11070

Rocky Mountain Gambel Oak-Mixed Montane Shrubland

BpS Model/Description Version: Aug. 2020

Vegetation Type

Shrubland

Map Zones

25, 28

Geographic Range

Colorado Plateau, Southern Rocky Mountains. Gambel oak occurs primarily in Colorado, New Mexico, Utah, Arizona, and southeastern Wyoming. In the southern extent of its distribution, Gambel oak plays a minor role as an associate with ponderosa pine and mixed-conifer habitats. Moving northward, long-lived Gambel oak clones form dominant to monotypic overstories (Simonin 2000).

Biophysical Site Description

In Colorado, Gambel oak occurs between 2,000m and 2,900m (6,600-9,570ft) on all aspects in this biophysical setting (BpS). At higher elevations, it is more predominant on southern exposures. Gambel oak is typically a riparian species in New Mexico within the Black and Sacramento mountain ranges.

Vegetation Description

Gambel oak occurs as the dominant species, ranging from dense thickets to clumps associated with serviceberry or sagebrush. Gambel oak generally has a well-developed understory comprised of snowberry, elk sedge, Letterman’s needlegrass, *Poa ampla*, yarrow, *Poa secunda*, , lupine, and goldenrod.

BpS Dominant and Indicator Species

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

Disturbance Description

The primary disturbance mechanism is mixed-severity fire resulting in top-kill and rare mortality. Gambel oak responds to fire with vigorous sprouting from the root crown. Larger forms may survive low-intensity surface fire. Extended drought also contributes to disturbance.

Fire Frequency

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

Scale ranges from tens to thousands of acres.

Adjacency or Identification Concerns

This BpS is characterized by >80% Gambel oak. This type merges with the mountain shrub BpS at lower elevations and intermingles with the deciduous woodland BpS at higher elevations and/or northern exposures.

Issues or Problems

Native Uncharacteristic Conditions

Comments

Succession Classes

**Mapping Rules**

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

Description

Post-replacement sprouts to approximately 2ft high. Dense resprouting of shrubs of any height and <20% cover with high number of stems per acre. Abundant grass and forb cover.

*Maximum Tree Size Class*  
None

Class B 47 Mid Development 1 - Closed

Indicator Species

Description

Three to 6ft tall and 3inches DBH. Stem mortality due to competition, with slight decrease in understory species due to shading. Grass and forbs declining.

*Maximum Tree Size Class*  
None

Class C 17 Late Development 1 - Open

Indicator Species

Description

Greater than 6ft tall and >3inches DBH. Small stands covering <30m with open canopy and usually scattered throughout a grassland or shrub type (Brown 1958).

*Maximum Tree Size Class*  
None

Class D 29 Late Development 1 - Closed

Indicator Species

Description

Greater than 6ft tall and 3 inches DBH. Nearly continuous canopy cover and 2ha+ with only occasional openings (Brown 1958).

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

Probabilistic Transitions

References

Alexander, B.G., Jr., E.L. Fitzhugh, F. Ronco, Jr. and J.A. Ludwig. 1987. A classification of forest habitat types of the northern portion of the Cibola National Forest, New Mexico. Gen. Tech. Rep. RM-143. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 35 pp.

Alexander, Robert R. 1988. Forest vegetation on National Forests in the Rocky Mountain and Intermountain Regions: habitat and community types. Gen. Tech. Rep. RM-162. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 47 pp.

Bradley, A.F., N.V. Noste and W.C. Fischer. 1992. Fire ecology of the forests and woodland in Utah. GTR-INT-287. Ogden, UT: Intermountain Research Station.

Brown, J.K. and J. Kapler-Smith, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42. vol 2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. 257 pp.

Brown, H.E. 1958. Gambel oak in West-central Colorado. Ecology 39: 317-327.

Hess, K. and C.H. Wasser. 1982. Grassland, shrubland, and forestland habitat types of the White River-Arapaho National Forest. Final Report. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 335 pp.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Poreda, S.F. and L.H. Wullstein. 1994. Vegetation recovery following fire in an oakbrush vegetation mosaic. The Great Basin Naturalist. 54: 380-383.

Simonin, K.A. 2000. Quercus gambelli in Fire Effects Information System [Online]. USDA Forest Service, Rocky Mountain Research Station, Forestry Sciences Laboratory (producer). Www.fs.fed.us/database/feis/ [2004, October 28].

Stuever, M.C. and J.S. Hayden. 1996. Plant associations (habitat types) of the forests and woodlands of Arizona and New Mexico. Final report submitted to: USDA Forest Service, Southwestern Region. Contract R3-95-27. Placitas, NM: Seldom Seen Expeditions, Inc. 520 pp.

Welsh, S.L., N.D. Atwood, S. Goodrich and L.C. Higgins. 2003. A Utah Flora, Third edition, revised. Provo, UT: Print Services, Brigham Young University. 912 pp.