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Steven P. Churchill

The New York Botanical Garden

Craig C. Feeman

Kansas Biological Survey

Gail E. Kantak

Saginaw Valley State University

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**THE VASCULAR FLORA OF THE NIOBRARA VALLEY PRESERVE
AND ADJACENT AREAS IN NEBRASKA**

Steven P. Churchill

The New York Botanical Garden
Bronx, New York 10458

and

Craig C. Freeman

Kansas Biological Survey
2291 Irving Hill Drive, Campus West
Lawrence, Kansas 66045

and

Gail E. Kantak

Department of Biology
Saginaw Valley State University
University Center, Michigan 48710

The Niobrara Valley Preserve is a 219 km² area along the Niobrara River in north-central Nebraska. Five hundred eighty-one species of vascular plants, about one-third of the total known from Nebraska, are recorded from the Preserve. They are distributed among 332 genera in 105 families. The floristic richness of this area may be attributed to two major factors: 1) a unique surface and subsurface geology has produced hydrologic and pedologic conditions amenable to a variety of plant communities; 2) Pleistocene and post-Pleistocene climates were critical in determining the co-occurrence of diverse vegetation types in the Niobrara River Valley. Among the principal plant communities juxtaposed in this area are three grassland types (sandhills, mixed, and tall-grass prairies) and three forest types (ponderosa pine, paper-birch, and eastern deciduous).

† † †

INTRODUCTION

A plant inventory was conducted for the Niobrara Valley Preserve (NVP) and adjacent area as part of a general ecological

survey for The Nature Conservancy in 1982 and 1983. A preliminary sketch of the area, with discussion of the plant and animal communities, was provided by Harrison (1980) prior to the survey. A summary of survey results was presented by Kantak (1983a & b). Published accounts describe the birds (Brogie and Mossman, 1983; Mossman and Brogie, 1983), the bryophytes (Churchill, 1985), and the butterflies (Dankert and Nagel, 1988). A detailed account of the biogeography of the Niobrara Valley based in part on the data from this survey has been presented by Kaul et al. (1988). In this paper we present the results of the survey of vascular plants. A total of 581 species distributed among 105 families and 332 genera is reported from the NVP and adjacent area, representing approximately one third of the known vascular flora for Nebraska. A summary of the NVP flora is presented in Table I, and Table II enumerates the ten largest families represented in the survey.

TABLE I. Summary of the vascular flora of the Niobrara Valley Preserve and adjacent area.

Division	Families	Genera	Species	
			Native	Intro-duced
Lycopodiophyta	1	1	1	
Equisetophyta	1	1	4	
Polypodiophyta	3	8	9	
Pinophyta	2	3	4	1
Magnoliophyta				
Magnoliopsida	80	245	364	44
Liliopsida	17	74	138	17
subtotal			519	62
Total	105	332	581	

TABLE II. Summary of the ten largest families from the Niobrara Valley Preserve, ordered largest to smallest.

Family	Number of species
Poaceae	81
Asteraceae	80
Cyperaceae	40
Fabaceae s. s.	36
Brassicaceae	19
Lamiaceae	17
Rosaceae	16
Polygonaceae	16
Scrophulariaceae	16
Onagraceae	14

Total number of species
in the ten largest families.
(ca. 58% of total NVP flora)

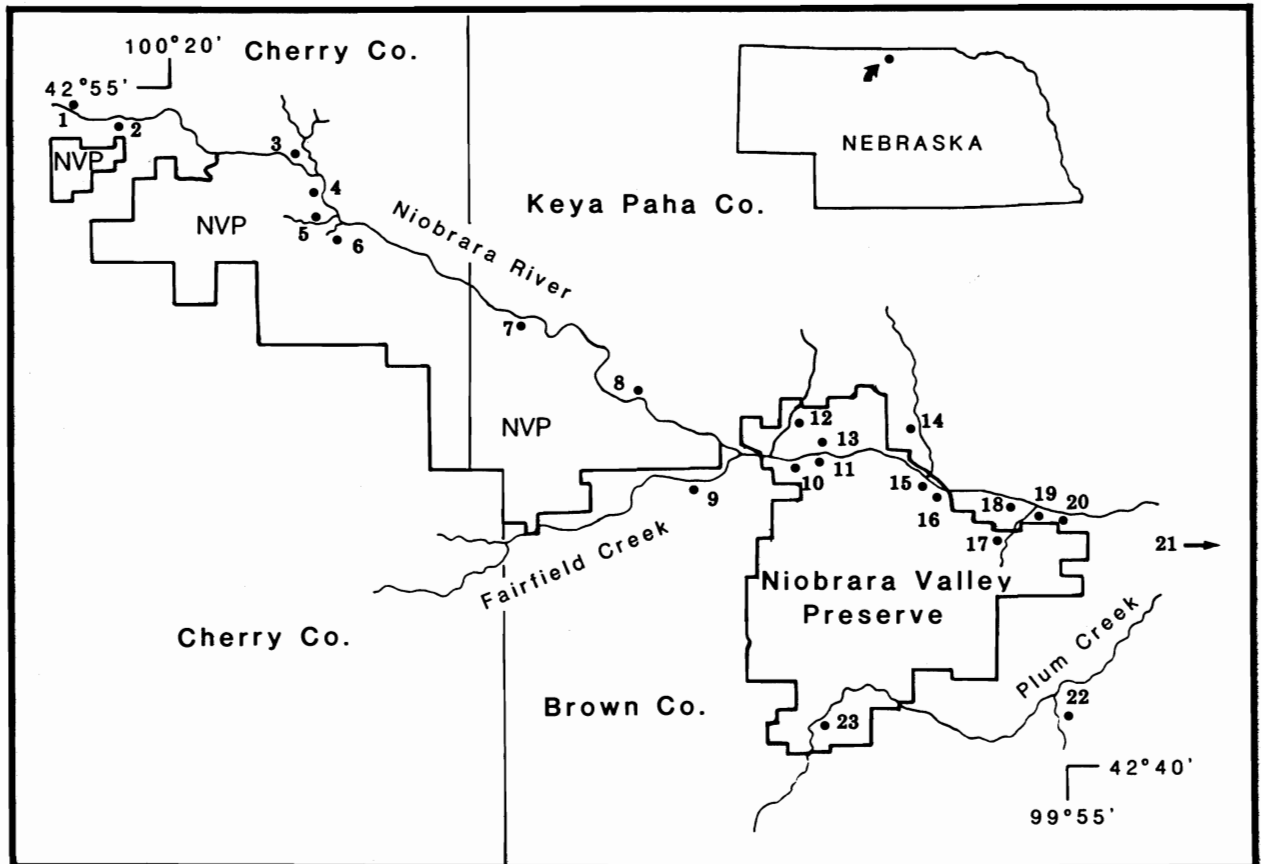


FIGURE 1. Map of the Niobrara Valley Preserve (NVP) and adjacent land in north-central Nebraska. Numbers 1–23 refer to major sites surveyed and to local names given to collections in this study: 1. canyons S and W of Sparks; 2. Berry Bridge; 3. canyons S of Sparks; 4. Smith Falls; 5. Big Cedar Creek; 6. Little Cedar Creek; 7. Rock Barn Marsh; 8. Sunnybrook Marsh; 9. Fairfield Creek; 10. NVP headquarters area; 11. Birch Hollow; Horsetail Canyon and Dicranum Gorge; 12. East Middle Creek; 13. Turkey Vulture Point; 14. Turkey Creek; 15. Barney Creek; 16. Garden Creek; 17. Hazel Creek; 18. old Kirkpatrick Ranch; 19. Jeff Creek; 20. Tickclover Canyon, Aggravation Rockbed and Smith Creeks, Rhodobryum Gorge, and Kantak Coulee; 21. Buzzard Canyon and Dutch Creek; 22. Quinlan Canyon; and 23. Plum Creek area.

LOCATION AND PHYSICAL DESCRIPTION

The study area is located in north-central Nebraska along an approximately 50 km stretch of the Niobrara River (Fig. 1). The Niobrara Valley Preserve comprises about 219 km² in northwestern Brown, northeastern Cherry, and southwestern Keya Paha counties. A map of the study area showing many of the collection sites in detail is available in Churchill (1985).

The middle reaches of the Niobrara River Valley, in which the NVP is located, are notable for the co-occurrence of several distinctly different plant communities, including Rocky Mountain pine forest, eastern deciduous forest, paper-birch forest, tall-grass prairie, mixed-grass prairie, and sandhill prairie, all within several miles of each other. This mosaic of vegetation types was first alluded to in the scientific literature by Bessey in 1887, when he described one of the Niobrara tributaries in this area, Long Pine Creek, as "a meeting place for two floras," referring to the mingling of western and eastern plant species that he found there. In the intervening 100 years other workers have described and characterized the ecological plant communities found in this region (e.g. Pool 1914, Pound and Clements 1900, Tolstead 1942a, b, 1947). The physical and topographical features giving rise to the disparate microhabitats found here were first pointed out by Tolstead (1942b) and are summarized below. More recently, the biogeographic evidence for the historical events leading to this admixture of species and community types has been treated by Kaul et al. (1988). The persistence here of species of widely varying biogeographical affinities in a characteristically grassland climate can be attributed largely to hydrological and geological features of the valley that provide microhabitats more characteristic of ecosystems to the east, west, or north. On the south side of the river, permeable sandhills overlie a buried impervious geological formation, permitting the accumulation of rainwater in the dune sands. This water runs laterally toward the valley, emerging in seeps and springs where the downcutting river has exposed the interface between the absorbent sands and the impermeable stratum. This permanently-flowing water has produced seeps, springs, springbranch canyons and subirrigated meadows on the south wall of the central Niobrara Valley, which is also shaded and protected from the prevailing southerly winds of the growing season because it faces north. Thus this side of the valley, in various places, provides appropriate environmental conditions for the more mesic plant species characteristic of eastern deciduous forest, northern boreal forest, or tallgrass prairie.

Environmental conditions are quite different to the north of the Niobrara River. Here the underlying geological stratum produces a fine-textured loamy soil that does not permit the infiltration and percolation of sufficient rainwater to maintain permanently flowing springs or seeps. In addition, this north wall is exposed to the southerly winds and to the sun and therefore is much drier. The plants adapted to the more xeric conditions on these slopes tend to be shade-intolerant species

more characteristic of western pine forest. Likewise, the tablelands at the top of the Valley support shallow-rooted drought-tolerant species typically found in mixed grass prairie.

DESCRIPTION OF MAJOR PLANT COMMUNITIES

Eastern Deciduous Forest

The eastern deciduous forest element is most widespread, covering much of the river floodplain and south wall of the Valley. At these locations a permanent water supply is accessible via the shallow floodplain water table or from permanent spring seeps. These forests are typically dominated by *Fraxinus pennsylvanica*, *Tilia americana*, and *Ostrya virginiana*, with *Quercus macrocarpa*, *Ulmus americana*, *Acer negundo*, *Celtis occidentalis* and *Juglans nigra* often represented. The understory comprises typical mesic, shade-tolerant species. This is the most diverse plant community type in the area; a more extensive list of species is found in Kaul et al. (1988).

Ponderosa Pine Forest

The ponderosa pine forest along the Niobrara River in this area is an eastern outlier of this community type in the Great Plains. It is best developed on the rocky soils and steep eroding cliffs of the north wall of the river valley, where there is no shading by deciduous trees and little chance of fire. Pines also occur on the steep, sandy slopes above the springbranch canyons on the south wall, and some are scattered in the sandhills to the south, where they may be increasing in this century due to fire exclusion (Steinauer and Bragg, 1987). *Juniperus virginiana* often occurs with the dominant *Pinus ponderosa*.

Tall-grass Prairie

The lowland meadows on the south side of the river support native tallgrasses and a diverse array of eastern prairie forbs. These species are restricted to areas where the water table is high, and consequently are found in the river floodplain or on some of the lower terraces. This community type is poorly represented because these lowland areas are heavily utilized for cultivation, haying or grazing. The best examples are dominated by *Sorghastrum nutans*, *Andropogon gerardii*, *Panicum virgatum* and *Agrostis stolonifera*.

