

IMPORTANT INFORMATION ABOUT THIS WORKBOOK

Risk Map Workbook

Please Select Your Area (e.g. Northeastern Area):

Pacific Northwest

There are four general worksheets followed by 15 empty modelsheets. Fill out the empty sheets. If you need additional sheets, please start a new file to keep the number of model worksheets to 15 in each file.

If more than 1 file is needed, please update this section with the correct numbers:

This is file

1

of

1

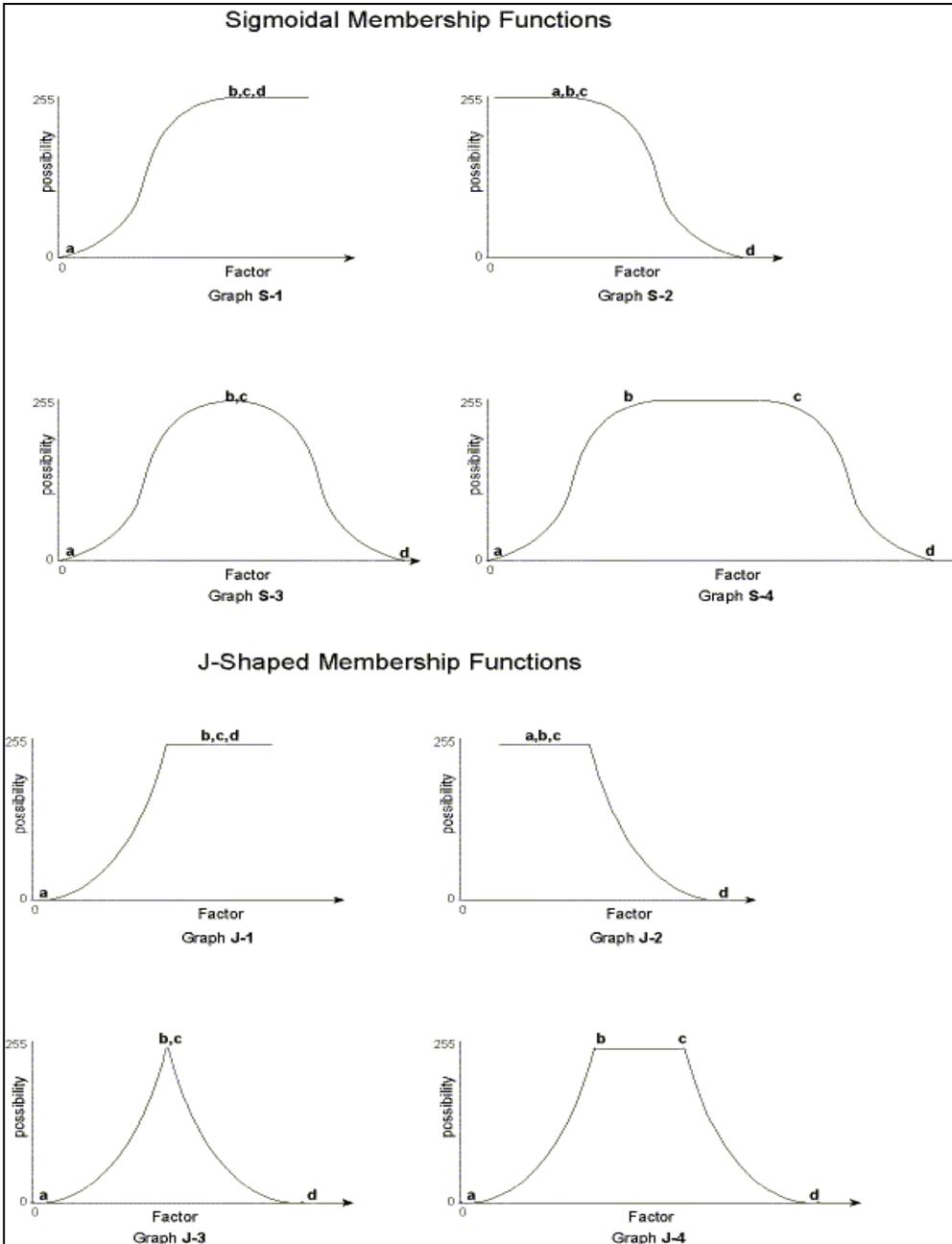
Worksheets:

- README** This worksheet
- Curves** Curve graphics
- Risk Rankings** Tool for assisting in developing scales
- Citations** Listing and status of models for interior west
- Base Sheet** Empty base sheet

Filling out the Model Worksheets

The area in blue on the top of the worksheet is for your use and is not printed. The format has changed slightly from the previous versions.

- Risk Agent(s):** Common name of the risk agent, e.g. [Spruce budworm](#)
- Host(s):** Host tree species, e.g. [Balsam fir](#)
- Model Extent:** Extent, e.g. [Northeastern](#) or list certain ecoregions. If the list of ecoregions is too long for this field, enter them in the comments and put a note in the model extent, such as "Certain IW ecoregions - see comments".
- Max Percent Mortality:** Maximum threshold expected (in percent)
- Susceptibility/Vulnerability** Enter the [Rank](#) for each (or one if only one used) and the [Weights](#) will calculate.
- Criteria** Enter the criteria following the same rules as the previous worksheets. *Note for rare exceptions (such as the inverse S-3 and S-4) where two sets of A,B,C,D risk values are needed for one criteria, delete the "Criteria X" from the cell. You will have to renumber the remaining criteria.
- Criteria Rank/Weight** Enter the [Rank](#) value, the [Weight](#) will calculate automatically.
- Constraints** List any model constraints, if applicable
- Comments** Area for information not covered in other fields
- Citations** Enter the full citation details (publication, communication, model developer, etc) on the **Citations** worksheet and assign a number. On the model spreadsheet, enter the citation number in this area. Two example citations are shown, replace with your citations.
- Model Certainty** Select the model certainty/source from the dropdown list.



Risk/Mortality Scaling Tool

To obtain eleven class values (for risk values, mortality thresholds), enter the risk begins and risk peaks values. Equal interval classes will be calculated.

	Input Value	Classes	Scaled Value
Risk Begins (0):	20	20	0
		28	1
		36	2
		44	3
		52	4
		60	5
		68	6
		76	7
		84	8
		92	9
Risk Peaks (10):	100	100	10

Citation List - Pacific Northwest

- | No. | Citation |
|-----|---|
| 1 | Betlejewski, Frank 2005. personal communication regarding mechanisms of spread of <i>P. lateralis</i> |
| 2 | Bridgwater, David 2005. personal communication: developed ponderosa pine risk models. |
| 3 | Burns, R.M. and B.H. Honkala, coordinators. 1990. <i>Silvics of North America Volume 1, Conifers</i> . USDA Forest Service. Agriculture Handbook 654. 675 pages. |
| 4 | Goheen D.J. 2005 personal communication: developed sugar pine mountain pine beetle model |
| 5 | Goheen, Ellen 2005 personal communication: developed mountain hemlock and western white pine models |
| 6 | Hawksworth, F.G., Wiens, D., Geils, B.W., and Nisley, R.G. 1996. <i>Dwarf mistletoes: Biology, pathology and systematics</i> . USDA Forest Service, Agriculture Handbook 709. Washington, D.C. 410 p. |
| 7 | Hildebrand, Dianne 2005 personal communication: developed whitebark pine models |
| 8 | Information Forestry. December, 2001. <i>Developing a Western Hemlock Looper Hazard Rating System</i> . Canadian Forest Service. |
| 9 | Johnson, N.E., K.R. Shea, and R.L. Johnsey. 1970. Mortality and Deterioration of Looper-Killed Hemlock in Western Washington. <i>Journal of Forestry</i> . Volume 68, Number 3. pages 162-163. |
| 10 | Koot, H.P. 1994. <i>Western Hemlock Looper</i> . Forest Pest Leaflet 21. Canadian Forest Service. Pacific Forestry Centre. 4 pages. |
| 11 | Lehmkuhl, J. F., P. F. Hessburg, R. D. Ottmar, M. H. Huff and R. L. Everett. 1994. <i>Historic and current forest landscapes in eastern Oregon and Washington, Part I: Vegetation pattern and insect and disease hazards</i> . USDA Gen. Tech. Report PNW-GTR-328. Pacific Northwest Research Station, USDA Forest Service, Portland, OR. 88p. |
| 12 | Mitchell, R.G. and P.E. Buffam. 2001. <i>Patterns of Long-Term Balsam Woolly Adelgid Infestations and Effects in Oregon and Washington</i> . <i>Western Journal of Applied Forestry</i> , Vol. 16, No. 3. |
| 13 | Nelson, Alison 2005. personal communication: developed red fir models. |
| 14 | Nelson, Alison and Goheen, Ellen 2005. personal communication regarding sudden oak death in tanoak |
| 15 | Perkins, D.L., and Roberts, D.W., 2003, Predictive models of whitebark pine mortality from mountain pine beetle. <i>For. Ecology & Management</i> 174: 495-510 |
| 16 | Philip, Greg 2005. personal communication: developed Douglas-fir, Pacific madrone, Port-Orford-cedar, and Sitka spruce models |
| 17 | Ripley, Karen 2005 personal communication: developed lodgepole pine, silver fir, western redcedar, and western hemlock models |
| 18 | Schmitt, C.L.; Powell, David C. 2002. <i>Risk rating forest stands for insect and disease impacts: a simplified approach using aerial photography data</i> . Publication BMPMSC-02-03. La Grande, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, Wallowa-Whitman National Forest, Blue Mountains Pest Management Service Center. 38 p. |
| 19 | Schmitt, C.L.; Powell, David C. 2005. <i>Rating forest stands for insect and disease susceptibility: a simplified approach</i> . Version 2.0. Publication BMPMSSC-05-01. La Grande, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Region, Wallowa-Whitman National Forest, Blue Mountains Pest Management Service Center. 20 p. |
| 20 | Schmitt, Craig 2005 personal communication: developed Engelmann spruce, grand fir, white fir, subalpine fir, and western larch models |
| 21 | Shore, T.L. and L. Safranyik. 1992. <i>Susceptibility and risk rating systems for the mountain pine beetle in lodgepole pine stands</i> . Forestry Canada, Pacific and Yukon Region, Pacific Forestry Centre. ISSN 0830-0453. Minister of Supply and Services Canada. |
| 22 | Steele, R.; R.E. Williams; J.C. Weatherby; E.D. Reinhardt; J.T. Hoffman; and R.W. Thier. 1996. <i>Stand Hazard Rating for Central Idaho Forests</i> . USDA Forest Service. General Technical Report INT-GTR-332. 29 pages. |
| 23 | Thomas, G.M. 1956. <i>Progress Report Studies of Silver Fir Beetles in Northern Washington 1955 Season</i> . USDA Forest Service. Division of Forest Insect Research. Portland, Oregon. 27 pages. |
| 24 | Thomas, G.M. and K.H. Wright. 1961. <i>Silver Fir Beetles</i> . USDA Forest Service. Forest Pest Leaflet 60. 7 pages. |
| 25 | Waddell K.L. and B. Hiserote. 2004. <i>The PNW-FIA Intergrated Database [database on CD]. Version 1.4</i> . Released April 2004. Forest Inventory and Analysis program, Pacific Northwest Research Station, Portland, OR |
| 26 | Wykoff, W.R., N.L. Crookston, and A.R. Stage. 1982. <i>Users Guide to the Stand Prognosis Model</i> . INT-GTR_133 |

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

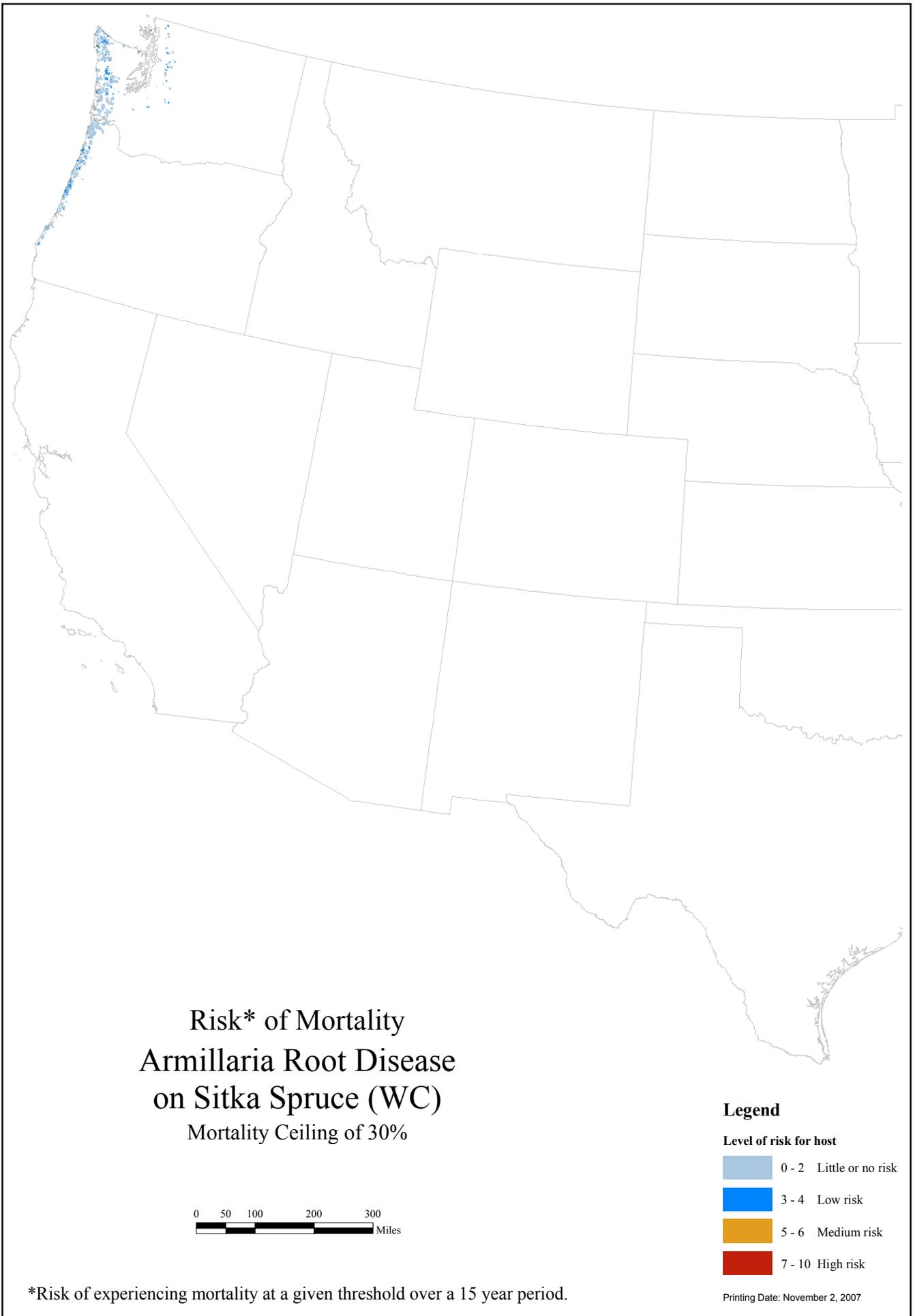
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		root disease present	1%	80%	80%	80%	Linear	1	80%
Criteria 2		host prop stocking	1%	80%	80%	80%	S-1	1/4	20%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	16
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Model Certainty	5 - Drawn From Ecological Principles
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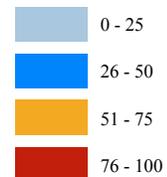


Percent Contribution*
 Armillaria Root Disease
 on Sitka Spruce (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): **Balsam Woolly Adelgid**

