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THE CHARACTERISTICS AND PHYTOGEOGRAPHIC AFFINITIES OF THE FLORA OF NINE-MILE PRAIRIE, A WESTERN TALL-GRASS PRAIRIE IN NEBRASKA

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Three hundred ninety-two species, subspecies, and varieties have been recorded at Nine-Mile Prairie, a relict tall-grass prairie that has been reduced from 323 to 97 ha in the past 50 years. There are 218 native and 17 introduced herbaceous perennial species, and 73 native and 24 introduced annuals. Analogous numbers for biennials are 15 and 11, for shrubs are 14 and one, for trees are ten and three, and for woody vines are six and none. One hundred twenty-one native species are of central and eastern North American phyto-geographic affinity, and 109 are of transcontinental affinity. Seventy-nine of the Prairie's native species occur only in the central part of the continent, but only 27 are characteristic of the western *and* central parts. Five habitats are utilized to categorize the vegetation: wooded ravine, upland prairie, disturbed upland prairie, wet prairie, and aquatic. Data are presented on the distribution of growth habits and phyto-geographic affinities for the habitats. The upland prairies have more native and introduced species than either the wet prairies or ravines. However, the relative proportions of growth habits, flowering phenologies, and phyto-geographic affinities are not the same in the various habitats. The flora of the wooded ravines is mostly of eastern affinity, while that of the upland prairies has strong western and central phyto-geographic elements.

† † †

INTRODUCTION

Nine-Mile Prairie is a 240 acre (97 ha) tract of virgin prairie on the west edge of the city of Lincoln in Lancaster County, Nebraska, and is one of the largest remnants of virgin prairie in eastern Nebraska. It was the site of pioneering studies of

plant ecology by J. E. Weaver and his associates from the 1910's to the 1950's, and is the longest-studied prairie in the State. The Prairie has been owned by the University of Nebraska Foundation since 1984, and is leased to the University for educational and research purposes. It has been mowed sometimes for hay and occasionally grazed lightly by cattle over the past century, but is relatively undisturbed except for a farmstead abandoned in the 1930's, which is far from being fully revegetated with native species. Since 1979 a regular program of mostly springtime burning has been undertaken to foster growth of native species and suppress the introduced elements.

The Prairie grows on moderately steep hills of loess and glacial till. The hills slope to narrow, rather steep-walled ravines, and there is no level land between them. The soils are fine-textured and water-retentive, but when they dry the surface becomes cracked and very hard. A few large glacial erratic boulders of Sioux quartzite appear at the surface.

There are several small, spring-fed streams of rather steep gradient near which most of the trees, shrubs, and associated understory plants occur, but there is no low, moist, level prairie. Two small, artificial ponds contain a few submersed aquatic species.

Steiger (1930), in a detailed paper that presaged modern quantitative ecological studies, presented much information on climate, flowering phenology, dominance, soil-water relationships of the plants, and other ecological characteristics of the Prairie. His paper is the only publication that enumerates and ecologically classifies the flora of Nine-Mile Prairie. He listed species in ravines, wet meadows, and disturbed areas, but presented ecological information mostly about species of high and low prairies. He characterized high prairie by the presence of little bluestem grass (*Andropogon scoparius*), porcupine grass (*Stipa spartea*), June-grass (*Koeleria pyramidata*), the dropseeds (*Sporobolus* spp.), and grama-grasses (*Bouteloua* spp.), and low prairie by its dense, continuous sod, mostly of big bluestem (*Andropogon gerardii*). For our purposes, we recognize these as one floristic area, the upland prairie, because they share many species and there is no apparent edaphic, topographic, or floristic boundary between them, as even Steiger noted. Both are well-drained and mostly sloping, whereas low prairie, in the modern sense, is level, poorly-drained, but not constantly saturated prairie; the latter conditions have never existed at Nine-Mile Prairie. Instead, there are narrow, marshy strips along the streams that we designate as wet prairies (but which are not Steiger's low prairie); they are characterized by plants that thrive on saturated soils.

The Prairie is usually categorized as "tall-grass prairie," but it is an example of such near its western limits, where the heights of the tallest grasses are usually less than in tall-grass

prairies farther east. In wet summers some of the grasses grow to 2 m in parts of the Prairie, but in many years they do not reach such heights.

Here we present an analysis of the plants of Nine-Mile Prairie to define their phylogeographic affinities and to characterize their growth habits. We also present an up-to-date floristic list to document the status of the flora 57 years after Steiger's study. Numerous species have been discovered since Steiger's list was published, but others he listed cannot be found today; their former presence is documented by herbarium specimens, many of them collected by Steiger. The Prairie has been reduced by plowing and grazing from 800 acres (323 ha) in 1930, which has undoubtedly eliminated some species.

For our purposes, the Prairie is taken to include not only the grassland species but also the plants of the narrow, often steep-sided ravines between the grassland slopes; these are wooded in some places. All native and introduced vascular plant species ever collected or credibly recorded from the Prairie are indicated in the data in Table I and the list in Table II. Nomenclature follows the *Flora of the Great Plains* (Great Plains Flora Association, 1986), in which most of the synonyms used by Steiger can be found. Most species are represented by voucher specimens in the University of Nebraska-Lincoln herbarium, where there is separate collection of Nine-Mile Prairie plants, including all the extant Steiger specimens from Nine-Mile Prairie or that we believe to be from there,

TABLE I. Numbers of species in the five habitats, grouped by habit and range.

HABITATS:	RANGES:	HABITS:
D Disturbed upland habitats	WCE Western, Central, Eastern No. Amer.	A Annual
U Undisturbed upland habitats	WC Western, Central North America	B Biennial
W Wet prairies, watersides	CE Central, Eastern North America	P Perennial (herbaceous)
R Wooded ravines and edges	C Central North America	S Shrub
Q Aquatic (underwater) habitats		T Tree
		V Vine (woody)

	HABIT: NATIVE SPECIES						RANGE: NATIVE SPECIES				HABIT: INTRODUCED SPECIES								
	A	B	P	S	T	V	WCE	WC	CE	C	A	B	P	S	T	V			
D	38	5	7	0	0	0	50	28	6	8	8	50	21	10	9	0	0	0	40
U	4	2	137	5	1	0	149	28	17	47	57	149	0	0	6	1	0	0	7
W	19	4	49	3	1	0	76	43	3	20	10	76	2	0	2	0	0	0	4
R	10	4	24	6	8	6	58	7	1	46	4	58	1	1	0	0	3	0	5
Q	2	0	1	-	-	-	3	3	0	0	0	3	0	0	0	-	-	-	0
	73	15	218	14	10	6	336	109	27	121	79	336	24	11	17	1	3	0	56

HABITATS

based upon the label data on his specimens. We have added many voucher specimens from the Prairie.

In Tables I and II, all species are designated as native (**N**) or introduced (**I**), the latter category including all species not native to eastern Nebraska. All species are also designated as annual (**A**), biennial (**B**), or perennial (**P**) herbs or, for woody plants, as shrubs (**S**), trees (**T**), or woody vines (**V**). When the literature reports a species to be either annual or biennial, we have chosen the latter designation as expressing the greatest longevity.

General habitat designations are given in the Tables using a modified version of Steiger's (1930) system. Plants of well-drained, sloping, upland prairie are designated "**U**", a category that combines Steiger's high and low prairies. Plants of distinctly wet, mostly saturated, marshy prairie are shown by "**W**", a category that also includes the plants bordering un-forested margins of small streams and ponds that contain the submersed aquatic (**Q**) species. Most trees and their understory species occur in the wooded ravines (**R**). Plants of disturbed, upland areas such as gopher mounds, eroded places, and paths are indicated by "**D**"; plants of disturbed places in "**W**" and "**R**" areas are not indicated, but all the annuals and biennials of those areas are typical of disturbed areas, as are a few perennials. Some species occasionally appear in habitats other than those designated, but for our purposes of classification and analysis we have indicated only the most usual habitat. Some species are likely to disappear, e.g., American elm, which was not listed by Steiger but is now common in the ravines but threatened by Dutch elm disease. Other species not listed by Steiger or us will surely be found, especially introduced ones.