Sandhills Prairie

This vegetation type is found atop the sand dunes above the canyons south of the river and is very extensive between the canyons cut by the tributaries of the Niobrara River. It is dominated by taller, vigorous, native perennial grasses in deep, often moist, sandy soil of stabilized sand dunes. These soils support a mixture of tall, mid- and short-grasses, with their relative abundance varying according to variation in water-holding capacity of the sandy soil as influenced by topography. In this range of microhabitats may be found grasses such as *Andropogon hallii*, *A. scoparius*, *Stipa comata*, *Panicum virgatum*, *Bouteloua hirsuta*, *Festuca octoflora*, *Calamovilfa longifolia*, *Koeleria pyramidata*, and associated prairie forbs.

Mixed Prairie

Mixed prairie is found most extensively on the flat tableland above the pine-covered slopes north of the Niobrara River. Here the drier, sandy loam soils support shallow-rooted, drought-tolerant species, producing an upland prairie dominated by perennial bunch- and sod-grasses. Mixed prairie also occurs in some areas of the river's south slope having appropriate soil moisture characteristics. Here may be found *Stipa comata*, *S. spartea*, *Festuca octoflora*, *Calamovilfa longifolia*, and *Bouteloua gracilis*.

Northern Boreal Relicts (Paper-birch forest)

Boreal relicts tend to be restricted and clustered around cold springs in sheltered springbranch canyons, or near springfed seeps along the steep canyon walls on the south side of the Niobrara Valley. Paper-birch (*Betula papyrifera*) is diagnostic of this community type, and is at its southern distributional limit, here widely disjunct from the major portion of its range. It is associated with other species typical of mixed conifer-aspens forests or cold-water marsh or bog habitats, and has a boreal-type understory of grasses, sedges, and mosses. It is often associated with *Ostrya virginiana* or *Fraxinus pennsylvanica*.

Minor Vegetation Types

Other, less extensive vegetation types can be recognized in this region, but they will not be discussed in this paper. They include a mixed deciduous/coniferous forest (where the eastern forests intermingle with the pine forest), hardwood savanna, pine-juniper savanna, transitional mixed-prairie/sandhills prairie or mixed-prairie/shortgrass prairie, upland thickets of *Rhus glabra*, and oxbow marshes.

ANNOTATED CATALOGUE

The following annotated catalogue combines both field and herbarium data to provide the first comprehensive listing of species found in the Niobrara Valley Preserve and adjacent areas. All taxa in the list are documented by voucher specimens deposited in the University of Nebraska Herbarium (NEB) in Lincoln. Representative duplicate sets have been distributed to the Kansas State University Herbarium (KSC), the New York Botanical Garden (NY), and the University of Kansas Herbarium (KANU). A reference collection of nearly all species is deposited at the Niobrara Valley Preserve headquarters near Johnstown.

In the list, all families and genera are given in alphabetical order within each plant division and class. Nomenclature follows the *Flora of the Great Plains* (Great Plains Flora Association, 1986). A statement of habitat, associated vegetation, and a subjective estimate of abundance is provided for each taxon, and is based largely on field observations. Such infor-

mation was deemed potentially valuable because it adds to our understanding of phytogeographic relationships in the Niobrara River Valley, and it may be a means by which vegetation changes can be gauged in the future. Non-native species are noted as "Introduced." Counties from which vouchers were collected during the course of this study are abbreviated as follows: Brown (B), Cherry (C), and Keya Paha (K).

I. LYCOPODIOPHYTA

Selaginellaceae

Selaginella rupestris (L.) Spring. Abundant in dry upland mixed and transitional sandhill prairies, gravelly ridges, and on dry sandy soil along streams in open areas. (B, C)

II. EQUISETOPHYTA

Equisetaceae

Equisetum arvense L. Common along the river and its tributaries, in marshes and disturbed mesic habitats. (B)

Equisetum ferrissii Clute. Common in open mesic sites in sandy-loam soils [*E. hyemale* × *E. laevigatum*]. (B)

Equisetum hyemale L. Common in springbranch canyons in paper-birch and eastern deciduous forests along streams. (B, C)

Equisetum laevigatum. A. Br. Common in open mesic sites in sandy to sandy-loam soil. This species was often found in the same habitat with *E. ferrissii*, but *E. laevigatum* normally occupied slightly drier sites. (B)

III. POLYPODIOPHYTA

Marsileaceae

Marsilea vestita Hook. & Grev. subsp. *vestita*. Infrequent in and around ephemeral ponds in the sandhills. [*Marsilea mucronata* A. Br.]. (B)

Ophioglossaceae

Botrychium campestre W. H. Wagner & D. R. Farrar. Originally reported as *B. matricariifolium* A. Br. (Freeman & Churchill, 1983), this species was only recently described (Wagner & Wagner, 1986), and represents one of but a few that might be considered endemic to the plains. It is rare in juniper-oak woodlands along the floodplain of the river, the only known locality for this species in Nebraska. (B)

Botrychium virginianum (L.) Sw. Infrequent on steep to moderate slopes in eastern deciduous forests in loamy soil. (B)

Ophioglossum vulgatum L. var. *pseudopodium* (Blake) Farw. Rare around a pond near the old fish hatchery on the south side of the river. This is only the second known locality for the species in Nebraska (Freeman & Churchill, 1983; see also Sutherland & Kaul, 1986). (C)

Polypodiaceae

Cystopteris fragilis (L.) Bernh. Abundant on moist, sandy to sandy-loam slopes in paper-birch, eastern deciduous, and ponderosa pine forests. (B, C, K)

Dryopteris spinulosa (C. F. Muell.) Watt. Rare in springbranch canyons in paper-birch and eastern deciduous forests in loamy soil. The four populations located along the river are reported in Freeman & Churchill (1983). [*Dryopteris spinulosa* (C. F. Muell.) Watt.] (B, C)

Onoclea sensibilis L. Infrequent in marshes and around ponds along the Niobrara River. (C)

Thelypteris palustris Schott. Common along streams, around seeps, and ponds, and in marshes and other mesic habitats, usually in full to partial shade. (B, C)

Woodsia oregana D. C. Eat. Occasional in eastern deciduous to coniferous-deciduous forests on sandy-loam slopes. (B, C)

IV. PINOPHYTA

Cupressaceae

Juniperus horizontalis Moench. Rare on a xeric bluff and slope at the edge of a ponderosa pine forest north of the river. (K)

Juniperus virginiana L. Common on sandy to gravelly slopes, uplands, and floodplains. (B, C)

Pinaceae

Picea pungens Engelm. Rare around old ranches along the river. A persistent cultivar. Introduced. (C)

Pinus ponderosa Laws. Abundant on xeric slopes on the north side of the river, and on gravelly ridges above canyons south of the river. Occasionally on open sandhills. (B)

V. MAGNOLIOPHYTA

A. Magnoliopsida (Dicotyledons)

Aceraceae

Acer negundo L. var. *interius* (Britt.) Sarg. Common along the river floodplain and its tributaries. (B, K)

Amaranthaceae

Amaranthus arenicola I. M. Johnst. Common in sandy disturbed habitats around old ranches, roads, and center pivots. (B, K)

Amaranthus graecizans L. Common in disturbed sandy to sandy-loam habitats around ranches and roads. (B)

Amaranthus retroflexus L. Common in disturbed sandy to loamy soil. Introduced. (K)

Froelichia floridana (Nutt.) Moq. var. *campestris* (Small) Fern. Common in disturbed sandy habitats. (B, C)

Froelichia gracilis (Hook.) Moq. Infrequent in disturbed, often eroded, sandy habitats. (B, C)

Anacardiaceae

Rhus aromatica Ait. var. *serotina* (Greene) Rehd. Common in rocky to sandy wooded canyons and on upland mixed prairie slopes. (B, K)

Rhus glabra L. Common in disturbed habitats, mixed and sandhills prairies, and coniferous woods. (K)

Toxicodendron rydbergii (Small) Greene. Abundant on mixed and sandhill prairies, and in canyons in coniferous and deciduous woods. (K)

Apiaceae

Berula erecta (Huds.) Cov. var. *incisum* (Torr.) Cronq. Common in marshes along the river and in springbranch tributaries. (B)

Cicuta bulbifera L. Rare in marshes along the river. (C)

Cicuta maculata L. Common in marshes along the river and along its tributaries. (B, C, K)

Conium maculatum L. Occasional in disturbed sites. Introduced. (B)

Cymopterus acaulis (Pursh) Raf. Uncommon on dry banks in transitional mixed prairie and ponderosa pine forests. (K)

Heracleum sphondylium L. subsp. *montanum* (Schleicher) Briq. Infrequent on open to shaded banks along springbranch creeks and on the south side of the river. (C)

Lomatium orientale Coult. & Rose. Infrequent on upland mixed prairies. (B, C, K)

Osmorhiza claytonii (Michx.) Clarke. Uncommon in deciduous forests. Collected by Churchill in 1974 (NEB). (C)

Osmorhiza longistylis (Torr.) DC. var. *longistylis*. Infrequent in rich deciduous woods, often around springs in springbranch canyons. (B)

Sanicula canadensis L. Common in deciduous woods. (B, C, K)

Sium suave Walt. Uncommon in marshes. Collected by Tolstead in 1936 (NEB).

Apocynaceae

Apocynum androsaemifolium L. Infrequent on slopes in shaded eastern deciduous forest. (K)

Araliaceae

Aralia nudicaulis L. Common in rich deciduous forests on slopes along springbranch canyons. Observed in nearly every springbranch canyon on the south side of the river from the fish hatchery on the east edge of Fort Niobrara National Wildlife Refuge east to the mouth of Plum Creek. (B, C)

Asclepiadaceae

Asclepias arenaria Torr. Infrequent on upland sandhill and mixed prairies in sandy soil. (K)

Asclepias incarnata L. subsp. *incarnata*. Common along the river and its tributaries, especially in marshes and on stabilized sandbars. (B, K)

Asclepias lanuginosa Nutt. Rare on gravelly to sandy slopes in openings of ponderosa pine forests. (K)

Asclepias pumila (A. Gray) Vail. Infrequent on mixed prairies on slopes and uplands. (K)

Asclepias syriaca L. Occasional in pastures along the river and in disturbed sites. (C)

Asclepias verticillata L. Infrequent in mesic to xeric sites in sandhill and mixed prairies. (B, C)

Asclepias viridiflora Raf. Scarce on upland sandhills and mixed prairies. (B, K)

Asteraceae

Achillea millefolium L. subsp. *lanulosa* (Nutt.) Piper. Common along roads and on upland prairies. (B)

Ambrosia artemisiifolia L. Common in disturbed habitats throughout. (B)

Ambrosia psilostachya DC. Common on upland sandhill and mixed prairies and in disturbed habitats. (B)

Ambrosia trifida L. Frequent in disturbed habitats along roads and abandoned fields. (K)

Antennaria neglecta Greene. Common in deciduous and coniferous woods along the river and its tributaries. (B, C)

Antennaria parvifolia Nutt. Common on upland sandhills and mixed prairies and on gravelly ridges and slopes. (B, K)

Arctium minus Bernh. Infrequent in disturbed wooded canyons and around old ranches. Introduced. (B)

Artemisia dracuncululus L. Common on sandhill and mixed prairies. (K)

Artemisia filifolia Torr. Rare on upland mixed prairie and on gravelly ridges and slopes. (B, K)

Artemisia frigida Willd. Frequent on sandhill and mixed prairies. (C, K)

Artemisia ludoviciana Nutt. var. *ludoviciana*. Frequent in prairies, often in sandy soil. (K)

Aster ericoides L. Common in wetland meadows, prairies, and deciduous and coniferous woods. (C)

Aster laevis L. Common in deciduous and coniferous woods, usually on shaded slopes. (C, K)

