

# USGS-NPS VEGETATION MAPPING PROGRAM

## Classification of the Vegetation of Fort Laramie National Historic Site

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# 1. VEGETATION SAMPLING AND CLASSIFICATION

## Introduction

This report presents the results of the vegetation classification portion of the NPS/USGS BRD Vegetation Mapping Program at Fort Laramie National Historic Site. Sampling strategy and field methods are described for both plot and accuracy assessment sampling. The vegetation classification, field key to the vegetation types, and descriptions of each type are also included. As a supplement to this report, the raw plot data and accuracy assessment points are included as original field forms and in electronic form in the PLOTS database (a Microsoft Access database).

## Methods

In general, the field methods used for developing the classification followed the standards outlined in the Field Methods for Vegetation Mapping document produced for this project. This began with the development of a preliminary vegetation classification based on literature review and an initial visit to the site. The preliminary classification was used to identify polygons delineated from aerial photos. Due to the small size of the mapping area it was not deemed necessary to limit sampling to subsets of the whole area or to stratify it based on environmental or other factors. Although environmental information was not used to stratify the mapping area, data were collected from across a range of conditions on the mapping area to capture as much of the variation in the vegetation as possible. The field team performed a reconnaissance of the mapping area, collecting limited environmental and vegetation information from points (called observation points) across the area. These points were used to refine the classification before detailed plot sampling began. Plot data and observation points were collected from across the entire mapping area, not just within the boundaries of Fort Laramie NHS. Getting access to lands within the mapping area but beyond the boundaries of Fort Laramie NHS was not difficult because all such land was public land.

Within polygons, plots were subjectively placed in vegetation that was judged to be representative of the whole polygon. In some polygons this was difficult because dominant species were distributed in patches. In these cases, the patchiness was noted on the field forms. Total number of plots and observation points per vegetation type was related to areal coverage of each vegetation type, widespread types had more plots than those with limited distribution. The combined number of plots (49) and observation points (53) varied from 0-21 per type, with an average of 6.4 per type. Plot size also varied with vegetation type. Woodland communities were sampled with 20 x 20 m plots. Shrub and herbaceous dominated communities were sampled with 10 x 10 m plots, and sparsely vegetated communities were sampled with 5 x 5 m plots.

Both plots and observation points were used to produce the final classification of Fort Laramie NHS. Field personnel organized the plots and observation points into groups based on vegetation structure and composition. Average cover of each species and vegetation stratum were computed. The plots were analyzed using an ordination technique, Detrended Correspondence Analysis (DCA), and a clustering algorithm, Unweighted Pair-Group Method Using Arithmetic Means (UPGMA). Because there were few plots per type and the locations of the plots were chosen to represent the variation of a type at Fort Laramie NHS, there was substantial variation within each type. In addition, the extensive history of disturbance has allowed invasive species to become established with the natural vegetation. These factors lessened the utility of the numerical analyses. Thus, the results of the numerical analyses were not used to derive the classification, but were compared to the subjective classification and any discrepancies in plot placement were examined.

Accuracy assessment data were collected following the procedures outlined in the Field Methods for Vegetation Mapping document produced for this project. The amount of data collected for each polygon was the same as that collected for observation points. 180 accuracy assessment points were collected from Sept. 2-Sept. 10, 1997. Points were placed as near to the center of delineated polygons as possible. Polygons in which accuracy assessment was done were spread across the mapping area and chosen by the field team to reflect the relative abundance of vegetation types.

## Results

The classification of the vegetation at Fort Laramie NHS resulted in 16 types being defined, including one woodland type, one shrubland type, 11 herbaceous types, and three sparsely vegetated types. Three of the herbaceous types are not placed within the National Vegetation Classification System (NVCS). Areas placed within these types are dominated by exotic and/or invasive species. They are so disturbed that they cannot be accurately placed within the natural vegetation subgroup of the NVCS. The names of these three types end with "Community" to signify that they have not been placed in the NVCS.

Many parts of the mapping area that are classified as natural vegetation have been disturbed in the past. This made classification of these areas problematic. Species lists and structure of these areas are different from less disturbed examples of the same community. The most difficult type to place within the NVCS was *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation. The examples on Fort Laramie NHS do not closely match the description for this type in other parts of Wyoming, but this appeared to be the closest match for the sites at Fort Laramie NHS. Further comparison of these sites and others like them may result in re-classification.

The classification of Fort Laramie NHS, placed within the NVCS, follows. A field key and descriptions for each of the types are included in later sections of this report.

### II. Woodland

#### II.B. Deciduous woodland

##### II.B.2. Cold-deciduous woodland

##### II.B.2.N Natural/semi-natural

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

#### **POPULUS DELTOIDES TEMPORARILY FLOODED WOODLAND ALLIANCE**

*Populus deltoides* / *Symphoricarpos occidentalis* Woodland

### III Shrubland

#### III.B Deciduous shrubland

##### III.B.2. Cold-deciduous woodland

##### III.B.2.N Natural/semi-natural

##### III.B.2.N.d. Temporarily flooded cold-deciduous shrubland

#### **SALIX EXIGUA TEMPORARILY FLOODED SHRUBLAND ALLIANCE**

*Salix exigua* Shrubland [Provisional]

### V. Herbaceous

- V.A. Perennial graminoid.vegetation
  - V.A.5. Temperate or subpolar grassland
    - V.A.5.N Natural/semi-natural
      - V.A.5.N.c. Medium-tall sod temperate or subpolar grassland
        - PASCOPTRUM SMITHII HERBACEOUS ALLIANCE**  
*Pascoptrum smithii* Herbaceous Vegetation [Provisional]
  
        - STIPA COMATA - BOUTELOUA GRACILIS HERBACEOUS ALLIANCE**  
*Stipa comata - Bouteloua gracilis- Carex filifolia* Herbaceous Vegetation
      - V.A.5.N.d. Medium-tall bunch temperate or subpolar grasslands
        - STIPA COMATA BUNCH HERBACEOUS ALLIANCE**  
*Stipa comata - Yucca glauca* Herbaceous Vegetation
      - V.A.5.N.e. Short sod temperate or subpolar grassland
        - BOUTELOUA GRACILIS HERBACEOUS ALLIANCE**  
*Bouteloua gracilis - Carex filifolia* Herbaceous Vegetation
      - V.A.5.N.j. Temporarily flooded temperate or subpolar grassland
        - SPARTINA PECTINATA TEMPORARILY FLOODED HERBACEOUS ALLIANCE**  
*Spartina pectinata - Scirpus pungens* Herbaceous Vegetation
      - V.A.5.N.k. Seasonally flooded temperate or subpolar grassland
        - CAREX NEBRASCENSIS SEASONALLY FLOODED HERBACEOUS ALLIANCE**  
*Carex nebrascensis* Herbaceous Vegetation
      - V.A.5.N.1. Semipermanently flooded temperate or subpolar
        - TYPHA (ANGUSTIFOLIA, LATIFOLIA) - (SCIRPUS SSP.) SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE**  
*Typha latifolia* Western Herbaceous Alliance
    - V.A.5.C Cultural
      - Formation undefined
        - ALLIANCE UNDEFINED**  
*Bromus inermis* Disturbed Community
  
        - ALLIANCE UNDEFINED**  
*Sporobolus cryptandrus* Disturbed Community
  
        - ALLIANCE UNDEFINED**  
Upland Weedy Community
  - V.A.6. Temperate or subpolar grassland with a sparse tree layer
    - V.A.6.N Natural/semi-natural

V.A.6.N.f. Medium-tall temperate or subpolar grassland with a  
sparse needle-leaved evergreen or mixed tree layer  
**PINUS PONDEROSA WOODED MEDIUM-TALL  
HERBACEOUS ALLIANCE**  
*Pinus ponderosa* / *Schizachyrium scoparium* Wooded  
Herbaceous Vegetation

VII Sparse Vegetation

VII.A Consolidated rock sparse vegetation

VII.A.1. Sparsely vegetated cliffs

VII.A.1.N Natural/semi-natural

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

**ROCK OUTCROP / BUTTE SPARSE VEGETATION**  
Sandstone Rock Outcrop Sparse Vegetation

VII.C Unconsolidated material sparse vegetation

VII.C.2 Sparsely vegetated sand flats

VII.C.2.N Natural/semi-natural

VII.C.2.N.a. Sand flats

**ALLIANCE UNDEFINED**

Upland Sand and Gravel Sparse Vegetation

VII.C.2.N.c. Temporarily flooded sand flats

**SAND FLATS TEMPORARILY FLOODED SPARSE  
VEGETATION**

Riverine Sand Flats - Bars Sparse Vegetation

## Conclusion

The vegetation of Fort Laramie NHS was classified using the techniques established for the NPS/BRD Vegetation Mapping Program. Most of the vegetation types were placed in the NVCS. Due to disturbance in some areas, some of the vegetation at Fort Laramie NHS did not closely match the more general, national description of the community into which it was placed. In addition, a few types did not fit within the current NVCS and retained park-specific names and descriptions. It is expected that these will be placed within a national hierarchy as the NVCS is further developed.

