

VEGETATION DESCRIPTION FOR JEWEL CAVE NATIONAL MONUMENT

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

Pinus ponderosa / Physocarpus monogynus Forest

COMMON NAME	Ponderosa Pine / Mountain Ninebark Forest
SYNONYM	Ponderosa Pine / Mountain Ninebark Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Evergreen forest (I.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen forest (I.A.8)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (I.A.8.N)
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.b.)
ALLIANCE	<i>Pinus ponderosa</i> Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is found in the Black Hills of South Dakota and Wyoming and in other areas of northeastern Wyoming. It has also been reported in northeastern Colorado (Johnston 1987), but this has not been well documented.

Jewel Cave National Monument

This community occurs throughout the Jewel Cave area. It is best developed on the south sides of drainages such as Lithograph Canyon and the drainage traversed by Highway 16 west of the park entrance.

ENVIRONMENTAL DESCRIPTION

Globally

This community is one of the more mesic of the ponderosa pine forests. It is found on north facing slopes (Johnston 1987). On three stands in eastern Wyoming the slopes ranged from 27-46% (Hoffman and Alexander 1976, 1987). It has been observed at elevations of 1400-1800 m (4300-5900 ft, Jones 1992) but may occur elsewhere. The soils are loam.

Jewel Cave National Monument

This community was found on slopes ranging from 10 to 20 degrees. Aspect usually is northerly.

MOST ABUNDANT SPECIES

Globally

Stratum

Tree canopy
Short shrub
Herbaceous

Species

Pinus ponderosa
Physocarpus monogynus
Galium boreale, *Pulsatilla patens*

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Jewel Cave National Monument

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Pinus ponderosa</i>
Short shrub	<i>Physocarpus monogynous</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Physocarpus monogynous*

Jewel Cave National Monument

Pinus ponderosa, *Physocarpus monogynous*

VEGETATION DESCRIPTION

Globally

The overstory of this forest community is usually exclusively *Pinus ponderosa*. The canopy can be moderately closed to closed. Sufficient light penetrates the canopy to allow the growth of a vigorous shrub layer. *Physocarpus monogynous*, which grows to approximately 1 meter, is the dominant shrub. In three stands in the Black Hills of Wyoming this species had an average cover of 42% (Hoffman and Alexander 1987). Other shrubs that occur in this community are *Mahonia repens*, *Arctostaphylos uva-ursi*, and *Symphoricarpos albus*. The herbaceous layer is dominated by forbs and non-vascular plants. *Antennaria rosea*, *Cerastium arvense*, *Galium boreale*, *Pulsatilla patens*, and mosses and lichens are typically found in this community.

Jewel Cave National Monument

This community is dominated by *Pinus ponderosa* in both the canopy and subcanopy. Coverage in each stratum typically ranges from 10 to 25%. Short shrub coverage typically is between 10 and 50%. *Physocarpus monogynous* consistently dominates the short shrub stratum, with other species often present, including *Shepherdia canadensis*, *Juniperus communis*, *Arctostaphylos uva-ursi*, *Symphoricarpos albus*, and *Amelanchier alnifolia*.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3

RANK JUSTIFICATION

DATABASE CODE C EGL000190

COMMENTS

Globally

Lack of natural disturbance (e.g., fire) over the last 100 years has led to increased densities and coverage in the subcanopy.

The stands used to document the *Pinus ponderosa* / *Physocarpus monogynous* Habitat Type described by Hoffman and Alexander (1976, 1987) had very high basal area and densities, possibly due to their sampling procedure. The dense structure may have affected the floristic makeup of the stands. Additionally, there is some ambiguity between this type as a forest or woodland; in increasingly dense stands, this type has >60% canopy closure.

REFERENCES

Hoffman, G. R. and R. R. Alexander. 1987. Forest vegetation of the Black Hills National Forest of South Dakota and Wyoming: A habitat type classification. Research Paper RM-276. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 48 p.

Hoffman, G. R. and R. R. Alexander. 1976. Forest vegetation of the Bighorn Mountains, Wyoming: A habitat type classification. Research Paper RM-170. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 38 p.

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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. 1992. Wyoming plant community classification. Wyoming Natural Diversity Database, The Nature Conservancy, Laramie, WY. 183 p.

McAdams, A. G., D. A. Stutzman, and D. Faber-Langendoen. 1998. Black Hills Community Inventory, unpublished data. The Nature Conservancy, Midwest Regional Office, Minneapolis, MN.

Pinus ponderosa / Symphoricarpos albus Forest

COMMON NAME	Ponderosa Pine / Common Snowberry Forest
SYNONYM	Ponderosa Pine / Snowberry Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Evergreen forest (I.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen forest (I.A.8)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (I.A.8.N)
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.b.)
ALLIANCE	<i>Pinus ponderosa</i> Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is in eastern Washington, northeastern Oregon, central and northern Idaho, western, central, and southeastern Montana, northern and eastern Wyoming, and western South Dakota. Johnston (1987) reports that this community is also in Nebraska but its presence there needs to be verified.

Jewel Cave National Monument

This community occurs throughout the Jewel Cave area.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on moderate slopes (Johnston 1987). The soils are usually loams with a high water holding capacity, but they can be stony or sandy. If they are the latter they tend to occur on north facing slopes with more mesic microclimates (Daubenmire 1952).