Aster novae-angliae L. Frequent in marshes, wetland prairies and along the banks of the river. (B, C, K)

Aster oblongifolius Nutt. Occasional on mixed prairies and ponderosa pine-oak woods. (B, C)

Aster praealtus Poir. var. *nebraskensis* (Britt.) Wieg. Common in marshes and mesic prairies. (C, K)

Aster simplex Willd. var. *ramosissimus* (T. & G.) Cronq. Common in marshes and mesic prairies. (K)

Bidens cernua L. Infrequent along the river on stabilized sandbars and in marshes. (B, C, K)

Bidens coronata (L.) Britt. Infrequent along the river on stabilized sandbars and in marshes. (B, C, K)

Bidens frondosa L. Occasional on sandbars and in streamside marshes. (B, K)

Chrysopsis stenophylla (A. Gray) Shinners. Infrequent on upland mixed prairie and gravelly ridges. (K)

Cirsium altissimum (L.) Spreng. Occasional in deciduous and coniferous woods. (B, C)

Cirsium canescens Nutt. Common on sandhill and mixed prairies. (B)

Cirsium flodmanii (Rydb.) Arthur. Occasional in mixed prairies. (K)

Conyza canadensis (L.) Cronq. var. *canadensis*. Common in disturbed habitats throughout, especially in overgrazed pastures and along roads. (B, K)

- Conyza ramosissima* Cronq. Infrequent in disturbed habitats around old ranches and prairie dog towns. (B)
- Crepis runcinata* (James) T. & G. subsp. *runcinata*. Rare in mesic tallgrass prairie along the river. (C)
- Dyssodia papposa* (Vent.) Hitchc. Infrequent in disturbed habitats throughout, especially in pastures and along roadsides. (C, K0)
- Echinacea angustifolia* DC. var. *angustifolia*. Common on uplands and slopes of mixed and sandhill prairies and slopes. (K)
- Erigeron bellidiastrum* Nutt. var. *bellidiastrum*. Common in disturbed sandy habitats, especially in grazed pastures and along roadsides. (B, C, K)
- Erigeron philadelphicus* L. Common along streams, around seeps, in marshes, and along the floodplain of the river. (C, K)
- Erigeron strigosus* Muhl. ex Willd. var. *strigosus*. Common in disturbed habitats, especially in grazed pastures and along roads. (B, C)
- Eupatorium maculatum* L. var. *bruneri* (A. Gray) Breitung. Common in marshes, around ponds, and along the river. (B, C)
- Eupatorium perfoliatum* L. Rare in marshes, around ponds, and along the river in mesic tallgrass prairie. (C, K)
- Euthamia gymnospermoides* Greene. Common in marshes and meadows along the floodplain of the river. [*Solidago graminifolia* var. *gymnospermoides* (Greene) Croat]. (B)
- Gaillardia pulchella* Foug. Occasional in seeded tallgrass prairie, possibly introduced. (K)
- Grindelia squarrosa* (Pursh) Dun. var. *squarrosa*. Frequent in mixed prairie, particularly in overgrazed pastures. (K)
- Gutierrezia sarothrae* (Pursh) Britt. & Rusby. Occasional in mixed prairies and transitional sandhill-mixed prairies on escarpments. (K)
- Haplopappus spinulosus* (Pursh) DC. Common on upland sandhill and mixed prairie. (B, C)
- Helenium autumnale* L. Scarce in marshes, around ponds, and along the river. (B, C)
- Helianthus annuus* L. Common in disturbed habitats along roads, in prairies, and wooded margins. (B, K)
- Helianthus maximiliani* Schrad. Scarce on mesic tallgrass prairies. (C)
- Helianthus nuttallii* T. & G. subsp. *nuttallii*. Occasional in mesic prairies and marshes along the river. (K)
- Helianthus nuttallii* T. & G. subsp. *rydbergii* (Britt.) Long. Uncommon in mesic prairies and marshes along the river. (C)
- Helianthus rigidus* (Cass.) Desf. subsp. *subrhomboideus* (Rydb.) Heiser. Common on upland sandhill prairies and on slopes on mixed prairies. (B)
- Helianthus tuberosus* L. Occasional in marshes along the river and along creek banks. (B)
- Heliopsis helianthoides* (L.) Sweet var. *scabra* (Dun.) Fern. Common in mesic habitats around marshes, ponds, and along the river and its tributaries. (B, C, K)
- Hieracium canadense* Michx. Uncommon in transitional eastern deciduous and coniferous forests. (C)
- Hymenopappus tenuifolius* Pursh. Common on sandhill and mixed prairies. (B, C)
- Kuhnia eupatorioides* L. var. *corymbulosa* T. & G. Infrequent on sandhill and mixed prairies. (C, K)
- Lactuca canadensis* L. Occasional in deciduous woods and meadows. (K)
- Lactuca oblongifolia* Nutt. Scarce along disturbed roadsides. (B)
- Liatis aspera* Michx. Uncommon on sandy slopes in open deciduous to coniferous woods. (B)
- Liatis punctata* Hook. Common on upland sandhills and mixed prairies. (B, C)
- Liatis squarrosa* (L.) Michx. var. *glabrata* (Rydb.) Gaiser. Common on sandhill prairie and occasionally on mixed prairie. [*L. glabrata* Rydb.] (B, C)
- Lygodesmia juncea* (Pursh) Hook. Common in disturbed sandy habitats and on mixed and sandhill prairies. (K)
- Microseris cuspidata* (Pursh) Sch.-Bip. Common on upland mixed prairies and slopes. The report of *Agoseris glauca* (Pursh) D. Dietr. by Harrison (1980) is this species. (B, K)
- Pectis angustifolius* Torr. Uncommon in dry sandy prairie (C). Collected by Bates in 1908 (NEB).
- Ratibida columnifera* (Nutt.) Woot. & Standl. Common on sandhill and mixed prairies and in open woodlands. (C, K)
- Rudbeckia hirta* L. Common in mesic sandhill meadows, mesic tallgrass meadows along the river, and in open woods along tributaries to the river. (B, C)
- Senecio integerrimus* Nutt. var. *integerrimus*. Common in canyons along tributaries to the river in deciduous and coniferous woods. (B, C, K)
- Senecio plattensis* Nutt. Common on mesic mixed prairies and in woodlands along the river and its tributaries. (B, C, K)
- Senecio riddellii* T. & G. Frequent in sandhill prairies. (B, C)
- Senecio tridenticulatus* Rydb. Common in sandhill prairies. (B)
- Shinnerososeris rostrata* (A. Gray) Tomb. Infrequent on sandy to gravelly sandhill prairie slopes and ridges. [*Lygodesmia rostrata* A. Gray] (B, C)
- Solidago canadensis* L. var. *gilvocanescens* Rydb. Occasional in marshes and mesic prairies. (C)
- Solidago canadensis* L. var. *scabra* T. & G. Common in marshes and mesic prairies. (C, K)
- Solidago gigantea* Ait. Infrequent on oxbow and river marshes. (C)
- Solidago missouriensis* Nutt. var. *fasciculata* Holz. Common on sandhill and mixed prairies. (B)
- Solidago mollis* Bartl. Uncommon in transitional eastern deciduous and coniferous forests. (C)
- Solidago nemoralis* Ait. Common in mixed prairie and transitional sandhill-mixed prairies. (C, K)
- Solidago rigida* L. Infrequent on tallgrass prairie along the river. (C)
- Solidago speciosa* Nutt. Uncommon in transitional sandhills prairie and ponderosa woods. Collected by Tolstead in 1936 (NEB). (C)
- Tanacetum vulgare* L. Uncommon on disturbed ground along the river. Introduced. (C)
- Taraxacum officinale* Weber. Infrequent in disturbed habitats throughout. Introduced. (K)
- Thelesperma filifolium* (Hook.) A. Gray var. *intermedium* (Rydb.) Shinners. Common to abundant on upland mixed prairie and occasionally on sandhill prairie. (B)
- Townsendia exscapa* (Richards.) Porter. Scarce on xeric sandhill and mixed prairies. (B)
- Tragopogon dubius* Scop. Infrequent in disturbed habitats, especially along roadsides and in pastures. Introduced. (B, K)
- Vernonia fasciculata* Michx. ssp. *fasciculata*. Occasional in disturbed prairies. (B)
- Xanthium strumarium* L. Frequent in disturbed sites along roadsides, sandbars, and in oldfields. (B, K)

Balsaminaceae

- Impatiens capensis* Meerb. Common along wooded streams, around seeps, and in marshes along the river. (B, C)

Betulaceae

- Betula papyrifera* Marsh. Common along streams and around springs in canyons almost exclusively on the south side of the river, and on the south bank of the river. One population was observed north of the river ca 3.5 mi south of Sparks. Populations on the south side of the river were observed from the fish hatchery on the east edge of the Fort Niobrara National Wildlife Refuge east to Dutch Creek. (B, C)
- Corylus americana* Walt. Rare along streams and around springs in canyons on the south side of the river. Observed sporadically in springbranch canyons from the fish hatchery on the east edge of the Fort Niobrara National Wildlife Refuge east to Jeff Creek. (B, C)
- Ostrya virginiana* (Mill.) K. Koch. Common along the river and its tributaries. (C, K)

Boraginaceae

- Cryptantha minima* Rydb. Common in grazed pastures and disturbed habitats (B, K)
- Hackelia deflexa* (Wahl.) Opiz. Infrequent in level disturbed areas in mesic deciduous woods. (B, C)
- Hackelia virginiana* (L.) I. M. Johnst. Infrequent in juniper-oak woodlands along the river. (K)
- Lappula redowskii* (Hornem.) Greene. Common in disturbed habitats throughout. (B, C, K)
- Lithospermum carolinense* (Walt.) MacM. Common on upland sandhill and mixed prairies and on steep sandy-loam slopes in open coniferous woods. (B, C)
- Lithospermum incisum* Lehm. Infrequent on mixed and sandhill prairies. (B, C, K)
- Myosotis laxa* Lehm. Rare on sandbars along the river and at the mouth of Plum Creek. This is the first locality for this species in Nebraska and the Great Plains (Sutherland & Kaul, 1986). (B)
- Onosmodium molle* Michx. var. *occidentale* (Mack.) Johnst. Infrequent on xeric sandy to gravelly slopes, thickets, and prairies. (B, K)

Brassicaceae

- Arabis hirsuta* (L.) Scop. var. *pycnocarpa* (Hopkins) Rollins. Infrequent in dense to open deciduous and coniferous woods on slopes and along streams. (B, C, K)
- Camelina microcarpa* Andr. ex DC. Rare in disturbed sandy habitats along roads and in pastures. Introduced. (B)
- Capsella bursa-pastoris* (L.) Medic. Common in disturbed habitats. Introduced. (K)
- Cardamine bulbosa* (Schreb.) B.S.P. Rare around springs and seeps along the river. (B)
- Chorisporea tenella* (Pall.) DC. Rare in disturbed habitats along roadsides and in overgrazed pastures. Introduced. (C)
- Descurainia pinnata* (Walt.) Britt. Occasional in disturbed habitats, especially in overgrazed pastures. (B)
- Descurainia sophia* (L.) Webb. Common in disturbed habitats throughout. Introduced. (K)
- Draba reptans* (Lam.) Fern. Common on mixed prairies. (B)
- Erysimum asperum* (Nutt.) DC. Common on sandhill and mixed prairies. (B, K)
- Erysimum cheiranthoides* L. Common in deciduous woods and occasionally in coniferous woods, especially in disturbed habitats. (B, C, K)
- Erysimum inconspicuum* (S. Wats.) MacM. Rare in grazed deciduous woods and on the banks of the river. (B)
- Hesperis matronalis* L. Rare in deciduous woodlands along the river and its tributaries. Introduced. (K)
- Lepidium densiflorum* Schrad. Common in disturbed habitats throughout. (K)
- Lesquerella ludoviciana* (Nutt.) S. Wats. Common on sandhill and mixed prairies. (B, C)
- Nasturtium officinale* R. Br. Common along the river and its tributaries, especially around seeps and springs. Introduced. (B, C)
- Rorippa palustris* (L.) Bess. subsp. *hispida* (Desv.) Jonsell. Infrequent on sandbars and around marshes along the river. (K)
- Sisymbrium altissimum* L. Infrequent in disturbed habitats along roadsides and in pastures and fields. Introduced. (K)
- Sisymbrium loeselii* L. Infrequent in disturbed habitats along roadsides and in pastures and fields. (K)
- Thlaspi arvense* L. Infrequent in overgrazed pastures and disturbed habitats. Introduced. (K)