The general methods outlined for the NPS/BRD Vegetation Mapping Program worked well in this project. There were several factors which contributed to this. The first was that the field team had aerial photographs with preliminary polygons already delineated when they began field work. This made choosing plot and observation point locations much more efficient than would otherwise have been the case, especially given the limited environmental data available. The second was that the field personnel had been involved in mapping other parks for this project. This eliminated the need for training and made for more efficient use of field time. Finally, the small size and relatively gentle terrain of the mapping area made many aspects of the field effort easier.

## **Contributors**

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## 2. FIELD KEY TO THE PLANT COMMUNITIES OF FORT LARAMIE NATIONAL HISTORIC SITE

1. Sites more than 25% vegetated.
  2. More than 10% of the site covered by woody plants **more than** 3m tall
    3. Broadleaf (dicot) trees predominate; site riverine:  
***Pinus ponderosa* / *Symphoricarpos occidentalis* Woodland**
    3. Needleleaf (conifer) trees predominate; upland sites:  
***Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation**
  2. Less than 10% of site covered by woody plants more than 3m tall
    4. More than 10% of site covered by woody plants less than 3m tall
      5. *Symphoricarpos occidentalis* dominate; site on floodplain: see  
***Populus deltoides* / *Symphoricarpos occidentalis* Woodland** above  
(trees maybe sparse or absent)
      5. not as above
      6. *Salix exigua* or *Populus deltoides* dominate; site riverine:  
***Salix exigua* Shrubland**
      6. *Artemisia filifolia* and occasionally *Yucca glauca* dominate  
shrub stratum; upland sites:  
***Stipa comata* - *Yucca glauca* Herbaceous Vegetation**
    4. Less than 10% of site covered by woody plants **less than** 3m tall (except for  
small inclusions).
      7. Site riverine or palustrine wetland.
        8. *Typha latifolia* dominates:  
***Typha latifolia* Western Herbaceous Vegetation**
        8. *Typha latifolia* not dominate.
          9. *Spartina pectinata* dominates; site riverine:  
***Spartina pectinata* - *Scirpus pungens* Herbaceous  
Vegetation**
          9. Intermittently saturated floodplain sites dominated by

sedges and rushes; *Esquisetum laevigatum* may dominate in drier areas:

***Carex nebrascensis* Herbaceous Vegetation**

7. Site upland, never saturated in most years.
10. Vegetation dominated by exotic grasses and/or exotic or native weedy forbs.
  11. *Bromus inermis* dominates:  
***Bromus inermis* Disturbed Community**
  11. Other species dominate:  
**Upland Weedy Community**
10. (Move to left margin)
10. Vegetation dominated by native grasses
  12. *Pascopyrum smithii* dominant; *Bouteloua gracilis* often present, but codominants variable or entirely absent (includes seeded stands):***Pascopyrum smithii* Herbaceous Vegetation**
  12. Not as above; *Pascopyrum smithii* occasionally present, but other grass species more abundant.
  13. Dominant species include *Stipa comata*, *Bouteloua gracilis*, and/or *Carex filifolia*:  
***Stipa comata* - *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation**
  13. not as above
  14. *Sporobolus cryptandrus* dominant; *Buchloe dactyloides* sometimes present and locally dominant; *Bromus tectorum* often abundant (not apparent late in season):  
***Sporobolus cryptandrus* Disturbed Community**
  14. Small sites (less than 0.25 ha) dominated by other grass species such as *Poa pratensis*, *Sporobolus airoides* and *Agropyron cristatum* should be treated as inclusions in the surroundings polygons.

1. Site less than 25% vegetated
  15. Riverine sites; may include small stands of *Salix exigua* and young *Populus deltoides*:  
**Riverine Sand Flats - Bars Sparse Vegetation**
  15. Upland sites.
    16. Sandy or gravelly sites on floodplain or in drainage bottoms; *Artemisia campestris* and/or *Opuntia polyacantha* usually dominate:  
**Upland Sand and Gravel Sparse Vegetation**
    16. Sites on ridgetops or slopes.
      17. Forb-rich vegetation on small cobbles capping ridges.  
***Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation**
      17. not as above
      18. Pale, soft sandstone with less than 10% vegetative cover.  
**Sandstone Rock Outcrop Sparse Vegetation**
      18. Other sparsely-vegetated small sites (less than 0.25 ha), such as disturbed areas, low escarpments in grassland, and small outcrops in sparse pine woodland should be treated as inclusions in the surroundings polygons.

### 3. VEGETATION DESCRIPTION FOR FORT LARAMIE NATIONAL HISTORIC SITE

NOTE: "\*" Indicates a new formation to the National Vegetation Classification System

#### Populus deltoides / Symphoricarpos occidentalis Woodland

COMMON NAME	Eastern Cottonwood / Western Snowberry Woodland
SYNONYM	Cottonwood / Wolfberry - Western Rose Floodplain Woodland
PHYSIOGNOMIC CLASS	Woodland (II)
PHYSIOGNOMIC SUBCLASS	Deciduous woodland (II.B)
PHYSIOGNOMIC GROUP	Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (II.B.2.N)
FORMATION	Temporarily flooded cold-deciduous woodland (II.B.2.N.b.)
ALLIANCE	<i>Populus deltoides</i> Temporarily Flooded Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE  
*Globally*

This community is found in western North Dakota, western South Dakota, and Wyoming.

*Fort Laramie National Historic Site*

This community occurs on the lower floodplain along the Platte and Laramie Rivers, with small isolated stands on the upper floodplain, along the highway north of the park, and north of the canal on the south edge of the park.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community is on medium to coarse textured alluvial soils on the floodplains of major rivers. The floodplains are both seasonally inundated and subirrigated (Thilenius et al. 1995). The meandering erosional and depositional pattern of rivers maintains and influences this community along rivers (Hanson 1990). It is rarely found at higher elevations in the mountains of eastern Wyoming and western South Dakota (Johnston 1987).

*Fort Laramie National Historic Site*

This community occurs on the lower floodplain adjacent to rivers, and occasionally on the upper floodplain as isolated stands. It occurs on level ground on alluvial soils.

MOST ABUNDANT SPECIES

*Globally*

<u>Statum</u>	<u>Species</u>
Tree canopy	<i>Populus deltoides, Acer negundo, Fraxinus pennsylvanica</i>
Shrub	<i>Symphoricarpos occidentalis</i>
Herbaceous	<i>Elymus trachycaulus, Pascopyrum smithii</i>

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<u>Statum</u>	<u>Species</u>
Tree canopy	<i>Populus deltoides</i> , <i>Salix amygdaloides</i>
Subcanopy	<i>Fraxinus pennsylvanica</i> , <i>Populus deltoides</i> , <i>Acer negundo</i>
Short shrub	<i>Symphoricarpos occidentalis</i>

**DIAGNOSTIC SPECIES**

*Globally*

*Populus deltoides*, *Acer negundo*, *Fraxinus pennsylvanica*, *Symphoricarpos occidentalis*, *Pascopyrum smithii*

*Fort Laramie National Historic Site*

*Populus deltoides*, *Salix amygdaloides*

**VEGETATION DESCRIPTION**

*Globally*

This community is typically dominated by a single deciduous tree species, *Populus deltoides*. In some stands other species, such as *Acer negundo* and *Fraxinus pennsylvanica*, may contribute to the canopy. The tallest trees exceed 15 meters. *Populus deltoides* is a pioneer species that requires moist, sparsely vegetated alluvium to become established from seed, therefore stands of this community are seral. The shrub layer is typically 0.5-1 m tall. It is dominated by *Symphoricarpos occidentalis* and commonly includes *Juniperus scopulorum* and *Rosa* spp. In Wyoming, *Chrysothamnus nauseosus* is present and increases with heavy grazing (Thilenius et al. 1995). The herbaceous layer usually includes *Pascopyrum smithii* and *Elymus trachycaulus*. Weedy species such as *Cirsium arvense*, *Melilotus officinalis*, *Taraxacum officinale*, and *Poa secunda* are very common, especially in the presence of grazing (Jones and Walford 1995, Thilenius et al. 1995). *Maianthemum stellatum* is abundant only where grazing is absent.

