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):

R1CHAP **Chaparral**

General Information

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

Modelers

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Reviewers

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Vegetation Type

Shrubland

Dominant Species*

ADFA
HEAR5
CECU2
QUBE5

General Model Sources

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

LANDFIRE Mapping Zones

3 6
4
5

Rapid Assessment Model Zones

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

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-

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

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 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.

Indicator Species* and Canopy Position

LOSC2
PHACE
CRYPT
EMMEN

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:

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Class B **80%**

Late3 Closed

Description

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

Indicator 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:

Class C **0%**

Mid1 Open

Description

Indicator Species* and Canopy Position

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	%
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 D **0%**

Late1 Open

Description

Indicator Species* and Canopy Position

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	%
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 E **0%**

Late1 Closed

Description

Indicator Species* and Canopy Position

Structure Data (for upper layer lifeform)

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

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

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

Non-Fire Disturbances Modeled

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

Historical Fire Size (acres)

Avg:
Min:
Max:

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 the 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.

Sources of Fire Regime Data

☑ Literature
☐ Local Data
☐ Expert Estimate

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	50	30	125	0.02	100
Mixed					
Surface					
All Fires	50			0.02002	

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