The typical flowering seasons are given in Table II as spring (**Sp**), summer (**Su**), or fall (**F**), indicating March—May, June—August, and September—October respectively. When two seasons are noted (**SpSu**, **SuF**), it is usual for flowering to peak near the end of the first season and the beginning of the second. A few species flower from spring through fall and are designated as "**SpF**". The annual species are more variable in flowering phenology than the perennials, and some spring-flowering annuals re-flower in the fall, especially if the fall weather is wet. However, flowering of the perennials can be strongly affected by the weather too. According to Steiger (1930), all areas show peak numbers of species in flower in late May and early to mid-June, followed by declines in late June or early July. The ravines, lower slopes, and wet meadows then exhibit increases, reaching higher peaks in August that are followed by steep declines in September, but the upper slopes continue a slow and steady decline in number of species in flower from their June maximum.

To assess phylogeographic affinities, the general North American range is given for each native species in Table I. Those with ranges extending across the continent are indicated as "**WCE**" (west, central, east), those of the central and eastern parts of the continent (from the eastern foot of the Rocky Mountains to the Atlantic coast) as "**CE**", and those that range from the Pacific coast, Great Basin, or Rocky Mountains through the Great Plains as "**WC**". Many of the Prairie's species are found only in the central third of the continent (from the eastern foot of the Rocky Mountains across the Great Plains to the Mississippi River or somewhat beyond) and are designated "**C**" in the list. Ranges are not given for introduced species because they are of no value in assessing phylogeographic relationships of the native flora. Information about ranges is taken from the *Atlas of the Flora of the Great Plains* (Great Plains Flora Association, 1977), the *Flora of the Great Plains* (Great Plains Flora Association, 1986), and from various regional floras of North America.

OBSERVATIONS AND DISCUSSION

Distribution of growth habits in native and introduced species

Table I shows that of the the 392 species of vascular plants discovered at Nine-Mile Prairie in the past 60 years, 336 (86%) are native species and 56 (14%) are introduced. (Many introduced species are Eurasian, but some are American.) Of the native species, 218 (65%) are perennial herbs, 73 (22%) are annuals, 15 (4.5%) are biennials, and 6 (1.8%) are woody vines. The ten native tree species and 14 native shrub species together account for about 7% of the native species.

Steiger (1930) found 345 species of native and introduced plants, and he noted 156 native species in upland prairie (his low and high prairies), 45 in wet prairie, and 132 in the ravines (these total more than 345 because he showed some species in more than one habitat). Some native species on Steiger's list, e.g. *Cypripedium candidum*, cannot be found in the Prairie today, but others, e.g. *Spiranthes vernalis* and *S. cernua*, are common but do not appear on his list. He did not list *Bromus inermis*, the introduced smooth brome grass, but today it is a common and serious weed, even in the undisturbed Prairie. He noted that the only trees in the ravines were boxelder (*Acer negundo*), cottonwood (*Populus deltoides*), and willow (*Salix* sp.). Today we find all those and American, red, and Siberian elms (*Ulmus americana*, *U. rubra*, *U. pumila*), the hybrid *Ulmus rubra* × *U. pumila*, honey locust (*Gleditsia triacanthos*), hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), and the introduced mulberry (*Morus alba*) and Osage orange (*Maclura pomifera*) to be present and sometimes

abundant. Siberian elm reproduces vigorously, but is confined by fires to some of the ravines. Although abundant nearby, neither black walnut (*Juglans nigra*) nor bur oak (*Quercus macrocarpa*) is known from the Prairie.

Some of Steiger's citations were based upon incorrectly identified specimens that we have re-identified; such species are included in our list under the correct names. For example, the specimen he labelled *Helianthus petiolaris* is actually *H. tuberosus*, so the latter name appears on our list; in this instance *H. petiolaris* is absent from the list because that species has not been found at the Prairie and is, in fact, rare in this part of the State.

We exclude from our list some species cited by Steiger for the Prairie because they are not documented by specimens and we have not found the species in the Prairie; many are unknown in this part of the State or, at least, in the Prairie because suitable habitat is lacking for them. Some of Steiger's citations are no doubt based upon mis-identifications, but in the absence of specimens we cannot determine what was meant by those names. The current names (from Great Plains Flora Association, 1986) of these excluded species are *Agropyron caninum*, *Alopecurus aequalis*, *Aster fendleri*, *Carex haydenii*, *C. interior*, *C. lurida*, *C. pennsylvanica*, *Chenopodium gigantospermum*, *Cirsium ochrocentrum*, *Desmodium paniculatum*, *Eragrostis hypnoides*, *E. pilosa*, *Euphorbia geyeri*, *Galium lanceolatum*, *G. trifidum*, *Hieracium scabrum*, *Lithospermum arvense*, *L. carolinense*, *Muhlenbergia mexicana*, *Physalis pumila*, *Plantago aristata*, *Rubus allegheniensis*, *Salix nigra*, *Scrophularia lanceolata*, *Silene drummondii*, *Sisymbrium altissimum* (probably for *S. loeselii*), and *Viola palustris*.

Thus, because of these and other problems of synonymy, identification, and changing nomenclatural concepts, our list and Steiger's are not entirely comparable, but they are similar enough to suggest that some floristic changes have occurred since 1930. Also, we include in our list a more detailed survey of the flora of the wooded ravines, the disturbed areas, and the ponds (which latter did not exist in Steiger's time). And while Steiger studied the entire tract, he concentrated on a transect of about 0.3 mi (0.4 km), but we have studied the area rather evenly. That transect apparently was at the north end of the northwestern part of the Prairie.

Table I classifies the native and introduced species by habitat. It shows differences among habitats in the proportions of native and introduced species, in the growth habits of the species, and in the phytogeographic affinities. The aquatic, ravine, and wet-prairie habitats have the fewest introduced species (0, 5, and 4, respectively), the upland prairie has 7, and the disturbed upland areas have 40. In total numbers of species, native and introduced, the strictly aquatic habitat has the fewest (3),

the ravines have 63, the wet prairies have 80, the upland prairies have 156, and the disturbed areas have 90. Table I also shows the differing proportions of growth habits among the habitats. Trees, shrubs, and woody vines collectively account for tiny fractions of the species numbers in all habitats except the ravines. Perennial species outnumber annuals in all except the disturbed and aquatic habitats.

The commonest native annuals in small disturbed places in upland prairie, such as gopher mounds and anthills, are *Ambrosia artemisiifolia*, *Erigeron strigosus*, *Hedeoma hispida*, *Triodanis perfoliata*, and *Plantago patagonica*. Other native annuals and biennials grow with introduced annuals and biennials in heavily disturbed places, but the native *Linum sulcatum* occurs mostly in apparently undisturbed prairie sod. The musk thistle (*Carduus nutans*), an introduced biennial, also appears there too, and is a potential problem in prairie management. The introduced perennials are often found in undisturbed prairie and some, such as smooth brome (*Bromus inermis*), are vigorous competitors with the native species.

The ravines are often choked with rough-leaved dogwood (*Cornus drummondii*) in moister places, and with wild plum (*Prunus americana*) and smooth sumac (*Rhus glabra*) in drier ones; the latter two are sometimes accompanied by chokecherry (*P. virginiana*). The sumac, plum, and chokecherry tend to spread from the ravines in the absence of fire, the sumac being especially invasive.

The introduced trees (*Maclura pomifera*, *Morus alba*, *Ulmus pumila*) are mostly confined to the ravines, but sometimes get established in disturbed sites elsewhere, especially in the absence of fire and mowing. The native red cedar (*Juniperus virginiana*) is a potentially troublesome invader, but is controlled by burning and mowing; it is most abundant in the abandoned farmstead.

