

A Preliminary Survey Of
the Vascular Flora
of Mormon Island Crane Meadows,
Hall County

by

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A PRELIMINARY SURVEY OF THE VASCULAR FLORA
OF MORMON ISLAND CRANE MEADOWS, HALL COUNTY, NEBRASKA

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Abstract

A survey of the vascular flora occurring on Mormon Island Crane Meadows, Hall County, Nebraska. The study was conducted during the growing season of 1980. Crane Meadows is an area of 1902 acres of lowland pastures, hay meadows, Platte River bottoms and associated woodlands in southcentral Nebraska.

An annotated checklist of the taxa is included indicating for each taxon the flowering period, relative frequency in the study area, habitat type, distribution deviation, distribution of taxon in Nebraska and an indication of its origin. The checklist includes 262 species of vascular plants, 174 genera and 61 families. There are 217 native species and 45 with a non-North American origin. There are 3 lower vascular plants, 93 monocots and 165 dicots.

Management practices are recommended based upon a survey of the literature. Recommendations are made pertaining to burning, grazing, haying and restoration of native prairies.

INTRODUCTION

A preliminary survey of the vascular flora of Mormon Island Crane Meadows was undertaken for the Nature Conservancy during the growing season of 1980. Crane Meadows as circumscribed in this study is as follows: an area of 1902 acres of lowland pasture/prairie, hay meadows, Platte River bottoms, associated islands and shoreline. Crane Meadows is located one-half mile south and one mile west of the West I-80 Grand Island, Nebraska Interchange. The study area represents the western area of Mormon Island. Hall County is located in southcentral Nebraska (Fig. 1).

Knowledge of the vascular flora of the study area is currently limited to reports for the state and indications of known collections from Hall County by Petersen (1912) and Winter (1936). Robert Lemaire made collections in Hall County and compiled a checklist which remains unpublished (Lemaire). The objectives of this study were to: (1) Collect and preserve a representative set of vascular plants growing in the area, (2) Prepare an annotated check-list of the vascular plants of the study area.

STUDY AREA

The Platte River in the location of the study area forms four separate channels with low-lying islands between the channels. Crane Meadows represents a portion of one of these low-lying islands. The study area

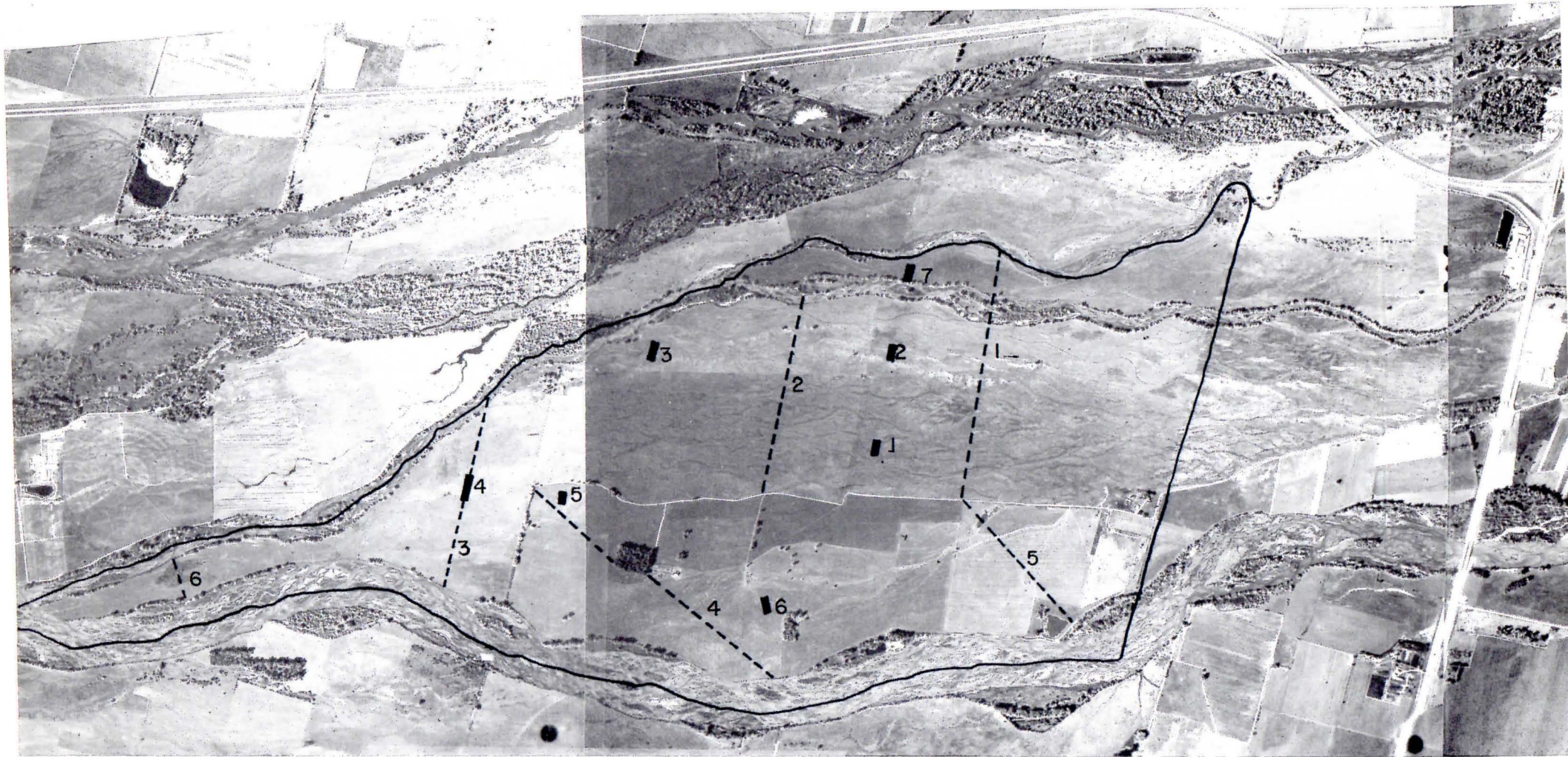
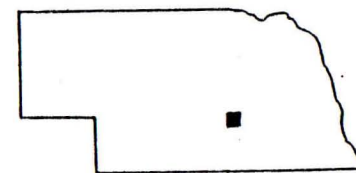


Figure 1.

