

IMPORTANT INFORMATION ABOUT THIS WORKBOOK

Risk Map Workbook

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

South

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

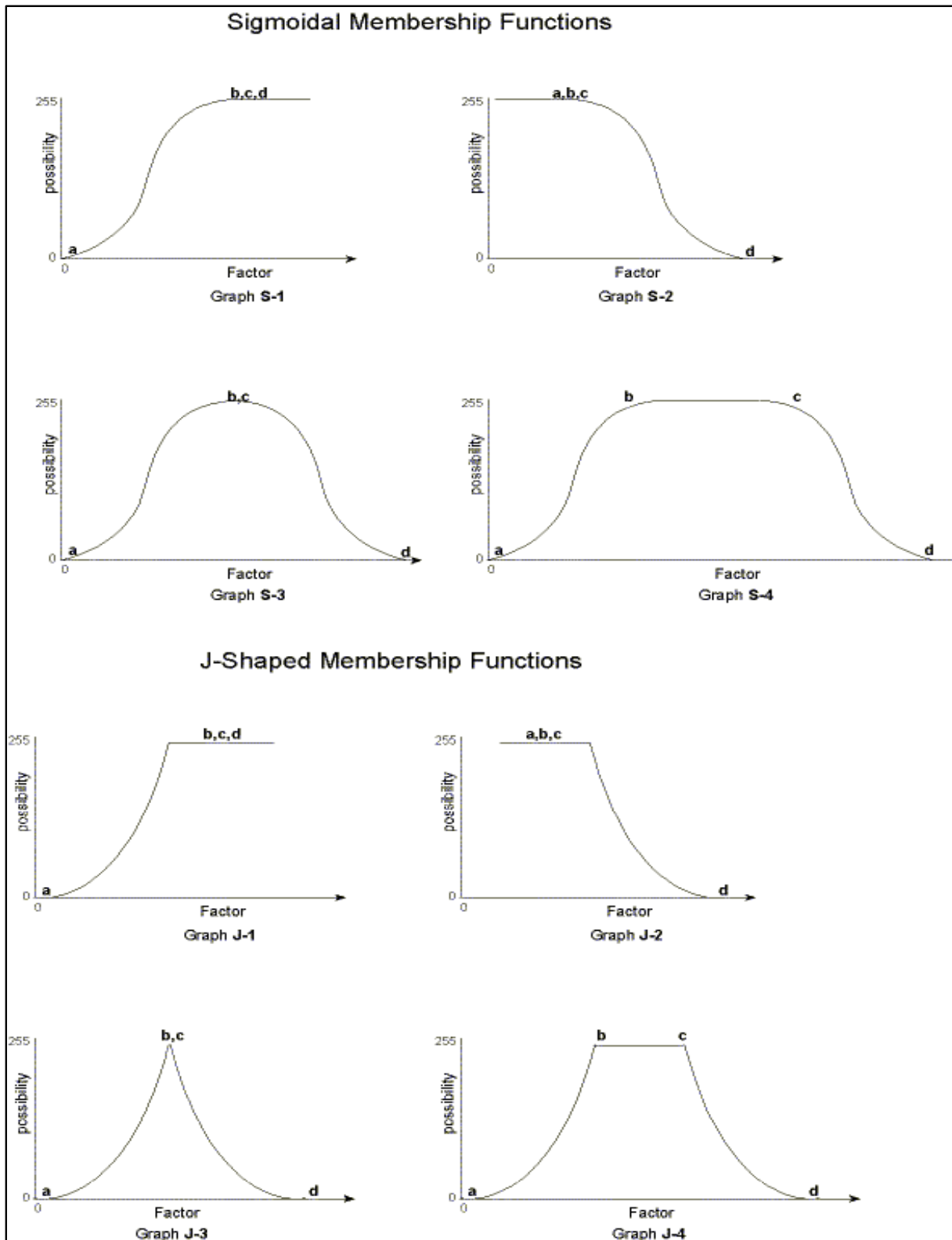
Worksheets:

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.

	<u>Input Value</u>	<u>Classes</u>	<u>Scaled Value</u>
Risk Begins (0):	<input type="text" value="0"/>	0	0
		9	1
		17	2
		26	3
		34	4
		43	5
		51	6
		60	7
		68	8
		77	9
Risk Peaks (10):	<input type="text" value="85"/>	85	10

Citation List - South

No.

Citation

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Stocking, Host% (BA)	50%	80%	80%	80%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

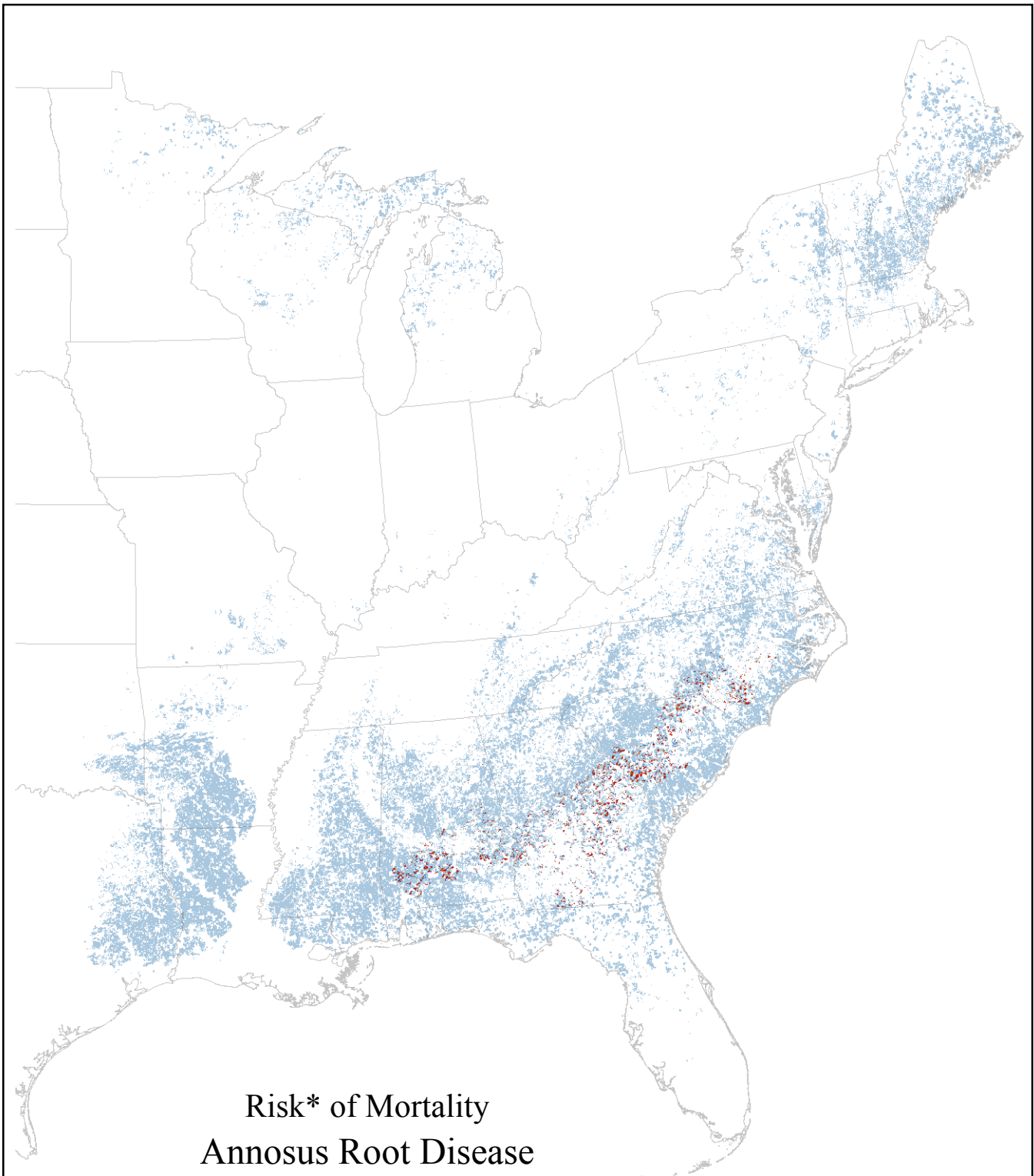
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) High Hazard Areas for Annosum - Southern Forest Health Atlas of Insects and Diseases 2) High Mortality Areas for Annosum (Defined by Nolan Hess) - Mapping Risk from Forest Insects and Diseases

Comments

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Annosus Root Disease
 on Yellow Pine Species

Eastern White Pine, Loblolly Pine, Longleaf Pine,
 Shortleaf Pine & Virginia Pine

Mortality Ceiling of 70%

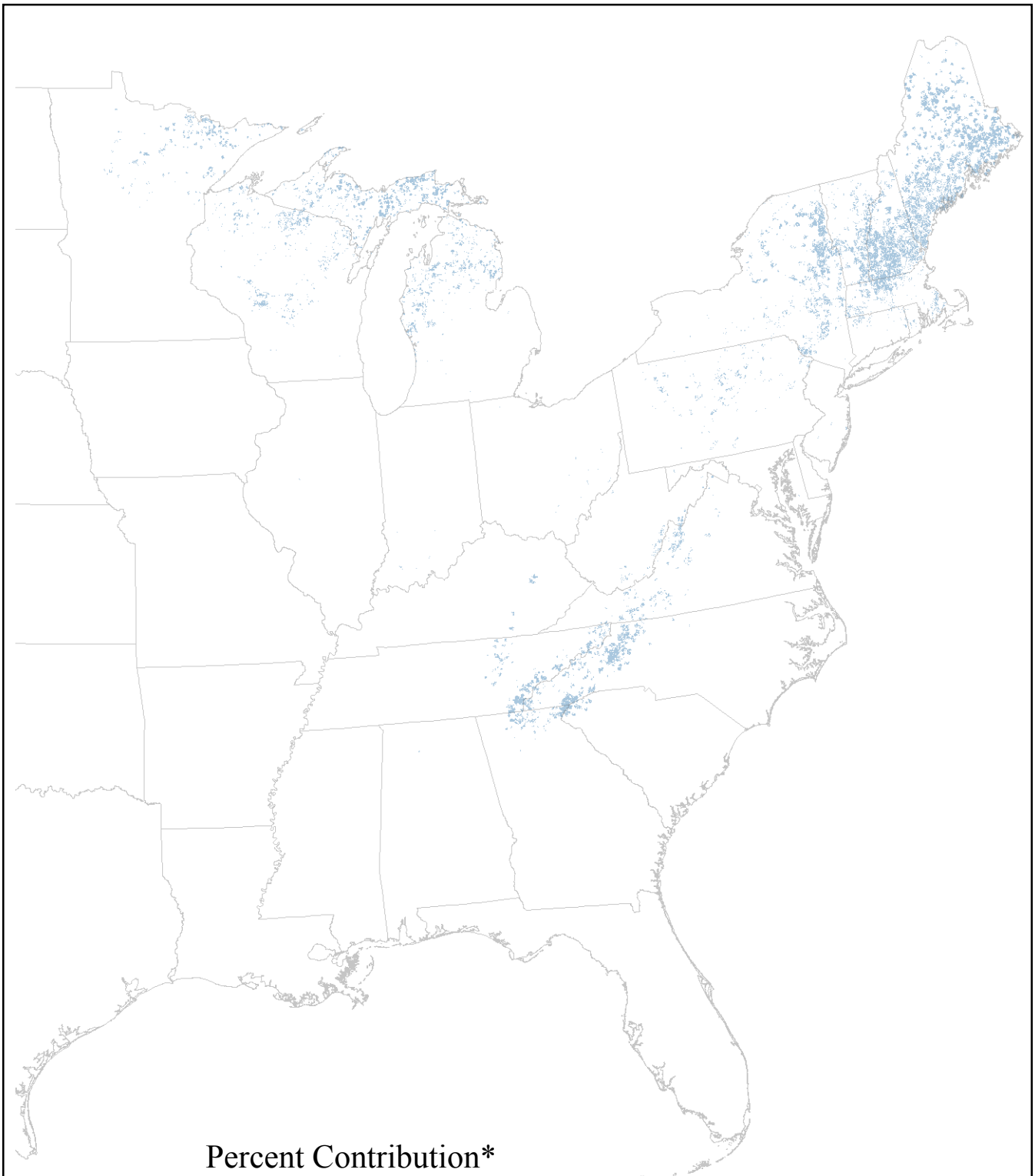


Legend

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.

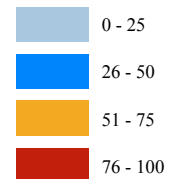


Percent Contribution*
 Annosus Root Disease
 on Eastern White Pine
 0 pixels



Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Stocking, Host% (BA)	50%	80%	80%	80%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

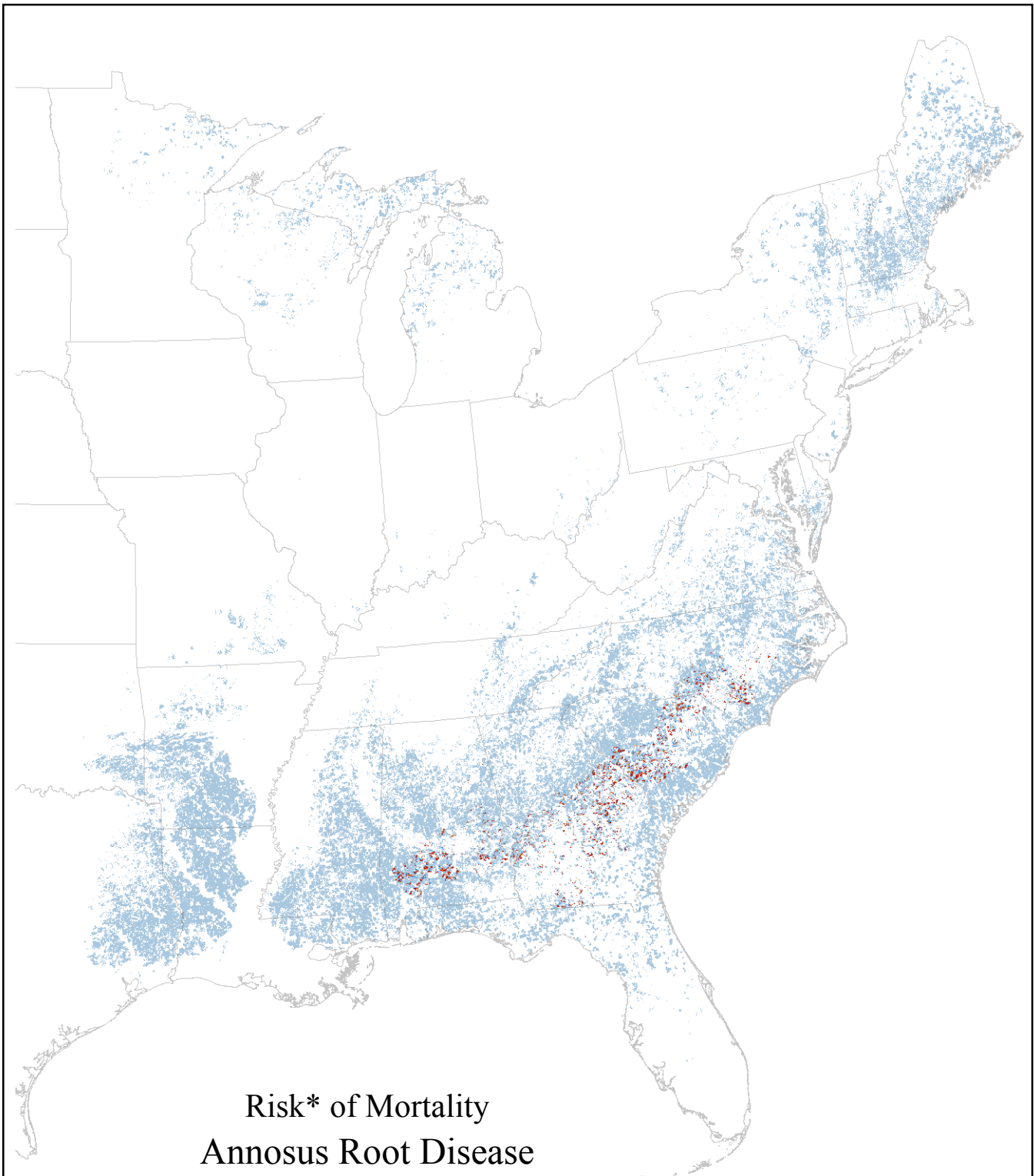
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) High Hazard Areas for Annosum - Southern Forest Health Atlas of Insects and Diseases 2) High Mortality Areas for Annosum (Defined by Nolan Hess) - Mapping Risk from Forest Insects and Diseases

