

Badlands Sparse Vegetation Complex

COMMON NAME Badlands Sparse Vegetation Complex
SYNONYM Badlands Complex
PHYSIOGNOMIC CLASS ()
PHYSIOGNOMIC SUBCLASS ()
PHYSIOGNOMIC GROUP ()
PHYSIOGNOMIC SUBGROUP ()
FORMATION ()
ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM

RANGE

Theodore Roosevelt National Park

The Badlands Sparse Vegetation Complex occurs throughout Theodore Roosevelt National Park. The formations occur as exposed cliffs, ridges, slopes, narrow gorges, buttes, mounds, fans, and drainages.

Globally

This complex is found in the badlands formations of the western Great Plains of the United States and Canada.

ENVIRONMENTAL DESCRIPTION

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The area is part of the unglaciated region of Missouri River Plateau. Stratified beds of soft shales, clays, silts, lignite, and sandstone of the Tertiary Tongue River Formation of the Fort Union Group characterize the soils. These soft and highly erodible substrates have been severely dissected by the Little Missouri River and its associated tributaries. The result is a badlands type topography characterized by an intricate maze of gullies and ravines separated by relatively large upland plateaus and small erosional-proof buttes capped by scoria. Topographic relief varies considerably from 30 m at the southern edge of the region to more than 150 m at the northern end. The badlands formations extend for about 180 km along both sides of the River and vary in width from 11 km in the south to 56 km in the north.

Globally

Badlands are produced by a combination of factors, including elevation, type of rainfall, carving action of streams, and a particular material. Badlands are basically a type of mature dissection with a finely-textured drainage pattern and steep slopes. Badlands can only form where the land lies well above its local base level. The land must also be easily erodable, or vegetation cover will stabilize the surface. An arid climate will also discourage vegetation growth and will tend to have infrequent, but torrential, rains with great eroding action. In the Great Plains, the geologic formations forming the badlands complex include Cretaceous shales, Oligocene siltstones, sandstones, and clayey mudstones (Von Loh et al. 1999). The soils in the Great Plains badlands complex are generally poorly consolidated clays with bands of sandstone or isolated conglomerates (Froiland 1990).

MOST ABUNDANT SPECIES

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<u>Stratum</u>	<u>Species</u>
Shrub	<i>Gutierrezia sarothrae</i> , <i>Artemisia tridentata</i> , <i>Atriplex confertifolia</i> , <i>Krascheinnikovia lanata</i>
Herbaceous	<i>Sueda depressa</i> , <i>Distichlis spicata</i>

Globally

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Eriogonum pauciflorum</i> , <i>Gutierrezia sarothrae</i> , <i>Opuntia polyacantha</i>
Forb	<i>Atriplex argentea</i> , <i>Cryptantha thyrsoiflora</i> , <i>Grindelia squarrosa</i>

CHARACTERISTIC SPECIES

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Gutierrezia sarothrae, *Artemisia tridentata*, *Atriplex confertifolia*, *Krascheinnikovia lanata*,
Sueda depressa, *Distichlis spicata*

USGS-NPS Vegetation Mapping Program
Theodore Roosevelt National Park

Globally

Atriplex argentea, *Atriplex canescens*, *Cryptantha thyrsoiflora*, *Eriogonum pauciflorum*, *Grindelia squarrosa*, *Gutierrezia sarothrae*, *Opuntia polyacantha*

OTHER SPECIES (GLOBAL)

Stratum

Forb

Species

Astragalus barrii, *Eriogonum visherii*, *Oenothera cespitosa*

VEGETATION DESCRIPTION

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Foliar cover on the Badlands Sparse Vegetation Complex is usually low, about 5% and rarely exceeds 10%. Plant density and height is quite low on these sites. The least amount of vegetation occurs on the steep, south facing slopes. On these sites, the transition to vegetation types on the lower slopes is fairly abrupt. On other sites, the vegetation may grow in patches and in rows associated with the sedimentary material. Species composition is generally quite consistent across the sites.

Globally

This badlands community complex varies from stands with virtually no vegetation (eroding slopes and badland walls) to stands that may exceed 10% vegetative cover, but more often are less than 5%. On level terrain, the vegetation is relatively evenly distributed, but on steeper slopes and cliffs the vegetation may grow in patches and in rows or seams. Plant species that are nearly always present include the dwarf-shrubs *Eriogonum pauciflorum*, *Gutierrezia sarothrae*, *Opuntia polyacantha*, *Atriplex argentea*, *Cryptantha thyrsoifolia*, and the forb *Grindelia squarrosa*. *Atriplex canescens* dwarf-shrubs were observed throughout the type, but were typically short-statured and scattered in distribution (Von Loh *et al.* 1999). *Eriogonum visherii*, a spring annual, is a rare plant found primarily in badlands in the Dakotas (Froiland 1990). *Astragalus barrii* is another uncommon Great Plains species that is associated with these badlands habitats (Froiland 1990).

CONSERVATION RANK G5. This badlands complex is somewhat restricted in distribution, occurring in selected localities where geologic conditions are right for its formation, but it is a rugged, persistent type, with extensive areas protected.

DATABASE CODE CECX002004

COMMENTS

Four associations are currently included in the complex, based on work in South Dakota: CEGL002050, CEGL002195, CEGL002294, CEGL00005270. Other associations may be added with further range-wide review: e.g. CEGL000993.

REFERENCES

- Froiland, S.G. 1990. Natural History of the Black Hills and Badlands. The Center For Western Studies, Augustana College, Sioux Falls, South Dakota. 224 pp.
- Von Loh, J., D. Cogan, D. Faber-Langendoen, D. Crawford, and M. Pucherelli. 1999. USGS-NPS Vegetation Mapping Program, Badlands National Park, South Dakota (Final Report). Technical Memorandum No. 8260-00-02, U.S. Bureau of Reclamation Technical Service Center. Denver Colorado.