All six woody vines are native species (*Celastrus scandens*, *Menispermum canadense*, *Parthenocissus vitacea*, *Smilax hispida*, *Toxicodendron* sp., and *Vitis riparia*) and grow upon the trees and shrubs in the ravines, as do the herbaceous annual vines (*Echinocystis lobata*, *Polygonum convolvulus*, *Sicyos angulatus*) and the herbaceous perennial vines (*Calystegia sepium*, *Polygonum scandens*). Bindweed (*Convolvulus arvensis*), an aggressive introduced species that is abundant nearby, sometimes invades from adjacent cultivated land, but is not a serious problem in the Prairie itself.

The only bulbous plants in the upland prairies are wild onion (*Allium canadense*) and violet wood-sorrel (*Oxalis violacea*). The bulbous prairie erythronium (*Erythronium mesochoreum*) has not been found, but it grows nearby. A few species have notably thickened underground storage organs (e.g. *Cacalia plantaginea*, *Psoralea esculenta*), and *Liatis* can

develop somewhat thickened subterranean stems, but the Prairie flora is overwhelmingly rhizomatous and fibrous-rooted. One species of the very wet prairie is cormous: *Sagittaria brevirostra*.

Geographic affinities of the flora

The grasslands of central North America are young. They formed after the retreat of the Pleistocene continental glaciers and the disappearance of the boreal forests that bordered them. The modern grasslands were populated by species migrating from refugia mostly to the southeast, south, and southwest. A few are relicts of cooler, early post-Pleistocene times, when the area was forested (Kaul, Katak, and Churchill, 1988), and some are endemics, having evolved in the grasslands. The flora is thus largely immigrant, and one method of measuring the contributions of other areas is to analyze the present geographic affinities of the native flora. The data for Nine-Mile Prairie are shown in Tables I and II.

As Table I reveals, more than two-thirds of the native flora of Nine-Mile Prairie consists of species of transcontinental affinity (**WCE**; 109 species or 32% of the native flora) and central and eastern affinity (**CE**; 121 species or 36%). The 79 species endemic to the central part of the continent (**C**) account for 24%. The smallest contribution is made by species of west and central (**WC**) distribution: 27 species (about 8%).

There are disparities in the distributions of phylogeographic affinities among the habitats, as show in Table I. Transcontinentally distributed native species in the upland (**U**), disturbed (**D**), and wet prairies (**W**) are 19%, 56%, and 57% of their native species, respectively. The native species confined to the central part of the continent (**C**) account for about 39% of the native species in the upland prairies, but only about 12% and 7% of those in the wet prairie and ravines, respectively. The ravines have 79% of their native flora with central and eastern phylogeographic affinity (**CE**), but the other habitats have less than 30% in that category. Native species of western and central affinity account for only 11% of the native species in upland prairies, and for about 2% in the ravines and 4% in the wet prairies.

Significant families

The Asteraceae have the most species, 68, and are mostly summer- and fall-flowering. The Poaceae are represented by 61 species and flower over the entire growing season. The Fabaceae are third largest, with 23 species. The Asclepiadaceae are represented by nine milkweeds (*Asclepias*), of which *A. verticillata* is by far the most common, followed by *A. syriaca*; a single plant of *A. viridis* was found in 1987, the northernmost location known for that species. Here and there on the lower

slopes are large clumps of the spectacular butterfly milkweed, *A. tuberosa*. The climbing milkweed, *Cynanchum laeve*, an eastern species apparently native as far west as the Missouri River counties in Nebraska, has recently become a somewhat serious weed in Lincoln, but has not yet been found at the Prairie.

Of the four orchid species reported for the Prairie, three can be found today. The ladies' tresses, *Spiranthes vernalis* and *S. cernua*, are locally abundant, but the white lady-slipper, *Cypripedium candidum*, is known only from an herbarium specimen more than 50 years old. The prairie fringed orchid, *Habenaria leucophaea* (sensu lato) occurs at two sites. (Sheviak and Bowles [1986] have recently recognized our specimens of the latter under the old generic and new specific names *Platanthera praeclara*, reserving *leucophaea* for more eastern specimens. Both entities occur in eastern Nebraska, but we are unsure of the need to recognize them at the specific level.)

Floristic similarities to nearby prairies

No lists of species of nearby prairies of similar size to Nine-Mile Prairie are available, and thus it is not possible to calculate indices of similarity. However, there are notable absences from the Prairie of some species that occur at other remnant prairies nearby: *Erythronium mesochoreum*, *Phlox pilosa*, and the introduced *Dianthus armeria*, to name a few. Some nearby prairies are edaphically different from Nine-Mile Prairie, and could reveal rather different suites of species upon analysis.

The western tall-grass prairie once occupied thousands of square miles in eastern Nebraska and nearby states, but it has become rare because of agrarian disturbance. Numerous fragments of such prairie exist in Lancaster County and other glaciated counties of eastern Nebraska, but few are as large as Nine-Mile Prairie, and most are in degraded condition. Native prairies are virtually annihilated in the level, unglaciated counties west of the Big Blue River and in the hilly mixed-grass area of central Nebraska, in contrast to the sandhills and short-grass prairies of central and western Nebraska (Kaul, 1975), in which substantial areas remain in various conditions of preservation.

TABLE II. VASCULAR PLANTS OF NINE-MILE PRAIRIE

STATUS:

1. Species cited by Steiger (1930) under this name; a voucher specimen by Steiger, by us, or by someone else exists in the University of Nebraska-Lincoln herbarium.

2. Species cited by Steiger under a synonym, or a name used by him based upon a mis-identified specimen that we have re-identified; voucher specimen in the herbarium.

3. Species cited by Steiger under this name or a synonym, but not documented by a voucher specimen. We have not found this species at the Prairie, but it is present nearby, and we accept Steiger's citation.

4. Species not cited by Steiger, but we found it in the Prairie; voucher specimen in the herbarium.

PROVENANCE:

- I. Introduced species, not native to eastern Nebraska.
- N. Native species.

HABIT:

- A. Annual plant.
- B. Biennial plant.
- P. Perennial, herbaceous plant.
- S. Shrub.
- T. Tree.
- V. Woody vine.

HABITAT:

- D. Disturbed areas in upland (U) prairie.
- Q. Submersed in the artificial ponds.
- R. Wooded ravines.
- U. Upland, well-drained prairie of the slopes and hilltops.
- W. Permanently wet, open prairie bordering the streams and ponds; includes marsh plants.

FLOWERING TIME:

- F. Fall (Sep—Nov)
- Sp. Spring (Mar—May)

SpF. Spring *through* fall, continuously or intermittently.

SpSu. Spring & summer, especially late spring and early summer.

Su. Summer (Jun—Aug)

SuF. Summer and fall, especially late summer and early fall.

GEOGRAPHIC RANGE:

C. Central North America, from the eastern base of the Rocky Mountains to the Mississippi River or somewhat beyond.

CE. Central and eastern North America, from the base of the Rocky Mountains to the east coast.

WC. Western and central North America, from the Pacific coast to the Mississippi River or somewhat beyond.

WC. Transcontinental.

(Nomenclature follows *Flora of the Great Plains* [Gt. Pl. Flora Assn., 1986].)

