

11070

Rocky Mountain Gambel Oak-Mixed Montane Shrubland

BpS Model/Description Version: Aug. 2020

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	<i>Quercus gambelii</i>	Gambel oak
ARTR2	<i>Artemisia tridentata</i>	Big sagebrush
PRVI	<i>Prunus virginiana</i>	Chokecherry
PURSH	<i>Purshia</i>	Bitterbrush
SYOR2	<i>Symphoricarpos oreophilus</i>	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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