Jewel Cave National Monument

This community occurs on gentle to moderate slopes (0 to 15 degrees) of all aspects.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Short shrub	<i>Amelanchier alnifolia</i> , <i>Mahonia repens</i> , <i>Symphoricarpos albus</i>
Herbaceous	<i>Campanula rotundifolia</i> , <i>Galium</i> spp.

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Pinus ponderosa</i>
Short shrub	<i>Symphoricarpos albus</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Symphoricarpos albus*, *Balsamorhiza sagittata*

Jewel Cave National Monument

Pinus ponderosa, *Symphoricarpos albus*

VEGETATION DESCRIPTION

Globally

The overstory of this community is dominated by successfully reproducing *Pinus ponderosa*. There are lesser amounts of *Populus tremuloides*, *Betula papyrifera*, *Quercus macrocarpa*, *Juniperus scopulorum*, *Picea glauca*, *Pinus flexilis*, and *Pseudotsuga menziesii*. Hoffman and Alexander (1987) sampled 12 stands of this type that averaged 35.8 m²/ha basal area. The shrub layer is prominent, with cover approaching 100% in some stands (Daubenmire 1952). The common shrubs in this community are *Amelanchier alnifolia*, *Symphoricarpos albus*, *Shepherdia canadensis*, *Mahonia repens*, *Spiraea betulifolia*, *Juniperus communis*, and *Prunus virginiana*. The herbaceous layer is also well developed. Typical species found in this layer are *Achillea millefolium*, *Campanula rotundifolia*, *Galium species*, and *Solidago occidentalis*. Periodic groundfires move through the lower strata of this community. Regeneration after these events is rapid. Within a few years the signs of a fire may be difficult to detect (Daubenmire 1952).

Jewel Cave National Monument

This community is dominated by *Pinus ponderosa* in both the canopy and subcanopy. Coverage for each stratum typically is 10 to 25%, and occasionally as high as 60%. Short shrub coverage typically is less than 10%, with *Symphoricarpos albus* present but not abundant (less than 10% cover). Other shrubs may be present, including *Juniperus communis*, *Spiraea betulifolia*, *Rhus trilobata*, and *Amelanchier alnifolia*. Herbaceous cover is variable, ranging generally between 10 and 60%. This stratum usually is species-rich, with both graminoids and forbs significant. There are no clear dominants. *Symphoricarpos occidentalis* also occurs in the study area. Where it forms dense thickets, it can be identified vegetatively with confidence. However, it also occurs as scattered individuals under pine, and in these situations it is necessary to have flowering material to differentiate between *S. albus* and *S. occidentalis*.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4?

RANK JUSTIFICATION

DATABASE CODE C EGL000203

COMMENTS

Periodic fires are probably important in maintaining the grassland groundlayer and limiting shrub and tree seedling regeneration.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

The stands used to document the *Pinus ponderosa* / *Symphoricarpos albus* Habitat Type described by Hoffman and Alexander (1976, 1987) had very high basal area and densities, possibly due to their sampling procedure. Hoffman and Alexander (1987) described two phases of this type, *Oryzopsis asperifolia* phase which is now identified as *Pinus ponderosa* / *Oryzopsis asperifolia* Woodland and the *Balsamorhiza sagittata* phase which remains part of this type. The dense structure may have affected the floristic makeup of the stands. Additionally, there is some ambiguity between this type as a forest or woodland; in increasingly dense stands, this type has >60% canopy closure.

Jewel Cave National Monument

Stands classified as *Pinus ponderosa* / *Symphoricarpos albus* Forest appear to differ significantly from that type as previously described for the Black Hills (Thilenius 1972, Hoffman and Alexander 1987). Canopy cover typically is less than 60% (and therefore is "Woodland" rather than "Forest"), and *Symphoricarpos albus* typically is sparse.

This type often occurs in mosaics with other pine types. At several plot and observation point locations in the Jewel Cave area, *Arctostaphylos uva-ursi* and *Symphoricarpos albus* were equally common and it was difficult to assign community names to the stands.

REFERENCES

Daubenmire, R. 1952. Forest vegetation of northern Idaho and adjacent Washington and its bearing on concepts of vegetation classification. *Ecological Monographs* 22(4):301-330.

Hoffman, G. R. and R. R. Alexander. 1987. Forest vegetation of the Black Hills National Forest of South Dakota and Wyoming: A habitat type classification. Research Paper RM-276. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 48 p.

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

McAdams, A. G., D. A. Stutzman, and D. Faber-Langendoen. 1998. Black Hills Community Inventory, unpublished data. The Nature Conservancy, Midwest Regional Office, Minneapolis, MN.

Pfister, R. D., B. L. Kovalchik, S. F. Arno, and R. C. Prebby. 1974. Forest habitat types of Montana. INT- 34. USDA Forest Service Intermountain Forest and Range Experiment Station, Missoula, MT. 312p.

Thilenius, J. F. 1972. Classification of deer habitat in the ponderosa pine forest of the Black Hills, South Dakota. RM-91. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 28p.

Populus tremuloides / Prunus virginiana Forest

COMMON NAME	Quaking Aspen / Chokecherry Forest
SYNONYM	Aspen / Chokecherry Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (I.B.2.N)
FORMATION	Montane or boreal cold-deciduous forest (I.B.2.N.b.)