Host(s): **Pacific Silver Fir**

Model Extent: **Oregon and Washington**

Max Percent Mortality: **30%**

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

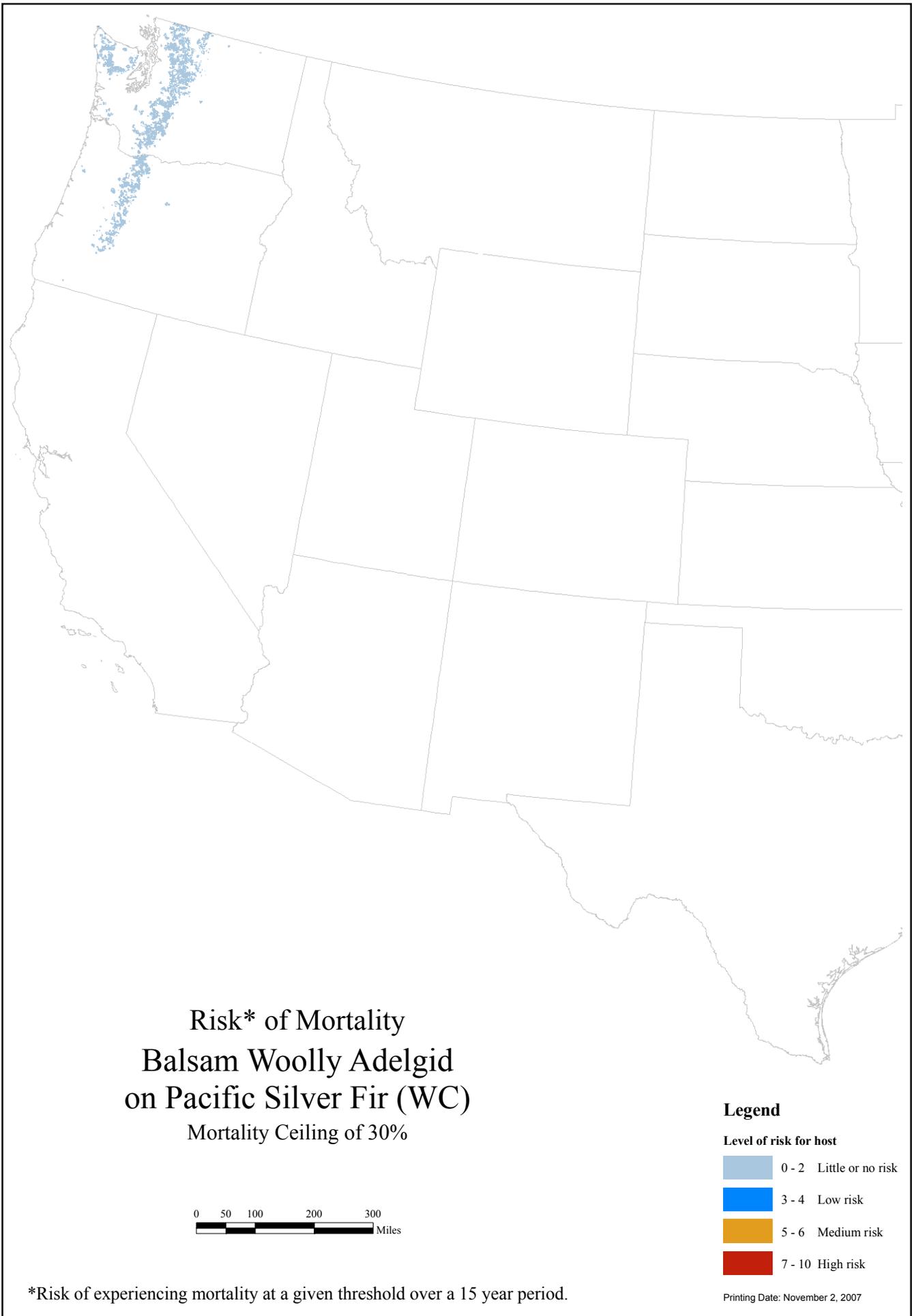
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		BWA present	1	1	0	0	Linear	1	83%
Criteria 2		elevation	0'	0'	4000'	4000'	S-2	0.2	17%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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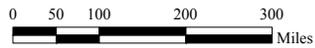
Citations	3, 12, 17
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Model Certainty	3 - Informed Professional Judgement
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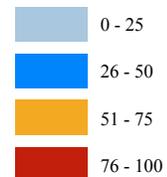


Percent Contribution*
Balsam Woolly Adelgid
on Pacific Silver Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		ecoregion	342C',M332G	342C',M332G	,-342C',M332G	342C',M332G	Linear	1	50%
Criteria 2		BWA present	yes	yes	yes	yes	Linear	1	50%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	20
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Model Certainty	4 - Expert Opinion
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**Risk* of Mortality
Balsam Woolly Adelgid
on Subalpine Fir (WC)**
Mortality Ceiling of 30%

Legend

Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

0 50 100 200 300
Miles

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

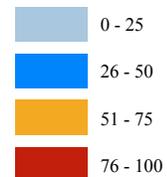


Percent Contribution*
Balsam Woolly Adelgid
on Subalpine Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Defoliators

Host(s): Douglas-fir

Model Extent: OR and WA east of the Cascades, see comments

Max Percent Mortality: 12%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host proportion of ba	host is 1%	host is 90%	90	host is 100%	S-1	1	33%
Criteria 2		conifer pct cover	1	90	90	90	Linear	1	33%
Criteria 3		host prop in understory	1	90	90	90	S-1	0.5	17%
Criteria 4		host prop in overstory	1	90	90	90	S-1	0.5	17%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments eastern Oregon and Washington
BAILEY_CODE not in ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

Citations 16

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Defoliators on Douglas-fir
 (WC - Eastern OR/WA)

Mortality Ceiling of 12%

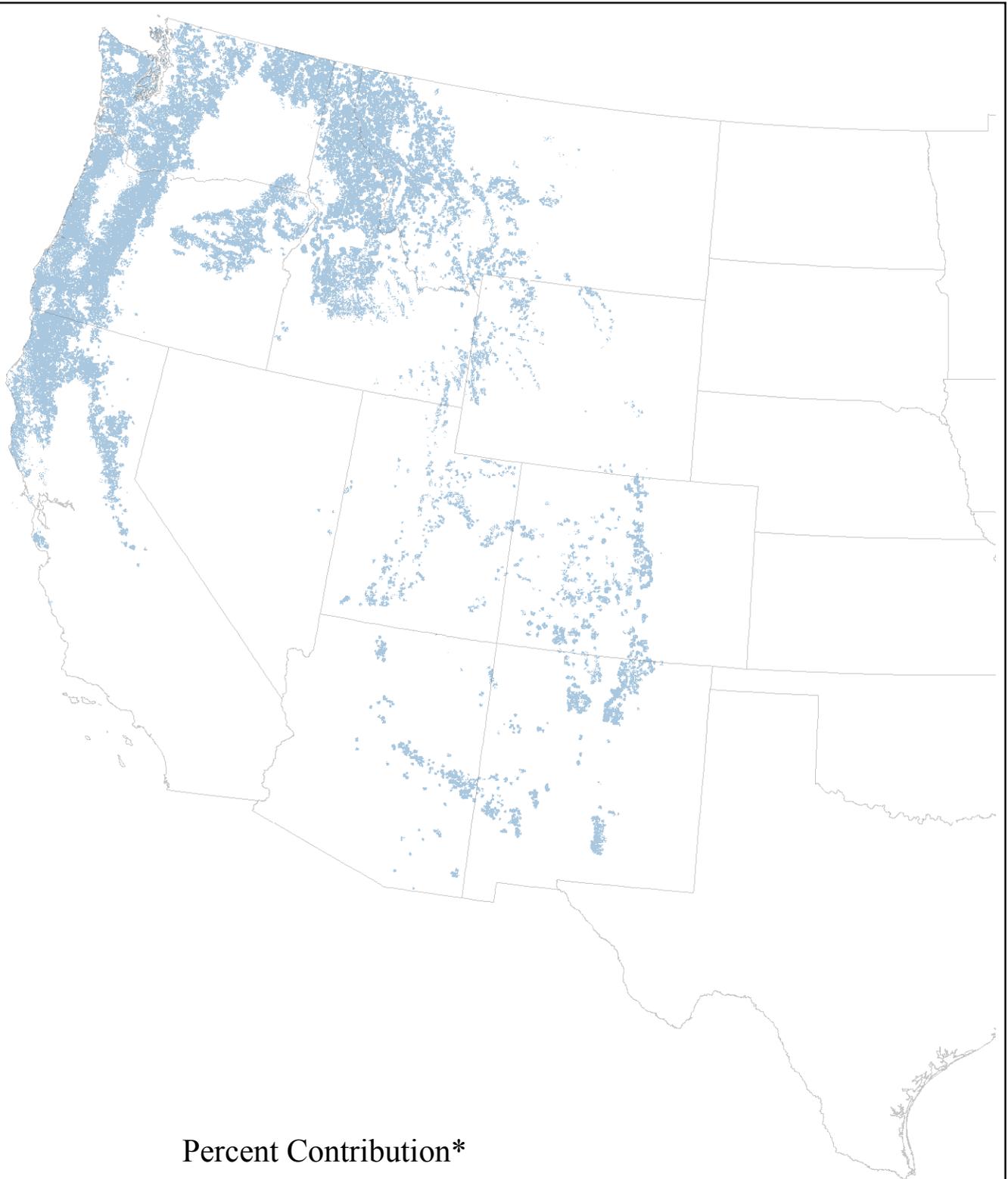


Legend

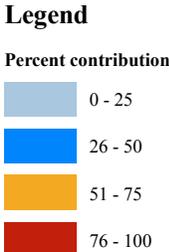
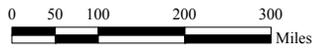
Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
 Defoliators on Douglas-fir
 (WC - Eastern OR/WA)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Defoliators

Host(s): Grand Fir

Model Extent: Oregon and Waashington

Max Percent Mortality: 14%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop. defoliator host	host is 10% of	host is 90% of	90	host is 90% of	Linear	1	33%
Criteria 2		host prop in overstory	host is 1% of s	host is 90% of	90	host is 90% of	Linear	1/2	17%
Criteria 3		host prop in understory	host is 1% of s	host is 90% of	90	host is 90% of	Linear	1/2	17%
Criteria 4		conifer pct cover	1	90	90	90	S-1	1	33%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments eastern Oregon and Washington
BAILEY_CODE not in ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

Citations 11, 19, 20

Model Certainty 3 - Informed Professional Judgement



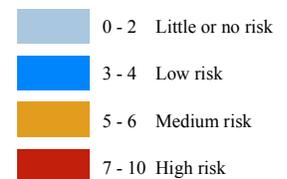
Risk* of Mortality Defoliators on Grand Fir (WC)

Mortality Ceiling of 14%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 1, 2007

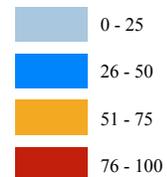


Percent Contribution* Defoliators on Grand Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Defoliators

Host(s): White Fir

Model Extent: Oregon and Waashington

Max Percent Mortality: 14%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop. defoliator host	host is 10% of	host is 90% of	90	host is 90% of	Linear	1	33%
Criteria 2		host prop in overstory	host is 1% of s	host is 90% of	90	host is 90% of	Linear	1/2	17%
Criteria 3		host prop in understory	host is 1% of s	host is 90% of	90	host is 90% of	Linear	1/2	17%
Criteria 4		conifer pct cover	1	90	90	90	S-1	1	33%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments eastern Oregon and Washington
BAILEY_CODE not in ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

Citations 11, 19, 20

Model Certainty 3 - Informed Professional Judgement



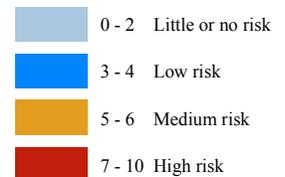
Risk* of Mortality Defoliators on White Fir (WC)

Mortality Ceiling of 14%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 5, 2007

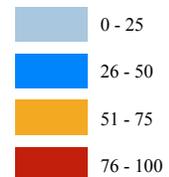


Percent Contribution* Defoliators on White Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Douglas-fir Beetle

Host(s): Douglas-fir

Model Extent: OR and WA east of the Cascades, see comments

Max Percent Mortality: 12%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host proportion of ba	host is 1%	host is 90%	90%	host is 90%	S-1	1	25%
Criteria 2		overstory qmd	10"	21"	21"	21"	J-1	1	25%
Criteria 3		conifer pct cover	1	90	90	90	Linear	1	25%
Criteria 4		host prop in understory	1	90	90	90	S-1	1/2	13%
Criteria 5		host prop in overstory	1	90	90	90	S-1	1/2	13%
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments eastern Oregon and Washington
BAILEY_CODE not in ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

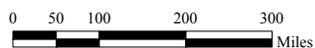
Citations 16

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Douglas-fir Beetle on Douglas-fir
 (WC- Eastern OR/WA)

Mortality Ceiling of 12%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

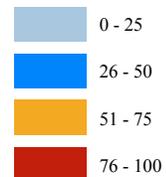


Percent Contribution*
 Douglas-fir Beetle on Douglas-fir
 (WC- Eastern OR/WA)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Douglas-fir Beetle

Host(s): Douglas-fir

Model Extent: ecoregions('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A

Max Percent Mortality: 6%

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

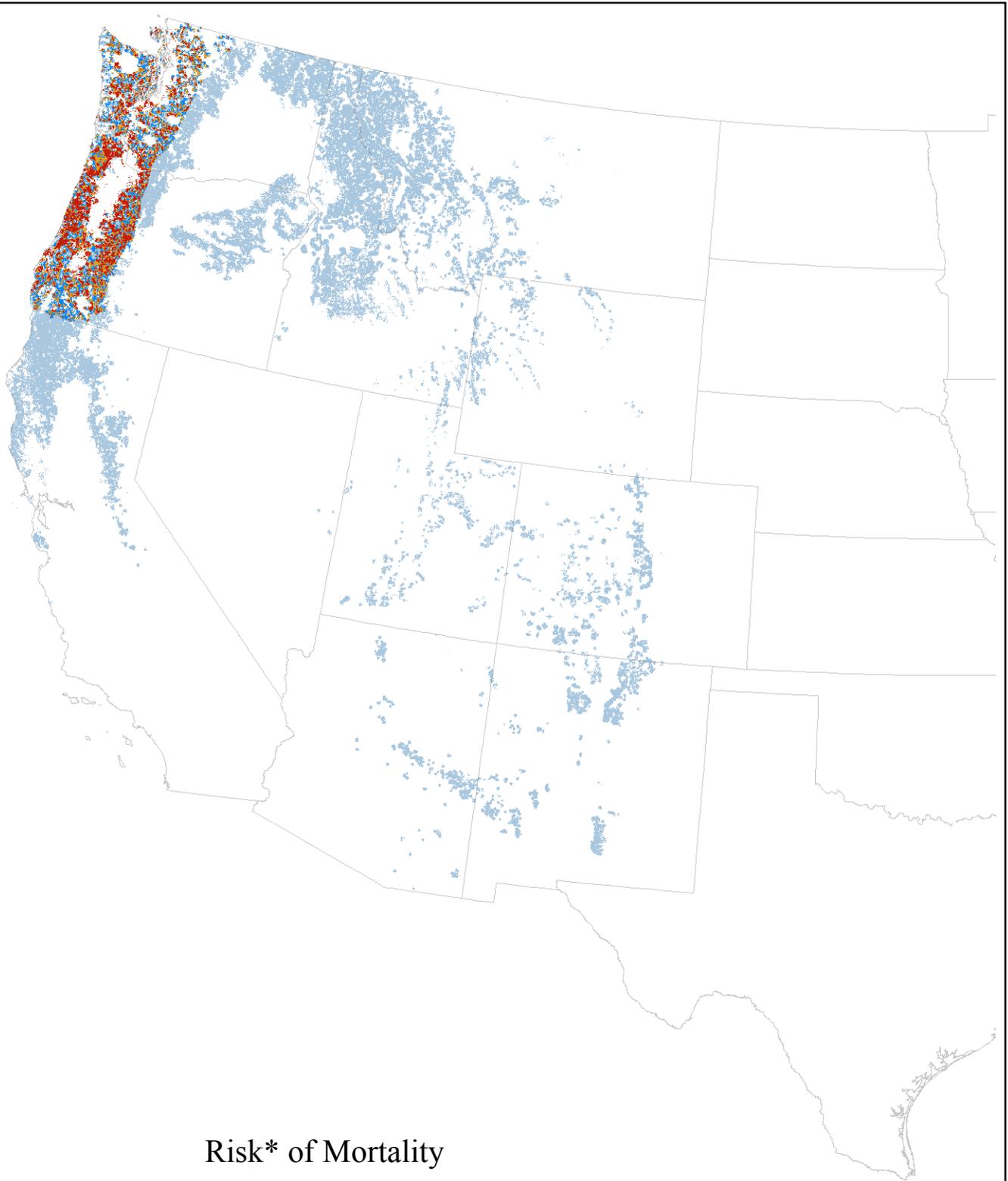
Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	host QMD	10"	21"	21"	21"	J-1	1	80%
Criteria 2	host proportion ba	1%	90%	90%	90%	S-1	1/4	20%
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints

Comments

Citations 16

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Douglas-fir Beetle on Douglas-fir
 (WC- Western OR/WA)

Mortality Ceiling of 6%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

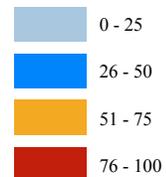


Percent Contribution*
 Douglas-fir Beetle on Douglas-fir
 (WC- Western OR/WA)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): Douglas-fir

Model Extent: OR and WA east of the Cascades, see comments

Max Percent Mortality: 5%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

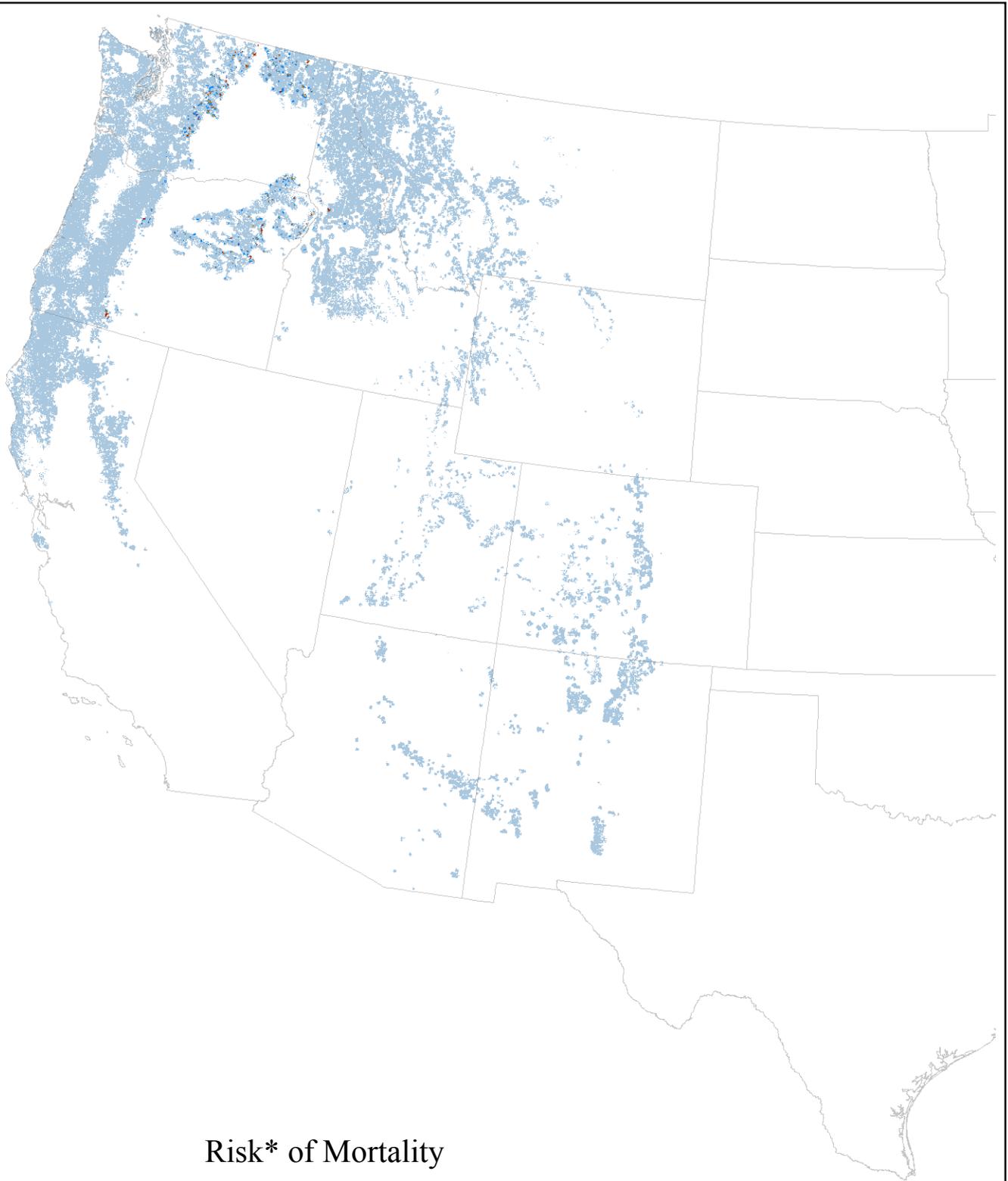
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments eastern Oregon and Washington
BAILEY_CODE not in ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

