentilla paradoxa</i> Nutt.		X
<i>Phemeranthus rugospermus</i> (J. M. Holz.)		X	<i>Potentilla pensylvanica</i> L.		X
<i>Portulaca grandiflora</i> Hook.		X	<i>Potentilla recta</i> L.	12	
POTAMOGETONACEAE (Pondweed Family)			<i>Prunus americana</i> Marsh.		X
<i>Potamogeton diversifolius</i> Raf.		X	<i>Prunus pumila</i> L. var. <i>besseyi</i> (L. H. Bailey) Waugh		X
<i>Potamogeton foliosus</i> Raf.		X	<i>Prunus virginiana</i> L.	1	
<i>Potamogeton gramineus</i> L.		X	<i>Pyrus ioensis</i> (Wood) L. H. Bailey		X
<i>Potamogeton illinoensis</i> Morong		X	<i>Rosa arkansana</i> Porter ex Porter & J.M. Coult.	12	
<i>Potamogeton natans</i> L.		X	<i>Rosa woodsii</i> Lindl.		X
<i>Potamogeton nodosus</i> Poir.		X	<i>Rubus occidentalis</i> L.	1	
<i>Potamogeton pectinatus</i> L.		X	RUBIACEAE (Coffee Family)		
<i>Potamogeton praelongus</i> Wulfen		X	<i>Galium aparine</i> L.	15	
<i>Potamogeton pusillus</i> L.		X	<i>Galium circaezans</i> Michx. var. <i>hypomalacum</i> Fernald		X
<i>Potamogeton richardsonii</i> (A. Benn.) Rydb.		X	<i>Galium obtusum</i> Bigelow		X
<i>Potamogeton strictifolius</i> A. Benn.		X	<i>Galium tinctorium</i> L.		X
<i>Potamogeton zosteriformis</i> Fernald		X	<i>Galium trifidum</i> L.		X
PRIMULACEAE (Primrose Family)			<i>Galium triflorum</i> Michx.		X
<i>Anagallis minima</i> (L.) Krause		X	RUTACEAE (Citrus Family)		
<i>Androsace occidentalis</i> Pursh		X	<i>Zanthoxylum americanum</i> P. Mill.		X
<i>Lysimachia ciliata</i> L.		X	SALICACEAE (Willow or Poplar Family)		
<i>Lysimachia hybrida</i> Michx.		X	<i>Populus deltoides</i> Bartr. ex Marsh. var. <i>occidentalis</i> Rydb.	5	
<i>Lysimachia thyrsoflora</i> L.		X	<i>Salix amygdaloides</i> N. J. Andersson	5	
RANUNCULACEAE (Buttercup Family)			<i>Salix eriocephala</i> Michx. var. <i>famelica</i> (C. R. Ball) R. D. Dorn		X
<i>Anemone caroliniana</i> Walter		X	<i>Salix exigua</i> Nutt. subsp. <i>interior</i> (Rowlee) Cronquist	1, 5, 17	
<i>Anemone cylindrica</i> A. Gray		X	<i>Salix humilis</i> Marsh.		X
<i>Anemone patens</i> L. var. <i>multifida</i> Pritz.		X	<i>Salix petiolaris</i> J. E. Smith		X
<i>Aquilegia canadensis</i> L.		X	<i>Salix xrubens</i> Schrank (S. <i>alba</i> x <i>fragilis</i>)		X
<i>Clematis virginiana</i> L.		X			
<i>Delphinium virescens</i> Nutt.	13				
<i>Ranunculus abortivus</i> L.		X			
<i>Ranunculus cymbalaria</i> Pursh		X			
<i>Ranunculus longirostris</i> Godron		X			
<i>Ranunculus pensylvanicus</i> L.		X			

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SANTALACEAE (Sandalwood Family)			SPARGANIACEAE (Bur-Reed Family)		
<i>Comandra umbellata</i> (L.) Nutt. subsp. <i>pallida</i> (A. DC.) Piehl		X	<i>Sparganium emersum</i> A. Rehmman		X
SAXIFRAGACEAE (Saxifage Family)			<i>Sparganium eurycarpum</i> Engelm.		X
