10570

Rocky Mountain Subalpine-Montane Limber-Bristlecone Pine Woodland

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Forest and Woodland

Map Zone

28

Geographic Range

Colorado south of I-70, into New Mexico. Bristlecone component drops out north of I-70. In Colorado above South Park, San Luis Valley floors. Extends onto southerly slopes of Mt. Evans and Pikes Peak, and along spine of Sangre de Cristos and east mid slopes of San Juans into New Mexico.

Biophysical Site Description

Elevation ranges from 2,475-3,050m (7,500-10,000ft), mid to upper slopes. The areas are typically in rain shadows and can often be considered dry, cold extents of tree cover.

Vegetation Description

Usually a mixed PIAR and PIFL type, with PIEN and PSME, and occasionally PIPO as sites moderate. Sparse understories, with grass (FEAR and FETH) or short shrubs (*Ribes* spp. and *Juniperus* spp.).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PIAR | *Pinus aristata* | Bristlecone pine |
| PIFL2 | *Pinus flexilis* | Limber pine |
| FEAR2 | *Festuca arizonica* | Arizona fescue |
| FETH | *Festuca thurberi* | Thurber’s fescue |
| ARUV | *Arctostaphylos uva-ursi* | Kinnikinnick |
| CELE3 | *Cercocarpus ledifolius* | Curl-leaf mountain mahogany |
| JUCO6 | *Juniperus communis* | Common juniper |
| MARE11 | *Mahonia repens* | Creeping barberry |

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

Disturbance Description

This group contains some of the oldest trees in the region, with PIAR at 1,000yrs old or more and PIFL at 500yrs+. Understories are often sparse, with little to carry fires across the surface. Fire occurrence is low frequency and mixed severity. In the absence of wind, fires are likely limited in extent (2ac or less). Stand-replacement fires are usually wind driven, especially in Classes C and D. Susceptible to bark beetles (especially PIFL), but generally is drought tolerant.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 486 | 29 |  |  |
| Moderate (Mixed) | 197 | 71 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 140 | 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

Large patch; 50-2,000ha. Stand-replacement fires of hundreds of acres have been experienced. Continuous bands of the group of 1000s of acres are present around large intermountain valleys (e.g., South Park in Colorado).

Adjacency or Identification Concerns

Probably synonymous with PIAR/FETH and PIAR/FEAR habitat types described by DeVelice et al. (1986). Also similar to Great Basin Pine group present in Utah, Nevada, and Idaho.

Issues or Problems

B Wilmore suggests fire regime 4 or 5.

Native Uncharacteristic Conditions

Canopy cover >60% can be considered uncharacteristic for this woodland biophysical setting.

Comments

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 | A | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| Tree | 0-5 | A | A | A | A | A | A | UN | UN | UN | UN |
| Tree | 5-10 | A | B | B | B | B | B | UN | UN | UN | UN |
| Tree | 10-25 | A | C | C | C | C | C | UN | UN | UN | UN |
| Tree | 25-50 | A | C | C | C | C | C | UN | UN | UN | UN |
| Tree | >50 | A | C | C | C | C | C | 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 19 Early Development 1 - All Structures

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIAR | Pinus aristata | Bristlecone pine | All |
| PIFL2 | Pinus flexilis | Limber pine | All |
| FEAR2 | Festuca arizonica | Arizona fescue | Lower |

Description

Bare ground and talus with sparse ground cover of forbs, grasses, and low shrubs. Occasional old survivors may be present.

Class B 35 Mid Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIAR | Pinus aristata | Bristlecone pine | Upper |
| PIFL2 | Pinus flexilis | Limber pine | Upper |
| FEAR2 | Festuca arizonica | Arizona fescue | Lower |

Description

Open woodland, generally with <40% crown closure of seedlings, saplings, and survivors. Not seen as a closed stand.

Class C 46 Late Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIAR | Pinus aristata | Bristlecone pine | Upper |
| PIFL2 | Pinus flexilis | Limber pine | Upper |
| FEAR2 | Festuca arizonica | Arizona fescue | Lower |
| RIMO2 | Ribes montigenum | Gooseberry currant | Lower |

Description

Open woodland, generally with <40% crown cover of mixed diameter. Sparse ground cover of grasses and low shrubs.

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 99 |
| Mid1:OPN | 100 | Late1:OPN | 199 |
| Late1:OPN | 200 | Late1:OPN | 949 |

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 | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Early1:ALL | Early1:ALL | 0.005 | 200 | No | 0 |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.005 | 200 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Mixed Fire | Late1:OPN | Mid1:OPN | 0.005 | 200 | Yes | 0 |

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