Citations 16

Model Certainty 4 - Expert Opinion



Risk* of Mortality
 Dwarf Mistletoe on Douglas-fir
 (WC - Eastern OR/WA)

Mortality Ceiling of 5%

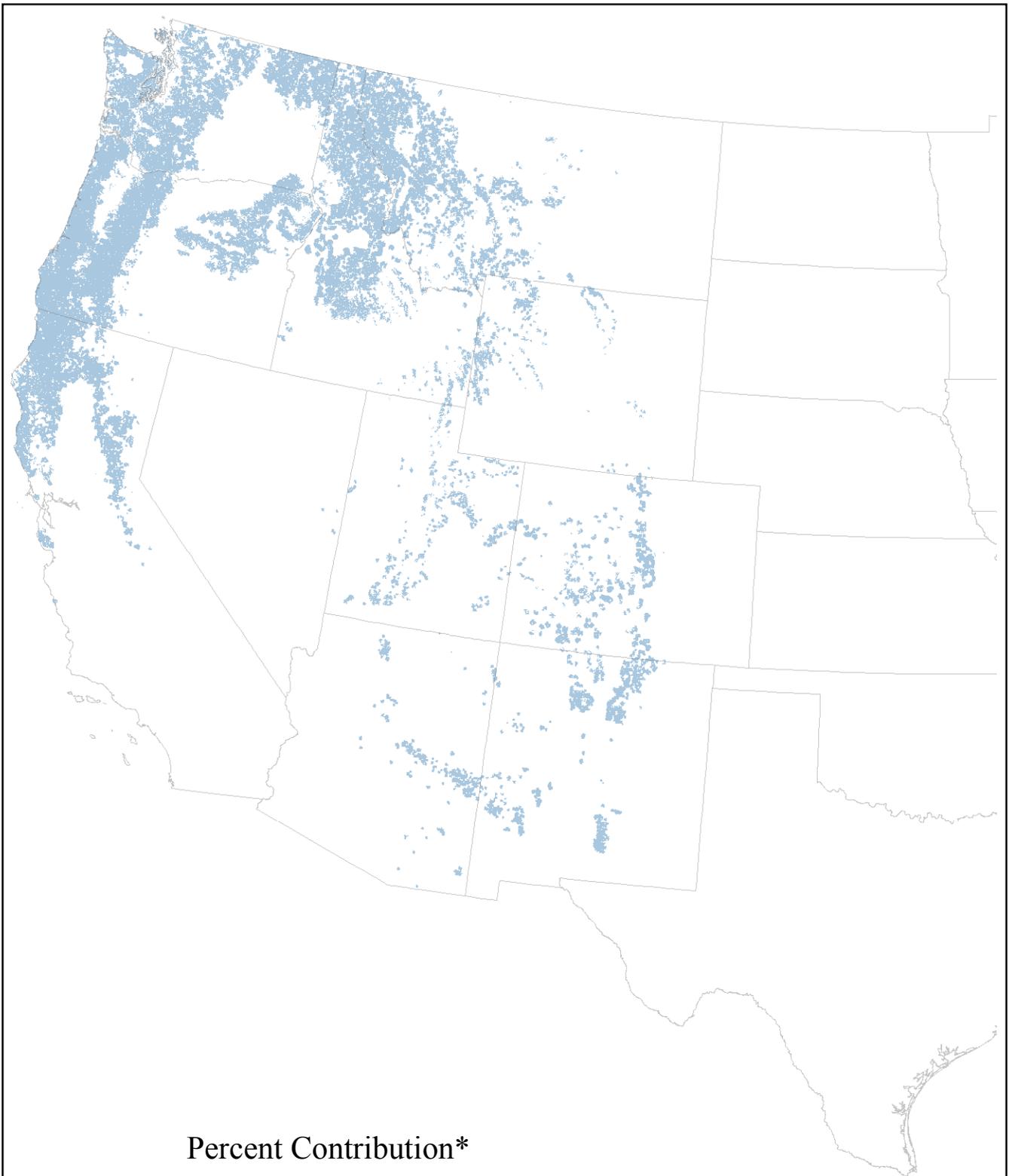


Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

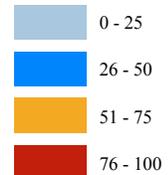


Percent Contribution*
 Dwarf Mistletoe on Douglas-fir
 (WC - Eastern OR/WA)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): Douglas-fir

Model Extent: coregions ('-263A', 'M261A', 'M261D', 'M242B', 'M242A', '-242A')

Max Percent Mortality: 5%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

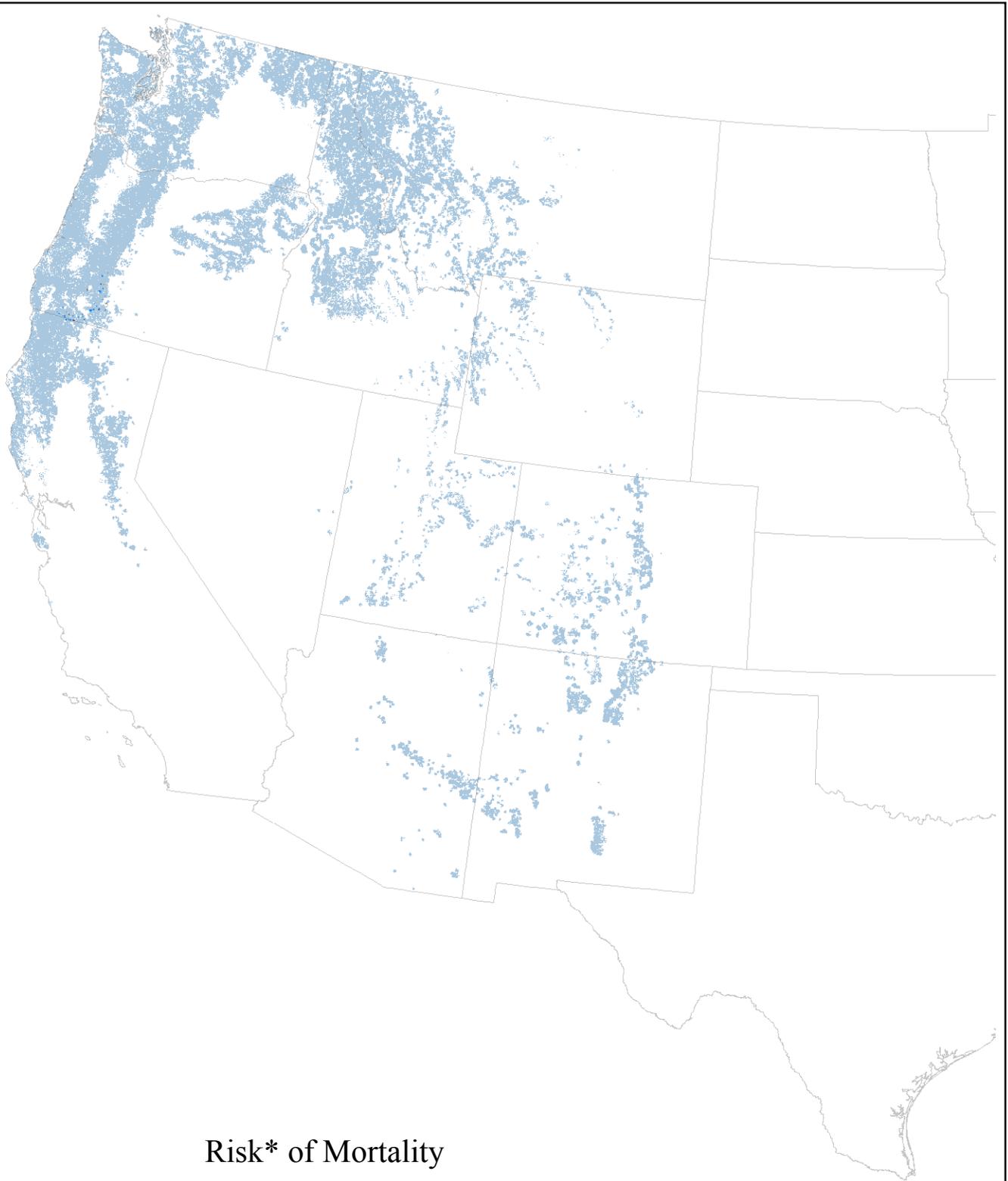
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		mistletoe rating	1	5	5	5	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 16

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Dwarf Mistletoe on Douglas-fir
 (WC - Western OR/WA)

Mortality Ceiling of 5%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

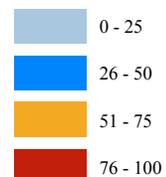


Percent Contribution*
Dwarf Mistletoe on Douglas-fir
(WC - Western OR/WA)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): Grand Fir

Model Extent: Oregon and Washington

Max Percent Mortality: 5%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 20

Model Certainty 3 - Informed Professional Judgement



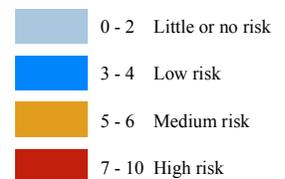
Risk* of Mortality Dwarf Mistletoe on Grand Fir (WC)

Mortality Ceiling of 5%



Legend

Level of risk for host

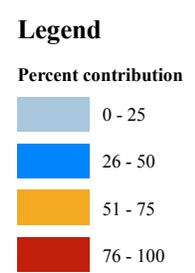


*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 1, 2007



Percent Contribution*
Dwarf Mistletoe on Grand Fir (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

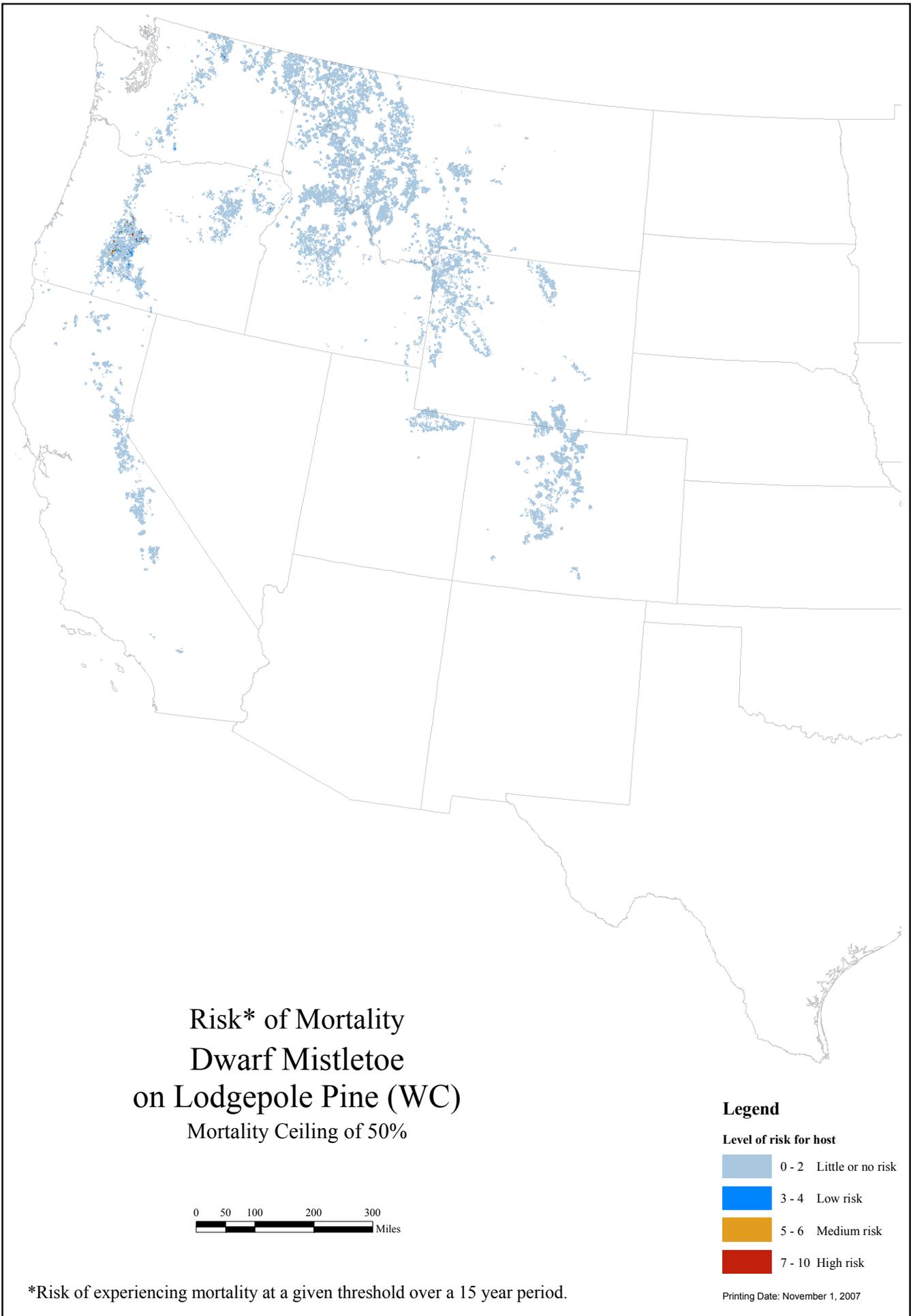
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host mistletoe rating	1	6	6	6	J-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

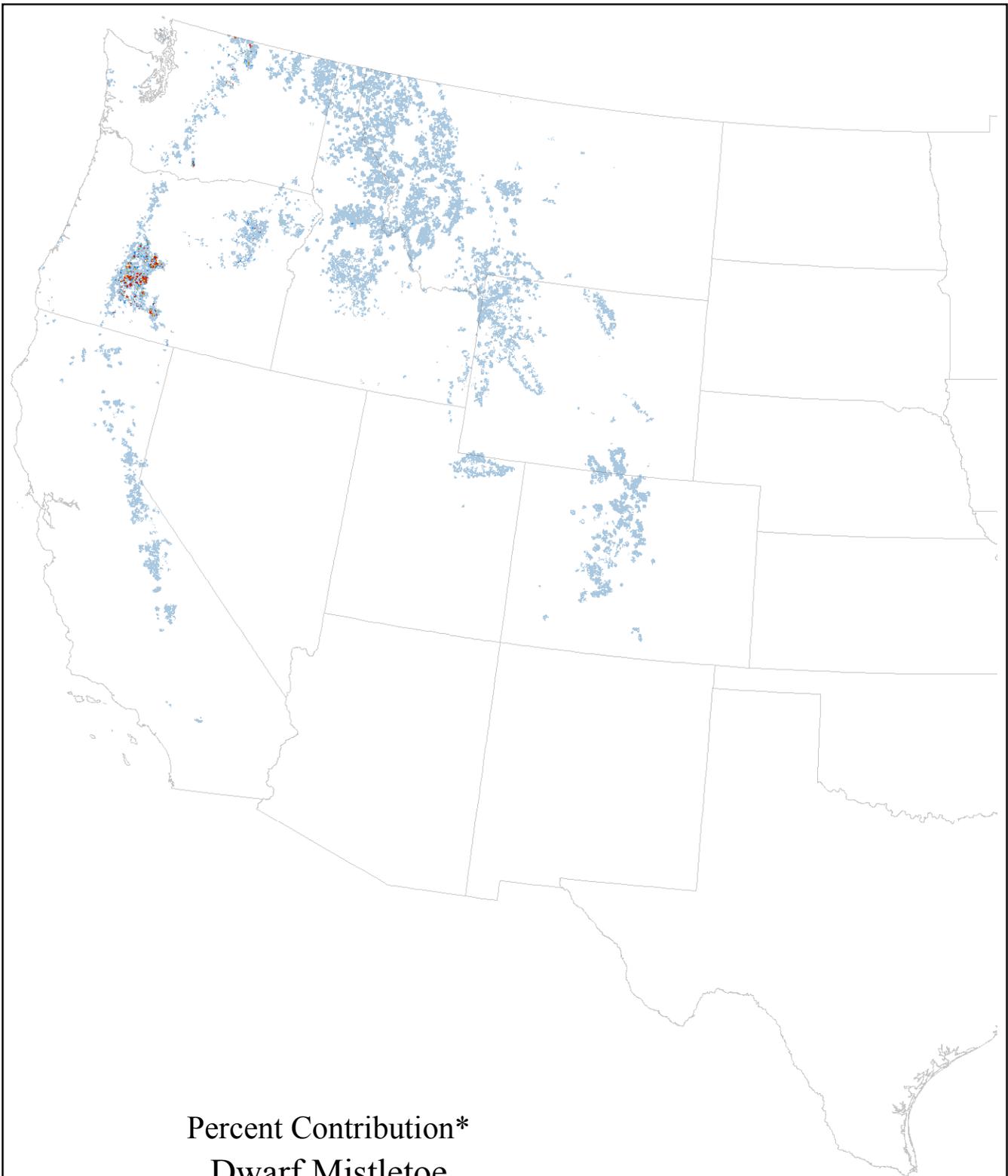
Constraints	
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Comments	
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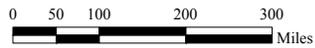
Citations	3, 17, 22
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Model Certainty	
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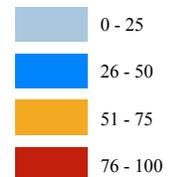