Cactaceae

- Coryphantha missouriensis* (Sweet) Britt. & Rose var. *missouriensis*. Uncommon in transitional ponderosa pine forest and sandhill prairie. Previously known only from Sheridan and Logan counties in Nebraska (GPFA, 1977). [*Mammillaria missouriensis* Sweet] (B)
- Coryphantha vivipara* (Nutt.) Britt. & Rose var. *vivipara*. Infrequent on sandy to gravelly ridges and on sandhill and mixed prairies. [*Mammillaria vivipara* (Nutt.) Haw.] (B, K)
- Opuntia fragilis* (Nutt.) Haw. Common on sandhill and mixed prairies, especially in overgrazed habitats. (K)
- Opuntia macrorhiza* Engelm. var. *macrorhiza*. Common on sandhill and mixed prairies, especially in overgrazed habitats. [*O. compressa* (Salisb.) Macbr. var. *macrorhiza* (Engelm.) Benson] (K)

Campanulaceae

- Campanula americana* L. Infrequent in springbranch canyons, especially around seeps and springs. (C)
- Campanula aparinoides* Pursh. Infrequent in marshes and on stabilized sandbars along the river. (B)
- Campanula rotundifolia* L. Common on steep to moderate slopes in canyons along the river and its tributaries. (B, C, K)
- Lobelia siphilitica* L. Infrequent around marshes, on stabilized sandbars, and on low wet ground along the river. (B, C, K)
- Lobelia spicata* Lam. Infrequent around marshes and in wet depressions along the river and its tributaries. (B)
- Triodanis perfoliata* (L.) Nieuw. Common on sandhill and mixed prairies, especially in overgrazed areas. [*Specularia perfoliata* (L.) A. DC.] (B, K)

Cannabaceae

- Cannabis sativa* L. subsp. *sativa*. Common in disturbed habitats along roadsides, streams, and farm sites. Introduced. (K)
- Humulus lupulus* L. Infrequent in mixed deciduous and coniferous woods. (K)

Capparaceae

- Cleome serrulata* Pursh. Common in disturbed sandy habitats, especially along roadsides and in overgrazed pastures. (B, K)
- Polanisia dodecandra* (L.) DC. subsp. *trachysperma* (T. & G.) Iltis. Rare along disturbed sandy to gravelly roadsides. (C)
- Polanisia jamesii* (T. & G.) Iltis. Common in exposed sand on sandhill and mixed prairies, especially in disturbed habitats. (B, C, K) [*Cristatella jamesii* T. & G.]

Caprifoliaceae

- Lonicera dioica* L. Infrequent in canyons along the river in deciduous forests. (B, C, K)
- Sambucus canadensis* L. Uncommon at edge of rich deciduous forests. (B)
- Symphoricarpos albus* (L.) Blake. Uncommon in prairies and open conifer-deciduous woods. Collected by Bates in 1890 (*NEB*). (C)
- Symphoricarpos occidentalis* Hook. Common on sandhill and mixed prairies and in deciduous and coniferous woods. (B, C, K)

Caryophyllaceae

- Arenaria lateriflora* L. Common in rich deciduous and coniferous forests in canyons along the river. (B, C, K)
- Cerastium brachypodium* (Engelm. ex A. Gray) Robins. Common in disturbed sandy to gravelly habitats. (B)
- Silene antirrhina* L. Scarce in open disturbed habitats and on grazed slopes. (B)
- Silene pratensis* (Raf.) Godr. & Gren. Uncommon in overgrazed pastures. Introduced. [*Lychnis alba* P. Mill.] (C)
- Stellaria longifolia* Muhl. ex Willd. Rare on low wet ground around ponds, marshes, and along the river. (B, C)

Celastraceae

- Celastrus scandens* L. Infrequent in dry canyons, rich deciduous and coniferous woods, thickets, and along the river. (B, K)

Ceratophyllaceae

- Ceratophyllum demersum* L. Common in shallow, clear, still or slow flowing water in ponds and streams and occasionally in the river in shallow pools. (B)

Chenopodiaceae

- Chenopodium album* L. Common in disturbed habitats along roadsides, in fields, and around farm sites. (K)
- Chenopodium berlandieri* Moq. Occasional in deciduous wooded canyons. (K)
- Chenopodium gigantospermum* Aellen. Occasional in disturbed sites along roadsides and in grazed woods. [*C. hybridum* L.] (B, C, K)
- Chenopodium standleyanum* Aellen. Occasional in deciduous and coniferous-deciduous woods. (B)
- Corispermum hyssopifolium* L. Scarce in disturbed sandy habitats. (B)
- Corispermum nitidum* Kit. Scarce in disturbed sandy habitats. (K)
- Cycloloma atriplicifolium* (Spreng.) Coult. Common in disturbed sandy habitats in sandhill and mixed prairies and on sandbars in the river. (B, C, K)
- Kochia scoparia* (L.) Schrad. Common in disturbed sites along roadsides, oldfields, and in overgrazed pastures. Introduced. (K)

Cistaceae

- Helianthemum bicknellii* Fern. Uncommon in or at the edges of deciduous or coniferous-deciduous woods. (B, C)

Clusiaceae

- Hypericum majus* (A. Gray) Britt. Common on stabilized sandbars in the river and in mesic habitats along the floodplain of the river. (B)

Convolvulaceae

- Convolvulus arvensis* L. Common in disturbed habitats, especially along roads, in fields, and around farm sites. (K)
- Evolvulus nuttallianus* R. & S. Infrequent on sandy to gravelly slopes and ridges in sandhill and mixed prairies. (B, C, K)
- Ipomoea leptophylla* Torr. Common on sandhill and mixed prairie uplands and slopes. (K)

Cornaceae

Cornus stolonifera Michx. Common in marshes, around ponds, and along the river and its tributaries. (B, K)

Crassulaceae

Penthorum sedoides L. Common on stabilized sandbars, in marshes, around ponds, and along the river and its tributaries. (B, K)

Cucurbitaceae

Echinocystis lobata (Michx.) T. & G. Infrequent in trees and shrubs along the river and its tributaries. (B, C)

Cuscutaceae

Cuscuta coryli Engelm. Rare in open to partially shaded habitats, on *Salix* and *Solidago*. (B)

Elaeagnaceae

Elaeagnus angustifolia L. Infrequent along the floodplain of the river and its tributaries. Introduced. (K)

Shepherdia argentea (Pursh) Nutt. Infrequent along the floodplain of the river and on bluffs above the river. (B, C, K)

Elatinaceae

Elatine triandra Schkuhr. Rare in shallow water in stock tanks and in empty moist tanks. (B)

Euphorbiaceae

Croton texensis (Kl.) Muell. Arg. Common in grazed pastures and disturbed habitats, often along roadsides. (C)

Euphorbia hexagona Nutt. Infrequent in disturbed lowland sites in sandy soil, especially where grazed. (B, C, K)

Euphorbia missurica Raf. Infrequent in open sandy habitats on sandhill and mixed prairies. (B, C)

Euphorbia × *pseudovirgata* (Schur) Soo. Rare in disturbed woods and pastures. [*E. podperae* Croizat] (B)

Euphorbia serpens H.B.K. Frequent in disturbed sites along roadsides and in heavily grazed pastures. (K)

Fabaceae

Amorpha canescens Pursh. Common on sandhill and mixed prairies although less common in grazed pastures. (B)

Amorpha fruticosa L. Common along the floodplain of the river, especially around marshes and on stabilized sandbars. (B)

Amphicarpaea bracteata (L.) Fern. Common in deciduous woods and on floodplain meadows. (C)

Apios americana Medic. Common along the river and its tributaries. (C)

Astragalus canadensis L. Infrequent along the river on open loamy banks. (B, C)

Astragalus ceramicus Sheld. var. *filifolius* (A. Gray) Herm. Infrequent in sandhill prairies and exposed sandy soils. (C)

Astragalus crassicaarpus Nutt. var. *crassicaarpus*. Common on upland mixed prairies in sandy-loam soil. (K)

Astragalus lotiflorus Hook. Scarce on upland mixed prairies and gravelly ridges. (B, K)

Astragalus missouriensis Nutt. Occasional on exposed escarpments in pine woods. (B, K)

Dalea aurea Nutt. ex Pursh. Infrequent on upland mixed prairies and slopes. (K)

Dalea candida Michx. ex Willd. var. *oligophylla* (Torr.) Shinn. Common on sandhill and mixed prairies. [*Petalostemon occidentale* (A. Gray) Fern.] (B, K)

Dalea enneandra Nutt. Common on mixed prairies. (K)

Dalea purpurea Vent. var. *purpurea*. Common on sandhill prairies and occasionally on upland mixed prairies. [*Petalostemon purpureum* (Vent.) Rydb.] (C)

Dalea villosa (Nutt.) Spreng. Common on sandhill prairies and occasionally on upland mixed prairies. [*Petalostemon villosus* Nutt.] (K)

Desmodium canadense (L.) DC. Common along the floodplain of the river, especially around marshes, ponds, wet meadows, and occasionally prairies. (C)

Desmodium glutinosum (Muhl. ex Willd.) Wood. Common on rich paperbitch and eastern deciduous forests. (B, C, K)

Glycyrrhiza lepidota Pursh var. *lepidota*. Common along the floodplain of the river, especially around marshes, ponds, wet meadows, and occasionally on prairies. (B, C, K)

Lathyrus polymorphus Nutt. subsp. *polymorphus*. Common in open sandy habitats and disturbed habitats in sandhills. (C, K)

Lespedeza capitata Michx. Occasional in transitional pine-deciduous woods. (C)

Lotus purshianus Clem. & Clem. Scarce in disturbed upland habitats in sandy soil. (B)

Medicago lupulina L. Common in disturbed habitats throughout. Introduced. (B, K)

Medicago sativa L. Subsp. *sativa*. Infrequent in disturbed habitats, especially in fields and along roadsides. Introduced. (K)

Melilotus alba Medic. Common in disturbed habitats, especially along roadsides and in pastures. Introduced. (B, K)

Melilotus officinalis (L.) Pall. Common in disturbed habitats, especially along roadsides, streams, and in pastures. Introduced. (K)

Oxytropis lambertii Pursh var. *lambertii*. Common on upland sandhill and mixed prairies. (B)

Psoralea argophylla Pursh. Common on sandhill and mixed prairies and in open coniferous woods. (B, K)

Psoralea cuspidata Pursh. Infrequent on upland mixed prairies. (K)

Psoralea digitata Nutt. Common on sandhill and mixed prairies. (B)

Psoralea esculenta Pursh. Infrequent on mixed prairies and rarely on sandhill prairies. (K)

Psoralea hypogaea Nutt. var. *hypogaea*. Rare on sandy to gravelly ridges on mixed prairies. (B, C, K)

Psoralea tenuiflora Pursh. Common in mixed and sandhill prairies and transitional coniferous woods. (K)

Strophostyles leiosperma (T. & G.) Piper. Common on stabilized sandbars in the river, along the floodplain of the river, and on sandy banks along tributaries. (B, K)

Trifolium hybridum L. subsp. *elegans* (Savi) Asch. & Graebn. Infrequent in disturbed pastures and along the floodplain of the river. Introduced. (B, K)

Trifolium pratense L. Infrequent in disturbed habitats, especially along roadsides, and in pastures. Introduced. (K)

Trifolium repens L. Common in disturbed habitats, especially in grazed grassy areas on the floodplain of the river. Introduced. (B)

