

NPS/BRD VEGETATION MAPPING PROGRAM

Classification of the Vegetation of Scotts Bluff National Monument

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VEGETATION SAMPLING & CLASSIFICATION

Introduction

This report presents the results of the vegetation classification portion of the NPS/BRD Vegetation Mapping Program at Scotts Bluff National Monument. The methods for sampling the vegetation are briefly discussed, particularly in relation to the standard described in NPS/BRD Vegetation Mapping Program: Field Methods for Vegetation Mapping. Also included in this document are the vegetation classification for Scotts Bluff, the field key to the vegetation types, and descriptions of each vegetation type. The supplements to this report include the field data sheets for the classification plots and the accuracy assessment plots and corresponding electronic data files (in dBase 5.0).

Methods

The methods used for developing the vegetation classification for Scotts Bluff National Monument followed the standards described in Field Methods for Vegetation Mapping (see methods paper for detailed methodology employed). Due to the small size of the Monument, a pilot sampling approach, based on sampling across key environmental gradients and photographic signatures, was not required. The sample area consisted of nearly the entire Monument with only a few sites (cliff faces and river sandbars) being inaccessible to sampling. Polygons were selected for sampling based on:

1) environmental factors (primarily aspect and slope, with soil type used for some vegetation types), 2) geographic location within the Monument (widely dispersed polygons of a given type were preferred), 3) representativeness (polygons were selected to capture the representative variability of each of the vegetation types), and 4) accessibility (in some cases certain polygons were difficult to access).

Sample plots were subjectively located within polygons so as to include representative and non-representative expressions of the community. The heterogeneity of the vegetation and the small number of samples per type precluded randomly selecting plot location. The number of sample plots per vegetation type varied with the total coverage, number of polygons, and variability of each type. Plots sampled per type varied from 0 (cliffs and sandbars) to 12 (prairie) with an average of 5 plots per type.

The size of sample plots also varied with vegetation type. For woodland communities, 15 x 25 m plots were used to sample the canopy and sub-canopy strata, and 10 x 10 m plots were used to sample the shrub and herbaceous strata. An exception was made for the *Juniperus scopulorum* / *Oryzopsis micrantha* Woodland, where restricted stand size required using 10 x 10 m plots to sample all strata. For shrub communities, 10 x 10 m plots were used to sample both the shrub and herbaceous strata. Plot size for the large majority of the herbaceous communities was 10 x 10 m. An exception was made for the seepage community, where the restricted geographic coverage of the community mandated 5 x 5 m and 3 x 3 m plots (these were the largest plots that would fit comfortably within the stands). In sparsely vegetated communities, 10 x 10 m. plots were used to sample all strata for the majority of community types. In the rock outcrop community however, both 10 x 10 m and 5 x 5 m plots were used.

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In addition to the species information collected within the classification plots, an area around the plot (10 m from the plot boundary, within the same vegetation polygon) was surveyed for the presence of species not found in the plot. These species are found at the end of the species list on the form and are denoted with a "P" rather than a cover class.

The procedures differed from the methods outlined in the "Field Methods" document in two main areas: identification of sample sites and accuracy assessment. High quality aerial photography with delineated vegetation polygons was not available prior to vegetation sampling; thus, some suggested methods for stratifying sampling locations were not applicable. The lack of good aerial photographs was ameliorated somewhat by the terrain of the Monument and the generally low stature of the vegetation. The bluff provided a commanding view of most of the Monument and facilitated the selection of sampling sites. During a two day reconnaissance visit, an initial list of community types was developed by visually inspecting the Monument from the bluff top and then by visiting examples of all of the obvious vegetation polygon types.

Accuracy assessment, as originally envisioned, would have occurred after the completion of the final vegetation map. In order to best utilize field time, however, data (observation points) were collected during this field season and will be used later to assess the accuracy of the map. Accuracy assessment data were collected from 150 sites. On average 10 sites per vegetation type were sampled. However, this varied with the vegetation type. The accuracy assessment sites were spread across the monument and were intended to represent the full variability of each of the vegetation types. In general more sites were chosen for types which had greater geographic extent and variability on the Monument and fewer were chosen for those with lesser geographic extent and variability. The precise site locations were chosen haphazardly. In most cases, to minimize travel time, accuracy assessment points were chosen in the polygons surrounding those for which detailed plot data were collected, at least 50 meters from the plot. Additional accuracy assessment sites were chosen by walking transects across the monument and taking data in the different vegetation types encountered. Data collected for the accuracy assessment sites was similar to that collected on the plots. However, instead of collecting full species lists, only the dominant species in each strata of the vegetation were listed.

Results

Twenty vegetation types were delineated for Scotts Bluff National Monument, including 3 woodland types, 3 shrubland types, 9 herbaceous types and 5 sparsely vegetated types. In addition, two mosaic types were designated that combine a prairie type and sparsely vegetated types. This designation is useful as a mapping label where these the types interdigitate at a finer scale than the mapping unit. The upland herbaceous communities (grasslands) and the sparsely vegetated communities occupy the vast majority of the Monument, with communities dominated by woody or wetland herbaceous vegetation forming minor components.

Staff at the Monument had previously delineated 24 disturbance polygons. These are sites that had been converted to human use (agriculture, golf, etc.) and are currently in various stages of recovery from that disturbance. These polygons have been designated for (or are in the process of) restoration by the Monument staff. At the request of the Monument staff, all of these polygons were sampled to characterize them. These sites were placed in one of two community categories: Mixedgrass Prairie (Restored/Reseeded) or *Kochia scoparia/Bromus* spp. Early Seral Community and described.

In addition, there are other areas of the Monument that have been impacted by past human activity (primarily overgrazing) and have been invaded to various degrees by weedy and exotic species. These areas were never plowed or converted and have maintained a component of their native vegetation. For example, many of the upland grassland sites have been invaded by brome grass (*Bromus* spp.). Many of the most highly disturbed sites are in the river floodplain. Here *Andropogon gerardii* - *Calamagrostis canadensis* - *Helianthus grosseserratus* Herbaceous Vegetation, *Typha latifolia* Inland Great Plains Herbaceous Vegetation, and *Populus deltoides* - (*Salix amygdaloides*) / *Salix exigua* Woodland are heavily dominated by exotics and usually have little resemblance to their natural condition. These sites were assigned community designations that most closely resemble the known natural communities. Due to their degraded condition, the vegetation descriptions of these types for the Monument may not closely resemble their global descriptions.

Following is the vegetation classification for Scotts Bluff National Monument (set within the hierarchy of the National Vegetation Classification System). A vegetation key to facilitate identification of the types in the field and a description of each vegetation type at the Monument are provided in later sections of this report.

Classification

II WOODLAND. Open stands of trees usually over 5 m tall with crowns not usually touching (generally forming 25 to 60% cover)

II.A Evergreen woodland (evergreen species generally contribute >75% of the total tree cover)

II.A.4 Temperate or subpolar needle-leaved evergreen woodland

II.A.4.N.a Rounded-crowned temperate or subpolar needle-leaved evergreen

JUNIPERUS SCOPULORUM WOODLAND ALLIANCE
Juniperus scopulorum / *Oryzopsis micrantha* Woodland

PINUS PONDEROSA WOODLAND ALLIANCE
Pinus ponderosa / *Juniperus scopulorum* Woodland

II.B Deciduous woodland (deciduous species generally contribute >75 % of the total tree cover)

II.B.2 Cold-deciduous woodland

II.B.2.N.b Temporarily flooded cold-deciduous woodland

POPULUS DELTOIDES TEMPORARILY FLOODED WOODLAND
ALLIANCE

Populus deltoides - (*Salix amygdaloides*) / *Salix exigua* Woodland

III SHRUBLAND (SCRUB). Shrubs or trees usually 0.5 to 5 m tall with individuals or clump not touching to interlocking (generally forming >25% canopy cover - some examples of defined shrubland communities on Scott's Bluff National Monument may have <25% canopy cover).

III.B Deciduous shrubland (scrub) (deciduous species generally contribute to >75% of the total shrub and/or tree cover)

III.B.2 Cold-deciduous shrubland

III.B.2.N.a Temperate cold-deciduous shrubland

CERCOCARPUS MONTANUS SHRUBLAND ALLIANCE
Cercocarpus montanus / *Bouteloua curtipendula* Shrubland

III.B.2.N.b Temporarily flooded cold-deciduous shrubland

SALIX EXIGUA TEMPORARILY FLOODED SHRUBLAND
ALLIANCE
Salix exigua Shrubland

SYMPHORICARPOS OCCIDENTALIS TEMPORARILY FLOODED
SHRUBLAND ALLIANCE
Symphoricarpos occidentalis Shrubland

V HERBACEOUS. Graminoids and/or forbs (including ferns) generally forming >10% cover with woody cover usually <10%

V.A Perennial graminoid vegetation. Graminoids over 1 m tall, generally contributing >50% of total herbaceous cover

V.A.5 Temperate or subpolar grassland

V.A.5.N.a Tall sod temperate grassland (> 60% cover) (including sod or mixed sod-bunch graminoids)

ANDROPOGON GERARDII - (CALAMAGROSTIS CANADENSIS,
PANICUM VIRGATUM) HERBACEOUS ALLIANCE
Andropogon gerardii - *Calamagrostis canadensis* - *Helianthus
grosseserratus* Herbaceous Vegetation

ANDROPOGON HALLII HERBACEOUS ALLIANCE
Andropogon hallii - *Calamovilfa longifolia* Herbaceous Vegetation

V.A.5.N.c Medium tall sod temperate or subpolar grassland (graminoids).
Graminoids usually between 0.5 to 1 m tall, generally contributing
>50% of total herbaceous cover

ALLIANCE UNDEFINED

***Kochia scoparia/Bromus* spp. Early Seral Community**

ALLIANCE UNDEFINED

Mixedgrass Prairie (Reseeded/Restored)

PASCOPYRUM SMITHII HERBACEOUS ALLIANCE

***Pascopyrum smithii* Herbaceous Vegetation**

STIPA COMATA - BOUTELOUA GRACILIS HERBACEOUS
ALLIANCE

***Stipa comata - Bouteloua gracilis - Carex filifolia* Herbaceous
Vegetation**

V.A.5.N.l Semipermanently flooded temperate or subpolar grassland

TYPHA (ANGUSTIFOLIA, LATIFOLIA) - (SCIRPUS SPP.)

SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE

***Typha* spp. Inland Great Plains Herbaceous Vegetation**

V.A.5.N.m Saturated temperate or subpolar grassland

CAREX SPP. - TYPHA SPP. SATURATED HERBACEOUS
ALLIANCE

***Typha* spp. - *Equisetum hyemale* - *Carex* spp. Seep Herbaceous
Vegetation**

V.A.6.N.f Medium-tall temperate or subpolar grassland with a sparse needle-
leaved evergreen or mixed tree layer

PINUS PONDEROSA WOODDED MEDIUM-TALL
HERBACEOUS ALLIANCE

***Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous
Vegetation**

VII SPARSE VEGETATION. Vascular vegetation is scattered or nearly absent (generally <10%). Cover
of non-vascular plants (mosses and lichens) may be absent to continuous.

