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Climate Change Atlas Tree Species

Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service Northern Research Station Landscape Change Research Group Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	9,941.4	3,838.4	342

Species Information

The columns below provide breif summaries of the species associated with the region and described in the table on the next pages. Definitions are provided in the Excel file for this region.

Genus	Species						Potential Change in Habitat Suitability			ty Capability	Capability to Cope or Persist				tial
Ash	3			Ν	Vodel			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	7	Abu	ndance	F	Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	5	Abundant	6	High	23	24	Increase	27	30	Very Good	13	14	Likely	0	0
Oak	11	Common	30	Medium	27	55	No Change	7	8	Good	15	18	Infill	5	7
Pine	5	Rare	39	Low	40	14	Decrease	34	30	Fair	11	9	Migrate	3	10
Other	44	Absent	20	FIA	7		New	12	15	Poor	8	8	_	8	17
-	75		95	_	97	93	Unknown	17	14	Very Poor	19	17			
							-	97	97	FIA Only	4	4			

Potential Changes in Climate Variables

Temperatu	ıre (°F)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	55.5	57.4	59.7	59.9 🛶 🔶
Average	CCSM85	55.5	57.8	60.4	63.3
	GFDL45	55.5	58.2	60.8	61.5
	GFDL85	55.5	58.4	61.8	65.4
	HAD45	55.5	57.9	61.1	62.4
	HAD85	55.5	58.3	62.8	66.7
Growing	CCSM45	70.2	72.0	74.1	74.7
Season	CCSM85	70.2	72.4	75.1	79.0
May—Sep	GFDL45	70.2	73.3	76.4	77.7
	GFDL85	70.2	73.7	77.9	81.9
	HAD45	70.2	73.3	76.5	78.0
	HAD85	70.2	73.6	80.0	83.7
Coldest	CCSM45	33.3	35.2	36.4	36.7
Month	CCSM85	33.3	36.2	37.0	38.5
Average	GFDL45	33.3	36.9	36.8	37.2
	GFDL85	33.3	35.1	36.2	36.8
	HAD45	33.3	33.1	35.4	35.7
	HAD85	33.3	34.6	36.3	38.0
Warmest	CCSM45	75.2	77.2	78.4	78.6 🛶 🔶
Month	CCSM85	75.2	77.5	79.3	81.0
Average	GFDL45	75.2	78.7	80.4	81.2
	GFDL85	75.2	79.1	81.8	83.9
	HAD45	75.2	79.3	81.7	82.5
	HAD85	75.2	80.5	85.1	86.8

Precipitati	ion (in)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	53.8	56.6	60.8	59.2
Total	CCSM85	53.8	60.2	61.2	65.2
	GFDL45	53.8	59.9	61.7	65.8
	GFDL85	53.8	59.5	63.1	65.9
	HAD45	53.8	52.5	56.1	57.0 🛶 🔶
	HAD85	53.8	55.1	51.2	54.8 +++++
Growing	CCSM45	23.2	23.8	25.3	24.5
Season	CCSM85	23.2	25.4	23.9	25.5
May—Sep	GFDL45	23.2	26.4	26.1	27.2
	GFDL85	23.2	25.5	26.5	27.2 + + + +
	HAD45	23.2	22.9	22.0	22.7 ++++
	HAD85	23.2	23.9	18.8	20.6 ++++++++++++++++++++++++++++++++++++

NOTE: For the six climate variables, four 30-year periods are used to indicate six potential future trajectories. The period ending in 2009 is based on modeled observations from the PRISM Climate Group and the three future periods were obtained from the NASA NEX-DCP30 dataset. Future climate projections from three models under two emission scenarios show estimates of each climate variable within the region. The three models are CCSM4, GFDL CM3, and HadGEM2-ES and the emission scenarios are the 4.5 and 8.5 RCP. The average value for the region is reported, even though locations within the region may vary substantially based on latitude, elevation, land-use, or other factors.