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
ACANTHACEAE						
<i>Ruellia humilis</i> , fringleaf ruellia	2	N	P	U	Su	CE
ACERACEAE						
<i>Acer negundo</i> , boxelder	1	N	T	R	Sp	WCE
ALISMATACEAE						
<i>Alisma triviale</i> , water plantain	4	N	P	W	Su	WCE
<i>Echinodorus rostratus</i> , burhead	4	N	A	W	Su	CE
<i>Sagittaria brevirostra</i> , arrowhead	2	N	P	W	SuF	C
<i>S. calycina</i> , arrowhead	4	N	A	W	SuF	WCE
AMARANTHACEAE						
<i>Amaranthus albus</i> , tumbleweed	4	N	A	D	SuF	WCE
<i>A. retroflexus</i> , rough pigweed	3	N	A	D	SuF	WCE
<i>A. rudis</i> , water-hemp	4	N	A	W	Su	C

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE	PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
ANACARDIACEAE							<i>C. undulatum</i> , wavy-leaf thistle	4	N	P	U	Su	WC
<i>Rhus glabra</i> , smooth sumac	1	N	S	U	Su	WCE	<i>Conyza canadensis</i> , horseweed	2	N	A	D	SuF	WCE
<i>Toxicodendron</i> sp., poison ivy	2	N	P	R	Su	CE	<i>C. ramosissima</i> , dwarf horseweed	3	N	A	D	SuF	C
APIACEAE							<i>Dyssodia papposa</i> , fetid marigold	3	N	A	D	SuF	C
<i>Cicuta maculata</i> , water hemlock	1	N	P	W	Su	CE	<i>Echinacea angustifolia</i> , coneflower	2	N	P	U	Su	C
<i>Conium maculatum</i> , poison hemlock	4	I	B	R	Su	CE	<i>Eclipta prostrata</i> , yerba-de-tajo	4	N	A	W	SuF	CE
<i>Lomatium foeniculaceum</i> var. <i>daucifolium</i> , carrotleaf lomatium	2	N	P	U	Sp	WC	<i>Erechtites hieracifolia</i> , fireweed	4	N	A	W	F	CE
<i>Sanicula canadensis</i> , black snake-root	1	N	B	R	Su	CE	<i>Erigeron strigosus</i> , daisy fleabane	2	N	A	U	Su	WCE
<i>S. gregaria</i> , clustered sanicle	3	N	P	R	SpSu	CE	<i>Eupatorium perfoliatum</i> , boneset	1	N	P	W	SuF	CE
APOCYNACEAE							<i>E. rugosum</i> , white snake-root	2	N	P	R	SuF	CE
<i>Apocynum cannabinum</i> , hemp dogbane	1	N	P	W	Su	WCE	<i>Euthamia gymnospermoides</i> , viscid euphorbia	1	N	P	U	SuF	C
ASCLEPIADACEAE							<i>Grindelia squarrosa</i> , gumweed	1	N	P	D	SuF	WC
<i>Asclepias incarnata</i> , swamp milkweed	1	N	P	W	Su	WCE	<i>Helianthus annuus</i> , common sunflower	1	N	A	D	SuF	WC
<i>A. lanuginosa</i> , woolly milkweed	2	N	P	U	Su	C	<i>H. grosseserratus</i> , sawtooth sunflower	3	N	P	U	F	CE
<i>A. stenophylla</i> , narrow-leaved milkweed	2	N	P	U	Su	C	<i>H. maximiliani</i> , Maximilian's sunflower	3	N	P	R	F	CE
<i>A. sullivantii</i> , Sullivant's milkweed	1	N	P	U	Su	C	<i>H. rigidus</i> , stiff sunflower	2	N	P	U	SuF	WC
<i>A. syriaca</i> , common milkweed	1	N	P	U	Su	CE	<i>H. tuberosus</i> , Jerusalem artichoke	2	N	P	U	SuF	CE
<i>A. tuberosa</i> , butterfly milkweed	1	N	P	U	Su	CE	<i>Heliopsis helianthoides</i> var. <i>scabra</i> , rough heliopsis	2	N	P	U	Su	WCE
<i>A. verticillata</i> , whorled milkweed	1	N	P	U	Su	CE	<i>Hieracium longipilum</i> , hawkweed	1	N	P	U	Su	C
<i>A. viridiflora</i> , green milkweed	2	N	P	U	Su	CE	<i>Kuhnia eupatorioides</i> var. <i>corymbulosa</i>	2	N	P	U	SuF	C
<i>A. viridis</i> , spider milkweed	4	N	P	U	Su	CE	<i>Lactuca canadensis</i> , wild lettuce	1	N	B	R	SuF	CE
ASTERACEAE							<i>L. ludoviciana</i> , western wild lettuce	1	N	B	U	SuF	C
<i>Achillea millefolium</i> , yarrow, milfoil	1	N	P	U	Su	WCE	<i>L. oblongifolia</i> , blue lettuce	2	N	P	U	SuF	WC
<i>Ambrosia artemisiifolia</i> , common ragweed	2	N	A	D	SuF	WCE	<i>L. serriola</i> , prickly lettuce	2	I	B	D	SuF	
<i>A. psilostachya</i> , western ragweed	4	N	P	U	SuF	C	<i>Liatris aspera</i> , rough gayfeather	2	N	P	U	SuF	CE
<i>A. trifida</i> , giant ragweed	1	N	A	D	SuF	WCE	<i>L. punctata</i> , blazing star, dotted gayfeather	2	N	P	U	SuF	C
<i>Antennaria neglecta</i> , pussy-toes	2	N	P	U	SpSu	WCE	<i>Lygodesmia juncea</i> , skeletonweed	3	N	P	U	Su	WC
<i>Arctium minus</i> , burdock	4	I	B	D	SuF	WCE	<i>Microris cuspidata</i> , false dandelion	3	N	P	U	Sp	C
<i>Artemisia dracunculoides</i> , silky wormwood	1	N	P	U	SuF	WC	<i>Prenanthes aspera</i> , white lettuce	4	N	P	R	SuF	C
<i>A. ludoviciana</i> var. <i>ludoviciana</i> , Louisiana sage	1	N	P	U	SuF	WC	<i>Raietida columnifera</i> , coneflower	1	N	P	U	Su	C
<i>Aster ericoides</i> , heath aster	2	N	P	U	F	C	<i>R. pinnata</i> , tall coneflower	3	N	P	U	Su	C
<i>A. oblongifolius</i> , aromatic aster	2	N	P	U	F	CE	<i>Rudbeckia hirta</i> , black-eyed susan	3	N	P	U	SuF	WCE
<i>A. sericeus</i> , silky aster	1	N	P	U	F	C	<i>R. laciniata</i> , cutleaf coneflower	3	N	P	R	SuF	CE
<i>A. simplex</i> , panicled aster	2	N	P	U	F	CE	<i>Senecio integerrimus</i> , lamb's-tongue groundsel	1	N	P	U	Sp	WC
<i>Bidens cernua</i> , nodding beggar-ticks	4	N	A	W	F	WCE	<i>S. plattensis</i> , prairie ragwort	1	N	B	U	Sp	C
<i>B. frondosa</i> , beggar-ticks	1	N	A	W	F	CE	<i>Silphium integrifolium</i> , rosinweed	1	N	P	U	Su	C
<i>B. vulgata</i> , tall beggar-ticks	1	N	A	W	F	WCE	<i>S. laciniatum</i> , compass plant	1	N	P	U	Su	C
<i>Cacalia plantaginea</i> , Indian-plantain	2	N	P	U	Su	C	<i>S. perfoliatum</i> , cup plant	3	N	P	R	Su	CE
<i>Carduus nutans</i> , musk thistle	4	I	B	D	Su	CE	<i>Solidago canadensis</i> , Canada goldenrod	1	N	P	U	F	WCE
<i>Cirsium altissimum</i> , tall thistle	1	N	P	U	Su	CE	<i>S. gigantea</i> , late goldenrod	4	N	P	U	F	WCE
<i>C. flodmanii</i> , Flodman's thistle	4	N	B	W	SuF	C	<i>S. missouriensis</i> , Missouri goldenrod	2	N	P	U	F	WC
							<i>S. nemoralis</i> , gray goldenrod	3	N	P	U	F	CE
							<i>S. rigida</i> , stiff goldenrod	1	N	P	U	F	CE
							<i>S. speciosa</i> var. <i>rigidiuscula</i> , showy goldenrod	2	N	P	U	F	C
							<i>Taraxacum officinale</i> , dandelion	4	I	P	D	SpF	
							<i>Tragopogon dubius</i> , goat's beard	4	I	B	D	Su	
							<i>T. pratensis</i> , meadow salsify	3	I	B	D	SpSu	
							<i>Vernonia baldwinii</i> ssp. <i>interior</i> , ironweed	1	N	P	U	Su	C
							<i>Xanthium strumarium</i> , cocklebur	2	I	A	U	SuF	