VII.A Consolidated rocks sparse vegetation (cliff and pavement)

VII.A.1 Sparsely vegetated cliff

VII.A.1.N.a Cliffs with sparse vascular vegetation

OPEN BLUFF / CLIFF SPARSE VEGETATION
Inland Siltstone Bluff - Cliff

ROCK OUTCROP / BUTTE SPARSE VEGETATION
Siltstone - Clay Butte Sparse Vegetation

VII.C Unconsolidated material sparse vegetation

VII.C.2 Sparsely vegetated sand flats

VII.C.2.N.c Temporarily flooded sand flats
SAND FLATS TEMPORARILY FLOODED SPARSE VEGETATION
Riverine Sand Flats - Bars Sparse Vegetation

VII.C.3 Sparsely vegetated soil slopes

VII.C.3.N.b Dry slopes

LARGE ERODING CLIFFS SPARSE VEGETATION
Eroding Great Plains Badlands Sparse Vegetation

SMALL ERODING CLIFFS / BANKS SPARSE VEGETATION
Eroding Great Plains Slopes Sparse Vegetation

Discussion

Overall, the sampling of vegetation and development of a classification for Scotts Bluff were successful. There were a number of minor difficulties (to be expected in a pilot project), and the lessons learned should prove valuable for future mapping projects. The primary drawback for this project was the lack of good aerial photography with delineated polygons prior to vegetation sampling. We were able to work around this limitation due to the small size of the Monument, the availability of a vantage point from which to view the area (the bluff itself), and the low stature of the vegetation. In most other National Park Service units, however, this lack of aerial photos would have jeopardized the ability to conduct sampling and develop a classification. Proceeding without photos may provide a useful test of how well prior knowledge of vegetation types facilitates the development of the final vegetation map. Following are some specific recommendations that should improve future vegetation mapping projects:

- 1) Aerial photography should be flown the year before vegetation sampling and generally at the same time of year as the sampling will occur. Optimally, these photos should be available to personnel planning the field work during the winter before the field work.

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- 2) Vegetation sampling should be conducted by two person teams, an ecologist/botanist and an assistant. Having a second person to help haul equipment, lay out plots, record data, and take GPS readings may more than double the efficiency of the operation.
- 3) For grasslands it may be best to sample using transects rather than releve plots. Grasslands in the Great Plains can have great variability in species composition and abundance within limited areas due to past disturbances animal use (e.g. gophers), soils, etc. It may be worthwhile to test whether transects would better capture this variability and provide better descriptions of community types.
- 4) Analysis of the time requirements for this project should be incorporated into future projects to develop more realistic deadlines for the vegetation sampling and development of various products.

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FIELD KEY TO THE PLANT COMMUNITIES OF SCOTTS BLUFF NATIONAL MONUMENT

1. Site more than 25% vegetated.
 2. More than 25% of site covered by woody plants **more than** 2 m tall.
 3. Broadleaf trees predominate; site riverine or affected by irrigation canal
Populus deltoides-(*Salix amygdaloides*)/*Salix exigua* **Floodplain Woodland**
 3. Needleleaf (conifer) trees predominate; upland sites and draws.
 4. *Pinus ponderosa* and *Juniperus scopulorum* predominate; canopies usually intermingled
Pinus ponderosa/*Juniperus scopulorum* **Woodland**
 4. *Juniperus scopulorum* predominates (*Pinus ponderosa* cover less than 10%); canopies usually intermingled
Juniperus scopulorum/*Oryzopsis micrantha* **Woodland**
 2. Less than 25% of site covered by woody plants **more than** 2 m tall.
 5. More than 25% of site covered by woody plants **less than** 2 m tall.
 6. Site riverine or palustrine. Herbaceous stratum poorly represented or absent; *Salix exigua* dominant; stream margins
Salix exigua **Shrubland**
 6. Site upland (including intermittently flooded draws).
 7. Site on middle slopes of bluffs; *Cercocarpus montanus* dominant
Cercocarpus montanus/*Bouteloua curtipendula* **Shrubland**
 7. Site on low slopes or in draws; *Rhus aromatica*, *Symphoricarpos occidentalis* dominant
Symphoricarpos occidentalis **Shrubland**
 5. Less than 25% of site covered by woody plants **less than** 2 m tall (except for small inclusions).
 8. Site riverine or palustrine wetland.
 9. Site riverine, confined to floodplain, soils intermittently flooded to saturated by river.

10. Soil saturated most of season; *Typha latifolia*, *Eleocharis erythropoda*, *Scirpus pungens* among dominants; annual and biennial plants uncommon or absent
***Typha* spp. Inland Great Plains Herbaceous Vegetation**
10. Soil rarely saturated; *Typha*, *Eleocharis*, and *Scirpus* uncommon; annual and biennial plants conspicuous
***Andropogon gerardii*-*Calamagrostis canadensis*-*Helianthus grosseserratus* Herbaceous Vegetation**
9. Site palustrine, on middle slopes; soils saturated by irrigation or ground water
***Typha* spp.-*Equisetum hyemale*-*Carex* spp. Seep Herbaceous Vegetation**
8. Site upland, never flooded.
11. Community has 10-25% tree canopy cover by *Pinus ponderosa* and *Juniperus scopulorum*. Understory dominated by *Bouteloua gracilis* and *Stipa comata*. Site above 4100 feet.
***Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation**
11. Community has less than 10% tree canopy cover by *Pinus ponderosa* and *Juniperus scopulorum*.
12. Community dominated by exotic grasses and forbs and/or native weedy forbs (the exception is *Pascopyrum smithii* a native grass which is sometimes co-dominant in this community).
***Kochia scoparia*/*Bromus* spp. Early Seral Community**
12. Community dominated by native grasses and sedges. Exotic grasses and forbs and native weedy forbs may be present but are not dominant except in small localized areas.
13. Dominant species include one or more of the following: *Carex filifolia*, *Bouteloua gracilis*, or *Stipa comata*.

14. *Carex filifolia* cover more than 25% or *Stipa comata* dominant (areas where *Carex filifolia* cover has been reduced by deposition of erosional material or past overgrazing)
***Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation**
14. *Carex filifolia* cover less than 25%, *Bouteloua gracilis* co-dominant, areas interspersed with rock outcrops, on or near top of bluffs
15. Large steep (60-90%) slopes not present
Rock Outcrop/Prairie Mosaic (Siltstone-Clay Butte Sparse Vegetation and *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation)
15. Large, steep (60-90%) slopes present
Cliff/Rock Outcrop/Prairie Mosaic (Inland Siltstone Bluff-Cliff Sparse Vegetation and Siltstone-Clay Butte Sparse Vegetation and *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation)
13. Dominant species include one or more of the following: *Pascopyrum smithii*, *Bouteloua curtipendula*, *Schizachyrium scoparium*, *Calamovilfa longifolia*, or *Andropogon hallii*
16. Dominant species including *Calamovilfa longifolia* and/or *Andropogon hallii*; soil sandy; *Yucca glauca* cover usually over 5% (except in draws); *Artemisia filifolia* often present (shrubs <25%)
***Andropogon hallii-Calamovilfa longifolia* Herbaceous Vegetation**

16. Dominant species not including *Calamovilfa longifolia* and/or *Andropogon hallii*; *Yucca glauca* cover less than 5%. *Artemisia filifolia* usually absent.
17. Community an unnatural looking, reseeded grassland on a formerly disturbed site; overall plant diversity extremely low; *Stipa comata* and *Nassella viridula* not abundant.
**Mixedgrass Prairie
(Reseeded/Restored)**
17. Community a natural looking grassland not on a formerly disturbed site overall plant diversity not extremely low. *Stipa comata* and *Nassella viridula* abundant.
**Pascopyrum smithii
Herbaceous Vegetation**
1. Site less than 25% vegetated.
 18. Site riverine, mostly bare sand
Riverine Sand Flats-Bars Sparse Vegetation
 18. Site upland, mostly bare rock.
 19. Site consisting of slopes of 60-90% grade; *Mentzelia decapetala* dominant
Inland Siltstone Bluff-Cliff Sparse Vegetation
 19. Site consisting of irregularly-eroded slopes of less than 60% grade; *Mentzelia decapetala* rare (if ever) dominant.
 20. Site less than 10% vegetated (except for small inclusions); % shrub cover (*Atriplex canescens*, *Chrysothamnus nauseosus*) often nearly equal to or exceeding % herbaceous cover; elevation less than 4000 ft
Eroding Great Plains Badlands Sparse Vegetation
 20. Site usually more than 10% vegetated; % shrub cover (*Rhus aromatica*, *Chrysothamnus parryi*, *Kraschennikovia lanata*, *Artemisia filifolia*) usually much less than % herbaceous cover.

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- 21. Site situated on sandy or silty soil; elevation often less than 4000 ft.
Eroding Great Plains Bank Sparse Vegetation

- 21. Site situated on sandstone or siltstone outcrops.

- 22. Site situated on sandstone outcrops atop bluffs; elevation more than 4300 ft.
Rock Outcrop/Prairie Mosaic (Siltstone-Clay Butte Sparse Vegetation and *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation)

- 22. Site situated on siltstone outcrops on sides of bluffs; elevation often less than 4300 ft
Siltstone-Clay Butte Sparse Vegetation

VEGETATION DESCRIPTIONS FOR SCOTTS BLUFF NATIONAL MONUMENT

Juniperus scopulorum / Oryzopsis micrantha Woodland

COMMON NAME	Rocky Mountain juniper/Little-seeded ricegrass Woodland
SYNONYM	Juniper Woodland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Woodland
PHYSIOGNOMIC SUBCLASS	Evergreen woodland
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen woodland
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen woodland
ALLIANCE	<i>Juniperus scopulorum</i> Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found in southeast Montana, southwest North Dakota, western South Dakota, and extreme western Nebraska.

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This community is predominantly found on north-facing slopes of escarpments. In the southwestern part of the Monument, it can be found in steep-sided ravines.

ENVIRONMENTAL DESCRIPTION

Throughout its range, *Juniperus scopulorum/Oryzopsis micrantha* Woodland occurs on steep (35-70%) north facing slopes. A few sites on more gradual south-facing slopes have been reported in North Dakota (Johnston 1987). The soils are poorly developed, shallow, loamy sands, sandy loams, and clay loams, sometimes with high gravel content.

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This community occupies narrow draws on steep (15-45%) upper- and mid-slopes of escarpments. On the southwestern part of the Monument, this community can be found in steep-sided ravines cutting through grassy uplands. Sites are often quite eroded and soils are poorly developed loose, loamy sands.