Unknown

10

80

7

77

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
red maple	Acer rubrum	WDH	High	98.4	1412.0		Lg. dec.	High	Abundant	Good	Good			1 1
white oak	Quercus alba	WDH	Medium	93	1271.6	10.7 No change	No change	High	Abundant	Very Good	Very Good			1 2
yellow-poplar	Liriodendron tulipifera	WDH	High	93.9	1095.9	8.0 Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1 3
Virginia pine	Pinus virginiana	NDH	High	73.1	785.5	7.1 Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			04
chestnut oak	Quercus prinus	NDH	High	76.2	710.8	7.5 Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1 5
sugar maple	Acer saccharum	WDH	High	71.2	640.3	6.2 Lg. dec.	Lg. dec.	High	Abundant	Good	Good			16
pignut hickory	Carya glabra	WDL	Medium	70.6	359.9	3.6 Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0 7
sourwood	Oxydendrum arboreum	NDL	High	88	357.8	3.0 Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1 8
scarlet oak	Quercus coccinea	WDL	Medium	67.6	356.4	4.3 Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0 9
blackgum	Nyssa sylvatica	WDL	Medium	84.1	333.4	2.8 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1 10
black oak	Quercus velutina	WDH	High	70.9	327.7	3.7 Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1 11
American beech	Fagus grandifolia	WDH	High	54.4	321.0	3.9 Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0 12
mockernut hickory	Carya alba	WDL	Medium	64.5	291.7	3.3 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1 13
shortleaf pine	Pinus echinata	WDH	High	53.9	283.2	4.4 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1 14
eastern hemlock	Tsuga canadensis	NSH	High	43.2	262.3	5.4 Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0 15
eastern redcedar	Juniperus virginiana	WDH	Medium	28.2	214.2	4.3 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1 16
sweetgum	Liquidambar styraciflua	WDH	High	34.4	207.7	4.1 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1 17
northern red oak	Quercus rubra	WDH	Medium	48.9	189.4	2.7 Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1 18
black cherry	Prunus serotina	WDL	Medium	51.5	180.3	2.6 Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1 19
eastern white pine	Pinus strobus	WDH	High	30	179.4	5.5 Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0 20
flowering dogwood	Cornus florida	WDL	Medium	67	152.3	1.4 No change	No change	Medium	Common	Fair	Fair			1 21
white ash	Fraxinus americana	WDL	Medium	30.7	135.8	2.7 Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1 22
black locust	Robinia pseudoacacia	NDH	Low	30.3	126.0	3.3 Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1 23
sassafras	Sassafras albidum	WSL	Low	47	118.3	1.6 Sm. dec.	No change	Medium	Common	Poor	Fair			1 24
southern red oak	Quercus falcata	WDL	Medium	27	102.1	2.7 Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1 25
bitternut hickory	Carya cordiformis	WSL	Low	23.4	91.6	2.2 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1 26
shagbark hickory	Carya ovata	WSL	Medium	29.7	89.6	1.8 Sm. inc.	No change	Medium	Common	Good	Fair			1 27
eastern redbud	Cercis canadensis	NSL	Low	28.4	71.2	1.5 No change	No change	Medium	Common	Fair	Fair			1 28
loblolly pine	Pinus taeda	WDH	High	5.9	70.6	9.2 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1 29
post oak	Quercus stellata	WDH	High	21.2	68.9	2.7 Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1 30
green ash	Fraxinus pennsylvanica	WSH	Low	25.4	68.9	1.5 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1 31
chinkapin oak	Quercus muehlenbergii	NSL	Medium	14.7	67.5	2.9 No change	Sm. dec.	Medium	Common	Fair	Poor			1 32
black walnut	Juglans nigra	WDH	Low	21.9	65.6	1.9 Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1 33
American elm	Ulmus americana	WDH	Medium	18.2	64.0	2.2 Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1 34
sycamore	Platanus occidentalis	NSL	Low	20.7	57.9	2.0 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1 35
sweet birch	Betula lenta	NDH	High	22.4	52.1	1.9 Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0 36
American basswood	Tilia americana	WSL	Medium	20.7	45.8	2.2 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 37
paulownia	Paulownia tomentosa	NSL	FIA	4.9	42.9	3.7 Unknown	Unknown	NA	Rare	NNIS	NNIS			0 38
yellow buckeye	Aesculus flava	NSL	Low	15.4	42.9	1.4 Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0 39
cucumbertree	Magnolia acuminata	NSL	Low	25	35.2	1.1 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 40
pitch pine	Pinus rigida	NSH	High	7.1	35.0	4.0 Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 41
winged elm	Ulmus alata	WDL	Medium	23.1	32.1	1.0 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1 42
serviceberry	Amelanchier spp.	NSL	Low	29.3	29.5	0.9 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 43
ailanthus	Ailanthus altissima	NSL	FIA	5.5	27.5	3.7 Unknown	Unknown	NA	Rare	NNIS	NNIS			0 44
common persimmon	Diospyros virginiana	NSL	Low	9.6	27.5	1.3 No change	Sm. inc.	High	Rare	Fair	Good			1 45
shellbark hickory	Carya laciniosa	NSL	Low	8.9	26.5	1.9 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2 46
silver maple	Acer saccharinum	NSH	Low	1.4	25.8	12.6 Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0 47