Comments

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Annosus Root Disease
 on Yellow Pine Species

Eastern White Pine, Loblolly Pine, Longleaf Pine,
 Shortleaf Pine & Virginia Pine

Mortality Ceiling of 70%

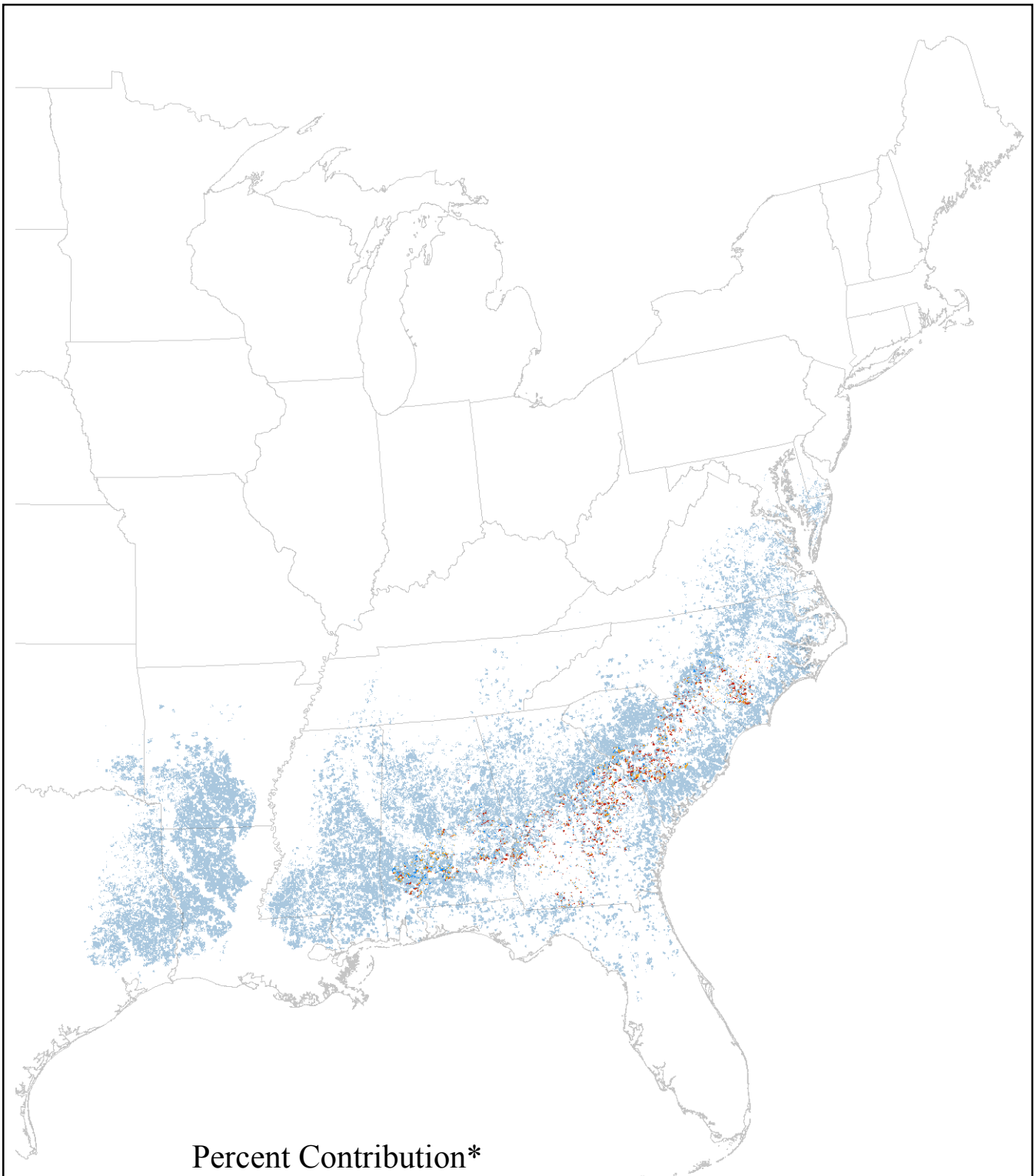


Legend

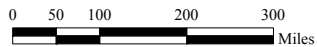
Level of risk for host

- 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.

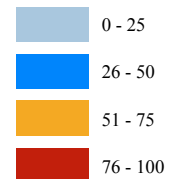


Percent Contribution*
Annosus Root Disease
on Loblolly Pine



Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Stocking, Host% (BA)	50%	80%	80%	80%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

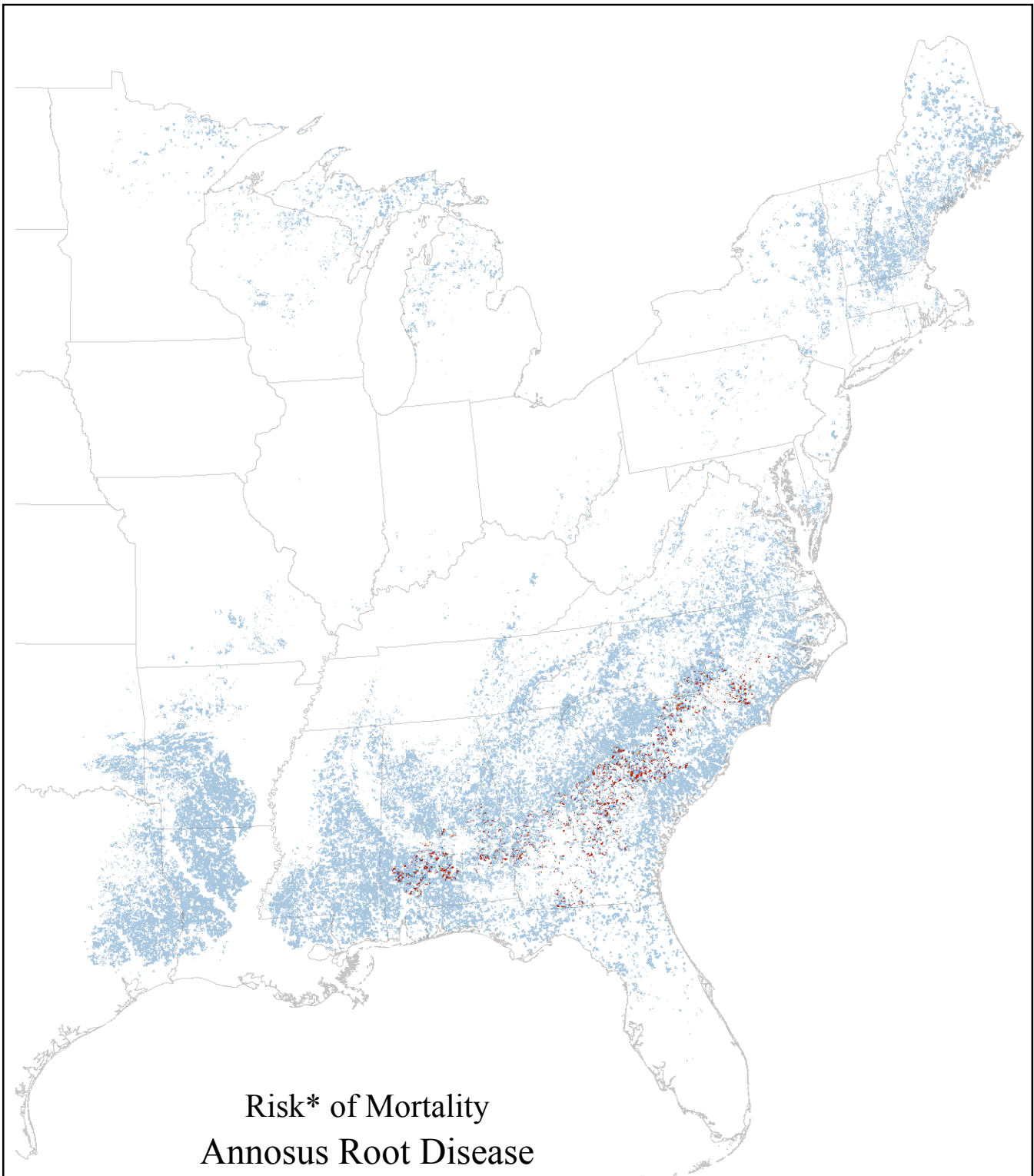
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) High Hazard Areas for Annosum - Southern Forest Health Atlas of Insects and Diseases 2) High Mortality Areas for Annosum (Defined by Nolan Hess) - Mapping Risk from Forest Insects and Diseases

Comments

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Annosus Root Disease
 on Yellow Pine Species

Eastern White Pine, Loblolly Pine, Longleaf Pine,
 Shortleaf Pine & Virginia Pine

Mortality Ceiling of 70%

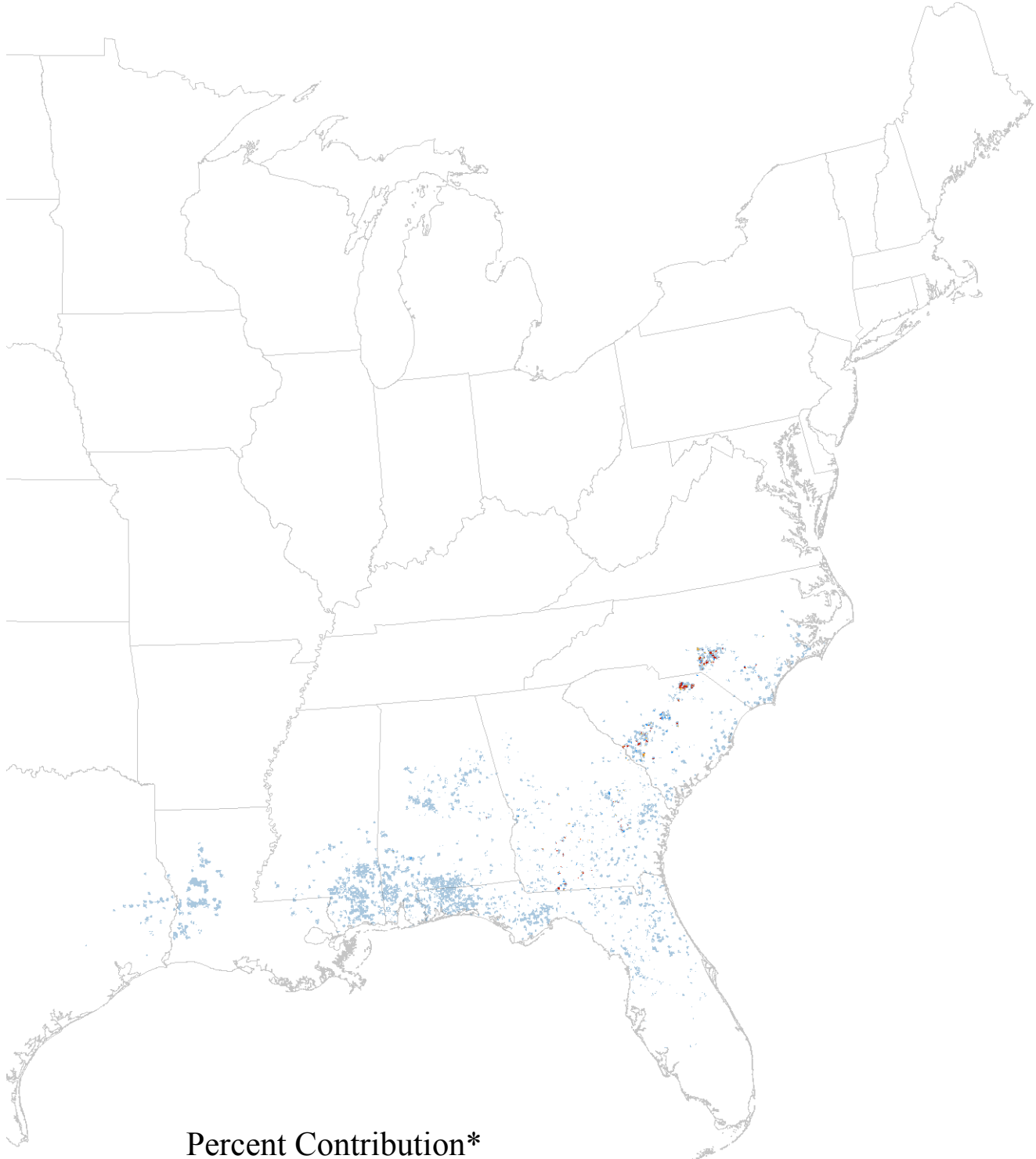


Legend

Level of risk for host

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

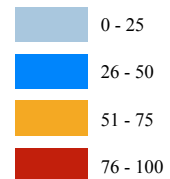
*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution* Annosus Root Disease on Longleaf Pine

Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Stocking, Host% (BA)	50%	80%	80%	80%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