*Fort Laramie National Historic Site*

This community typically is dominated by *Populus deltoides* with trees to 20 m or more in height. Large individuals of *Salix amygdaloides* occasionally occur and *Populus angustifolia* and *P. x acuminata* occasionally occur in this community. Canopy coverage can be sparse (5%) or as much as 50%. The subcanopy often contributes substantial cover. In some cases, it is difficult to split canopy from subcanopy due to a continuous range in tree height. *Fraxinus pennsylvanica*, *Populus deltoides*, and *Acer negundo* are the most common subcanopy species. *Symphoricarpos occidentalis* dominates the shrub stratum in some areas, but is often absent or poorly developed. A few small stands of *Prunus virginiana* occur in this community on the east side of the Laramie River west of the Fort Site. Herbaceous stratum composition is quite variable. Most species found in the understory of this community are also typical of *Spartina pectinata*, *Bromus inermis*, or *Pascopyrum smithii* Herbaceous Vegetation, or Upland Sand and Gravel Sparse Vegetation.

**OTHER NOTEWORTHY SPECIES** Information not available.

**CONSERVATION RANK** G2G3

**RANK JUSTIFICATION**

**DATABASE CODE** CEGL000660

**COMMENTS**

*Globally*

In eastern Montana, Hanson et al. (1990) describe a *Populus deltoides/Symphoricarpos occidentalis* type as a grazing-induced stage of the *Populus deltoides/Cornus sericea* type. This contrasts with information from Wyoming, where Thilenius et al. (1995) found that *Symphoricarpos occidentalis* decreases with grazing and *Chrysothamnus nauseosus* increases.

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*Symphoricarpos occidentalis* is often absent or poorly developed in this community. Stands of *S. occidentalis*

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without tree cover are treated as extensions of the nearby stands of *Populus deltoides*. In some stands, *P. deltoides* is absent, and *Salix amygdaloides* dominates the canopy.

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## Salix exigua Shrubland [Provisional]

COMMON NAME	Narrow-Leaf Willow Shrubland [Provisional]
SYNONYM	Sandbar Willow Shrubland
PHYSIOGNOMIC CLASS	Shrubland (III)
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland (III.B)
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland (III.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (III.B.2.N)
FORMATION	Temporarily flooded cold-deciduous shrubland (III.B.2.N.d.)
ALLIANCE	<i>Salix exigua</i> Temporarily Flooded Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE

*Globally*

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

*Fort Laramie National Historic Site*

This community occurs along the Laramie and Platte Rivers and in seepage areas north of the canal.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community is found near lakes and streams 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 (Steinauer 1989).

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*Fort Laramie National Historic Site*

This community occurs on level sites on alluvial soils along the Laramie and Platte Rivers and in seepage areas north of the canal.

**MOST ABUNDANT SPECIES**

*Globally*

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Salix exigua</i>
Herbaceous	<i>Carex pellita</i> , <i>Scirpus americanus</i>

*Fort Laramie National Historic Site*

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Salix exigua</i> , <i>Populus deltoides</i>

**DIAGNOSTIC SPECIES**

*Globally*

*Salix exigua*

*Fort Laramie National Historic Site*

*Salix exigua*, young *Populus deltoides* (less than 3 m tall)

**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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This community is dominated by *Salix exigua* and/or young *Populus deltoides* (less than 3 m tall). Both species dominate the tall and short shrub strata, and combined cover is usually greater than 50%, sometimes approaching 100%. Herbaceous cover is sparse and quite variable in composition.

**OTHER NOTEWORTHY SPECIES** Information not available.

**CONSERVATION RANK** G5Q

**RANK JUSTIFICATION**

**DATABASE CODE** CEGL001197

**COMMENTS**

*Globally*

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 (Wilson 1970, Bellah and Hulbert 1979).

*Fort Laramie National Historic Site*

Some stands mapped as this type have very little *Salix exigua* and are dominated by young *Populus deltoides*. Succession to and from this community can be relatively rapid (several years), depending on flood events and rate of growth of the young cottonwoods.

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## Pascopyrum smithii Herbaceous Vegetation [Provisional]

COMMON NAME	Western Wheatgrass Herbaceous Vegetation [Provisional]
SYNONYM	Western Wheatgrass Mixedgrass Prairie
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Medium-tall sod temperate or subpolar grassland (includes sod or mixed sod-bunch graminoids) (V.A.5.N.c.)
ALLIANCE	<i>Pascopyrum smithii</i> Herbaceous Alliance
CLASSIFICATION CONFIDENCE LEVEL	3
USFWS WETLAND SYSTEM	Upland

RANGE

*Globally*

This community is found in Montana, Wyoming, Colorado, Idaho, Utah, Nebraska, Saskatchewan, and possibly North Dakota.

*Fort Laramie National Historic Site*

This community occurs on the floodplain. This type includes the seeded stands east of the Fort Site.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community occurs on flat to gently sloping topography. 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 (Godfread 1994).



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**Fort Laramie National Historic Site**

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*Fort Laramie National Historic Site*

This community occurs on level sites on alluvial soils of the floodplain. Many of the sites were disturbed in the recent past (less than 40 years). This community is occasional in drainage bottoms on Bureau of Land Management land south of the NHS.

**MOST ABUNDANT SPECIES**

*Globally*

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

*Fort Laramie National Historic Site*

<u>Statum</u>	<u>Species</u>
Herbaceous	<i>Pascopyrum smithii</i> , <i>Bouteloua gracilis</i> , <i>Sporobolus cryptandrus</i> , <i>Calamovilfa longifolia</i>

**DIAGNOSTIC SPECIES**

*Globally*

*Pascopyrum smithii*

*Fort Laramie National Historic Site*

*Pascopyrum smithii* (as dominant or codominant)

**VEGETATION DESCRIPTION**

*Globally*

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*, *Nassella viridula*, and *Stipa comata* (Aldous 1924).

*Fort Laramie National Historic Site*

This community is dominated by *Pascopyrum smithii*. In some areas, few other species occur. The codominant grass species for this community vary. *Bouteloua gracilis* is probably the most common. Other locally dominant species include *Poa pratensis*, *Distichlis spicata* (in seepage areas north of the canal), and *Sporobolus airoides*, as well as those mentioned above. *Bromus tectorum* can be locally abundant. Herbaceous cover typically is in the 25-50% range, and occasionally greater. Height is generally less than 0.5 m. This type includes seeded stands east of the Fort Site, which are composed of *P. smithii* with and without *Bouteloua gracilis*.

**OTHER NOTEWORTHY SPECIES** Information not available.

**CONSERVATION RANK** G3G5Q

**RANK JUSTIFICATION**

**DATABASE CODE** CEGL001577

**COMMENTS**

*Globally*

This community is similar to several others that are dominated or co-dominated by *Pascopyrum smithii*. Further work needs to be done to refine the differences in composition and environmental characteristics.

*Fort Laramie National Historic Site*

*P. smithii* also occurs as a minor component in other grassland types.

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.

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	Needle-and-thread - Blue Grama Mixedgrass Prairie
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Medium-tall sod temperate or subpolar grassland (includes sod or mixed sod-bunch graminoids) (V.A.5.N.c.)
ALLIANCE	<i>Stipa comata - Bouteloua gracilis</i> Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

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

*Fort Laramie National Historic Site*

This community is most common on upland sites, especially on Bureau of Land Management lands south and northwest of the NHS. It also occurs in the northwest part of the NHS, and on the upper floodplain in the southwest part.