<i>Heuchera richardsonii</i> R. Br.		X	TILIACEAE (Linden Family)		
SCROPHULARIACEAE (Figwort Family)			<i>Tilia americana</i> L.		X
<i>Agalinis aspera</i> (Douglas ex Benth.) Britton		X	TYPHACEAE (Cattail Family)		
<i>Agalinis tenuifolia</i> (M. Vahl.) Raf. var. <i>parviflora</i> (Britton) Britton	21		<i>Typha angustifolia</i> L.	17 *N	
<i>Bacopa rotundifolia</i> (Michx.) Wettst.		X	<i>Typha latifolia</i> L.		X
<i>Castilleja sessiliflora</i> Pursh		X	ULMACEAE (Elm Family)		
<i>Gratiola neglecta</i> Torr.		X	<i>Ulmus americana</i> L.	2	
<i>Lindernia dubia</i> (L.) Pennell		X	<i>Ulmus pumila</i> L.	1, 16	
<i>Mimulus glabratus</i> Kunth var. <i>jamesii</i> (Torr. & A. Gray ex Benth.) A. Gray		X	URTICACEAE (Nettle Family)		
<i>Mimulus rigens</i> L.		X	<i>Boehmeria cylindrica</i> (L.) Swartz		X
<i>Orobanche fasciculata</i> Nutt.		X	<i>Parietaria pensylvanica</i> Muhl. ex Willd.		X
<i>Orobanche ludoviciana</i> Nutt.		X	<i>Pilea fontana</i> (Lunell) Rydb.		X
<i>Pedicularis lanceolata</i> Michx.		X	<i>Urtica dioica</i> L. subsp. <i>gracilis</i> (Aiton) Selander	15	
<i>Penstemon albidus</i> Nutt.	10		VERBENACEAE (Vervain Family)		
<i>Penstemon angustifolius</i> Nutt. ex Pursh var. <i>angustifolius</i>	3, 8, 10, 13		<i>Verbena bipinnatifida</i> Nutt.		X
<i>Penstemon gracilis</i> Nutt.		X	<i>Verbena bracteata</i> Lag. & J.D. Rodriguez	12	
<i>Penstemon grandiflorus</i> Nutt.	13		<i>Verbena hastata</i> L.		X
<i>Verbascum thapsus</i> L.	1		<i>Verbena stricta</i> Vent.	13, 1	
<i>Veronica americana</i> (Raf.) Schwein. ex Benth.		X	<i>Verbena urticifolia</i> L.		X
<i>Veronica anagallis-aquatica</i> L.		X	VIOLACEAE (Violet Family)		
<i>Veronica catenata</i> Pennell		X	<i>Viola canadensis</i> L. var. <i>rugulosa</i> (Greene) C. L. Hitchc.		X
<i>Veronica peregrina</i> L. var. <i>peregrina</i>		X	<i>Viola nephrophylla</i> Greene	5	
<i>Veronica peregrina</i> L. var. <i>xalapensis</i> (Kunth) Pennell		X	<i>Viola pedatifida</i> G. Don		X
SMILACACEAE (Greenbriar Family)			<i>Viola pubescens</i> Ait. var. <i>eriocarpa</i> (Schwein.) Russell		X
<i>Smilax lasioneura</i> Hook.		X	<i>Viola sororia</i> Willd.	6	
SOLANACEAE (Nightshade Family)			VITACEAE (Grape Family)		
<i>Lycium barbarum</i> L.		X	<i>Parthenocissus quinquefolia</i> (L.) Planch.		X
<i>Physalis heterophylla</i> Nees	15		<i>Parthenocissus vitacea</i> (Knerr) A. Hitchc.	1	
<i>Physalis hispida</i> (Waterfall) Cronquist		X	<i>Vitis riparia</i> Michx.	1	
<i>Physalis longifolia</i> Nutt.		X	ZANNICHELLIACEAE (Horned-Pondweed Family)		
<i>Solanum interius</i> Rydb.		X	<i>Zannichellia palustris</i> L.		X
<i>Solanum rostratum</i> Dunal		X	ZYGOPHYLLACEAE (Caltrop Family)		
<i>Solanum triflorum</i> Nutt.	5		<i>Tribulus terrestris</i> L.		X