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)

R0PSMEco Cold Douglas-Fir

General Information

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

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Vegetation Type

Forested

Dominant Species*

pseud7
pico
potr5

General Model Sources

- ☐ Literature
- ☐ Local Data
- ☐ Expert Estimate

LANDFIRE Mapping Zones

10 21
19 22
20 29

Rapid AssessmentModel Zones

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

Geographic Range

East of the Continental Divide in eastern Idaho and western-central Wyoming.

Biophysical Site Description

The PNVG occurs on moderate to steep slopes in montane to upper montane settings. It is dominated by the continental climatic regime. Sites are rocky and well drained (I.e., xeric).

Vegetation Description

Sites are typically dominated by a mosaic of Douglas-fir, aspen, and/or lodgepole pine. Lodgepole pine and aspen are common associates with Douglas-fir either within stands or within landscape mosiacs, though aspen becomes much less prominent north of the Central Rockies. Stands range from open to moderately dense structures as a result of a mixed severity fire regime. Understory is sparsely occupied by serviceberry, ninebark, or snowberry. Grasses and forbs are also sparse.

Disturbance Description

Mean fire return interval is approximately 45 years, though can be as frequent as 20 years on drier sites. Approximately 70% of all fires are mixed-severity; 30% are replacement fires.

Insects (bark beetle) may cause thinning of stands or cause total replacement of stands. Blow-down events will occur in the closed canopy conditions occasionally.

Adjacency or Identification Concerns

This type may be dominated by aspen or Douglas-fir or both. Aspen was not modeled as an individual PNVG for this region in the Rapid Assessment.

This type corresponds to dry Douglas-fir habitat types (Pfister et al. 1977).

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

This PNVG is similar to the PNVG R2ASMCup for the Great basin model zone.

Scale Description

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

Patch size is typically hundreds of acres, though may be highly variable. Landscape will be patchy as a result of the mixed severity fire regime.

Issues/Problems

Model Evolution and Comments

Workshop code was DFIR4.

This model is similar to and based on the original FRCC model DFIR2.

Peer review was incorporated on 4/6/2005.

*Succession Classes***

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

Class A 10 %

Early1 PostRep

Description

Grass, forb, seedling/sapling of Douglas-fir, lodgepole pine or aspen. Aspen will dominate the site after fire if clones were present prior to the fire. After 20 years, this condition will typically succeed to class B, though approximately 10% of the landscape will naturally succeed to class C.

Dominant Species* and Canopy Position

pseud7
pico
potr5

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	50 %
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

Pole sized trees of Douglas-fir, lodgepole pine or aspen with canopy cover exceeding 50%. Mixed severity fire and insects will reduce canopy cover, causing a transition to class C. Otherwise, at 100 years this class succeeds to class E.

Dominant Species* and Canopy Position

pseud7
pico

potr5

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	Max
Cover	50 %	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 30 %

Mid1 Open

Description

Pole sized trees of Douglas-fir and lodgepole pine with canopy cover less than 50%. Aspen may be present, especially following mixed severity fires. Mixed severity fire and insects will maintain this condition. If this class goes 65 years without fire, it will succeed to class B. Otherwise, after 100 years this class succeeds to class D.

Dominant Species* and Canopy Position

pseud7
pico
potr5

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	50 %
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 15 %

Late1 Open

Description

Medium and large diameter Douglas-fir with intermittent logdgepole pine and small diameter subalpine fir. Aspen can be a significant player in patches following mixed severity fire. Overall canopy cover is less than 50%. Mixed severity fire maintains the condition. Insects may maintain the late-development condition or select older trees, causing a transition to class C. Blowdown events may also open the canopy. If this class goes 45 years without fire, it will succeed to class E. Otherwise, it persists indefinitely.

Dominant Species* and Canopy Position

pseud7
pico
abla
potr5

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	0 %	50 %
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 20 %

Late1 Closed

Description

Medium to large diameter Douglas-fir and subalpine fir. Aspen and lodgepole component are mostly decadent or dead. Canopy cover is greater than 50%. Insects and mixed severity fire may open up the canopy, causing a transition to class D.

Dominant Species* and Canopy Position

pseud7
abla
pien

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	50 %	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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Disturbances

Disturbances Modeled

- [x] Fire
- [x] Insects/Disease
- [x] Wind/Weather/Stress
- [ ] Native Grazing
- [x] 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
- [ ] Expert Estimate

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

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	145	75	250	0.0069	31
Mixed	65	35	150	0.01538	69
Surface					
All Fires	45			0.02229	

References

Agee, James K. 1993. Fire Ecology of Pacific Northwest Forests. Washington, D.C.: Island Press. 493 p.

Arno, S.F. 1980. Forest fire history in the northern Rockies. Journal of Forestry (78): 460-465.

Barrett, S. W. 2004. Altered fire intervals and fire cycles in the Northern Rockies. Fire Management Today 64(3): 25-29.

Barrett, S. W. 2004. Fire Regimes in the Northern Rockies. Fire Management Today 64(2): 32-38.

Barrett, S. W., S. F. Arno, and J. P. Menakis. 1997. Fire episodes in the inland Northwest (1540-1940) Based on Fire History Data. USDA, Forest Service, Intermountain Research Station. General Technical Report INT-370.

Bradley, Anne F.; Fischer, William C.; Noste, Nonan V. 1992. Fire ecology of the forest habitat types of eastern Idaho and western Wyoming. Gen. Tech. Rep. INT-290. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 92 p.

Brown, James K.; Smith, Jane Kapler, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p

Brown, James K., Arno, Stephen F., Barrett, Stephen W., and Menakis, James P. 1994. Comparing the prescribed natureal fire program with presettlement fires in the Selway-Bitterrot Wilderness. International Journal of Wildland Fire 4(3): 157- 168.

Keane, Robert E., Arno, Stephen F., and Brown, James K. 1990. Simulating cumulative fire effects in ponderosa pine/Douglas-fir forests. Ecology 71(1): 189-203.

Knight, Dennis H. 1994. Mountains and plains: the ecology of Wyoming landscapes. New Haven: Yale University Press. 338p.

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Peet, R. K. 1988. Forests of the Rocky Mountains. In: M. G. Barbour and W. D. Billings, eds. Terrestrial vegetation of North America. Cambridge: Cambridge University Press. Pp. 64-102.

Pfister, R. D., B. L. Kovalchik, S. F. Arno, and R. C. Presby. 1977. Forest habitat types of Montana. USDA Forest Service, Intermountain Forest and Range Experiment Station, General Technical Report, INT-34.

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