Locations of transects and exclosures.



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of 1902 acres is predominantly wetland meadows and grazed pastures with interspersed sandy areas. Approximately 200 acres of the area was cultivated between 1946-1980 (Lingle 1980). Riverbed channels, sandbar islands, wooded shoreline, wooded lots, and cultivated areas of corn and alfalfa are also included in the study area.

Soils consist of primarily loam, silt loam to sandy loam, and sandy loam to fine sandy loam (Yost 1962).

The mean annual precipitation at Grand Island is 25 inches. Wet years and dry years are a common occurrence. The mean length of the growing season is 160 days. Mean temperature ranges from 23 to 78 degrees. Moderate to strong south to southeasterly winds are common (Stevens 1959). During the growing season of 1980, the study area received the following extremes in moisture conditions: the study area was mostly inundated until mid-June due to heavy snow melt in the mountains and greater than normal spring rains in Nebraska; during the later part of the growing season there was little rainfall and little river flow.

METHODS AND MATERIALS

Vascular plant collections were made from May through September of the 1980 growing season. Collections were made at random sites in the varied habitats throughout the study area. Exclosures and transects were established for a concurrent community structure study, these were frequently used for collection sites (Fig. 1). Standard taxonomic procedures were utilized for pressing and mounting the collected specimens.

ANNOTATED CHECK-LIST

The annotated check-list is arranged by families according to McGregor et al (1977). Within each family, genera and species are arranged alphabetically. Common names are provided according to McGregor et al (1977).

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The annotation to each taxon is arranged in the following order:

- flowering period
- notation if taxon was infrequent in study area
- habitat type
- significant distribution deviation
- distribution of taxon in Nebraska
- area of world from which taxon was naturalized, others are considered native.

Specimens are deposited in the Kearney State College Herbarium, the Nebraska State Herbarium (NEB) and the University of Kansas Herbarium (KANU).

Division EQUISETOPHYTA
EQUISETACEAE (Horsetail Family)

Equisetum arvense L. Field Horsetail

Spores April-May
Grazed pasture
Scattered throughout state except southwest

Equisetum laevigatum A. Br. Smooth Horsetail

Spores March-July
Hay meadow, pastures and riverbanks
Common throughout state

Division POLYPODIOPHYTA
POLYPODIACEAE (Fern Family)

Thelypteris palustris Schott Marsh Fern

Spores June-October
Infrequent in study area
Grazed pasture
Scattered throughout state

Division PINOPHYTA
CUPRESSACEAE (Cypress Family)

Juniperus virginiana L. Red Cedar

Pastures and meadows
Common throughout state except southwest

Division MAGNOLIOPHYTA

CLASS LILIATAE

ALISMATACEAE (Water Plantain Family)

Alisma subcordatum Raf. Water Plantain

June-September
Sandy or muddy bottoms of shallow water
Eastern half of state

Sagittaria latifolia Willd. Common Arrowhead

June-October
Shallow water of low areas and ditches
Scattered throughout state

JUNCAGINACEAE (Arrowgrass Family)

Triglochin maritimum L. Arrowgrass

June-September
Low areas of grazed pastures
Represents the southeastern edge of distribution in the state
Scattered western three-fourths of state

COMMELINACEAE (Spiderwort Family)

Tradescantia bracteata Small Spiderwort

May-July
Grazed pasture and riverbanks
Scattered to common throughout state

JUNCACEAE (Rush Family)

Juncus balticus Willd. Baltic Rush

May-September
Hay meadows
Scattered throughout state except southeast

Juncus dudleyi Wieg.

Dudley Rush

May-September
Low areas of grazed pastures
Scattered throughout state

Juncus nodosus L.

Knotted Rush

July-September
Low areas of grazed pastures
Scattered in state except southern one-fourth

Juncus torreyi Cov.

Torrey's Rush

July-October
Low areas of grazed pasture
Common throughout state

CYPERACEAE (Sedge Family)

Carex aquatilis Wahl.

May-August
Riverbanks and low areas
Probably common throughout state

Carex brevior (Dew.) Mack.

Fescue Sedge

May-August
Hay meadows and grazed pastures
Common throughout state

Carex eleocharis Bailey

Needleleaf Sedge

April-July
Sandy areas of grazed pastures
Common in state except southeast

Carex gravida Bailey

Heavy Sedge

May-July
Grazed pastures
Scattered throughout state

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Carex hallii Olney

May-July

Wet areas of hay meadows and grazed pastures

Represent the eastern edge of distribution in the state

Scattered western half

Carex lanuginosa Michx.

Wooly Sedge

May-July

Wet areas of hay meadows

Common throughout state

Carex meadii Dew.

Mead's Sedge

April-July

Hay meadows and grazed pastures

Common eastern half

Carex molesta Mack.

May-July

Hay meadows

Scattered throughout the state, mostly eastern half

Carex praegracilis W. Boott

Clustered-field Sedge

May-July

Sandy areas of grazed pastures

Common throughout state

Carex scoparia Schkuhr.

Broom Sedge

May-August

Low areas of grazed pastures and hay meadows

Scattered in state except southwest

Carex stipata Muhl.

Saw-beak Sedge

May-July

Low shrubby area of meadow

Scattered throughout state

Carex vulpinoidea Michx.

Fox Sedge

May-July
Disturbed wet areas
Common throughout state

Cyperus aristatus Rottb.

May-October
Sandy riverbed
Common throughout state

Cyperus esculentus L.

Yellow Nutsedge

June-October
Disturbed areas
Common east half of state

Cyperus odoratus L.