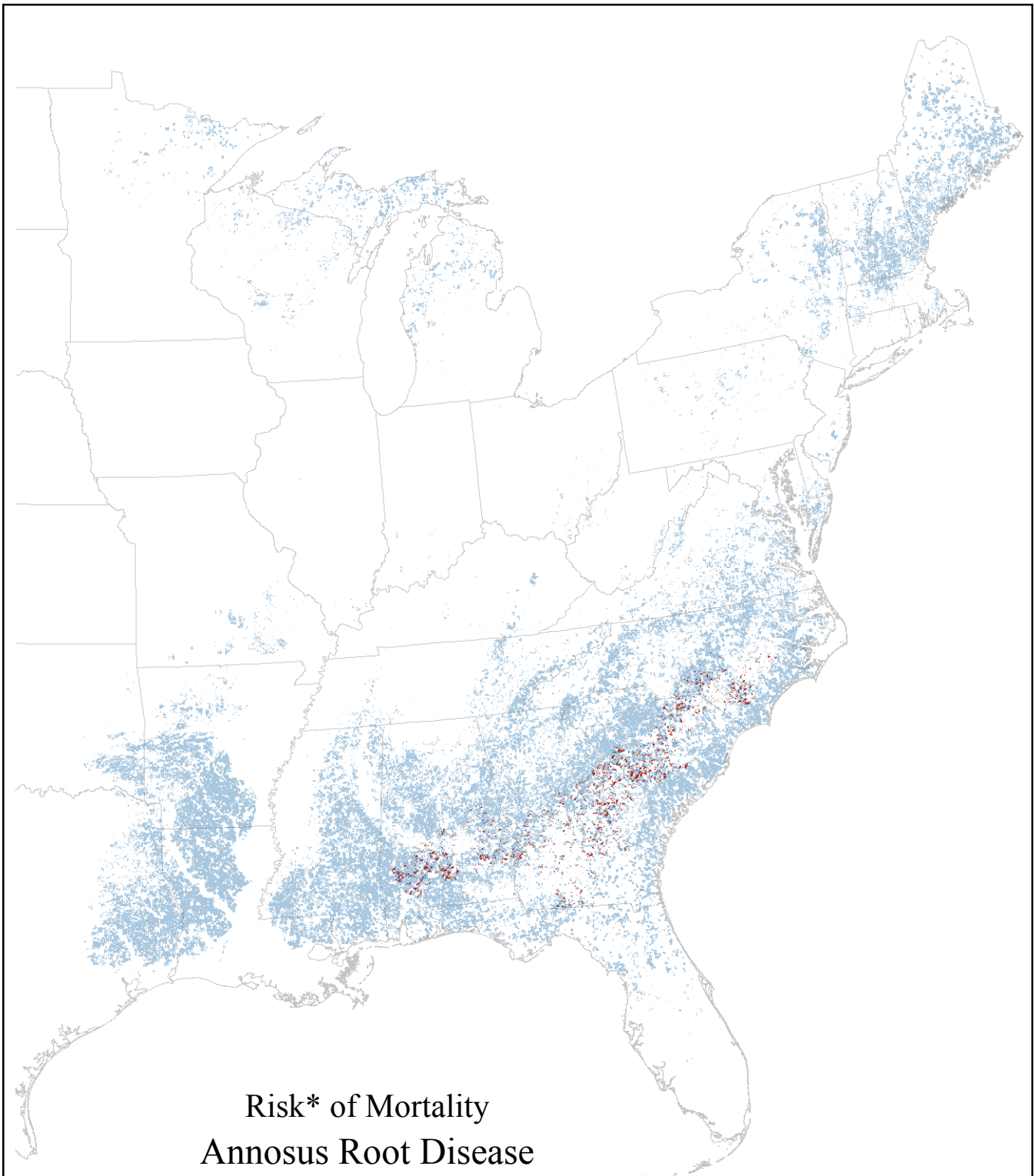
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) High Hazard Areas for Annosum - Southern Forest Health Atlas of Insects and Diseases 2) High Mortality Areas for Annosum (Defined by Nolan Hess) - Mapping Risk from Forest Insects and Diseases

Comments

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Annosus Root Disease
 on Yellow Pine Species

Eastern White Pine, Loblolly Pine, Longleaf Pine,
 Shortleaf Pine & Virginia Pine

Mortality Ceiling of 70%

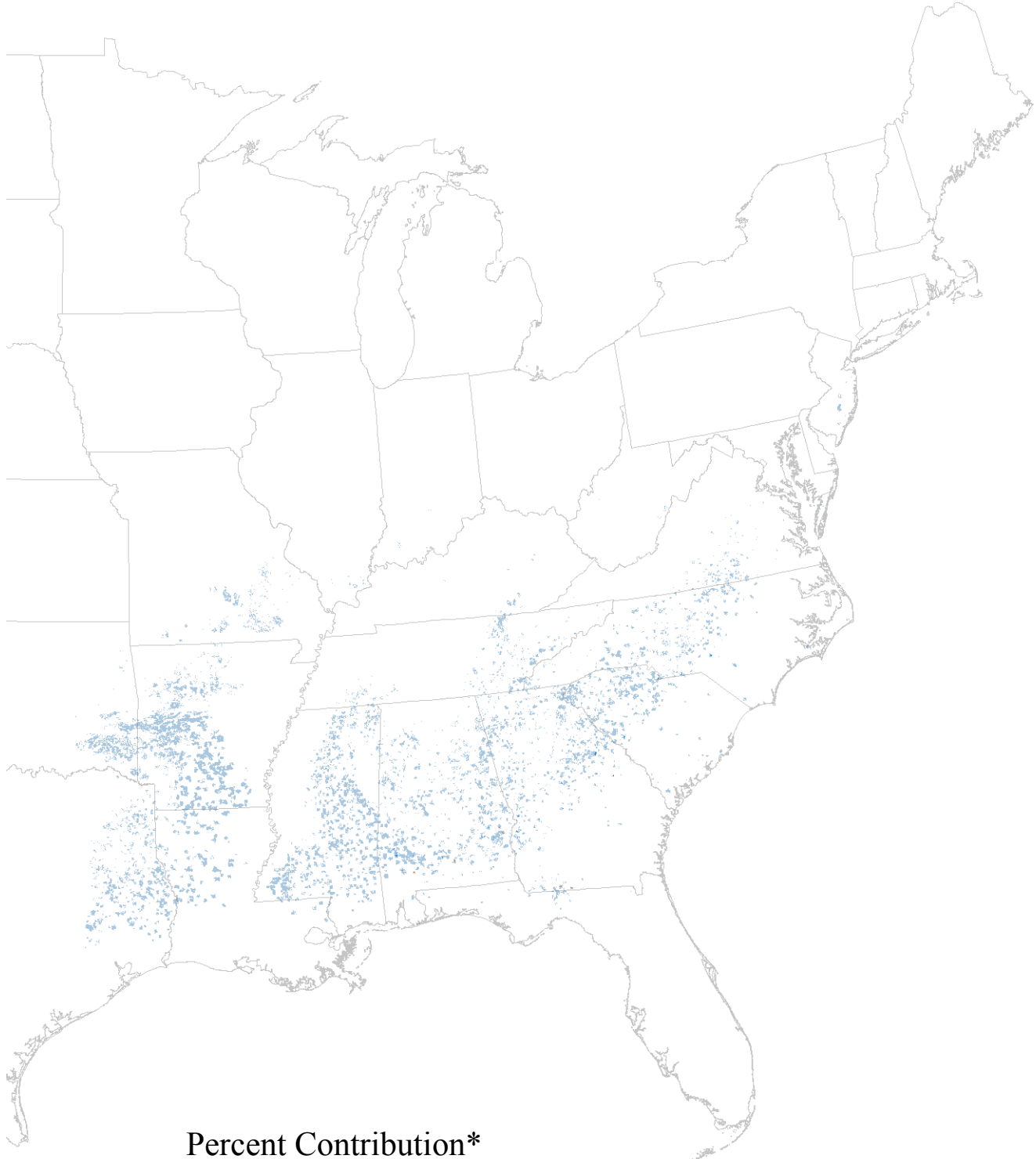


Legend

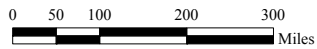
Level of risk for host

- 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.

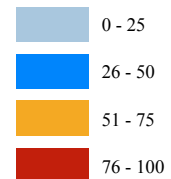


Percent Contribution*
Annosus Root Disease
on Shortleaf Pine



Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Stocking, Host% (BA)	50%	80%	80%	80%	Linear	1	100%
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

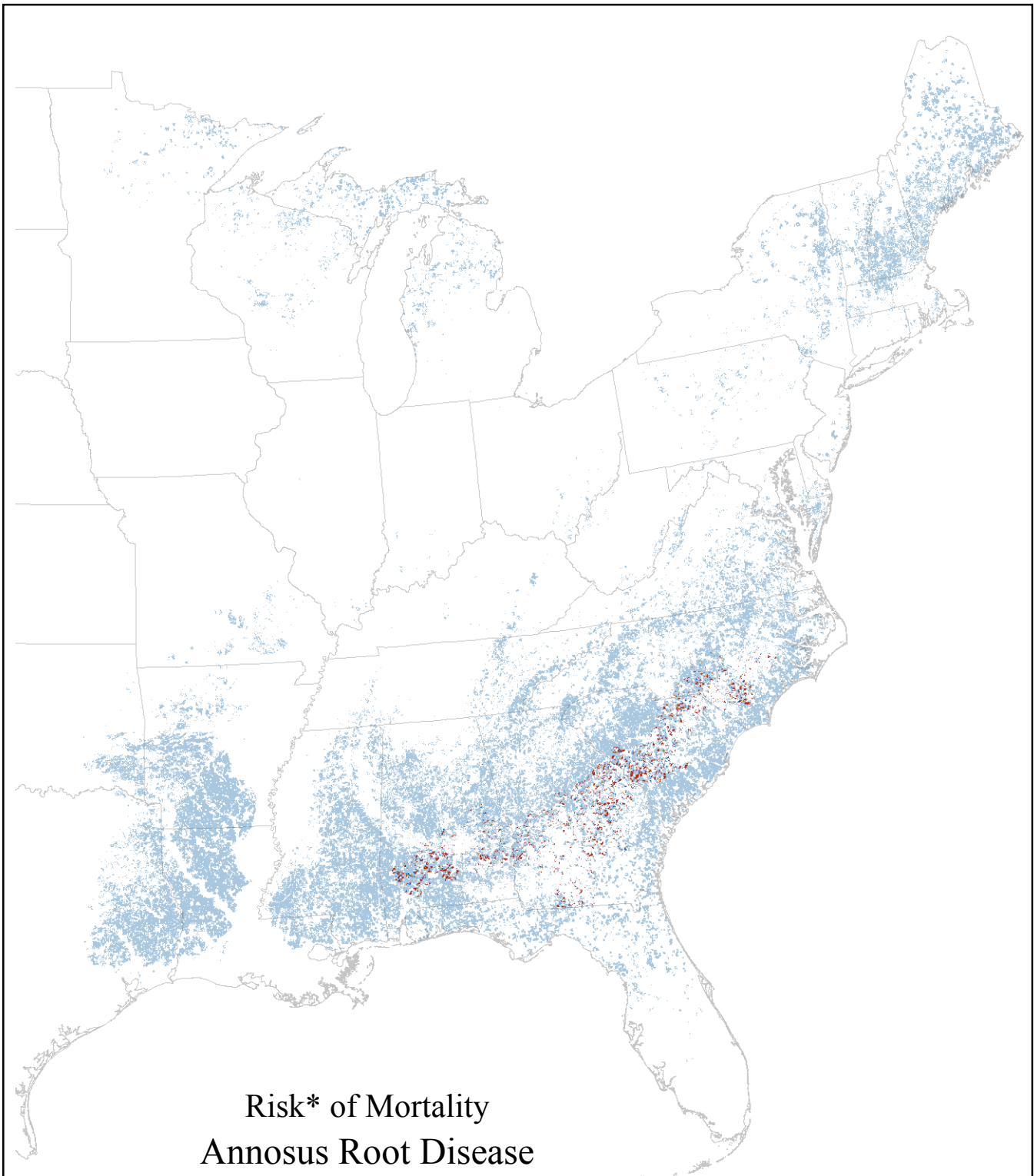
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) High Hazard Areas for Annosum - Southern Forest Health Atlas of Insects and Diseases 2) High Mortality Areas for Annosum (Defined by Nolan Hess) - Mapping Risk from Forest Insects and Diseases

Comments

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Annosus Root Disease
 on Yellow Pine Species
 Eastern White Pine, Loblolly Pine, Longleaf Pine,
 Shortleaf Pine & Virginia Pine

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

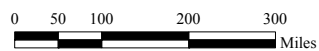
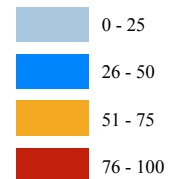
*Risk of experiencing mortality at a given threshold over a 15 year period.



Percent Contribution*
Annosus Root Disease
on Virginia Pine

Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD	2	3	3	4	J-4	1/2	33%
Criteria 2		Infection Rate (%)	25%	49%	49%	49%	Linear	1	67%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

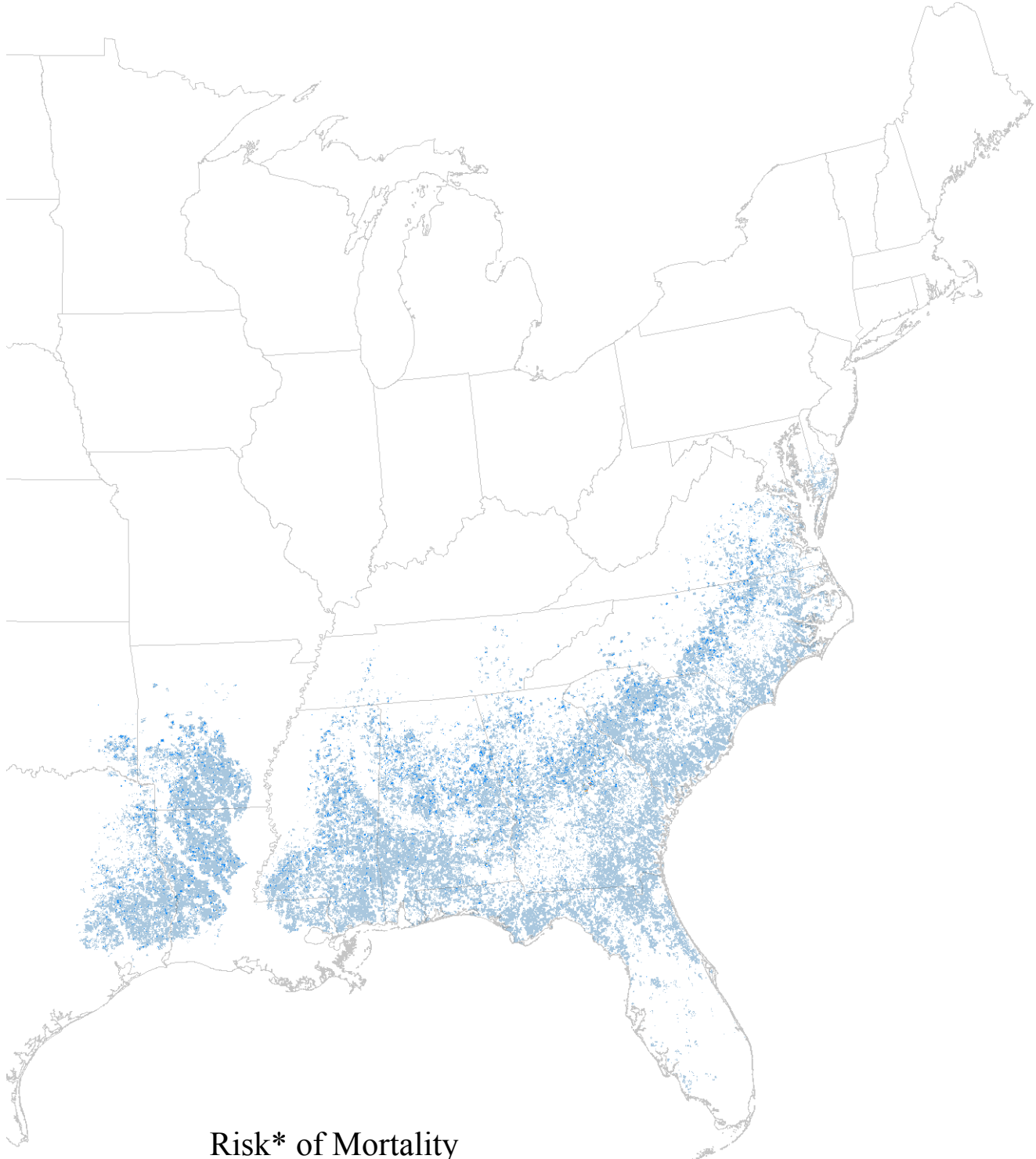
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) Presence of Loblolly Pine (based on Basal Area of Loblolly Pine greater than 1). 2) Presence of Oak (based on percent cover for Oak greater than 1).