Percent Contribution*
Dwarf Mistletoe
on Lodgepole Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): Mountain Hemlock

Model Extent: Oregon and Washington

Max Percent Mortality: 60%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 5

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Dwarf Mistletoe
 on Mountain Hemlock (WC)
 Mortality Ceiling of 60%



Legend

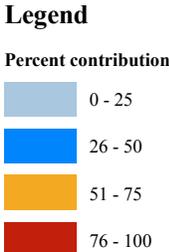
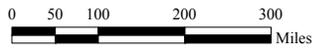
Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Dwarf Mistletoe
on Mountain Hemlock (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): Western Larch

Model Extent: Oregon and Washington

Max Percent Mortality: 38%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host mistletoe rating	1	5	5	5	J-1	1	86%
Criteria 2		size class	1	24	24	24	S-2	1/6	14%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	6, 20, 26
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Model Certainty	2 - Literature/Research Based
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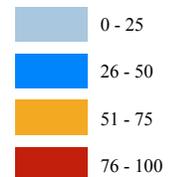


Percent Contribution*
Dwarf Mistletoe
on Western Larch (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Dwarf Mistletoe

Host(s): White Fir

Model Extent: Oregon and Washington

Max Percent Mortality: 5%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 20

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Dwarf Mistletoe on White Fir (WC)

Mortality Ceiling of 5%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

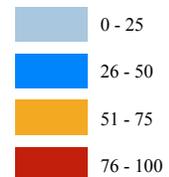


Percent Contribution*
 Dwarf Mistletoe on White Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10						dm			

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		host mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	7
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Model Certainty	4 - Expert Opinion
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Risk* of Mortality
Dwarf Mistletoe on Whitebark Pine (WC)

Mortality Ceiling of 100%



Legend

Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007



Percent Contribution*
Dwarf Mistletoe on Whitebark Pine (WC)

Legend

Percent contribution

- 0 - 25
- 26 - 50
- 51 - 75
- 76 - 100



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): **Fir Engraver Beetle**

Host(s): **Grand Fir**

Model Extent: **Oregon and Washington**

Max Percent Mortality: **18%**

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0								
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	prop ba fir engraver host	host is 10% of	host is 90% of		host is 90% of	Linear	1	25%
Criteria 2	overstory QMD	5" QMD	21" QMD		21" QMD	S-1	1	25%
Criteria 3	host prop in overstory	1	90%		90%	Linear	1/2	13%
Criteria 4	host prop in understory	1	90%		90%	Linear	1/2	13%
Criteria 5	conifer pct cover	1	80%		80%	Linear	1	25%
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints	
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Comments	
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Citations	11, 19, 20
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Model Certainty	3 - Informed Professional Judgement
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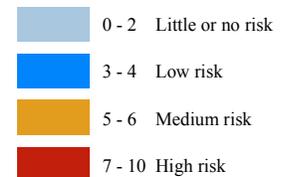
Risk* of Mortality Fir Engraver Beetle on Grand Fir (WC)

Mortality Ceiling of 18%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 1, 2007

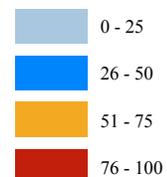


Percent Contribution*
Fir Engraver Beetle on Grand Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		Prop. Root dis host	host is 1% of b	host is 100% o	ost is 100% of b	host is 100% o	S-1	1	25%
Criteria 2		host prop in overstory	10%	90%	90%	90%	S-1	1/2	13%
Criteria 3		host prop in understory	1%	90%	90%	90%	S-1	1/2	13%
Criteria 4		size class	5" QMD	21" QMD	21" QMD	21" QMD	S-1	1	25%
Criteria 5		conifer pct cover	1%	80%	80%	80%	S-1	1	25%
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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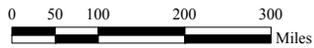
Citations	11, 13, 19
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Model Certainty	5 - Drawn From Ecological Principles
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Risk* of Mortality
Fir Engraver Beetle on Red Fir (WC)

Mortality Ceiling of 16%



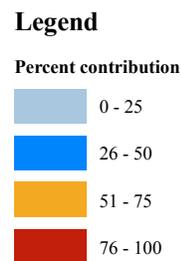
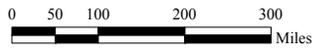
Legend

Level of risk for host	
Light blue	0 - 2 Little or no risk
Blue	3 - 4 Low risk
Yellow	5 - 6 Medium risk
Red	7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Fir Engraver Beetle on Red Fir (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): **Fir Engraver Beetle**

Host(s): **White Fir**

Model Extent: **Oregon and Washington**

Max Percent Mortality: **18%**

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0								
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	prop ba fir engraver host	host is 10% of	host is 90% of		host is 90% of	Linear	1	25%
Criteria 2	overstory QMD	5" QMD	21" QMD		21" QMD	S-1	1	25%
Criteria 3	host prop in overstory	1	90%		90%	Linear	1/2	13%
Criteria 4	host prop in understory	1	90%		90%	Linear	1/2	13%
Criteria 5	conifer pct cover	1	80%		80%	Linear	1	25%
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints	
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Comments	
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Citations	11, 19, 20
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Model Certainty	3 - Informed Professional Judgement
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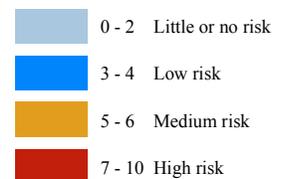
Risk* of Mortality Fir Engraver Beetle on White Fir (WC)

Mortality Ceiling of 18%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 5, 2007

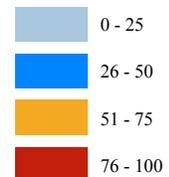


Percent Contribution*
Fir Engraver Beetle on White Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		stand age	100	250	250	250	S-1	1	75%
Criteria 2		prop ba western hemlock	40%	80%	80%	80%	J-1	1/3	25%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

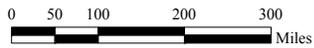
Comments

Citations 8, 9, 10, 17

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Hemlock Looper
 on Western Hemlock (WC)
 Mortality Ceiling of 25%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

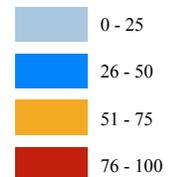


Percent Contribution*
Hemlock Looper
on Western Hemlock (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

#REF!

Risk Agent(s): Ips Engraver Beetle

Host(s): Ponderosa Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 18%

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	size class of ponderosa	4"	4"		8"	J-2	1	50%
Criteria 2	plot basal area	110 ft2/acre	190 ft2/acre	190 ft2/acre	190 ft2/acre	S-1	1	50%
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints

Comments

Citations 2

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
Ips Engraver Beetles
on Ponderosa Pine (WC)
Mortality Ceiling of 18%

Legend

Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

0 50 100 200 300
Miles

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

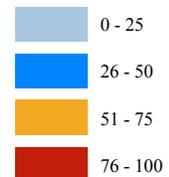


Percent Contribution*
Ips Engraver Beetles
on Ponderosa Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

#REF!

Risk Agent(s): **Laminated Root Rot**

Host(s): **Mountain Hemlock**

Model Extent: **Oregon and Washington**

Max Percent Mortality: **60%**

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0								
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	prop root disease present	1%	80%	80%	80%	S-1	1	100%
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints

Comments

Citations **5**

Model Certainty **3 - Informed Professional Judgement**

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Miscellaneous Mortality (dca-90009)

Host(s): Western Redcedar

Model Extent: Oregon and Washington

Max Percent Mortality: 15%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

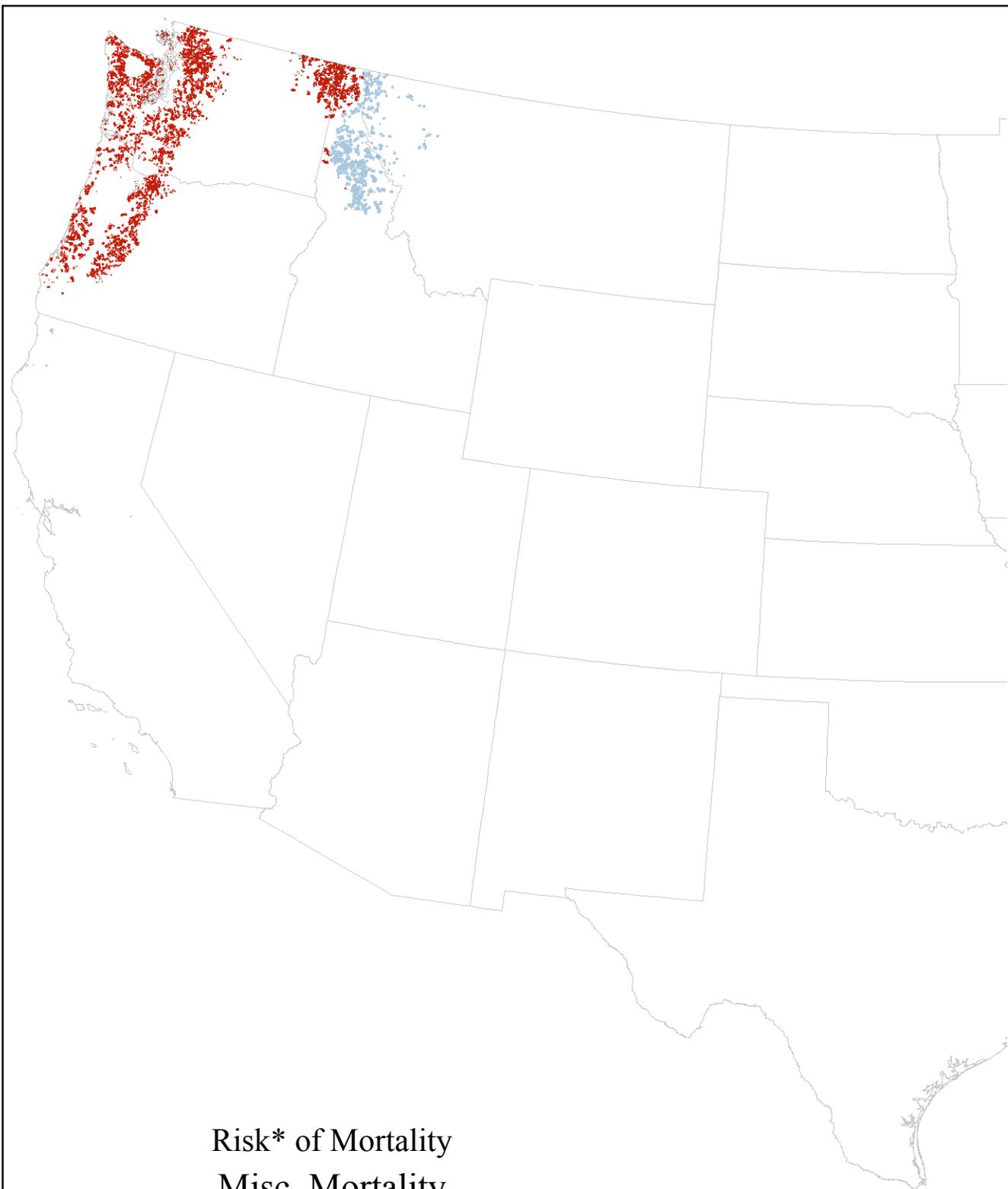
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		redcedar present	yes	yes				1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments for this host specific damage agents were not practical to model--15% mortality over 15 years matches redcedar mortality rate as measured on FIA plots in Oregon and Washington

Citations 17, 25

Model Certainty 1 - Data Driven



Risk* of Mortality
 Misc. Mortality
 on Western Redcedar (WC)
 Mortality Ceiling of 15%



Legend

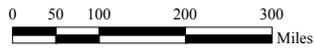
Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

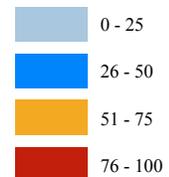


Percent Contribution*
Misc. Mortality
on Western Redcedar (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: February 27, 2006

#REF!

Risk Agent(s): Mountain Pine Beetle

Host(s): Lodgepole Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 70%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

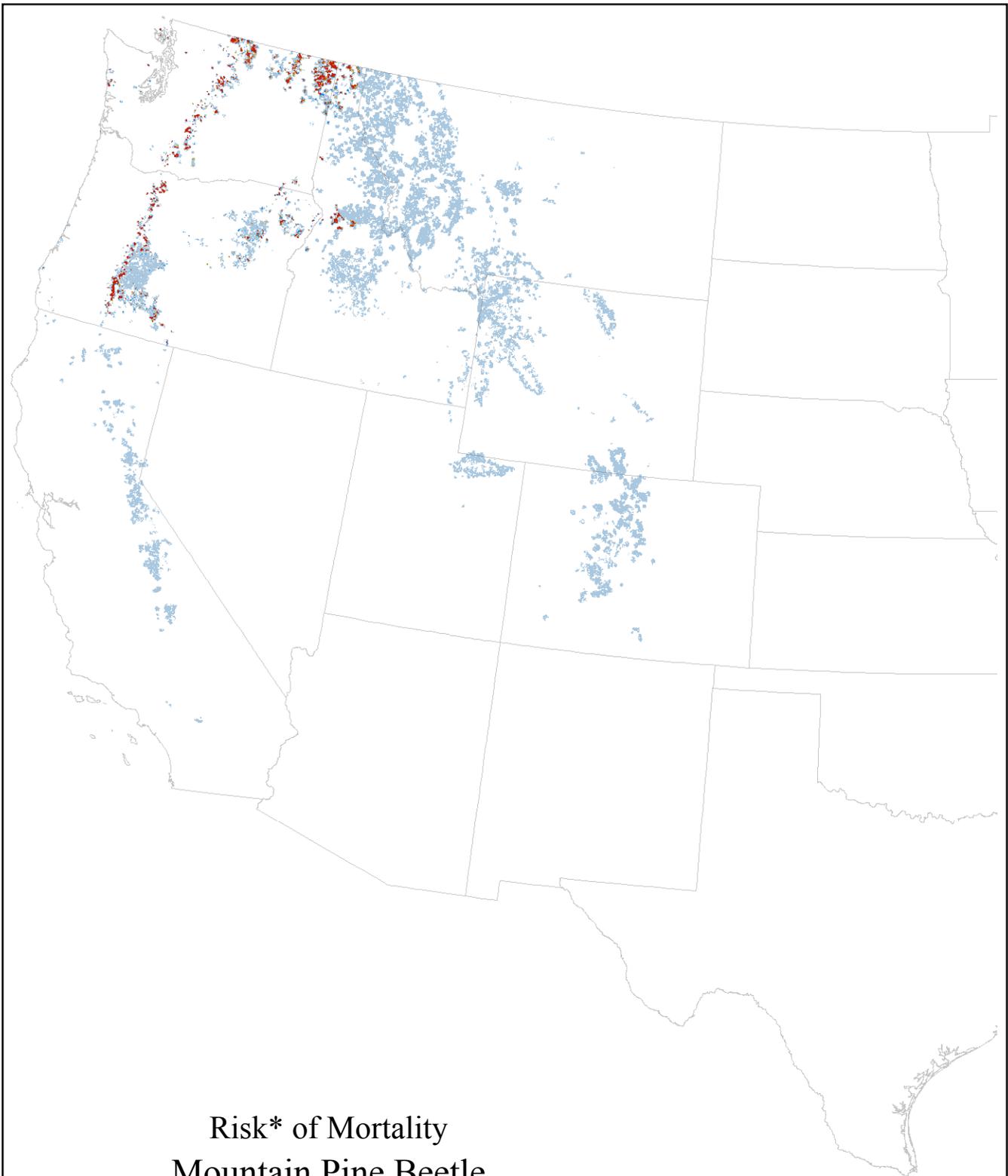
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		plot basal area	90	220	220	220	J-1	1	67%
Criteria 2		size class of lodgepole	5	7	7	7	J-1	1/2	33%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 3, 17, 21, 22

Model Certainty 2 - Literature/Research Based



Risk* of Mortality
Mountain Pine Beetle
on Lodgepole Pine (WC)
Mortality Ceiling of 70%



