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):

R1PSMA **South Coastal Mixed Evergreen/Big Cone Douglas-Fir**

General Information

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

Modelers		Reviewers	
Mark Borchert	mborchert@fs.fed.us	Richard Minnich	Univ. of California Riverside
		JoAnn Fites	jfites@fs.fed.us

Vegetation Type

Forested

Dominant Species*

PSMA
QUCH2
CECO
PICO3

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

Bigcone Douglas-fir ranges from the Sierra Madre to San Diego Country. In the San Gabriel Mountains and San Bernardino Mountains there are continuous forests of this species but in most of its distribution it is highly fragmented and embedded in other vegetation types, primarily chaparral. Stands occur as an archipelago of small (<15 acres) populations growing in mesic setting such as steep north-facing slopes, canyons, draws and landslides. These sites have low understory fuel loading and do not easily carry fire.

Biophysical Site Description

Steep rapidly eroding slopes and cliffs. Elevations range from 2000-7500 feet (600-2200 meters). Often in fault zones.

Vegetation Description

Bigcone Douglas-fir frequently co-occurs with tree canyon live oak. Both species are long-lived (>300). Douglas-firs are generally scattered in a continuous canopy of understory canyon live oak. In many settings, however, both firs and oaks are patchily distributed with frequent openings. Because they grow on steep slopes, soils are gravelly and erosive.

Disturbance Description

Although they grow in a matrix with chaparral, bigcone Douglas-fir forests burn at longer fire return intervals as surrounding chaparral. Fires can carry into understory canyon live oak and occasionally into the overstory. Generally, however, portions of the stand survive. Trees that are moderately to lightly burned will resprout in the canopy; if foliage is burned throughout, PSMA will be killed.

Adjacency or Identification Concerns

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

Scale Description

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

Wildfires typically burn 1,000's and 10,000's of acres of neighboring chaparral; a small percentage burn more than 100,000 acres. The extent to which bigcone stands burn is highly variable even though chaparral burns completely.

Issues/Problems

Model Evolution and Comments

As per comments by JoAnn Fites and Richard Minnich, fire return intervals were lengthened, and the % of late seral was increased from the original model. To achieve desired mosaics given the fire regime inputs, ending age of B and beginning age of C were changed to 159 and 160, respectively (original model had 179 and 180 years). The original model used a 50-year fire return interval, similar to the chaparral surrounding bigcone Douglas-fir (this is the mid-point between 40 and 60 given by Byrne et al. This represents the frequency between large fires that showed up in the sediment cores). There were in-workshop discussions about aboriginal burning and whether it really would have been less frequent in this type than in the Mixed Evergreen - North (MEVGn) model.

Succession Classes

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

Class A 15 %

Early1 Open

Description

Resprouting canyon live oak. If present, A few bigcone Douglas-fir seed trees. May include Ceanothus spp. (sprouters).

Indicator Species* and Canopy Position

QUCH2
PSMA2
JUCA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	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 B 25 %

Mid1 Closed

Description

Tree canyon live oak. In the absence of fire, bigcone Douglas-fir begins to colonize the site.

Indicator Species* and Canopy Position

QUCH2
PSMA2

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	70 %	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:

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

Class C **60 %**

Late3 Closed

Description

Mature tree canyon live oak and bigcone Douglas-fir.

Indicator Species* and Canopy Position

PSMA2
QUCH2

Structure Data (for upper layer lifeform)

	Min	Max
Cover	70 %	100 %
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 D **0 %**

Late1 Open

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	

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

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	

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: **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

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

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

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

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	250			0.004	29
Mixed	100			0.01	71
Surface					
All Fires	71			0.01401	

References

Byrne, R.I., J. Michaelsen and A. Soutar. 1977. Fossil charcoal as a measure of wildfire frequency in southern California: a preliminary analysis, pp. 361-361. In H.A. Mooney and C.E. Conrad (eds.). Proceedings of the symposium on environmental consequences of fire and fuel management in Mediterranean ecosystems. USDA Forest Service, General Technical Report WO-3.