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

23

Geographic Range

Typically on dry, wind-swept ridges and exposed upper elevations in mountains of Colorado, New Mexico, and Arizona.

Biophysical Site Description

Elevation ranges from 2,485-3,485 m, mid to upper slopes. The areas are typically in rain shadows and are the dry, cold extent of tree cover. Stands occur on thin, stony soils on high windswept ridges and open slopes with minimal ground cover.

Vegetation Description

*Pinus longaeva* and *Pinus flexilis* can exist separately or as mixed stands. There can be *Picea engelmannii* and limited *Pseudotsuga menziesii* in the stands. Sparse cover of forbs, grasses, and short shrubs form an understory. Seed dispersal of limber and bristlecone pines highly dependent on seed-caching birds.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PIAR | *Pinus aristata* | Bristlecone pine |
| PIFL2 | *Pinus flexilis* | Limber pine |
| FEAR | *Festuca arida* | Desert fescue |
| FETH | *Festuca thurberi* | Thurber's fescue |

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

Disturbance Description

Understories are often sparse, with little to carry fires across the surface. Fire occurrence is typically low frequency and consists of surface fires. In the absence of wind, fires are likely limited in extent. Stand-replacement fires are usually wind driven. This type is susceptible to bark beetles (especially *Pinus flexilis*), but generally is drought tolerant.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 499 | 29 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 199 | 71 |  |  |
| All Fires | 142 | 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

Stands vary from tens to thousands of acres in size. Stand replacement fire size can vary from 1/10th of an acre to 100s of acres.

Adjacency or Identification Concerns

A new, uncharacteristic disturbance is the introduction of white pine blister rust in bristlecone species. Blister rust is not occurring yet in western Great Basin.

Issues or Problems

Native Uncharacteristic Conditions

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 | B | B | B | B | UN | UN | UN | UN |
| Tree | 5-10 | C | C | C | C | C | C | UN | UN | UN | UN |
| Tree | 10-25 | C | C | C | C | C | C | UN | UN | UN | UN |
| Tree | 25-50 | C | C | C | C | C | C | UN | UN | UN | UN |
| Tree | >50 | C | 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 18 Early Development 1 - All Structures

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIFL2 | Pinus flexilis | Limber pine | All |
| PILO | Pinus longaeva | Great basin bristlecone pine | All |

Description

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

Class B 21 Mid Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIFL2 | Pinus flexilis | Limber pine | Upper |
| PILO | Pinus longaeva | Great basin bristlecone pine | Upper |

Description

Open woodland, with <40% crown closure of seedlings, saplings, and survivors.

Class C 61 Late Development 1 - Open

Upper Layer Lifeform: Tree

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIFL2 | Pinus flexilis | Limber pine | Upper |
| PILO | Pinus longaeva | Great basin bristlecone pine | Upper |

Description

Open woodland, with <40% crown cover of mixed diameter. Sparse ground cover of grasses and low shrubs. Very old trees can develop in this class.

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 99 |
| Mid1:OPN | 100 | Late1:OPN | 249 |
| Late1:OPN | 250 | 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 | 0.002 | 500 | Yes | 0 |
| Surface 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 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.005 | 200 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.005 | 200 | No | 0 |

References

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