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 (Hanson and Whitman 1938, Hansen et al. 1984).

*Fort Laramie National Historic Site*

This community occurs on sandy soils on level and rolling sites, and on slopes to 15 degrees. There is no apparent correlation with aspect.

MOST ABUNDANT SPECIES

*Globally*

Statum

Herbaceous

Species

*Stipa comata, Bouteloua gracilis, Carex filifolia*

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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*Fort Laramie National Historic Site*

Statum

Species

Herbaceous

*Stipa comata*, *Bouteloua gracilis*, *Carex filifolia*

DIAGNOSTIC SPECIES

*Globally*

*Stipa comata*, *Bouteloua gracilis*, *Carex filifolia*

*Fort Laramie National Historic Site*

*Stipa comata*, *Bouteloua gracilis*

VEGETATION DESCRIPTION

*Globally*

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 abundant at some sites. Forbs that are typical of this community are *Heterotheca villosa* var. *villosa*, *Guara coccinea*, *Liatris punctata*, and *Phlox hoodii*. Sandier areas often have *Calamovilfa longifolia* present. 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 follows: shrubs - 6%, graminoids - 67%, forbs - 11%, bryophytes - 14%, litter - 55%, rock 4%, bare soil - 9% (Mueggler and Stewart 1978). Thilenius et al. (1995) found that the average cover on 14 stands in eastern Wyoming was 42%. Tolstead (1942) described this community as the climax on the level lands of the northern part of Cherry County, Nebraska.

*Fort Laramie National Historic Site*

This community typically is dominated by *Stipa comata* and *Bouteloua gracilis*. The latter is the more dominant species in some areas, as can be *Carex filifolia*. Low shrubs are often present but sparse, the most frequent being *Artemisia filifolia* and *A. frigida*. *Tradescantia occidentalis* and *Opuntia fragilis* frequently occur in this community. The latter is occasionally abundant. *Andropogon hallii* occurs occasionally in small patches. Small patches of *Calamovilfa longifolia* are common. At two sites, very small stands of *Schizachyrium scoparium* were observed on steeper slopes within this type. In some areas, such as old disturbed areas on Bureau of Land Management land northwest of the park (pipeline), large stands of *Calamovilfa longifolia* are present. Herbaceous cover typically ranges from 40 to 75%, with heights typically between 0.5 and 1 m.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3G4

RANK JUSTIFICATION

DATABASE CODE CEGL002037

COMMENTS

*Fort Laramie National Historic Site*

This community is very similar to the *Stipa comata* - *Yucca glauca* Herbaceous Vegetation type in composition. However, shrub cover is less than 10% or may be absent. At some sites, especially on the BLM land south of the NHS, *Bouteloua gracilis* is dominant, and *Stipa comata* is rare or absent, probably due to grazing (*S. comata* is known to be a decreaser and *B. gracilis* an increaser in these situations; USDA Forest Service 1937). *Carex filifolia*, also an increaser (Jones 1992), contributes substantial cover in some areas.

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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REFERENCES

- Hansen, P. L., G. R. Hoffman, and A. J. Bjugstad. 1984. The vegetation of Theodore Roosevelt National Park, North Dakota: A habitat type classification. General Technical Report RM-113. USDA Forest Service, Rocky Mountains Forest and Range Experiment Station, Fort Collins, CO. 35 p.
- Hanson, H. C. and W. Whitman. 1938. Characteristics of major grassland types in western North Dakota. Ecological Monographs 8(1):58-114.
- Jones, G. 1992. Wyoming plant community classification. Wyoming Natural Diversity Database, The Nature Conservancy, Laramie, WY. 184 pp.
- Mueggler, W. F. and W. L. Stewart. 1978. Grassland and shrubland habitat types of western Montana. USDA Forest Service General Technical Report INT-66. Intermountain Forest and Range Experiment Station, Ogden, UT. 154 pp.
- Thilenius, J. F., G. R. Brown, and A. L. Medina. 1995. Vegetation on semi-arid rangelands, Cheyenne River basin, Wyoming. General Technical Report RM-263. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 60 p.
- Tolstead, W. L. 1942. Vegetation of the northern part of Cherry County, Nebraska. Ecological Monographs 12(3):256-292.
- USDA Forest Service. 1937. Range plant handbook.

## Stipa comata - Yucca glauca Herbaceous Vegetation

COMMON NAME	Needle-and-thread - Soapweed Yucca Herbaceous Vegetation
SYNONYM	Needle-and-thread - Soapweed Mixedgrass Prairie
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Medium-tall bunch temperate or subpolar grassland (V.A.5.N.d.)
ALLIANCE	<i>Stipa comata</i> Bunch Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

This community is found only in Wyoming.

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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*Fort Laramie National Historic Site*

This community is most common on upland sites on Bureau of Land Management lands northwest and south of the NHS. *Artemisia filifolia* does occur in *Stipa comata* - *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation within the NHS but, at these sites, shrub cover usually is less than 10%.

ENVIRONMENTAL DESCRIPTION

*Globally*

Stands of the narrower *Stipa comata* - *Yucca glauca* Herbaceous Vegetation are found only along ridge tops and a short distance down the adjacent slopes (Thilenius et al. 1995). The broader *Yucca glauca* / *Calamovilfa longifolia* Shrub Herbaceous Vegetation, into which it is suggested *Stipa comata* - *Yucca glauca* Herbaceous Vegetation be placed, apparently occurs on a broader range of ridge tops and upper slopes.

*Fort Laramie National Historic Site*

This community occurs on sandy soils on rolling terrain and on slopes to 18 degrees. There is no apparent correlation with aspect.

MOST ABUNDANT SPECIES

*Globally*

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Yucca glauca</i>
Herbaceous	<i>Calamovilfa longifolia</i> , <i>Stipa comata</i> , <i>Bouteloua gracilis</i>

*Fort Laramie National Historic Site*

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Artemisia filifolia</i> , <i>Yucca glauca</i>
Herbaceous	<i>Stipa comata</i> , <i>Bouteloua gracilis</i> , <i>Carex filifolia</i>

DIAGNOSTIC SPECIES

*Globally*

*Yucca glauca*, *Calamovilfa longifolia*, *Stipa comata*

*Fort Laramie National Historic Site*

*Artemisia filifolia*, *Stipa comata*, *Bouteloua gracilis*

VEGETATION DESCRIPTION

*Globally*

Stands of the narrower *Stipa comata* - *Yucca glauca* Herbaceous Vegetation (Thilenius et al. 1995) contain an open to moderately-dense (at least 10% cover), low shrub layer above a species-rich herbaceous layer. Dominance of the shrub layer by *Yucca glauca* is characteristic (average cover in 6 stands was 9.8%). *Artemisia tridentata* ssp. *wyomingensis* and *Artemisia cana* ssp. *cana* may be present but are sparse and contribute little cover. In the herbaceous layer, *Stipa comata* and *Calamovilfa longifolia* co-dominate (16% cover and 8% cover respectively), and *Bouteloua gracilis* and *Carex filifolia* often are present but contribute much less cover than do *Stipa* or *Calamovilfa*. Forbs are common but contribute little cover; *Artemisia frigida* has the highest constancy, but no forb is characteristic of the association. Litter covers up to ca. half of the ground surface, and most of the rest of the ground surface is bare soil.

*Fort Laramie National Historic Site*

This community typically is dominated by *Stipa comata* and *Bouteloua gracilis* in the herbaceous stratum, with greater than 10% low shrub cover dominated by *Artemisia filifolia*. *Yucca glauca* can be common as well. *B. gracilis* is the more dominant herbaceous species in some areas, as is *Carex filifolia*. *Tradescantia occidentalis* and *Opuntia fragilis* frequently occur in this community. The latter is occasionally abundant. *Andropogon hallii* occurs occasionally in small patches. Small patches of *Calamovilfa longifolia* are common. In some areas, such as old disturbed areas on Bureau of Land Management land northwest of the park (pipeline), large stands of *Calamovilfa longifolia* occur.

OTHER NOTEWORTHY SPECIES Information not available.

