

## **Appendix 8.**

### **Field Key to the NVSC Vegetation Associations at Wind Cave National Park**

## FIELD KEY TO THE PLANT COMMUNITIES OF WIND CAVE NATIONAL PARK

*How to Use the Key*---Go through the key on this page to arrive at the appropriate group of plant communities. On the following pages, communities are arranged by groups. Included are brief descriptions with relevant field characteristics for each type. Read through the appropriate group to find the type that matches best. It may be necessary to check other community types listed in the Similar types field.

There will be some stands that do not match any of the descriptions exactly. Many plant communities are variable in composition, and while the descriptions attempt to address variability, there will be exceptions. Stands can represent transition zones between two types. There can be small inclusions of one type in larger stands of another. It is important to survey sufficiently large stands when classifying, and to base decisions on representative areas within stands.

1. Vegetative cover greater than 10%; tree canopy cover usually greater than 20%, sometimes 10-20%  
**FORESTS AND WOODLANDS**
  - 1.1. Conifers with greater than 50% of total tree cover  
**CONIFER FORESTS AND WOODLANDS**
    - 1.2.1.2 **Coniferous forest or woodland; shrub cover typically >20%.**
    - 1.2.1.3 **Coniferous forest or woodland; shrub cover typically <20%; understory graminoid-dominated**
  - 1.2. Broadleaf trees with greater than 50% of total tree cover  
**BROADLEAF FORESTS AND WOODLANDS**
2. Vegetative cover greater than 10%; tree cover less than 10%; shrub cover typically greater than 20%  
**SHRUBLANDS**
3. Vegetative cover greater than 10%; tree cover less than 10%; shrub cover less than 20%; herbaceous cover usually greater than 20%, sometimes 10-20%  
**HERBACEOUS VEGETATION**
  - 3.1. Streamsides, wet meadows, ponds and other wet or seasonally-wet sites  
**RIPARIAN/WET MEADOW HERBACEOUS VEGETATION**
  - 3.2. Terrestrial, upland sites; i.e. rarely wet  
**UPLAND HERBACEOUS VEGETATION**
4. Vegetative cover less than 10%  
**SPARSE VEGETATION**

## FORESTS AND WOODLANDS

### 1.1. CONIFER FORESTS AND WOODLANDS

#### 1.2.1.2. Coniferous forest or woodland; shrub cover typically greater than 20%.

CEGL000859 *Pinus ponderosa* / *Juniperus communis* Woodland

#### **PONDEROSA PINE/COMMON JUNIPER WOODLAND**

*Dominant or indicator species:* Ponderosa pine dominates the canopy, and subcanopy if present. Common juniper is the most abundant shrub with cover often 20-50%. Where tree cover is dense, shrub cover is sparse. Herbaceous cover typically is sparse.

*Variability:* As for most of the pine types in the Black Hills, pine cover is variable but often is greater than 50%; there may not be a clear distinction between canopy and subcanopy. In stands with heavy pine cover, little herbaceous growth is present, and even common juniper may be sparse.

*Habitat characteristics:* This type occurs on moderate to steep slopes on all aspects except southerly.

CEGL000192 *Pinus ponderosa* / *Prunus virginiana* Forest

#### **PONDEROSA PINE/CHOCKECHERRY FOREST**

*Dominant or indicator species:* Ponderosa pine dominates the canopy, and subcanopy if present. Chokecherry is the dominant shrub, with cover greater than 20%.

*Variability:* As for most of the pine types in the Black Hills, pine cover is variable, but usually is greater than 50%; there may not be a clear distinction between canopy and subcanopy. The chokecherry component is variable in height and cover. Other shrubs may be present including gooseberry, common juniper and ninebark.

*Habitat characteristics:* At WICA, this type typically occurs on lowermost slopes, often northerly.

*Similar types:* Stands with only dead trees standing (post burn) are classified as chokecherry shrubland.

#### 1.2.1.3. Coniferous forest or woodland; shrub cover typically less than 20%; understory graminoid-dominated

CEGL000849 *Pinus ponderosa* / *Carex inops* ssp. *heliophila* Woodland

#### **PONDEROSA PINE/SUNSEGE WOODLAND**

*Dominant or indicator species:* Ponderosa pine dominates the canopy, and subcanopy if present. Shrub cover typically is sparse or absent. The herbaceous stratum is graminoid-dominated, with sunsedge the most abundant species. Poverty oatgrass often is present.

*Variability:* As for most of the pine types in the Black Hills, pine cover is variable (20-60% or occasionally greater), and there may not be a clear distinction between canopy and subcanopy. Herbaceous cover is variable; with less herbaceous cover in stands with denser canopy cover.

*Habitat characteristics:* This type has been found on gentle to moderate slopes of all aspects, but is less common on northerly aspects.