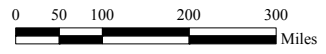
Comments Susceptibility Criteria 1) QMD for Loblolly Pine
Susceptibility Criteria 2) Infection Rates (%) for Fusiform Rust - Southern Forest Health Atlas of Insects and Diseases

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Fusiform Rust on
 Loblolly Pine and Slash Pine
 Mortality Ceiling of 50%

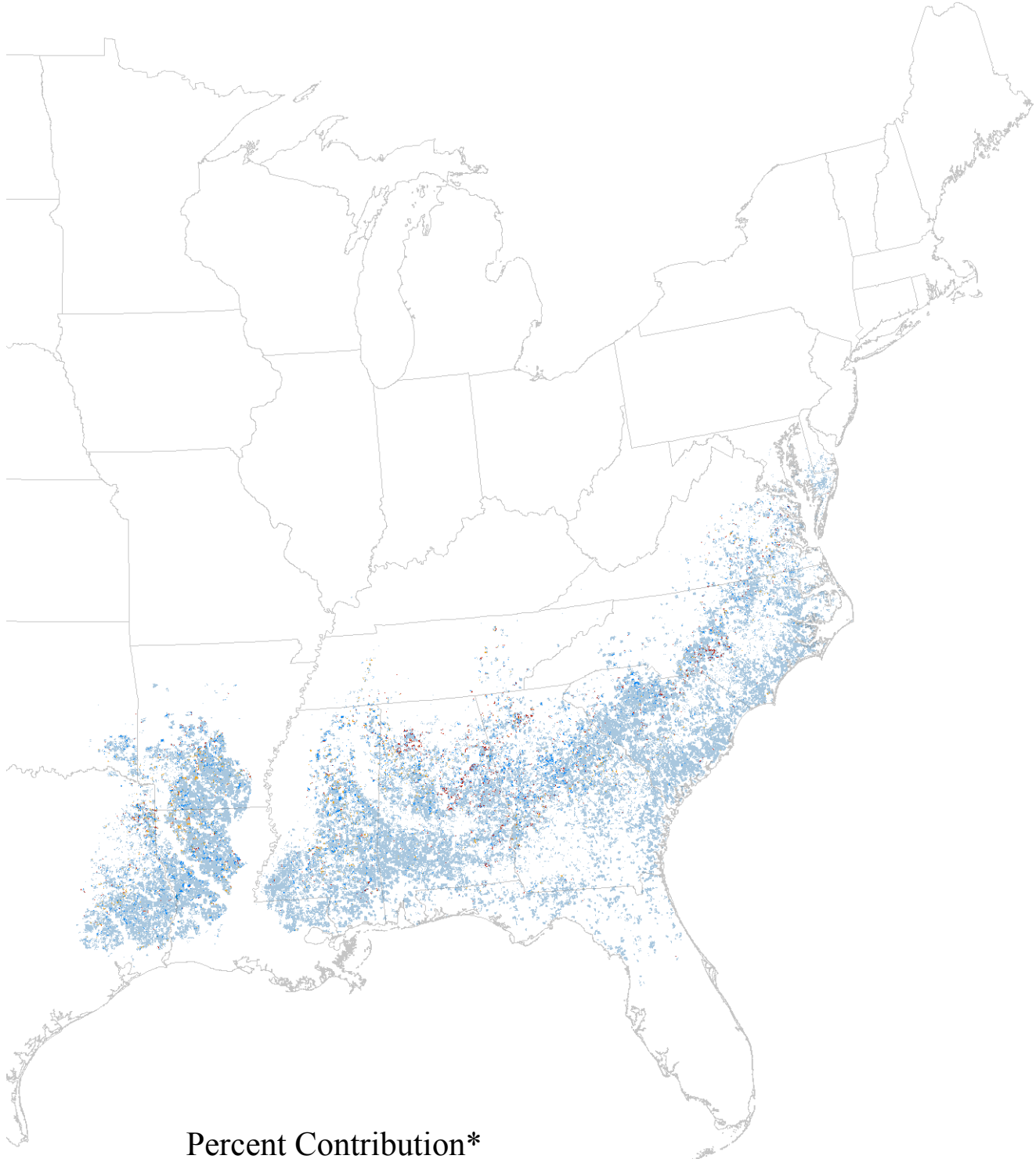


Legend

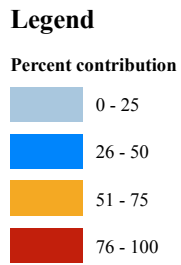
Level of risk for host

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*
Fusiform Rust on
Loblolly Pine



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

Risk Model Worksheet - South

Risk Agent(s):

Host(s):

Model Extent:

Max Percent Mortality:

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	100%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD	2	3	3	4	J-4	1/2	33%
Criteria 2		Infection Rate (%)	25%	49%	49%	49%	Linear	1	67%
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

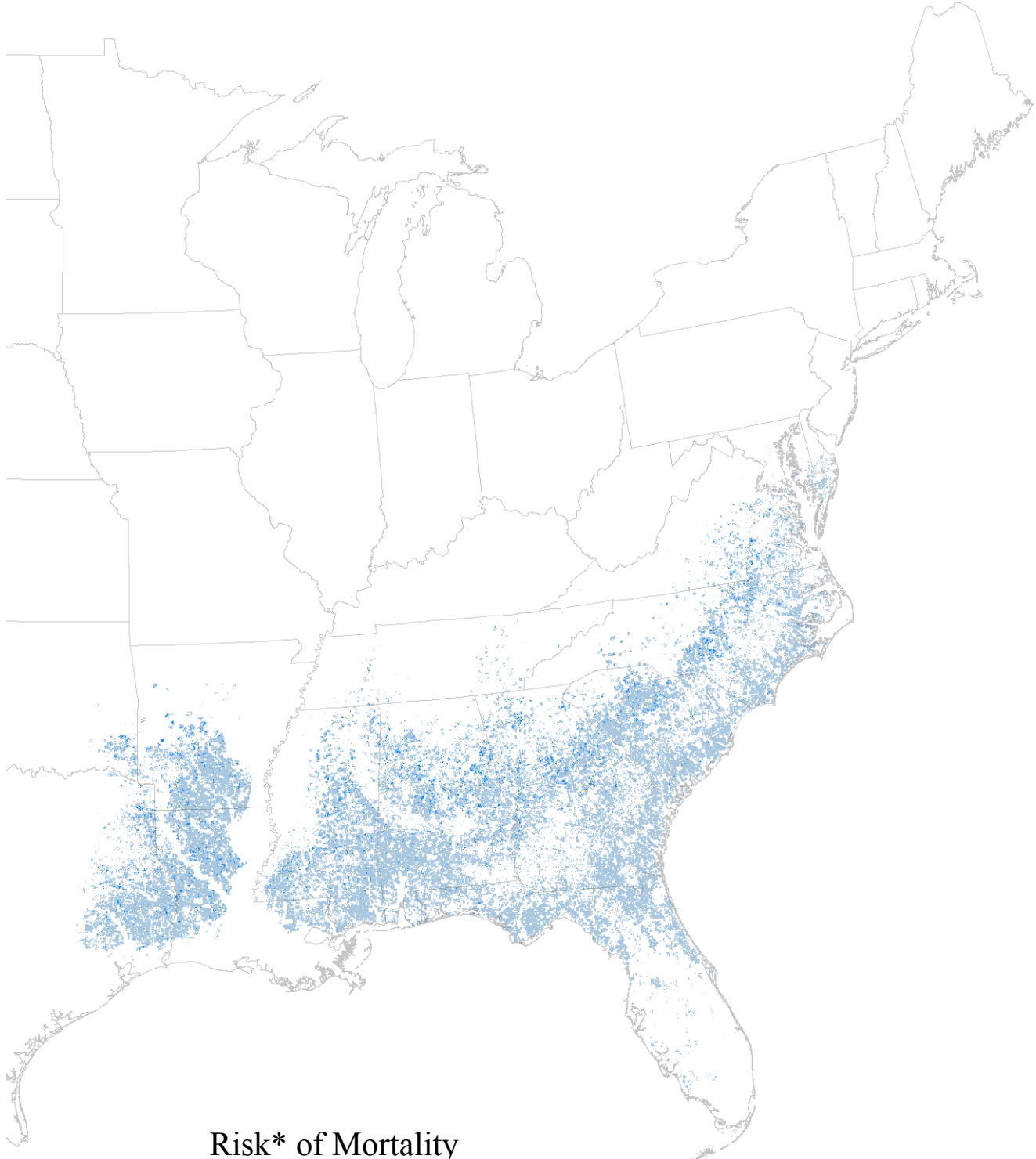
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
0	0%		(a)	(b)	Decreases (c)	(d)			
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints 1) Presence of Slash Pine (based on Basal Area of Slash Pine greater than 1). 2) Presence of Oak (based on percent cover for Oak greater than 1).

Comments Susceptibility Criteria 1) QMD for Slash Pine
Susceptibility Criteria 2) Infection Rates (%) for Fusiform Rust - Southern Forest Health Atlas of Insects and Diseases

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Fusiform Rust on
 Loblolly Pine and Slash Pine
 Mortality Ceiling of 50%

Legend

Level of risk for host

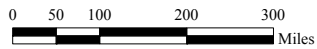
Light Blue	0 - 2	Little or no risk
Blue	3 - 4	Low risk
Orange	5 - 6	Medium risk
Red	7 - 10	High risk



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

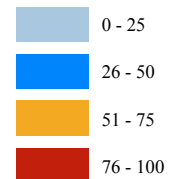


Percent Contribution*
Fusiform Rust on
Slash Pine



Legend

Percent contribution



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

Printing Date: November 13, 2007

Risk Model Worksheet - South

Risk Agent(s): Hemlock Woolly Adelgid (HWA)

Host(s): Carolina/Eastern Hemlock

Model Extent: South

Max Percent Mortality: 100%

Susceptibility

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

Vulnerability

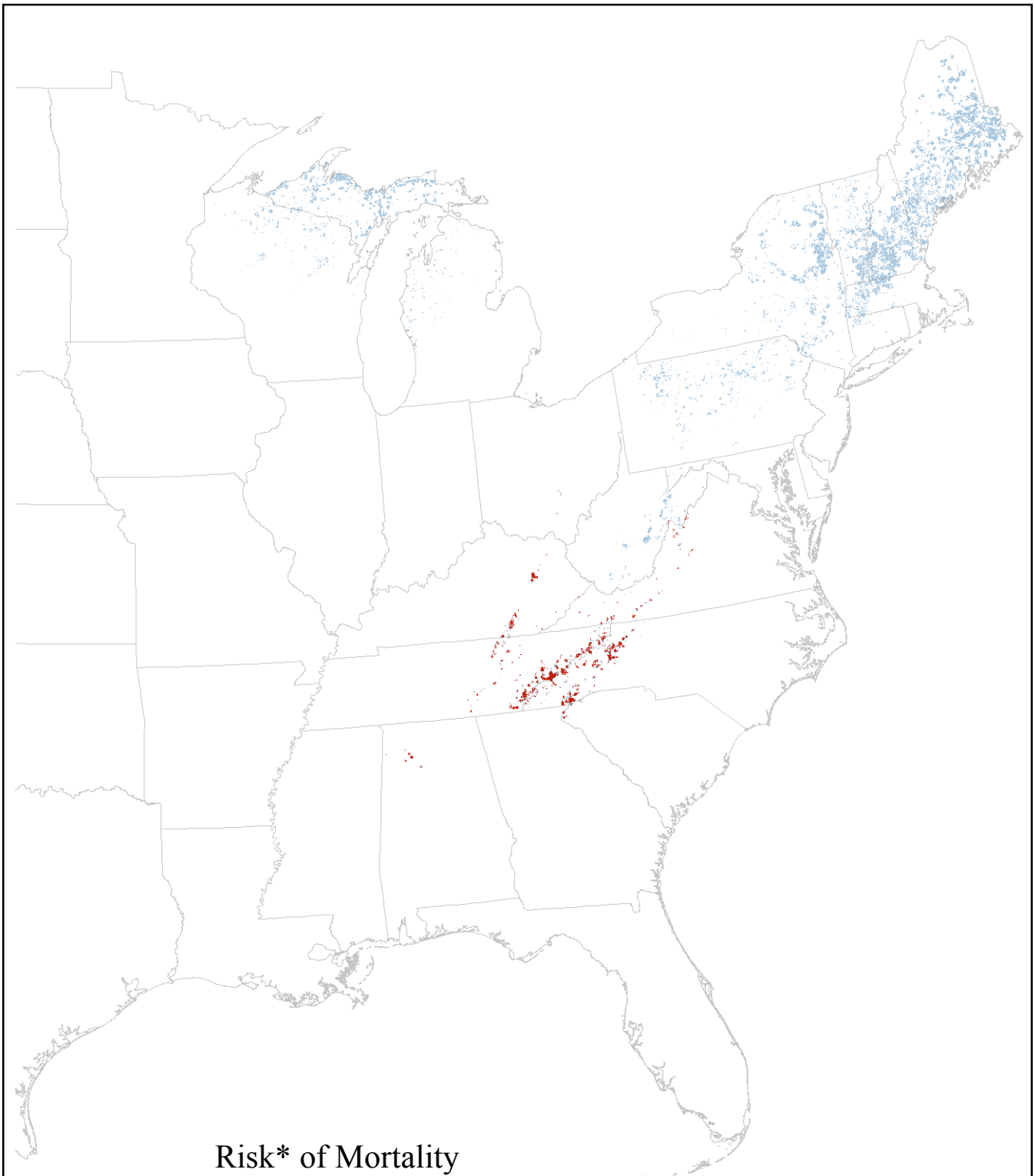
Rank/Weight		Criterion	Risk Begins (a)	Risk Peaks (b)	Risk Decreases (c)	Risk Ends (d)	Curve	Rank	Weight
0	0%								
Criteria 1									
Criteria 2									
Criteria 3									
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria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