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

ALLIANCE *Populus tremuloides* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Upland

RANGE

Globally

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

Jewel Cave National Monument

This community occurs in Hell Canyon north of the Monument. Small unmapped stands of *Populus tremuloides* are occasional elsewhere in the study area.

ENVIRONMENTAL DESCRIPTION

Globally

In the Black Hills, this community is found along mesic valley bottoms. The slopes can vary from steep (at the bottom of the hillslope) to gentle (along the valley bottom).

Jewel Cave National Monument

This community occurs in drainage bottoms.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Populus tremuloides</i>
Short shrub	<i>Prunus virginiana</i>

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Populus tremuloides</i> , <i>Betula papyrifera</i>
Short shrub	<i>Prunus virginiana</i>

DIAGNOSTIC SPECIES

Globally

Populus tremuloides, *Prunus virginiana*

Jewel Cave National Monument

Populus tremuloides, *Prunus virginiana*

VEGETATION DESCRIPTION

Globally

This community is dominated by deciduous trees in the canopy, but may have a component of evergreen trees, also. *Populus tremuloides* is the most abundant tree species. *Picea glauca* (in the Black Hills) and *Pinus ponderosa* may also be present. There is a short shrub layer dominated by *Prunus virginiana* and often containing *Amelanchier alnifolia*, *Ribes* spp., and *Symphoricarpos* spp.

Jewel Cave National Monument

This community is dominated by *Populus tremuloides* and/or *Betula papyrifera* in both the canopy and subcanopy. Two stands of this type were sampled. Estimated canopy coverage was less than 25% but subcanopy coverage was as high as 60%. Short shrub cover estimates ranged from 10 to 60%, with *Ribes* spp., *Rosa* sp., and *Prunus virginiana* the more common species. *P. virginiana* may form a tall shrub stratum as well. The herbaceous stratum typically is sparse (less than 10%) and variable in species composition; *Oryzopsis asperifolia* and *Fragaria virginiana* were found in both stands. *Betula papyrifera* may be locally codominant or dominant in stands of this type.

OTHER NOTEWORTHY SPECIES Information not available.

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Jewel Cave National Monument

CONSERVATION RANK G3?Q

RANK JUSTIFICATION

DATABASE CODE CEGL000596

COMMENTS

Globally

This community is found primarily to the west of the Black Hills. Further rangewide review may alter the global description of the type.

REFERENCES

Acer negundo / Prunus virginiana Forest

COMMON NAME Ash Leaf Maple / Choke Cherry Forest

SYNONYM Box Elder / Chokecherry Forest

PHYSIOGNOMIC CLASS Forest (I)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2)

PHYSIOGNOMIC SUBGROUP Natural/semi-natural (I.B.2.N)

FORMATION Temporarily flooded cold-deciduous forest (I.B.2.N.d.)

ALLIANCE *Acer negundo* Temporarily Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

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

Jewel Cave National Monument

A single mappable stand of this vegetation type was found in the bottom of Hell Canyon just north of the National Monument.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found in mesic situations, usually near streams or rivers.

Jewel Cave National Monument

This community occurs in the bottom of Hell Canyon on alluvial soil adjacent to a small stream, and on adjacent lowermost slopes.

MOST ABUNDANT SPECIES

Globally

Stratum

Tree canopy

Tall shrub

Species

Acer negundo

Prunus virginiana

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

Stratum

Tree canopy

Tall shrub

Short shrub

Species

Acer negundo

Prunus virginiana, *Cornus stolonifera*

Ribes spp., *Rubus idaeus*, *Symphoricarpos occidentalis*, *Rosa* sp.

DIAGNOSTIC SPECIES

Globally

Acer negundo, *Prunus virginiana*

Jewel Cave National Monument

Acer negundo

VEGETATION DESCRIPTION

Globally

This is an early successional community dominated by *Acer negundo*. *Populus tremuloides* may also be found. Tree density may be moderate to high. Shrubs are common and vary from short (<1 m) to tall (>2 m). *Prunus virginiana* and *Cornus stolonifera* are common.

Jewel Cave National Monument

This community is dominated by *Acer negundo* in the canopy and subcanopy. In the single mappable stand, both strata had canopy coverages estimated at 10 to 25%. The tall shrub stratum is dominated by *Prunus virginiana* and *Cornus stolonifera*, with coverage estimated at 10 to 25%. There is substantial short shrub cover (estimated at 25 to 50%), with *Ribes* spp., *Rubus idaeus*, *Symphoricarpos occidentalis*, and *Rosa* sp. most common. Herbaceous cover is relatively sparse (less than 5%) but species-rich, with both graminoids and forbs significant.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3

RANK JUSTIFICATION

DATABASE CODE C EGL000628

COMMENTS

Globally

This is an early successional community that is poorly described across its range.

REFERENCES

Pinus ponderosa / Arctostaphylos uva-ursi Woodland

COMMON NAME

Ponderosa Pine / Bearberry Woodland

SYNONYM

Ponderosa Pine / Kinikinnick Woodland

PHYSIOGNOMIC CLASS

Woodland (II)

PHYSIOGNOMIC SUBCLASS

Evergreen woodland (II.A)

PHYSIOGNOMIC GROUP

Temperate or subpolar needle-leaved evergreen woodland (II.A.4)

PHYSIOGNOMIC SUBGROUP

Natural/semi-natural (II.A.4.N)

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Jewel Cave National Monument

FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a.)