30 Floristics of Nine-Mile Prairie

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
BORAGINACEAE						
<i>Hackelia virginiana</i> , stickseed	4	N	B	R	SuF	CE
<i>Lappula echinata</i> , stickseed	3	I	A	S	SpF	
<i>Lithospermum canescens</i> , hoary puccoon	1	N	P	U	SpSu	CE
<i>L. incisum</i> , fringed puccoon	2	N	P	U	SpSu	C
<i>Onosmodium molle</i> var. <i>occidentale</i> , false gromwell	2	N	P	U	Su	C
BRASSICACEAE						
<i>Arabis hirsuta</i> , rock cress	4	N	B	R	Sp	WCE
<i>Brassica kaber</i> , charlock mustard	3	I	B	D	Su	
<i>B. napus</i> , turnip	3	I	B	D	SuF	
<i>Camelina sativa</i> , false flax	3	I	A	D	Sp	
<i>Capsella bursa-pastoris</i> , shepherd's purse	2	I	A	D	Sp	
<i>Cardaria draba</i> , hoary cress	2	I	P	D	Sp	
<i>Draba reptans</i> , whitlow grass	2	N	A	D	Sp	WCE
<i>Lepidium densiflorum</i> , peppergrass	2	N	B	D	Sp	CE
<i>L. virginicum</i> , peppergrass	3	N	A	D	SuF	WCE
<i>Rorippa palustris</i> ssp. <i>glabra</i> var. <i>fernaldiana</i> , bog yellow cress	1	N	B	W	Su	WCE
<i>Thlaspi arvense</i> , penny-cress	1	I	A	D	Sp	
CAESALPINIACEAE						
<i>Cassia chamaecrista</i> , partridge-pea	2	N	A	D	SuF	CE
<i>C. marilandica</i> , wild senna	1	N	P	R	SuF	CE
<i>Gleditsia triacanthos</i> , honey locust	4	N	T	R	Sp	CE
CAMPANULACEAE						
<i>Campanula americana</i> , American bell-flower	3	N	A	R	SuF	CE
<i>Lobelia siphilitica</i> , big blue lobelia	1	N	P	W	SuF	C
<i>Triodanis leptocarpa</i> , Venus's looking-glass	2	N	A	D	SpSu	C
<i>T. perfoliata</i> , clasping Venus's looking-glass	2	N	A	D	SpSu	WCE
CANNABACEAE						
<i>Cannabis sativa</i> , marijuana, hemp	1	I	A	D	SuF	
<i>Humulus lupulus</i> , hops	3	N	P	R	Su	WCE
CAPRIFOLIACEAE						
<i>Sambucus canadensis</i> , elderberry	1	N	S	R	Su	CE
<i>Symphoricarpos occidentalis</i> , wolfberry	1	N	S	U	Su	WC
<i>S. orbiculatus</i> , coralberry	3	N	S	R	Su	CE

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
CARYOPHYLLACEAE						
<i>Cerastium brachypodum</i> , mouse-ear chickweed	1	N	A	D	SpSu	WCE
<i>Silene antirrhina</i> , sleepy catchfly	4	N	A	D	SpSu	WCE
<i>Silene stellata</i> , starry campion	1	N	P	R	SuF	CE
CELASTRACEAE						
<i>Celastrus scandens</i> , bittersweet	1	N	V	R	SpSu	CE
CHENOPODIACEAE						
<i>Chenopodium berlandieri</i> , lamb's quarters	4	N	A	D	SuF	WCE
<i>Kochia scoparia</i> , kochia, fireweed	1	I	A	D	SuF	
<i>Salsola iberica</i> , Russian thistle	3	I	A	D	SuF	
COMMELINACEAE						
<i>Tradescantia bracteata</i> , spiderwort	1	N	P	U	Su	C
CONVOLVULACEAE						
<i>Calystegia sepium</i> , hedge bindweed	4	N	P	R	SuF	WCE
<i>Convolvulus arvensis</i> , field bindweed	1	I	P	D	SpF	
CORNACEAE						
<i>Cornus drummondii</i> , rough-leaved dog-wood	4	N	S	R	SpSu	CE
CRASSULACEAE						
<i>Penthorum sedoides</i> , ditch stonecrop	4	N	P	W	SuF	CE
CUCURBITACEAE						
<i>Echinocystis lobata</i> , prickly cucumber	2	N	A	R	SuF	CE
<i>Sicyos angulatus</i> , bur cucumber	4	N	A	R	SuF	CE
CUPRESSACEAE						
<i>Juniperus virginiana</i> , red cedar	4	N	T	U	Sp	CE
CUSCUTACEAE						
<i>Cuscuta glomerata</i> , dodder	2	N	A	U	SuF	C
<i>C. pentagona</i> , dodder	3	N	A	U	Su	WCE

PLANT FAMILY. GENUS. SPECIES. COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
CYPERACEAE						
<i>Carex amphibola</i> var. <i>turgida</i>	4	N	P	W	SpSu	CE
<i>C. bicknellii</i>	4	N	P	W	SpSu	CE
<i>C. brevior</i> , straw sedge	2	N	P	U	SpSu	WCE
<i>C. gravida</i>	4	N	P	W	SpSu	CE
<i>C. heliophila</i> , sun sedge	1	N	P	U	SpSu	C
<i>C. hystericina</i>	4	N	P	W	SpSu	WCE
<i>C. laeviconica</i>	3	N	P	W	SpSu	C
<i>C. lanuginosa</i> , woolly sedge	1	N	P	W	SpSu	CE
<i>C. meadii</i> , Mead's sedge	1	N	P	U	SpSu	CE
<i>C. molesta</i>	2	N	P	U	SpSu	C
<i>C. stipata</i> , sawbeak sedge	1	N	P	W	SpSu	WCE
<i>C. stricta</i>	3	N	P	W	SpSu	C
<i>C. vulpinoidea</i>	4	N	P	W	SpSu	WCE
<i>Cyperus lupulinus</i> , fern flatsedge	2	N	P	U	SuF	CE
<i>C. lupulinus</i> X <i>C. schweinitzii</i>	4	N	P	D	Su	
<i>C. odoratus</i>	2	N	A	W	SuF	WC
<i>Eleocharis erythropoda</i>	4	N	P	W	Su	CE
<i>E. macrostachya</i> , common spike rush	3	N	P	W	Su	WCE
<i>Scirpus americanus</i> , American bulrush	3	N	P	W	Su	WCE
<i>S. atrovirens</i> , green bulrush	3	N	P	W	Su	WCE
<i>S. pallidus</i> , dark green bulrush	4	N	P	W	SuF	WC
<i>S. validus</i> , soft-stem bulrush	1	N	P	W	Su	WCE
EQUISETACEAE						
<i>Equisetum arvense</i> , field horsetail	1	N	P	W	Sp	WCE
<i>E. hyemale</i> , tall scouring-rush	3	N	P	W	Su	WCE
<i>E. laevigatum</i> , Kansas horsetail	1	N	P	R	SpSu	WC
EUPHORBIACEAE						
<i>Acalypha rhomboidea</i> , 3-seeded mercury	4	N	A	R	SuF	CE
<i>A. virginica</i> , three-seeded mercury	3	N	A	R	SuF	CE
<i>Euphorbia corollata</i> , flowering spurge	2	N	P	U	SuF	CE
<i>E. dentata</i> , toothed spurge	2	N	A	D	SuF	C
<i>E. maculata</i> , spotted spurge	2	N	A	D	SuF	CE
<i>E. marginata</i> , snow on the mountain	2	N	A	D	SuF	WC
<i>E. nutans</i> , eyebane	4	N	A	D	SuF	CE
FABACEAE						
<i>Amorpha canescens</i> , lead plant	1	N	S	U	Su	C
<i>A. fruticosa</i> , false indigo	3	N	S	W	Su	C
<i>Amphicarpaea bracteata</i> , hog peanut	2	N	A	R	SuF	CE
<i>Astragalus canadensis</i> , Canada milk-vetch	2	N	P	U	Sp	WCE
<i>A. crassicarpus</i> var. <i>crassicarpus</i> , ground-plum	2	N	P	U	Sp	CE
<i>A. plattensis</i> , Platte River milk-vetch	4	N	P	U	SpSu	C
<i>Baptisia bracteata</i> var. <i>glabrescens</i> , plains indigo	1	N	P	U	Sp	C

