

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 sub irrigated (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

Statum

Tree canopy

Shrub

Herbaceous

Species

Populus deltoides, Acer negundo, Fraxinus pennsylvanica

Symphoricarpos occidentalis

Elymus trachycaulus, Pascopyrum smithii

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

Fort Laramie National Historic Site

Statum

Tree canopy

Subcanopy

Short shrub

Species

Populus deltoides, *Salix amygdaloides*

Fraxinus pennsylvanica, *Populus deltoides*, *Acer negundo*

Symphoricarpos occidentalis

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.

Fort Laramie National Historic Site

Symphoricarpos occidentalis is often absent or poorly developed in this community. Stands of *S. occidentalis* without tree cover are treated as extensions of the nearby stands of *Populus deltoides*. In some stands, *P. deltoides*

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

is absent, and *Salix amygdaloides* dominates the canopy.

REFERENCES

Hansen, P., K. Boggs, R. Pfister, and J. Joy. 1990. Classification and management of riparian and wetland sites in central and eastern Montana. Draft version 2. Montana Riparian Association, Montana Forest and Conservation Experiment Station, School of Forestry, University of Montana, Missoula.

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

Jones, G. P. and G. M. Walford. 1995. Major riparian vegetation types of eastern Wyoming. Grant Number 9-01136. Report Submitted to the Wyoming Department of Environmental Quality, Water Quality Division. Laramie, WY. 245 p.

Thilenius, J. F., G. R. Brown, and A. L. Medina. 1995. Vegetation on semi-arid rangelands, Cheyenne River Basin, Wyoming. General Technical Report RM-GTR-263. USDA Forest Service, Rocky Mountain Range and Forest Experiment Station, Fort Collins, CO. 60 p.

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).

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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*.

Fort Laramie National Historic Site

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 C EGL001197

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.

REFERENCES

- Bellah, R. G. and L. C. Hulbert. 1974. Forest succession on the Republican River floodplain in Clay County, Kansas. *The Southwestern Naturalist* 19(2):155-166.
- 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.
- Wilson, R. E. 1970. Succession in stands of *Populus deltoides* along the Missouri River in southeastern South Dakota. *American Midland Naturalist* 83(2):330-342.

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 (Godfred 1994).

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.

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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 C EGL001577

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

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

Fort Laramie National Historic Site

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

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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 C EGL002037

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.

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.

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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.

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

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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

Stratum

Shrub

Herbaceous

Species

Yucca glauca

Calamovilfa longifolia, *Stipa comata*, *Bouteloua gracilis*

Fort Laramie National Historic Site

Stratum

Shrub

Herbaceous

Species

Artemisia filifolia, *Yucca glauca*

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

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.

CONSERVATION RANK G2?

RANK JUSTIFICATION

DATABASE CODE C EGL001706

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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 (Prodgers 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 (Prodgers 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.
- Prodgers, 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, 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>

DIAGNOSTIC SPECIES

Globally

Bouteloua gracilis, *Carex filifolia*

Fort Laramie National Historic Site

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

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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)

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

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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.

CONSERVATION RANK G3Q

RANK JUSTIFICATION

DATABASE CODE CEGL001478

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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.

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).

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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

Herbaceous

Species

Carex nebrascensis, Agrostis stolonifera, Juncus balticus

Fort Laramie National Historic Site

Statum

Herbaceous

Species

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

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

Statum

Herbaceous

Species

Typha latifolia

Fort Laramie National Historic Site

Statum

Herbaceous

Species

Typha latifolia

DIAGNOSTIC SPECIES

Globally

Typha latifolia

Fort Laramie National Historic Site

Typha latifolia

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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)

PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)

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

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

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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.

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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

Statum

Herbaceous

Species

Sporobolus cryptandrus, Bromus tectorum

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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)
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.)

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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</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>

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</i> , <i>Bouteloua gracilis</i> , <i>Carex filifolia</i> , <i>Pseudoroegneria spicata</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Schizachyrium scoparium*

Fort Laramie National Historic Site

Pinus ponderosa, *Schizachyrium scoparium*

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.

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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)

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

FORMATION Undefined

ALLIANCE Undefined

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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.

Fort Laramie National Historic Site

<u>Statum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Short shrub	<i>Rhus trilobata, Yucca glauca</i>

DIAGNOSTIC SPECIES

Globally

Information not available.

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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)
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

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

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

Herbaceous

Species

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

Fort Laramie National Historic Site

Statum

Shrub

Herbaceous

Species

Salix exigua, *Populus deltoides*

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 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?

USGS-NPS Vegetation Mapping Program
Fort Laramie National Historic Site

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

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.

USGS-NPS Vegetation Mapping Program

Fort Laramie National Historic Site

MOST ABUNDANT SPECIES

Globally

Information not available.

Fort Laramie National Historic Site

Stratum

Species

Shrub

Artemisia frigida

Herbaceous

Artemisia campestris, *Opuntia polyacantha*, *Sporobolus cryptandrus*

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