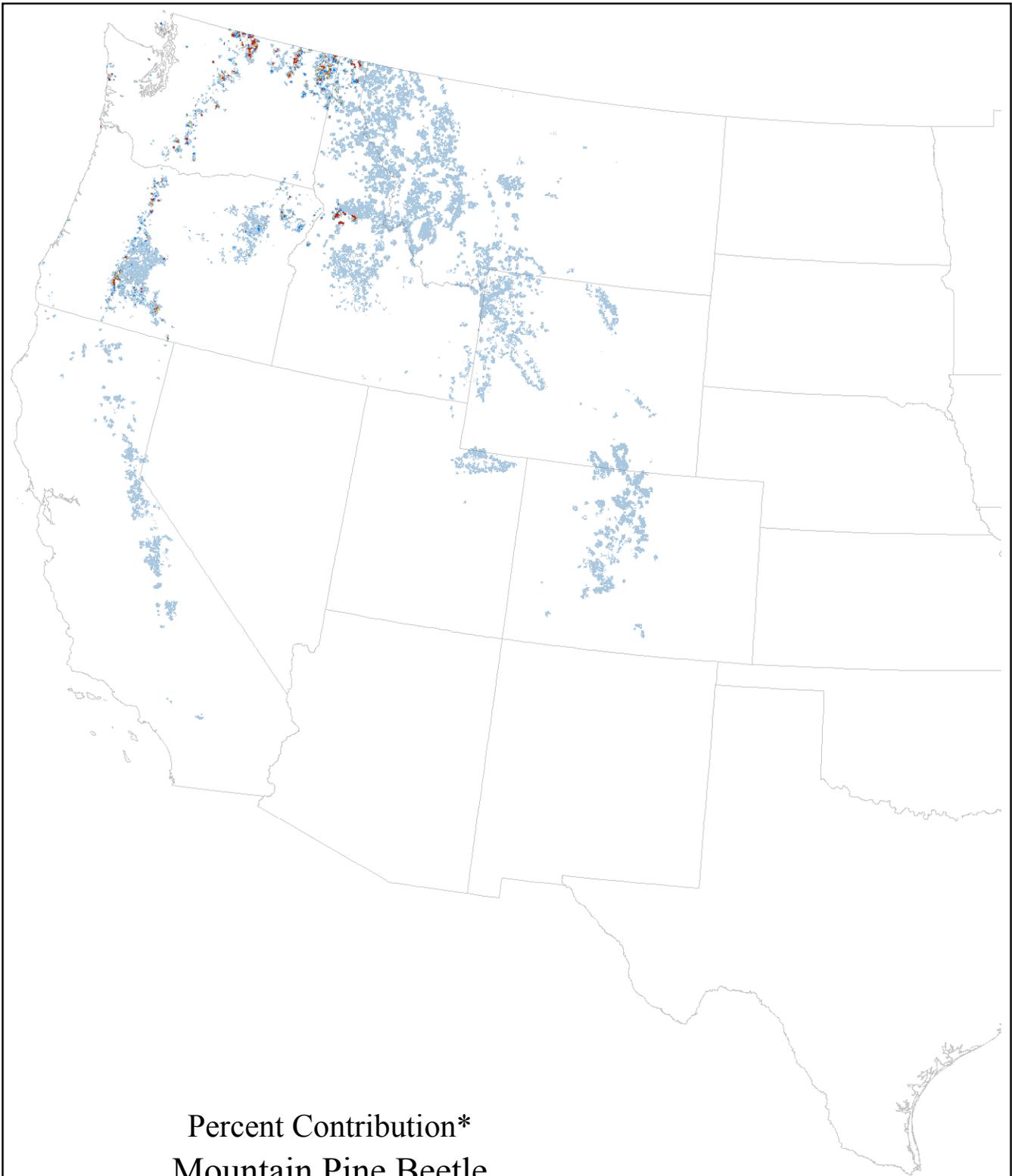
Legend

Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 1, 2007

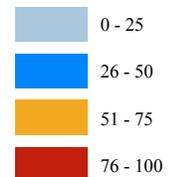


Percent Contribution*
Mountain Pine Beetle
on Lodgepole Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

#REF!

Risk Agent(s): Mountain Pine Beetle

Host(s): Ponderosa Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 40%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		size class of ponderosa	5"	8"	16'	32"	S-4	1	50%
Criteria 2		plot basal area	110 ft2/acre	170 ft2/acre	170ft2/acre	170 ft2/acre	S-1	1	50%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 2

Model Certainty 4 - Expert Opinion



Risk* of Mortality
Mountain Pine Beetle
on Ponderosa Pine (WC)
Mortality Ceiling of 40%

Legend

Level of risk for host

-  Little or no risk
-  Low risk
-  Medium risk
-  High risk



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007



Percent Contribution*
Mountain Pine Beetle
on Ponderosa Pine (WC)

Legend

Percent contribution

0 - 25

26 - 50

51 - 75

76 - 100

0 50 100 200 300
Miles

*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		plot basal area on site classes 6-7	75 ft2/acre	120 ft2/acre	120 ft2/acre	120 ft2/acre	J-1	1	50%
Criteria 2		plot basal area on site classes 1-5	90 ft2/acre	180 ft2/acre	180 ft2/acre	180 ft2/acre	J-1	1	50%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	4
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Mountain Pine Beetle on Sugar Pine (WC)

Mortality Ceiling of 30%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Mountain Pine Beetle on Sugar Pine (WC)

Legend

Percent contribution

- 0 - 25
- 26 - 50
- 51 - 75
- 76 - 100



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Mountain Pine Beetle

Host(s): Western White Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 45%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

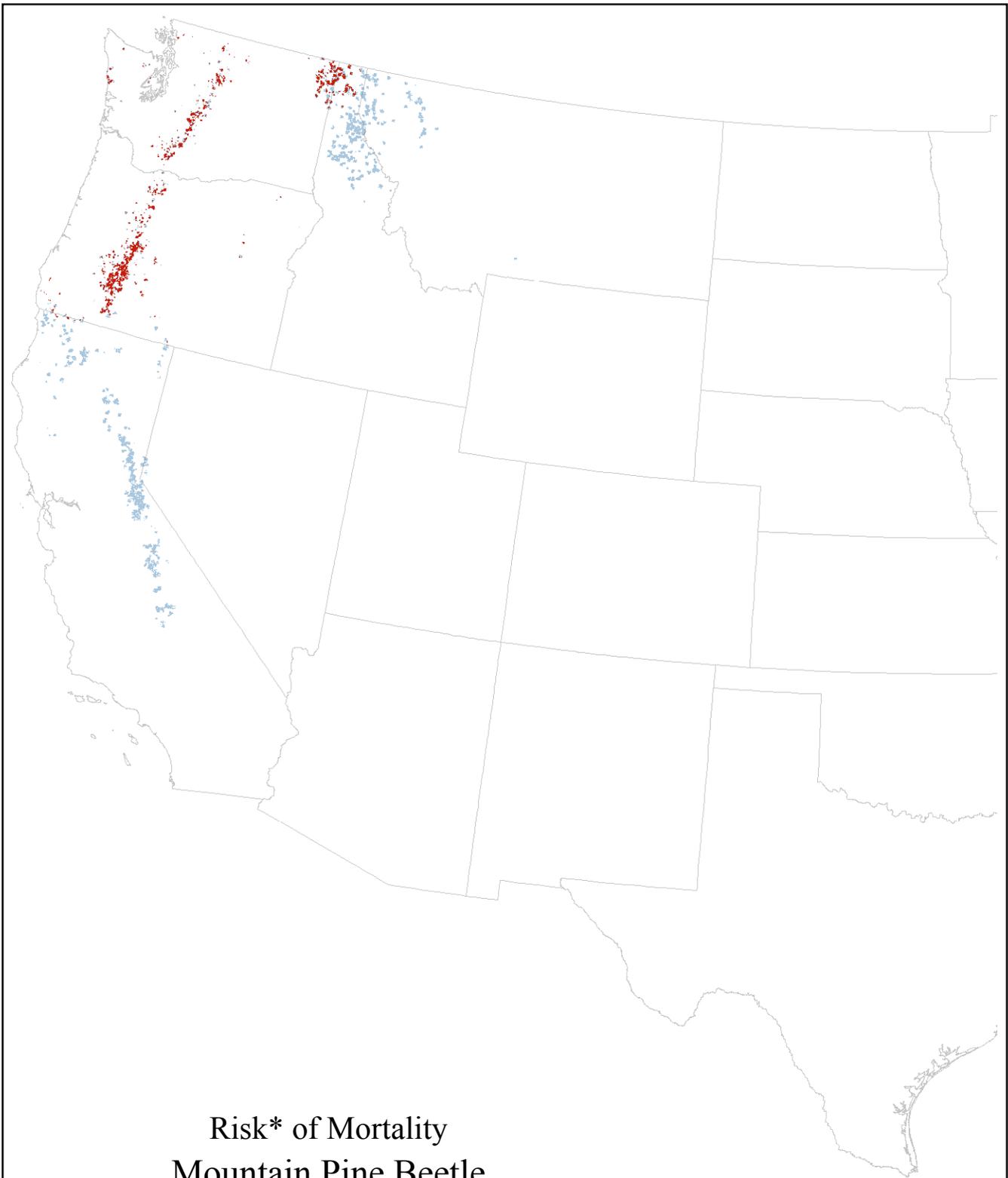
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		plot basal area on site classes 1-6	120 ft ² /acre	150 ft ² /acre	150 ft ² /acre	150 ft ² /acre	J-1	1	50%
Criteria 2		plot basal area on site class 7	50 ft ² /acre	90 ft ² /acre	90 ft ² /acre	90 ft ² /acre	J-1	1	50%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	5
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Mountain Pine Beetle
 on Western White Pine (WC)
 Mortality Ceiling of 45%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Mountain Pine Beetle
on Western White Pine (WC)

Legend

Percent contribution

0 - 25

26 - 50

51 - 75

76 - 100

0 50 100 200 300
Miles

*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 6, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Mountain Pine Beetle

Host(s): Whitebark Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 90%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		plot basal area	20	65	65	65	S-1	1	45%
Criteria 2		whitebark QMD	8"	14"	14"	14"	J-1	1	45%
Criteria 3		lodgepole present	yes	yes	yes	no	Linear	1/5	9%
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	7
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Mountain Pine Beetle
 on Whitebark Pine (WC)
 Mortality Ceiling of 90%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007



Percent Contribution*
Mountain Pine Beetle
on Whitebark Pine (WC)

Legend

Percent contribution

0 - 25

26 - 50

51 - 75

76 - 100

0 50 100 200 300
Miles

*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

#REF!

Risk Agent(s): Pacific Madrone Decline

Host(s): Pacific Madrone

Model Extent: Oregon and Washington

Max Percent Mortality: 60%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		Prop of madrone with damage	1%	90%	90%	90%	Linear	1	83%
Criteria 2		plot basal area	160 ft2/acre	220 ft2/acre	220ft/acre	220 ft2/acre	S-1	1/5	17%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

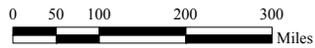
Citations 16

Model Certainty 5 - Drawn From Ecological Principles



Risk* of Mortality
 Pacific Madrone Decline

Mortality Ceiling of 60%



Legend

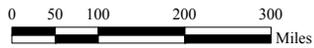
Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

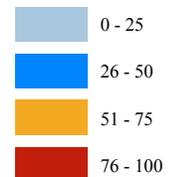


Percent Contribution* Pacific Madrone Decline



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

#REF!

Risk Agent(s): Port-Orford-Cedar Root Disease

Host(s): Port-Orford-Cedar

Model Extent: southwest Oregon and Northwest California

Max Percent Mortality: 100%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		percent of drainages infected	0	40%	40	40%	Linear	1	48%
Criteria 2		road proximity	0	0	75	75'	S-2	0.5	24%
Criteria 3		curvature	-0.06	-0.03	0.06	0.06	S-4	0.2	10%
Criteria 4		stream proximity	0	0	50'	50'	S-2	0.2	10%
Criteria 5		host prop BA	0	50%	50'	50%	J-2	0.1	5%
Criteria 6		slope	0%	25%	25%	25%	J-1	0.1	5%
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 1, 16

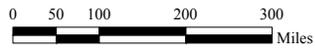
Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality

Port-Orford-Cedar Root Disease (WC)

Mortality Ceiling of 100%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*

Port-Orford-Cedar Root Disease (WC)



Legend

Percent contribution

0 - 25

26 - 50

51 - 75

76 - 100

*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		mistletoe rating	1	6	6	6	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

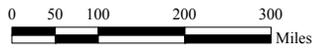
Citations 13

Model Certainty 5 - Drawn From Ecological Principles



Risk* of Mortality Dwarf Mistletoe on Red Fir (WC)

Mortality Ceiling of 3%



Legend

Level of risk for host

Light blue	0 - 2	Little or no risk
Blue	3 - 4	Low risk
Orange	5 - 6	Medium risk
Red	7 - 10	High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Dwarf Mistletoe on Red Fir (WC)

Legend

Percent contribution

0 - 25

26 - 50

51 - 75

76 - 100

0 50 100 200 300
Miles

*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0								
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

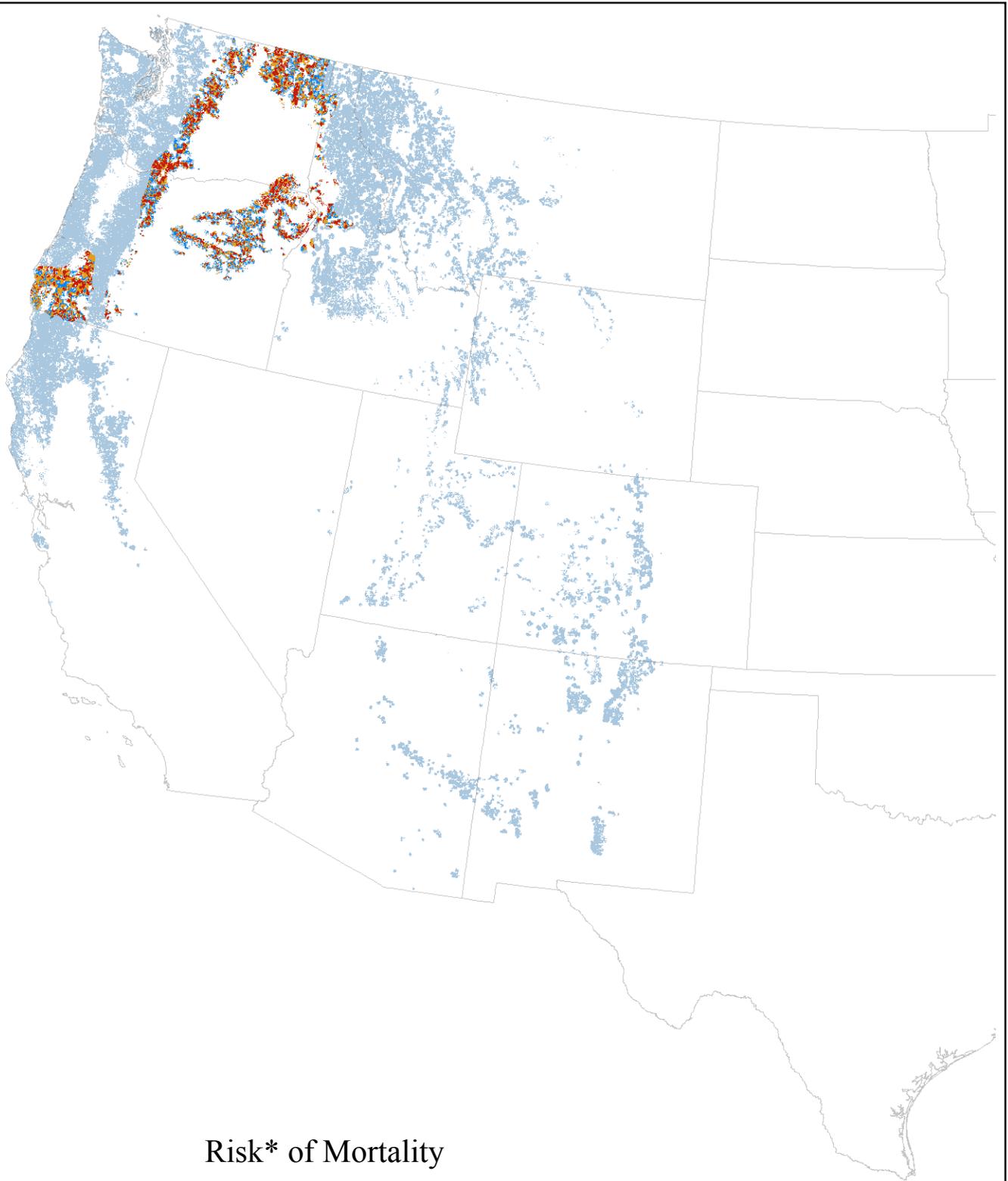
Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	host proportion of ba	host is 1%	host is 90%	host is 90%	host is 90%	S-1	1	33%
Criteria 2	host prop in overstory	1	90	90	90	S-1	1/2	17%
Criteria 3	host prop in understory	1	90	90	90	S-1	1/2	17%
Criteria 4	overstory QMD	5" QMD	27" QMD	27" QMD	27" QMD	S-1	1	33%
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints	
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Comments	
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Citations	16
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Root Disease on Douglas-fir
 (WC - Eastern OR/WA & M261A)

Mortality Ceiling of 12%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

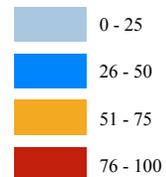


Percent Contribution*
Root Disease on Douglas-fir
(WC - Eastern OR/WA & M261A)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

