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)

R2CHAPmn Montane Chaparral

General Information

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

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Vegetation Type

Shrubland

Dominant Species*

ARPA
CECO
QUVA
CEIN3

General Model Sources

- [x] Literature
- [ ] Local Data
- [x] Expert Estimate

LANDFIRE Mapping Zones

12 17
13 18
16

Rapid AssessmentModel Zones

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

Geographic Range

Montane chaparral is located in the southern and central Sierra Nevada on steep south and west aspects. It also occurs elsewhere throughout CA and Nevada within montane forests, especially within the Transerve Ranges of California.

Biophysical Site Description

This type generally occurs on steep south and west aspects in canyons, on glaciated landscapes, on recent volcanics and areas with low site productivity/shallow soils, and on decomposed graintic soils on the east side of the Sierra Nevada.

Vegetation Description

Montane chaparral includes a number of floristically distinct types of shrublands. Greenleaf manzanita, mountain
whitethorn, pinemat manzanita, deerbrush, snowbrush, huckleberry oak, bush chinquapin and many other shrub species
are common and dominant in the early and open seral stages. Ponderosa pine, Jeffrey pine, sugar pine, Douglas-fir,
bigcone Douglas-fir, Coulter Pine, white fir, incense cedar, red fir, and lodgepole pine are present in the mid seral stages
and dominant in late seral closed stands. In the Peninsular and Transverse Ranges, Palmer ceanothus and Mexican or
pink-bract manzanitas may also be characteristic. Sites influenced by Great Basin or Mojave desert climates may have
mixtures of montane chaparral and species such as antelope bitterbrush and mountain big sagebrush.

Disturbance Description

Stand replacing fires (average FRI of 75-100 yrs) occurred mostly in the shrub dominated stages. Mixed

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

severity fire (average FRI of 40 yrs) is present in all but the early structural class. FRI is generally greater than that of the surrounding forested landscape - perhaps double (Nagel and Taylor, in press) - due to the lack of flammability of many young shrub fields without a long history of fuel accumulation.

Adjacency or Identification Concerns

This type includes several types of montane shrublands on sites that are typically seral to conifers. Montane chaparral is usually embedded within mixed conifer, red fir, white fir, Jeffrey pine, and other conifer forests on sites that are prone to stand replacing fire, or on otherwise disturbed or more open sites.

This PNVG is identical to the PNVG R1CHAPmn from the California model zone

Scale Description

Sources of Scale Data ☑ Literature ☐ Local Data ☑ Expert Estimate

Montane chaparral typically originates following large stand replacing fires in conifer forests. A variety of montane
shrubs occupy the site and limit establishment and growth of conifers. If these shrublands burn again before succession to late seral close forest, they can stay shrub dominated for long periods of time (centuries). Patch size can be quite
large, especially in the northern part of the state.

Issues/Problems

Not sure about historic composition of seral stages. System described over broad area on east and west side of Sierras. It also occurs elsewhere, however, most literature summarized is characteristic of the Sierra Nevada range. Sugihara and Sherlock created a 4-box model. Based on anonymous feedback, Shlisky edited the model to 3-boxes, removing the tree dominated state. This determination was based on a hypothesis that the 4-box model overlapped too-much with mixed conifer PNVGs. Overlap will be reviewed during the mapping phase, and determination of which model works best
(Sugihara and Sherlock vs. Sugihara et al.) will be made at that time.

Model Evolution and Comments

Adopted the VDDT model for the Great Basin as-is from the California Workshop (R1CHAPmn) with revisions by Ayn Shlisky. This model may be redundant with the mixed conifer models (i.e., dominant species in classes B and C are all trees, not shrubs), and could be captured within Vegetation Class A of the mixed conifer, red fir/ white fir, and the red fir/w white pine models, by including shrub species in the descriptions. This issue needs to be rectified when the first draft Rapid Assessment map is constructed, and relationships between forest and montane chaparral PNVGs can be assessed. As modeled, it's possible that montane chaparral could be mapped as a PNVG only in areas where it does not turn into forest with lack of fire and succession. Would this be hard to map? What Shlisky tried with the model: 1) class D (forest) from original model deleted, and reference % of old class D combined with new class C, and 2) surface fire removed and replaced by mixed fire (no surface fire expected in this type). Lots of fire may not n necessarily lead to a persistent shrub field except on steep, especially s-facing slopes(?). On thinner soils at higher elevation, fire is not necessary to perpetuate shrubs - trees don't grow there for other reasons.

Succession Classes**

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

Class A 25 %

Early1 PostRep

Description

Early succession, after large patches of stand replacement fire. Comprised of grass, shrubs, and few tree seedlings to saplings. Prunus emarginata also common. Succession to B (mid-development open) after 30 years. Stand replacing fire (FRI of 75 yrs) will setback succession.

Dominant Species* and Canopy Position

ARPA6
CECO
QUVA
CEIN3

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	10 %
Height	no data	no data
Tree Size Class	no data	

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

Class B 30 %

Mid1 Open

Description

Open or closed shrublands with scattered pole to medium sized conifers. Jeffrey pine, ponderosa pine, white fir, red fir, sugar pine, Douglas-fir, incense cedar and lodgepole pine can occur. Prunus emarginata also common. Replacement fire average FRI is 100 yrs. Mixed severity fire (average FRI of 40 yrs) maintains vegetation in state C. Succession to C after 50 yrs.

Dominant Species* and Canopy Position

PIPO
PSME
ABMA
ABCO

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	11 %	20 %
Height	no data	no data
Tree Size Class	no data	

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

Class C 45 %

Late1 Open

Description

Open or closed shrublands with scattered large and very large sized conifers, and sometimes medium and small sized shade tolerant conifers. Tree cover greater than 35% can occur in small to moderately sized patches on north aspects and lower slope positions. Jeffrey pine, ponderosa pine, white fir, red fir, sugar pine, Douglas-fir, incense cedar and lodgepole pine can occur. Prunus emarginata also common. FRI of

Dominant Species* and Canopy Position

PIJE
PSME
ABCO
ABMA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	21 %	80 %
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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replacement and mixed severity fires as described for class B. Succession remains in class C.

Class D **0 %**

Late1 Closed

Description

Dominant Species* and Canopy Position

Structure Data (for upper layer lifeform)

	Min	Max
Cover	%	%
Height	no data	no data
Tree Size Class	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)

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

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: **3**

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.

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	93			0.01075	37
Mixed	54			0.01852	63
Surface					
All Fires	34			0.02928	

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