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 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG):

R3QUGA Gambel Oak

General Information

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

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Vegetation Type

Shrubland

Dominant Species*

QUGA
AMUT
CAGE2
stle4

Expert Estimate

General Model Sources

Literature
Local Data

Landfire Mapping Zones

14 24 28
15 25 16
23 27

Geographic Range

Gambel oak occurs primarily in Colorado, New Mexico, Utah (Wasatch Front), Arizona and southeastern Wyoming. In the southern extent of its distribution, Gambel oak occupies a minor role as an associate with Ponderosa Pine and mixed conifer habitats. Moving north, long-lived Gambel oak clones form dominant to mono-typic overstories. (FEIS-2004)

Biophysical Site Description

In Colorado, Gambel oak occurs between 6,000 and 9,000 feet on all aspects. At higher elevations it is more predominant on southern exposures. Gambel oak is typically a riparian species in New Mexico, occurring from 6,580 to 8,080 feet within the Black and Sacramento Mountain ranges. In Arizona Gambel oak occurs as a shrub thicket or as a tree throughout the Ponderosa pine habitat at elevations ranging from 8,000 to 8,600 feet. In Utah, Gambel oak is a dominant species in the central Utah mountain brush zone at 6,500 to 7,800 feet on southern exposures. On northern exposures Gambel oak shares dominance with bigtooth maple or is completely replaced by bigtooth maple (Simonin 2000).

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, lupine, and goldenrod.

Disturbance Description

The primary disturbance mechanism is replacement fire or mixed-severity fire resulting in 25-75% top-kill, but rare mortality. Depending on surrounding communities, fire frequency in Gambel oak may range from 20 years (Simonin 2000) to 100 years (Floyd et al. 2000). 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.

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.
Adjacency or Identification Concerns
This PNVG is characterized by > 80% Gambel oak. This type merges with the mountain shrub PNVG
(R3MSHB) at lower elevations and grades into ponderosa pine and pinyon juniper types at higher elevations.

Scale Description
Scale ranges from 10 to 1000's of acres

Issues/Problems
This effort models Gambel oak as a climax species. One Rapid Assessment technical modeling rule was
violated (a disturbance--native grazing--accelerates age). It was left in the model because it captures a real
ecological function (i.e., disturbance accelerating succession).

Model Evolution and Comments
Peer review for this type suggested that R3MSHB and R3QUGA be combined and have a total MFI of 100
years with no mixed or surface fires. The R3QUGA model was unchanged, but the R3MSHB model was
modified slightly.

This PNVG replaces the model R2CHAPin from the Great Basin only for mapzone 16 of the Great Basin.

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

Class A  5 %
Early1 PostRep
Description
Post-replacement sprouts to
approximately 2' high. Dense
resprouting with high number of
stems/acre. Abundant grass and
forb cover.

Indicator Species* and
Canopy Position
CAGE2
STLE4
QUGA
SYOR2

Structure Data (for upper layer lifeform)
Min    Max
Cover   0 %    20%
Height  no data no data
Tree Size Class    no data

Upper Layer Lifeform
Herbaceous
Shrub
Tree

Fuel Model    no data

Class B  50 %
Mid1 Closed
Description
3'-6' tall to 3" dbh. Stem mortality
due to competition with slight
decrease in understory species due
to shading. Grass and forbs
declining.

Indicator Species* and
Canopy Position
QUGA
CAGE2
STLE4

Structure Data (for upper layer lifeform)
Min    Max
Cover   20 %    70%
Height  no data no data
Tree Size Class    no data

Upper Layer Lifeform
Herbaceous
Shrub
Tree

Fuel Model    no data

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### Class C 15%

**Late2 Open**

**Description**

> 6' tall and > 3" dbh. Small stands < 30 meters across usually scattered throughout a grassland or shrub type (Brown 1958).

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model**

no data

**Structure Data (for upper layer lifeform)**

<table>
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<th>Min</th>
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<td>Tree Size Class</td>
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</table>

**Indicator Species**

- QUGA
- ARTRV
- CAGE2

**Cover**

QUGA

**Height**

ARTRV

**Tree Size Class**

CAGE2

### Class D 30%

**Late1 Closed**

**Description**

> 6' tall and 3" dbh. Nearly continuous stand 2 or more hectares in size with only occasional openings (Brown 1958).

**Upper Layer Lifeform**

- Herbaceous
- Shrub
- Tree

**Fuel Model**

no data

**Structure Data (for upper layer lifeform)**

<table>
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<th>Min</th>
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<td>Cover</td>
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<td>Height</td>
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<tr>
<td>Tree Size Class</td>
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</tr>
</tbody>
</table>

**Indicator Species**

- QUGA
- CAGE2
- STLE4
- ACAG

**Cover**

QUGA

**Height**

CAGE2

**Tree Size Class**

STLE4

### Class E 0%

**Late1 Closed**

**Description**

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

**Indicator Species**

- QUGA
- CAGE2
- STLE4
- ACAG

**Cover**

QUGA

**Height**

CAGE2

**Tree Size Class**

STLE4

**Fuel Model**

no data

### Disturbances

**Non-Fire Disturbances Modeled**

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

**Fire Regime Group:**

- 4
  - 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

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8/11/2008
Replacement

Mixed

Surface

All Fires

Avg FI	Min FI	Max FI	Probability	Percent of All Fires

References