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redredfirstredfirstredfirstredfirstredfirstredfirstredfirstredfirst <thfirst< th="">firstfirstfirstfirstfirstfirstfirst<thfirst< th=""><th>Common Name</th><th>Scientific Name</th><th>Range</th><th>MR</th><th>%Cell</th><th>FIAsum</th><th>FIAiv ChngCl4</th><th>5 ChngCl85</th><th>Adap</th><th>Abund</th><th>Capabil45</th><th>Capabil85</th><th>SHIFT45</th><th>SHIFT85</th><th>SSO N</th></thfirst<></thfirst<>	Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv ChngCl4	5 ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
redr	American holly	llex opaca	NSL	Medium	15.8	24.2	1.3 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 48
alteraltersymbol	slippery elm	Ulmus rubra	WSL	Low	21.1	23.6	0.7 Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1 49
ender bipled	red mulberry	Morus rubra	NSL	Low	10.9	19.2	1.1 Sm. dec.	. Sm. inc.	Medium	Rare	Very Poor	Fair			1 50
bisledMagnolia	American hornbeam; muscle	A Carpinus caroliniana	WSL	Low	10.8	16.6	1.2 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1 51
backerAcc megandoW3HW3HM4HP1	eastern hophornbeam; ironw	v Ostrya virginiana	WSL	Low	14.4	14.4	0.7 Lg. inc.	Lg. inc.	High	Rare	Good	Good			1 52
bick digmainesNH </td <td>bigleaf magnolia</td> <td>Magnolia macrophylla</td> <td>NSL</td> <td>Low</td> <td>12.6</td> <td>13.5</td> <td>1.0 Lg. dec.</td> <td>Lg. dec.</td> <td>Medium</td> <td>Rare</td> <td>Very Poor</td> <td>Very Poor</td> <td></td> <td></td> <td>0 53</td>	bigleaf magnolia	Magnolia macrophylla	NSL	Low	12.6	13.5	1.0 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 53
yellow brichBetula àleghannessNDHigh58918. gefc0, gefcWellumRecVery PoorVery PoorVery PoorVery PoorVery PoorVery PoorVery PoorNo<	boxelder	Acer negundo	WSH	Low	4.4	11.3	2.0 No chan	ge Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1 54
and hickoryCarpo pallidaNSLPA2.07.92.2UnknownNARareFA OnlyFA OnlyCUT0.5hackberyCetix occidentalisWDHMedium1.16.31.2Le, inc.Le, inc.HelmRareGoodGoodInfill +Infill +1.5sugnberyCetix iserigataNDHMedium64.4O.7Sin. dec.MediumRareGoodGoodGoodInfill +1.6mountain or Fraser magnelaMagnolia fraseriNSLMedium64.4O.7Sin. dec.MediumRareVery PoorVery PoorVery Poor1.00.62mountain or Fraser magnelaMagnolia fraseriNSLLow2.73.51.11.8, dec.MediumRareNery PoorVery PoorVery PoorVery Poor1.00.62Shumard okQuercus shumardiiNSLLow2.73.03.5Sin. dec.MediumRareNery PoorPoorGood1.612.64Shumard okQuercus shumardiiNSLLow2.03.03.5Sin. dec.MediumRareNery PoorPoorGood1.6112.65Shumard okQuercus shumardiiNSLLow1.03.0Sin. dec.Ner, MediumRareNery PoorNery PoorNe	black willow	Salix nigra	NSH	Low	2.5	10.7	2.9 Sm. dec.	. No change	Low	Rare	Very Poor	Very Poor			2 55