ALLIANCE *Pinus ponderosa* Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

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

Jewel Cave National Monument

This community occurs in the northern part of the Monument and in the area to the north.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on flat to gently sloping terrain (3-21%) in the Black Hills (Hoffman and Alexander 1987). It has been found from 1540-3000 m (4250-9100 ft). The slopes are more likely to be facing northward than southward. Soils are sandy loams and clay loams.

Jewel Cave National Monument

This community occurs typically on gentle to moderate slopes (5 to 15 degrees), and occasionally on steeper slopes. It was found on all aspects but south.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Short shrub	<i>Arctostaphylos uva-ursi</i> , <i>Juniperus communis</i> , <i>Symphoricarpos albus</i>
Herbaceous	<i>Oryzopsis asperifolia</i>

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Pinus ponderosa</i>
Short shrub	<i>Arctostaphylos uva-ursi</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Arctostaphylos uva-ursi*, *Shepherdia canadensis*

Jewel Cave National Monument

Pinus ponderosa, *Arctostaphylos uva-ursi*

VEGETATION DESCRIPTION

Globally

Pinus ponderosa is the dominant tree in this woodland community. *P. ponderosa* reproduces successfully in this community and is found as seedlings and saplings as well as mature trees. There may be seedlings of *Populus tremuloides* and *Quercus macrocarpa*. In northern New Mexico and southern Colorado, *Pseudotsuga menziesii* may also be present, but elsewhere rarely do any species except *Pinus ponderosa* grow larger than saplings. Shrubs are prominent in this community. Hoffman and Alexander (1987) found that in 10 stands in the Black Hills, shrubs averaged 43.9% cover while the herbaceous stratum averaged 19.3% cover. The most abundant shrub was *Arctostaphylos uva-ursi*, which covered an average of 33% (range of 10-85%) of the surface. Other shrubs that are likely to be present are *Spiraea betulifolia*, *Juniperus communis*, and *Symphoricarpos albus*. Typical herbaceous species are *Achillea millefolium*, *Fragaria virginiana*, *Lathyrus ochroleucus*, and *Oryzopsis asperifolia*.

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Jewel Cave National Monument

Jewel Cave National Monument

This community is dominated by *Pinus ponderosa* in both the canopy and subcanopy. Coverage in each stratum typically is less than 25% and often less than 10%. Subcanopy coverage is often greater than canopy coverage. Short shrub coverage typically is between 10 and 50%. *Arctostaphylos uva-ursi* occurs consistently with other species often present, including *Shepherdia canadensis*, *Juniperus communis*, *Physocarpus monogynous*, and *Symphoricarpos* sp. Herbaceous cover usually is sparse (less than 10%) and variable in species composition.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4

RANK JUSTIFICATION

DATABASE CODE CEGL000844

COMMENTS

Globally

Fire was likely an important factor in the regulation of stand structure historically.

The stands used to document the *Pinus ponderosa* / *Arctostaphylos uva-ursi* Habitat Type described by Hoffman and Alexander (1987) had very high basal area and densities for a woodland, possibly due to their sampling procedure. The dense structure may have affected the floristic makeup of the stands and made the list of dominant species a poor reflection of the community as a whole.

Jewel Cave National Monument

This type often occurs in mosaics with other pine types. At several plot and observation point locations, *Arctostaphylos uva-ursi* and *Symphoricarpos albus* were equally common, and it was difficult to assign community names to the stands.

REFERENCES

Alexander, R. R. 1988. Forest vegetation on national forests in the Rocky Mountain and Intermountain region: habitat types and community types. General Technical Report RM-162. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 47 p.

Hoffman, G. R. and R. R. Alexander. 1987. Forest vegetation of the Black Hills National Forest of South Dakota and Wyoming: A habitat type classification. Research Paper RM-276. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 48 p.

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

McAdams, A. G., D. A. Stutzman, and D. Faber-Langendoen. 1998. Black Hills Community Inventory, unpublished data. The Nature Conservancy, Midwest Regional Office, Minneapolis, MN.

Pinus ponderosa / Carex inops ssp. heliophila Woodland

COMMON NAME	Ponderosa Pine / Sun Sedge Woodland
SYNONYM	Ponderosa Pine / Long-Stolon Sedge Woodland
PHYSIOGNOMIC CLASS	Woodland (II)
PHYSIOGNOMIC SUBCLASS	Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (II.A.4.N)
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a.)
ALLIANCE	<i>Pinus ponderosa</i> Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

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

Jewel Cave National Monument

In the study area, this community occurs most commonly west of the Monument and east of the Monument west of the Pass Creek Road. It is found at scattered sites elsewhere.

ENVIRONMENTAL DESCRIPTION

Globally

This community is often found on gentle and moderate south to west facing slopes (Hansen and Hoffman 1988, Hoffman and Alexander 1987).