USFWS WETLAND SYSTEM Not applicable

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MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Juniperus scopulorum</i>
Short shrub	<i>Rhus aromatica</i> , <i>Rosa woodsii</i>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Oryzopsis micrantha</i>
Non-vascular	Information not available

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<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Juniperus scopulorum</i> , <i>Juniperus virginiana</i>
Short shrub	<i>Oryzopsis micrantha</i> , <i>Chenopodium fremontii</i>
Herbaceous	<i>Parietaria pensylvanica</i>

DIAGNOSTIC SPECIES

Globally

Juniperus scopulorum, *Oryzopsis micrantha*

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Chenopodium fremontii, *Juniperus scopulorum*, *Oryzopsis micrantha*

VEGETATION DESCRIPTION

Globally

This woodland community is dominated by small *Juniperus scopulorum* trees. Most of these trees are 10-20 cm dbh and 4-6 meters tall. Some trees are 30-40 cm dbh. The basal area has been reported at 22-41 m²/ha (Hansen et al. 1984, Hansen and Hoffman 1987). The canopy of *Juniperus scopulorum* is moderate to dense. Where it is dense the shrub and herbaceous strata are poorly developed. Where the canopy is less full, shrubs and herbaceous species are more abundant. On 7 stands in southwest North Dakota mosses and lichens covered 72% of the ground surface, shrubs covered 17.4%; graminoids - 69.1%; forbs - 9.4% (Hansen et al. 1984). Three stands in southeastern Montana had less coverage by each strata (Hansen and Hoffman 1987). Among the shrubs that may be found in this community are *Rhus aromatica*, *Juniperus communis*, *J. horizontalis*, *Rosa woodsii*, and *Prunus virginiana*. Typical herbaceous species are *Campanula rotundifolia*, *Galium boreale*, *Oryzopsis micrantha*, and *Maianthemum stellatum*. *Fraxinus pennsylvanica* saplings are sometimes found in depressions where soil and moisture accumulate.

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This community is densely wooded with interlocking canopies of *Juniperus scopulorum*. Scattered individuals of *Pinus ponderosa* are sometimes found on the periphery. A sparse short shrub layer of *Cercocarpus montanus*, *Rhus aromatica* and *Ribes aureum* var. *villosum* is usually present. The herbaceous layer is also sparse. There is little species diversity due to the poor soils and dense shade. *Oryzopsis micrantha*, *Chenopodium fremontii*, and *Parietaria pensylvanica* are common under the canopy of junipers. The exotics *Bromus* spp. are common in open areas with loose soil. On the southwestern part of the Monument, *Juniperus virginiana* may be common to dominant in some of the ravines.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3

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RANK JUSTIFICATION Information not available.

COMMENTS

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This community intergrades with *Pinus ponderosa/Juniperus scopulorum* Woodland in places. Much of the *Juniperus virginiana* found in the southwestern part of the Monument may have been planted.

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Pinus ponderosa / Juniperus scopulorum Woodland

COMMON NAME	Ponderosa pine/Rocky Mountain juniper Woodland
SYNONYM	Mixed Conifer Woodland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Woodland
PHYSIOGNOMIC SUBCLASS	Evergreen woodland
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen woodland
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen woodland
ALLIANCE	<i>Pinus ponderosa</i> Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

The global range of this community includes southeastern Montana, eastern Wyoming, southwestern North Dakota, western South Dakota, western Nebraska, eastern Colorado, and New Mexico.

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This community is found on north-facing slopes of escarpments and sometimes at the base of bluffs. It is common in the rest of the Wildcat Hills.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on slopes between 16-45% with a variety of aspects. It is predominantly found on more mesic north-facing slopes. In more mesic local climates or with heavier soils this community can exist on south-facing slopes. Bedrock can be sandstone, limestone, or shale. Soils are usually shallow, very stony, medium textured, and well drained.

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Pinus ponderosa/*Juniperus scopulorum* Woodland is usually found on moderately steep (25-30%) grades on upper and middle slopes of escarpments. West of Sentinel Rock it may be found on low slopes and in gullies. The soil is absent or loose loamy sand with interspersed rocks.

USFWS WETLAND SYSTEM Not applicable

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Tall shrub	<i>Juniperus scopulorum</i>
Short shrub	<i>Cercocarpus montanus</i> , <i>Rhus trilobata</i> var. <i>trilobata</i>
Herbaceous	Information not available

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Tall shrub	<i>Juniperus scopulorum</i>
Short shrub	<i>Cercocarpus montanus</i> , <i>Ribes cereum</i>
Herbaceous	<i>Bouteloua curtipendula</i> , <i>B. gracilis</i> , <i>Carex filifolia</i> , <i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i> , <i>Thermopsis rhombifolia</i>

DIAGNOSTIC SPECIES

Globally

Juniperus scopulorum, *Pinus ponderosa*

Scotts Bluff National Monument

Juniperus scopulorum, *Pinus ponderosa*, *Ribes cereum*, *Thermopsis rhombifolia*

VEGETATION DESCRIPTION

Throughout its range this community has a moderately dense to open canopy of *Pinus ponderosa*. This canopy is typically between 10 and 20 m high. The trees are 20-40 cm dbh. *Juniperus scopulorum* forms a subcanopy that is 2-4 m high and is also moderately dense to open. There is usually a shrub layer that contains *Cercocarpus montanus*, *Rhus trilobata* var. *trilobata*, *Symphoricarpos occidentalis*, and *Yucca glauca*. The herbaceous layer is sparse or absent in parts of this community, especially under areas of dense canopy or on very steep, eroding slopes. Litter often accumulates where conifers are dense. Where the herbaceous stratum is present it is dominated by prairie graminoids. These include *Schizachyrium scoparium*, *Bouteloua curtipendula*, *Bouteloua gracilis*, and *Carex filifolia*.

Scotts Bluff National Monument

This community has moderately dense to widely spaced *Pinus ponderosa* with usually non-overlapping crowns. *Juniperus scopulorum* forms a subcanopy. The shrub layer is usually well-represented, consisting of *Cercocarpus montanus*, *Ribes cereum*, and occasionally *Rhus aromatica*. The herbaceous stratum is typically composed of prairie graminoids such as *Bouteloua curtipendula*, *B. gracilis*, *Carex filifolia*, and *Elymus lanceolatus* ssp. *lanceolatus*. On steeper eroding slopes there is a significant amount of bare ground. Where juniper is abundant the understory is similar to that of *Juniper scopulorum*/*Oryzopsis micrantha* Woodland.

OTHER NOTEWORTHY SPECIES

Crepis atribarba, an uncommon species in Nebraska, has been found in this community in Scotts Bluff NM.

CONSERVATION RANK G4Q

RANK JUSTIFICATION Information not available.

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

COMMENTS

This community is very similar to *Juniperus scopulorum* Woodland in some places, both inside and outside the borders of Scotts Bluff NM. It also intergrades with *Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation, especially on the tops of some of the ridges at Scotts Bluff NM.

REFERENCES

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Populus deltoides - (Salix amygdaloides) / Salix exigua Woodland

COMMON NAME	Cottonwood-(Peach leaved willow)/Sandbar willow Woodland
SYNONYM	Floodplain Woodland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Woodland
PHYSIOGNOMIC SUBCLASS	Deciduous woodland
PHYSIOGNOMIC GROUP	Cold-deciduous woodland
FORMATION	Temporarily flooded cold-deciduous woodland
ALLIANCE	<i>Populus deltoides</i> Temporarily Flooded Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

Populus deltoides-(*Salix amygdaloides*)/*Salix exigua* Woodlands are found in Manitoba, North Dakota, South Dakota, central and western Nebraska, western Kansas, eastern Colorado, Oklahoma, Texas, and New Mexico.

Scotts Bluff National Monument

This community is on the first floodplain terrace on the south side on the North Platte River. A few stands have developed near the irrigation canal north of Scotts Bluff.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found along the banks of streams and rivers. It develops on newly deposited alluvium. The soils are predominantly sand, although silt, clay, or loam may be present. Soils are poorly developed. The water table fluctuates with the level of the river or stream.

Scotts Bluff National Monument

This community occurs on level ground and on gently sloping ground at the base of low north-facing slopes. The soil is silty.

USFWS WETLAND SYSTEM Palustrine

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Populus deltoides</i> , <i>Salix amygdaloides</i>
Short shrub	<i>Salix exigua</i>
Herbaceous	<i>Equisetum</i> spp.

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<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Fraxinus pennsylvanica</i> , <i>Populus deltoides</i> , <i>Salix amygdaloides</i>
Short shrub	<i>Rhus aromatica</i> , <i>Symphoricarpos occidentalis</i>
Herbaceous	<i>Agropyron</i> spp., <i>Cirsium arvense</i> , <i>Phalaris arundinacea</i>

DIAGNOSTIC SPECIES

Globally

Populus deltoides, *Salix exigua*

Scotts Bluff National Monument

Fraxinus pennsylvanica, *Populus deltoides*, *Salix amygdaloides*

VEGETATION DESCRIPTION

Globally

This woodland community has closely spaced shrubs and small trees. The canopy is not complete and significant light reaches the ground. *Populus deltoides* and *Salix amygdaloides* reach 6-12 meters in this community. *S. amygdaloides* is absent to common in examples of this community. *Fraxinus pennsylvanica* may be present, especially on the landward side of this community. *Salix exigua* is usually more abundant along the streamside margins of this community and where the canopy of taller trees is most open. This shrub grows to 2-5 meters tall. Other shrubs that can be found are *Salix irrorata* and *Toxicodendron rydbergii*. The herbaceous layer is often sparse and its composition is affected by local seed sources. *Cenchrus longispinus*, *Elymus canadensis*, *Equisetum* spp., and *Polygonatum lapathifolium* are frequently in the herbaceous layer.

Scotts Bluff National Monument

Old alluvial plains are frequently dominated by dense stands of *Acer negundo* and *Fraxinus pennsylvanica*. The woods in the sandy soils of the level, primary terraces are more open and are dominated by *F. pennsylvanica*, *Populus deltoides* and *Salix amygdaloides*. Shrubs are usually present in the open woods. Predominant among these is *Symphoricarpos occidentalis*. Lesser amounts of *Prunus virginiana*, *Rhus aromatica*, and *Ribes aureum* var. *villosum* can be found. *Pascopyrum smithii* and *Phalaris arundinacea* often dominate the herbaceous layer of the open woods. Invasive exotics, such as *Bromus* spp., *Cirsium arvense*, and *Cynoglossum officinale*, are common.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2G3

RANK JUSTIFICATION

This community was naturally restricted to riparian areas that were prone to periodic flooding. Dams, flood control activities, and withdrawal of water for irrigation have reduced the creation of new areas for establishment of *Populus deltoides*-(*Salix amygdaloides*)/*Salix exigua* Woodlands.

COMMENTS

Flooding and scouring by sand and ice are common in most examples of this community. During floods, erosion and deposition of material may occur. Drought stress affects shallow-rooted plants when the water table drops. This community is a seral community and requires the creation of new sandbars, mudflats, and other barren stretches for its continued existence. Bellah and Hulbert (1974) found that this community existed for only about 20 years before succession altered the forest to another community. Johnson (1994)

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believed that alteration of the hydrology of the Platte River in Nebraska has reduced the frequency of flooding. Thus, early successional communities such as this one were not being re-established as quickly as they were being replaced by later seral communities.

Scotts Bluff National Monument

This community could possibly be split into two woodland types, *Acer negundo-Fraxinus pennsylvanica* Woodland and *Populus deltoides-(Salix amygdaloides)/Salix exigua* Woodland. The distinction between these two types is not always clear. Further sampling would be needed to clarify this.