August-October
Sandy riverbed and bank
Common to scattered in state

Cyperus schweinitzii Torr.

Schweinitz Flatsedge

June-October
Sandy areas, pastures and meadows
Common throughout state

Eleocharis acicularis (L.) R. & S.

Needle Spikesedge

July-October
Low areas of grazed pasture
Scattered throughout state

Eleocharis compressa Sulliv.

Flatstem Spikesedge

May-August
Low areas, hay meadows and pastures
Scattered eastern three-fourths of state

Eleocharis macrostachya Britt.

Spike Rush

May-August
Low areas of hay meadows and pastures
Scattered throughout state

Fimbristylis puberula (Michx.) Vahl.

May-August
Infrequent in study area
Low areas of grazed pastures
Scattered in western three-fourths of state

Scirpus atrovirens Willd.

Darkgreen Bulrush

June-September
Low areas of meadows and pastures
Scattered throughout state

Scirpus fluviatilis (Torr.) Gray

River Bulrush

June-September
Riverbank
Scattered in state except for southwest

Scirpus maritimus L.

Prairie Bulrush

June-October
Riverbed
Infrequently scattered in state

Scirpus pungens Vahl.

Common Threesquare

S. *americanus*?

June-September
Low areas in pasture and meadows
Common throughout state

Scirpus validus Vahl.

Soft-stem Bulrush

June-September
Marshy areas and riverbed
Common throughout state

POACEAE (Grass Family)

- Agropyron repens* (L.) Beauv. Quackgrass
 June-September
 Hay meadows and grazed pastures
 Common throughout most of state
 Naturalized from Europe
- Agropyron smithii* Rydb. Western Wheatgrass
 June-September
 Infrequent in study area
 Sandy area of grazed pasture
 Common throughout state
- Agrostis stolonifera* L. Redtop
 June-September
 Hay meadows
 Common throughout state
 Naturalized from Europe
- Alopecurus aequalis* Sobol. Shortawn Foxtail
 May-September
 Infrequent in study area
 Wet area of grazed pasture
 Scattered in northern three-fourths of state
- Andropogon gerardi* Vitman Big Bluestem
 July-September
 Hay meadows and grazed pastures
 Throughout state
- Andropogon scoparius* Michx. Little Bluestem
 July-September
 Hay meadows and grazed pastures
 Throughout state
- Aristida oligantha* Michx. Prairie Threeawn
 August-September
 Hay meadows and sandy areas on river
 Common eastern three-fourths of state

Avena fatua L.	Wild Oat
June-August Infrequent in study area Hay meadows Scattered in central counties of state Probably native of Europe	
Bouteloua gracilis (H.B.K.) Griffiths	Blue Grama
July-September Grazed pastures Common throughout state	
Bromus inermis Leyss.	Smooth Brome
May-August Found in most habitats Common throughout state Naturalized from Europe	
Bromus japonicus Thunb.	Japanese Brome
May-July Disturbed areas Common throughout state Naturalized from Eurasia	
Bromus tectorum L.	Downy Brome
May-July Disturbed areas Common throughout state Naturalized from Europe	
Calamagrostis inexpansa Gray	Northern Reedgrass
June-August Grazed pasture Scattered throughout state	
Calamovilfa longifolia (Hook.) Scribn.	Prairie Sandreed
July-September Sandy areas of grazed pastures Common throughout state	

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Cenchrus longispinus (Hack.) Fern.

Field Sandbur

June-October
Disturbed areas
Common throughout state

Digitaria sanguinalis (L.) Scop.

Crabgrass

June-September
Disturbed areas
Common to scattered in state
Naturalized from Europe

Distichlis spicata (L.) Greene

Seashore Saltgrass

June-October
Grazed pastures
Scattered throughout state, less abundant eastward

Echinochloa crusgalli (L.) Beauv.

Barnyardgrass

June-October
Disturbed places
Common throughout state
Naturalized from Old World

Eleusine indica (L.) Gaertn.

Goosegrass

July-October
Disturbed areas
Scattered throughout southeastern half of state
Naturalized from Old World

Elymus canadensis L.

Canada Wild Rye

June-October
Disturbed areas
Common throughout state

Elymus virginicus L.

Virginia Wild Rye

May-September
Hay meadows
Common eastern half of state, scattered western half of state

<p>Eragrostis cilianensis (All.) E. Mosher</p> <p>June-October Disturbed areas Common throughout state Naturalized from Europe</p>	<p>Stinkgrass</p>
<p>Eragrostis pectinacea (Michx.) Nees</p> <p>July-October Riverbed and banks Scattered throughout state</p>	<p>Carolina Lovegrass</p>
<p>Eragrostis spectabilis (Pursh) Steud.</p> <p>July-October Disturbed areas Scattered eastern three-fourths of state</p>	<p>Purple Lovegrass</p>
<p>Festuca octoflora Walt.</p> <p>April-July Sandy areas along river Common throughout state</p>	<p>Six-weeks Fescue</p>
<p>Festuca pratensis Huds.</p> <p>June-August Grazed pastures and meadows Scattered throughout state Naturalized from Europe</p>	<p>Meadow Fescue</p>
<p>Hordeum jubatum L.</p> <p>June-August Grazed pasture and hay meadows Common throughout state</p>	<p>Foxtail Barley</p>
<p>Hordeum pusillum Nutt.</p> <p>June-August Grazed pasture and hay meadows Scattered throughout state</p>	<p>Little Barley</p>

- Koeleria pyramidata* (Lam.) Beauv. Junegrass
 June-September
 Grazed pastures and hay meadows
 Common throughout state
- Leersia virginica* Willd. Whitegrass
 June-October
 Low area along river
 Scattered mostly in southeastern half of state
- Muhlenbergia asperifolia* (Nees & Meyen) Parodi Scratchgrass
 June-October
 Hay meadow and grazed pastures
 Scattered throughout state
- Muhlenbergia mexicana* (L.) Trin. Wirestem Muhly
 June-October
 Grazed pastures
 Infrequent eastern three-fourths of state
- Muhlenbergia racemosa* (Michx.) B.S.P. Marsh Muhly
 August-October
 Low wooded areas along river
 Scattered throughout state
 More common in southern half of state
- Muhlenbergia sylvatica* Torr. Forest Muhly
 August-October
 Wooded area along river
 Mostly extreme eastern and two counties of south central
 part of state
- Panicum capillare* L. Witchgrass
 June-October
 Hay meadows
 Common throughout state

Panicum lanuginosum Ell.