Jewel Cave National Monument

This community occurs on gentle slopes (less than 10 degrees) often with southerly aspects.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Herbaceous	<i>Carex inops</i> ssp. <i>heliophila</i> , <i>Danthonia spicata</i>

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Pinus ponderosa</i>
Herbaceous	<i>Carex inops</i> ssp. <i>heliophila</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Carex inops* ssp. *heliophila*

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

Pinus ponderosa, *Carex inops* ssp. *heliophila*

VEGETATION DESCRIPTION

Globally

The tree canopy and subcanopy are dominated by *Pinus ponderosa*. *Juniperus scopulorum* and *Quercus macrocarpa* are occasionally found in the subcanopy. Shrubs are infrequent in this type. The herbaceous layer is dominated by *Carex inops* ssp. *heliophila* with inclusions of *Schizachyrium scoparium* and *Pseudoroegneria spicata* -- generally in areas with more open canopies.

Jewel Cave National Monument

Stands of this vegetation type are dominated by *Pinus ponderosa*. Both canopy and subcanopy coverages typically are less than 25%. Short shrub canopy also typically is less than 25%, and commonly consists of one or more of the following species: *Physocarpus monogynous*, *Arctostaphylos uva-ursi*, *Symphoricarpos albus*, and *Amelanchier alnifolia*. Herbaceous cover usually is less than 25%. *Carex inops* ssp. *heliophila* occurs consistently but is not abundant.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3

RANK JUSTIFICATION

DATABASE CODE Cegl000849

COMMENTS

Globally

The canopy in this type is usually moderately open but can become nearly closed in undisturbed stands (i.e., where the natural disturbance regime has been disrupted).

The stands used to document the *Pinus ponderosa* / *Carex inops* ssp. *heliophila* Habitat Type described by Hoffman and Alexander (1987) and Hansen and Hoffman (1988) had very high basal area and densities for a woodland, possibly due to their sampling procedure. The dense structure may have affected the floristic makeup of the stands. This type, however, is a woodland (not forest) type in its typically high-quality state.

Jewel Cave National Monument

This type often occurs in mosaics with other pine types, especially *Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation.

REFERENCES

Hansen, P. L. and G. R. Hoffman. 1988. The vegetation of the Grand River/Cedar River, Sioux, and Ashland Districts of the Custer National Forest: A habitat type classification. General Technical Report RM-157. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. 68 p.

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Pinus ponderosa / Juniperus communis Woodland

COMMON NAME	Ponderosa Pine / Common Juniper Woodland
SYNONYM	Ponderosa Pine / Common Juniper Woodland
PHYSIOGNOMIC CLASS	Woodland (II)
PHYSIOGNOMIC SUBCLASS	Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP	Natural/semi-natural (II.A.4.N)
FORMATION	Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a.)
ALLIANCE	<i>Pinus ponderosa</i> Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is found in eastern Montana, the Bighorn Mountains in northern Wyoming and the Black Hills of western South Dakota and eastern Wyoming.

Jewel Cave National Monument

This community occurs throughout most of the Jewel Cave area. In the study area, it was not found east of the Monument nor in the eastern portion of the park.

ENVIRONMENTAL DESCRIPTION

Globally

This community is most often found on moderate north and west facing slopes (Hansen and Hoffman 1987, Hoffman and Alexander 1987, Hoffman and Alexander 1976). The soils are shallow and loamy.

Jewel Cave National Monument

This community commonly occurs on moderate to steep slopes (20 - 30 degrees), although it occasionally is found on slopes as gentle as 5 degrees. It was found on all aspects.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Short shrub	<i>Juniperus communis</i>
Herbaceous	<i>Carex inops</i> ssp. <i>heliophila</i> , <i>Schizachyrium scoparium</i>

Jewel Cave National Monument

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i>
Subcanopy	<i>Pinus ponderosa</i>
Short shrub	<i>Juniperus communis</i>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa., *Juniperus communis*, *Mahonia repens*, *Achillea millefolium*.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

Pinus ponderosa, Juniperus communis

VEGETATION DESCRIPTION

Globally

This community is dominated by *Pinus ponderosa* in the overstory. Other tree species that may be present are *Picea glauca* and *Populus tremuloides*. The canopy is usually moderately closed but can become nearly closed in stands that are not disturbed for long periods. There is a prominent low shrub layer whose most abundant component is *Juniperus communis*. This species covered an average of 25% (range of 4-42%) in 7 stands in the Black Hills of South Dakota and Wyoming (Hoffman and Alexander 1987). Total average cover by the shrub layer was 51% and by the herb layer was 8%. Other shrub species found in this community across its range are *Arctostaphylos uva-ursi*, *Mahonia repens*, *Spiraea betulifolia*, and *Symphoricarpos albus*. Typical herbaceous species are *Achillea millefolium*, *Carex inops* ssp. *heliophila*, *Schizachyrium scoparium*, *Fragaria* spp., and *Lathyrus ochroleucus* (McAdams et al. 1998).

Jewel Cave National Monument

Stands of this type are dominated by *Pinus ponderosa* in both the canopy and subcanopy. Subcanopy coverage often is greater than canopy coverage, and stands of doghair are common. Short shrub coverage typically is less than 10%, with *Juniperus communis* present but not abundant. Other shrub species may be present, including *Physocarpus monogynous*, *Arctostaphylos uva-ursi*, and *Symphoricarpos albus*. Herbaceous cover is relatively sparse, rarely exceeding 10%.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4?

RANK JUSTIFICATION

DATABASE CODE CEG000859

COMMENTS

Globally

The canopy in this type is usually moderately closed but can become nearly closed in undisturbed stands (i.e., where the natural disturbance regime has been disrupted).

