

Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004 and 2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG)

R2BLBR **Blackbrush**

General Information

Contributors (additional contributors may be listed under "Model Evolution and Comments")

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Vegetation Type

Shrubland

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

- California
- Great Basin
- Great Lakes
- Northeast
- Northern Plains
- N-Cent. Rockies
- Pacific Northwest
- South Central
- Southeast
- S. Appalachians
- Southwest

Dominant Species*

CORA
ACSP1
BOER
AMDU

LANDFIRE Mapping Zones

12	17
13	18
16	

Geographic Range

Blackbrush occurs in the southern Great Basin region, in the Mojave desert from California, through Nevada to Utah and Arizona. Within the Mojave-Colorado plateau ecotone, blackbrush is found on dry slopes and benches above the river canyons of southern Utah and northern Arizona. It is also found midslope on mountain ranges throughout this area. The PNVG described here applies to the Mojave Desert and the Colorado Plateau (including portions in the Southwest model zone).

Biophysical Site Description

Blackbrush occurs at the bioregional transition between the Mojave and Great Basin deserts and in the Mojave desert, and so occurs therefore on mesic and thermic soils, that are shallow to a root restrictive layer, on low hills and mountains and broad alluvial fans. Elevation ranges from 2200 to 4500 feet.

Vegetation Description

Blackbrush is considered to be one of the most flammable native plant assemblages in the Mojave Desert, although this desert does not have a history of fire. There are many ecological site descriptions in the Mojave desert and the bioregional transition between the Mojave Desert and Great Basin that describe the various sites by vegetation composition and soils published by the NRCS. In general terms, blackbrush dominates the site with 80 to 90% of total cover. Although 185 species of vascular plants have been found growing within blackbrush, they are never very abundant except at upper- and lower-elevational ecotones. For instance, desert needlegrass (*Achnatherum speciosum*) and Indian ricegrass (*Oryzopsis hymenoides*) are important grass species. Beatley (1976) stated that "so nearly complete is the dominance of this shrub species that in areas that are not ecotonal there are only a few associated shrubs species, and these occur usually as scattered plants in an otherwise pure stands of *Coleogyne*."

Disturbance Description

Low amounts of fine fuels in interspaces probably limited fire spread to only extreme fire conditions, during which high winds, low relative humidity, and low fuel moisture led to high intensity stand-replacing crown

*Dominant Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

fires. Historical fire return intervals appear to have been on the order of centuries allowing late seral blackbrush stands to re-establish.

Adjacency or Identification Concerns

On the upper elevation, adjacent PNVG's include, black sagebrush and Wyoming Big sagebrush communities and at lower elevations creosotebush and bursage communities. Within the upper and lower limits exist adjacent problem areas of blackbrush that are characterized by burned patches with early seral characteristics that have been degraded by overgrazing, prescribed burning in the mid-1900's. There is increased cover of early seral shrubs such as Chrysothamnus spp., Gutierrezia spp., and Eriogonum fasciculatum, early seral herbaceous perennials such as Sphaeralcea ambigua and Astragalus spp, and alien annual plants such as Bromus rubens, Bromus tectorum and erodium cictarum. Burned stands can also have a large perennial grass component. Other areas are annual grasslands dominated by Bromus rubens, and Bromus tectorum from repeated burning.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

The typical scale of common disturbance extent ranges from 100 to 1000 acres. Exceptions do occur in excess of 1000's of acres.

Issues/Problems

We don't have much data on this community.

Model Evolution and Comments

The PNVG and references apply best to the Mojave Desert and the Nevada Test Site. Although Utah and Arizona's blackbrush are not part of the Great Basin model zone, it is worth discussing its characteristics. Understory and associated species varies with soil type. Sandy sites in southeastern Utah have a much greater perennial grass component (mainly indian ricegrass and dropseeds) than the shallow calcareous soils in the Mojave. On the isolated mesas in the Grand Canyon there is an interesting relationship between soil depth, site location on the landscape and associated species. Grazing has not confounded these relationships because the only ungulate grazing has been by desert bighorns. Shallow soils over a petrocalcic horizon has very little perennial grass . The deep soils on " run in " sites have much greater perennial grass and associated shrub (eg. 4 wing saltbush) cover. According to Ledyard Stebbins blackbrush has been around for a long time; experts refer to it as a paleoendemic.