*Similar types:* At WICA the ponderosa pine / sunsedge type often occurs in mosaics with ponderosa pine / western wheatgrass and ponderosa pine / little bluestem.

CEGL000188 *Pinus ponderosa / Pascopyrum smithii* Woodland

**PONDEROSA PINE/WESTERN WHEATGRASS WOODLAND**

*Dominant or indicator species:* Ponderosa pine dominates the canopy, and subcanopy if present. Shrubs usually are sparse or absent. The herbaceous stratum is variable in composition; abundant graminoids include western wheatgrass, green needlegrass, needle-and-thread and porcupine grass.

*Variability:* As for most of the pine types in the Black Hills, pine cover is variable (20-60% or occasionally 10-20%), and there may not be a clear distinction between canopy and subcanopy. Graminoid dominance can be variable even within stands. Western wheatgrass may be sparse or even absent. This type needs better definition in the Black Hills.

*Habitat characteristics:* This type occurs on gentle to moderately-steep slopes of all aspects.

*Similar types:* At WICA, the ponderosa pine / western wheatgrass type often occurs in mosaics with ponderosa pine / sunsedge and ponderosa pine / little bluestem.

CEGL000201 *Pinus ponderosa / Schizachyrium scoparium* Woodland

**PONDEROSA PINE/LITTLE BLUESTEM WOODLAND**

*Dominant or indicator species:* Ponderosa pine dominates the canopy, and subcanopy if present. Rocky Mountain juniper may be present but cover is less than 20%. Shrub cover is typically sparse. Little bluestem and other dry prairie graminoids such as side-oats grama dominate the herbaceous stratum.

*Variability:* As for most of the pine types in the Black Hills, pine cover is variable (20-60%; occasionally 10-20%); there may not be a clear distinction between canopy and subcanopy.

*Habitat characteristics:* This type occurs on gentle to steep SE-, S- and SW-facing slopes.

*Similar types:* At WICA, the ponderosa pine / little bluestem type often occurs in mosaics with ponderosa pine / western wheatgrass and ponderosa pine / sunsedge.

## 1.2. BROADLEAF FORESTS AND WOODLANDS

CEGL000660 *Populus deltoides / Symphoricarpos occidentalis* Woodland

**COTTONWOOD/WESTERN SNOWBERRY FLOODPLAIN WOODLAND**

*Dominant or indicator species:* Plains cottonwood is the dominant canopy species, with greater than 10% cover and greater than 50% of the total canopy cover. Western snowberry forms thickets in the understory. Other hardwoods such as boxelder and green ash may be present, but are not abundant.

*Variability:* Cottonwood cover is variable both among and within stands. Distribution is typically patchy. Other hardwoods may be present.

*Habitat characteristics:* Floodplains; level sites on alluvium.  
*Similar types:* green ash - American elm / western snowberry forest.

CEGL002082      *Fraxinus pennsylvanica* - *Ulmus americana* / *Symphoricarpos occidentalis*  
Forest  
**GREEN ASH - AMERICAN ELM / WESTERN SNOWBERRY  
FOREST**

*Dominant or indicator species:* Green ash with some cottonwood forms a closed canopy/subcanopy. Understory composition for this type is varied depending on the presence of grazing.

*Variability:* Not known for Black Hills stands.

*Habitat characteristics:* Floodplains; level sites on alluvium.

*Similar types:* Cottonwood/western snowberry floodplain woodland.

CEGL000628      *Acer negundo* / *Prunus virginiana* Forest  
**BOX ELDER / CHOKECHERRY FOREST**

*Dominant or indicator species:* Boxelder is the most consistent canopy species, typically with greatest cover. Chokecherry may be absent. Western snowberry and 3-leaved sumac may be present. Other diagnostic understory species are not known for Black Hills stands.

*Variability:* Chokecherry is variable in cover and height, and occasionally absent. Hardwoods such as green ash, American elm, bur oak and paper birch may be present, or locally dominant.

*Habitat characteristics:* Drainage bottoms.

## 2. SHRUBLANDS

CEGL001173      *Salix bebbiana* Shrubland  
**BEAKED (BEBB=S) WILLOW SCRUB**

*Dominant or indicator species:* Beaked (Bebb=s) willow dominates the shrub stratum. The herbaceous stratum typically includes riparian/wet meadow species, such as Canadian reedgrass, water sedge, beaked sedge, Nebraska sedge and redtop bent.

*Variability:* Herbaceous associates are variable.

*Habitat characteristics:* Streambanks and wet meadows at higher elevations.

*Similar types:* In the Black Hills, multiple riparian types often occur together in mosaics of small patches.

CEGL001086      *Cercocarpus montanus* / *Bouteloua curtipendula* Shrubland  
**MOUNTAIN MAHOGANY / SIDE-OATS GRAMA SHRUBLAND**

*Dominant or indicator species:* Mountain mahogany strongly dominates this type. Herbaceous cover is variable; common species include side-oats grama and little bluestem. Scattered ponderosa pine or Rocky Mountain juniper may be present.