Constraints Presence of Hemlock - Carolina and Eastern Hemlock (based on Basal Area)

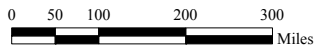
Comments No Criteria for Susceptibility - One Constraint defines Area of Mortality

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Hemlock Woolly Adelgid on
 Carolina/Eastern Hemlock (S)
 Mortality Ceiling of 100%

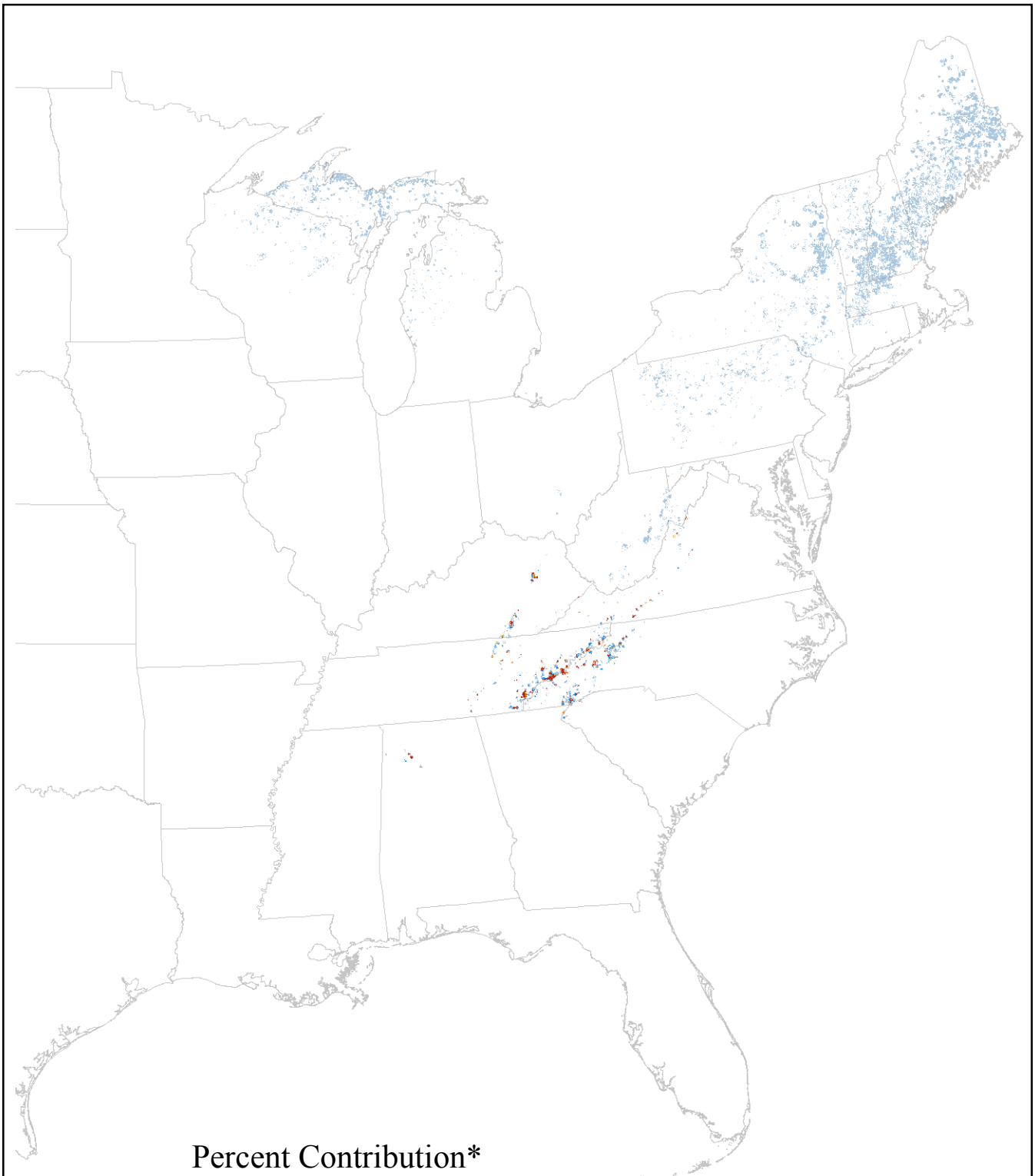


Legend

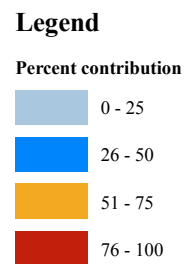
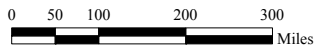
Level of risk for host

- 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*
Hemlock Woolly Adelgid on
Carolina/Eastern Hemlock (S)



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Eastern White Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	30%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	30%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1/3	10%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	30%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

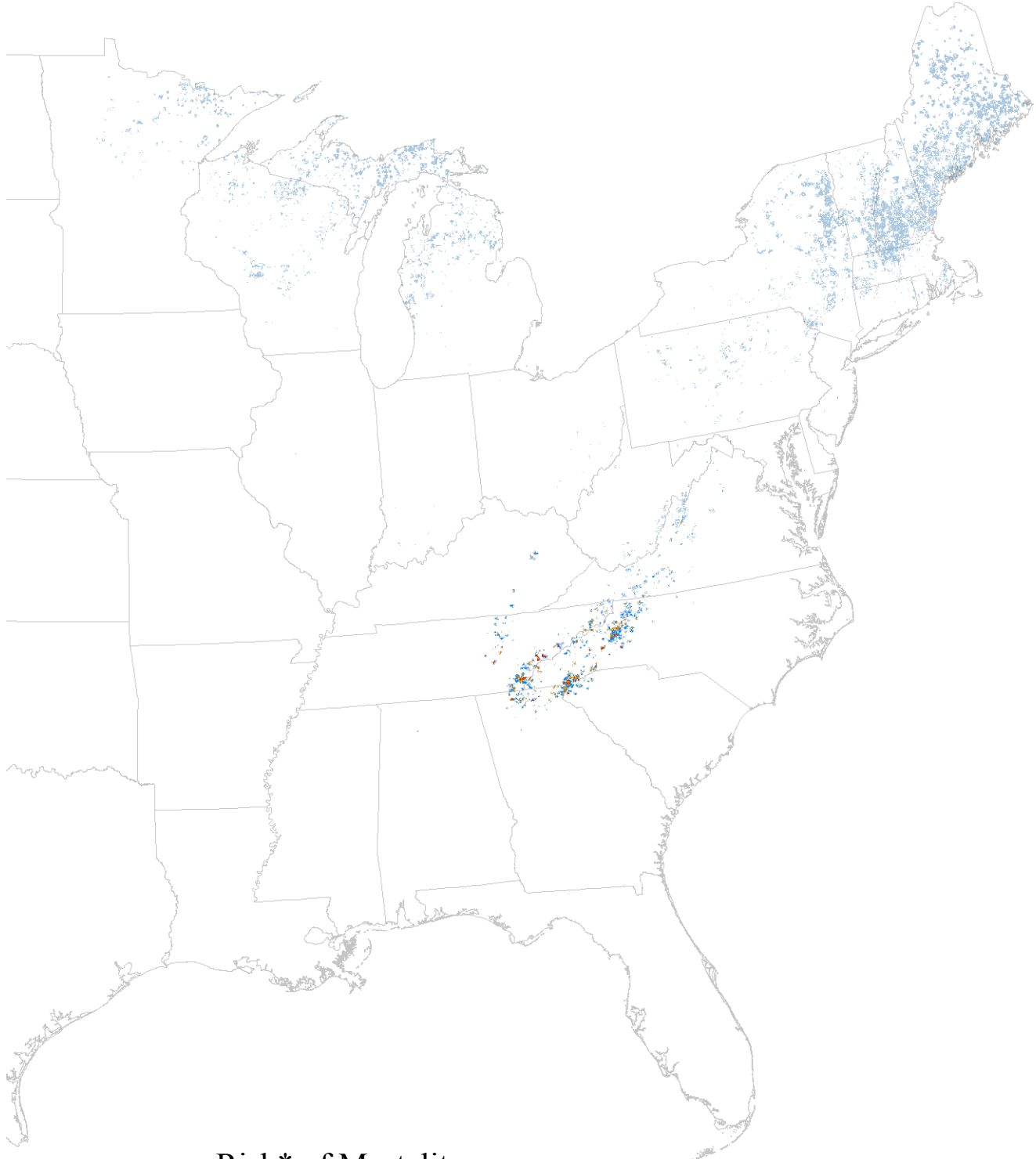
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	16	30	30	30	Linear	1	43%
Criteria 2		Soil Moisture / Dryness (WDI)	30	30	30	48	S-2	1/3	14%
Criteria 3		Soil Moisture / Wetness (WDI)	52	82	82	2	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1	43%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

Citations

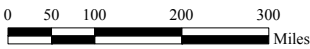
Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality

Southern Pine Beetle on Eastern White Pine

Mortality Ceiling of 85%

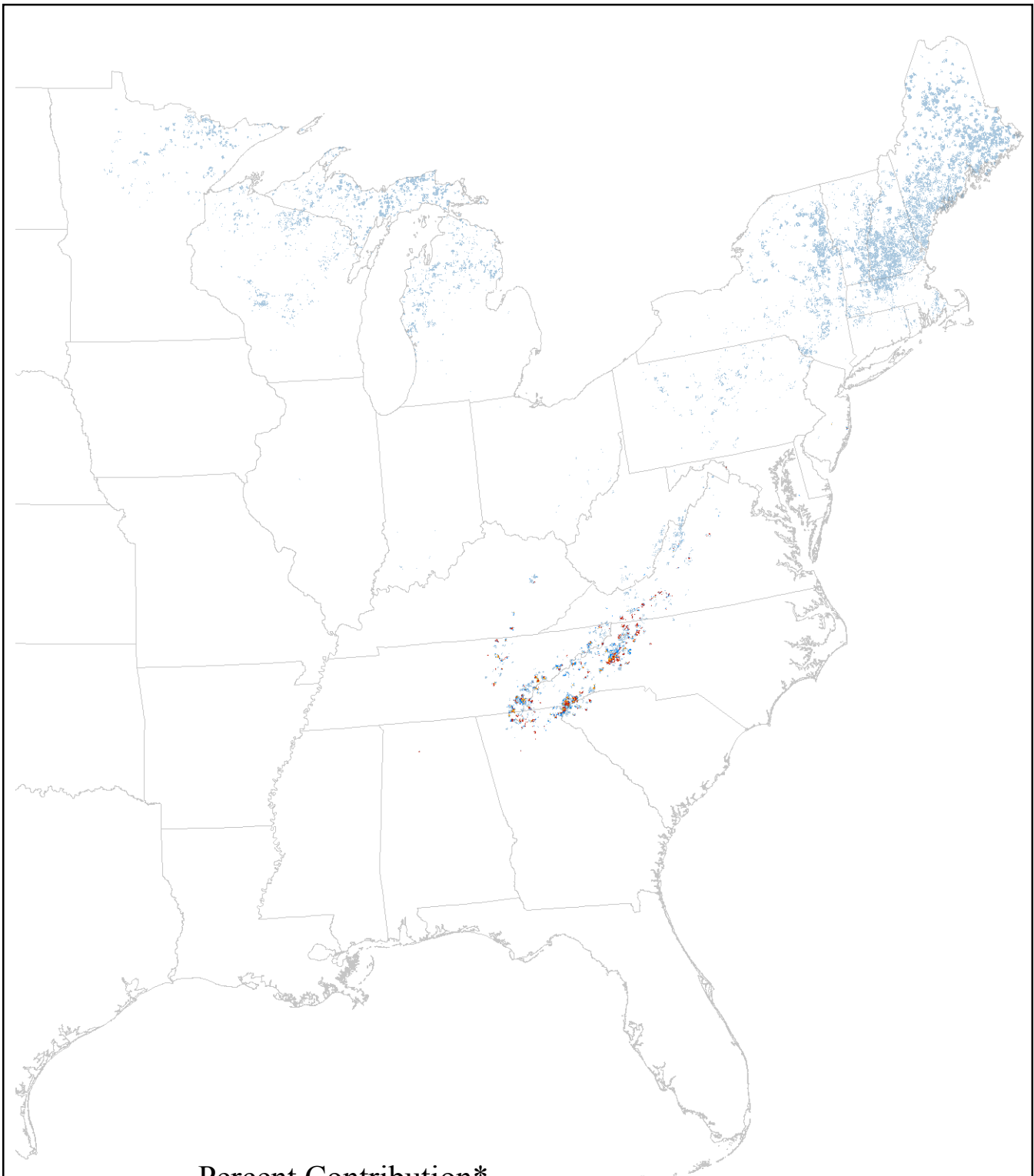


Legend

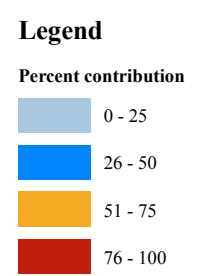
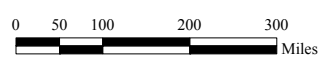
Level of risk for host

- 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*
Southern Pine Beetle on Eastern White Pine



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

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Loblolly Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	S-1	1	25%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	25%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1	25%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	25%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