June-October
Grazed pastures and hay meadows
Scattered eastern three-fourths of state

Panicum oligosanthos Schult.

Small Panicgrass

June-October
Grazed pasture and hay meadows
Common throughout state

Panicum virgatum L.

Switchgrass

July-October
Grazed pastures and hay meadows
Common throughout state

Paspalum setaceum Michx.

June-October
Sandy disturbed areas
Scattered throughout state

Phalaris arundinacea L.

Reed Canarygrass

May-August
Hay meadow
Scattered throughout state, more abundant eastern half

Phleum pratense L.

Timothy

June-August
Hay meadows
Scattered throughout state except the southwest
Naturalized from Europe

Poa pratensis L.

Kentucky Bluegrass

May-August
Found in most areas
Common throughout state
Naturalized from Europe

Setaria glauca (L.) Beauv. Yellow Foxtail

June-October
Disturbed areas
Common eastern half, less abundant western half of state
Naturalized from Europe

Sorghastrum avenaceum (Michx.) Nash Indian-grass

July-September
Hay meadows and grazed pastures
Common throughout state

Spartina pectinata Link Prairie Cordgrass

June-October
Hay meadows and grazed pastures
Common throughout state

Sphenopholis obtusata (Michx.) Scribn. Prairie Wedgegrass

May-August
Grazed pasture
Scattered throughout state

Sporobolus asper (Michx.) Kunth Rough Dropseed

July-October
Hay meadows and grazed pastures
Scattered eastern three-fourths of state

Sporobolus cryptandrus (Torr.) Gray Sand Dropseed

July-October
Hay meadows
Common throughout state

Stipa comata Trin. & Rupr. Needle-and-Thread

May-July
Sandy areas, grazed pasture
Represents the eastern edge of Kansas and Nebraska distribution
Common western three-fourths of state

Triplasis purpurea (Walt.) Chapm. Sandgrass

August-October
Sandy areas along river
Scattered throughout state except west quarter

SPARGANIACEAE (Bur-reed Family)

Sparganium eurycarpum Englem. Giant Burr-reed

May-August
Low areas of meadows and pastures
Scattered throughout state

LILIACEAE (Lily Family)

Allium canadense L. Wild Onion

May-June
Hay meadows and pastures
Eastern half of state

Allium textile A. Nels. & Macbr. White Wild Onion

May-July
Hay meadows and pastures
Represents the eastern edge of range
Western half of state

Asparagus officinalis L. Asparagus

May-June
Wooded area along river
Probably common throughout state, although not indicated by
vouchers
Naturalized from Europe

Hyposix hirsuta (L.) Cov. Yellow Stargrass

May-July
Hay meadows and grazed pastures
Scattered throughout eastern three-fourths of state

Smilacina stellata (L.) Desf.

Spikenard

May-July
Wooded areas
Scattered throughout state

Smilax hispida Muhl.

Bristly Greenbriar

May-July
Wooded area along river
Represents the northwestern limit of known range in Nebraska
Scattered throughout east part of state

IRIDACEAE (Iris Family)

Sisyrinchium angustifolium Miller

Blue-eyed-grass

May-July
Hay meadow and grazed pasture
Scattered throughout state

Sisyrinchium campestre Bickn.

White-eyed-grass

May-July
Hay meadows and grazed pastures
Common to scattered in eastern half of state

ORCHIDACEAE (Orchid Family)

Spiranthes cernua (L.) Rich.

Ladies-tresses

August-October
Hay meadows and grazed pastures
Infrequent eastern three-fourths of state

Division MAGNOLIOPHYTA

CLASS MAGNOLIATAE

RANUNCULACEAE (Buttercup Family)

Anemone canadensis L. Meadow Anemone

May-August
Wooded area on river bank
Common eastern quarter and south central part of state

Delphinium virescens Nutt. Prairie Larkspur

May-July
Riverbank and hay meadows
Scattered throughout state

Ranunculus cymbalaria Pursh Shore Buttercup

May-October
Pastures, low wet areas
Scattered throughout state except southeastern part

ULMACEAE (Elm Family)

Ulmus americana L. American Elm

March-April
Wooded areas
Scattered throughout state

MORACEAE (Mulberry Family)

Morus alba L. White Mulberry

April-May
Wooded areas
Scattered throughout eastern three-fourths of state
Naturalized from East Asia

CANNABACEAE (Hemp Family)

Cannabis sativa L.

Marijuana

July-October

Disturbed areas

Scattered throughout eastern three-fourths of state

Naturalized from Asia

URTICACEAE (Nettle Family)

Parietaria pensylvanica Muhl.

Pennsylvania Pellitory

June-September

Wooded areas

Scattered throughout state

Urtica dioica L.

Stinging Nettle

June-October

Grazed pasture and wooded areas

Scattered throughout state

NYETAGINACEAE (Four-O'clock Family)

Mirabilis linearis (Pursh) Heimerl.

Narrowleaf Four-O'clock

May-October

Grazed pasture

Infrequent in study area

Scattered throughout but less frequent eastern quarter of state

Mirabilis nyctaginea (Michx.) MacM.