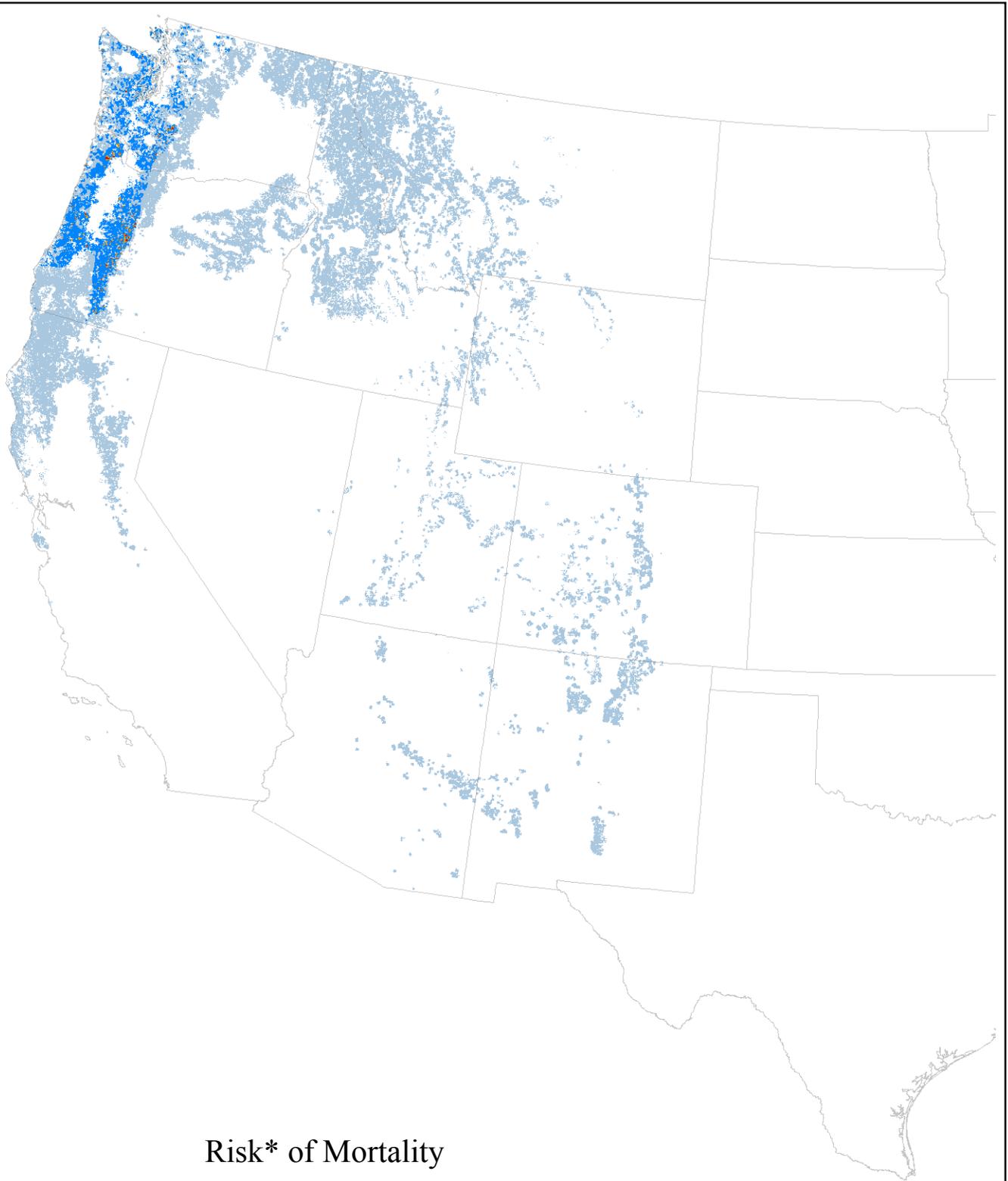
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop root disease present	1%	80%	80	80%	Linear	1	67%
Criteria 2		host prop stocking	1%	80%	80	80%	J-1	1/2	33%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	16
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Root Disease on Douglas-fir
 (WC - Western OR/WA except M261A)
 Mortality Ceiling of 12%



Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

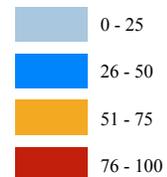


Percent Contribution*
 Root Disease on Douglas-fir
 (WC - Western OR/WA except M261A)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Root Diseases

Host(s): Grand Fir

Model Extent: Oregon and Washington

Max Percent Mortality: 14%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop. Root disease host	host is 10% of	host is 90% of		host is 100% of	Linear	1	33%
Criteria 2		host prop in overstory	1	90%		90%	S-1	1/2	17%
Criteria 3		host prop in understory	1	90%		90%	S-1	1/2	17%
Criteria 4		overstory QMD	5" QMD	27" QMD		27" QMD	Linear	1	33%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 11, 19, 20

Model Certainty 3 - Informed Professional Judgement



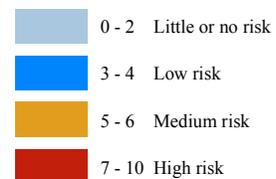
Risk* of Mortality Root Disease on Grand Fir (WC)

Mortality Ceiling of 14%



Legend

Level of risk for host

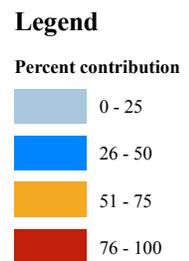
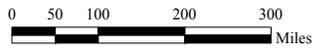


*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 1, 2007



Percent Contribution* Root Disease on Grand Fir (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

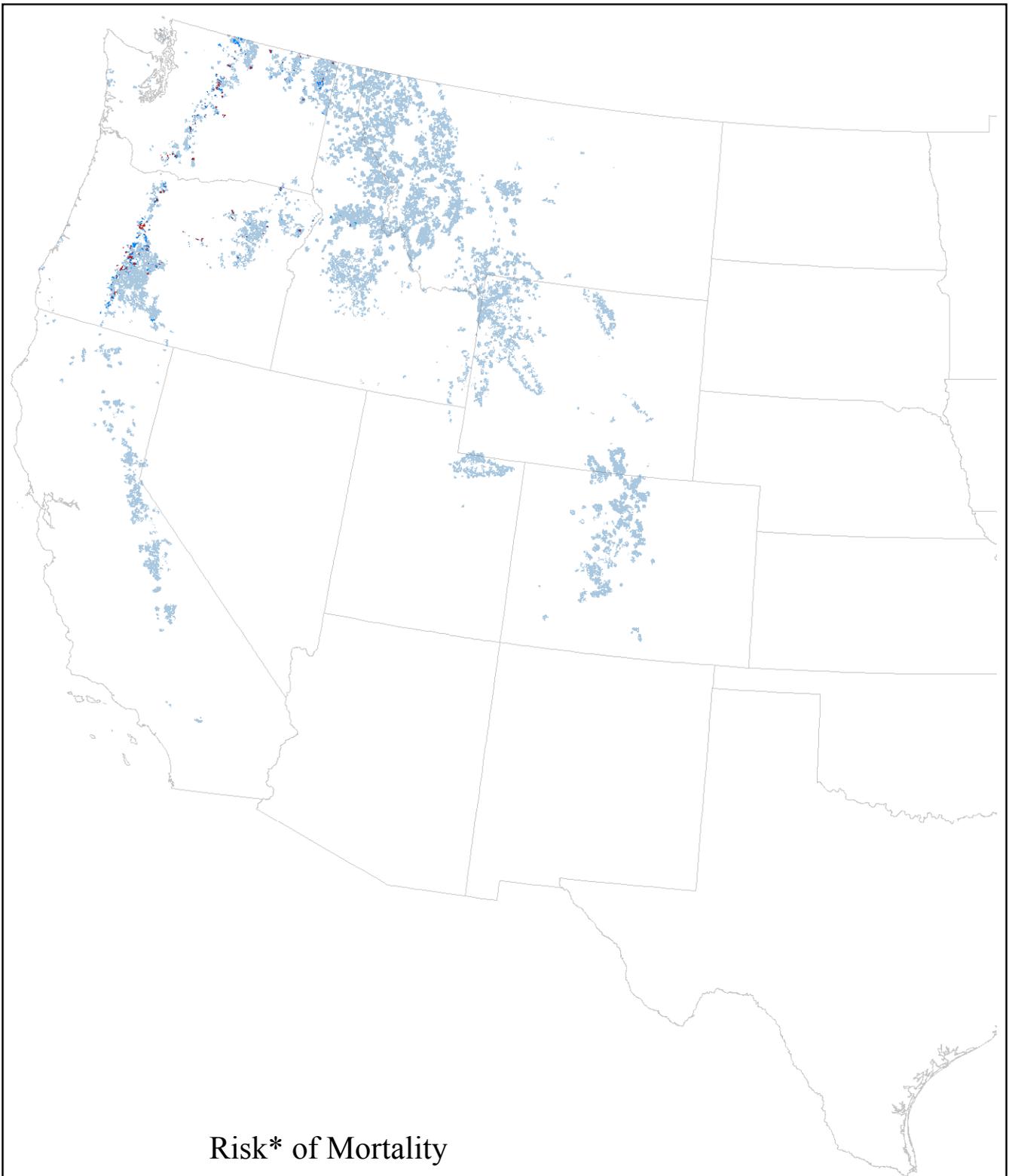
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop root disease present	1	50%	50%	50%	J-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

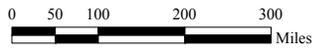
Citations 3, 17, 22

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality Root Disease on Lodgepole Pine (WC)

Mortality Ceiling of 20%

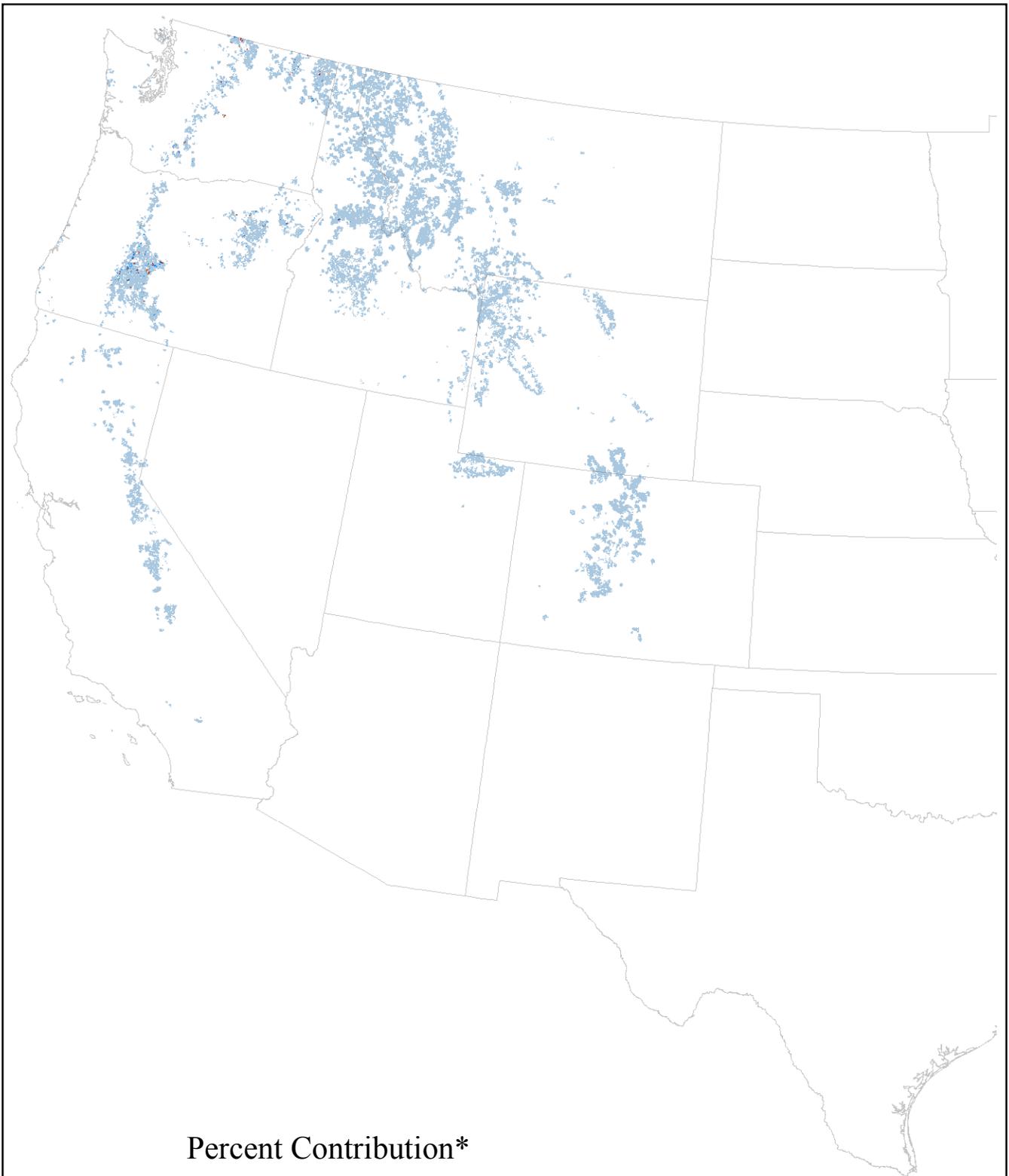


Legend

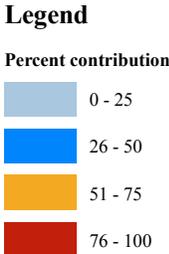
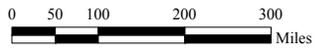
Level of risk for host

Light Blue	0 - 2	Little or no risk
Medium Blue	3 - 4	Low risk
Orange	5 - 6	Medium risk
Red	7 - 10	High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution* Root Disease on Lodgepole Pine (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

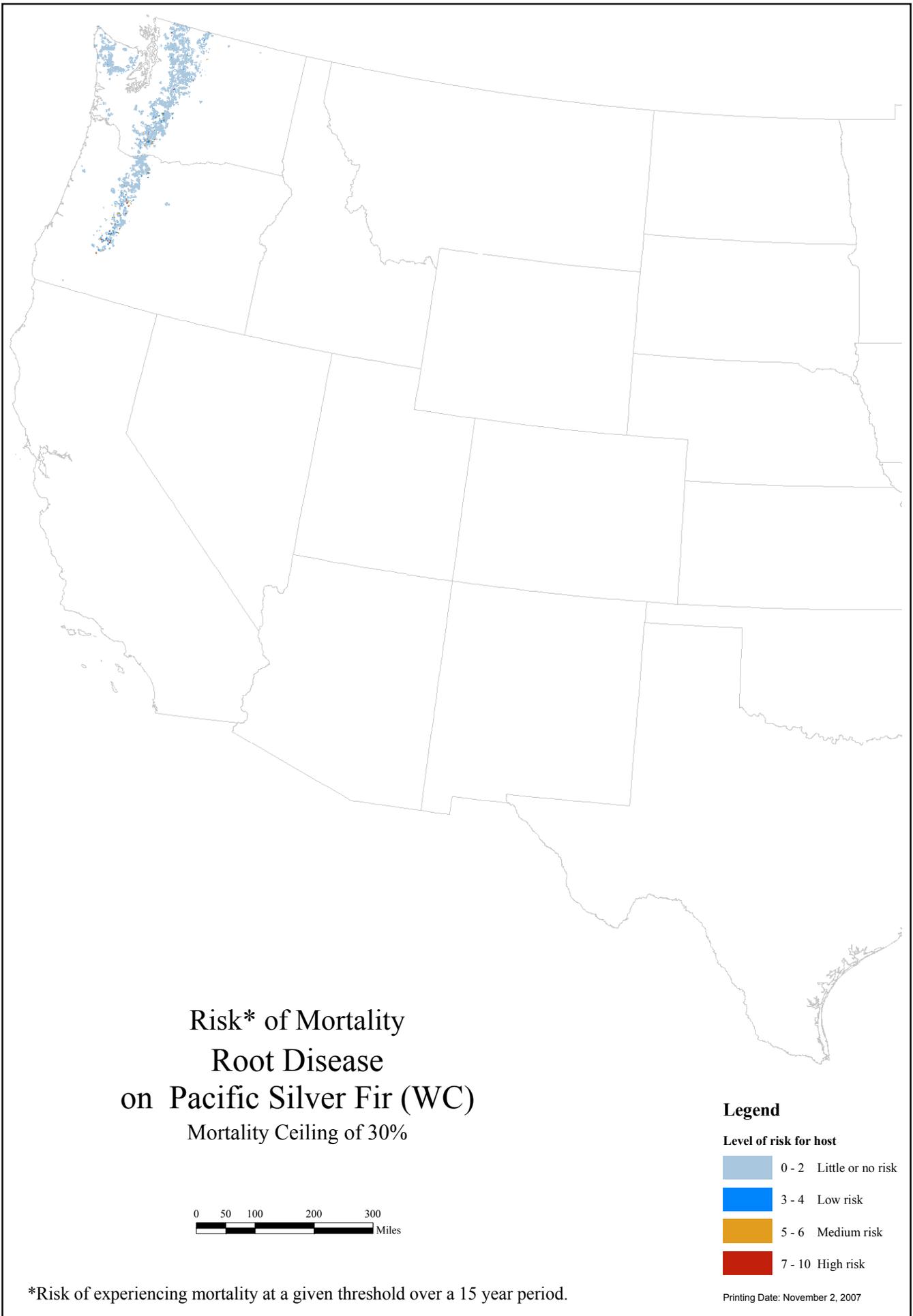
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		root disease present	1%	90%	90%	90%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 3, 17

Model Certainty 4 - Expert Opinion

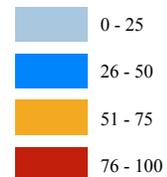




Percent Contribution*
Root Disease
on Pacific Silver Fir (WC)

Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	prop root disease present	1%	60%	60%	60%	Linear	1	100%
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints

Comments

Citations

Model Certainty



Risk* of Mortality
 Root Disease
 on Ponderosa Pine (WC)
 Mortality Ceiling of 15%

Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk



*Risk of experiencing mortality at a given threshold over a 15 year period.