willowedOurse pheloneNS.No. <t< td=""><td>yellow birch</td><td>Betula alleghaniensis</td><td>NDL</td><td>High</td><td>5</td><td>8.9</td><td>1.8 Lg. dec.</td><td>Lg. dec.</td><td>Medium</td><td>Rare</td><td>Very Poor</td><td>Very Poor</td><td></td><td></td><td>0 56</td></t<>	yellow birch	Betula alleghaniensis	NDL	High	5	8.9	1.8 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 56
backberry Cells occidentalis WIM Medium 13 15 11	sand hickory	Carya pallida	NSL	FIA	2.6	7.9	2.2 Unknow	n Unknown	NA	Rare	FIA Only	FIA Only			0 57
sugarbonCellis lavigatoNMMediumS.1S.1S.1S.1S.1S.1S.1MediumRareMediumRareGoodGo	willow oak	Quercus phellos	NSL	Low	1.1	6.3	1.4 No chan	ge No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 58
string mountain or Fraser mapping mountain or Fraser mapping Magnolia fraseriNSL NSL NSL NSL NSL NSLNSL NSL NSLNSL NSL NSLNSL 	hackberry	Celtis occidentalis	WDH	Medium	4.3	6.3	1.2 Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1 59
munital or fraser magnalsMagnals <td>sugarberry</td> <td>Celtis laevigata</td> <td>NDH</td> <td>Medium</td> <td>1</td> <td>5.1</td> <td>5.1 Lg. inc.</td> <td>Lg. inc.</td> <td>Medium</td> <td>Rare</td> <td>Good</td> <td>Good</td> <td></td> <td></td> <td>2 60</td>	sugarberry	Celtis laevigata	NDH	Medium	1	5.1	5.1 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 60
Ohio backeye Aesculus glabra NSL Low 1 3.3 3.3 Sm. Inc. High Rare Yery Poor Yery	striped maple	Acer pensylvanicum	NSL	Medium	6	4.4	0.7 Sm. dec.	. Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 61
Shumanda Quercus shumandi NSL Low 1 3.3 3.3 m.d.c. Shu, de Med Rate Part Gord Gord Cort 2 2 6 eastern cotonwod Paulu aleria NSL Ku 1 3.0 Sn.dec. No.dec. No.de Med Part Part Part 1	mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	5	4.2	0.8 Sm. dec.	. Sm. dec.	Low	Rare	Very Poor	Very Poor			0 62
eastern cottonwood Populus detoides NSH Uw 21 3.0 3.0 3.0 Sm. dec. M.edum Rare Nerty ow Yenr yoor <	Ohio buckeye	Aesculus glabra	NSL	Low	2.7	3.5	1.1 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 63
river birchBetua iagaNLNLVI <th< td=""><td>Shumard oak</td><td>Quercus shumardii</td><td>NSL</td><td>Low</td><td>1</td><td>3.3</td><td>3.3 Sm. dec.</td><td>Sm. inc.</td><td>High</td><td>Rare</td><td>Poor</td><td>Good</td><td></td><td></td><td>2 64</td></th<>	Shumard oak	Quercus shumardii	NSL	Low	1	3.3	3.3 Sm. dec.	Sm. inc.	High	Rare	Poor	Good			2 64
white mulberry Morus alba NSL FIA 0.7 2.2 0.4 Unknown NA Rare NNIS NNIS C 0	eastern cottonwood	Populus deltoides	NSH	Low	1	3.0	3.0 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 65