The stands used to document the *Pinus ponderosa* / *Juniperus communis* Habitat Type described by Hoffman and Alexander (1987) and Hansen and Hoffman (1988) had very high basal area and densities for a woodland, possibly due to their sampling procedure. The dense structure may have affected the floristic makeup of the stands. Additionally, there is some ambiguity between this type as a forest or woodland; in increasingly dense stands, this type has >60% canopy closure.

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Jewel Cave National Monument

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Symphoricarpos occidentalis Shrubland [Provisional]

COMMON NAME	Western Snowberry Shrubland
SYNONYM	Wolfberry 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>Symphoricarpos occidentalis</i> Temporarily Flooded Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is widespread in western Montana, North Dakota, and South Dakota. It is also present in Nebraska, Wyoming, and Saskatchewan.

Jewel Cave National Monument

This community is found throughout the Jewel Cave area. It occurs as mappable stands and as inclusions in other vegetation types.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found in mesic swales, depressions, ravines and floodplains. Some examples of this community experience intermittent and brief flooding. The soils are fertile and well drained to imperfectly drained silts and loams. The upper soil horizon is usually deep, although a thin layer of sand may be present if the site has been recently flooded (Jones 1995).

Jewel Cave National Monument

This community occurs in relatively broad, level canyon bottoms.

MOST ABUNDANT SPECIES

Globally

Stratum

Short shrub

Herbaceous

Species

Symphoricarpos occidentalis, *Rhus aromatica*, *Prunus virginiana*

Pascopyrum smithii, *Poa pratensis*, *Galium boreale*

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

Stratum

Short shrub

Species

Symphoricarpos occidentalis

DIAGNOSTIC SPECIES

Globally

Symphoricarpos occidentalis, *Rosa woodsii*, *Poa pratensis*, *Artemisia ludoviciana*

Jewel Cave National Monument

Symphoricarpos occidentalis

VEGETATION DESCRIPTION

Globally

Throughout its range this community is dominated by shrubs approximately 1 m tall. Shrub cover is typically greater than 50%. In places it can approach 100%. These shrubs form dense clumps that exclude most other species. *Symphoricarpos occidentalis* is the most common shrub, but *Rhus aromatica* and *Prunus virginiana* can be locally abundant. *R. aromatica* and *P. virginiana* can grow to 2-3 meters in places. Herbaceous species and smaller shrubs are most abundant at the edge of this community and in gaps between the clumps of taller shrubs where the shading is less complete. *Rosa woodsii* is a typical smaller shrub. *Achillea millefolium*, *Artemisia ludoviciana*, *Galium boreale*, and *Pascopyrum smithii* are common herbaceous species of this community. Woody vines sometimes occur. *Parthenocissus vitacea* is the most common vine.

Jewel Cave National Monument

Mappable stands of this community type are composed of thickets of *Symphoricarpos occidentalis* without significant tree cover, although scattered trees may be present. Smaller stands occur under both hardwoods and pine and in grasslands. Short shrub cover typically is high (60 to 100%). Other shrub species may be present, including *Ribes* spp., *Amelanchier alnifolia*, and *Rosa* sp. Herbaceous cover is less than 10%; *Monarda fistulosa* and *Cynoglossum officinale* appear to be the more common components.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4G5

RANK JUSTIFICATION

DATABASE CODE C EGL001131

COMMENTS

Globally

This community seems to thrive in disturbed areas (Hansen and Hoffman 1988), especially those subject to disturbance by fire and cattle grazing.

This type often occurs in heavily disturbed areas in conjunction with exotic species such as *Poa pratensis* and *Cirsium arvense*.

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Pascopyrum smithii - Bouteloua gracilis - Carex filifolia Herbaceous Vegetation

COMMON NAME Western-Wheat Grass - Blue Grama - Threadleaf Sedge Herbaceous Vegetation

SYNONYM Western Wheatgrass - Blue Grama - Thread-Leaved Sedge 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 2

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is found in Colorado, Wyoming, Montana, North Dakota, South Dakota, and Saskatchewan. Details of its distribution within these states are not available.

Jewel Cave National Monument

This community is best developed in the bottom of Hell Canyon, on the ridgecrest in the southeast part of the Monument, and in the vicinity of the Pass Creek Road. Smaller stands occur elsewhere.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on flat or gently sloping terrain. Many stands are on floodplains or gentle valley slopes, others are on uplands (Hanson and Whitman 1938, Hansen and Hoffman 1988). The soils are clay loam, silt loam, or loam and usually deep and fertile. This community appears to be only in basins or other broad lowlands. It does not appear to be found in mountain valleys (Hanson and Dahl 1956, Jones 1992).