Vicia villosa Roth. var. *villosa*. Common along roadsides and disturbed habitats. (B)

Fagaceae

Quercus macrocarpa Michx. Common along the river and its tributaries, on the floodplain and on valley slopes. (C, K)

Fumariaceae

Corydalis aurea Willd. subsp. *occidentalis* (Engelm.) Ownbey. Infrequent on sandy, exposed slopes in juniper-oak woodlands along the river and its tributaries. (B)

Gentianaceae

Gentiana andrewsii Griseb. Occasional in mature marshes along the river. (B, C, K)

Geraniaceae

Geranium carolinianum L. Infrequent in open disturbed habitats. (B)

Grossulariaceae

Ribes americanum P. Mill. Common in open deciduous and coniferous woodlands. (B, C, K)

Ribes missouriense Nutt. Common along the river and its tributaries on wooded slopes. (B)

Ribes odoratum Wendl. Common along the floodplains of the river and its tributaries, especially in dry wooded areas. (B, C, K)

Ribes oxycanthoides L. Rare in springbranch canyons in eastern deciduous forests on moderate slopes. (C)

Hydrophyllaceae

Ellisia nyctelea L. Common in disturbed habitats, especially along the floodplain and on grazed wooded slopes. (B, C, K)

Juglandaceae

Juglans nigra L. Occasional in deciduous woods along the floodplain of the river (B, C)

Lamiaceae

- Dracocephalum parviflorum* Nutt. Uncommon in dry disturbed soils. Collected by Clements in 1893 (NEB). (K)
- Glechoma hederacea* L. Common on the grassy banks of a small tributary of the river at the Niobrara Valley Preserve Headquarters. Introduced. (B)
- Hedeoma hispida* Pursh. Common on mixed prairie uplands and slopes and occasionally on sandhill prairies. (B)
- Lycopus americanus* Muhl. ex Bart. Common along the river and its tributaries, especially around marshes and on stabilized sandbars. (B, C)
- Lycopus asper* Greene. Common along the river and its tributaries, especially around marshes and on stabilized sandbars. (B, C)
- Mentha arvensis* L. Common along the river and its tributaries, especially around marshes and on stabilized sandbars. (B, K)
- Monarda fistulosa* L. var. *fistulosa*. Occasional in deciduous woods. (B)
- Monarda fistulosa* L. var. *menthifolia* (Grah.) Fern. Common along the floodplain and on slopes in coniferous and deciduous woods. (K)
- Nepeta cataria* L. Infrequent in disturbed habitats including roadsides, oldfields and at the edges of woods. Introduced. (B)
- Prunella vulgaris* L. Infrequent in disturbed, often grazed, mesic habitats along the floodplain and tributaries. (B)
- Pycnanthemum virginianum* (L.) Dur. & Jackson ex Robins. & Fern. Infrequent along the river and Plum Creek, especially in marshes. (B, C, K)
- Salvia azurea* Lam. Uncommon on grazed mixed prairies. This species was known previously only from southeastern Nebraska, south of the Platte River, and from a disjunct location in Perkins County. [*S. pitcheri* Nutt.] (C)
- Salvia reflexa* Hornem. Infrequent in disturbed habitats, especially along roadsides. (C)
- Scutellaria galericulata* L. Infrequent in marshes and around ponds along the river. (C)
- Scutellaria lateriflora* L. Common along the river and its tributaries, especially in marshes and on stabilized sandbars. (B)
- Scutellaria parvula* Michx. var. *leonardii* (Epl.) Fern. Rare in sandy soil in juniper-oak woodlands on the floodplain. (B)
- Teucrium canadense* L. var. *boreale* (Bickn.) Shinn. Infrequent along the river and its tributaries and in marshes. [var. *occidentale* (A. Gray) McCl. & Epl.] (B, C)

Lentibulariaceae

- Utricularia vulgaris* L. Infrequent in shallow still water in beaver ponds and marshes along the river. (B, C)

Linaceae

- Linum rigidum* Pursh var. *compactum* (A. Nels.) Rogers. Occasional on mixed prairies. (B, K)
- Linum rigidum* Pursh var. *rigidum*. Common on sandhill and mixed prairies. (C)

Loasaceae

- Mentzelia decapetala* (Pursh) Urban & Gilg. Uncommon in mixed prairie. Collected by Bessey in 1890 (NEB) and by Tolstead in 1936 (NEB). (C)
- Mentzelia nuda* (Pursh) T. & G. Occasional on mixed and sandhill prairies. (B, K)

Lythraceae

- Ammannia robusta* Heer & Regel. Infrequent along the river and its tributaries in open sandy habitats. (B)
- Lythrum alatum* Pursh var. *alatum*. Common in marshes, around ponds, and on stabilized sandbars in the river. [*L. dacotanum* Nieuw.] (B)
- Lythrum salicaria* L. Abundant in marshes and on stabilized sandbars in along the river. This species is well established along the river and was observed from the Fort Niobrara National Wildlife Refuge east to sandbars 2 mi east of the Meadville Bridge across the Niobrara. Purple loosestrife is an aggressive adventive and poses a potentially serious threat to native plants in marshes and on sandbars along the river. Further localities for the Niobrara and Nebraska have been recorded by Churchill et al., 1976 and Sutherland and Kaul, 1986. The spread of this species in North America has been examined by Stuckey (1980). Introduced. (B, C, K)

Malvaceae

- Malva neglecta* Wallr. Scarce in disturbed habitats, especially along roadsides. Introduced. (C)
- Malva rotundifolia* L. Scarce in disturbed habitats, especially around old ranches and roadsides. Introduced. (B)

- Sphaeralcea coccinea* (Pursh) Rydb. Infrequent on exposed gravelly soil, usually on xeric slopes. (B, K)

Mimosaceae

- Desmanthus illinoensis* (Michx.) MacM. Infrequent on upland mixed prairies, especially where somewhat disturbed. (C, K)
- Schrankia nuttallii* (DC.) Standl. Infrequent on upland mixed prairies, especially where somewhat disturbed. (K)

Molluginaceae

- Mollugo verticillata* L. Common in disturbed sandy habitats, especially along roads and trails. Introduced. (B)

Monotropaceae

- Pterospora andromedea* Nutt. Occasional in transitional ponderosa pine and paper-birch forests in springbranch canyons on steep to moderate slopes. Recently reported for the Niobrara area by Sutherland and Kaul (1986), this species previously was known in Nebraska only from Sioux County (GPFA, 1977). It has been observed in springbranch canyons from 0.7 mi north of Brewer Bridge across the river east to near the Niobrara Valley Preserve Headquarters. (B, C)

Moraceae

- Morus alba* L. Uncommon, usually around old farms and ranches. Introduced. (B)

Nyctaginaceae

- Mirabilis hirsuta* (Pursh) MacM. Infrequent on sandhill and mixed prairies and in rocky ponderosa pine woodlands. (K)
- Mirabilis linearis* (Pursh) Heimerl. Infrequent on mixed prairies. (B, K)
- Mirabilis nyctaginea* (Michx.) MacM. Infrequent in disturbed habitats along roadsides and in fields. (K)

Nymphaeaceae

- Nymphaea odorata* Ait. Uncommon in oxbow pond along the river. Collected by Tolstead in 1941 (NEB). (K)

Oleaceae

- Fraxinus pennsylvanica* Marsh. Common in eastern deciduous forests along the river and its tributaries. (B, C, K)
- Syringa vulgaris* L. Occasional on abandoned ranch and farm sites. Introduced. (B)

Onagraceae

- Calylophus serrulatus* (Nutt.) Raven. Common on sandhill and mixed prairies. (K)
- Circaea lutetiana* L. subsp. *canadensis* (L.) Asch. & Mag. Common in springbranch canyons in paper-birch and eastern deciduous forests. (B, C, K)
- Epilobium ciliatum* Raf. Common along the river and its tributaries on sandbars, in marshes, around ponds, and on sandy banks. (B, C)
- Epilobium coloratum* Biehler. Infrequent around ponds, marshes, and along the river and its tributaries. (K)
- Epilobium leptophyllum* Raf. Common along the river on stabilized sandbars and around marshes. (B)
- Gaura coccinea* Pursh. Occasional on mixed prairies. (C, K)
- Gaura parviflora* Dougl. Frequent in wetlands and on mixed prairies. (C, K)
- Ludwigia palustris* (L.) Ell. Uncommon on sandy banks on the floodplain of the river. (B)
- Ludwigia polycarpa* Short & Peter. Uncommon on the floodplain of the river and on wet ground. (B)
- Oenothera albicaulis* Pursh. Infrequent on upland mixed prairies, usually where somewhat disturbed. (C)
- Oenothera biennis* L. Common in marshes and mesic prairies, especially along the floodplain of the river. (B)
- Oenothera laciniata* Hill. Infrequent in disturbed habitats throughout. (B)
- Oenothera nuttallii* Sweet. Infrequent on upland sandhill and mixed prairies. (B)
- Oenothera rhombipetala* Nutt. ex T. & G. Common on sandhill and mixed prairies and in disturbed sandy to gravelly habitats. (B)

Orobanchaceae

- Orobanche fasciculata* Nutt. Common on sandhill and mixed prairies, usually parasitic on *Artemisia frigida*. (B, C)

Oxalidaceae

- Oxalis dillenii* Jacq. Common in wooded ravines and in open wooded areas in short grass. (K)
Oxalis stricta L. Infrequent along the river and its tributaries and in mesic woods. (B)

Papaveraceae

- Argemone polyanthemus* (Fedde) G. Ownbey. Infrequent on sandhill and mixed prairies and in disturbed habitats, especially along roadsides and in grazed pastures. (B, K)

Pedaliaceae

- Proboscidea louisianica* (P. Mill.) Thell. Rare on disturbed ground around one farm. Introduced. (K)

Plantaginaceae

- Plantago rugelii* Dcne. Infrequent in disturbed habitats around homes and ranches. (C, K)
Plantago patagonica Jacq. var. *patagonica*. Common on sandhill and mixed prairies and in sandy disturbed habitats. (B)

Polemoniaceae

- Collomia linearis* Nutt. Common in dry sandy soil in disturbed habitats, especially where grazed. (B, C, K)
Ipomopsis longiflora (Torr.) V. Grant. Common on sandhill prairies. (B, K)
Phlox andicola Nutt. Infrequent on sandhill prairies in loose sand and blowouts. (C)

Polygalaceae

- Polygala alba* Nutt. Infrequent in exposed gravelly soil, usually on xeric slopes at the edge of ponderosa pine forest. (C, K)
Polygala verticillata var. *isocycla* Fern. Occasional on sandhill and mixed prairies, and in open ponderosa pine forest. (B)

Polygonaceae

- Eriogonum annuum* Nutt. Common on sandhill and mixed prairies, especially in disturbed habitats. (C)
Polygonum achoreum Blake. Frequent in disturbed habitats along roadsides and in oldfields. (K)
Polygonum amphibium L. var. *stipulaceum* Colem. Rare in shallow water in oxbow ponds along the river. (B)
Polygonum arenastrum Jord. ex Bor. Occasional in disturbed habitats. Introduced. (C)
Polygonum convolvulus L. Infrequent in disturbed sandy habitats. Introduced. (C)
Polygonum erectum L. Infrequent in disturbed habitats along roadsides. (B)
Polygonum lapathifolium L. Common around ephemeral ponds, marshes and along the river and its tributaries. (B, C, K)
Polygonum persicaria L. Occasional in marshes and wet depressions on the floodplain of the river. Introduced. (C)
Polygonum punctatum Ell. Common around seeps, in marshes, and along the river and its tributaries. (B, C)
Polygonum scandens L. Common in disturbed sandy habitats. (C)
Polygonum tenue Michx. Infrequent in disturbed habitats around prairie dog towns. (B)
Rumex altissimus Wood. Infrequent in disturbed habitats throughout. (C, K)
Rumex crispus L. Common in disturbed habitats, around marshes, and along the floodplain of the river. Introduced. (K)
Rumex maritimus L. var. *fueginus* (Phil.) Dusen. Common in marshes and on stabilized and unstabilized sandbars along the river. (C, K)
Rumex stenophyllus Ledeb. Infrequent in marshes and wet disturbed habitats. Introduced. (K)
Rumex venosus Pursh. Common on sandhill prairies in blowouts and loose sand, and along sandy roadsides. (C)