bigtooth appenPopulus grandidentataNS.Mediu12.12.1Very Lg. dc.Very Lg. dc.MediuRareLottLottLott06blue achCurcus marilandinaNS.Mediu1.81.8S. Lg. inc.Lg. inc.NB.Kery PoorVery PoorVery Poor707270pecanCarya illinoinensisNSILow1.00.5Lg. inc.Lg. inc.Lg. inc.KeryRareFlA OnlyFlA Only1.07271American chestnutCastane dentataNSIXFlA1.00.7UrknownUrknownMediuRareFIA OnlyFlA OnlyFLA Only7272paryapavAsimina trilobaNSIFIA1.00.7UrknownUrknownNediunRareFIA OnlyFLA Only7374Kentucky coffeetreeGymocladus diocusNSIXFIA1.00.0New HabitaNew Habita <td< td=""><td>river birch</td><td>Betula nigra</td><td>NSL</td><td>Low</td><td>2</td><td>3.0</td><td>1.5 Sm. dec.</td><td>. No change</td><td>Medium</td><td>Rare</td><td>Very Poor</td><td>Poor</td><td></td><td>Infill +</td><td>2 66</td></td<>	river birch	Betula nigra	NSL	Low	2	3.0	1.5 Sm. dec.	. No change	Medium	Rare	Very Poor	Poor		Infill +	2 66
black Fraxinus quadrangulata NSL Low 1 1.8 1.8 N. dec. Sm. dec. Low Rare Very Poor Very Poor Curcus	white mulberry	Morus alba	NSL	FIA	0.7	2.2	0.4 Unknow	n Unknown	NA	Rare	NNIS	NNIS			0 67
blackjack oak Quercus marilandica NSL Medium 2.4 1.7 0.5 Lg.inc. Lg.inc. High Rare Good Good Good Image (1) <	bigtooth aspen	Populus grandidentata	NSL	Medium	1	2.1	2.1 Very Lg.	dec. Very Lg. dec.	Medium	Rare	Lost	Lost			0 68
pecan Carya illinoinensis NSH Low 1 0.9 0.9 lg.inc. lg.inc. Lg.inc. Low Rare Fair Fair Infill + 2 71 American chestnut Castane a dentata NSLX FIA 1 0.7 0.7 Unknown Medium Rare FIA Only	blue ash	Fraxinus quadrangulata	NSL	Low	1	1.8	1.8 Sm. dec.	. Sm. dec.	Low	Rare	Very Poor	Very Poor			0 69
American chestnut Castanea dentata NSLX FIA 2 0.9 0.4 Unknown Medium Rare FIA Only FIA Only <td>blackjack oak</td> <td>Quercus marilandica</td> <td>NSL</td> <td>Medium</td> <td>2.4</td> <td>1.7</td> <td>0.5 Lg. inc.</td> <td>Lg. inc.</td> <td>High</td> <td>Rare</td> <td>Good</td> <td>Good</td> <td></td> <td></td> <td>2 70</td>	blackjack oak	Quercus marilandica	NSL	Medium	2.4	1.7	0.5 Lg. inc.	Lg. inc.	High	Rare	Good	Good			2 70
wild plumPrunus americanaNSLXFIAPL0.70.7UnknownUnknownMediumRareFIA OnlyFIA Only<	pecan	Carya illinoinensis	NSH	Low	1	0.9	0.9 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2 71
pawpawAsimina trilobaNSLLow10.60.6Very Lg. dec.Very Lg. dec.MediumRareLostLostLost0.74Kentucky coffeetreeGymocladus dioicusNSLXFIA10.50.5UnknownMediumRareFIA OnlyFIA Only740.75ashe juniperJuniperus asheiNDHHigh000New HabitatNew Habitat <td>American chestnut</td> <td>Castanea dentata</td> <td>NSLX</td> <td>FIA</td> <td>2</td> <td>0.9</td> <td>0.4 Unknow</td> <td>n Unknown</td> <td>Medium</td> <td>Rare</td> <td>FIA Only</td> <td>FIA Only</td> <td></td> <td></td> <td>0 72</td>	American chestnut	Castanea dentata	NSLX	FIA	2	0.9	0.4 Unknow	n Unknown	Medium	Rare	FIA Only	FIA Only			0 72
Kentucky coffeetree Gymnocladus dioicus NSLX FIA 1 0.5 0.5 Unknown Medium Rare FIA Only FIA On	wild plum	Prunus americana	NSLX	FIA	1	0.7	0.7 Unknow	n Unknown	Medium	Rare	FIA Only	FIA Only			0 73