PLANT FAMILY. GENUS. SPECIES. COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
<i>Dalea candida</i> var. <i>candida</i> , white prairie clover	2	N	P	U	Su	C
<i>D. purpurea</i> var. <i>purpurea</i> , purple prairie-clover	2	N	P	U	Su	C
<i>Desmodium canadense</i> , Canada tick-clover	3	N	P	U	Su	CE
<i>D. illinoense</i> , Illinois tick-clover	2	N	P	U	Su	C
<i>Glycyrrhiza lepidota</i> , American licorice	1	N	P	U	Su	WC
<i>Lespedeza capitata</i> , bush-clover	1	N	P	U	SuF	CE
<i>Medicago lupulina</i> , black medic	4	I	A	D	SuF	
<i>M. sativa</i> , alfalfa	3	I	P	D	SpF	
<i>Melilotus alba</i> , white sweet-clover	1	I	B	D	SpF	
<i>M. officinalis</i> , yellow sweet-clover	1	I	B	D	SpF	
<i>Psoralea argophylla</i> , silver scurf-pea	1	N	P	U	Su	C
<i>P. esculenta</i> , breadroot scurf-pea	3	N	P	U	Su	C
<i>P. tenuiflora</i> var. <i>floribunda</i> , many-flowered scurf-pea	2	N	P	U	Su	C
<i>Trifolium pratense</i> , red clover	1	I	P	D	SpF	
<i>T. repens</i> , white clover	4	I	P	D	SpF	
<i>Vicia americana</i> var. <i>minor</i> , American vetch	2	N	P	U	SpSu	WCE
FUMARIACEAE						
<i>Corydalis micrantha</i> , golden corydalis	2	N	A	U	SpSu	WCE
GENTIANACEAE						
<i>Gentiana puberulenta</i> , downy gentian	4	N	P	U	F	C
GROSSULARIACEAE						
<i>Ribes missouriense</i> , Missouri gooseberry	2	N	S	R	Sp	C
HYDROPHYLLACEAE						
<i>Ellisia nyctelea</i> , ellisia	2	N	A	R	Sp	C
IRIDACEAE						
<i>Sisyrinchium campestre</i> , blue-eyed grass	1	N	P	U	Sp	C
JUNCACEAE						
<i>Juncus dudleyi</i> , Dudley's rush	1	N	P	W	Su	WCE
<i>J. interior</i> , inland rush	1	N	P	W	Su	C
<i>J. torreyi</i> , Torrey's rush	2	N	P	W	SuF	WCE

32 Floristics of Nine-Mile Prairie

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
LAMIACEAE						
<i>Hedeoma hispida</i> , rough false penny-royal	1	N	A	D	Su	CE
<i>Lycopus americanus</i> , American bugleweed	1	N	P	W	SuF	WCE
<i>Mentha arvensis</i> , field mint	2	N	P	W	SuF	WCE
<i>Monarda fistulosa</i> var. <i>fistulosa</i> , bergamot, beebalm	2	N	P	U	Su	CE
<i>Nepeta cataria</i> , catnip	1	I	P	D	SuF	
<i>Salvia azurea</i> , Pitcher's sage	2	N	P	U	F	C
<i>S. reflexa</i> , lance-leaved sage	3	N	A	D	Su	C
<i>Scutellaria lateriflora</i> , side-flowering skullcap	1	N	P	W	Su	WCE
<i>S. parvula</i> var. <i>leonardii</i> , small skullcap	1	N	P	U	Su	CE
<i>Stachys palustris</i> ssp. <i>pilosa</i> , marsh betony, hedge nettle	3	N	P	W	Su	WCE
<i>Teucrium canadense</i> var. <i>canadense</i> , American germander, wood-sage	1	N	P	R	Su	WCE
LEMNACEAE						
<i>Lemna minor</i> , duckweed	4	N	A	Q	Su	WCE
LILIACEAE						
<i>Allium canadense</i> var. <i>canadense</i> , wild onion	1	N	P	U	Su	CE
<i>A. canadense</i> var. <i>lavandulare</i> , wild onion	1	N	P	U	Su	CE
<i>Asparagus officinalis</i> , asparagus	4	I	P	U	Sp	
<i>Polygonatum biflorum</i> , Solomon's seal	3	N	P	R	Su	CE
<i>Smilacina stellata</i> , false Solomon's seal	2	N	P	R	SpSu	WCE
LINACEAE						
<i>Linum sulcatum</i> , yellow flax	2	N	A	U	Su	C
LYTHRACEAE						
<i>Ammannia robusta</i> , toothcup	4	N	A	W	SuF	C
<i>Lythrum alatum</i> var. <i>alatum</i> , loosestrife	3	N	P	W	SuF	C
MALVACEAE						
<i>Abutilon theophrasti</i> , velvet leaf	2	I	A	D	SuF	
<i>Callirhoe, alcaeoides</i> , plains poppy-mallow	3	N	P	U	Su	C
<i>C. involucrata</i> , purple poppy-mallow	4	N	P	U	SpSu	WC
MENISPERMACEAE						
<i>Menispermum canadense</i> , moonseed	3	N	V	R	Su	CE
MIMOSACEAE						
<i>Desmanthus illinoensis</i> , prairie mimosa	2	N	P	U	Su	C
MORACEAE						
<i>Maclura pomifera</i> , Osage orange	4	I	T	R	Sp	
<i>Morus alba</i> , white mulberry	4	I	T	U	Sp	
NAJADACEAE						
<i>Najas guadalupensis</i> , naiad	4	N	A	Q	SuF	WCE
NYCTAGINACEAE						
<i>Mirabilis hirsuta</i> , hairy four-o'clock	3	N	P	U	Su	C
<i>M. linearis</i> , narrow-leaved four-o'clock	2	N	P	U	Su	C
<i>M. nyctaginea</i> , wild four-o'clock	3	N	P	D	Su	C
OLEACEAE						
<i>Fraxinus pennsylvanica</i> , green ash	4	N	T	R	Sp	CE
ONAGRACEAE						
<i>Calylophus serrulatus</i> , yellow evening primrose	2	N	P	U	Su	C
<i>Epilobium coloratum</i> , willow-herb	1	N	P	W	SuF	CE
<i>Gaura longiflora</i> , large-flowered gaura	4	N	B	D	SuF	CE
<i>G. parviflora</i> , small-flowered gaura	1	N	B	D	SpSu	WC
<i>Oenothera villosa</i> , yellow evening primrose	1	N	B	D	SuF	WCE
ORCHIDACEAE						
<i>Cypripedium candidum</i> , white lady-slipper	1	N	P	W	SpSu	CE
<i>Habenaria leucophaea</i> , prairie fringed orchid	2	N	P	W	Su	C
<i>Spiranthes cernua</i> , ladies' tresses orchid	4	N	P	U	F	CE
<i>S. vernalis</i> , early ladies' tresses orchid	4	N	P	U	Su	CE
OROBANCHACEAE						
<i>Orobanche uniflora</i> , cancer root	2	N	P	U	Su	WCE
OXALIDACEAE						
<i>Oxalis dillenii</i> , gray-green wood sorrel	2	N	P	U	SpF	WCE
<i>O. stricta</i> , yellow wood-sorrel	2	N	P	U	Su	WCE
<i>O. violacea</i> , violet wood-sorrel	2	N	P	U	Sp	CE