Portulacaceae

- Talinum calycinum* Engelm. Infrequent on exposed sandy to gravelly prairie ridges on well-drained soils south of the river. This species, rare in Nebraska, is known from Brown, Cherry, and Kearney counties (Great Plains Flora Association, 1977). It was found to be relatively common on gravelly ridges on the south side of Plum Creek, often in mixed populations with *Talinum parviflorum*. Elsewhere, *T. calycinum* was rare. (B, C)
Talinum parviflorum Nutt. Common on exposed sandy to gravelly prairie ridges on well-drained soils. (B, C)

Primulaceae

- Androsace occidentalis* Pursh. Common on mixed prairies and in open deciduous and coniferous woods. (B, K)
Centunculus minimus L. Rare around ephemeral ponds in sandhill prairies. This is only the fourth report of this species in the state, it having been recorded from Holt, Lancaster and Nemaha counties (Great Plains Flora Association, 1977). (B)
Lysimachia ciliata L. Infrequent around marshes and ponds along the floodplain of the river. (B)
Lysimachia thysiflora L. Common in shallow water in marshes and ponds, and on wet ground along the river. (B)

Ranunculaceae

- Anemone caroliniana* Walt. Infrequent on transitional sandhill-mixed prairies. (B)
Anemone cylindrica A. Gray. Common along the floodplain of the river in juniper-oak woodlands. (B, C, K)
Anemone patens L. Scarce in ponderosa pine woods on the upper slopes of the river valley. (B, K)
Aquilegia canadensis L. Common on slopes and long streams in springbranch canyons in eastern deciduous and paper birch forests. (B, C)
Clematis ligusticifolia Nutt. Rare along roadsides and creeks growing over trees and shrubs. (K)
Clematis virginiana L. Rare along roadsides and creeks, growing over trees and shrubs. (K)
Delphinium virescens Nutt. Common on upland sandhill and mixed prairies. (B)
Ranunculus abortivus L. Common along streams in deciduous woods, often in disturbed habitats. (B)
Ranunculus cymbalaria Pursh. Common on low wet ground around marshes, seeps, streams, ponds, and sandbars along the river. (B, C, K)
Ranunculus longirostris Godr. Infrequent in still or slowly moving water in marshes and pools along the river. (B, K)
Ranunculus sceleratus L. var. *sceleratus*. Infrequent in and along streams in open areas. Introduced. (K)
Ranunculus subrigidus Drew. Occasional in shallow water along the river. (C)
Thalictrum dasycarpum Fisch. & Ave-Lall. Common along the floodplain of the river at the edge of eastern deciduous forests, around marshes, and on stabilized sandbars. (B, C)

Rhamnaceae

- Ceanothus herbaceus* Raf. var. *pubescens* (T. & G.) Shinn. Scarce on sandhill prairies and on sandy slopes in ponderosa pine woods. (B)
Rhamnus lanceolata Pursh var. *glabratus* Gl. Uncommon in deciduous woods. Collected by Clements in 1893 (NEB). (K)

Rosaceae

- Agrimonia gryposepala* Wallr. Infrequent in thickets around marshes and along the river. (B)
Amelanchier alnifolia Nutt. Scarce on open to semi-open slopes in ponderosa pine forests. (B, K)
Fragaria vesca L. var. *americana* Porter. Common in thickets and grassy woodlands along streams. (B, C, K)
Geum alepicum Jacq. Uncommon. Collected by Tolstead in 1936 (NEB). (C)
Malus sylvestris Mill. Rare along the river. A persistent cultivated, introduced species. (C)
Physocarpus opulifolius (L.) Raf. var. *intermedius* (Rydb.) Robins. Common in springbranch canyons in eastern deciduous and paper birch forests and on the banks of the river. This species is known from only five counties in the state, along the river (GPFA, 1977). It was observed to be common, particularly on the south bank of the river, from the east edge of the Fort Niobrara National Wildlife Refuge east to the Meadville Bridge over the river. (B, C, K)
Potentilla arguta Pursh. Common on prairies and transitional areas between prairies and woods. (K)
Potentilla norvegica L. Infrequent in disturbed grassy lowlands along the river and its tributaries. (B)
Potentilla pensylvanica L. Infrequent in disturbed grassy lowlands along the river and its tributaries. (C, K)
Potentilla rivalis Nutt. Infrequent in meadows and in disturbed mesic to xeric sites. (K)

- Prunus americana* Marsh. Common in thickets, edges of woods, and in open to semi-open deciduous and coniferous woods. (K)
Prunus pumila L. var. *besseyi* (Bailey) Gl. Common on sandhill prairies on mesic slopes and occasionally on mixed prairie in sandy soil. (B)
Prunus virginiana L. Common in thickets, along streams, at the edges of woods, in open to semi-open woods, and along the floodplain of the river. (B)
Rosa arkansana Porter. Common on sandhill and mixed prairies, in thickets, and openings in woods. (K)
Rosa woodsii Lindl. Scarce in thickets and on banks along the river. (B)
Rubus occidentalis L. Common along wooded tributaries to the river in sandy to sandy-loam soil. (B)

Rubiaceae

- Galium aparine* L. Common in eastern deciduous and coniferous forests, ravines, and disturbed habitats. (B, C, K)
Galium circaeans Michx. Scarce in springbranch canyons along streams on partially shaded banks in loamy soil. (B, C)
Galium triflorum Michx. Common along springbranch canyons in eastern deciduous forests in loamy soil. (B, C)

Rutaceae

- Zanthoxylum americanum* P. Mill. Common in eastern deciduous and coniferous woods and in thickets. (B, C, K)

Salicaceae

- Populus alba* L. Rare in canyons around seeps and along streams. Introduced and spreading locally. (K)
Populus deltoides Marsh. subsp. *monilifera* (Ait.) Eckenw. Common along the floodplain of the river and its tributaries. [*P. sargentii* Dode] (B)
Populus grandidentata Michx. × *P. tremuloides* Michx. Locally common in the area of Smith Falls. This is the only hybrid population involving these two parental species currently known in the Great Plains region (see Eckenwalder's treatment of Salicaceae in Great Plains Flora Association, 1986).
Salix amygdaloides Anderss. Common along the river and its tributaries. (B, C, K)
Salix eriocephala Michx. Occasional along creeks and rivers, and in marshes. Collected by Bates in Cherry County, 1894, and in 1899 in Brown County (NEB) [*S. rigida* Muhl. var. *rigida*] (B, C)
Salix exigua Nutt. subsp. *interior* (Rowlee) Cronq. Common along the river on stabilized sandbars, around marshes, ponds, and along tributaries. (K)

Santalaceae

- Comandra umbellata* (L.) Nutt. subsp. *pallida* (A. DC.) Piehl. Common on upland sandhill and mixed prairies in sandy to gravelly soil. (B)

Saxifragaceae

- Heuchera richardsonii* R. Br. Common on wooded slopes in paper birch, eastern deciduous, and ponderosa pine forests, especially along springbranch canyon streams. (C)

Scrophulariaceae

- Agalinis aspera* (Dougl. ex Benth.) Britt. Uncommon on mixed prairies on dry slopes. (K)
Agalinis tenuifolia (Bahl) Raf. var. *parviflora* (Nutt.) Penn. Infrequent in tallgrass meadows and mesic habitats along the river. (C)
Bacopa rotundifolia (Michx.) Wettst. Infrequent in and around ephemeral ponds in the sandhills. (B)
Castilleja sessiliflora Pursh. Uncommon on dry gravelly to rocky soil on mixed prairies. (K)
Lindernia dubia (L.) Penn. Common around ephemeral ponds, in marshes, and on stabilized and unstabilized sandbars along the river. [including *L. anagallidea* (Michx.) Penn.] (B, K)
Mimulus glabratus H. B. K. var. *fremontii* (Benth.) A. L. Grant. Common along the river on stabilized sandbars and in marshes. (B, K)
Mimulus ringens L. Common along the river on stabilized sandbars and in marshes. (B, K)
Penstemon albidus Nutt. Common on sandhill and mixed prairies. (B, C, K)
Penstemon angustifolius Nutt. ex Pursh var. *angustifolius*. Common on sandhill and mixed prairies. (B, C, K)
Penstemon gracilis Nutt. var. *gracilis*. Common on mesic upland mixed prairies, along streams and in openings in ponderosa pine forests. (K)
Penstemon grandiflorus Nutt. Common on sandhill and mixed prairies, and along sandy roadsides. (K)

- Scrophularia lanceolata* Pursh. Common in open eastern deciduous woods along streams. (B, C)
Verbascum thapsus L. Common in disturbed habitats, including pastures, roadsides and open woods. Introduced. (K)
Veronica americana (Raf.) Schwein. ex Benth. Common along the river and its tributaries on sandbars, around marshes and ponds. (B, C, K)
Veronica anagallis-aquatica L. Common along the river and its tributaries on sandbars, around marshes and ponds. Introduced. (K)
Veronica peregrina L. var. *xalapensis* St. John & Warren. Infrequent around ephemeral ponds, in mesic depressions and in disturbed mesic habitats along the floodplain of the river. (B)

Solanaceae

- Lycium halimifolium* P. Mill. Rare and persistent around old abandoned farms and ranches. Introduced. (C)
Physalis heterophylla Nees. Infrequent in open woods and at the edges of woods. (B)
Physalis pumila Nutt. ssp. *hispida* (Waterfall) Hinton. Common in disturbed habitats and along streams in open areas. (B)
Solanum ptycanthum Dun. ex DC. Infrequent in disturbed habitats along roadsides, center pivots and in grazed woods. (B, C)
Solanum rostratum Dun. Frequent in overgrazed prairies and disturbed sites throughout. (B, K)
Solanum triflorum Nutt. Infrequent in disturbed sandy to sandy-gravelly habitats in sandhill and mixed prairies, often associated with prairie dog towns. (B, K)

Tiliaceae

- Tilia americana* L. Common in springbranch canyons on the south side of the river. (B)

Ulmaceae

- Celtis occidentalis* L. Common on open mesic floodplains along the river and its tributaries. (B)
Ulmus americana L. Common on the floodplain of the river and its tributaries. (B)

Urticaceae

- Boehmeria cylindrica* (L.) Sw. Infrequent in marshes and around ponds along the river. (B)
Laportea canadensis (L.) Wedd. Common in mesic shaded woods, especially in springbranch canyons. (C)
Parietaria pensylvanica Muhl. Common in disturbed habitats in shaded woods and open grazed areas. (B)
Pilea fontana (Lunell) Rydb. Common in springbranch streams in shallow flowing water and on wet banks. (B, C)
Urtica dioica L. subsp. *gracilis* (Ait.) Seland. Common in disturbed habitats along streams, roadsides, farm sites and along the river floodplain. (C, K)

Verbenaceae

- Phryma leptostachya* L. Common in springbranch canyons in paper birch and eastern deciduous forests. (C, K)
Verbena bracteata Lag. & Rodr. Common in disturbed habitats along roadsides and around center pivots. (C, K)
Verbena hastata L. Common around ponds, marshes, on stabilized sandbars and along the river and its tributaries. (C, K)
Verbena stricta Vent. Common on sandhill and mixed prairies and in open woods, especially in disturbed habitats. (K)
Verbena urticifolia L. Common along streams in eastern deciduous woods. (B, C)

Violaceae

- Viola canadensis* L. var. *rugulosa* (Greene) C. L. Hitchc. Infrequent in paper-birch, eastern deciduous, and ponderosa pine forests along streams on mesic ground. (B, C, K)
Viola nephrophylla Greene. Common along streams in springbranch canyons in paper-birch and eastern deciduous forests. (B, K)
Viola pratincola Greene. Common along streams in springbranch canyons in paper-birch and eastern deciduous forests. (K)