Wild Four-O'Clock

May-October

Riverbank

Scattered throughout state

ANACADRICCEAE (Cashew Family)

Rhus glabra L. Smooth Sumac

May-August
Wooded areas
Scattered eastern three-fourths of state

Toxicodendron radicans (L.) O. Ktze. Poison Ivy

May-July
Riverbanks and wooded areas
Scattered eastern half of state

RUTACEAE (Rue Family)

Zanthoxylum americanum Mill. Prickly Ash

April-May
Wooded areas
Represents the western edge of range in Nebraska
Infrequent eastern third of state

ZYGOPHYLLACEAE (Caltrop Family)

Tribulus terrestris L. Puncture Vine

June-September
Disturbed weedy areas
Scattered throughout and common south central part of state
Naturalized from Europe

OXALIDACEAE (Wood Sorrel Family)

Oxalis dillenii Jacq.

May-November
Hay meadows and disturbed areas
Scattered eastern half of state

APIACEAE (Parsley Family)

Cicuta maculata L.

Water Hemlock

May-September
Low areas of hay meadows
Scattered throughout state

Daucus carota L.

Wild Carrot

June-October
Roadside disturbed areas
Infrequent in study area
Scattered eastern half of state
Naturalized from Eurasia

Sanicula canadensis L.

Canada Sanicle

May-August
Wooded areas
Scattered throughout state

GENTIANACEAE (Gentian Family)

Eustoma grandiflorum (Raf.) Shinnars

Prairie Gentian

May-August
Hay meadows
Scattered mostly in western three-fourths of state

APOCYNACEAE (Dogbane Family)

Apocynum sibiricum Jacq.

Prairie Dogbane

June-August
Riverbanks and grazed pastures
Common throughout state

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ASCLEPIADACEAE (Milkweed Family)

Asclepias incarnata L. Swamp Milkweed

June-September
Riverbank
Common throughout state except southwest quarter

Asclepias speciosa Torr. Showy Milkweed

May-July
Disturbed sandy areas
Common western half of state

Asclepias verticillata L. Whorled Milkweed

July-September
Disturbed sandy areas
Common eastern half and scattered western half of state

SOLANACEAE (Nightshade Family)

Physalis heterophylla Nees Clammy Ground Cherry

May-September
Hay meadows
Scattered throughout state

Physalis virginiana Mill. Ground Cherry

April-October
Disturbed weedy areas
Common throughout state

Solanum americanum Mill. Black Nightshade

May-October
Disturbed weedy areas
Scattered throughout state

Solanum rostratum Dun.

Buffalo Bur

May-October
Disturbed weedy areas
Scattered throughout state

CONVOLVULACEAE (Convolvulus Family)

Convolvulus arvensis L.

Field Bindweed

May-September
Grazed pastures and disturbed areas
Scattered throughout state
Naturalized from Eurasia

Convolvulus sepium L.

Hedge Bindweed

June-September
Riverbank
Scattered throughout state

Ipomoea purpurea (L.) Roth

Common Morning-glory

June-October
Disturbed areas in hay meadows
Infrequent central and common eastern edge of state

CUSCUTACEAE (Dodder Family)

Cuscuta glomerata Choisy

Cluster Dodder

July-September
Wet areas of hay meadows
Scattered eastern half of state

HYDROPHYLLACEAE (Waterleaf Family)

Ellisia nyctelea L.

Waterpod

April-July
Disturbed weedy areas
Scattered throughout state

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BORAGINACEAE (Borage Family)

Lithospermum incisum Lehm.

Narrow-leaved Puccoon

April-June
Sandy areas of pastures
Common throughout state

VERBENACEAE (Vervain Family)

Phyla lanceolata (Michx.) Greene

Fog Fruit

June-September
Low wet areas of pastures, meadows and along rivers
Common eastern half of state

Verbena bracteata Lag. & Rodr.

Bracted Vervain

May-October
Low wet areas of pastures
Common throughout state

Verbena hastata L.

Blue Vervain

June-October
Hay meadows
Scattered throughout state

Verbena stricta Vent.

Hoary Vervain

June-September
Pastures and hay meadows
Common throughout state

Verbena urticifolia L.

Nettle-leaved Vervain

July-September
Wooded islands
Scattered throughout state except southwest

LAMIACEAE (Mint Family)

- Hedeoma hispida* Pursh
 Rough Pennyroyal
 May-August
 Hay meadows
 Scattered throughout state
- Lycopus americanus* Muhl.
 American Bugleweed
 June-October
 Low meadows and river shoreline
 Scattered throughout state
- Lycopus asper* Greene
 Rough Bugleweed
 July-September
 River shoreline
 Scattered throughout state except southern third
- Monarda fistulosa* L.
 Wild Bergamot
 May-August
 Hay meadows
 Scattered throughout state
- Nepeta cataria* L.
 Catnip
 June-October
 Disturbed weedy areas
 Scattered throughout state
 Naturalized from Europe
- Prunella vulgaris* L.
 Selfheal
 May-October
 Hay meadows and pastures
 Scattered throughout state except southwestern quarter
- Pycnanthemum virginianum* (L.) Durand & Jacks. Mountain Mint
 July-September
 Hay meadows
 Infrequent eastern three-fourths of state

Teucrium canadense L.

American Germander

June-September
Roadside ditch
Scattered throughout state

PLANTAGINACEAE (Plantain Family)

Plantago eriopoda Torr.

Alkali Plantain

June-September
Hay meadows
Represent the south-eastern edge of range in the plains
Common western and south central parts of state

Plantago major L.

Common Plantain

May-September
Disturbed weedy areas
Scattered throughout state
Naturalized from Europe

Plantago patagonica Jacq.

Buckhorn

May-August
Hay meadows and pastures
Common throughout state

OLEACEAE (Olive Family)

Fraxinus pennsylvanica Marsh.

Green ash

April-May
Wooded areas
Scattered throughout state

~~CAMPANULACEAE~~
SCROPHULARIACEAE

CAMPANULUCEAE (Bell flower Family)

Lobelia siphilitica L.

Blue Cardinal-flower

July-October
Hay meadows and pastures
Scattered throughout state

Lobelia spicata Lam.