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE	PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
PLANTAGINACEAE							<i>P. virgatum</i> , switch grass	1	N	P	U	F	WCE
<i>Plantago major</i> , common plantain	3	I	P	D	Su		<i>Paspalum setaceum</i> var. <i>stramineum</i> , paspalum	4	N	P	U	SpF	C
<i>P. patagonica</i> , woolly plantain	2	N	A	D	Su	WC	<i>Phalaris arundinacea</i> , reed canary grass	1	N	P	W	Su	WCE
<i>P. rugelii</i> , blackseed plantain	1	N	P	D	Su	CE	<i>Pheum pratense</i> , timothy	1	I	P	U	Su	
POACEAE							<i>Poa compressa</i> , Canada bluegrass	1	I	P	U	SpF	
<i>Agropyron smithii</i> , western wheatgrass	1	N	P	U	Su	WC	<i>P. pratensis</i> , Kentucky bluegrass	1	I	P	U	SpF	
<i>Agrostis hyemalis</i> , ticklegrass	4	N	P	D	SpSu	CE	<i>Schedonnardus paniculatus</i> , tumble grass	1	N	P	D	SuF	C
<i>A. stolonifera</i> , reedtop bentgrass	2	I	P	W	Su		<i>Setaria glauca</i> , yellow foxtail grass	2	I	A	D	SuF	
<i>Andropogon gerardii</i> , big bluestem grass	2	N	P	U	SuF	CE	<i>S. viridis</i> , green foxtail grass	2	I	A	D	SuF	
<i>A. scoparius</i> , little bluestem grass	1	N	P	U	SuF	WCE	<i>Sorghastrum nutans</i> , Indian grass	1	N	P	U	SuF	WCE
<i>Aristida oligantha</i> , prairie three-awn grass	1	N	A	D	SuF	WCE	<i>Sorghum halepense</i> , Johnson grass	4	I	P	D	SuF	
<i>Bouteloua curtipendula</i> , side-oats grama	1	N	P	U	SuF	WCE	<i>Spartina pectinata</i> , cordgrass	3	N	P	W	SuF	WCE
<i>B. gracilis</i> , blue grama grass	2	N	P	U	SuF	C	<i>Sphenopholis obtusata</i> , prairie wedgescale grass	1	N	P	U	Su	CE
<i>B. hirsuta</i> , hairy grama grass	1	N	P	U	Su	WC	<i>Sporobolus asper</i> , tall dropseed grass	1	N	P	U	SuF	CE
<i>Bromus inermis</i> , smooth brome grass	4	I	P	U	SpSu		<i>S. heterolepis</i> , prairie dropseed grass	1	N	P	U	SuF	C
<i>B. japonicus</i> , Japanese brome	4	I	A	D	SpSu		<i>Stipa spartea</i> , porcupine grass	1	N	P	U	SpSu	WC
<i>B. mollis</i> , soft chess	3	I	A	D	Su		<i>Tridens flavus</i> , reedtop grass	4	N	P	U	SuF	CE
<i>B. tectorum</i> , downy brome, cheatgrass	2	I	A	D	Sp		POLYGALACEAE						
<i>Buchloe dactyloides</i> , buffalo grass	3	N	P	U	Su	WC	<i>Polygala verticillata</i> , whorled milkwort	3	N	P	U	SuF	CE
<i>Cenchrus longispinus</i> , sandbur	2	N	P	D	SuF	WCE	POLYGONACEAE						
<i>Chloris verticillata</i> , windmill grass	4	N	P	D	SuF	C	<i>Polygonum achoreum</i> , knotweed	4	N	A	D	SuF	WCE
<i>Cinna arundinacea</i> , wood reedgrass	1	N	P	R	SuF	CE	<i>P. amphibium</i> var. <i>emersum</i> , water smartweed	2	N	P	W	SuF	WCE
<i>Dichantherium acuminatum</i> var. <i>villosum</i>	2	N	P	U	SpF	CE	<i>P. arenastrum</i> , knotweed	4	I	A	D	SuF	
<i>D. leibergii</i> , Leiberg dichantherium	2	N	P	U	SpSu	C	<i>P. bicornis</i> , curltop knotweed	2	N	A	D	SuF	
<i>D. oligosanthos</i> var. <i>scribnerianum</i> , Scribner's dichantherium	2	N	P	U	SpF	WCE	<i>P. convolvulus</i> , climbing bindweed	2	I	A	R	SuF	
<i>Digitaria sanguinalis</i> , crabgrass	3	I	A	D	SuF		<i>P. lapathifolium</i> , pale smartweed	4	N	A	D	SuF	WCE
<i>Echinochloa crusgalli</i> , barnyard grass	1	I	A	W	SuF		<i>P. pennsylvanicum</i> , Pennsylvania smartweed	4	N	A	D	SuF	WCE
<i>E. muricata</i> var. <i>microstachya</i>	4	N	A	W	SuF	WCE	<i>P. persicaria</i> , lady's thumb	4	I	A	D	SuF	
<i>Eleusine indica</i> , goose-grass	3	I	A	D	SuF		<i>P. punctatum</i> , dotted water smartweed	2	N	A	W	SuF	WCE
<i>Elymus canadensis</i> , Canada wild rye	1	N	P	U	SuF	WCE	<i>P. ramosissimum</i> , bushy knotweed	2	N	A	D	SuF	WCE
<i>E. villosus</i> , hairy wild rye	3	N	P	R	SuF	CE	<i>P. scandens</i> , climbing false buckwheat	2	N	P	R	SuF	CE
<i>E. virginicus</i> , Virginia wild rye	2	N	P	U	Su	CE	<i>Rumex acetosella</i> , sheep sorrel	3	I	P	U	SpSu	
<i>Eragrostis cilianensis</i> , stinkgrass	3	I	A	D	SuF		<i>R. altissimus</i> , pale dock	1	N	P	W	Su	CE
<i>E. pectinacea</i> , lovegrass	3	N	A	D	SuF	WCE	<i>R. crispus</i> , curly dock	1	I	P	W	SpSu	
<i>E. spectabilis</i> , purple lovegrass	4	N	P	D	SuF	WCE	POTAMOGETONACEAE						
<i>Festuca octoflora</i> , six-weeks fescue	1	N	A	D	SpSu	WCE	<i>Potamogeton foliosus</i> , leafy pondweed	4	N	P	Q	Su	WCE
<i>Glyceria striata</i> , manna grass	3	N	P	W	SuF	WCE	PRIMULACEAE						
<i>Hordeum jubatum</i> , foxtail barley	1	N	P		SpSu	WCE	<i>Androsace occidentalis</i> , western rock jasmine	1	N	A	D	Sp	WC
<i>H. pusillum</i> , little barley	1	N	A	D	SpSu	WCE	<i>Lysimachia ciliata</i> , fringed loosestrife	2	N	P	W	Su	WCE
<i>Koeleria pyramidata</i> , June-grass	2	N	P	U	Su	CE							
<i>Leersia oryzoides</i> , rice cut-grass	2	N	P	W	F	WCE							
<i>L. virginica</i> , white-grass	2	N	P	W	F	CE							
<i>Leptochloa fascicularis</i> , bearded sprangle-top grass	2	N	A	W	SuF	WCE							
<i>Leptoloma cognatum</i> , fall witchgrass	4	N	P	U	SuF	CE							
<i>Muhlenbergia cuspidata</i> , plains muhly grass	4	N	P	U	SuF	CE							
<i>M. racemosa</i> , wirestem muhly grass	3	N	P	U	SuF	WCE							
<i>M. schreberi</i> , nimblewill	3	N	P	R	SuF	CE							
<i>Panicum capillare</i> , witch grass	1	N	A	D	F	WCE							
<i>P. dichotomiflorum</i> , fall panic grass	1	N	A	W	F	CE							

