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):

R1SESE **Coast Redwood**

General Information

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

Modelers		Reviewers	
Neil Sugihara	nsugihara@fs.fed.us	John Stuart	jds2@humboldt.edu
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Vegetation Type

Forested

Dominant Species*

SESE3
PSME
TSHE
LIDE3

General Model Sources

- [x] Literature
- [ ] Local Data
- [x] 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

Occurs along the coast from the Chetco River south to Monterey County.

Biophysical Site Description

Restricted to the coastal fog belt and low elevation slopes below 3,500 feet elevation. Redwood forests occur in an irregular, narrow strip, ranging in width from 8 km to 56 km (5 to 35 mi) (Olson et al. 1990, Griffin and Critchfield 1972). The tallest and largest trees are confined to moist, wind-protected canyons and lower slopes.

Vegetation Description

Dense forests dominated by coast redwood and including Douglas-fir, and tan oak in dryer locations and western hemlock and Sitka spruce close to the coast.

Disturbance Description

Redwood forests typically burned in the summer and early fall in moderate intensity surface fires that consumed irregular patches of surface fuel and understory vegetation. The great height of the canopy and separation of surface and crown fuels resulted in a pattern where fire rarely resulted in canopy tree mortality. There was a wide range of fire intervals ranging from less than 10 years in interior and upland locations to more than 100 years on lower slopes near the coast.

Adjacency or Identification Concerns

Includes a variety of forest types that are dominated by coast redwood.

Scale Description

Sources of Scale Data [x] Literature [ ] Local Data [x] Expert Estimate

Fires were tens to thousands of acres in size occurring mainly during drought periods and with warm dry east winds.

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

Issues/Problems

Coast redwood includes a wide variety of forest types that are dominated or codominated by coast redwood. These include a rich variety of very moist coastal forests with longer fire intervals and coastal species and interior stands with histories of frequent fire and more interior associated species.

Model Evolution and Comments

Fire rarely resulted in mortality in mature canopy trees. This is a result of the very tall canopy and large separation of surface fuel from crowns. Suggested reviewers: John Stuart; Mark Borchert

Succession Classes

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

Class A 1 %

Early1 PostRep

Description

Early succession following creation of localized canopy gaps from fire or treefalls. Regenerating coast redwood, and other conifers including various combinations of Douglas-fir, western hemlock, Sitka spruce, hardwoods including tan oak, bigleaf maple, and hazelnut with huckleberry, salal, swordfern. Trees are seedlings or recent sprouts.

Indicator Species* and Canopy Position

SESE3
PSME
VAOV2
GASH

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	34 %
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 5 %

Mid1 Closed

Description

Small trees up to 30 inches diameter include coast redwood, and other conifers including various combinations of Douglas-fir, western hemlock, Sitka spruce, hardwoods including tan oak, bigleaf maple, and hazelnut with huckleberry, salal, swordfern.

Indicator Species* and Canopy Position

SESE3
PSME
GASH
VAOV2

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	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 94 %

Late1 Closed

Description

Dense forest dominated by coast redwood. Sitka spruce can be a codominant near the coast and Douglas-fir codominates interior locations. Canopy includes coast redwood, and other conifers including various combinations of Douglas-fir, western hemlock, Sitka spruce, hardwoods including tan oak, bigleaf maple, and hazelnut with huckleberry, salal, swordfern.

Indicator Species* and Canopy Position

SESE3
PSME
VAOV2
GASH

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	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 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

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:

Disturbances

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Non-Fire Disturbances Modeled

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

Fire Regime Group: 1

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	1000			0.001	2
Mixed					
Surface	20			0.05	98
All Fires	20			0.05101	

References

Brown, J.K. and J.K. Smith eds. 2000. Wildland fire in ecosystems. Effects of fire on flora. Gen. Tech. Rep. RMRS GTR 42 vol. 2. USDA Forest Service 257 pp.

Finney, M. A., and R. E. Martin. 1989. Fire history in a Sequoia sempervirens forest at Salt Point State Park, California. Canadian Journal of Forest Research 19:1451-1457.

Greenlee, J. M. 1983. Vegetation, fire history and fire potential of Big Basin Redwoods State Park, California. Ph.D. University of California, Santa Cruz.

Griffin, J.R and W.B. Critchfield. 1972. The distribution of forest trees in California. USDA Forest Service Research Paper PSW 82. 118 pp.

Stuart, J. and S. Stephens. 2005. Fire in the North Coast Bioregion. Chapter 8 in: Sugihara, N. G., J. W. van Wagtendonk, J. Fites-Kaufman, K., E. Shaffer, and A. E. Thode (eds.). Fire in California ecosystems. Univ. California Press, Berkeley. (in press).

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