**USGS-NPS Vegetation Mapping Program  
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CONSERVATION RANK G2?

RANK JUSTIFICATION

DATABASE CODE C EGL001706

COMMENTS

*Globally*

This association is currently considered a temperate, mid-grass, bunchgrass grassland. But as described by Thilenius et al. (1995), the reference from which it was named, it is characterized by a low shrub layer of at least ca. 10% cover, and so should probably be considered a sparse shrub type in the *Yucca glauca* Shrub Herbaceous Alliance (V.A.7.N.h. in TNC's national vegetation hierarchy) and renamed *Yucca glauca* / *Stipa comata* Shrub Herbaceous Vegetation.

Furthermore, it appears to be the same as the *Yucca glauca* / *Calamovilfa longifolia* Association (CEGL001456) from Montana, as suggested by the following evidence. First, the two types are markedly similar in species composition. Percent constancy and percent canopy cover of the major species in the *Yucca glauca* / *Calamovilfa longifolia* association are as follows (Producers 1978): *Yucca glauca* 100% (22.5%), *Stipa comata* 33% (0.2%), *Calamovilfa longifolia* 83% (15.6%), *Schizachyrium scoparium* 67% (11.3%), *Bouteloua gracilis* 67% (3.2%), *Carex filifolia* 50% (5.6%). In the *Yucca glauca* / *Stipa comata* shrub-steppe, percent constancy and percent canopy cover of the major species are quite similar (Thilenius et al. 1995): *Yucca glauca* 100% (9.8%), *Stipa comata* 100% (16.3%), *Calamovilfa longifolia* 100% (8.7%), *Schizachyrium scoparium* not listed; *Bouteloua gracilis* 83% (8.2%), *Carex filifolia* 83% (7.1%).

Second, stands of the two types occur on similar substrates. Stands of the *Yucca glauca* / *Calamovilfa longifolia* association occur on sandstone and scoria substrates (Producers 1978), and stands of the *Yucca glauca* / *Stipa comata* shrub-steppe occur on sandstone outcrops (Thilenius et al. 1995). Third, the authors of the *Yucca glauca* / *Stipa comata* shrub-steppe (Thilenius et al. 1995) originally identified a *Yucca glauca* / *Calamovilfa longifolia* type on sandstone outcrops and sandy soils, based on a reconnaissance of vegetation in the Cheyenne River Basin. They then sampled 6 stands and revised their original type to the *Yucca glauca* / *Stipa comata* shrub-steppe of sandstone outcrops. Surveys by George Jones in the Cheyenne River Basin suggest that the original concept of the *Yucca glauca* / *Calamovilfa longifolia* type on sandstone outcrops and sandy soils applies well to the vegetation.

*Fort Laramie National Historic Site*

This community intergrades with *Stipa comata* - *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation. At some sites, especially on the BLM land south of the NHS, *Bouteloua gracilis* is dominant, and *Stipa comata* is rare or absent, probably due to grazing (*S. comata* is known to be a decreaser and *B. gracilis* an increaser in these situations; USDA Forest Service 1937). *Carex filifolia*, also an increaser (Jones 1992), contributes substantial cover in some areas. Low shrubs occasionally contribute greater than 25% cover. However, these stands are included in this community rather than being segregated as a shrubland community.

REFERENCES

Johnston, B. C. 1987. Plant associations of region two. Edition 4. R2-ECOL-87-2. USDA Forest Service, Rocky Mountain Region. Lakewood CO. 429 pp.

Jones, G. 1992. Wyoming plant community classification. Wyoming Natural Diversity Database, The Nature Conservancy, Laramie, WY. 184 pp.

Producers, R. 1978. Circle West vegetation baseline study. Final report. Circle West technical report no. 1, Energy Division, Montana Department of Natural Resources and Conservation, Helena MT. 115 pp.

Thilenius, J. F., G. R. Brown, and A. L. Medina. 1995. Vegetation on semi-arid rangelands, Cheyenne River Basin,

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Wyoming. USDA Forest Service General Technical Report RM-GTR-263. Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 60 pp.

USDA Forest Service. 1937. Range plant handbook.

## Bouteloua gracilis - Carex filifolia Herbaceous Vegetation

COMMON NAME	Blue Grama - Threadleaf Sedge Herbaceous Vegetation
SYNONYM	Blue Grama - Threadleaf Sedge Shortgrass Prairie
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Short sod temperate or subpolar grassland (V.A.5.N.e.)
ALLIANCE	<i>Bouteloua gracilis</i> Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

### RANGE

*Globally*

This community is found in eastern Wyoming.

*Fort Laramie National Historic Site*

This community occurs on ridgecrests on Bureau of Land Management lands northwest and south of the NHS.

### ENVIRONMENTAL DESCRIPTION

*Globally*

This community is typically found on level to rolling ridges and upper slopes of any aspect. Soil texture is medium to coarse with few stones. Bare soil is common (Thilenius et al. 1997).

*Fort Laramie National Historic Site*

This community occurs on high, narrow ridgecrests on small cobbles of Miocene age (Love and Christiansen 1985).

### MOST ABUNDANT SPECIES

*Globally*

<u>Statum</u>	<u>Species</u>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Carex filifolia</i>

Fort Laramie National Historic Site

<u>Statum</u>	<u>Species</u>
Herbaceous	<i>Carex filifolia</i> , <i>Paronychia depressa</i> , <i>Bouteloua gracilis</i> , <i>Heterotheca villosa</i> , <i>Hymenopappus acaulis</i>

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DIAGNOSTIC SPECIES

Globally

*Bouteloua gracilis*, *Carex filifolia*

*Fort Laramie National Historic Site*

*Paronychia depressa*, *Heterotheca villosa*, *Hymenopappus acaulis*

VEGETATION DESCRIPTION

Globally

*Bouteloua gracilis* and *Carex filifolia* are both dominant members of the herbaceous stratum. *Stipa comata*, *Calamovilfa longifolia*, *Artemisia frigida*, *Comandra umbellata* ssp. *pallida*, and *Astragalus spatulatus* can also be found. Short shrubs, such as *Rhus trilobata* and *Yucca glauca*, are sometimes scattered in this community.

*Fort Laramie National Historic Site*

This community is forb-rich (in comparison with other grassland types). The herbaceous stratum is quite low (typically less than 20 cm in height) with variable cover ranging from 10 to 75%. On broader ridgecrests, soils may be cobbly, but herbaceous cover is greater, with grass species dominant.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3?

RANK JUSTIFICATION

DATABASE CODE CEG001757

COMMENTS

Globally

This type may be a variant of *Stipa comata* - *Bouteloua gracilis* - *Carex filifolia*. Further review is needed on their relationship.

*Fort Laramie National Historic Site*

Stands at Fort Laramie NHS do not fit well within the global type description. Further review of the global type is needed to determine if they should be placed in a separate (possibly new) community or if they fall within the variation of the current global type.

REFERENCES

Love, J. D. and A. C. Christiansen. 1985. Geologic Map of Wyoming. U.S. Geologic Survey.

Thilenius, J. F., G. R. Brown, and A. L. Medina. 1997. Vegetation on semi-arid rangelands, Cheyenne River Basin, Wyoming. General Technical Report RM-GTR-263. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 60 pp.

## Spartina pectinata - Scirpus pungens Herbaceous Vegetation

COMMON NAME	Freshwater Cordgrass - Three-square Bulrush Herbaceous Vegetation
SYNONYM	Prairie Cordgrass - Bulrush Wet Meadow
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)



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**Fort Laramie National Historic Site**

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PHYSIOGNOMIC SUBGROUP Natural/semi-natural (V.A.5.N)

FORMATION Temporarily flooded temperate or subpolar grassland (V.A.5.N.j.)

ALLIANCE *Spartina pectinata* Temporarily Flooded Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Palustrine

RANGE

*Globally*

This community is found in eastern Wyoming and eastern Montana.

*Fort Laramie National Historic Site*

This community occurs adjacent to the Laramie River.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community is usually found as narrow bands along the margins of low gradient or standing open water and in depressions where the soil is saturated or flooded for short periods during the growing season (Jones and Walford 1995). Soils are fine textured and often have a high organic content.

*Fort Laramie National Historic Site*

This community occurs in narrow bands adjacent to the Laramie River on alluvial soils.