Pale-spike Lobelia

July-October
Hay meadows and pastures
Scattered throughout state

RUBIACEAE (Madder Family)

Galium aparine L.

Catchweed Bedstraw

May-September
Wooded areas
Scattered throughout state

CAPRIFOLIACEAE (Honeysuckle Family)

Sambucus canadensis L.

Elderberry

June-July
Riverbank
Scattered eastern three-fourths of state

ASTERACEAE (Sunflower Family)

Achillea millefolium L.

Yarrow

June-November
Hay meadows
Scattered throughout state

Ambrosia artemisiifolia L.

Common Ragweed

July-October
Hay meadows and grazed pastures
Scattered throughout state

Ambrosia psilostachya DC.

Western Ragweed

July-October
Hay meadows and grazed pastures
Scattered throughout state

Ambrosia trifida L.	Giant Ragweed
July-October Disturbed weedy areas Scattered throughout state	
Antennaria neglecta Greene	Field Pussytoes
May-June Grazed pastures Scattered throughout state except southwestern quarter	
Arctium minus Schkuhr.	Common Burdock
July-November Wooded areas Infrequent, mostly eastern half of state	
Artemisia ludoviciana Nutt.	White Sage
July-November Hay meadows Scattered throughout state	
Aster ericoides L.	White Aster
August-October Hay meadow, pastures and riverbanks Scattered western half and common eastern half of state	
Aster simplex Willd.	Panicked Aster
August-October Grazed pastures Scattered throughout state	
Bidens comosa (Gray) Wieg.	Beggarticks
August-October River shoreline Scattered throughout state	

Bidens frondosa L.

Beggarticks

July-October
River shoreline
Common throughout state

Carduus nutans L.

Musk Thistle

July-September
Disturbed weedy areas
Common eastern half and infrequent western half of state
Naturalized from Europe

Chrysanthemum leucanthemum L.

Ox-eye Daisy

July-September
Hay meadows
Infrequent throughout state

Chrysopsis villosa (Pursh) Nutt.

Golden Aster

July-September
Grazed pastures
Scattered throughout state except southwestern quarter

Cirsium flodmani (Rydb.) Arthur

Prairie Thistle

July-September
Disturbed weedy areas
Scattered throughout state

Conyza canadensis (L.) Cronq.

Horseweed

June-October
Grazed pastures
Scattered throughout state

Coreopsis tinctoria Nutt.

Plains Coreopsis

May-September
Low areas of hay meadows
Scattered throughout state

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Crepis runcinata (James) T. & G.

Hawk's-beard

June-July

Grazed pastures

Represents the eastern edge of range in Nebraska

Scattered western three-fourths of state

Erigeron philadelphicus L.

Philadelphia Fleabane

April-August

Hay meadows

Scattered northern one-third and eastern one-half of state

Erigeron strigosus Muhl.

Daisy Fleabane

May-October

Hay meadows and pastures

Common throughout state but less frequent western quarter

Eupatorium perfoliatum L.

Boneset

July-September

Grazed pastures

Scattered throughout state

Grindelia squarrosa (Pursh) Dun.

Curly-top Gumweed

June-September

Grazed pastures

Scattered throughout state

Helenium autumnale L.

Sneezeweed

August-October

Grazed pastures

Scattered throughout state

Helianthus annuus L.

Common Sunflower

July-September

Disturbed weedy areas

Scattered throughout state

Helianthus grosseserratus Martens	Sawtooth Sunflower
July-October Hay meadows Scattered eastern one-half	
Helianthus maximiliana Schrad.	Maximilian Sunflower
July-October Hay meadows Scattered throughout state	
Helianthus petiolaris Nutt.	Plains Sunflower
June-October Disturbed weedy areas Scattered throughout state	
Helianthus tuberosus L.	Jerusalem Artichoke
August-October Hay meadows and edge of wooded areas Scattered throughout state	
Iva annua L.	
August-October Shoreline Scattered southern half of state	
Iva xanthifolia Nutt.	Marsh Elder
June-October Disturbed weedy areas Scattered throughout state	
Lactuca canadensis L.	Wild Lettuce
June-November Hay meadows Scattered throughout state except southwestern quarter	

Lactuca oblongifolia Nutt.

Blue Lettuce

May-October
Disturbed weedy areas
Scattered throughout state

Lactuca serriola L.

Prickly Lettuce

June-October
Disturbed weedy areas
Scattered throughout state
Naturalized from Europe

Liatris pycnostachya Michx.

Tall Blazing Star

August-September
Hay meadows
Eastern quarter and southcentral part of state

Ratibida columnifera (Nutt.) Woot. & Standl. Prairie Cone Flower

June-September
Hay meadows and grazed pastures
Common throughout state

Rudbeckia hirta L.

Black-eyed Susan

May-September
Hay meadows and grazed pastures
Scattered mostly in northern two-thirds of state

Senecio plattensis Nutt.

Prairie Ragwort

April-June
Hay meadows and grazed pastures
Common eastern one-third and scattered in remainder of state

Solidago canadensis L.

Canada Goldenrod

August-October
Grazed pastures
Scattered throughout state

Solidago gramifolia (L.) Salisb.	Narrow-leaved Goldenrod
August-October Grazed pastures Infrequent throughout state	
Solidago gigantea Ait.	Late Goldenrod
August-October Grazed pastures Scattered throughout state	
Taraxacum officinale Weber	Dandelion
March-November Disturbed weedy areas Scattered to common throughout state Naturalized from Europe	
Tragopogon dubius Scop.	Goatsbeard
May-July Disturbed weedy areas Scattered throughout state Naturalized from Europe	
Vernonia fasciculata Michx.	Ironweed
July-September Grazed pastures Scattered throughout state	
Xanthium strumarium L.	Cocklebur
August-October River bottom and islands Scattered throughout state	

DISCUSSION AND RECOMMENDATIONS

The annotated check-list for the study area includes 262 species of vascular plants, representing 174 genera and 61 families. The list includes 3 species of lower vascular plant, 93 species of monocots and 165 species of dicots.

