10720

Wyoming Basins Dwarf Sagebrush Shrubland and Steppe

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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Vegetation Type

Shrubland

Map Zones

28

Geographic Range

Western CO, eastern UT, northwestern WY, western MT, southern ID and southeastern OR.

Biophysical Site Description

Very heavy, montmorillonite (smectite) clay soils with some coarse fragments, usually effectively very shallow to a hard clay pan, not deep enough to support either big sagebrush or deep-rooted grasses. Usually poorly drained.

Vegetation Description

Low-stature sagebrush shrubs, sometimes with conspicuous (though sparse) grass layer taller than the shrubs (especially with ARAR8). The two vegetation series (*Artemisia nova* and *Artemisia arbuscula*) are here combined; though they occupy different climates (ARAR8 on much colder sites), they have very similar physiognomies and responses to fire; almost never do the two species occur together or in adjacent sites. Total live cover usually <100%, averaging 60-80%.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| ARNO4 | *Artemisia nova* | Black sagebrush |
| ARAR8 | *Artemisia arbuscula* | Little sagebrush |
| PUTR2 | *Purshia tridentata* | Antelope bitterbrush |
| ARTR4 | *Artemisia tripartita* | Threetip sagebrush |
| FEID | *Festuca idahoensis* | Idaho fescue |
| KOMA | *Koeleria macrantha* | Prairie junegrass |
| PSSP6 | *Pseudoroegneria spicata* | Bluebunch wheatgrass |
| POSE | *Poa secunda* | Sandberg bluegrass |

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

Disturbance Description

Fire has very little effect on this ecosystem, since there is little vegetation to carry a fire. Low and black sagebrush are easily killed by fire, but stands usually don't burn, apparently because of low productivity, low canopy heights and fuel too scattered. Native ungulates sometimes cause erosion in these stands when they trail across them, especially in spring and fall when the sites are wet. The sites are resilient and resistant to trampling in summer and winter, when they are dry or frozen.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 124 | 100 |  | 400 |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 124 | 100 |  |  |

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

The scale of polygons varies with the scale of the habitat, from small patches in the 10s of acres, up to larger sites of 100s-1,000s of acres.

Adjacency or Identification Concerns

Often occurs interspersed or alternating with big sagebrush shrublands, sometimes in a mosaic, corresponding to the mosaic of habitats (moderately well-drained vs. excessively poorly-drained).

Issues or Problems

Little information exists about historical disturbances in this system. Patch sizes were probably less than 500ac and interspersed in other vegetation communities.

Native Uncharacteristic Conditions

Comments

One reviewer suggests combining with 1064. Peer reviewers disagreed about the frequency of fire in this system. The majority agreed with the original 125yr average; one review suggested using a 400yr average. The original MFI of 125yrs was retained, but descriptive information was added to the Disturbance Description section. Note that changing the fire frequency from 125yrs to 400yrs results in just five percent change in the model results for the percent of the landscape in each class (class A would be 10% instead of 15%; B would be 90% instead of 85%.)

Succession Classes

**Mapping Rules**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Upper Layer Lifeform** | **Height (m)** | **Canopy Cover (%)** | | | | | | | | | |
| **0-10** | **11-20** | **21-30** | **31-40** | **41 - 50** | **51-60** | **61-70** | **71-80** | **81-90** | **91-100** |
| Herb | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Herb | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Herb | >1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0-0.5 | A | B | B | B | B | B | B | B | B | B |
| Shrub | 0.5-1.0 | A | B | B | B | B | B | B | B | B | B |
| Shrub | 1.0-3.0 | A | B | B | B | B | B | B | B | B | B |
| Shrub | >3.0 | A | B | B | B | B | B | B | B | B | B |
| Tree | 0-5 | B | B | B | B | B | UN | UN | UN | UN | UN |
| Tree | 5-10 | B | B | B | B | B | UN | UN | UN | UN | UN |
| Tree | 10-25 | B | B | B | B | B | UN | UN | UN | UN | UN |
| Tree | 25-50 | B | B | B | B | B | UN | UN | UN | UN | UN |
| Tree | >50 | B | B | B | B | B | UN | UN | UN | UN | UN |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 16 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ARNO4 | Artemisia nova | Black sagebrush | Upper |
| ARAR8 | Artemisia arbuscula | Little sagebrush | Upper |

Description

Black/low sagebrush seedlings, alone or with early weeds or rabbitbrush.

*Maximum Tree Size Class*  
None

Class B 84 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ARNO4 | Artemisia nova | Black sagebrush | Upper |
| ARAR8 | Artemisia arbuscula | Little sagebrush | Mid-Upper |
| ELEL5 | Elymus elymoides | Squirreltail | Lower |
| KOMA | Koeleria macrantha | Prairie junegrass | Lower |

Description

Black/low sagebrush with mid height late seral grasses.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Late1:OPN | 19 |
| Late1:OPN | 20 | Late1:OPN | 999 |

Probabilistic Transitions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Disturbance Type** | **Disturbance occurs In** | **Moves vegetation to** | **Disturbance Probability** | **Return Interval (yrs)** | **Reset Age to New Class Start Age After Disturbance?** | **Years Since Last Disturbance** |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.008 | 125 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.008 | 125 | Yes | 0 |

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