

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)

R1CHAP Chaparral

General Information

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

Modelers

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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*

ADFA
HEAR
CECU
QUBE

LANDFIRE Mapping Zones

3 6
4
5

Geographic Range

Beginning as far north as Yreka and ending south of Bakersfield, chaparral forms a narrow, linear band along the foothills of the western Sierra Nevada Mountains. It is more diffusely distributed in the Coast Ranges from Ukiah to Salinas. From Big Sur in the northern Santa Lucia Mountains to Lompoc, it is primarily coastal. South of Santa Barbara chaparral is the dominant vegetation type covering several million of acres of the Transverse and Peninsular Ranges well into northern Mexico. Chaparral is widespread in southern California and can occur in the coastal mountains, foothills and plains.

Biophysical Site Description

Dry slopes and ridges below 5,000 feet on rocky, gravelly or fairly heavy soils. Average rainfall 14-25 inches.

Vegetation Description

Chaparral is composed of woody, sclerophyllous shrubs that generally vary from 3 to 15 feet in height. Shrub cover is usually dense and continuous, covering vast areas of land. In central and southern California xeric, high-insolation aspects typically support species such as chamise, redshank, obligate-seeding manzanitas, chaparral yucca, redberry, sugar bush and Ceanothus spp. In more mesic, low solar insolation settings, common dominants are scrub oak, toyon, poison oak, coffeeberry, and Prunus spp. Scrub oak readily sprouts after fire. At elevations above 4000 feet, resprouting manzanitas, shrub interior live oak, birchleaf mountain mahogany and canyon live oak are common associates.

Disturbance Description

Chaparral burns in high-intensity, stand-replacing crown fires that burn thousands of acres in a single event. However, there is a considerable range in the flammability of shrub species (e.g., chamise is "flashier" than manzanita). Large, stand replacement events can interact with seed availability and, hence, influence post-fire successional pathways differently than for smaller, less severe fires. Mean fire return intervals are highly variable across the state depending on species composition and other factors. Sediment cores taken

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

from the Santa Barbara Channel in central California dating from the 16th and 17th centuries indicate that large fires burned the Santa Ynez and Santa Lucia Mountain every 40-60 years. Season of burning plays a large part in species composition. Occasionally, frost affects mortality and increases fuel buildup. In the last century the high frequency of human ignitions have reduced the mean fire interval to 30-35 years in southern California.

Adjacency or Identification Concerns

Below ponderosa and sugar pine forests on the western slopes of the Sierra Nevada and more southern mountains.

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Wildfires typically burn 1,000's and 10,000's of acres; a small percentage burn more than 100,000 acres.

Issues/Problems

In this model, chaparral cover closes after 8 years. Of course, it could be faster or slower depending on the site. One reviewer suggested adding another state to reflect a mid-closed state (B) following an early seral ephemeral state (A). Due to the coarse nature of the Rapid Assessment and difficulty mapping a mid- versus late-closed state for the Rapid Assessment, we are maintaining the existing 2-box model, but will consider a 3-box model for future LANDFIRE modeling by mapping zone.

Model Evolution and Comments

This model uses a 50-year fire return interval. This is the mid-point between 40 and 60 given by Byrne et al. This represents the average interval between large fires that appeared in the sediment cores. The interval may have been somewhat shorter if smaller fires (I.e., those that did not show up in the cores) had been included.

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

Class A 20%

Early1 Open

Description

Shrub seedlings, fire annuals, perennial geophytes, short-lived perennials. 0-8 years of age.

Dominant Species* and Canopy Position

LOSC2
PHACE
CRYPT
EMME

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	70 %
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 80%

Late3 Closed

Description

Resprouting shrubs, shrubs growing from seedlings. Herbs only in openings. Greater than 8 years of age.

Dominant Species* and Canopy Position

ADFA
QUBE5
CEBE2
CECU2

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	71 %	100 %
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%

Midl 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

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: 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

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>	50	30	125	0.02	100
<i>Mixed</i>					
<i>Surface</i>					
<i>All Fires</i>	50			0.02002	

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