No species entered in the check-list is a first record for Nebraska. There were no species in the check-list considered to be rare for the state. The following species were determined to have infrequent distribution in the study area but not infrequent in Hall County or the state:

Thelypteris palustris Schoot.
Fimbristylis puberula (Michx.) Vahl.
Agropyron smithii Rydb.
Alopecurus aequalis Sobol
Avena fatua L.
Mirabilis linearis (Pursh) Heimerl.
Talinum parviflorum Nutt.
Amannia coccinea Rottb.
Ludwigia palustris (L.) Ell.
Daucus carota L.

The following taxa collected from the study area are at the edge of their known distribution in Nebraska or the Great Plains:

Triglochin maritimum L.
Carex hallii Olney
Stipa comata Trin. & Rupr.
Allium textile A. Nels. & Macbr.
Smilax hispida Muhl.
Chenopodium missouriense Aellen
Lysimachia thrysiflora L.
Rosa woodsii Lindl.
Oenothera pallida Lindl.
Zanthoxylum americanum Mill.

Plantago eriopoda Torr.

Crepis runcinata (James) T. & G.

The collections of Desmodium glutinosum (Muhl.) Wood represent a disjunct distribution, it is also found as a disjunct collection in Keya Paha County, Nebraska. The study area contained 45 species which are considered as naturalized taxa.

The following recommendations are made regarding the study area:

1. The flora of the study area, as determined by this study, consists of 262 species of vascular plants. It is estimated that this represents approximately 90% of the total flora for the area. Normally collections from at least three growing seasons are necessary in order to arrive at a reasonably complete catalogue of the flora. The flora should be monitored on a periodic basis, every 2 or 3 years. This is especially important if management practices are initiated which may vary the composition of the flora.
2. The presence of 217 native species suggests that a large number of taxa from the pre-settlement native prairie continue to exist in at least some areas of the study area. In comparison, a tall-grass prairie of 40 acres in west central Missouri had 250 native species. (Hurd and Christinsen, 1975). Observations indicate that the species normally dominant in a native lowland prairie for this region of Nebraska are not the dominants in the majority of the study area. The results of the ecological study should verify this observation. This would suggest management practices to attempt to gradually increase the number of native species as well as to increase the density of the normal dominants for this type of area. The remaining management recommendation will

assist in accomplishing this objective.

3. The flora of the study area revealed 45 species which are non-North American in origin. The native prairie of west central Missouri, referred to in item Number 2, contained 18 naturalized taxa (Hurd and Christensen, 1975). A reduction in the density of these species, as well as a reduction in the number of taxa in this category of plants, is suggested. Management principles to attain these changes are recommended in the following items.
4. The area being utilized during the summer of 1980 as pasture, the north and west pasture, should be subjected to a reduced grazing load. The presence of Medicago lupulina L., black medick, in relatively abundant quantities indicates a low fertility (Johnson, 1970). This condition is probably due to excessive grazing in the past. A stocking rate for the pasture area should be carefully determined, perhaps with the assistance of a range management specialist. Although it is not practical to reintroduce bison, pronghorn and elk, it is necessary to approximate pre-white-man animal influences (Hargen and Shult, 1973). An appropriate rotation of the cattle to the various pastures should approximate these conditions.

Two management problems are associated with the pasture area, the invasion of non-prairie species and the accumulation of plant litter. Spring burning is an effective management tool, litter is controlled without damaging soil and native vegetation productivity, and flowering and seed set of native species is increased (Richards, 1972). Research conducted on a native prairie in eastern Nebraska revealed that 3 years of spring burning without summer mowing

decreased the number of non prairie species and increased native grasses (Becic and Bragg, 1978). Native prairie is dominated by warm-season perennial grasses and in the absence of natural fire, cool season grasses, shrubs and trees invade the prairie (Owensby, 1973). Spring burning will essentially eliminate undesirable species such as Poa pratensis L., Kentucky bluegrass and annual grasses such as Festuca octoflora Walt., six-weeks fescue, Hordeum pusillum Nutt., little barley and Bromus spp. Late spring burning will cause fire injury to sedges and rushes which begin their perennial growth in late March and early April. Certain bunchgrasses such as Andropogon scoparius Michx., little bluestem, may be injured or killed when the dead material in the center of the crowns burn with intense heat. When the second seasons growth of the biennial Melilotus albus Desr., white sweet clover, is destroyed by spring burning, seed production is prevented (Heitlinger, 1974). In general, native prairie species have well developed rhizomes, deep root systems and/or intercalary meristems which individually or in combination resist injury from burning if the burning occurs at the appropriate time. The most effective burn period occurs when Poa pratensis L., Kentucky bluegrass, has begun to grow and prior to spring growth of native perennials, not later than the first three weeks in April (Richards, 1972). The initiation of spring growth of native perennials may vary depending on climatic conditions and should be determined by on site examination prior to burning. Spring burning should be accomplished prior to 90% accumulation of maximum litter. To avoid floristic changes the best burning sequence appears to be every 3 years or at about 75% of maximum

litter accumulation (Kucera, 1970).

Burning is labor intensive, therefore, management will need to determine the appropriate schedule of acreage to be burned. In order to attempt to prevent accidental burns, a mowed area at the east edge of the pasture is recommended.

5. Annual removal of hay from a site interrupts the normal recycling of nutrients and contributes to low vigor of grasses. (Johnson, 1970). Operation of haying equipment on the hay meadow causes compaction of soil and storage of hay in stacks produces a weed patch after removal (Christensen, 1972). It is recommended that haying procedures be discontinued, that the hay being stored be removed and the hay meadows be subjected to controlled grazing and management practices be initiated as recommended for the existing pastures.
6. The areas under cultivation during the summer of 1980 should be restored to a native prairie condition. Crop production does not appear to be economically practical. Many of the disturbed weedy areas are associated with the cultivated areas. It is recommended that the cultivated areas be uniformly seeded with an appropriate mixture of native plant seed of the correct ecotype. Ecotype seeds for Nebraska are available from commercial seedsmen (Wilson, 1972). Seeding should occur in late fall after mid-November, this enables early spring germination. Weed competition may be controlled by mowing with a rotary shredder set above prairie seeding height (Schramm, 1970). Herbicide spray may be utilized if broadleaf weeds are at least 30% of the weedy population (Wilson, 1970). Once prairie species are well established, the areas may be grazed and should be managed as pastures.