The stands found near the irrigation canal north of Scotts Bluff rely on water from the canal for their existence.

REFERENCES

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Burgess, R. L., W. C. Johnson, and W. R. Keammerer. 1973. Vegetation of the Missouri River Floodplain in North Dakota. Report to the Office of Water Resources Research, US Department of the Interior, OWRR Project number A-022-NDAK. 162 pp.

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Johnson, W. C. 1994. Woodland Expansion in the Platte River, Nebraska: Patterns and Causes. *Ecological Monographs* 64(1):45-84.

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The Nature Conservancy (TNC). 1991b. Nebraska State Community Abstract , Western Floodplain Woodland. Midwest Regional Office, Minneapolis, MN.

Cercocarpus montanus / Bouteloua curtipendula Shrubland

COMMON NAME	Mountain mahogany/Side-oats grama Shrubland
SYNONYM	Cercocarpus Shrubland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Temperate cold-deciduous shrubland
ALLIANCE	<i>Cercocarpus montanus</i> Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found on slopes in New Mexico, Nebraska, the Black Hills of South Dakota and Wyoming and on some of the lower mountain slopes of eastern Wyoming. It is found on slopes below ponderosa pine forests and above herbaceous communities.

Scotts Bluff National Monument

This community is located on the north face of the South Bluff, with most of it on either side of Sentinel Rock. This community is better developed elsewhere in the Wildcat Hills.

ENVIRONMENTAL DESCRIPTION

Globally

This community is almost exclusively found on slopes. These slopes are 20-40% with a variety of aspects. Drought stress is severe due to relatively little precipitation, moderate to steep slopes, and thin, poorly developed soils. Soils are loams and clay-loams. The parent material is sandstone or limestone.

Scotts Bluff National Monument

Cercocarpus montanus/Bouteloua curtipendula Shrubland is on steep (25-35%) eroding middle slopes of the South Bluff, just below the cliffs. Soils are loose and poorly developed to nearly absent.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Short shrub	<i>Cercocarpus montanus</i> , <i>Rhus trilobata</i> var. <i>trilobata</i>
Herbaceous	<i>Bouteloua curtipendula</i>

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<u>Strata</u>	<u>Species</u>
Short shrub	<i>Cercocarpus montanus</i>
Herbaceous	<i>Artemisia frigida</i> , <i>Bromus japonicus</i> , <i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i> .

DIAGNOSTIC SPECIES

Globally

Bouteloua curtipendula, *Cercocarpus montanus*

Scotts Bluff National Monument

Artemisia frigida, *Cercocarpus montanus*

VEGETATION DESCRIPTION

Throughout its range, this community is a shrub-steppe community. Its physiognomy is similar to the chaparral of California. Vegetation cover is sparse to moderate. The dominant shrubs are evenly spaced with herbaceous species occurring in between individual shrubs. The dominant species, *Cercocarpus montanus*, is approximately 2 meters tall. *Rhus trilobata* var. *trilobata*, the other common shrub species, also grows to 2 meters. The herbaceous species rarely grow taller than 1 meter. *Bouteloua curtipendula* is the most abundant herbaceous species. *Aristida purpurea* var. *longiseta* and *Artemisia frigida* are typical smaller shrubs. Common herbaceous species are the forbs *Aster oblongifolius*, *Hedeoma hispida*, and the grass *Oryzopsis hymenoides*.

Scotts Bluff National Monument

This community is defined solely on the predominance of *Cercocarpus montanus*. *Rhus aromatica* is sometimes present. The herbaceous understory is quite variable though usually disturbed. The exotics *Bromus* spp. are often dominant.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G5

RANK JUSTIFICATION Information not available.

COMMENTS

This community is too poorly developed at Scotts Bluff NM to provide a definitive description. West of Sentinel Rock, *Cercocarpus montanus* is found mostly in *Pinus ponderosa*/*Juniperus scopulorum* Woodland. The *Cercocarpus montanus*/*Bouteloua curtipendula* Shrubland seems confined to slopes not favorable for tree growth. This appears to be a somewhat disturbance-oriented community.

REFERENCES

Hoffman, G. R. and R. A. Alexander. 1987. Forest Vegetation of the Black Hills National Forest of South Dakota and Wyoming: A Habitat Type Classification. Research paper RM-276. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 48 pp.

Johnston, B. C. 1987. Plant Associations of Region Two. R-2-ECOL-87-2. USDA Forest Service Rocky Mountain Region, Lakewood, CO. 429 pp.

Salix exigua Shrubland

COMMON NAME	Sandbar willow Shrubland
SYNONYM	Sandbar Shrubland
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Temporarily flooded cold-deciduous shrubland
ALLIANCE	<i>Salix exigua</i> Temporarily Flooded Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found along rivers and streams in Washington, Oregon, Idaho, Montana, southern Manitoba, North Dakota, South Dakota, Nebraska, Wyoming, Colorado, and Oklahoma.

Scotts Bluff National Monument

This community is found along the margins of the North Platte River and in isolated areas in the first floodplain terrace.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on recently deposited or disturbed alluvial material. The parent material is alluvial sand, although silt, clay, or gravel may be present. Soil development is poor to absent.

Scotts Bluff National Monument

This community occurs on recently deposited alluvial sands along shores of the river. A small area just below Scotts Seep may also be placed in this community.

USFWS WETLAND SYSTEM Palustrine

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Short shrub	<i>Salix exigua</i>
Herbaceous	<i>Cenchrus longispinus</i> , <i>Polygonatum lapathifolium</i> , <i>Scirpus americanus</i> , <i>Triglochin maritimum</i> , <i>Xanthium strumarium</i>

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Strata Species

Short shrub *Elaeagnus angustifolia*, *Populus deltoides*, *Salix amygdaloides*, *Salix exigua*

Herbaceous *Phalaris arundinacea*, *Spartina pectinata*

DIAGNOSTIC SPECIES

Globally

Salix exigua, *Polygonatum lapathifolium*

Scotts Bluff National Monument

Salix exigua

VEGETATION DESCRIPTION

Globally

The dominant vegetation in this community is short shrubs, usually not more than 4 meters tall. The most common of these is *Salix exigua*. *Salix irrorata* and saplings of *Populus deltoides* or *S. amygdaloides* are also frequently found in the shrub layer. This stratum can have moderate to high stem density in the community as a whole. The species in the shrub layer do not form a closed canopy, allowing significant light to reach the groundlayer. There are often patches where the shrub layer is absent. The herbaceous cover is sparse to moderate. Older stands and places with less competition from the shrubs have greater herbaceous cover. The composition of the herbaceous layer can vary greatly. Species that are often found in this community are *Cenchrus longispinus*, *Polygonatum lapathifolium*, *Scirpus americanus*, *Triglochin maritimum*, and *Xanthium strumarium*.

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The overall physiognomy and the shrub layer composition are similar to the general global description. The shrub layer is dominated by *Salix exigua* with small *Populus deltoides* scattered throughout. *Elaeagnus angustifolia* is common in some places. The herbaceous layer is nearly absent (where recently flooded) to moderately developed. *Phalaris arundinacea* is the most common herbaceous species. Other herbaceous species include *Carex* spp., *Pascopyrum smithii*, *Poa pratensis*, and *Spartina pectinata*. Some exotic forbs, such as *Lepidium latifolium*, are locally common.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G5

RANK JUSTIFICATION

This is a globally common community on sandbars and newly deposited alluvium.

COMMENTS

This community is a primary or early secondary community and requires floods to create new areas on which it can develop. Once established, this community may not exist for more than 10-20 years before it is replaced by a later seral stage.

Both globally and at Scotts Bluff NM, this community intergrades with the Riverine Sand Flats-Bar Sparse Vegetation.

REFERENCES

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Symphoricarpos occidentalis Shrubland

COMMON NAME	Wolfberry Shrubland
SYNONYM	Shrub ravine
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Shrubland
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland
FORMATION	Temporarily flooded cold-deciduous shrubland
ALLIANCE	<i>Symphoricarpos occidentalis</i> Temporarily Flooded Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is widespread in western Montana and North Dakota. It is also present in Nebraska, South Dakota, Manitoba, and Saskatchewan.

Scotts Bluff National Monument

This community occurs throughout plains and lower- to mid-slopes of escarpments.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found in mesic swales, depressions, ravines and floodplains. Some examples of this community experience intermittent and brief flooding. The soils are fertile and well drained to imperfectly drained silts and loams.

Scotts Bluff National Monument

Symphoricarpos occidentalis Shrubland occupies lower-slopes of escarpments and walls, and beds of draws and channels on the plains. Soils are colluvial silt and sandy loam and not rapidly drained.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Short shrub	<i>Rhus aromatica</i> , <i>Rosa woodsii</i> , <i>Symphoricarpos occidentalis</i>
Woody vine	<i>Parthenocissus vitacea</i>
Herbaceous	<i>Artemisia ludoviciana</i> , <i>Pascopyrum smithii</i>

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<u>Strata</u>	<u>Species</u>
Short shrub	<i>Rhus aromatica</i> , <i>Ribes aureum</i> var. <i>villosum</i> , <i>Symphoricarpos occidentalis</i> , <i>Toxicodendron rydbergii</i>
Woody vine	<i>Parthenocissus vitacea</i>
Herbaceous	<i>Bromus</i> spp., <i>Clematis ligusticifolia</i> , <i>Poa pratensis</i> , <i>Parietaria pensylvanica</i> , <i>Nepeta cataria</i>

DIAGNOSTIC SPECIES

Globally

Rhus aromatica, *Symphoricarpos occidentalis*

Scotts Bluff National Monument

Rhus aromatica, *Symphoricarpos occidentalis*

VEGETATION DESCRIPTION

Throughout its range this community is dominated by shrubs approximately 1 m tall. Shrub cover is typically greater than 50%. In places it can approach 100%. These shrubs form dense clumps that exclude most other species. *Symphoricarpos occidentalis* is the most common shrub, but *Rhus aromatica* and *Prunus virginiana* can be locally abundant. *R. aromatica* and *P. virginiana* can grow to 2-3 meters in places. Herbaceous species and smaller shrubs are most abundant at the edge of this community and in gaps between the clumps of taller shrubs where the shading is less complete. *Rosa woodsii* is a typical smaller shrub. *Achillea millefolium*, *Artemisia ludoviciana*, *Galium boreale*, and *Pascopyrum smithii* are common herbaceous species of this community. Woody vines sometimes occur. *Parthenocissus vitacea* is the most common vine.

Scotts Bluff National Monument

This community is densely vegetated, especially in deep narrow draws. It is dominated by *Rhus aromatica* and/or *Symphoricarpos occidentalis*, often with *Ribes aureum* var. *villosum* and *Prunus virginiana*. *Juniperus scopulorum* can be found in this community also, especially west of Scotts Bluff. *Toxicodendron rydbergii* is often abundant in the understory. The herbaceous stratum is poorly developed at most sites and consists of exotics such as *Bromus japonicus*, *Poa pratensis*, and *Nepeta cataria*. Where shrub cover is less dense prairie grasses such as *Bouteloua curtipendula*, *Calamovilfa longifolia*, and *Schizachyrium scoparium* are found. Woody and herbaceous vines (*Parthenocissus vitacea* and *Clematis ligusticifolia*, respectively) are frequently mixed in with the shrubs.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4

RANK JUSTIFICATION Information not available.

