

Pascopyrum smithii - Nassella viridula Herbaceous Vegetation

COMMON NAME Western Wheatgrass - Green Needlegrass Herbaceous Vegetation
SYNONYM Western Wheatgrass - Green Needlegrass 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 (V.A.5.N.c)
ALLIANCE PASCOPYRUM SMITHII HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Terrestrial

RANGE

Badlands National Park

Large stands of western wheatgrass - green needlegrass occur within the Park, occupying flats, swales, and moderate slopes with clay-loam soils.

Globally

This community is found in Wyoming, Montana, Saskatchewan, Manitoba, North Dakota, and South Dakota.

ENVIRONMENTAL DESCRIPTION

Badlands National Park

Western wheatgrass - green needlegrass stands occur on deeper soils within the Park, typically on flats on plains and buttes and moderate hillslopes of all aspects.

Globally

This community is found at the bottom of narrow valleys, on stream terraces, and on rolling uplands (Jones 1992, USFS 1992). Soils are fine-textured (clays, silty clays, clay loams, or rarely loams) and well-drained. The soil profile is typically well developed. The parent material is siltstone and mixed sedimentary rock (USFS 1992). This community usually occurs on level or nearly level ground but sometimes may be on moderate slopes of any aspect.

MOST ABUNDANT SPECIES

Badlands National Park

| <u>Stratum</u> | <u>Species</u> |
|----------------|--|
| Herbaceous | <i>Bromus japonicus</i> , <i>Bouteloua gracilis</i> , <i>Nassella viridula</i> , <i>Pascopyrum smithii</i> |

Globally

| <u>Stratum</u> | <u>Species</u> |
|----------------|--|
| Graminoid | <i>Nassella viridula</i> , <i>Pascopyrum smithii</i> |

CHARACTERISTIC SPECIES

Badlands National Park

Pascopyrum smithii, *Nassella viridula*, *Bouteloua gracilis*, *Buchloe dactyloides*, *Bromus japonicus*, *Poa pratensis*

Globally

Nassella viridula, *Pascopyrum smithii*

OTHER NOTABLE SPECIES

Badlands National Park

Globally

| <u>Stratum</u> | <u>Species</u> |
|----------------|---|
| Graminoid | <i>Elymus lanceolatus</i> , <i>Koeleria macrantha</i> , <i>Stipa comata</i> |

VEGETATION DESCRIPTION

Badlands National Park

Stands of western wheatgrass - green needlegrass typically have moderate to dense herbaceous cover, ranging from 45-100%. Dominant graminoids include western wheatgrass (*Pascopyrum smithii*), green needlegrass (*Stipa viridula*), blue grama (*Bouteloua gracilis*), and Japanese brome (*Bromus japonicus*). Species dominance varies locally within a stand, particularly for green needlegrass, which is usually present at less than 10% foliar cover, but on some flats it may provide up to 65% vegetative cover. Other common herbaceous species present include white sagebrush (*Artemisia ludoviciana*), white aster (*Aster ericoides*), and scurfpea (*Psoralidium tenuiflorum*).

In stands of western wheatgrass - green needlegrass at Badlands NP, species dominance varies within the stand; therefore, multiple points were sampled to characterize the type.

USGS-NPS Vegetation Mapping Program Badlands National Park

Globally

This community is dominated by midgrasses, generally between 0.6 and 1 m tall. The vegetation cover tends to be moderate to high, with almost all of the canopy provided by graminoids (Redmann 1975, USFS 1992). The dominant species are *Pascopyrum smithii* and *Nassella viridula*, although *Elymus lanceolatus* (another rhizomatous wheatgrass that is similar in morphology and ecology to *Pascopyrum smithii*) is the dominant species in some stands. At least 5% canopy cover of *Nassella viridula* may be diagnostic for this association. Other common grasses are *Stipa comata*, *Koeleria macrantha*, *Poa secunda* (= *Poa juncifolia*), *Poa pratensis*, *Sporobolus cryptandrus*, and, on sandier soils, *Calamovilfa longifolia*. Shorter graminoids are less common, but may include *Bouteloua gracilis*, *Carex duriuscula* (= *Carex eleocharis*), *Carex filifolia*, *C. inops* ssp. *heliophila*, and *C. pensylvanica*. These species are present in many stands, but they usually contribute little cover. The wheatgrass basin association of Nebraska (Steinauer and Rolfsmeier 1997), which may belong to this association, also contains *Schizachyrium scoparium*. Cheatgrasses (*Bromus commutatus*, *Bromus japonicus*, *Bromus tectorum*) are present in many stands and contribute substantial cover in some. The forbs *Aster falcatus*, *Astragalus* spp., *Achillea millefolium*, *Sphaeralcea coccinea*, *Artemisia ludoviciana*, *Lepidium densiflorum*, and *Vicia americana* are also typical of this community. *Artemisia cana* ssp. *cana* or *Artemisia tridentata* ssp. *wyomingensis* may be present, often as scattered shrubs contributing little cover. Stands with denser shrubs are transitional to shrub-herbaceous vegetation.

CONSERVATION RANK G3G4. The G3G4 rank is based on the broad geographic distribution and the relatively broad environmental requirements of this association. The prevalence of cheatgrass in many stands, though, may necessitate a review of this rank.

DATABASE CODE CEGL001583

MAP UNITS The western wheatgrass - green needlegrass mixedgrass prairie is mapped as Map Class 19 (Western wheatgrass - Green needlegrass Grassland) on the Badlands NP vegetation map. It should be understood that only stands observed during field work are delineated, because there is no distinction between aerial photo signatures of this class and that of the western wheatgrass herbaceous alliance types. The two types were combined for accuracy assessment.

SIMILAR ASSOCIATIONS

Pascopyrum smithii - *Bouteloua gracilis* - *Carex filifolia* Herbaceous Vegetation (Drier graminoids, such as *Bouteloua gracilis* or *Carex filifolia*, tend to predominate in this association.)

COMMENTS

Badlands National Park

It's possible that other western wheatgrass associations could be recognized at Badlands NP. However, this type and the Western Wheatgrass - Blue Grama - Threadleaf Sedge Herbaceous Vegetation association (CEGL001579) appear to be the main ones.

Only occasionally is green needlegrass equal to or greater than western wheatgrass in stand dominance. In many cases, green needlegrass provides less than 10% vegetative cover. During field work, several large stands of western wheatgrass - green needlegrass mixedgrass prairie were sampled to adequately characterize the type. The stands are found more commonly in the North Unit, north of the badlands wall, but large stands were observed on Sheep Mountain Table and on Stronghold Table in the South Unit.

REFERENCES

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- Johnston, B. C. 1987. Plant associations of region two: potential plant communities of Wyoming, South Dakota, Nebraska, Colorado, and Kansas. Edition 4. USDA Forest Service, Rocky Mountain Region. R2-Ecol-87-2. 429 pp.
- Jones, G. 1992. Wyoming plant community classification (Draft). Wyoming Natural Diversity Database, Laramie, WY. 183 pp.
- Redmann, R. E. 1975. Production ecology of grassland plant communities in western North Dakota. Ecol. Mono. 45:83-106.
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