Succession Classes**
Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 10%

Early1 Open

Description

Historically, fire was relatively uncommon in this vegetation. The average FRI for replacement fire was 333 years, which would reset the ecological clock to zero. When burned, the fire tolerant/crown-sprouting shrubs such as spiny menodora, horsebrush, and snakeweed will dominate the site. At higher elevations of mesic blackbrush, a big sagebrush-desert bitterbrush community typically replaces blackbrush for a

Dominant Species* and Canopy Position

GUSA2
MESP2
EPNE
TETRA

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	35 %
Height	no data	no data
Tree Size Class	no data	

Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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protracted period. This class can express itself for over a hundred years with varying amounts of blackbrush gradually establishing after decades and eventually succeeding to Class B. A few examples of this that have been observed in the field are believed to be over 60 plus years old. The ground cover varies by elevation and moisture regime with mesic sites being generally 0 to 35 percent with some sites only capable of 10 percent cover. The thermic sites are generally, 10 to 15 ground cover with exception going as high as 35 percent. Currently, there is much more that is burned due to burning done to produce forage in the mid-1900's. This is estimated to be about 20 percent. Portions of the this 20 percent have transitioned through repeated burning into annual grasslands that are not historical but are now part of the system.

Class B 90 %

Late3 Closed

Description

This community class seems to be stable and occurs after a threshold is crossed. Composition is 70 to 80 percent blackbrush dominated. Other species are perennial grasses of desert needlegrass, Indian ricegrass, galleta grass, fluff grass, and threeawn. Lesser shrub composition includes: Nevada ephedra, turbinella oak, desert bitterbrush, fourwing saltbush, and Anderson's wolfberry in mesic sites and Nevada ephedra, creosotebush, Mojave buckwheat, snakeweed, prickly pear, white bursage and spiny menodora in thermic sites. There are other shrubs also. The FRI for replacement fire is 1000 years, which causes a rare transition to class A.

Dominant Species* and Canopy Position

CORA
EPNE
YUSC2
LATR2

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	10 %	35 %
Height	no data	no data
Tree Size Class	no data	

- Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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Class C 0%

Mid1 Open
Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	0 %	%
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

Upper Layer Lifeform

- Herbaceous
 Shrub
 Tree

Upper layer lifeform differs from dominant lifeform.
Height and cover of dominant lifeform are:

Fuel Model no data

Class D 0%

Late1 Open
Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	0 %	%
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

Upper Layer Lifeform

- Herbaceous
 Shrub
 Tree

Upper layer lifeform differs from dominant lifeform.
Height and cover of dominant lifeform are:

Fuel Model no data

Class E 0%

Late1 Closed
Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	<i>Min</i>	<i>Max</i>
<i>Cover</i>	0 %	%
<i>Height</i>	no data	no data
<i>Tree Size Class</i>	no data	

Upper Layer Lifeform

- Herbaceous
 Shrub
 Tree

Upper layer lifeform differs from dominant lifeform.
Height and cover of dominant lifeform are:

Fuel Model no data

Disturbances

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Disturbances Modeled

- Fire
- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other

Historical Fire Size (acres)

Avg: no data
 Min: no data
 Max: no data

Sources of Fire Regime Data

- Literature
- Local Data
- Expert Estimate

Fire Regime Group: 5

- I: 0-35 year frequency, low and mixed severity
- II: 0-35 year frequency, replacement severity
- III: 35-200 year frequency, low and mixed severity
- IV: 35-200 year frequency, replacement severity
- V: 200+ year frequency, replacement severity

Fire Intervals (FI)

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

	<i>Avg FI</i>	<i>Min FI</i>	<i>Max FI</i>	<i>Probability</i>	<i>Percent of All Fires</i>
<i>Replacement</i>	833	100	1700	0.00120	98
<i>Mixed</i>					
<i>Surface</i>					
<i>All Fires</i>	832			0.00122	

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