Vitaceae

- Parthenocissus vitacea* (Kner) Hitchc. Common in thickets and woods throughout. (B, C)

Vitis riparia Michx. Common in dry canyons, along streams, and on the floodplain of the river and its tributaries. (B, K)

Zygophyllaceae

Tribulus terrestris L. Infrequent in disturbed habitats, especially along roadsides, in oldfields, and pastures. (B, K)

B. LILIOPSIDA (MONOCOTYLEDONS)

Agavaceae

Yucca glauca L. Common on sandhill and mixed prairies, especially in overgrazed areas. (K)

Alismataceae

Alisma ref. *subcordatum* Raf. Rare in mud and shallow water along the river and its tributaries. (B)

Sagittaria latifolia Willd. Common in oxbow ponds and on sandbars along the river. (B)

Commelinaceae

Commelina erecta L. var. *angustifolia* (Michx.) Fern. Infrequent in disturbed areas in woods and on slopes in sandhill prairies. (B, K)

Tradescantia occidentalis (Britt.) Smyth. Common in sandhill and transitional sandhill-mixed prairies. (B, K)

Cyperaceae

Carex aurea Nutt. Occasional in marshes, oxbow ponds, and wetland prairies along the river. (B)

Carex blanda Dew. Common in canyons in deciduous woods and along the floodplain of the river. (B, C)

Carex brevior (Dew.) Mack. ex Lunell. Common in meadows and coniferous and deciduous woods. (B)

Carex comosa F. Boott. Rare in marshes, oxbow ponds, and along the river and its tributaries. (B)

Carex diandra Schrank. Uncommon in marsh along Plum Creek. Collected by Tolstead in 1940 (NEB). (B)

Carex eburnea F. Boott. Common in canyons on slopes in deciduous woods. (B, C)

Carex eleocharis Bailey. Common on prairies and in meadows, often in dry sandy soil. (B, C)

Carex filifolia Nutt. Common on mixed prairies and transitional sandhill-mixed prairies. (C, K)

Carex granularis Muhl. ex Willd. var. *granularis*. Infrequent in marshes and along streams in sandy soil. (K)

Carex heliophila Mack. Common on sandhill and mixed prairies. (B, C)

Carex hystericina Muhl. ex Willd. Common on sandbars in the river and in marshes and around seeps. (B, C, K)

Carex interior Bailey. Scarce along tributaries to the river, especially around seeps and on low wet ground. (B, C)

Carex lanuginosa Michx. Common along tributaries to the river and around marshes. (B, C, K)

Carex meadii Dew. Common in moist pastures and along the river and its tributaries. (B)

Carex nebraskensis Dew. Common around marshes and oxbow ponds along the river and its tributaries. (B, C)

Carex peckii Howe. Scarce on slopes in canyons in paper-birch and eastern deciduous forests. Observed sporadically in the river valley, this species appears to be restricted in the state to a roughly 45-mile stretch of the Niobrara River Valley from Valentine east to Long Pine Creek. (B, C, K)

Carex praegracilis W. Boott. Uncommon in prairies. Collected by Tolstead in 1936 (NEB). (C)

Carex saximontana Mack. Common in rich wooded springbranch canyons and moist ravines in ponderosa pine forests along the river. (B, C, K)

Carex scoparia Schkuhr ex Willd. Infrequent around marshes and ponds along the river. (B)

Carex sprengelii Dew. ex Spreng. Common in open to wooded mesic slopes and level areas along the river and its tributaries. (B, C, K)

Carex stipata Muhl. Common in marshes and meadows along the river and its tributaries. (B, C, K)

Carex stricta Lam. Common in marshes, oxbow ponds, and wet depressions along the river and its tributaries. (B)

Carex tetanica Schkuhr. Uncommon in deciduous woods. Collected by Tolstead in 1938 (NEB). (C)

Carex vulpinoidea Michx. Uncommon in marshes and oxbow ponds. (B)

Cyperus acuminatus Torr. & Hook. Common around ephemeral ponds in the sandhills, in marshes, and along the river and its tributaries. (B)

Cyperus aristatus Rottb. Common around ephemeral ponds in the sandhills, in marshes, and along the river and its tributaries. (B, K)

Cyperus diandrus Torr. Common along the river and its tributaries in sparsely vegetated habitats. (B, K)

Cyperus erythrorhizos Muhl. Occasional along sandbar river marshes. (B)

Cyperus odoratus L. Common on sandbars in the river and along tributaries and marshes. [*C. ferruginescens* Boeck.] (K)

Cyperus rivularis Kunth. Common along the river and its tributaries in mesic sandy soil. (B, C, K)

Cyperus schweinitzii Torr. Common on sandhill and mixed prairies and along streams. (B, C)

Cyperus strigosus L. Common on sandbars in the river and along tributaries and marshes. (B, C, K)

Eleocharis acicularis (L.) R. & S. Common around ephemeral ponds in the sandhills, around marshes, and on sandbars in the river, usually in exposed wet sand. (B)

Eleocharis erythropoda Steud. Common along the river and its tributaries, and in marshes. (B, C, K)

Eleocharis obtusa (Willd.) J. A. Schult. var. *ovata* Drapalik & Mohlenbrock. Infrequent around ephemeral ponds in the sandhills, in marshes, and along the river. (B)

Fimbristylis puberula (Michx.) Vahl. var. *interior* (Britt.) Kral. Rare in tall-grass meadow along the river. (C)

Scirpus acutus Muhl. Occasional in oxbow ponds and marshes along the river. (B)

Scirpus pallidus (Britt.) Fern. Occasional in marshes and along sandbars. (B)

Scirpus pungens Vahl. Common around marshes, oxbow ponds, and on sandbars in the river and its tributaries. [*S. americanus* long misapplied] (B, C, K)

Scirpus validus Vahl. Common in ponds, marshes, and along the river and its tributaries. (K)

Hydrocharitaceae

Elodea nuttallii (Planch.) St. John. Common in slowly flowing water along the river. (K)

Iridaceae

Sisyrinchium montanum Greene. Infrequent in grassy open areas, often at the edges of woods. (C, K)

Juncaceae

Juncus alpinus Vill. Common on sandbars in and along the river and occasionally along its tributaries. (K)

Juncus balticus Willd. Common around oxbow ponds, marshes, mesic pastures, and other mesic habitats along the river and its tributaries. (B, C)

Juncus brachyphyllus Wieg. Infrequent on mesic sandhill prairies and along the river and its tributaries. (B)

Juncus bufonius L. Common in mud and sand on sandbars in and along the river. (B, K)

Juncus dudleyi Wieg. Common on sandbars in the river and along the floodplain of the river. (B, C, K)

Juncus longistylis Torr. Rare in marshes and on stabilized sandbars along the river. (B)

Juncus marginatus Rostk. Uncommon on stabilized sandbars along the river. (B)

Juncus nodosus L. Common in marshes and on sandbars along the river. (B)

Juncus torreyi Cov. Common around ponds, marshes and along the river and its tributaries. (C, K)

Juncaginaceae

Triglochin maritima L. var. *elata* (Nutt.) A. Gray. Infrequent in tallgrass meadows along the river. (C)

Triglochin palustris L. Infrequent along the river on both stabilized and unstabilized sandbars. These collections from Brown and Keya Paha counties represent the third and fourth county records for this species in the state (Great Plains Flora Association, 1977). Widely scattered populations were observed from approximately 2 mi west of the Norden-Johnstown road bridge across the Niobrara River, east to a sandbar 1 mi east of the Meadville Bridge across the river. (B, K)

Lemnaceae

- Lemna minor* L. Common in still or slowly flowing water in streams, marshes, ponds, and pools in the river. (B)
Lemna trisulca L. Infrequent in still shallow water in beaver ponds along the river. (C)
Spirodela polyrrhiza (L.) Schleid. Infrequent in still shallow water in beaver ponds along the river. (B)

Liliaceae

- Allium perdulce* S. V. Fraser. Infrequent on gravelly slopes and ridges on mixed prairies. (B)
Asparagus officinalis L. Infrequent around old farm sites, oldfields, and in disturbed woods. Introduced. (K)
Hypoxis hirsuta (L.) Cov. Infrequent on low wet ground in tallgrass meadows along the river. (C)
Polygonatum biflorum (Walt.) Ell. Common in springbranch canyons on steep to moderate slopes in paper-birch and eastern deciduous forests. (B, C)
Smilacina stellata (L.) Desf. Common in springbranch canyons on steep to moderate slopes in paper-birch and eastern deciduous forests and in wooded ravines in ponderosa pine forests. (C)

Orchidaceae

- Habenaria hyperborea* (L.) R. Br. Common in springbranch canyons in paper-birch and eastern deciduous forests, and around seeps along the river. (B, C)
Liparis loeselii (L.) Rich. Infrequent in marshes along the south side of the river. This species is relatively uncommon in Nebraska, having been reported previously from five counties in the state (Great Plains Flora Association, 1977). Scattered populations were observed along the river from near the mouth of Fairfield Creek east to the mouth of Barney Creek. (B)
Spiranthes cernua (L.) Rich. Occasional on tallgrass prairies along the river and in marshes. (B, C)