Jewel Cave National Monument

This community is best developed on flat to gentle slopes. Smaller stands occur elsewhere, most commonly in openings on wooded southerly slopes.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

MOST ABUNDANT SPECIES

Globally

Stratum

Herbaceous

Species

Bouteloua gracilis, *Carex filifolia*, *Pascopyrum smithii*, *Schizachyrium scoparium*, *Stipa comata*

Jewel Cave National Monument

Stratum

Herbaceous

Species

Pascopyrum smithii, *Poa pratensis*, *Psoralea argophylla*

DIAGNOSTIC SPECIES

Globally

Pascopyrum smithii, *Carex filifolia*, *Bouteloua gracilis*, *Buchloe dactyloides*

Jewel Cave National Monument

Pascopyrum smithii

VEGETATION DESCRIPTION

Globally

This community is dominated by medium and short graminoids. Total vegetation cover is usually high (Hanson and Dahl 1956, Hansen et al. 1984.) The midgrass stratum is dominated by *Pascopyrum smithii*. Common associates include *Koeleria macrantha*, *Stipa comata*, and *Nassella viridula*. *Stipa comata* is more common on the upper slopes and drier upland sites while *Nassella viridula* is more common on the lower slopes and floodplains. Short graminoids are very abundant in this community. The most common are *Bouteloua gracilis* and *Carex filifolia*. Other upland sedges, such as *C. inops* ssp. *heliophila*, *C. eleocharis*, and *C. pensylvanica* are usually found with these. Forbs do not contribute much of the canopy cover but they are scattered throughout this community. Typical forbs are *Astragalus* spp., *Tragopogon dubius*, *Gaura coccinea*, *Hedeoma hispida*, *Lappula occidentalis*, and *Sphaeralcea coccinea*. Shrubs are a very minor component of the vegetation. The half-shrub *Artemisia frigida* is often present and some stands contain *Artemisia cana*, *Opuntia* spp., or *Symphoricarpos occidentalis*.

Jewel Cave National Monument

Herbaceous cover for this community was estimated between 25 and 75%. *Pascopyrum smithii* was found consistently. Other consistently-present graminoids include *Nassella viridula* and *Poa pratensis*. *Bouteloua gracilis* was a significant component in one stand but absent from another. Small stands of *Symphoricarpos occidentalis* are often present.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G4

RANK JUSTIFICATION

DATABASE CODE CEGL001579

COMMENTS

Globally

Fire was likely a common event in this type historically.

This type was described from communities named as *Pascopyrum smithii* - *Bouteloua gracilis* or *Pascopyrum smithii* - *Carex filifolia*. It is unclear whether the *Pascopyrum smithii* - *Bouteloua gracilis* Herbaceous Vegetation overlaps with these descriptions.

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Poa pratensis Disturbed Community

COMMON NAME	Kentucky Bluegrass Disturbed Community
SYNONYM	Bluegrass 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	Undefined
CLASSIFICATION CONFIDENCE LEVEL	3
USFWS WETLAND SYSTEM	Upland
RANGE	
<i>Globally</i>	Information not available.

Jewel Cave National Monument

Mappable stands of this community are common throughout. Smaller patches occur in stands of *Pascopyrum smithii* - *Bouteloua* (*curtipendula*, *gracilis*) - *Carex filifolia* Herbaceous Vegetation or form mosaics with that type. *Poa pratensis* is present in many other vegetation types, but not dominant.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

ENVIRONMENTAL DESCRIPTION

Globally

Information not available.

Jewel Cave National Monument

This community was found on gentle slopes in valley bottoms and on slopes. It was found on all aspects.

MOST ABUNDANT SPECIES

Globally

Stratum Species

Information not available.

Jewel Cave National Monument

Stratum Species

Herbaceous Poa pratensis

DIAGNOSTIC SPECIES

Globally

Information not available.

Jewel Cave National Monument

Poa pratensis, strongly dominant

VEGETATION DESCRIPTION

Globally

Information not available.

Jewel Cave National Monument

This community is strongly dominated by *Poa pratensis*. Other graminoids may be present, including *Pascopyrum smithii* and *Nassella viridula*. Small stands of *Symphoricarpos occidentalis* often are present.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK GW

RANK JUSTIFICATION

The dominant species in this community is an invasive exotic. Thus, it falls under the definition of a GW ranking.

DATABASE CODE Information not available.

COMMENTS

REFERENCES

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

**Schizachyrium scoparium - Bouteloua (curtipendula, gracilis) - Carex filifolia
Herbaceous Vegetation**

COMMON NAME Little Bluestem - Grama (Side-oats, Blue) - Threadleaf Sedge

SYNONYM Northern Great Plains Little Bluestem 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 *Schizachyrium scoparium - Bouteloua curtipendula* Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE

Globally

This community is found in western North Dakota, western South Dakota, eastern and northern Wyoming, central and eastern Montana, southern Saskatchewan, and southern Manitoba.

Jewel Cave National Monument

This community is best developed on the ridgecrest in the southwest part of the Monument, and in the area of the Pass Creek Road. Smaller stands occur throughout the study area, especially in openings in *Pinus ponderosa* / *Schizachyrium scoparium* Wooded Herbaceous Vegetation.

ENVIRONMENTAL DESCRIPTION

Globally

This community is usually found on gentle to steep slopes with variable aspects (Thilenius 1972, Hansen et al. 1984, Johnston 1987, Hansen and Hoffman 1988). The soil may be loamy sand, sandy loam, loam, or clay loam. There may be a substantial component of gravel. Hansen et al. (1984) found 7-36% gravel by weight in 16 stands in western North Dakota. The soils are typically shallow and occur over sandstone or limestone (Johnston 1987, Thilenius et al. 1995).

Jewel Cave National Monument

Mappable stands of this vegetation type were found on gentle slopes with southerly exposures.