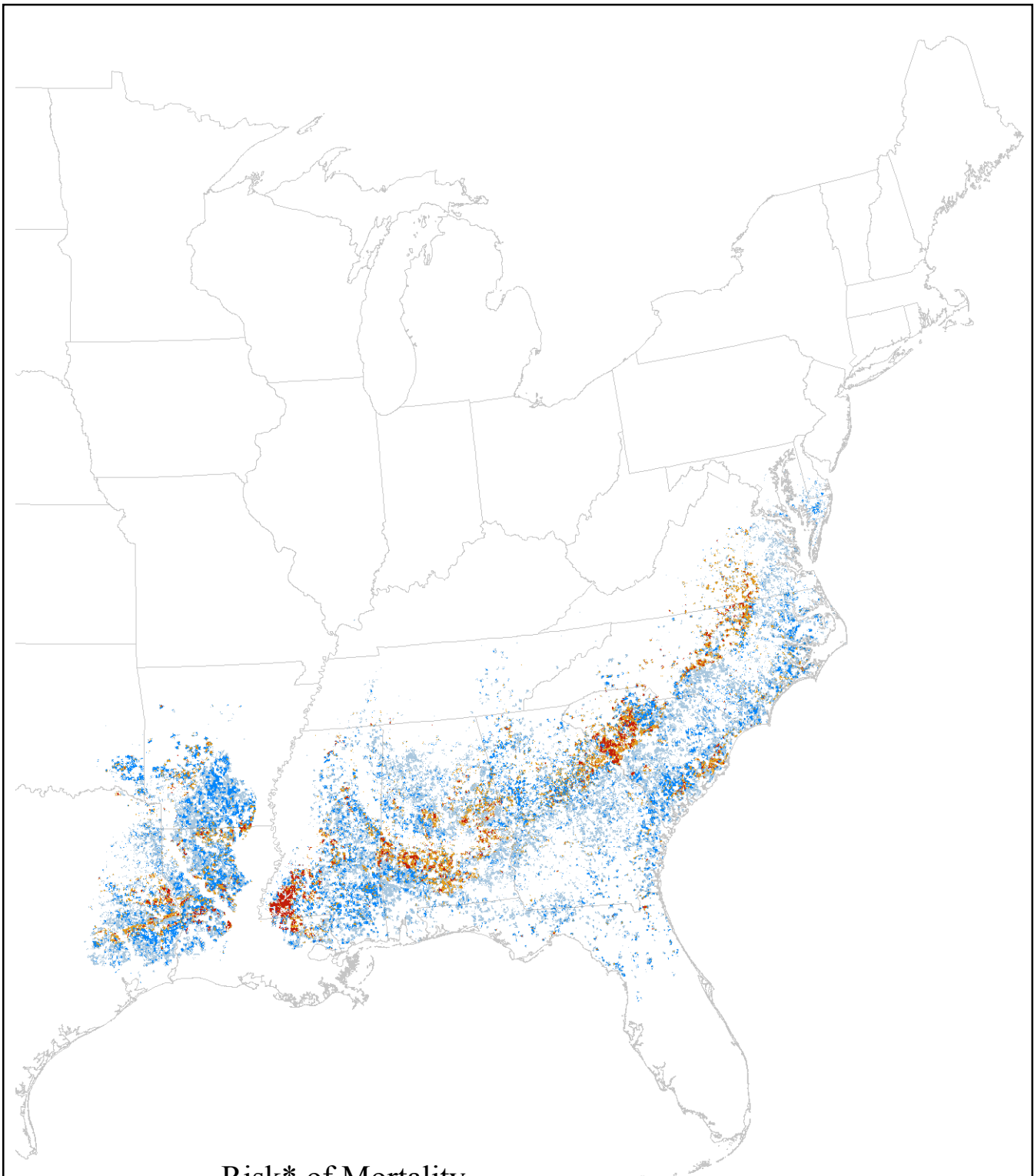
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	10	20	20	20	Linear	1/3	20%
Criteria 2		Soil Moisture / Dryness (WDI)	35	44	45	50	S-2	1	60%
Criteria 3		Soil Moisture / Wetness (WDI)	60	74	76	80	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1/3	20%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta. Moderately dry sites (44-45) are higher risk than wet sites (74-76).

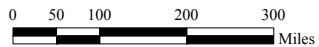
Citations

Model Certainty 3 - Informed Professional Judgement



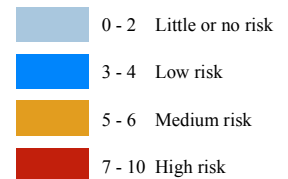
Risk* of Mortality Southern Pine Beetle on Loblolly Pine

Mortality Ceiling of 85%



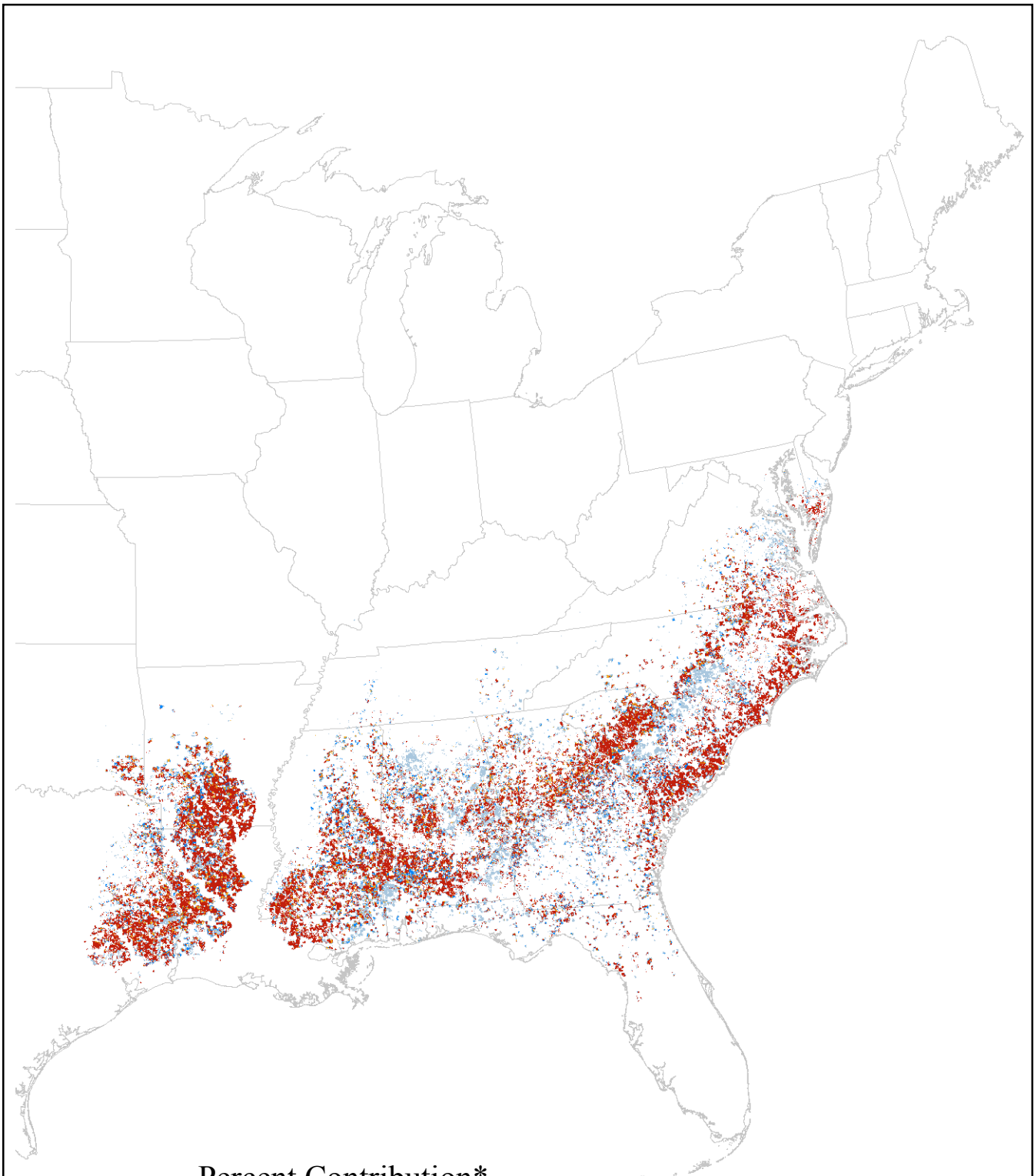
Legend

Level of risk for host



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

Printing Date: November 9, 2007



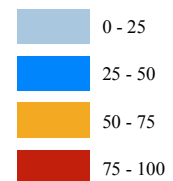
Percent Contribution*

Southern Pine Beetle on Loblolly Pine



Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Longleaf Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	S-1	1	25%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	25%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1	25%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	25%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

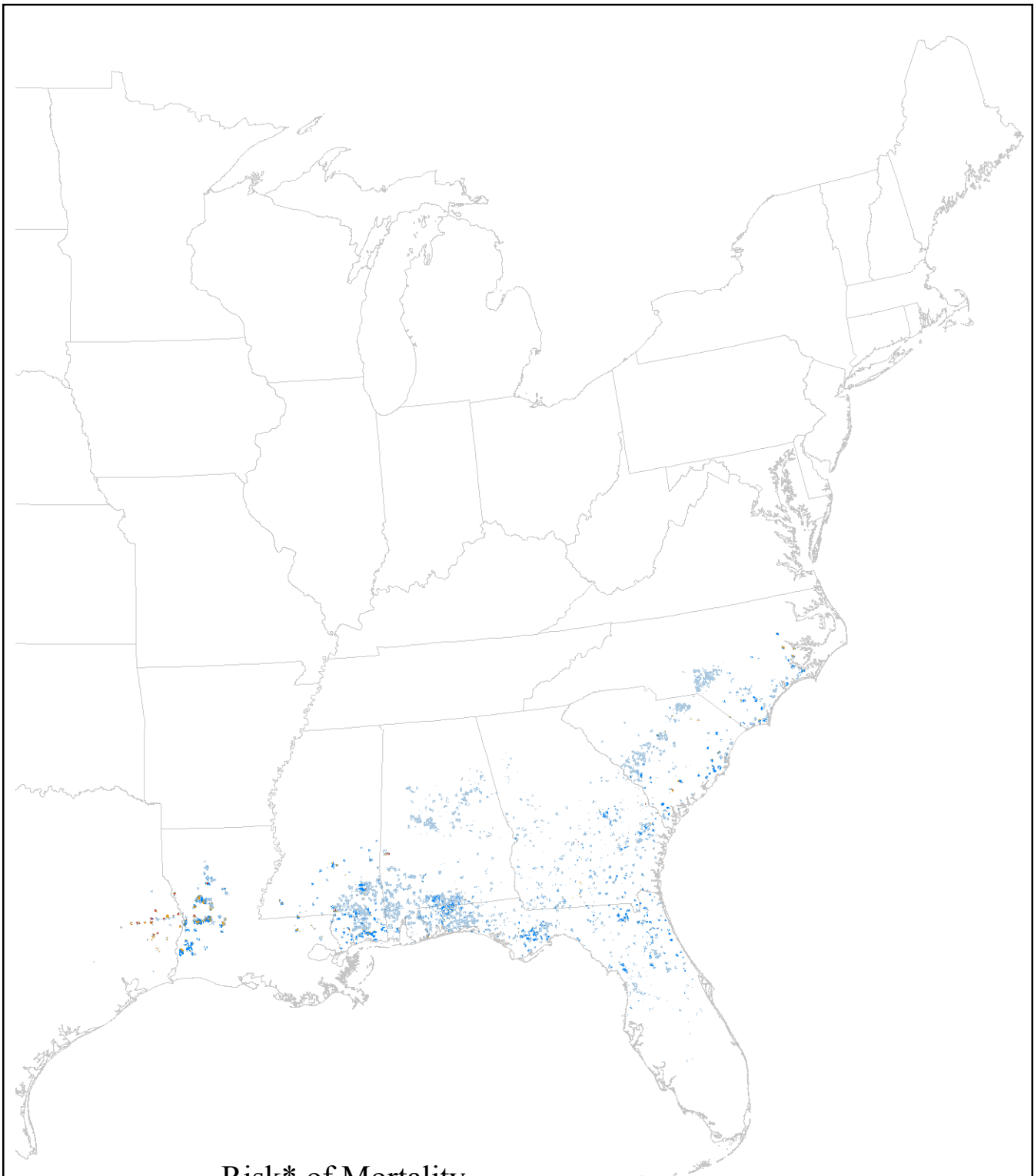
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	10	20	20	20	Linear	1/3	20%
Criteria 2		Soil Moisture / Dryness (WDI)	35	44	45	50	S-2	1	60%
Criteria 3		Soil Moisture / Wetness (WDI)	60	74	76	80	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1/3	20%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

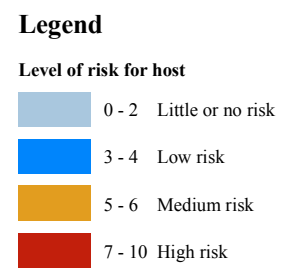
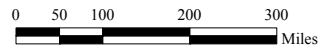
Citations

Model Certainty 3 - Informed Professional Judgement

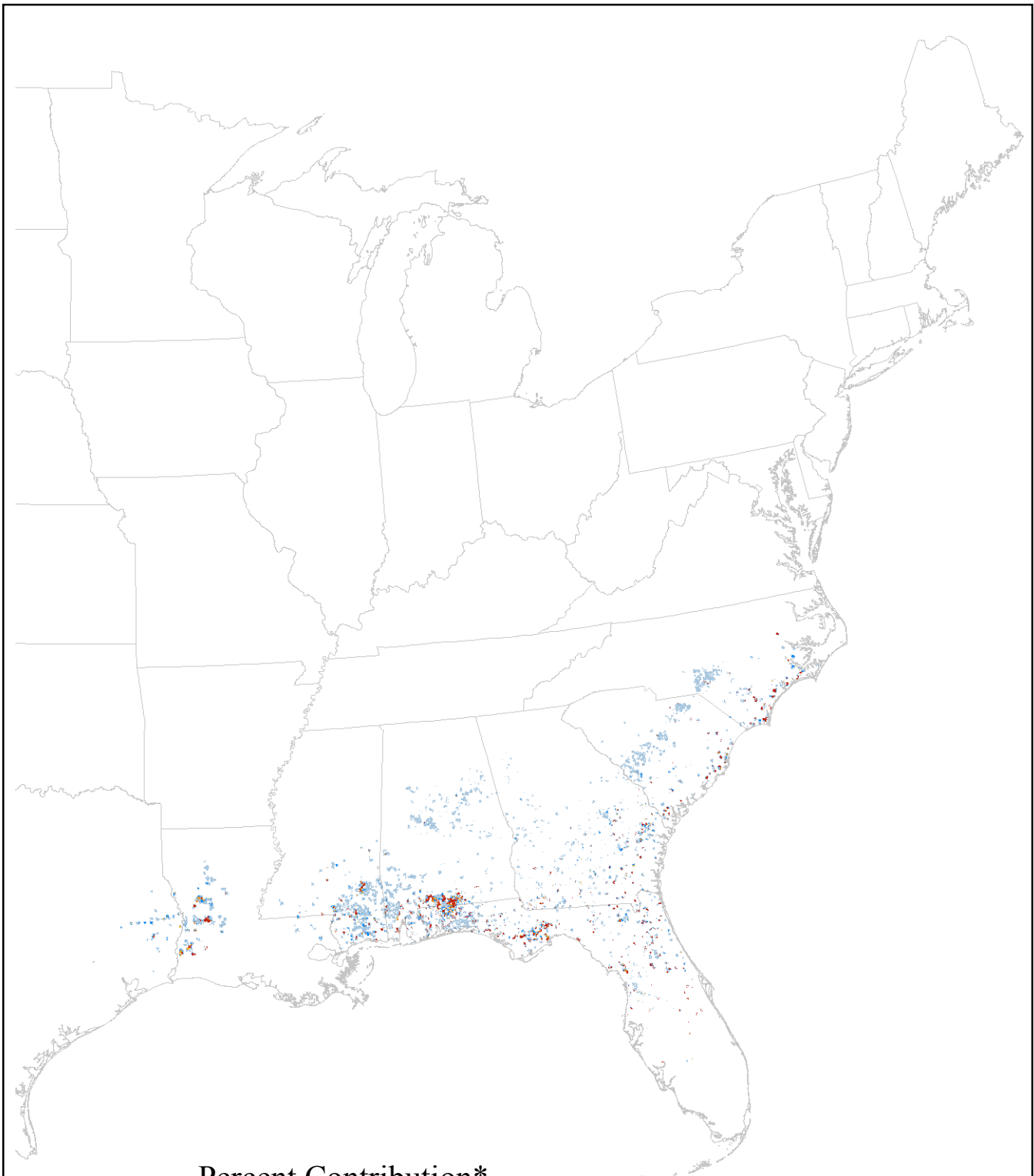


Risk* of Mortality Southern Pine Beetle on Longleaf Pine

Mortality Ceiling of 85%



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



Percent Contribution* Southern Pine Beetle on Longleaf Pine

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 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Pitch Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	30%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	30%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1/3	10%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	30%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	4	11	11	11	Linear	1	43%
Criteria 2		Soil Moisture / Dryness (WDI)	24	24	24	44	S-2	1/3	14%
Criteria 3		Soil Moisture / Wetness (WDI)	52	82	82	82	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1	43%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments 1. Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.
2. QMD and Climate parameters relaxed to correct NJ mortality: Jim Steinman, FHM Coordinator, Newtown Square, PA

