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)

R1CAGR **California Grassland**

General Information

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

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Vegetation Type

Grassland

Dominant Species*

NAPU
DACA
POSE
FERU2

General Model Sources

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

LANDFIRE Mapping Zones

3 6
4
5

Rapid AssessmentModel Zones

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

Geographic Range

Central Valley and coastal prairies from sea level to 3600' including the following subregions described by Miles and Goudy (1997): Central California Coast (261A), Southern California Coast (261B), Central Valley (262A), Northern California Coast (263A), Klamath Mountains (M261A), Northern California Coast Ranges (M261B), Northern California Interior Coastal Ranges (M261C), Sierra Nevada Foothills (M261F), Central California Coast Ranges (M262A), Southern California Mountains and Valleys (M262B) Baja California (Sawyer & Wolf in prep). Deleted , Mojave Desert (322A)from earlier version based on Bartolome comments.

Biophysical Site Description

Includes a variety of soil types, but these grasslands are edaphically constrained. Along the coast, these grasslands may occur on serpentine soils. Important finer resolution biophysical systems (serpentine, vernal pool, etc) are not distinguished here, yet may play a significant role in constraining fire behavior and effects. The importance of climate variation to vegetation composition and structure relative to grazing and fire dynamics is not captured in this model version.

Vegetation Description

Includes a diversity of dominant cover types composed of annual and perennial grass and forb species (Holstein 2001). The California grassland is extremely spatially and temporally variable - this model may not capture the full variation across the state, and thus may have low predictive reliability. The nature of the pre-Euro-American settlement grassland and fire effects are poorly known.

Disturbance Description

Includes aboriginal burning that occurred as frequently as 1-3 years. In absence of aboriginal influence, fire return intervals were 10-30 years. (Frost 1998, Greenlee & Langenheim 1990, Sugihara, N. et al 2005), but can be much longer, particularly where natural and human-caused ignitions were rare.

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

Adjacency or Identification Concerns

These grasslands often grade into areas which may have a shrubland or woodland component at some point during succession. They may also border wetlands or riparian areas. Along the coast, these grasslands are often found in conjunction with the coastal scrub type. California grasslands have been significantly altered through invasion of exotic species, livestock grazing, clearing, and seeding. Stands vary greatly in composition (Sawyer & Wolf, in prep). At least 95% are considered uncharacteristic of historic conditions.

Scale Description

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

Historically, fire size probably varied widely from very small fires (10s of hectares) to very large fires (1000s of hectares). (Sugihara 2005)

Issues/Problems

This model is meant to apply only to edaphically limited systems that would NOT succeed to shrubland. Amount of fire frequency data is poor.

Model Evolution and Comments

One reviewer suggested that model needs more states, yet there is a general consensus that reference conditions by state are unknown with any reliability. In particular, there is a high level of uncertainty in the degree of perennial dominance during the reference period. Hence, the model stands as a 2-box model for Rapid Assessment purposes. There is also great uncertainty in the restorability of California annual grasslands to perennial dominance.

*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

Post-stand replacement dominated by annual grasses and forbs. This would be created by a rare extreme fire event in the mid-seral closed state that would completely kill most perennial grasses as well as many annual seeds. This state is maintained by replacement fire.

Dominant Species* and Canopy Position

POSE
LACA7
ESCA2
BLNA

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	40 %
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 %

Early2 Closed

Description

>40% perennial grass; annual grasses and forbs in interstitial spaces. Most fires would result in a return to this state during the next growing season as perennial grasses would resprout and annuals would germinate.

Dominant Species* and Canopy Position

NAPU4
DACA3
POSE
FERU2

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	40 %	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 Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.

Class C **0 %**

Mid1 Open

Description

Dominant 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 D **0 %**

Late1 Open

Description

Dominant 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

Dominant 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

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Disturbances Modeled

- [x] Fire
- [ ] Insects/Disease
- [ ] Wind/Weather/Stress
- [x] Native Grazing
- [ ] Competition
- [ ] Other:
- [ ] Other

Historical Fire Size (acres)

Avg: no data
Min: no data
Max: no data

Sources of Fire Regime Data

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

Fire Regime Group: 2

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	2	1	3	0.5	100
Mixed					
Surface					
All Fires	2			0.50002	

References

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