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE	PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
RANUNCULACEAE							SCROPHULARIACEAE						
<i>Anemone caroliniana</i> , Carolina anemone	3	N	P	U	Sp	C	<i>Agalinis aspera</i> , rough gerardia	2	N	P	U	SuF	C
<i>A. cylindrica</i> , candle anemone	1	N	P	U	Su	WCE	<i>Mimulus ringens</i> , monkey flower	1	N	P	W	SuF	CE
<i>Clematis virginiana</i> , virgin's bower	1	N	P	R	F	CE	<i>Penstemon cobaea</i> , beard-tongue	1	N	P	U	Sp	C
<i>Delphinium virescens</i> , larkspur	1	N	P	U	Su	C	<i>P. grandiflorus</i> , large beardtongue	3	N	P	U	SpSu	C
<i>Ranunculus abortivus</i> , little-leaf buttercup	1	N	A	R	Sp	WCE	<i>Verbascum thapsus</i> , common mullein	4	I	B	D	Su	
<i>R. sceleratus</i> , cursed crowfoot	4	N	A	W	SuF	WCE	<i>Veronica aryensis</i> , corn speedwell	3	I	A	D	SuF	
<i>Thalictrum dasycarpum</i> , purple meadow rue	1	N	P	U	Su	WC	<i>Veronica peregrina</i> , purslane speedwell	1	N	A	D	SpSu	WCE
RHAMNACEAE							SMILACACEAE						
<i>Ceanothus herbaceus</i> , New Jersey tea	2	N	S	U	SpSu	C	<i>Smilax herbacea</i> var. <i>lasioneuron</i> , carrion flower	1	N	P	R	SpSu	C
							<i>S. hispida</i> , bristly greenbriar	1	N	V	R	SpSu	CE
ROSACEAE							SOLANACEAE						
<i>Fragaria virginiana</i> , wild strawberry	1	N	P	U	Sp	WCE	<i>Physalis heterophylla</i> , clammy ground-cherry	1	N	P	U	Su	CE
<i>Geum canadense</i> , white avens	1	N	P	R	SpSu	CE	<i>P. longifolia</i> , spearleaf ground-cherry	1	N	P	U	Su	CE
<i>Potentilla arguta</i> , tall cinquefoil	2	N	P	U	Su	WCE	<i>P. virginiana</i> , Virginia ground cherry	4	N	P	U	SpF	CE
<i>P. norvegica</i> , rough cinquefoil	2	N	B	W	Su	WCE	<i>Solanum ptycanthum</i> , black nightshade	4	N	A	U	SpF	CE
<i>P. recta</i> , sulphur cinquefoil	4	N	P	U	SpSu	WCE	<i>Solanum rostratum</i> , buffalo bur	1	N	A	D	Su	WCE
<i>P. rivalis</i> , brook cinquefoil	3	N	B	W	SpF	WC							
<i>Prunus americana</i> , American wild plum	1	N	S	R	Sp	CE	TYPHACEAE						
<i>P. virginiana</i> , choke-cherry	2	N	S	R	Sp	WCE	<i>Typha angustifolia</i> , narrow-leaved cattail	3	N	P	W	Su	WCE
<i>Rosa arkansana</i> , Arkansas wild rose	2	N	S	U	Su	CE	<i>T. latifolia</i> , broad-leaved cattail	1	N	P	W	Su	WCE
<i>R. multiflora</i> , multiflora rose	4	I	S	U	Su		ULMACEAE						
<i>Rubus occidentalis</i> , black raspberry	1	N	P	R	SpSu	CE	<i>Celtis occidentalis</i> , hackberry	4	N	T	R	Sp	CE
							<i>Ulmus americana</i> , American elm	1	N	T	R	Sp	CE
RUBIACEAE							<i>U. pumila</i> , Siberian elm	4	I	T	R	Sp	
<i>Galium aparine</i> , cleavers	1	N	A	R	Su	WCE	<i>U. rubra</i> , red or slippery elm	4	N	T	R	Sp	CE
<i>Hedyotis nigricans</i> , bluets	2	N	P	U	Su	C	<i>U. pumila</i> X <i>U. rubra</i>	4	N	T	R	Sp	
SALICACEAE							URTICACEAE						
<i>Populus deltoides</i> ssp. <i>monilifera</i> , cottonwood	1	N	T	R	Sp	CE	<i>Parietaria pensylvanica</i> , pellitory	1	N	A	R	Su	WCE
<i>Salix amygdaloides</i> , peach-leaved willow	1	N	T	R	Sp	WCE	<i>Urtica dioica</i> , stinging nettle	1	N	P	W	Su	WCE
<i>S. exigua</i> ssp. <i>interior</i> , sandbar willow	2	N	S	W	Sp	WC	VERBENACEAE						
<i>S. eriocephala</i> , diamond willow	3	N	S	W	Sp	CE	<i>Lippia lanceolata</i> , northern fog fruit	4	N	P	W	Su	CE
SANTALACEAE							<i>Verbena bracteata</i> , prostrate verbena	2	N	A	D	SpF	WCE
<i>Comandra umbellata</i> subsp. <i>umbellata</i> , comandra, bastard toadflax	1	N	P	U	SpSu	WCE	<i>V. hastata</i> , blue verbena	1	N	P	U	SuF	WCE
							<i>V. stricta</i> , hoary vervain	1	N	P	R	Su	CE
							<i>V. urticifolia</i> , white vervain	1	N	P	U	SuF	CE

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REFERENCES

- Great Plains Flora Association. 1977. *Atlas of the Flora of the Great Plains*. Ames, Iowa State University Press: 600p.
- _____. 1986. *Flora of the Great Plains*. Lawrence, University Press of Kansas: 1,328p.
- Kaul, R. B. 1975. *Vegetation of Nebraska*. Map 1:1,000,000. 13 colors. Lincoln, Conservation and Survey Division, University of Nebraska-Lincoln.
- _____, G. Kantak, and S. P. Churchill. 1988. The Niobrara River Valley, a postglacial refugium and migratory corridor of forest plants and animals in the grasslands of central North America. *The Botanical Review*, 54 (1):44-81.
- Sheviak, C. J. , and M. L. Bowles. 1986. The prairie fringed orchids: a pollinator-isolated species pair. *Rhodora*, 88: 267-290.
- Steiger, T. L. 1930. Structure of prairie vegetation. *Ecology*, 11: 170-217.

PLANT FAMILY, GENUS, SPECIES, COMMON NAME	STATUS	PROVENANCE	HABIT	HABITAT	FLOWERING TIME	RANGE
VIOLACEAE						
<i>Viola pedatifida</i> , prairie violet	1	N	P	U	Sp	C
<i>V. pratincola</i>	2	N	P	U	Sp	CE
<i>V. pubescens</i> var. <i>eriocarpa</i> , downy yellow violet	2	N	P	R	Sp	CE
<i>V. rafinesquii</i> , johnny-jump-up	1	N	A	R	Sp	CE
<i>V. sororia</i> , downy blue violet	2	N	P	R	SpF	CE
<i>V. pedatifida</i> X <i>V. sororia</i>	2	N	P	U	Sp	CE
VITACEAE						
<i>Parthenocissus vitacea</i> , Virginia creeper	3	N	V	R	Su	CE
<i>Vitis riparia</i> , river-bank grape	2	N	V	R	Su	CE
ZYGOPHYLLACEAE						
<i>Tribulus terrestris</i> , puncture vine	3	I	A	D	SuF	