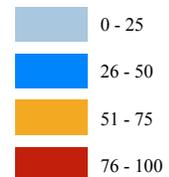


Percent Contribution*
Root Disease
on Ponderosa Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop. Fir engraver host	host is 10% of	host is 90% of	st is 90% of stock	host is 90% of	Linear	1	33%
Criteria 2		size class	9" QMD	32" QMD	32" QMD	32" QMD	S-1	1	33%
Criteria 3		host prop in overstory	10%	90%	90%	90%	S-1	1/2	17%
Criteria 4		host prop in understory	1%	90%	90%	90%	S-1	1/2	17%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 11, 13, 19

Model Certainty 5 - Drawn From Ecological Principles



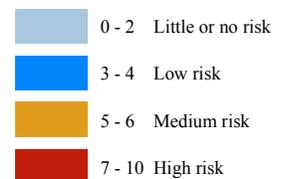
Risk* of Mortality Root Disease on Red Fir (WC)

Mortality Ceiling of 12%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

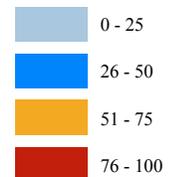


Percent Contribution* Root Disease on Red Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Root Diseases

Host(s): Subalpine Fir

Model Extent: Oegon and Washington

Max Percent Mortality: 30%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

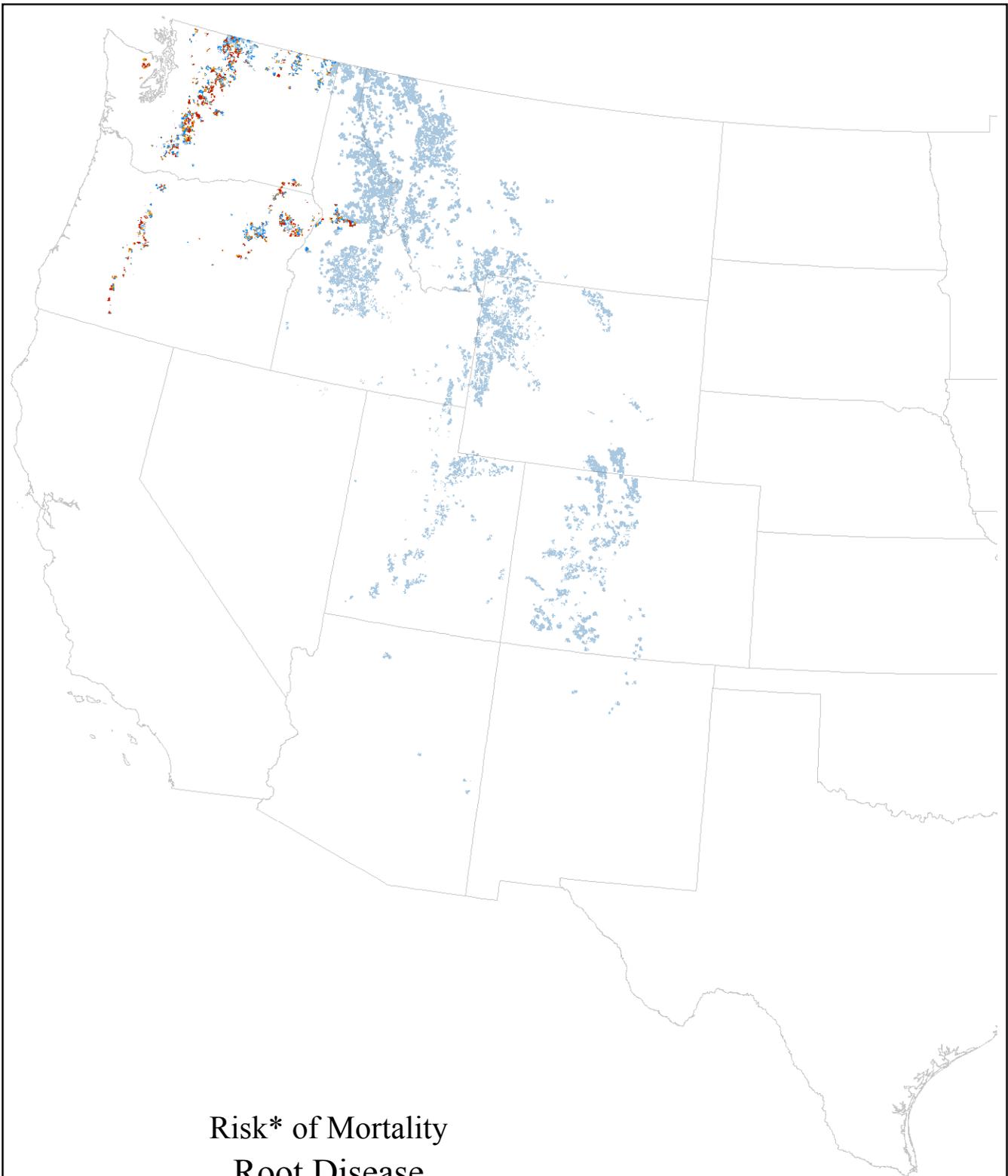
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop ba root disease host	host is 10% of	host is 90% of	host is 90% of ba	host is 90% of	S-1	1	33%
Criteria 2		overstory QMD	6" QMD	21" QMD	21" QMD	21" QMD	S-1	1	33%
Criteria 3		host prop in overstory	10%	90%	90%	90%	Linear	0.5	17%
Criteria 4		host prop in understory	10%	90%	90%	90%	Linear	0.5	17%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 11, 19, 20

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
Root Disease
on Subalpine Fir (WC)
Mortality Ceiling of 30%



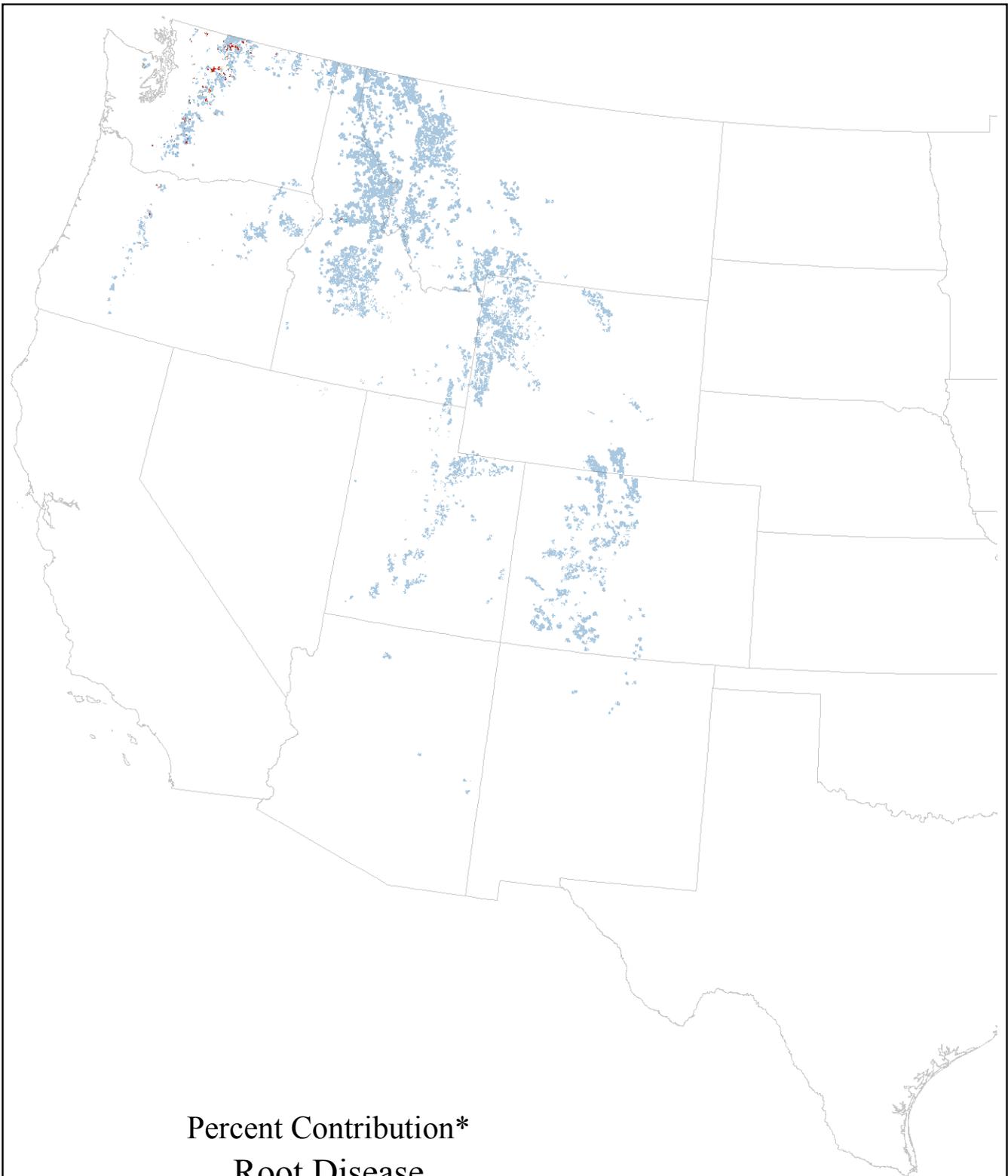
Legend

Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

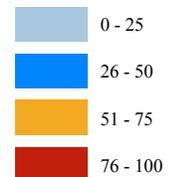


Percent Contribution*
Root Disease
on Subalpine Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Root Diseases

Host(s): Western Hemlock

Model Extent: Oregon and Washington

Max Percent Mortality: 10%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop root disease present	1%	40%	40%	40%	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 17

Model Certainty 4 - Expert Opinion



Risk* of Mortality Root Disease on Western Hemlock (WC)

Mortality Ceiling of 10%



Legend

Level of risk for host

- | | |
|---|-------------------------|
|  | 0 - 2 Little or no risk |
|  | 3 - 4 Low risk |
|  | 5 - 6 Medium risk |
|  | 7 - 10 High risk |

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 5, 2007

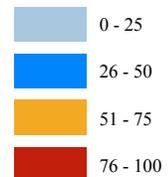


Percent Contribution*
Root Disease on Western Hemlock (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Root Diseases

Host(s): White Fir

Model Extent: Oregon and Washington

Max Percent Mortality: 14%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		prop. Root disease host	host is 10% of	host is 90% of		host is 100% of	Linear	1	33%
Criteria 2		host prop in overstory	1	90%		90%	S-1	1/2	17%
Criteria 3		host prop in understory	1	90%		90%	S-1	1/2	17%
Criteria 4		overstory QMD	5" QMD	27" QMD		27" QMD	Linear	1	33%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 11, 19, 20

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality Root Disease on White Fir (WC)

Mortality Ceiling of 14%



Legend

Level of risk for host

- Little or no risk
- Low risk
- Medium risk
- High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 5, 2007

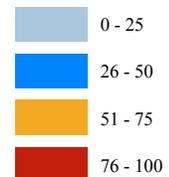


Percent Contribution*
 Root Disease on White Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Silver Fir Beetle

Host(s): Pacific Silver Fir

Model Extent: Oregon and Washington

Max Percent Mortality: 20%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		size class	12" QMD	30" QMD	30" QMD	30" QMD	S-1	1/3	40%
Criteria 2		total basal area	200ft ² /acre	200ft ² /acre	200ft ² /acre	500ft ² /acre	S-1	1/2	60%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

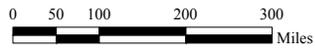
Comments

Citations 17, 23, 24

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Silver Fir Beetle
 on Pacific Silver Fir (WC)
 Mortality Ceiling of 20%



Legend

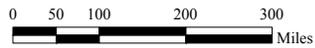
Level of risk for host

-  0 - 2 Little or no risk
-  3 - 4 Low risk
-  5 - 6 Medium risk
-  7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

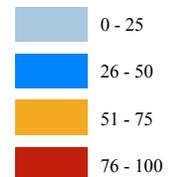


Percent Contribution*
Silver Fir Beetle
on Pacific Silver Fir (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1								
Criteria 2								
Criteria 3								
Criteria 4								
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Vulnerability

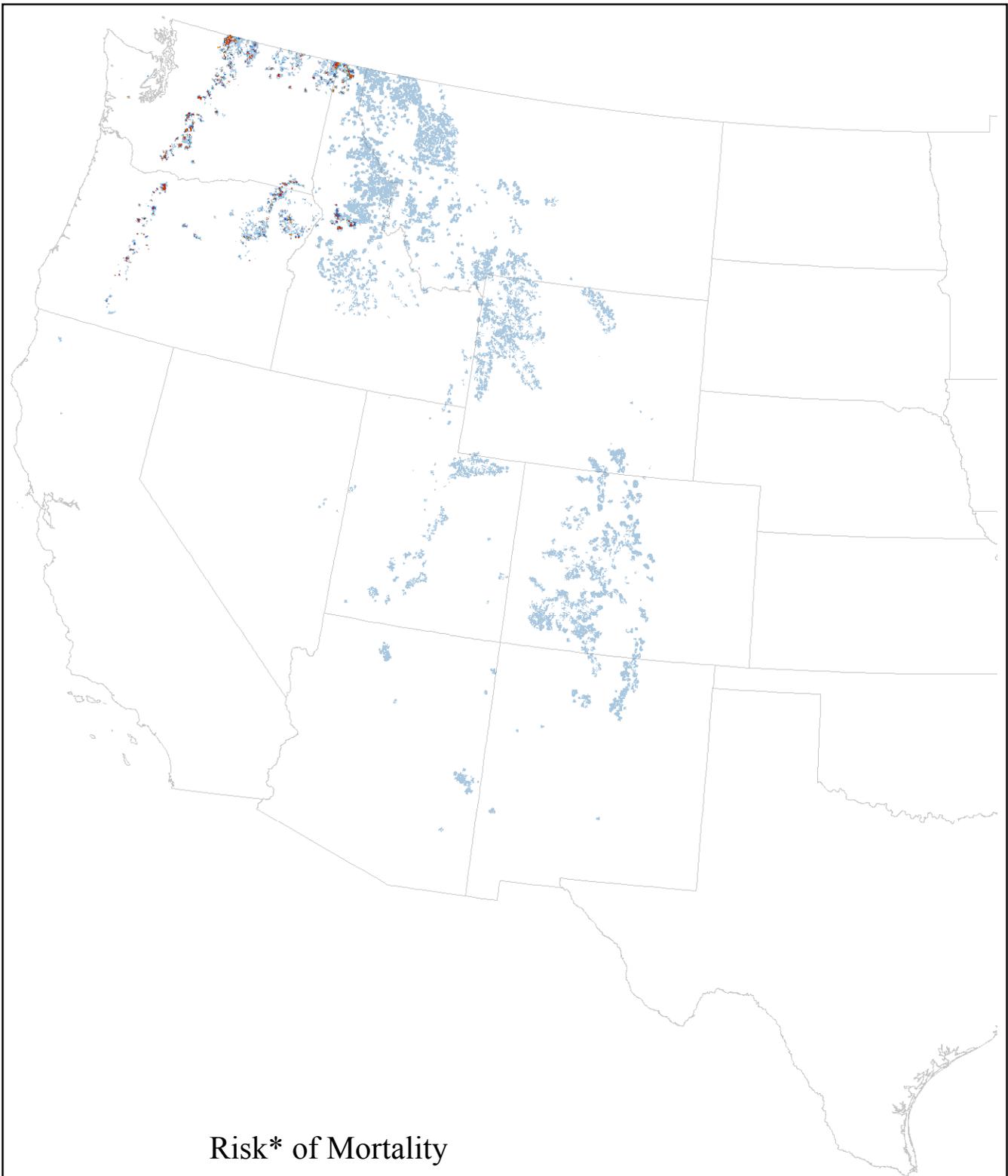
Rank/Weight	Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
Criteria 1	spruce qmd	5"	16"	16"	16"	S-1	1	33%
Criteria 2	plot basal area	50	175	175	175	S-1	1	33%
Criteria 3	physiography	curvature < -0.	curvature < -0.	curvature < -0.2	curvature < -0.	S-2	1/2	17%
Criteria 4	physiography	curvature < -0.	curvature = 0	curvature = 0	curvature > 0.2	S-3	1/2	17%
Criteria 5								
Criteria 6								
Criteria 7								
Criteria 8								
Criteria 9								
Criteria 10								

Constraints	QMD of spruce must be >=5"
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Comments	
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Citations	18, 20, 22
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality Spruce Beetle on Englemann Spruce (WC)

