11070

Rocky Mountain Gambel Oak-Mixed Montane Shrubland

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Bryan Bracken | Bryan\_Bracken@blm.gov | Louis Provencher | lprovencher@tnc.org |
| Sandy Gregory | s50grego@nv.blm.gov | None | None |
| Jack Sheffey | Jack\_Sheffey@blm.gov | None | None |

Vegetation Type

Shrubland

Map Zone

17

Geographic Range

This ecological system occurs in the mountains, plateaus, and foothills in the southern Rocky Mountains and Colorado Plateau, including the Uinta and Wasatch ranges and the Mogollon Rim. In Nevada, this biophysical setting (BpS) is found only rarely in the southeastern portion of the state.

Biophysical Site Description

These shrublands are most commonly found along dry foothills, lower mountain slopes, and at the edge of the western Great Plains at approximately 2,000-2,900m in elevation, and are often situated above pinyon-juniper woodlands. Substrates are variable and include soil types ranging from calcareous, heavy, fine-grain loams to sandy loams, gravelly loams, clay loams, deep alluvial sand, or coarse gravel.

Vegetation Description

The vegetation is typically dominated by *Quercus gambelii* alone or co-dominant with *Amelanchier alnifolia*, *Amelanchier utahensis*, *Artemisia tridentata*, *Cercocarpus montanus*, *Prunus virginiana*, *Purshia stansburiana*, *Purshia tridentata*, *Robinia neomexicana*, *Symphoricarpos oreophilus*,or *Symphoricarpos rotundifolius*. There may be inclusions of other mesic montane shrublands, with *Quercus* *gambelii* absent or as a relatively minor component. This ecological system intergrades with the lower montane-foothills shrubland system and shares many of the same site characteristics. Density and cover of *Quercus* *gambelii* and *Amelanchier* spp. often increase after fire.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| QUGA | *Quercus gambelii* | Gambel oak |
| ARTR2 | *Artemisia tridentata* | Big sagebrush |
| PRVI | *Prunus virginiana* | Chokecherry |
| PURSH | *Purshia* | Bitterbrush |
| SYOR2 | *Symphoricarpos oreophilus* | Mountain snowberry |

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

Disturbance Description

Fire is more often mixed, with less frequent replacement severity. Insect outbreaks occasionally affect this BpS. Frost-kill can cause a transition to early seral conditions. Fire often follows frost-kill disturbances.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 153 | 25 |  |  |
| Moderate (Mixed) | 52 | 75 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 39 | 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

This type occurs in relatively large patches across the landscape. Disturbance patch size within the type is generally moderate (a few to 100ac).

Adjacency or Identification Concerns

May be very difficult to distinguish this from Great Basin Semi-Desert Chaparral (BpS 1103). May be adjacent to other oak species.

Issues or Problems

Scant information on fire history for this type.

Highly susceptible to cheatgrass invasion.

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 | B | B | B | B | B | B | C | C | C | C |
| Shrub | >3.0 | B | B | B | B | B | B | C | C | C | C |
| Tree | 0-5 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | >50 | C | C | C | C | C | 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 7 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUGA | Quercus gambelii | Gambel oak | Upper |
| ARTR2 | Artemisia tridentata | Big sagebrush | Mid-Upper |
| PRVI | Prunus virginiana | Chokecherry | Low-Mid |
| PURSH | Purshia | Bitterbrush | Middle |

Description

Grass/forb and young Gambel oak sprouts <2m tall. Within clones, little herbaceous understory due to oak density. Between clones, there is fairly high cover of grasses and herbs, and <5% cover of sagebrush and other shrubs.

*Maximum Tree Size Class*  
None

Class B 33 Mid Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUGA | Quercus gambelii | Gambel oak | Upper |
| ARTR2 | Artemisia tridentata | Big sagebrush | Mid-Upper |
| PRVI | Prunus virginiana | Chokecherry | Low-Mid |
| PURSH | Purshia | Bitterbrush | Middle |

Description

Mid-seral stage with Gambel oak stems <2-3in in diameter and generally <8ft tall. High oak cover (generally >80%) within clone. Overall landscape canopy cover is generally 40-60%. Very sparse herbaceous cover within clones, but interspaces between clones grass/herb/sagebrush cover may be 5-20%.

*Maximum Tree Size Class*  
None

Class C 60 Late Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUGA | Quercus gambelii | Gambel oak | Upper |
| ARTR2 | Artemisia tridentata | Big sagebrush | Mid-Upper |
| PRVI | Prunus virginiana | Chokecherry | Low-Mid |
| PURSH | Purshia | Bitterbrush | Middle |

Description

Late seral stage is characterized by closed oak stands. Oak stems are generally >2-3in in diameter and usually >8ft tall. Oak cover within the clones is slightly lower than in the mid seral due to self-thinning of stems. Herbaceous understory cover is low (although may be somewhat more than in the mid-seral stage). Interspaces between clones is sagebrush (and other low shrubs) with 20-30% cover, along with grass/herbs.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:ALL | 5 |
| Mid1:ALL | 6 | Late1:ALL | 20 |
| Late1:ALL | 21 | Late1:ALL | 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** |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.007 | 143 | No | 0 |
| Mixed Fire | Early1:ALL | Early1:ALL | 0.01 | 100 | No | 0 |
| Insects or Disease | Mid1:ALL | Mid1:ALL | 0.003 | 333 | No | 0 |
| Wind or Weather or Stress | Mid1:ALL | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Replacement Fire | Mid1:ALL | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Mixed Fire | Mid1:ALL | Mid1:ALL | 0.02 | 50 | No | 0 |
| Insects or Disease | Late1:ALL | Late1:ALL | 0.003 | 333 | No | 0 |
| Wind or Weather or Stress | Late1:ALL | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Replacement Fire | Late1:ALL | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Mixed Fire | Late1:ALL | Mid1:ALL | 0.02 | 50 | Yes | 0 |

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