Poaceae

- × *Agrohordeum macounii* (Vasey) Lepage (*Agropyron caninum* × *Hordeum jubatum*). Uncommon in meadow-marsh transition. Collected by Bates in 1893 (NEB). (C)
Agropyron caninum (L.) Beauv. subsp. *majus* (Vasey) C. L. Hitchc. Infrequent on dry wooded slopes and occasionally in grazed pastures. (C)
Agropyron cristatum (L.) Gaertn. Infrequent on dry upland prairies, often where somewhat disturbed. Introduced. (B, K)
Agropyron smithii Rydb. Common on sandhill and mixed prairies and in disturbed habitats. (B)
Agrostis scabra Willd. Common in deciduous and coniferous woods on mesic slopes, along streams, and in mesic habitats along the river. [*A. hyemalis* (Walt.) B.S.P. var. *tenuis* (Tuckerm.) Gl.] (B)
Agrostis stolonifera L. var. *major* (Gaud.) Farw. Common in mesic habitats throughout. Introduced. (B)
Alopecurus aequalis Sobol. Uncommon in wet meadows and marshes along the river. (B)
Andropogon gerardii Vitman. Occasional in oak woodlands, tallgrass meadows, and marshes along the river and its tributaries. (B, K)
Andropogon hallii Hack. Common on sandhill and transitional sandhill-mixed prairies. (C, K)
Andropogon scoparius Michx. Common on mixed and sandhill prairies. (C, K)
Aristida basiramea Engelm. ex Vasey. Infrequent on transitional sandhill-mixed and mixed prairies. (B)
Aristida purpurea Nutt. var. *robusta* H. & H. Common on upland transitional sandhill-mixed and mixed prairies and in open grassy woods. [*A. longiseta* Steud.] (B, K)
Bouteloua curtipendula (Michx.) Torr. Common on sandhill and mixed prairies. (K)
Bouteloua gracilis (H.B.K.) Lag. ex Griffiths. Common on upland sandhill and mixed prairies on well drained soils. (B, K)
Bouteloua hirsuta Lag. Common on sandhill and mixed prairies on sandy to gravelly slopes. (B, C, K)
Bromus ciliatus L. Infrequent along the river and its tributaries in mesic loamy habitats in eastern deciduous woodlands. (B)
Bromus inermis Leyss. subsp. *inermis*. Common in grazed pastures and other disturbed habitats. Introduced. (B)
Bromus japonicus Thunb. ex Murr. Common in disturbed habitats, especially around old ranches and in heavily grazed areas. Introduced. (B, K)
Bromus latiglumis (Scribn. ex Shear) Hitchc. Infrequent along streams and on mesic slopes in deciduous and coniferous forests. (C, K)
Bromus tectorum L. Common in disturbed sandy habitats throughout. (K)
Buchloë dactyloides (Nutt.) Engelm. Common on mixed prairies and occasionally sandhill prairies. (B, C, K)
Calamagrostis canadensis (Michx.) Beauv. Common along the river and its tributaries on stabilized sandbars and around marshes. (B)
Calamagrostis stricta (Timm.) Koel. Infrequent in marshes along the river. [*C. inexpansa* A. Gray] (B)
Calamovilfa longifolia (Hook.) Scribn. Abundant on sandhill and mixed prairies. (B, C)
Catabrosa aquatica (L.) Beauv. Common along streams in springbranch canyons and on stabilized sandbars along the river. (B, C)
Cenchrus longispinus (Hack.) Fern. Common in disturbed sandy habitats, especially along roadsides and cattle trails. (B, K)
Cinna arundinacea L. Infrequent around ponds and marshes and along the river and its tributaries. (B, C)
Dactylis glomerata L. Scarce on open to partially shaded banks along the river and its tributaries. Introduced. (B)
Dichantherium acuminatum (Sw.) Gould & Clark var. *acuminatum*. Infrequent on sandhill and mixed prairies. [*Panicum lanuginosum* Ell.] (B)
Dichantherium oligoanthes (Schult.) Gould. var. *scribnerianum* (Nash) Gould. Common in woods and on disturbed sandhill and mixed prairies. [*Panicum oligoanthes* Schult. var. *scribnerianum* (Nash) Fern.] (B, C, K)
Dichantherium wilcoxianum (Vasey) Freckmann. Common on mixed prairies, often at the edges of ponderosa pine forests. [*Panicum wilcoxianum* Vasey] (B, C)
Digitaria sanguinalis (L.) Scop. Infrequent in disturbed sandy to sandy-loam habitats. Introduced. (B)
Echinochloa muricata (Beauv.) Fern. var. *microstachya* Wieg. Common in disturbed habitats throughout. (B)
Elymus canadensis L. Common in mesic sandy to sandy-loam habitats, especially along streams and roadsides. (B)
Elymus villosus Muhl. ex Willd. Common on slopes along streams in eastern deciduous woods and on the floodplain of the river. (B, C, K)
Eragrostis cilianensis (All.) E. Mosher. Common in disturbed habitats throughout. Introduced. (B, C)
Eragrostis hypnoides (Lam.) B.S.P. Uncommon on sandbars along the river. (B)
Eragrostis pectinacea (Michx.) Nees. Infrequent along disturbed sandy roadsides. (B)
Eragrostis spectabilis (Pursh) Steud. Common in sandhill prairies and sandy terrace meadows along the river. (B, K)
Eragrostis trichodes (Nutt.) Wood. Abundant on sandhill prairies and in disturbed sandy habitats. (C, K)
Festuca obtusa Biehler. Common in springbranch canyons in eastern deciduous and paper birch forests. (B, C)
Festuca octoflora Walt. Abundant on sandhill and mixed prairies, often in slightly disturbed habitats. (B, K)
Glyceria grandis S. Wats. ex A. Gray. Scarce in marshes and around ponds along the river. (B)
Glyceria striata (Lam.) Hitchc. Common along the Niobrara River and its tributaries. (B, K)
Hordeum jubatum L. Common in disturbed habitats, especially along roadsides and in pastures. Introduced. (B)
Hordeum pusillum Nutt. Common in disturbed habitats throughout. (B)
Koeleria pyramidata (Lam.) Beauv. Common on upland sandhill and mixed prairies. (B)
Leersia oryzoides (L.) Sw. Common in open to semi-open areas in mesic loamy soil along the river and its tributaries. (C)
Leersia virginica Willd. Infrequent around seeps and along streams in springbranch canyons on the south side of the river and rarely north of the river. (B, K)
Muhlenbergia asperifolia (Nees & Mey.) Parodi. Infrequent in mesic tallgrass meadows and on sandbars along the river. (C, K)
Muhlenbergia cuspidata (Torr.) Rydb. Common on sandhill and mixed prairies on fine-textured soils. (B)
Muhlenbergia filiformis (Thurb.) Rydb. Uncommon on sandbars along the river. (K)
Muhlenbergia mexicana (L.) Trin. Uncommon on stabilized sandbars along the river. (K)
Muhlenbergia pungens Thurb. Common in loose sand and blowouts on sandhill prairies. (B, C)

- Muhlenbergia racemosa* (Michx.) B.S.P. Common in deciduous and deciduous-coniferous woods. (B, C, K)
- Munroa squarrosa* (Nutt.) Torr. Infrequent in disturbed sandy to gravelly habitats. (B, C, K)
- Oryzopsis micrantha* (Trin. & Rupr.) Thurb. Common on slopes in canyons in eastern deciduous, paper birch, and ponderosa pine forests. (B, C)
- Panicum capillare* L. Common in disturbed sandy to sandy-loam habitats throughout. (B)
- Panicum dichotomiflorum* Michx. Rare along Plum Creek on sandbars. (B)
- Panicum virgatum* L. Abundant on upland sandhill and mixed prairies. (B, C)
- Paspalum setaceum* Michx. var. *stramineum* (Nash) D. Banks. Common in disturbed sandy habitats throughout. (B)
- Phleum pratense* L. Common in disturbed habitats throughout. Introduced. (K)
- Phragmites australis* (Cav.) Trin. ex Steud. Frequent along river marshes. (C, K)
- Poa compressa* L. Common on disturbed wooded slopes, along the floodplain of the river, and on stabilized sandbars in the river. Introduced. (B)
- Poa pratensis* L. Abundant in open wooded habitats, grazed pastures, and other disturbed habitats. Introduced. (B, C, K)
- Poa sylvestris* A. Gray. Rare on slopes in eastern deciduous forests in loamy soil, on the south side of the river. (B)
- Polypogon monspeliensis* (L.) Desf. Common on stabilized and unstabilized sandbars along the river and its tributaries. Introduced. (B, C, K)
- Redfieldia flexuosa* (Thurb.) Vasey. Common in blowouts and exposed unstabilized sand in the sandhills. (B)
- Schedonnardus paniculatus* (Nutt.) Trel. Infrequent on upland sandhill and mixed prairies. (B)
- Secale cereale* L. Infrequent along roadsides and around center pivots. Introduced. (B)
- Setaria glauca* (L.) Beauv. Occasional in disturbed habitats including roadsides and oldfields. Introduced. (B)
- Setaria viridis* (L.) Beauv. Common in disturbed habitats around old ranches, roads, and center pivots. Introduced. (B)
- Sorghastrum nutans* (L.) Nash. Infrequent in tallgrass meadows and mesic habitats along the river and its tributaries. [*S. avenaceum* (Michx.) Nash] (B)
- Spartina pectinata* Link. Common around marshes, ponds, and mesic depressions along the river and its tributaries. (B)
- Sphenopholis obtusata* (Michx.) Scribn. var. *major* (Torr.) Erdm. Infrequent on slopes in eastern deciduous woods in loamy soil. (K)
- Sporobolus cryptandrus* (Torr.) A. Gray. Common in disturbed habitats throughout. (B, C)
- Stipa comata* Trin. & Rupr. Abundant on sandhill and mixed prairies. (C, K)
- Stipa spartea* Trin. Infrequent in sandhill prairies on mesic slopes and in depressions. (B)
- Stipa viridula* Trin. Infrequent on upland mixed prairies and along roadsides. (K)
- Triplasis purpurea* (Walt.) Chapm. Common in open disturbed sandy habitats. (B, C, K)
- Triticum aestivum* L. Infrequent along roadsides and around center pivots. Introduced. (B)

Potamogetonaceae

- Potamogeton nodosus* Poir. Infrequent in ponds and oxbows along the river. (B)

Smilacaceae

- Smilax herbacea* L. var. *lasioneuron* (Small) Rydb. Occasional in deciduous woods. (B, C)

Sparganiaceae

- Sparganium eurycarpum* Engelm. Common in still shallow water in ponds, marshes, and along sandbars in the river. (B)

Typhaceae

- Typha latifolia* L. Common in ponds, along streams, in marshes, and in shallow water along the river. (K)

Zannichelliaceae

- Zannichellia palustris* L. Common in still shallow water in ponds and marshes, and in slowly flowing water in the river. (K)

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REFERENCES

- Bessey, C. E. 1887. A meeting-place for two floras. *Bulletin of the Torrey Botanical Club*, 14: 189–191.
- Brogie, M. A., and M. J. Mossman. 1983. Spring and summer birds of the Niobrara Valley Preserve area, Nebraska: an annotated checklist. *Nebraska Bird Review*, 51: 44–51.
- Churchill, S. P. 1985. Mosses of the Great Plains X. The Niobrara Valley Preserve and adjacent area in Nebraska. *Transactions of the Nebraska Academy of Sciences*, 13: 13–19.
- , R. B. Kaul, and D. M. Sutherland. 1976. New records of native and introduced plants from Nebraska. *Transactions of the Nebraska Academy of Sciences*, 3: 32–36.
- Dankert, N., and H. G. Nagel. 1988. Butterflies of the Niobrara Valley Preserve. *Transactions of the Nebraska Academy of Sciences*, 16: 17–30
- Freeman, C. C., and S. P. Churchill. 1983. Noteworthy pteridophyte records for Nebraska. *American Fern Journal*, 73: 29–30.
- Great Plains Flora Association. 1977. *Atlas of the Flora of The Great Plains*. Ames, Iowa, Iowa State University Press: 600 p.
- . 1986. *Flora of the Great Plains*. Lawrence, Kansas. University Press of Kansas: 1, 392p.
- Harrison, A. T. 1980. *The Niobrara Valley Preserve: Its biogeographic importance and description of its biotic communities*. A working report to The Nature Conservancy. Minneapolis, Minnesota. 116 p.
- Kantak, G. E. 1983a. *Niobrara Preserve Inventory*. 1982 Annual Report. The Nature Conservancy. Minneapolis, MN
- . 1983b. The Niobrara Valley Preserve: documentation of its biogeographic significance. *Proceedings of the Nebraska Academy of Sciences*, 93: 10.
- Kaul, R. B., G. E. Kantak and S. P. Churchill. 1988. The Niobrara River Valley, a postglacial migration corridor and refugium of forest plants and animals in the grasslands of central North America. *The Botanical Review*, 54: 44–81.

- Mossman, M. J., and M. A. Brogie. 1983. Breeding status of selected bird species in the Niobrara Valley Preserve area, Nebraska. *Nebraska Bird Review*, 51: 52–62.
- Pool, R. J. 1914. A study of the vegetation of the sandhills of Nebraska. *University of Minnesota Botanical Studies*, 4: 189–312.
- Pound, R., and F. E. Clements. 1900. The phytogeography of Nebraska. 2nd ed. University of Nebraska Botanical Seminar, Lincoln: 442p.
- Steinauer, E. M., and T. B. Bragg. 1987. Ponderosa pine (*Pinus ponderosa*) invasion of Nebraska sandhills prairie. *American Midland Naturalist*, 118: 358–365.
- Stuckey, R. L. 1980. Distributional history of *Lythrum salicaria* (Purple Loosestrife) in North America. *Bartonia*, 46: 3–20.
- Sutherland, D. M., and R. B. Kaul. 1986. Nebraska plant distribution. *Transactions of the Nebraska Academy of Sciences*, 14: 55–59.
- Tolstead, W. L. 1942a. Vegetation of the northern part of Cherry County, Nebraska. *Ecological Monographs*, 12: 255–292.
- . 1942b. A note on unusual plants in the flora of northwestern Nebraska. *American Midland Naturalist*, 28: 475–481.
- . 1947. Woodlands in northwestern Nebraska. *Ecology*, 28: 180–188.
- Wagner, W. H. Jr., and F. S. Wagner. 1986. Three new species of moonworts (*Botrychium* subg. *Botrychium*) endemic in western North America. *American Fern Journal*, 76: 33–47.