COMMENTS

Globally

This community often has a significant component of exotic species, especially where grazing has been intense. *Bromus inermis*, *Cirsium arvense*, and *Poa pratensis* are the most abundant of these exotics. Overgrazing of prairies can lead to the expansion of degraded forms of this community.

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Scotts Bluff National Monument

Juniperus virginiana occurs (and may have been planted) in some of the draws in which this community occurs. One large draw just north of Hwy 92 and west of Mitchell Pass contains significant *Juniperus* spp. but is placed in this community.

REFERENCES

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Andropogon gerardii - Calamagrostis Canadensis - Helianthus grosseserratus
Herbaceous Vegetation

COMMON NAME	Big Bluestem-Canada Bluejoint-Sawtooth Sunflower Herbaceous Vegetation
SYNONYM	Floodplain Meadow
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Tall sod temperate grassland
ALLIANCE	<i>Andropogon gerardii</i> -(<i>Calamagrostis canadensis</i> , <i>Panicum virgatum</i>) Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found in Nebraska, Minnesota, Wisconsin, Illinois, Indiana, Michigan, Missouri, Iowa, Arkansas, Oklahoma, and Kentucky.

Scotts Bluff National Monument

This community is restricted to floodplain terraces along the North Platte River on the north side of the Monument. It is widespread along the river.

ENVIRONMENTAL DESCRIPTION

Globally

This community occurs in headwaters of streams, depressions of terraces, and along floodplains of larger streams and rivers. Standing water is common in the spring and after heavy rains. The water table is usually near the surface. Soils are deep sandy loams, silt loams, or clay loams. They are typically poorly drained. The parent material can be loess, glacial till, or alluvium.

Scotts Bluff National Monument

It occupies level ground in the floodplain. Soils are poorly developed and formed from recently deposited alluvial sands and gravels.

USFWS WETLAND SYSTEM Palustrine

MOST ABUNDANT SPECIES

Globally

Strata

Species

Herbaceous *Andropogon gerardii*, *Helianthus grosseserratus*, *Panicum virgatum*

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Strata Species

Shrub *Rhus aromatica*, *Symphoricarpos occidentalis*

Herbaceous *Bromus* spp., *Cirsium arvense*, *Pascopyrum smithii*, *Phalaris arundinacea*, *Poa pratensis*

DIAGNOSTIC SPECIES

Globally

Andropogon gerardii, *Panicum virgatum*, *Spartina pectinata*

Scotts Bluff National Monument

Information not available

VEGETATION DESCRIPTION

Globally

This is a graminoid dominated community whose most abundant species, *Andropogon gerardii* and *Panicum virgatum*, are 2-3 meters tall. *Spartina pectinata* is rare to abundant in this community. It also grows to 2-3 meters. Shrubs and small trees are sometimes present. Cover is typically 90% or more. The diversity of species is relatively high for herbaceous communities. Forbs that are usual across its range include *Elymus canadensis*, *Equisetum* spp., *Helianthus grosseserratus*, *Liatris pycnostachya*, *Liatris lancifolia*, *Phlox pilosa*, *Solidago canadensis*, *Thalictrum dasycarpum*, *Silphium integrifolium*, *Viola pedatifida*, and *Zizia aurea*. On the wetter margins of this community, *Calamagrostis canadensis* and *Carex* spp. are often found.

Scotts Bluff National Monument

The community is predominantly herbaceous with scattered trees (*Populus deltoides*, *Fraxinus pennsylvanica*, and *Salix* spp.) and shrubs (*Rhus aromatica*, *Salix exigua*, and *Symphoricarpos occidentalis*). The common graminoids are *Bromus japonicus*, *B. tectorum*, *Elymus caninus*, *Elytrygia repens*, *Pascopyrum smithii*, and *Poa pratensis*. Exotic forbs are abundant, especially *Cardus nutans* and *Cirsium arvense*. Vegetation is dense except on some gravelly flats near the river where native annuals predominate.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2G3

RANK JUSTIFICATION

Sites that formerly maintained this community have largely been converted to agricultural uses. Disruption of fire regimes has allowed shrubs and trees to invade other examples of this community.

COMMENTS

Fire is important in maintaining this community against invasion by woody species. In Missouri the average pre-settlement fire frequency was 2-5 years for a stand of this community.

Scotts Bluff National Monument

This community has significant numbers of exotic and woody species. The areas where this community now occurs appear to have had significant disturbance in the past. They are not representative of this community as a whole. It is possible that these sites should be classified as some type of disturbance community.

USGS-NPS Vegetation Mapping Program
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REFERENCES

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Andropogon hallii - Calamovilfa longifolia Herbaceous Vegetation

COMMON NAME	Sand bluestem-Prairie sandreed Herbaceous Vegetation
SYNONYM	Sandsage prairie
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Tall sod temperate grassland
ALLIANCE	<i>Andropogon hallii</i> Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found in Colorado, Montana, South Dakota, Nebraska, and Kansas. Its distribution within these states is not known.

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This community is found primarily on the plains north and northwest of Scotts Bluff. Small patches of this community occur elsewhere.

ENVIRONMENTAL DESCRIPTION

This community is found on flat to moderate slopes with sandy, loamy sand, or sandy loam soil. Often these locations are stabilized sand dunes (Johnston 1987). The sandy soil allows precipitation to penetrate quickly with little lost to runoff or evaporation. However, the water holding capacity of the soils and the precipitation of the region is low. This results in very little water remaining in the soil near the surface for much of the growing season (Tolstead 1942).

Scotts Bluff National Monument

Sites of this community are on level to gentle (<10%) slopes on interfluvies of plains. The soil is loamy sand (Dwyer loamy fine sand).

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

Strata

Species

Herbaceous *Andropogon hallii*, *Calamovilfa longifolia*, *Schizachyrium scoparium*

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Strata

Species

Herbaceous *Andropogon hallii*, *Bromus* spp., *Calamovilfa longifolia*, *Stipa comata*, *Elymus lanceolatus* ssp. *lanceolatus*, *Yucca glauca*

DIAGNOSTIC SPECIES

Globally

Andropogon hallii, *Calamovilfa longifolia*

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Andropogon hallii, *Artemisia frigida*, *Calamovilfa longifolia*, *Ipomoea leptophylla*, *Yucca glauca*

VEGETATION DESCRIPTION

This mixed grass community is dominated by graminoids that are between 0.5 and 1.5 m tall. The most abundant of these are typically *Andropogon hallii*, which reaches 1-1.5 m in Nebraska and *Calamovilfa longifolia*, which is 0.5-1 m (Tolstead 1942). *Bouteloua hirsuta*, *Schizachyrium scoparium*, and *Stipa comata* are common and can be co-dominant, locally. Other graminoids that are usually found in this community are *Agrostis hyemalis*, *Eragrostis trichodes*, *Carex inops* ssp. *heliophila*, *C. filifolia*, *Sporobolus cryptandrus*, *Muhlenbergia pungens*, *Koeleria macrantha*, and *Schizachyrium scoparium*. Forbs that accompany these graminoids include *Ambrosia psilostachya*, *Psoraleidum* spp., *Ipomoea leptophylla*, *Liatris punctata*, *Tradescantia occidentalis*, *Aster ericoides*, and *Solidago missouriensis*. Low shrubs, which rarely exceed 0.5 m, can be scattered throughout this community. These include *Amorpha canescens*, *Rosa arkansana*, and *Yucca glauca*. There is usually a significant amount of bare ground between the plants (Ramaley 1939, Tolstead 1942).

This community is a grassland, often with sparse shrub cover. The dominant species are *Calamovilfa longifolia*, *Stipa comata*, and, in some places, *Andropogon hallii*. Plants are relatively widely spaced with exotic *Bromus* spp. often filling the intervening spaces. *Yucca glauca* is quite conspicuous and the high concentration of yucca is often a useful indicator of this community. *Artemisia filifolia* is also characteristic of but not always common in this community. It is also present in other communities. *Ipomoea leptophylla* is the most conspicuous of numerous forb species.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2

RANK JUSTIFICATION Information not available.

COMMENTS

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This community intergrades with *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation, although in some places the border is distinct. Much of the sandsage grassland west of Scotts Bluff (west of the old fenceline) has been heavily disturbed.

REFERENCES

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Johnston, B. C. 1987. Plant Associations of Region Two. R2-ECOL-87-2. USDA Forest Service, Rocky Mountain Region, Lakewood, CO. 429 p.

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Steinauer, G. 1989. Characterization of the Natural Communities of Nebraska. Pp. 103-141, *in*, M. Clausen, M. Fritz, and G. Steinauer. The Nebraska Natural Heritage Program, Two Year Progress Report, Appendix D. Lincoln, Nebraska.

Tolstead, W. L. 1941. Plant Communities and Secondary Succession in South-central South Dakota. *Ecology* 22(3):322-328.

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Kochia scoparia / Bromus spp. Early Seral Community

COMMON NAME	Mexican Firebush/Brome Early Seral Community
SYNONYM	None
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Medium tall sod temperate or subpolar grassland
ALLIANCE	Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

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This community is found in Areas 1, 6, 7, 11, 12, 14, 16, 17, 18, 19, 21, 22, and 23.

ENVIRONMENTAL DESCRIPTION

This community occurs on sites of past anthropogenic disturbance such as former cropland, roadways, golfcourse fairways, farmsteads and feedlots. This community occurs on level to gently sloping topography. The soils are sandy or silty.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
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Shrub	<i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i> , <i>Krascheninnikovia lanata</i>
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Herbaceous	<i>Kochia scoparia</i> , <i>Bromus tectorum</i> , <i>Bromus japonicus</i> , <i>Bromus inermis</i> , <i>Helianthus annuus</i> , <i>Sisymbrium altissimum</i> , <i>Pascopyrum smithii</i>
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DIAGNOSTIC SPECIES

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Kochia scoparia, *Bromus tectorum*, *Bromus japonicus*, *Bromus inermis*, *Helianthus annuus*, *Agropyron cristatum*, *Triticum aestivum*.

VEGETATION DESCRIPTION

The dominants of this community are highly variable. The community is most frequently dominated by any combination of the following herbaceous species: *Kochia scoparia*, *Bromus tectorum*, *Bromus japonicus*, *Bromus inermis*, *Helianthus annuus*, *Sisymbrium altissimum*, and *Pascopyrum smithii*. *Triticum aestivum* may dominate localized areas of this community where it has been seeded as a cover crop. Other common species

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in this community include *Agropyron cristatum*, *Lactuca serriola*, and *Conyza canadensis*. The shrubs, *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa* and *Krascheninnikovia lanata* are often found in the community, though they infrequently dominate.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

This type is the result of disturbance and has only been defined for Scotts Bluff NM.

REFERENCES None

Mixed Grass Prairie (Reseeded/Restored)

COMMON NAME	Mixed Grass Prairie (Reseeded/Restored)
SYNONYM	None
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Medium tall sod temperate or subpolar grassland
ALLIANCE	Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

This type occurs in areas designated by the Monument staff as Areas 2, 3, 4, 5, 8, 9, 13, and 15.