Citations

Model Certainty 3 - Informed Professional Judgement



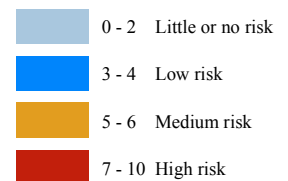
Risk* of Mortality Southern Pine Beetle on Pitch Pine

Mortality Ceiling of 85%



Legend

Level of risk for host

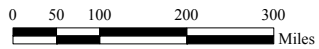


*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 9, 2007



Percent Contribution* Southern Pine Beetle on Pitch Pine



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 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Shortleaf Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	25%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	25%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1	25%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	25%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

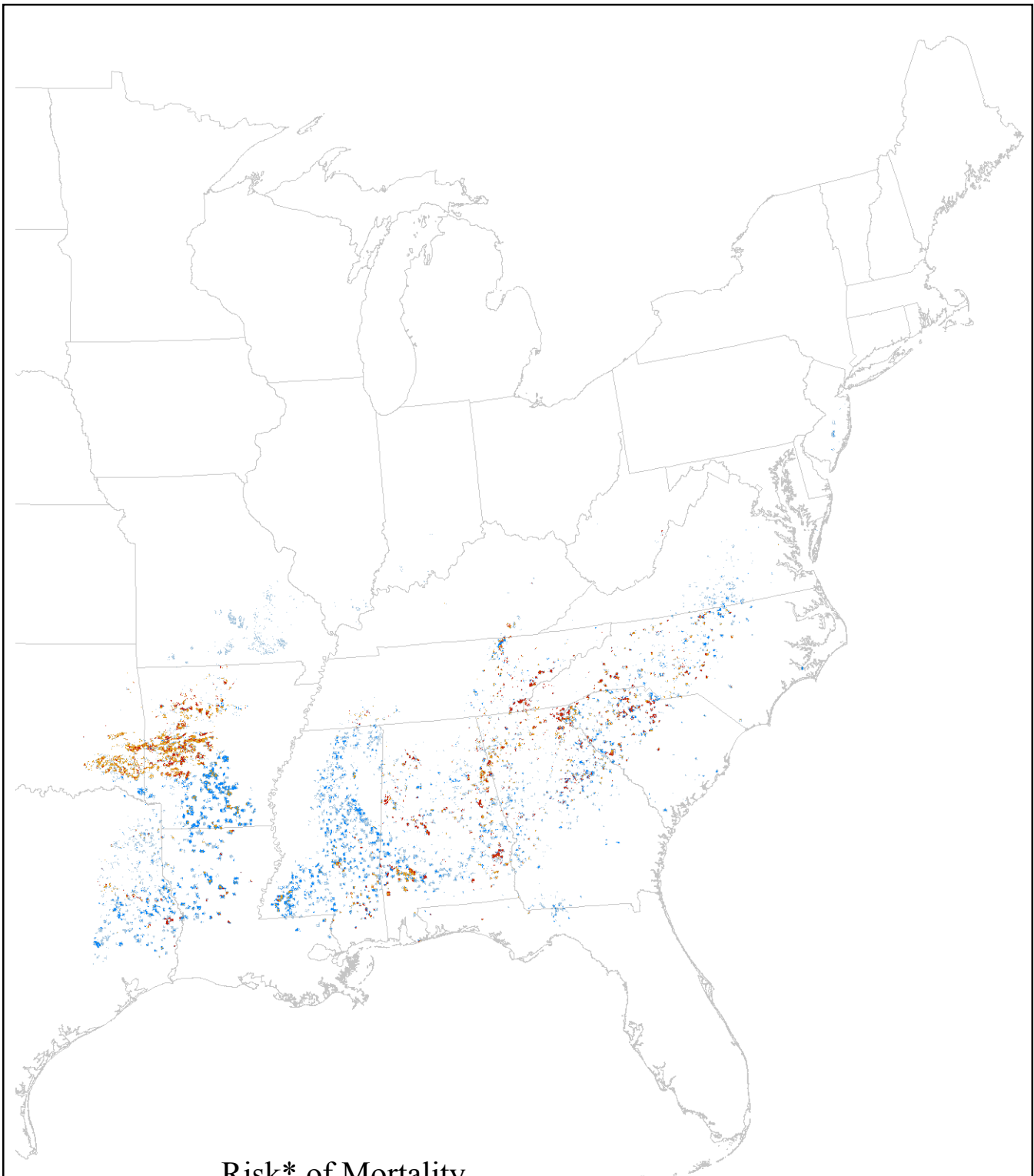
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	8	16	16	16	Linear	1/3	20%
Criteria 2		Soil Moisture / Dryness (WDI)	25	25	25	35	S-2	1	60%
Criteria 3									
Criteria 4		Total BA	60	120	120	120	Linear	1/3	20%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

Citations





Model Certainty 3 - Informed Professional Judgement



**Risk* of Mortality
Southern Pine Beetle
on Shortleaf Pine**
Mortality Ceiling of 85%

Legend

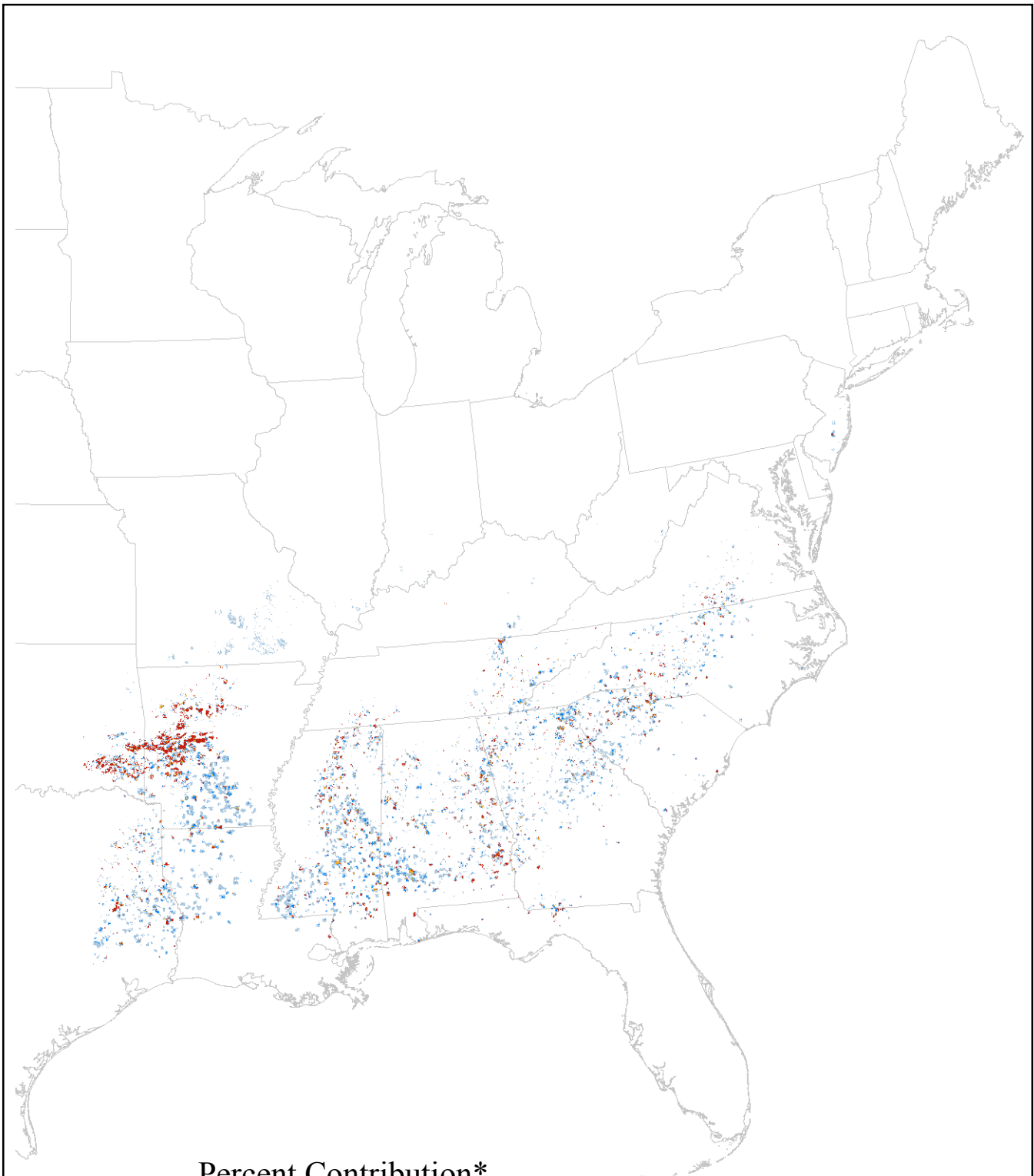
Level of risk for host

-  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.

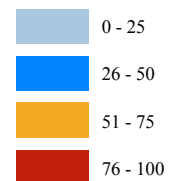
Printing Date: November 9, 2007



Percent Contribution* Southern Pine Beetle on Shortleaf Pine

Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Slash Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	30%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	30%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1/3	10%
Criteria 4		Host Pct.	25	50	50	50	Linear	1	30%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

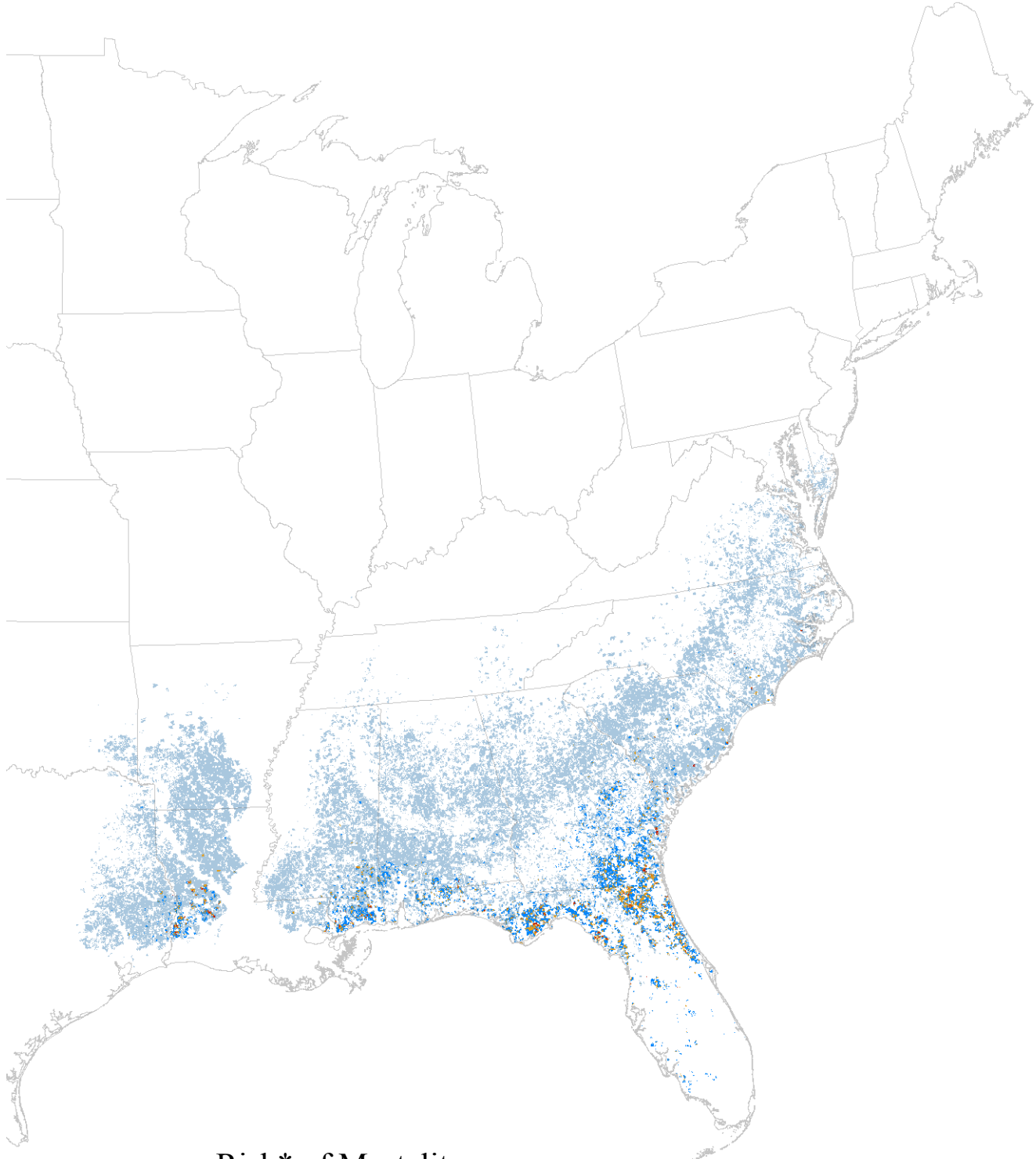
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	13	22	22	22	Linear	1	34%
Criteria 2		Soil Moisture / Wetness (WDI)	52	75	75	75	S-1	1	33%
Criteria 3		Total BA	60	120	120	120	Linear	1	33%
Criteria 4									
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