MOST ABUNDANT SPECIES

*Globally*

<u>Statum</u>	<u>Species</u>
Herbaceous	<i>Spartina pectinata</i> , <i>Scirpus pungens</i>

*Fort Laramie National Historic Site*

<u>Statum</u>	<u>Species</u>
Herbaceous	<i>Spartina pectinata</i>

DIAGNOSTIC SPECIES

*Globally*

*Spartina pectinata*, *Scirpus pungens*

*Fort Laramie National Historic Site*

*Spartina pectinata*

VEGETATION DESCRIPTION

*Globally*

This community is dominated by tall graminoids approximately 1-2 meters tall. Vegetation cover is usually high. *Spartina pectinata* is dominant and can form near monocultures. *Scirpus pungens*, *Poa pratensis*, *Carex praegracilis*, and *Carex nebrascensis* are all common constituents of the herbaceous stratum (Jones 1992). Shrubs and trees are not abundant, but *Salix* spp. can be found in many stands.

*Fort Laramie National Historic Site*

Herbaceous cover for this community is typically greater than 75%, with grasses and tall forbs 1-1.5 m in height. The community is heavily dominated by *Spartina pectinata*. Other species commonly found include *Asclepias speciosa* and *Verbena hastata*. *Bromus inermis* and *Cirsium arvense* are common on drier margins.

OTHER NOTEWORTHY SPECIES Information not available.

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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CONSERVATION RANK G3Q

RANK JUSTIFICATION

DATABASE CODE CEGL001478

COMMENTS

*Globally*

This type is poorly described across its range. The stands at Fort Laramie NHS are similar to others described elsewhere in Wyoming (Jones and Walford 1995), but as the type is better described, these stands should be compared to the global range of variation to verify their placement.

*Fort Laramie National Historic Site*

Stands of *Spartina pectinata* also occur under *Populus deltoides* along the east side of the Laramie River, west of the Fort Site. Some stands include scattered individuals of *Salix exigua* and/or *S. amygdaloides*.

REFERENCES

Jones, G. 1992. Wyoming plant community classification. Wyoming Natural Diversity Database, The Nature Conservancy, Laramie, WY. 184 pp.

Jones, G. and G. Walford. 1995. Major riparian vegetation types of eastern Wyoming. A report submitted to the Wyoming Department of Environmental Quality, Water Quality Division. 245 pp.

## Carex nebrascensis Herbaceous Vegetation

COMMON NAME	Nebraska Sedge Herbaceous Vegetation
SYNONYM	Nebraska Sedge Wet Meadow
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Seasonally flooded temperate or subpolar grassland (V.A.5.N.k)
ALLIANCE	<i>Carex nebrascensis</i> Seasonally Flooded Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE

*Globally*

This community is found in Arizona, Utah, Nevada, California, Oregon, Idaho, Montana, Wyoming, Colorado, and possibly in Washington and New Mexico.

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*Fort Laramie National Historic Site*

This community occurs in intermittently wet areas on the upper floodplain north of the canal.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community is found in nearly level, poorly drained sites which are wet much of the year (Jones 1992). In eastern Wyoming, soils were gleyed sandy, silty loam, clay loam, or clays (Jones and Walford 1995).

*Fort Laramie National Historic Site*

This community occurs on intermittently saturated alluvial soils on the upper floodplain north of the canal. This habitat is largely a product of seepage from the canal.

MOST ABUNDANT SPECIES

*Globally*

Statum	Species
Herbaceous	<i>Carex nebrascensis</i> , <i>Agrostis stolonifera</i> , <i>Juncus balticus</i>

*Fort Laramie National Historic Site*

Statum	Species
Herbaceous	<i>Carex nebrascensis</i> , <i>Carex</i> spp., <i>Juncus</i> spp., <i>Equisetum laevigatum</i>

DIAGNOSTIC SPECIES

*Globally*

*Carex nebrascensis*, *Agrostis stolonifera*, *Juncus balticus*

*Fort Laramie National Historic Site*

*Carex nebrascensis*, *Carex* spp., *Juncus* spp., *Equisetum laevigatum*

VEGETATION DESCRIPTION

*Globally*

This community is occurs as bands parallel to streams and is dominated by herbaceous species typically less than 1 meter tall. Woody species are rare. Common species include *Carex nebrascensis*, *Agrostis stolonifera*, *Scirpus pungens*, *Juncus balticus*, *Triglochin* spp., and *Equisetum* spp.

*Fort Laramie National Historic Site*

This community is locally dominated by several different species, especially *Carex nebrascensis* and *Juncus* spp. *Equisetum laevigatum* is dominant on drier margins and on drier sites.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4

RANK JUSTIFICATION

DATABASE CODE C EGL001813

COMMENTS

*Globally*

This type is poorly described across its range. As the type is better described, the placement of these Fort Laramie NHS stands into it should be re-examined.

REFERENCES

Jones, G. 1992. Wyoming plant community classification. Wyoming Natural Diversity Database, The Nature Conservancy, Laramie, WY. 184 pp.

Jones, G. and G. Walford. 1995. Major riparian vegetation types of eastern Wyoming. A report submitted to the Wyoming Department of Environmental Quality, Water Quality Division. 245 pp.

## **Typha latifolia Western Herbaceous Vegetation**

COMMON NAME	Broad-leaf Cattail Herbaceous Vegetation
SYNONYM	Broad-leaved Cattail Marsh
PHYSIOGNOMIC CLASS	Herbaceous vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (V.A.5.N)
FORMATION	Semipermanently flooded temperate or subpolar grassland (V.A.5.N.1.)
ALLIANCE	<i>Typha (angustifolia, latifolia)</i> - ( <i>Scirpus</i> spp.) Semipermanently Flooded Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Palustrine

### **RANGE**

*Globally*

This community occurs in Montana, Colorado, New Mexico, Wyoming, and western Nebraska.

*Fort Laramie National Historic Site*

This community is occasional along the Platte and Laramie Rivers, and in seepage areas north of the canal.

### **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 (Ramaley 1939, Tolstead 1942). It usually has a high organic content.

*Fort Laramie National Historic Site*

This community occurs on level sites near the river. The soils are saturated alluvium.

### **MOST ABUNDANT SPECIES**

*Globally*

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

*Fort Laramie National Historic Site*

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

### **DIAGNOSTIC SPECIES**

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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*Globally*  
*Typha latifolia*

*Fort Laramie National Historic Site*  
*Typha latifolia*

**VEGETATION DESCRIPTION**

*Globally*

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.

*Fort Laramie National Historic Site*

This community consists of stands of *Typha latifolia*, typically 1-2 m tall. Coverage is typically 50-75%. Standing water may or may not be present, depending on the season.

**OTHER NOTEWORTHY SPECIES** Information not available.

**CONSERVATION RANK** G5

**RANK JUSTIFICATION**

**DATABASE CODE** CEGL002010

**COMMENTS**

*Globally*

This community is a common element found in many wetland systems, but has received little attention. Consequently, the diagnostic features and species of this community are not well known.

*Fort Laramie National Historic Site*

At least one stand contained plants that were suggestive of *Typha angustifolia*, and the study area is within the range of the species (Dorn 1992). In this species, the staminate and pistillate spikes are not contiguous, being separated by 1-8 cm of bare rachis. However, spikes in *T. latifolia* occasionally are not contiguous (to 4 cm of bare rachis), and intermediate hybrids between the two species are not uncommon (Great Plains Flora Assoc. 1986). In plants observed at Fort Laramie NHS, the bare rachis was quite short (less than 1 cm).

**REFERENCES**

Dorn, R. D. 1992. Vascular Plants of Wyoming. 2nd ed. Cheyenne, WY: Mountain West Publishers.

Great Plains Flora Association. 1986. Flora of the Great Plains. Lawrence, KS: University Press of KS.

Ramaley, F. 1939. Sand-hill vegetation of northeastern Colorado. Ecological Monographs 9(1):1-51.

Tolstead, W. L. 1942. Vegetation of the northern part of Cherry County, Nebraska. Ecological Monographs 12(3):256-292.