ENVIRONMENTAL DESCRIPTION

This community occupies areas that have been disturbed by anthropogenic activities (e.g. farming) and later reseeded with mid-grasses. This community occurs on level to gently sloping topography. The soils are sandy or silty.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

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<u>Strata</u>	<u>Species</u>
Shrub	<i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i> , <i>Krascheninnikovia lanata</i>
Herbaceous	<i>Schizachyrium scoparium</i> , <i>Bouteloua curtipendula</i> , <i>Pascopyrum smithii</i>

DIAGNOSTIC SPECIES

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Schizachyrium scoparium, *Bouteloua curtipendula*, *Pascopyrum smithii*, *Agropyron cristatum*, *Echinacea angustifolia*, *Rudbeckia hirta*, *Salvia azurea*

VEGETATION DESCRIPTION

The community is dominated by one or a combination of the following species: *Bouteloua curtipendula*, *Schizachyrium scoparium*, and *Pascopyrum smithii*. Often few other species besides the dominants are present in the community, creating an unnatural-looking grassland. Lack of plant species diversity is a characteristic of this community. The exotic perennial grasses *Bromus inermis* and *Agropyron cristatum* may have extensive coverage in this community. These species are likely seed mixture contaminants. forbs native to the plains, but not to the Monument (e.g. *Echinacea angustifolia*, *Rudbeckia hirta*, and *Salvia azurea*) are

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also present in this community. They too are probably seed mixture contaminants. A shrub layer of *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa* and *Krascheninnikovia lanata* is sometime present in this community.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

A prairie dog town is located in one of the disturbed areas (area 13).

REFERENCES None

Pascopyrum smithii Herbaceous Vegetation

COMMON NAME	Western Wheatgrass Herbaceous Vegetation
SYNONYM	Mixed prairie
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Medium-tall sod temperate or subpolar grassland
ALLIANCE	<i>Pascopyrum smithii</i> Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found in Montana, Wyoming, Colorado, Idaho, Utah, western Nebraska, and southern Saskatchewan.

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It is on level plains, mostly eastward from the Mitchell Pass area. It is also scattered elsewhere in the Monument.

ENVIRONMENTAL DESCRIPTION

Globally

This community occurs on flat to gently sloping topography, often in ravines. Soils are clay, clay loam, and silt loam. It is sometimes found on alluvial fans of small streams. The soils are deep (40-100 cm) and well developed.

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This community is on nearly level slopes in silty loam soils at the base of escarpments and in the bottoms of wide ravines.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Pascopyrum smithii</i>

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Strata Species

Herbaceous *Bouteloua curtipendula*, *Bromus* spp., *Schizachyrium scoparium*, *Stipa comata*, *Nassella viridula*, *Pascopyrum smithii*

DIAGNOSTIC SPECIES

Globally

Pascopyrum smithii

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Pascopyrum smithii, *Nassella viridula*

VEGETATION DESCRIPTION

This is a midgrass community. Shrubs are rare. The dominant species grow to approximately 1 meter. *Pascopyrum smithii* is the only constant dominant species and may have 50% cover. Other species such as *Koeleria macrantha* and *Poa* spp. may be locally abundant. Many other species common in midgrass prairies are also found in this community. These include *Artemisia ludoviciana*, *Bouteloua gracilis*, *Stipa comata*, and *Nassella viridula*.

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This community is commonly dominated by *Pascopyrum smithii*. In some places *Bouteloua curtipendula* and *Schizachyrium scoparium* are more common, particularly in areas that are less well-drained. *Nassella viridula* and *Koeleria macrantha* are common constituents. Shrubs typical of ravine bottoms, including *Rhus aromatica* and *Symphoricarpos occidentalis*, may be scattered in this community. *Krascheninnikovia lanata* is probably more widespread, although it is never common. Forb diversity is low. Many of the common forbs are exotic and native species that do best on disturbed sites. Among these are *Chenopodium pratericola*, *Conyza canadensis*, *Lactuca serriola*, and *Sisymbrium altissimum*.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3G4

RANK JUSTIFICATION Information not available.

COMMENTS

Globally

This community is very similar to several others that include *Pascopyrum smithii* and needs to be better defined.

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This community intergrades with *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation and with *Symphoricarpos occidentalis* Shrubland. *Pascopyrum smithii* Herbaceous Vegetation also resembles some of the disturbed areas which have been seeded to wheatgrass, such as area 3 in the disturbed areas description. *Pascopyrum smithii* Herbaceous Vegetation seems to be restricted to silty soils though *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation may also be on these soils. Disturbed *Stipa comata-Bouteloua gracilis-Carex filifolia* Herbaceous Vegetation may resemble this community, particularly north of the Monument.

REFERENCES

Aldous, A. E. 1924. Types of Vegetation in the Semiarid Portion of the United States and Their Economic Significance. *Journal of Agricultural Research* 28(2):99-123.

Baker, W. L. and S. C. Kennedy. 1985. Presettlement Vegetation of Part of Northwestern Moffat County, Colorado, Described From Remnants. *Great Basin Naturalist* 45(4):747-777.

Godfread, C. 1994. The Vegetation of the Little Missouri Badlands of North Dakota. Pp 17-24 *In* C. H. Schmidt (ed.) *Proceedings of the Leafy Spurge Strategic Planning Workshop*, Dickinson, ND.

Stipa comata - Bouteloua gracilis - Carex filifolia Herbaceous Vegetation

COMMON NAME	Needle-and-thread grass-Blue grama-Threadleaf sedge Herbaceous Vegetation
SYNONYM	Mixed prairie
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Medium-tall sod temperate or subpolar grassland
ALLIANCE	<i>Stipa comata-Bouteloua gracilis</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE

This community is common in Nebraska, North Dakota, South Dakota, southern Saskatchewan, and southern Manitoba.

Scotts Bluff National Monument

This community is found throughout the Monument.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on flat to gently sloping sites, predominantly with sandy loam or loam soil. The soil is typically 40-100 cm deep.

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This community occupies moderately steep (35%) to level slopes on well-drained sandy loams and silt loams. It is found on top of escarpments in a few places but is mostly on slopes and surrounding plains.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Carex duriuscula</i> , <i>C. filifolia</i> , <i>Pascopyrum smithii</i> , <i>Stipa comata</i>

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<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Carex duriuscula</i> , <i>C. filifolia</i> , <i>Pascopyrum smithii</i> , <i>Stipa comata</i>

DIAGNOSTIC SPECIES

Globally

Aristida purpurea var. *longiseta*, *Bouteloua gracilis*, *Carex duriuscula*, *C. filifolia*, *Heterotheca villosa* var. *villosa*, *Gaura coccinea*, *Pascopyrum smithii*, *Phlox hoodii*, *Stipa comata*, *Sporobolus cryptandrus*

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Artemisia frigida, *Carex filifolia*, *Krascheninnikovia lanata*, *Stipa comata*

VEGETATION DESCRIPTION

This midgrass prairie community is dominated by graminoids that are usually between 0.5 and 1 m tall. The vegetation cover is moderate. The dominant species are *Bouteloua gracilis*, *Carex filifolia*, and *Stipa comata*. *S. comata* usually has the most coverage of any single species. *Pascopyrum smithii* is constant in this community and can be locally abundant. *Carex duriuscula* is not always present but is also be abundant at some sites. Forbs that are typical of this community are *Heterotheca villosa* var. *villosa*, *Gaura coccinea*, *Liatris punctata*, and *Phlox hoodii*. Shrubs rarely grow taller than the grasses, but *Artemisia frigida* is very common in this community. Other grasses that are likely to be present are *Aristida purpurea* var. *longiseta*, *Koeleria macrantha*, and *Sporobolus cryptandrus*. On 19 stands in west-central Montana the cover by the different strata was as follow shrubs - 6%, graminoids - 67%, forbs - 11, bryophytes - 14%, litter - 55%, rock 4%, bare soil - 9% (Mueggler and Stewart 1978).

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Carex filifolia is particularly abundant, especially on undisturbed sites. On these sites it can form fairly dense turf. *Stipa comata* occupies the spaces between the sedge clumps. *Carex filifolia* becomes more sparse on disturbed sites. These sites frequently have greater coverage by *Pascopyrum smithii*. Where this community occurs on steep slopes of the escarpments *C. filifolia* may be almost absent. *Calamovilfa longifolia* and *Andropogon hallii* are locally common in loose sand on these slopes and near the edges of steep draws. *Bouteloua gracilis* also becomes more prominent upslope on the escarpments. *Krascheninnikovia lanata* is the most frequent shrub. It may be scattered to locally abundant in disturbed, sandy soil, often with *Artemisia frigida*. Forb species are quite variable and none seems to be restricted to this community. *Sphaeralcea coccinea* and *Gaura coccinea* are among the more common constituents. On nearly level areas at the base of slopes on which this community occurs *Pascopyrum smithii*, *Kraschenninikovia lanta*, and annual *Bromus* spp. become more common and in places may predominate to the exclusion of *Carex filifolia* and *Stipa comata*. These areas seem to develop only where grazing has been eliminated for long periods of time.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G5

RANK JUSTIFICATION Information not available.

COMMENTS

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This community grades into Siltstone - Clay Butte Sparse Vegetation at higher elevations on the bluffs. It also intergrades with *Pascopyrum smithii* Herbaceous Vegetation on level slopes below the escarpments. Near the edges of steep draws, this community often contains more *Calamovilfa longifolia* and can appear similar to *Andropogon hallii*-*Calamovilfa longifolia* Herbaceous Vegetation. *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* Herbaceous Vegetation is the most common and widespread community at Scotts Bluff NM.

REFERENCES

Hanson, H. C. and W. Whitman. 1938. Characteristics of Major Grassland Types in Western North Dakota. *Ecological Monographs* 8(1):58-114.

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Typha spp. - Equisetum hyemale - Carex spp. Seep Herbaceous Vegetation

COMMON NAME	Cattail-Horsetail-Sedge spp. Seep Herbaceous Vegetation
SYNONYM	Great Plains Seep
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Saturated temperate or subpolar grassland
ALLIANCE	<i>Carex</i> spp.- <i>Typha</i> spp. Saturated Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

This community is found in Nebraska, South Dakota, Kansas, and Missouri.

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The only naturally occurring site is Scotts Spring on the east side of Scotts Bluff. This site is on the lower-midslope of an escarpment. The other examples of this community found near the irrigation canal north of Scotts Bluff are anthropogenic.

ENVIRONMENTAL DESCRIPTION

Globally

This community occurs on the slopes of hills, valleys, and bluffs. The soil in this community can be sand, muck, or gravel. It can be shallow to deep, depending on the degree of slope. The parent material is glacial till, loess, eolian sand, colluvium, or bedrock. Moderately minerotrophic groundwater (pH 6.0-6.9) continually saturates at least part of this community.

Scotts Bluff National Monument

This community is on a poorly developed, saturated, sandy loam soil.