*Variability:* Shrub stratum is fairly consistent; herbaceous cover is variable.

*Habitat characteristics:* This type typically is found on rocky sites underlain by limestone. Small patches may occur in areas of other rock types.

CEGL001394      *Juniperus horizontalis* / *Schizachyrium scoparium* Dwarf-Shrubland  
**CREEPING JUNIPER / LITTLE BLUESTEM  
DWARF-SHRUBLAND**

*Dominant or indicator species:* Creeping juniper is the dominant shrub, with greater than 20% cover. Herbaceous cover is highly variable, ranging from less than 10% on sparsely-vegetated sites to greater than 60% in grasslands.

*Variability:* See above.

*Habitat characteristics:* Only a few stands of this type have been surveyed in the Black Hills. Habitat is dry, but otherwise not well characterized.

CEGL001108      *Prunus virginiana* Shrubland  
**CHOCKECHERRY SHRUBLAND**

*Dominant or indicator species:* Shrub cover is greater than 50%, with chokecherry dominant, or co-dominant with 3-leaved sumac. Western snowberry may be present.

*Variability:* 3-leaved sumac and western snowberry are variable in cover, and may be absent.

*Habitat characteristics:* At WICA, this type occurs in drainage bottoms and on lower slopes, often in prairie. It also has been found around rock outcrops in those areas.

*Similar types:* This type may occur with western snowberry shrublands, with transition zones between the two. Ponderosa pine / chokecherry stands that have burned sufficiently to kill pine may exist for some period of time as chokecherry shrublands.

CEGL001131      *Symphoricarpos occidentalis* Shrubland  
**WESTERN SNOWBERRY SHRUBLAND**

*Dominant or indicator species:* Western snowberry is strongly dominant, and total shrub cover often is greater than 60%.

*Variability:* This type may occur with chokecherry shrublands, with transition zones between the two.

*Habitat characteristics:* This type occurs in riparian zones, and on upland sites in dry draws and occasional slopes.

*Similar types:* Stands of this type may occur with chokecherry shrublands, with transition zones between the two.

### **3. HERBACEOUS VEGETATION**

#### **3.1. RIPARIAN/WET MEADOW HERBACEOUS VEGETATION**

CEGL001477      *Spartina pectinata* - *Carex* spp. Herbaceous Vegetation  
**PRAIRIE CORDGRASS - SEDGE WET MEADOW**

*Dominant or indicator species:* as named.

*Variability:* Graminoid dominance typically is patchy. In the Black Hills, multiple riparian types often occur together in mosaics of small patches.

*Habitat characteristics:* Stream banks and wet meadows.

CEGL005263            Western Great Plains Streamside Vegetation  
**WESTERN GREAT PLAINS STREAMSIDE VEGETATION**

*Dominant or indicator species:* redbow bent, mannagrass, poison hemlock, willowherb, speedwell and others.

*Variability:* Dominance is variable and typically patchy. In the Black Hills, multiple riparian types often occur together in mosaics of small patches.

*Habitat characteristics:* Streambanks.

CEGL001833            *Eleocharis palustris* Herbaceous Vegetation  
**CREEPING SPIKERUSH WET MEADOW**

*Dominant or indicator species:* as named.

*Variability:* This type may occur in mosaics with other wetland types.

*Habitat characteristics:* Wetlands with open water for at least part of the season.

### 3.2. UPLAND HERBACEOUS VEGETATION

CEGL001681            *Schizachyrium scoparium - Bouteloua (curtipendula, gracilis) / Carex filifolia* Herbaceous Vegetation  
**NORTHERN GREAT PLAINS LITTLE BLUESTEM PRAIRIE**

*Dominant or indicator species:* Little bluestem is dominant, with side-oats and blue grama typically present. Thread-leaved sedge may be present. The more mesophytic grasses such as green needlegrass, needle-and-thread, western wheatgrass and Kentucky bluegrass are absent or minor components.

*Variability:* see above.

*Habitat characteristics:* At WICA, this type occurs on drier sites and on steeper slopes than the western wheatgrass - green needlegrass and Kentucky bluegrass types which prefer gently rolling terrain.

*Similar types:* The western wheatgrass - green needlegrass, Kentucky bluegrass and Northern Plains big bluestem prairie types can include patches of little bluestem.

CEGL002037            *Stipa comata - Bouteloua gracilis - Carex filifolia* Herbaceous Vegetation  
**NEEDLE-AND-THREAD - BLUE GRAMA MIXEDGRASS PRAIRIE**

*Dominant or indicator species:* as named.

*Variability:* Thread-leaved sedge may be absent.