Mortality Ceiling of 18%

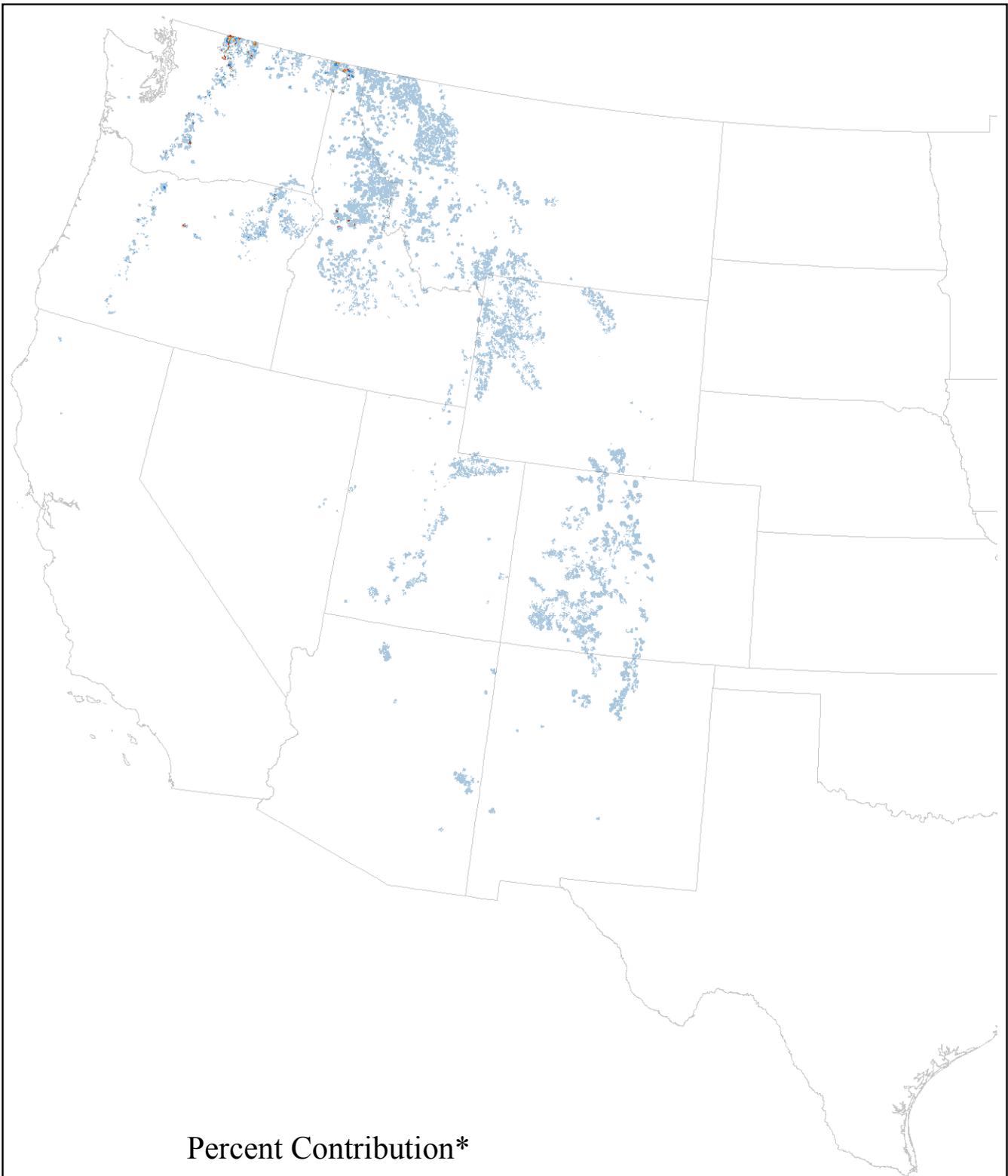


Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

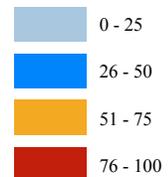


Percent Contribution*
 Spruce Beetle on Englemann Spruce (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		sitka spruce QMD	10"	21"	21	21"	S-1	1	67%
Criteria 2		sitka spruce ba ft2 / acre	50	250	250	250	J-1	0.5	33%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	16
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Model Certainty	5 - Drawn From Ecological Principles
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Risk* of Mortality Spruce Beetle on Sitka Spruce (WC)

Mortality Ceiling of 30%



Legend

Level of risk for host

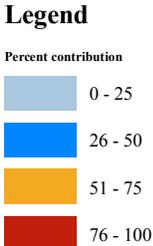
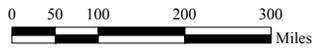
- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007



Percent Contribution* Spruce Beetle on Sitka Spruce (WC)



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Sudden Oak Death

Host(s): Tanoak

Model Extent: oregon N263A within the state of Oregon (coast redwood region)

Max Percent Mortality: 25%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		tanoak basal area	1	43	43	43	S-1	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints

Comments

Citations 14

Model Certainty 5 - Drawn From Ecological Principles



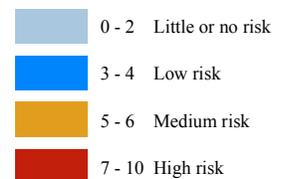
Risk* of Mortality Sudden Oak Death on Tanoak (WC)

Mortality Ceiling of 25%



Legend

Level of risk for host



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

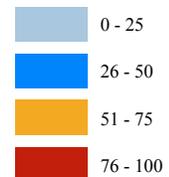


Percent Contribution* Sudden Oak Death on Tanoak (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Tomentosus Root Disease

Host(s): Engelmann Spruce

Model Extent: Oregon and Washington

Max Percent Mortality: 5%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

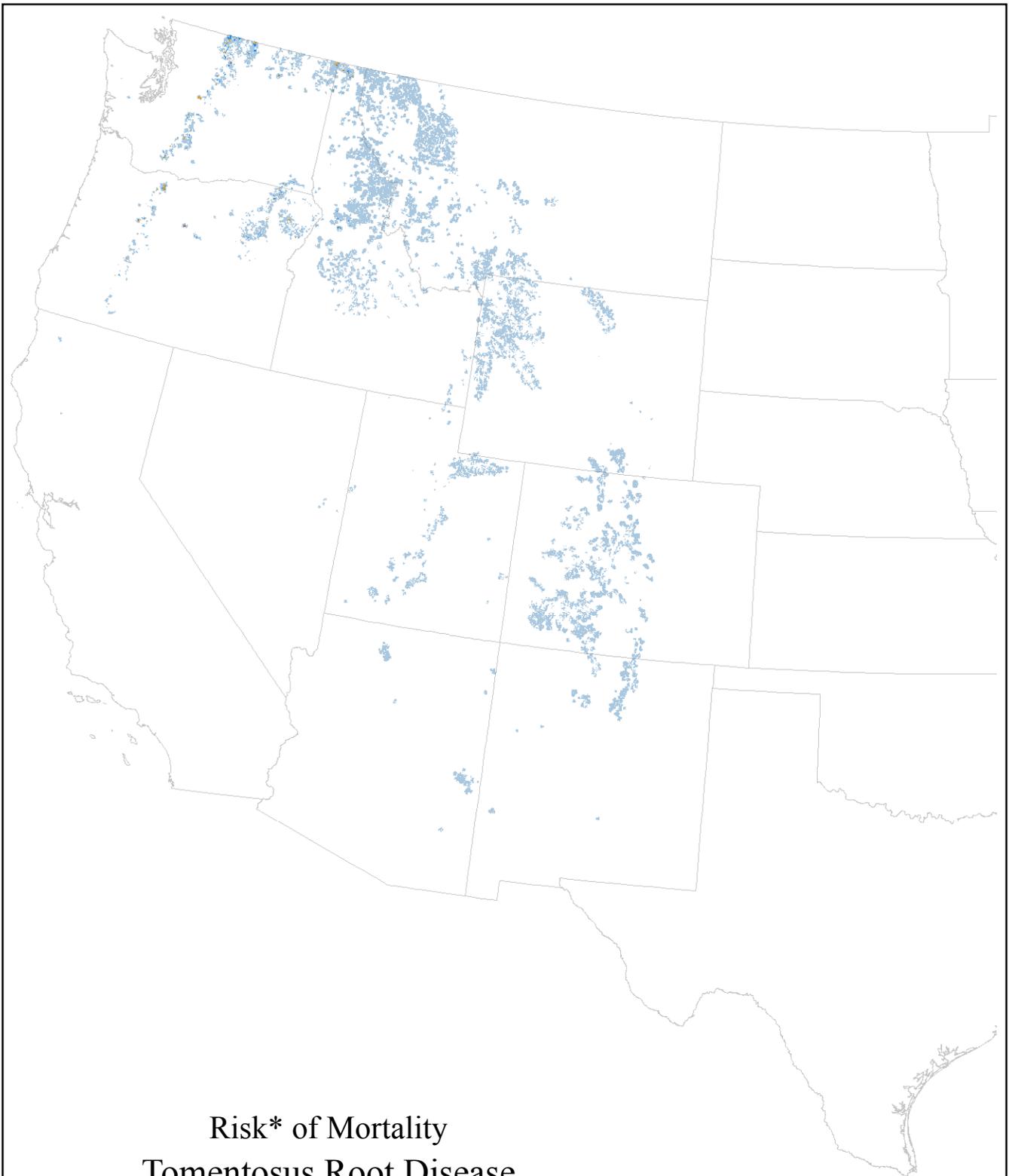
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		spruce qmd	12"	20"	20"	20"	S-1	1	50%
Criteria 2		Prop. Eng. Spruce	1%	90%	90%	90%	S-1	1	50%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints QMD of spruce must be >=5"

Comments

Citations 20

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Tomentosus Root Disease
 on Englemann Spruce (WC)
 Mortality Ceiling of 5%

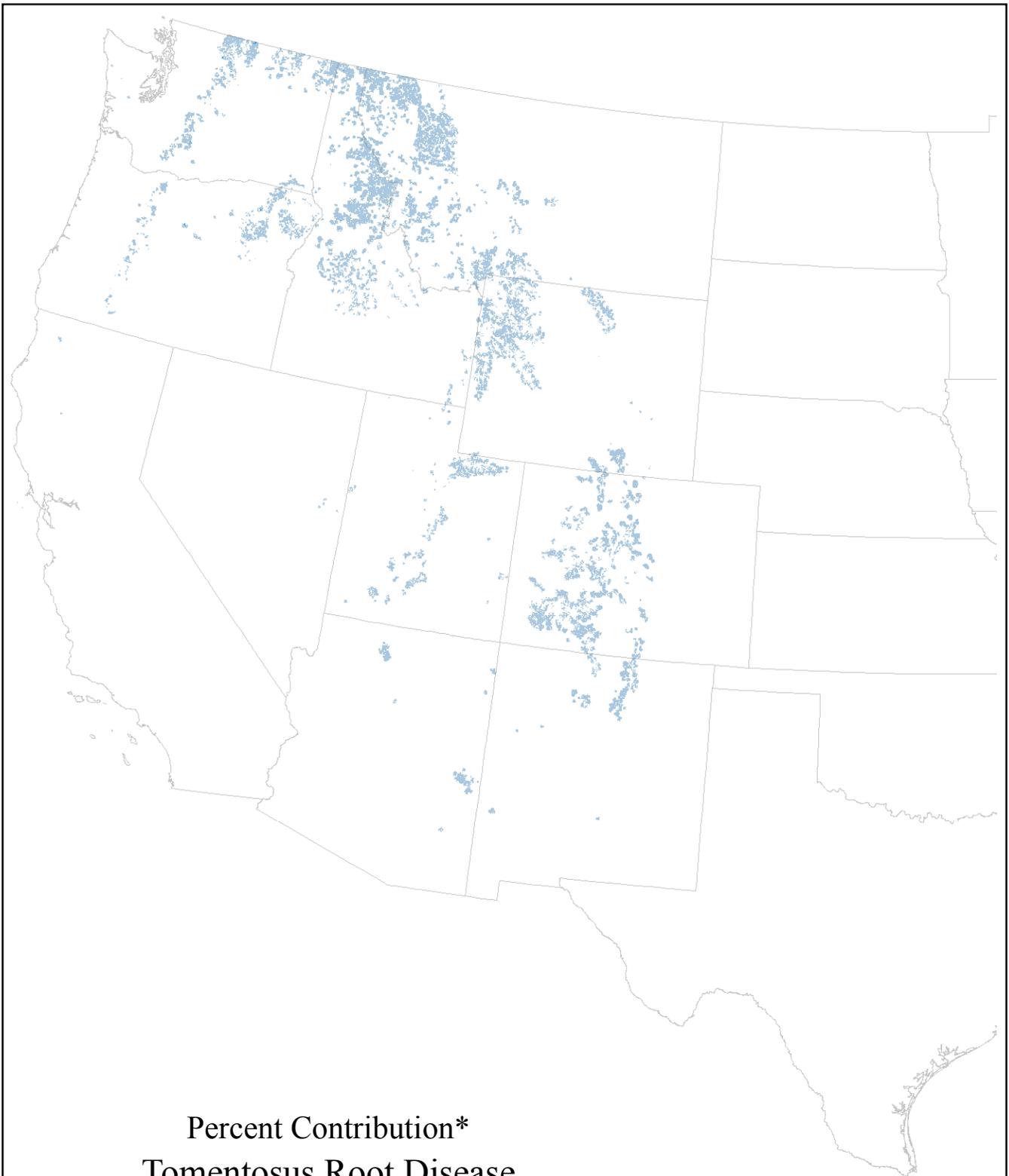


Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk

*Risk of experiencing mortality at a given threshold over a 15 year period.

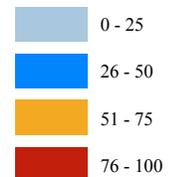


Percent Contribution*
Tomentosus Root Disease
on Englemann Spruce (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 1, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): Western Pine Beetle

Host(s): Ponderosa Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 70%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		plot basal area	50 ft ² /acre	190 ft ² /acre	190 ft ² /acre	190 ft ² /acre	S-1	1	33%
Criteria 2		size class of ponderosa	16"	22"	22"	22"	J-1	1	33%
Criteria 3		host prop stocking	1%	1%	1%	20%	J-2	1	33%
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints	
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Comments	
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Citations	2
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Model Certainty	3 - Informed Professional Judgement
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Risk* of Mortality
 Western Pine Beetle
 on Ponderosa Pine (WC)
 Mortality Ceiling of 70%

Legend

Level of risk for host

- 0 - 2 Little or no risk
- 3 - 4 Low risk
- 5 - 6 Medium risk
- 7 - 10 High risk



*Risk of experiencing mortality at a given threshold over a 15 year period.

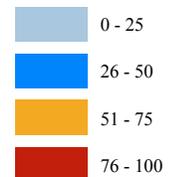


Percent Contribution*
Western Pine Beetle
on Ponderosa Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 2, 2007

Risk Model Worksheet - Pacific Northwest

Risk Agent(s): White Pine Blister Rust

Host(s): Whitebark Pine

Model Extent: Oregon and Washington

Max Percent Mortality: 80%

Susceptibility

Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

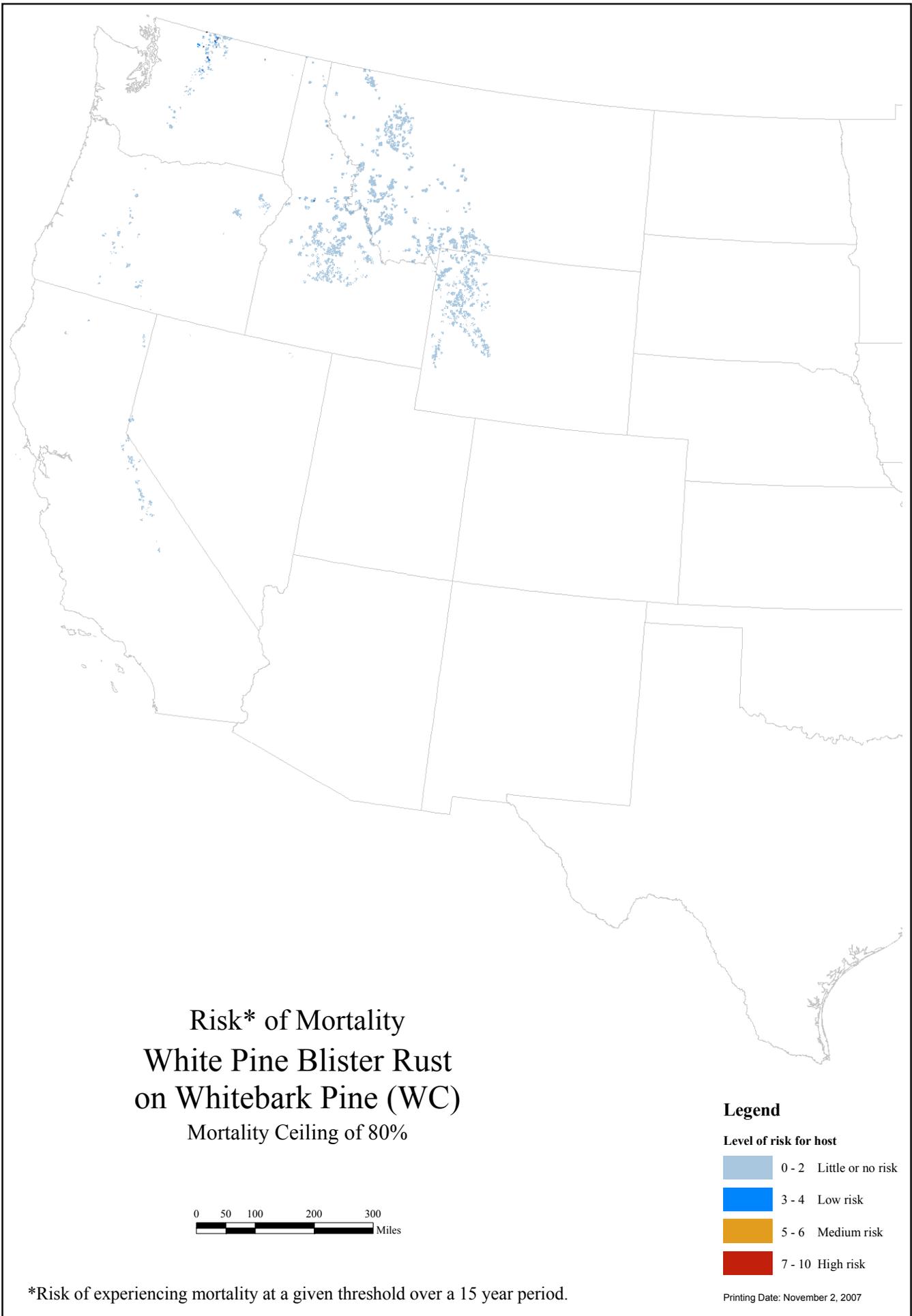
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
1	100%								
Criteria 1		blister rust severity	2	3	3	3	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints restricted above 8" qmd

Comments

Citations 7

Model Certainty 3 - Informed Professional Judgement



*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 2, 2007

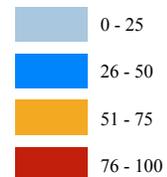


Percent Contribution*
White Pine Blister Rust
on Whitebark Pine (WC)



Legend

Percent contribution



*Percent contribution to composite basal area loss attributed to the individual risk agent.

Printing Date: November 5, 2007