USFWS WETLAND SYSTEM Palustrine

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Carex</i> spp., <i>Equisetum hyemale</i> , <i>Typha latifolia</i>

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Strata Species
Herbaceous *Carex hallii*, *Scirpus pungens*

DIAGNOSTIC SPECIES

Globally

Carex spp., *Equisetum hyemale*, *Typha latifolia*

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Carex hallii, *Scirpus pungens*

VEGETATION DESCRIPTION

Throughout its range, the dominant vegetation in this community is hydrophytic macrophytes. These are typically 1-2 meters tall. *Typha latifolia* is by far the most common of the taller species. Among the shorter plants that rarely exceed 1 meter *Carex* spp. and *Equisetum hyemale* predominate. Other wetland species such as *Eupatorium perfoliatum*, *Scirpus* spp., and *Thylypertris palustris* occur often. Small trees, such as *Populus deltoides* and *Salix* spp., are present rarely.

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The only natural stand is a small area of less than 10 square meters. Other stands are a result of water seeping from the Mitchell and Gering irrigation canal, but have many of the same species. Dominant plants include *Carex hallii* and *Scirpus pungens*. *Juncus torreyi* and *Agropyron caninum* are prominent. Peripheral areas which were formerly unvegetated are weedy. *Cirsium arvense* is conspicuous in these areas. Near the irrigation canal, some sites have species typical of moderately alkaline sites.

OTHER NOTEWORTHY SPECIES

Scotts Bluff National Monument

Carex hallii and *Sisyrinchium montanum* are known only from this site.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

Across its range, most examples of this community are small, ranging from tens to a few hundred square meters. Fires spreading from the drier surrounding communities may have been common in this community prior to European settlement. Soil slumping may occur on steep slopes.

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The natural seep has been disturbed by construction of a blacktop hiking path through the center of it. A small drainage pool below the trail is dominated by *Salix exigua*. Artificial seeps are present in badland draws below irrigation canals. These contain species not found elsewhere on the Monument.

REFERENCES

The Nature Conservancy (TNC). 1991. Nebraska State Community Abstract , Spring Seep. Midwest Regional Office, Minneapolis, MN.

Typha spp. Inland Great Plains Herbaceous Vegetation

COMMON NAME	Cattail Inland Great Plains Herbaceous Vegetation
SYNONYM	Northern Great Plains Cattail Marsh
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland
FORMATION	Semipermanently flooded temperate or subpolar grassland
ALLIANCE	<i>Typha (angustifolia, latifolia)</i> - (<i>Scirpus</i> spp.) Semipermanently Flooded Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community occurs in Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, and Manitoba.

Scotts Bluff National Monument

This community is restricted to shallow side channels of the North Platte River and abandoned channels on the first floodplain terrace. It is uncommon on the north side of the Monument, but frequent along the North Platte River.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found along streams, rivers, and the banks of ponds. The soil is saturated or flooded for much of the year. It usually has a high organic content.

Scotts Bluff National Monument

It occurs at river levels and in a few abandoned channels. Soils are sandy muck over sand and gravel.

USFWS WETLAND SYSTEM Palustrine

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Typha latifolia</i>

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Eleocharis erythropoda</i> , <i>Phalaris arundinacea</i> , <i>Scirpus pungens</i> , <i>Typha latifolia</i>

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

DIAGNOSTIC SPECIES

Globally

Typha latifolia

Scotts Bluff National Monument

Eleocharis erythropoda, *Scirpus pungens*, *Typha latifolia*

VEGETATION DESCRIPTION

This community is dominated by hydrophytic macrophytes, especially *Typha latifolia*, which grow to approximately 2 meters. *T. latifolia* can form dense stands in places, almost to the exclusion of other species. Other species typical of wetlands are found in lesser amounts in this community. Among these are *Carex* spp., and *Scirpus* spp.

Scotts Bluff National Monument

This community is similar to the global type described above. It is dominated by the hydrophytic monocots *Eleocharis erythropoda*, *Phalaris arundinacea*, *Scirpus pungens*, and *Typha latifolia*. Scattered dicot herbs and shrubs (especially *Salix exigua*) may be along the margins.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G5

RANK JUSTIFICATION

This community is widespread along the banks of streams, rivers and ponds, especially in Montana.

COMMENTS

This community is a disturbed one at Scotts Bluff NM, as indicated by the abundance of *Phalaris arundinacea*.

REFERENCES

Ramaley, F. 1939. Sand-hill Vegetation of Northeastern Colorado. 9(1):1-51.

Tolstead, W. L. Vegetation of the Northern Part of Cherry County, Nebraska. Ecological Monographs 12(3):256-292.

Pinus ponderosa / Schizachyrium scoparium Wooded Herbaceous Vegetation

COMMON NAME	Ponderosa Pine / Little Bluestem Wooded Herbaceous Vegetation
SYNONYM	Ponderosa Pine / Little Bluestem Savanna
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Herbaceous
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland with a sparse tree layer
FORMATION	Medium-tall temperate or subpolar grassland with a sparse needle-leaved evergreen or mixed tree layer
ALLIANCE	<i>Pinus ponderosa</i> Wooded Medium-tall Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	2

RANGE

This community is found in western Nebraska and western South Dakota.

Scotts Bluff National Monument

This community occurs at the tops of ridges and bluffs, especially South Bluff.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on loamy, sandy, or rocky soil. It is usually found on gentle to moderate slopes at low elevations in the Black Hills of South Dakota (Hayward 1928).

Scotts Bluff National Monument

This alliance is found on bluffs, ridge tops, and upper slopes, typically above 4100 feet.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i> , <i>Juniperus scopulorum</i>
Shrub	<i>Juniperus scopulorum</i>
Herbaceous	<i>Schizachyrium scoparium</i> , <i>Stipa comata</i> , <i>Carex filifolia</i> , <i>Bouteloua gracilis</i> , <i>Bouteloua curtipendula</i>

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i> , <i>Juniperus scopulorum</i>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Stipa comata</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Schizachyrium scoparium*

Scotts Bluff National Monument

Pinus ponderosa, *Bouteloua gracilis*

VEGETATION DESCRIPTION

Globally

This community has scattered mature trees with a fairly continuous graminoid understory. *Pinus ponderosa* is the most abundant tree species, sometimes with *Juniperus scopulorum* present as small trees or tall shrubs (Steinauer 1989). The most abundant graminoids in the understory are *Schizachyrium scoparium*, *Stipa comata*, *Carex filifolia*, *Bouteloua gracilis*, and *B. curtipendula*. *Calamovilfa longifolia* and *Koeleria macrantha* may be found on sandy soils in the eastern part of this community's range. Forbs that may be present include *Gaura coccinea*, *Psoraleidium lanceolatum*, and *Asclepias pumila*. In addition to the herbaceous species, shrubs such as *Symphoricarpos occidentalis*, *Rhus trilobata*, and *Cercocarpus montanus* are sometimes found in this community.

Scotts Bluff National Monument

This community is dominated by mid and short grass herbaceous species. These include *Bouteloua gracilis* and *Stipa comata*. There is a sparse tree canopy of *Pinus ponderosa*, sometimes with *Juniperus scopulorum*. *Juniperus scopulorum* occurs as a shrub, too.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2G3

RANK JUSTIFICATION Information not available.

COMMENTS

Periodic fires are probably important in maintaining the open grassland understory of this type.

Scotts Bluff National Monument

This community can grade into *Pinus ponderosa* / *Juniperus scopulorum* Woodland or *Stipa comata*-*Bouteloua gracilis*-*Carex filifolia* Herbaceous Vegetation.

REFERENCES

Hayward, H. H. 1928. Studies of plants in the Black Hills of South Dakota. *Botanical Gazette* 85(4):353-412.

Steinauer, G. 1989. Characterization of the natural communities of Nebraska. Pp. 103-141, *in*, M. Clausen, M. Fritz, and G. Steinauer. The Nebraska Natural Heritage Program, Two Year Progress Report, Appendix D. Lincoln, NE.

Eroding Great Plains Badlands Sparse Vegetation

COMMON NAME	Eroding Great Plains Badlands Sparse Vegetation
SYNONYM	Alkaline Badlands
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely Vegetated
PHYSIOGNOMIC SUBCLASS	Unconsolidated material sparse vegetation
PHYSIOGNOMIC GROUP	Sparsely vegetated soil slopes
FORMATION	Dry slopes
ALLIANCE	Large Eroding Cliffs Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community is found in northwestern Nebraska, western South Dakota, western North Dakota, and southern Saskatchewan.

Scotts Bluff National Monument

This community occurs on the north side of the north overlook of Scotts Bluff.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on moderate to steep slopes, predominantly with a southerly aspect. Soils are thin and highly erodible. On steeper slopes soils may be entirely absent. Parent material is sandstone or siltstone.

Scotts Bluff National Monument

This community is found on irregularly eroded slopes of dissected plains at elevations below 1300 meters (4000 ft). Vegetation occurs on siltstone outcrops within the Orella Member of the Brule Formation. There is very little soil development.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Short shrub	<i>Artemisia longifolia</i> , <i>Ericameria nauseosa</i> ssp. <i>nauseosa</i> var. <i>nauseosa</i> , <i>Sarcobatus vermiculatus</i>
Herbaceous	<i>Gutierrezia sarothrae</i> , <i>Phlox hoodii</i>

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

Scotts Bluff National Monument

Strata Species

Short shrub *Atriplex canescens*, *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*

Herbaceous *Elymus lanceolatus* ssp. *lanceolatus*, *Gutierrezia sarothrae*, *Salsola* spp.

DIAGNOSTIC SPECIES

Globally

Artemisia longifolia, *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*, *Eriogonum pauciflorum* var. *pauciflorum*, *Gutierrezia sarothrae*, *Sarcobatus vermiculatus*

Scotts Bluff National Monument

Atriplex canescens, *Astragalus pectinatus*, *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*, *Iva axillaris*

VEGETATION DESCRIPTION

Globally

Vegetation cover in this community is absent to sparse. In locally more favorable places, vegetation cover can be moderate. The vegetation that does occur in this community is dominated by shrubs approximately 0.5 meter tall. *Artemisia longifolia*, *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa*, and, in the more mesic areas, *Sarcobatus vermiculatus* are the dominant shrubs. These exist as scattered individuals on the face of the slope. Herbaceous species that can be found in this community are *Cryptantha celosioides*, *Eriogonum pauciflorum* var. *pauciflorum*, *Gutierrezia sarothrae*, *Iva axillaris*, *Opuntia* spp., *Phlox hoodii*, and *Sphaeralcea coccinea*.

Scotts Bluff National Monument

This community is mostly unvegetated siltstone. *Atriplex canescens* and *Ericameria nauseosa* ssp. *nauseosa* var. *nauseosa* are scattered on the slopes. Native herbs include *Astragalus pectinatus*, *Gutierrezia sarothrae*, and *Iva axillaris*. Exotic herbs, such as *Kochia scoparia*, *Salsola collina*, and *S. kali* are often present. In areas where there is some soil development, the grasses *Elymus lanceolatus* ssp. *lanceolatus*, *Oryzopsis hymenoides*, and *Stipa comata* predominate along with other prairie plants. The deeper draws have been invaded by mesophytic plants not native to this community. This has been caused by drainage and seepage from the Gering Canal.