- 7. A number of weedy disturbed areas were found in the study area. These were usually associated with roads, building sites, haystacks, cultivated areas, wooded areas and occasionally in pastures and hay meadows. Restoration of these areas should be attempted by controlling weedy species with herbicides or hand control and reseeding to a native condition. Measures should be taken to prevent the establishment of new disturbed areas and present causative agents, such as vehicles, should be controlled.
- 8. Management should establish experimental practices relating to burning, grazing and restoration. Monitoring of these experimental areas should be conducted to determine progress.

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Additions to Floristic Inventory - Mormon Island Crane Meadows
November 1982

DIVISION MAGNOLIOPHYTA

CLASS LILLIATAE

COMMELINACEAE (Spiderwort Family)

Tradescantia occidentalis (Britt.) Smyth Prairie Spiderwort

JUNCACEAE (Rush Family)

Juncus bufonius L. Toad Rush

CYPERACEAE (Sedge Family)

Carex blanda Dew. Woodland Sedge

POACEAE (Grass Family)

Agropyron caninum (L.) Beauv. Slender Wheatgrass

Bouteloua hirsuta Lag. Hairy Grama

Glyceria striata (Lam.) Hitchc. Fowl Mannagrass

Hierochloe odorata (L.) Beauv. Sweetgrass

Polypogon monspeliensis (L.) Desf. Rabbitfoot-Grass

Sporobolus airoides (Torr.) Torr Alkali Sacaton

Stipa spartea Trin. Porcupine-Grass

ORCHIDACEAE (Orchid Family)

Platanthera leucophaea (Nutt.) Lindl. Prairie Fringed Orchid

DIVISION MAGNOLIOPHYTA

CLASS MAGNOLIATAE

RANUNCULACEAE (Buttercup Family)

Ranunculus macounii Britt. Macoun's Buttercup

Thalictrum dasycarpum Fisch. & Lall. Purple Meadowrue

ULMACEAE (Elm Family)

Celtis occidentalis L. Hackberry

NYCTAGINACEAE (Four-O'Clock Family)

Mirabilis hirsuta (Pursh) MacM.

Hairy Four-O'Clock

CARYOPHYLLACEAE (Pink Family)

Silene antirrhina L.

Sleepy Catchfly

CHENOPODIACEAE (Goosefoot Family)

Chenopodium glaucum L.

Oak-Leaved Goosefoot

POLYGONACEAE (Buckwheat Family)

Polygonum lapathifolium L.

Pale Smartweed

BRASSICACEAE (Mustard Family)

Arabis glabra (L.) Bernh.

Tower Mustard

Capsella bursa-pastoris (L.) Medic.

Shepherd's Purse

Rorippa palustris (L.) Bess.

Bog Yellow Cress

ROSACEAE (Rose Family)

Potentilla norvegica L.

Strawberry Weed

Potentilla paradoxa Nutt.

Bushy Cinquefoil

FABACEAE (Bean Family)

Apios americana Medic.

Ground Nut

Desmanthus illinoensis (Michx.) MacM.

Bundle Flower

Lespedeza capitata Michx.

Bush Clover

Lotus purshianus Clem. & Clem.

Trifolium hybridum L.

Alsike Clover

LYTHRACEAE (Loosestrife Family)

Lythrum salicaria L.

Purple Loosestrife

ONAGRACEAE (Evening Primrose Family)

Oenothera laciniata Hill

Cutleaf Evening Primrose

Oenothera pallida Lindl.

ELAEAGNACEAE (Russian Olive Family)

Shepherdia argentea (Pursh) Nutt.

Buffaloberry

APIACEAE (Parsley Family)

Sium suave Walt.

Water Parsnip

APOCYNACEAE (Dogbane Family)

Apocynum cannabinum L.

Hemp Dogbane

ASCLEPIADACEAE (Milkweed Family)

Asclepias syriaca L.

Common Milkweed

BORAGINACEAE (Borage Family)

Onosmodium molle Michx.

False Gromwell

LAMIACEAE (Mint Family)

Mentha arvensis L.

Field Mint

Scutellaria lateriflora L.

Blue Skullcap

Stachys palustris L.

Hedge Nettle

SCROPHULARIACEAE (Figwort Family)

Mimulus ringens L.

Monkey Flower

Verbascum thapsus L.

Common Mullein

Veronica anagallis-aquatica L.

Water Speedwell

CAMPANULACEAE (Bell Flower Family)

Lobelia cardinalis L.

Cardinal Flower

Triodanis perfoliata (L.) Nieuw.

Looking Glass

CAPRIFOLIACEAE (Honeysuckle Family)

Symphoricarpos occidentalis Hook.

Western Snowberry

ASTERACEAE (Sunflower Family)

Antennaria neglecta Greene

Field Pussytoes

Artemisia ludoviciana Nutt.

White Sage

ASTERACEAE (Sunflower Family) (Continued)

<u>Aster praealtus</u> Poir.	Willowleaf Aster
<u>Bidens cernua</u> L.	Beggarticks
<u>Heliopsis helianthoides</u> (L.) Sweet	False Sunflower
<u>Liatris punctata</u> Hook.	Blazing Star
<u>Silphium integrifolium</u> Michx.	Wholeleaf Rosinweed
<u>Solidago missouriensis</u> Nutt.	Prairie Goldenrod
<u>Solidago rigida</u> L.	Rigid Goldenrod
<u>Vernonia baldwini</u> Torr.	Western Ironweed