MOST ABUNDANT SPECIES

Globally

Stratum

Herbaceous

Species

Bouteloua curtipendula, Bouteloua gracilis, Carex filifolia, Schizachyrium scoparium

Jewel Cave National Monument

Stratum

Herbaceous

Species

Schizachyrium scoparium, Psoralea argophylla, Echinacaea angustifolia

DIAGNOSTIC SPECIES

Globally

Schizachyrium scoparium, Carex filifolia, Bouteloua gracilis, Andropogon gerardii

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

Schizachyrium scoparium

VEGETATION DESCRIPTION

Globally

This community is predominantly composed of graminoid species less than 1 m tall. Occasional *Pinus ponderosa* are scattered throughout the type. The vegetation cover is moderate to high. Thilenius et al. (1995) found that vegetation cover was 44% in Wyoming and Hansen and Hoffman (1988) found 75% cover in North Dakota. The dominant species is *Schizachyrium scoparium* with *Bouteloua curtipendula*, *B. gracilis*, and *Carex filifolia* as associates or co-dominants. *Andropogon gerardii*, *Carex inops* ssp. *heliophila*, *C. eleocharis*, *Koeleria macrantha* and *Calamovilfa longifolia* are often present. *C. longifolia* may be abundant on sandier soils. *Muhlenbergia cuspidata*, *Stipa comata*, *Pascopyrum smithii*, and *Nassella viridula* may also be present. *Pseudoroegneria spicata* may be found in the western portions of this community (Jones 1992). In Manitoba, the graminoids *Festuca ovina* and *Elymus trachycaulus* and the lichen *Selaginella densa* are more abundant (Greenall 1995). Forbs do not contribute greatly to the canopy, but many species may be found in this community (Hanson and Whitman 1938). Among the forbs that may be found are *Echinacea angustifolia*, *Aster oblongifolius*, *A. ericoides*, *Gaura coccinea*, *Lygodesmia juncea*, *Helianthus pauciflorus* ssp. *pauciflorus*, *Rosa arkansana*, *Liatris punctata*, *Psoralea argophylla*, *Dalea purpurea*, *Phlox hoodii*, and *Campanula rotundifolia*. There are very few woody species; those that are present are usually short shrubs such as *Artemisa frigida*, *Juniperus horizontalis*, and *Yucca glauca*. Litter often accumulates and may cover more than 50% of the ground (Hirsch 1985).

Jewel Cave National Monument

Two mappable stands of this vegetation type were found. Herbaceous cover estimates were between 25 and 75% with *Schizachyrium scoparium* clearly dominant. This type is relatively species-rich with prairie graminoids and forbs well-represented.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G3

RANK JUSTIFICATION

DATABASE CODE CEGL001681

COMMENTS

Globally

Fire likely played a major role in this type. Periodic fire likely helped graminoid production and deterred tree growth.

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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.)
ALLIANCE	<i>Pinus ponderosa</i> Wooded Medium-tall Herbaceous Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE

Globally

Currently reported from western Nebraska, South Dakota, and eastern Wyoming; it is unknown if it also occurs in Montana and Colorado.

USGS-NPS Vegetation Mapping Program

Jewel Cave National Monument

Jewel Cave National Monument

This community occurs throughout the Jewel Cave area. It is best developed on the north sides of drainages, such as Lithograph Canyon.

ENVIRONMENTAL DESCRIPTION

Globally

This community is found on loamy, sandy, or rocky soil. It is usually found on gentle to moderate slopes. Parent material is usually either sandstone or limestone (McAdams et. al 1998).

Jewel Cave National Monument

The larger stands of this community were observed on slopes ranging from 4 to 30 degrees, with most between 10 and 20 degrees. Aspect usually is southerly.

MOST ABUNDANT SPECIES

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus ponderosa</i> , <i>Juniperus scopulorum</i>
Short shrub	<i>Rhus trilobata</i> , <i>Symphoricarpos occidentalis</i>
Herbaceous	<i>Bouteloua gracilis</i> , <i>Carex filifolia</i> , <i>Schizachyrium scoparium</i>

Jewel Cave National Monument

<u>Stratum</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>

DIAGNOSTIC SPECIES

Globally

Pinus ponderosa, *Schizachyrium scoparium*, *Yucca glauca*, *Opuntia* spp.

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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. 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.

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This community is dominated by *Pinus ponderosa* in the canopy, and by dry prairie graminoids in the understory with *Schizachyrium scoparium* consistently most abundant. *Juniperus scopulorum* (subcanopy) and *Rhus trilobata* (short shrub) are consistent components, though not abundant. Canopy cover typically is sparse, with few widely-spaced trees (this is easily seen in aerial photographs). The subcanopy and shrub strata typically are sparse or occasionally absent. Herbaceous cover typically ranges from 25 to 50%.

OTHER NOTEWORTHY SPECIES Information not available.

CONSERVATION RANK G2G3

RANK JUSTIFICATION

There are probably fewer than 100 occurrences in a restricted range in the northwestern Great Plains. Three occurrences are currently documented, one from South Dakota, and two from Nebraska. Over 8000 acres are

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currently documented, and at least that much is expected in other occurrences. Two of the currently documented occurrences are in fair condition; it seems likely that occurrences have been degraded by cattle grazing.

DATABASE CODE CEGL002019

COMMENTS

Globally

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

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In some areas, this community probably is an artifact of fire history, representing post-burn pine encroachment into little bluestem grassland.

This community also occurs in mosaics with the *Pinus ponderosa* / *Carex inops* ssp. *heliophila* Woodland.

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