OTHER NOTEWORTHY SPECIES

Astragalus pectinatus, which is uncommon in Nebraska, is found in this community and the surrounding prairie. *Lappula cenchrusoides* was found in prairie at the margins of these badlands; it is apparently restricted to this habitat in Nebraska.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

The slopes on which this community is found are actively eroding.

Scotts Bluff National Monument

This community grades into Siltstone-Clay Butte Sparse Vegetation at elevations near 1300 meters (4000 ft).

REFERENCES

Judd, B. I. 1939. Plant Succession on Scoria Buttes of Western North Dakota. *Ecology* 20(2):335-336.

The Nature Conservancy (TNC). 1991a. Nebraska State Community Abstract, Badlands. Midwest Regional Office, Minneapolis, MN.

The Nature Conservancy (TNC). 1991b. North Dakota State Community Abstract, Barren Slope. Minneapolis, MN.

Siltstone - Clay Butte Sparse Vegetation

COMMON NAME	Siltstone-Clay Butte Sparse Vegetation
SYNONYM	Siltstone-Clay Butte
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely Vegetated
PHYSIOGNOMIC SUBCLASS	Consolidated rocks sparse vegetation
PHYSIOGNOMIC GROUP	Sparsely vegetated cliff
FORMATION	Cliffs with sparse vascular vegetation
ALLIANCE	Rock Outcrop-Butte Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

This community has only been described in Scotts Bluff NM in extreme western Nebraska. In the Monument it is best represented in the Mitchell Pass area. It is also in draws on the west and north sides of Scotts Bluff. Similar communities are also found elsewhere in the Wildcat Hills.

ENVIRONMENTAL DESCRIPTION

Scotts Bluff National Monument

This community occurs on irregularly eroded siltstone outcrops, primarily of the Whitney Member and possibly also the Orella Member of the Brule Formation. It is on the middle to lower slopes of escarpments and on slopes of some ravines. Soils are undeveloped or poorly developed and silty.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Shrubs	Information not available
Herbaceous	Information not available

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Shrubs	<i>Ericameria parryi</i> var. <i>parryi</i>
Herbaceous	<i>Arenaria hookeri</i> , <i>Eriogonum pauciflorum</i> , <i>Gutierrezia sarothrae</i> , <i>Lomatium nuttallii</i>

DIAGNOSTIC SPECIES

Globally

Information not available.

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

Scotts Bluff National Monument

Ericameria parryi var. *parryi*, *Eriogonum pauciflorum*, *Gutierrezia sarothrae*, *Lomatium nuttallii*

VEGETATION DESCRIPTION

Scotts Bluff National Monument

This community varies from nearly unvegetated to about 40% cover. *Arenaria hookeri*, *Eriogonum pauciflorum*, *Gutierrezia sarothrae*, *Leptodactylon caespitosum*, and *Lomatium nuttallii* are among the most common species. Shrubs are poorly represented, except for *Ericameria parryi* var. *parryi*, which is frequent. Small inclusions of grassland are also frequent. *Elymus lanceolatus* ssp. *lanceolatus* and other prairie species are typically found in the inclusions.

OTHER NOTEWORTHY SPECIES

Ericameria parryi var. *parryi*, *Lomatium nuttallii*, *Phacelia hastata*, *Physaria brassicoides*, and *Stephanomeria runcinata*, all rare in Nebraska, are mostly restricted to this community at Scotts Bluff NM. The population of *Physaria brassicoides* is the only one known in Nebraska. *Fritillaria atropurpurea*, also rare, is found in prairie associations with this community.

CONSERVATION RANK Information not available

RANK JUSTIFICATION Information not available

COMMENTS

This community might be better treated as a prairie mosaic, since grassland inclusions occur throughout. This community grades into Rock Outcrop - Siltstone/Clay Buttes where the two meet. Inland Siltstone Bluff/Cliffs are very difficult to separate from the Rock Outcrop/Prairie mosaic. Most of the species of the latter are found in this community.

REFERENCES None

Riverine Sand Flats - Bars Sparse Vegetation

COMMON NAME	Riverine Sand Flats-Bars Sparse Vegetation
SYNONYM	Sandbar
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely Vegetated
PHYSIOGNOMIC SUBCLASS	Unconsolidated material sparse vegetation
PHYSIOGNOMIC GROUP	Sparsely vegetated sand flats
FORMATION	Temporarily flooded sand flats
ALLIANCE	Sand Flat Temporarily Flooded Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 2

RANGE

This community occurs in Indiana, Illinois, Missouri, Minnesota, Nebraska, Saskatchewan, Manitoba, and Ontario. It is most common along larger rivers such as the Mississippi, Missouri, and Platte Rivers.

Scotts Bluff National Monument

It is restricted to the margins of the North Platte River channel.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on rivers and streams where frequent flooding changes the substrate. The soil is absent or sometimes poorly developed. Parent material is sand.

Scotts Bluff National Monument

This community occupies nearly level ground in the river channel. Soils consist of freshly deposited alluvial sand. This community is seasonally flooded.

USFWS WETLAND SYSTEM Riverine

MOST ABUNDANT SPECIES

Globally

Strata

Herbaceous

Species

Cenchrus longispinus, *Cyperus* spp., *Eragrostis trichodes*, *Polygonum lapathifolium*, and *Sporobolus cryptandra*

Scotts Bluff National Monument

Strata

Herbaceous

Species

Extremely variable

DIAGNOSTIC SPECIES

Globally

Information not available.

Scotts Bluff National Monument

Information not available.

VEGETATION DESCRIPTION

Globally

Vegetation cover is sparse to sometimes moderate in this community. Ground cover is in the range of 20 to 60%. The predominant vegetation is herbaceous. Some young shrubs and trees may become established. Species found in the herbaceous layer are *Cenchrus longispinus*, *Cyperus* spp., *Eragrostis trichodes*, *Equisetum* spp., *Juncus* spp., *Polygonum lapathifolium*, and *Sporobolus cryptandrus*. Small *Populus deltoides* and *Salix* spp. are the most common woody species.

Scotts Bluff National Monument

This community is very sparsely vegetated. It is mostly bare sand. Scattered annual species such as *Cyperus squarrosus* and *Eragrostis pectinacea* are present. Perennial hydrophytes, such as *Eleocharis erythropoda*, are sometimes present along the margin of this community.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

Globally and at Scotts Bluff National Monument

This is a primary community. It develops on recently deposited or disturbed alluvial sand. It is a short-lived community. Either subsequent flooding destroys the plants or secondary communities develop on the site. Soil that is above the water table is prone to drought due to its poor water retaining capability. Species composition can vary greatly from year to year depending on timing and severity of flooding.

REFERENCES

The Nature Conservancy (TNC). 1991a. Missouri State Community Abstract, Sand Bar. Midwest Regional Office, Minneapolis, MN.

The Nature Conservancy (TNC). 1991b. Nebraska State Community Abstract, Sandbar. Midwest Regional Office, Minneapolis, MN.

Inland Siltstone Bluff / Cliff

COMMON NAME	Inland Siltstone Bluff/Cliff
SYNONYM	None
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely Vegetated
PHYSIOGNOMIC SUBCLASS	Sparsely vegetated consolidated rocks
PHYSIOGNOMIC GROUP	Sparsely vegetated cliff
FORMATION	Cliffs with sparse to dense non-vascular mats
ALLIANCE	Open Bluff/Cliff Sparsely Vegetated Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

This community is described only in Nebraska. It is likely to occur in other states, also.

Scotts Bluff National Monument

This community is found on slopes of escarpments.

ENVIRONMENTAL DESCRIPTION

This community occurs on steep (50% or greater) slopes of siltstone and clay scoria. Soil is not developed.

Scotts Bluff National Monument

This community is found on very steep (60% or greater) siltstone and sandstone cliffs of the Brule, Gering, and Monroe Cree-Harrison Formations on upper portions of escarpments. These cliffs may be more than 100 meters high. Soils are not developed.

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Herbaceous	Information not available

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Herbaceous	<i>Mentzelia decapetala</i>

DIAGNOSTIC SPECIES

Globally

Information not available.

Scotts Bluff National Monument
Mentzelia decapetala

VEGETATION DESCRIPTION

Globally

Vegetation is absent to very sparse. Little information has been collected on this community.

Scotts Bluff National Monument

This community is also mostly unvegetated. There are isolated individuals of *Mentzelia decapetala*. Other rock outcrop species are sporadically present on narrow ledges.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS

Scotts Bluff National Monument

This community may intergrade with Siltstone-Clay Butte Sparse Vegetation. More work needs to be done to better define this community both at Scotts Bluff NM and globally.

REFERENCES

Godfread, C. 1994. The Vegetation of Little Missouri River Badlands of North Dakota. Pp 17-24 *In* C. H. Schmidt (ed.) Proceedings of the Leafy Spurge Strategic Planning Workshop. Dickinson, North Dakota.

The Nature Conservancy (TNC). 1991. Nebraska State Community Abstract, Dry Cliff. Midwest Regional Office, Minneapolis, MN.

Eroding Great Plains Slopes Sparse Vegetation

COMMON NAME	Eroding Great Plains Slopes Sparse Vegetation
SYNONYM	Eroding Great Plains Slopes
TNC SYSTEM	Terrestrial
PHYSIOGNOMIC CLASS	Sparsely Vegetated
PHYSIOGNOMIC SUBCLASS	Unconsolidated material sparse vegetation
PHYSIOGNOMIC GROUP	Sparsely vegetated soil slopes
FORMATION	Dry slopes
ALLIANCE	Small eroding cliffs/banks Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 3

RANGE

This community is found in Nebraska and probably in other states of the Great Plains.

Scotts Bluff National Monument

This community is found north and west of Scotts Bluff.

ENVIRONMENTAL DESCRIPTION

Scotts Bluff National Monument

This community is found primarily on steep (35-60%) slopes of deep ravines. Soils may be sandy or silty and the elevation is usually under 1300 m (4000 ft).

USFWS WETLAND SYSTEM Not applicable

MOST ABUNDANT SPECIES

Globally

<u>Strata</u>	<u>Species</u>
Shrubs	Information not available.
Herbaceous	Information not available.

Scotts Bluff National Monument

<u>Strata</u>	<u>Species</u>
Shrubs	<i>Artemisia filifolia</i> , <i>Kraschennikovia lanata</i> , <i>Rhus aromatica</i>
Herbaceous	<i>Elymus lanceolatus</i> , <i>Gutierrezia sarothrae</i>

DIAGNOSTIC SPECIES

Globally

Information not available.

USGS-NPS Vegetation Mapping Program
Scotts Bluff National Monument

Scotts Bluff National Monument

Information not available.

VEGETATION DESCRIPTION

Information not available.

Scotts Bluff National Monument

Vegetation is often restricted to lower, shallower slopes. The steeper upper slopes frequently remain unvegetated. *Kraschennikovia lanata* tends to be more abundant on silty soils and *Artemisia filifolia* on sandy soils. Total vegetation cover is usually 10-25%

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK Information not available.

RANK JUSTIFICATION Information not available.

COMMENTS None

REFERENCES None