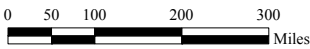
Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality Southern Pine Beetle on Slash Pine

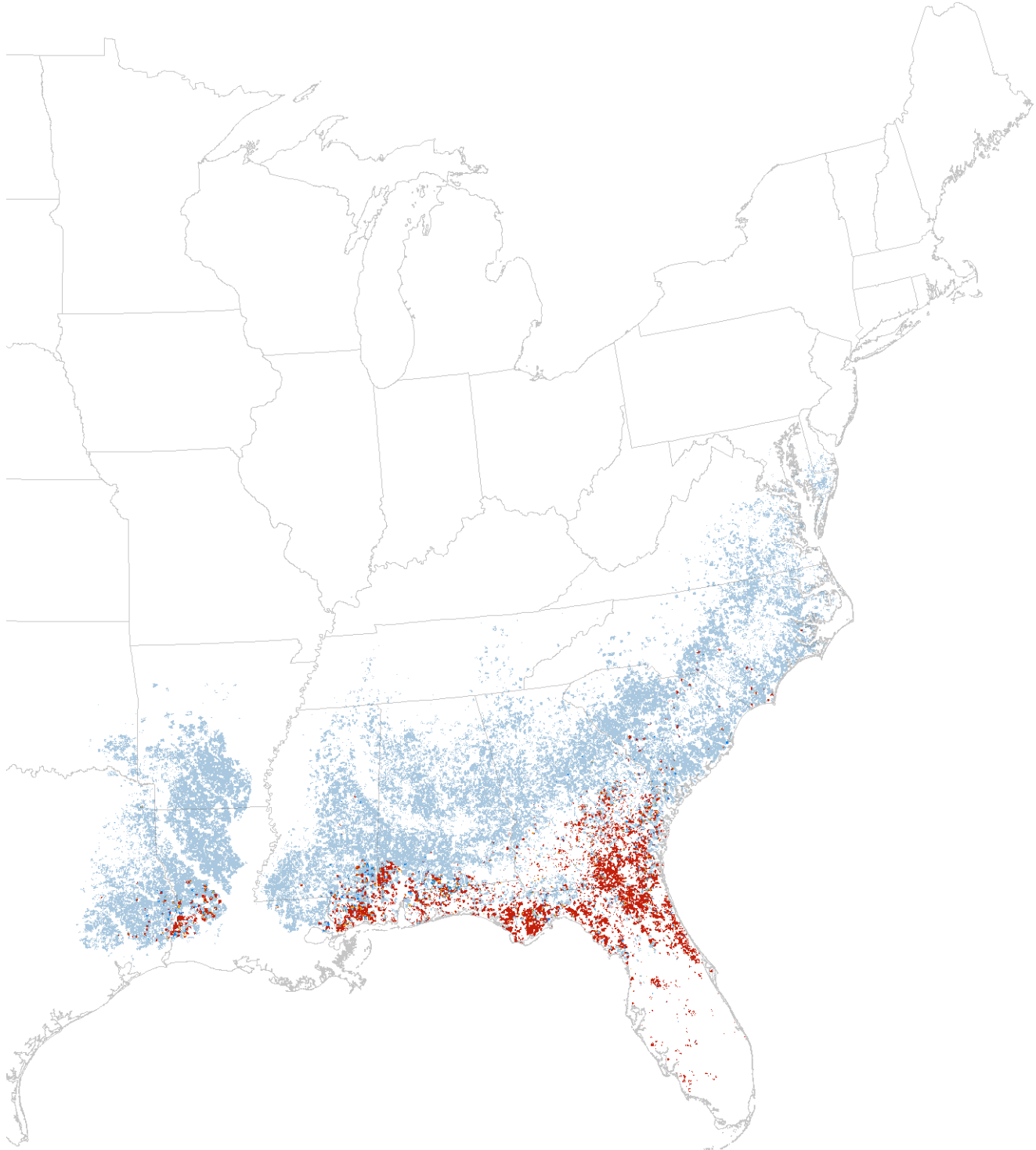
Mortality Ceiling of 85%



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.

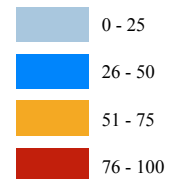


Percent Contribution* Southern Pine Beetle on Slash Pine



Legend

Percent contribution



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

Printing Date: November 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Table Mountain Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	30%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	30%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1/3	10%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	30%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	10	15	15	15	Linear	1	43%
Criteria 2		Soil Moisture / Dryness (WDI)	30	30	30	48	S-2	1/3	14%
Criteria 3		Soil Moisture / Wetness (WDI)	52	82	82	82	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1	43%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality
 Southern Pine Beetle
 on Table Mountain Pine
 Mortality Ceiling of 85%

Legend

Level of risk for host

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

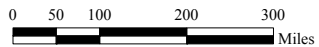


*Risk of experiencing mortality at a given threshold over a 15 year period.

Printing Date: November 9, 2007



Percent Contribution* Southern Pine Beetle on Table Mountain Pine



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 9, 2007

Risk Model Worksheet - South

Risk Agent(s): Southern Pine Beetle

Host(s): Virginia Pine

Model Extent: Eastern US

Max Percent Mortality: 85%

Susceptibility

Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1/3	25%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		Basal Area all SPB-susc. Species (ft2 / ac)	60	120	120	120	Linear	1	30%
Criteria 2		SPB Temperature Limitations (deg. F)	31	39	82	82.9	S-4	1	30%
Criteria 3		Historic Outbreaks # of Yrs. Since 1960	1	7	7	7	Linear	1/3	10%
Criteria 4		Host Pct.	20	50	50	50	Linear	1	30%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Vulnerability

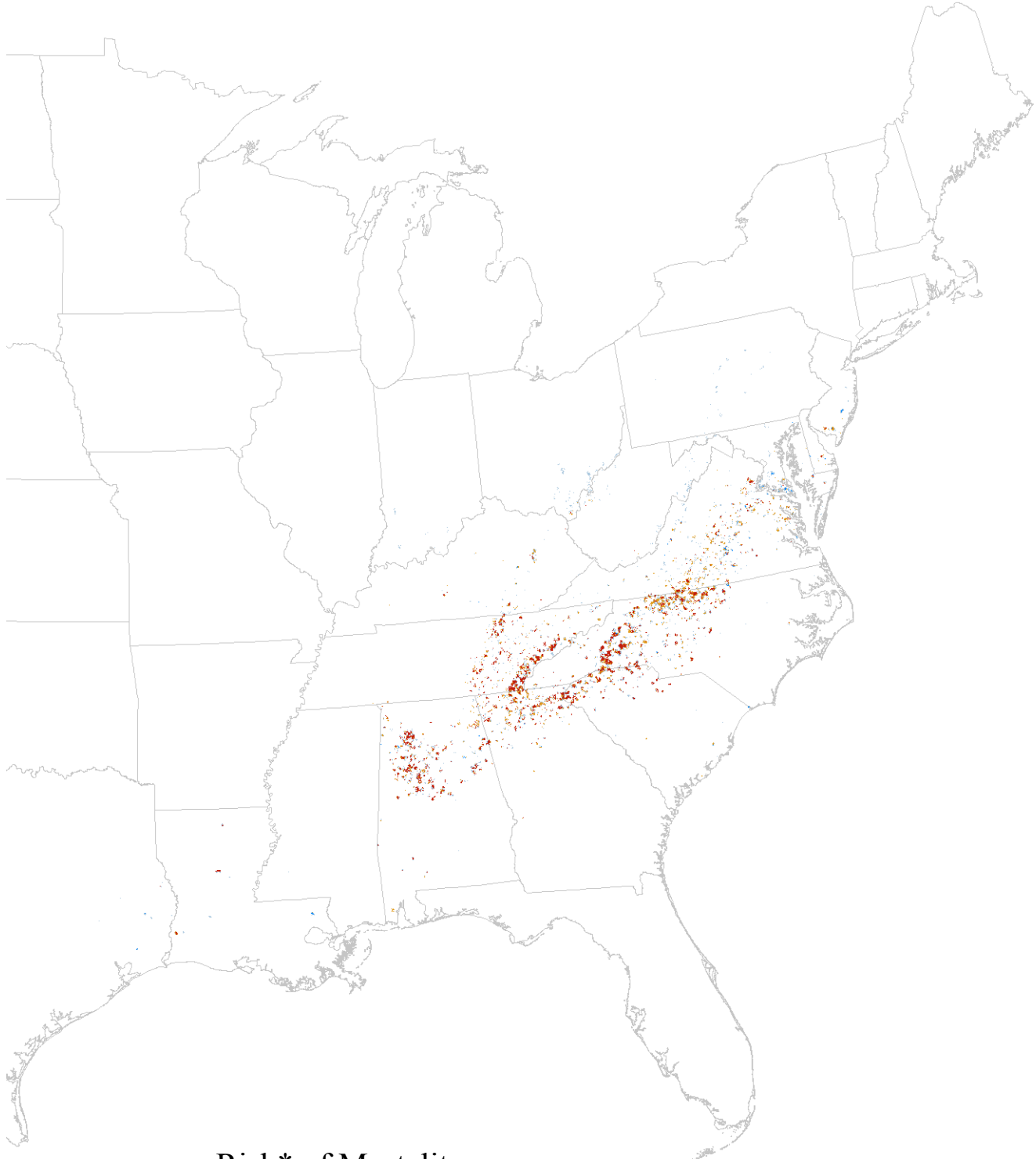
Rank/Weight		Criterion	Risk Begins	Risk Peaks	Risk	Risk Ends	Curve	Rank	Weight
1	75%		(a)	(b)	Decreases (c)	(d)			
Criteria 1		QMD (in.)	6	12	12	12	Linear	1	34%
Criteria 2		Soil Moisture / Dryness (WDI)	30	30	30	48	S-2	1	33%
Criteria 3		Soil Moisture / Wetness (WDI)	52	82	82	2	S-1		
Criteria 4		Total BA	60	120	120	120	Linear	1	33%
Criteria 5									
Criteria 6									
Criteria 7									
Criteria 8									
Criteria 9									
Criteria 10									

Constraints SPB restricted below 31 degrees (average January tempature).

Comments Criteria parameters derived from 7 - 9/05 email correspondence between FHTET staff and Jim Brown, FHM Program Coordinator, Atlanta.

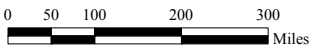
Citations

Model Certainty 3 - Informed Professional Judgement



Risk* of Mortality Southern Pine Beetle on Virginia Pine

Mortality Ceiling of 85%

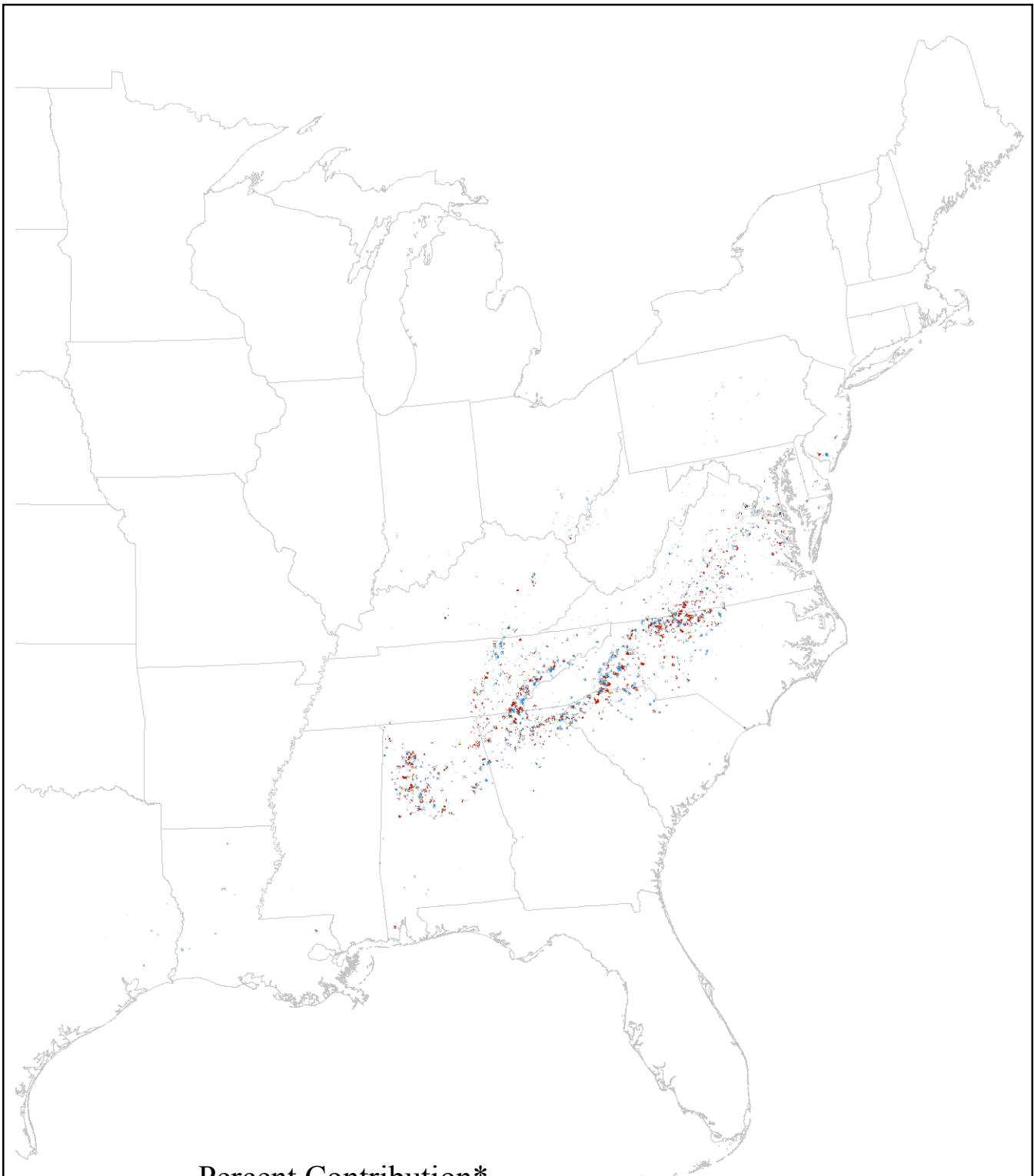


Legend

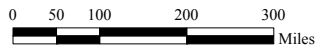
Level of risk for host

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.

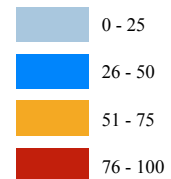


Percent Contribution* Southern Pine Beetle on Virginia Pine



Legend

Percent contribution



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

Printing Date: November 9, 2007