*Habitat characteristics:* At WICA, this type occurs on rocky drier sites in prairies, and is best developed on the rocky summits of broad benches in the northeast part of the park.

*Similar types:* Western wheatgrass - green needlegrass herbaceous vegetation.

CEGL001583      *Pascopyrum smithii* - *Nassella viridula* Herbaceous Vegetation  
**WESTERN WHEATGRASS - GREEN NEEDLEGRASS  
MIXDGRASS PRAIRIE**

*Dominant or indicator species:* as named.

*Variability:* Local dominance varies; in addition to the species named above, Kentucky bluegrass and needle-and-thread can be locally dominant. Scurfpea may be abundant.

*Habitat characteristics:* Rolling topography.

*Similar types:* needle-and-thread - blue grama mixedgrass prairie; Kentucky bluegrass herbaceous vegetation

CEGL003081      *Poa pratensis* Herbaceous Vegetation  
**KENTUCKY BLUEGRASS HERBACEOUS VEGETATION**

*Dominant or indicator species:* as named.

*Variability:* Other graminoids may be present in small amounts. Scurfpea may be abundant.

*Habitat characteristics:* Rolling topography.

*Similar types:* western wheatgrass - green needlegrass herbaceous vegetation

CEGL002205      *Andropogon gerardii*-*Schizachyrium scoparium* N. Plains Hillslope Herb.  
Veg.  
**NORTHERN PLAINS BIG BLUESTEM PRAIRIE**

*Dominant or indicator species:* Big bluestem is dominant, forming large patches to the exclusion of other species. Little bluestem is present, with variable cover.

*Variability:* Little bluestem cover is variable.

*Habitat characteristics:* Moderate to steep slopes of variable aspect, often rocky.

*Similar types:* Big bluestem may occur in many of the grassland types at WICA, and may be locally or seasonally dominant. Big bluestem dominance also can vary from year to year, based on the season's moisture regime.

new      *Aristida purpurea* - *Dysodia papposa* Herbaceous Vegetation = Prairie Dog  
Town Grassland Complex  
**PURPLE THREE-AWN - FETID MARIGOLD HERBACEOUS  
VEGETATION = PRAIRIE DOG TOWN GRASSLAND COMPLEX**

*Dominant or indicator species:* As is characteristic for recently-disturbed sites, species dominance is highly variable. Purple three-awn, fetid marigold and big-bract verbena are among the more common and consistent dominants.

*Habitat characteristics:* prairie dog towns.

new      Introduced Weedy Graminoid Herbaceous Vegetation  
**INTRODUCED WEEDY GRAMINOID HERBACEOUS  
VEGETATION**

*Dominant or indicator species:* Introduced graminoids such as smooth brome, Japanese brome and cheatgrass.

*Habitat characteristics:* Disturbed sites.

#### 4. SPARSE VEGETATION

CEGL002055 *Pinus ponderosa* Limestone Cliff Sparse Vegetation  
**PONDEROSA PINE LIMESTONE CLIFF**

*Dominant or indicator species:* This type consists of scattered ponderosa pine. Chokecherry and 3-leaved sumac often are associated with small outcrops.

*Variability:* Shrub and herbaceous cover and composition are variable.

*Habitat characteristics:* Limestone cliffs and outcrops.

CEGL002295 Black Hills Rock Outcrop Sparse Vegetation  
**BLACK HILLS ROCK OUTCROP**

*Dominant or indicator species:* This type consists of scattered ponderosa pine. 3-leaved sumac, common juniper and bearberry may be present.

*Variability:* Shrub and herbaceous cover and composition are variable.

*Habitat characteristics:* Igneous and metamorphic rock outcrops.

CEGL002294 Shale Barrens Slopes Sparse Vegetation  
**SHALE BARREN SLOPES**

*Dominant or indicator species:* Not known.

*Variability:* Not known.

*Habitat characteristics:* In the Wind Cave study area, this type occurs on gray shale on the east side of Boland Ridge. It is on private land, and was not surveyed.

CEGL005261 Siltstone (Redbeds) Plains Sparse Vegetation  
**REDBEDS (SILTSTONE) ROCK OUTCROP**

*Dominant or indicator species:* A variety of graminoids and forbs are found in this type.

*Variability:* see above  
*Habitat characteristics:* This type develops on red soil derived from the silt- and sandstones of the Spearfish Formation. Badlands-like outcrops and gypsum lenses are common.

new Recent Burn Sparse Vegetation  
**RECENT BURN SPARSE VEGETATION**

*Dominant or indicator species:* Invader species are present with patchy distribution. Mullein, Canada thistle, catnip and horseweed are among the more common.

*Variability:* This type is variable in composition. Dominance and cover can be quite patchy.

*Habitat characteristics:* This type includes recently-burned stands where fire was sufficiently hot to destroy most vegetative cover.