## **Bromus inermis Disturbed Community**

**COMMON NAME** Smooth Brome Disturbed Community

**SYNONYM**

**PHYSIOGNOMIC CLASS** Herbaceous vegetation (V)

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)  
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)  
PHYSIOGNOMIC SUBGROUP Planted/cultivated (V.A.5.C)  
FORMATION Undefined  
ALLIANCE Undefined  
CLASSIFICATION CONFIDENCE LEVEL 3  
USFWS WETLAND SYSTEM Upland

RANGE  
*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
This community type occurs on the floodplain.

ENVIRONMENTAL DESCRIPTION  
*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
This community type occurs on level sites on alluvial soils of the floodplain.

MOST ABUNDANT SPECIES  
*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
Statum                      Species  
Herbaceous                      *Bromus inermis*

DIAGNOSTIC SPECIES  
*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
*Bromus inermis*

VEGETATION DESCRIPTION  
*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
This community is heavily dominated by *Bromus inermis*. At some sites, no other species occur. Herbaceous cover is typically 50 - 75%, with plants to 1 m in height when in bloom. Some areas mapped as this type include patches of other weedy species.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK

RANK JUSTIFICATION

DATABASE CODE Not applicable.

COMMENTS

*Fort Laramie National Historic Site*

This community is a result of extensive disturbance with subsequent invasion by weedy exotic or native species. Thus, it is not placed within the National Vegetation Classification System. This community is included for possible future management considerations and represents a relatively insignificant entity within the flora.

REFERENCES

## Sporobolus cryptandrus Disturbed Community

COMMON NAME Sand Dropseed Disturbed Community

SYNONYM

PHYSIOGNOMIC CLASS Herbaceous vegetation (V)

PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)

PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)

PHYSIOGNOMIC SUBGROUP Planted/cultivated (V.A.5.C)

FORMATION Undefined

ALLIANCE Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community occurs on sandy floodplain and is most common on the upper floodplain east of the Fort.

ENVIRONMENTAL DESCRIPTION

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community occurs on sandy soils on level sites on the floodplain. These sites were disturbed in the recent past (less than 40 years).

MOST ABUNDANT SPECIES

*Globally*

Information not available.

*Fort Laramie National Historic Site*

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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Statum                      Species  
Herbaceous                      *Sporobolus cryptandrus, Bromus tectorum*

DIAGNOSTIC SPECIES

*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
*Sporobolus cryptandrus* (as the dominant)

VEGETATION DESCRIPTION

*Globally*  
Information not available.

*Fort Laramie National Historic Site*  
This community is heavily dominated by *Sporobolus cryptandrus*. Early in the season, *Bromus tectorum* often is a codominant, but dries up and is overtopped by the *S. cryptandrus* later in the season. Patches of *Buchloe dactyloides* occasionally occur in stands of this community. Herbaceous cover is typically greater than 25%, and often in the 50-75% range. Height is typically between 0.5 and 1 m (late season).

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK

RANK JUSTIFICATION

DATABASE CODE Not applicable.

COMMENTS

*Fort Laramie National Historic Site*  
This community is a result of extensive disturbance with subsequent invasion by weedy exotic or native species. Thus, it is not placed within the National Vegetation Classification System. This community is included for possible future management considerations and represents a relatively insignificant entity within the flora.

*Sporobolus cryptandrus* occurs as a minor component in other vegetation types, such as Upland Weeds, Upland Sand and Gravel, and *Stipa comata - Bouteloua gracilis - Carex filifolia* Herbaceous Vegetation.

REFERENCES

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

COMMON NAME                      Ponderosa Pine / Little Bluestem Wooded Herbaceous Vegetation

SYNONYM                              Ponderosa Pine / Little Bluestem Savanna

PHYSIOGNOMIC CLASS              Herbaceous vegetation (V)

PHYSIOGNOMIC SUBCLASS        Perennial graminoid vegetation (V.A)



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**Fort Laramie National Historic Site**

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PHYSIOGNOMIC GROUP      Temperate or subpolar grassland with a sparse tree layer (V.A.6)

PHYSIOGNOMIC SUBGROUP      Natural/semi-natural (V.A.6.N)

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

ALLIANCE      *Pinus ponderosa* Wooded Medium-tall Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

This community is found in western South Dakota, western Nebraska, and eastern Wyoming.

*Fort Laramie National Historic Site*

This community occurs on upland sites on Bureau of Land Management lands northwest and south of the NHS. It is best developed on the northerly escarpment above the canal northwest of the NHS.

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).

*Fort Laramie National Historic Site*

This community was observed on sandy silty soils derived from whitish, soft sandstone, on levels sites and slopes to 30 degrees. It occurs on all aspects except south, but is best developed on northerly exposures (northwest through northeast). Sandstone outcrops are common. The larger are mapped as the Rock Outcrop type.

MOST ABUNDANT SPECIES

*Globally*

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

*Fort Laramie National Historic Site*

<u>Statum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Juniperus scopulorum</i>
Short shrub	<i>Rhus trilobata</i>
Herbaceous	<i>Schizachyrium scoparium, Bouteloua gracilis, Carex filifolia, Pseudoroegneria spicata</i>

DIAGNOSTIC SPECIES

*Globally*

*Pinus ponderosa, Schizachyrium scoparium*

*Fort Laramie National Historic Site*

*Pinus ponderosa, Schizachyrium scoparium*

VEGETATION DESCRIPTION

**USGS-NPS Vegetation Mapping Program**  
**Fort Laramie National Historic Site**

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*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.

*Fort Laramie National Historic Site*

This community consists of sparse canopy dominated by *Pinus ponderosa*. Distribution is quite patchy, but probably averages greater than 10%. Trees are short, typically less than 10 m in height. Scattered individuals of *Juniperus scopulorum* commonly are found at these sites. The shrub stratum also is sparse, but *Rhus trilobata* occurs fairly consistently. Herbaceous dominants vary, with *Schizachyrium scoparium* being the most common. However, *Bouteloua gracilis*, *Carex filifolia*, and/or *Pseudoroegneria spicata* can be locally abundant. Herbaceous cover usually is less than 25%, but can be greater, especially under canopy openings.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2G3

RANK JUSTIFICATION

DATABASE CODE CEGL002019

COMMENTS

*Globally*

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

*Fort Laramie National Historic Site*

Sandstone outcrops are common in this community. The larger are mapped separately as Sandstone Rock Outcrop Sparse 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.

## Upland Weedy Community

COMMON NAME Upland Weedy Community

SYNONYM

PHYSIOGNOMIC CLASS Herbaceous vegetation (V)

PHYSIOGNOMIC SUBCLASS Annual graminoid or forb vegetation (V.D)

PHYSIOGNOMIC GROUP Temperate or subpolar annual grassland or forb vegetation (V.D.2)

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**Fort Laramie National Historic Site**

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PHYSIOGNOMIC SUBGROUP Planted/cultivated (V.D.2.C)

FORMATION Undefined

ALLIANCE Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community is occurs scattered throughout the study area, but is most common on the floodplain.

ENVIRONMENTAL DESCRIPTION

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community occurs on disturbed sites on both the floodplain and in upland areas.

MOST ABUNDANT SPECIES

*Globally*

Information not available.

*Fort Laramie National Historic Site*

Statum

Species

Herbaceous

*Bromus tectorum, Salsola sp., Kochia scoparia, Helianthus annuus*

DIAGNOSTIC SPECIES

*Globally*

Information not available.

*Fort Laramie National Historic Site*

*Bromus tectorum, Salsola sp., Kochia scoparia, Helianthus annuus, Iva xanthifolia*

VEGETATION DESCRIPTION

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community typically is dominated by annual grasses and large forbs. Herbaceous cover is usually high, from 50 - 100%, with plants to 1 m in height. Small patches of *Bromus inermis* occur in this community.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK

RANK JUSTIFICATION

DATABASE CODE Not applicable

COMMENTS

*Fort Laramie National Historic Site*

*Bromus tectorum* contributes significantly more cover early in the season. The large forbs become more significant late season. *B. tectorum* also occurs as a significant component in some of the grassland communities, especially in the *Sporobolus cryptandrus* type.

This community is a result of extensive disturbance with subsequent invasion by weedy exotic or native species. Thus, it is not placed within the National Vegetation Classification System. This community is included for possible future management considerations and represents a relatively insignificant entity within the flora.

REFERENCES

## Sandstone Rock Outcrop Sparse Vegetation

COMMON NAME	Sandstone Rock Outcrop Sparse Vegetation
SYNONYM	Rock Outcrop
PHYSIOGNOMIC CLASS	Sparse vegetation (VII)
PHYSIOGNOMIC SUBCLASS	Consolidated rock sparse vegetation (VII.A)
PHYSIOGNOMIC GROUP	Sparsely vegetated cliffs (VII.A.1)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (VII.A.1.N)
FORMATION	Cliffs with sparse vascular vegetation (VII.A.1.N.a.)
ALLIANCE	Rock Outcrop / Butte Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

This type has been found only at Fort Laramie. It is likely that further review will identify it in other states as well.

*Fort Laramie National Historic Site*

The rock outcrop type occurs predominantly on Bureau of Land Management land northwest of the NHS, where it is best developed on the northerly escarpment that drops down to the Laramie River floodplain. Smaller outcrops also occur on BLM lands south of the NHS.

ENVIRONMENTAL DESCRIPTION

*Globally*

Information not available.

*Fort Laramie National Historic Site*

The rock outcrop type consists of whitish, soft sandstone of Miocene age (Love and Christiansen 1985).

MOST ABUNDANT SPECIES

*Globally*

Information not available.

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**Fort Laramie National Historic Site**

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*Fort Laramie National Historic Site*

Statum

Species

Tree canopy

*Pinus ponderosa*

Short shrub

*Rhus trilobata, Yucca glauca*

DIAGNOSTIC SPECIES

*Globally*

Information not available.

*Fort Laramie National Historic Site*

No species were sufficiently consistent to be considered diagnostic.

VEGETATION DESCRIPTION

*Globally*

Information not available.

*Fort Laramie National Historic Site*

The rock outcrop type occurs in *Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation, *Stipa comata* - *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation, and *Stipa comata* - *Yucca glauca* Herbaceous Vegetation. Vegetative cover is sparse (less than 10%), and typically includes species from the surrounding community. Common among these are *Pinus ponderosa*, *Rhus trilobata*, *Yucca glauca*, *Schizachyrium scoparium*, and *Bouteloua gracilis*.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK

RANK JUSTIFICATION

DATABASE CODE

COMMENTS

*Globally*

*Fort Laramie National Historic Site*

REFERENCES

Love, J. D. and A. C. Christiansen. 1985. Geologic Map of Wyoming. U.S. Geologic Survey.

## Riverine Sand Flats - Bars Sparse Vegetation

COMMON NAME

Riverine Sand Flats - Bars Sparse Vegetation

SYNONYM

River Sand and Gravel Bars

PHYSIOGNOMIC CLASS

Sparse vegetation (VII)

PHYSIOGNOMIC SUBCLASS

Unconsolidated material sparse vegetation (VII.C)

PHYSIOGNOMIC GROUP

Sparsely vegetated sand flats (VII.C.2)

PHYSIOGNOMIC SUBGROUP

Natural/semi-natural (VII.C.2.N)

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FORMATION                                      Temporarily flooded sand flats (VII.C.2.N.c.)

ALLIANCE                                        Sand Flats Temporarily Flooded Sparse Vegetation

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Palustrine

RANGE

*Globally*

This community occurs in Illinois, Missouri, Minnesota, Nebraska, eastern Wyoming, southern Saskatchewan, southern Manitoba, southern Ontario, and possibly Indiana and North Dakota.

*Fort Laramie National Historic Site*

This community occurs adjacent to the Laramie and Platte Rivers.

ENVIRONMENTAL DESCRIPTION

*Globally*

This community is found on rivers and streams where frequent flooding changes the substrate. Soil is absent or sometimes poorly developed. Soil that is above the water table is prone to drought due to poor water retaining capability. Parent material is sand or gravel.

*Fort Laramie National Historic Site*

This community occurs on sandy, gravelly and small-cobble soils adjacent to rivers. Soil type can change relatively rapidly (over several years?) with flood events.

MOST ABUNDANT SPECIES

*Globally*

Statum

Species

Herbaceous

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

*Fort Laramie National Historic Site*

Statum

Species

Shrub

*Salix exigua*, *Populus deltoides*

Herbaceous

*Sporobolus cryptandrus*, *Melilotus* spp., *Artemisia campestris*

DIAGNOSTIC SPECIES

*Globally*

Information not available.

*Fort Laramie National Historic Site*

No species sufficiently constant to be diagnostic.

VEGETATION DESCRIPTION

*Globally*

Vegetation cover is sparse to sometimes moderate in this community. Ground cover is in the range of 5-20%. The predominant vegetation is herbaceous although some young shrubs and trees may become established. Species composition is variable from site to site and on the same site due to frequent flooding and recolonization from nearby seed sources. Species commonly found in the herbaceous layer include *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.

*Fort Laramie National Historic Site*

This community is characterized by sparse herbaceous and shrub cover, typically 1-10%. The vegetation composition and structure can change rapidly as a result of flooding. *Salix exigua* and small *Populus deltoides* are

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**Fort Laramie National Historic Site**

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the most abundant shrubs while *Sporobolus cryptandrus*, *Artemisia campestris*, and *Melilotus* spp. are typically found in the herbaceous layer. Small patches of *Spartina pectinata* sometime occurs in wet areas near the river.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G?

RANK JUSTIFICATION

DATABASE CODE C EGL002049

COMMENTS

*Globally*

This is a primary community that develops on recently deposited or disturbed alluvial sand and gravel. It is a short lived community. Either subsequent flooding destroys the plants or secondary communities develop on the site.

*Fort Laramie National Historic Site*

Succession to and from *Salix exigua* Shrubland may occur rapidly (within a few years) depending on the extent of seasonal flooding.

REFERENCES

## Upland Sand and Gravel Sparse Vegetation

COMMON NAME	Upland Sand and Gravel Sparse Vegetation
SYNONYM	Upland Flats
PHYSIOGNOMIC CLASS	Sparse vegetation (VII)
PHYSIOGNOMIC SUBCLASS	Unconsolidated material sparse vegetation (VII.C)
PHYSIOGNOMIC GROUP	Sparsely vegetated sand flats (VII.C.2)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (VII.C.2.N)
FORMATION	Sand flats (VII.C.2.N.a.)
ALLIANCE	Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

RANGE

*Globally*

This community has not been described other than at Fort Laramie NHS. It is likely to be found elsewhere in Wyoming and nearby states.

*Fort Laramie National Historic Site*

This community occurs predominantly on the upper and lower floodplains, with occasional occurrences away from the river.

ENVIRONMENTAL DESCRIPTION

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*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community occurs on gravelly or sandy soils on the floodplain, and occasionally in drainage bottoms at upland sites.

**MOST ABUNDANT SPECIES**

*Globally*

Information not available.

*Fort Laramie National Historic Site*

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Artemisia frigida</i>
Herbaceous	<i>Artemisia campestris</i> , <i>Opuntia polyacantha</i> , <i>Sporobolus cryptandrus</i>

**DIAGNOSTIC SPECIES**

*Globally*

Information not available.

*Fort Laramie National Historic Site*

*Artemisia campestris*, *Opuntia polyacantha*

**VEGETATION DESCRIPTION**

*Globally*

Information not available.

*Fort Laramie National Historic Site*

This community typically consists of a low herbaceous stratum (less than 0.5 m in height) with 10-50% cover. Shrub cover is variable or absent, with *Artemisia frigida* occurring most frequently. *Cryptogammic* soil is often well developed.

**OTHER NOTEWORTHY SPECIES** Information not available.

**CONSERVATION RANK**

**RANK JUSTIFICATION**

**DATABASE CODE** Information not available.

**COMMENTS**

*Globally*

This community has not been described other than at Fort Laramie NHS. It likely occurs elsewhere, but it needs further review for a complete rangewide description.

*Fort Laramie National Historic Site*

Sites away from the river (washes and blowouts) are somewhat different than floodplain occurrences. *Opuntia polyacantha* can occur at these sites, but *Artemisia campestris* was not observed. *A. filifolia* is occasional; *Ambrosia psilostachya* and *Calamovilfa longifolia* also were locally common.

**REFERENCES**