ashe juniperuJuniperus asheiNDHHigh00New HabitatNew Habitat <th< td=""><td>pawpaw</td><td>Asimina triloba</td><td>NSL</td><td>Low</td><td>1</td><td>0.6</td><td>0.6 Very Lg.</td><td>dec. Very Lg. dec.</td><td>Medium</td><td>Rare</td><td>Lost</td><td>Lost</td><td></td><td></td><td>0 74</td></th<>	pawpaw	Asimina triloba	NSL	Low	1	0.6	0.6 Very Lg.	dec. Very Lg. dec.	Medium	Rare	Lost	Lost			0 74
red sprucePice rubensNDHHigh000UnknownUnknownUnknownUnknownUnknownUnknown0077longleaf pinePinus palustrisNSHMedium000New HabitatNew Habitat<	Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	1	0.5	0.5 Unknow	n Unknown	Medium	Rare	FIA Only	FIA Only			0 75
Index partName	ashe juniper	Juniperus ashei	NDH	High	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat			0 76
Table Mountain pinePinus pungensNSLLow000New HabitatNew Ha	red spruce	Picea rubens	NDH	High	0	0	0 Unknow	n Unknown	Low	Absent	Unknown	Unknown			0 77
northern white-cedarThuja occidentalisWSHHigh000UnknownUnknownMediumAbsentUnknownUnknownUnknownMigrate +Migrate +	longleaf pine	Pinus palustris	NSH	Medium	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3 78
florida mapleAce' barbatumNSLLow000New HabitatNew HabitatHighAbsentNew HabitatNew HabitatMigrate + Migrate +381mountain mapleAcer spicatumNSLLow000New HabitatNew Hab	Table Mountain pine	Pinus pungens	NSL	Low	0	0	0 New Hal	bitat New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3 79
mountain mapleAcer spicatumNSLLow000UnknownUnknownHighAbsentUnknownUnknownUnknown0082cittamwood/gum bumeliaSideroxylon lanuginosum ssp. NSLLow00New HabitatNew Habitat <td< td=""><td>northern white-cedar</td><td>Thuja occidentalis</td><td>WSH</td><td>High</td><td>0</td><td>0</td><td>0 Unknow</td><td>n Unknown</td><td>Medium</td><td>Absent</td><td>Unknown</td><td>Unknown</td><td></td><td></td><td>0 80</td></td<>	northern white-cedar	Thuja occidentalis	WSH	High	0	0	0 Unknow	n Unknown	Medium	Absent	Unknown	Unknown			0 80
cittamwood/gum bumeliaSideroxylon lanuginosum ssp. NSLLow00New HabitatNew HabitatHigh HighAbsentNew HabitatNew Habit	florida maple	Acer barbatum	NSL	Low	0	0	0 New Hal	bitat New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3 81
black hickoryCarya texanaNDLHigh000New HabitatNew Habitat<	mountain maple	Acer spicatum	NSL	Low	0	0	0 Unknow	n Unknown	High	Absent	Unknown	Unknown			0 82
black ashFraxinus nigraWSHMedium000UnknownNew HabitatLowAbsentUnknownNew HabitatNew HabitatAsshoneylocustGleditsia triacanthosNSHLow00New HabitatNew Habitat <t< td=""><td>cittamwood/gum bumelia</td><td>Sideroxylon lanuginosum ssp</td><td>. NSL</td><td>Low</td><td>0</td><td>0</td><td>0 New Hal</td><td>bitat New Habitat</td><td>High</td><td>Absent</td><td>New Habitat</td><td>New Habitat</td><td></td><td></td><td>3 83</td></t<>	cittamwood/gum bumelia	Sideroxylon lanuginosum ssp	. NSL	Low	0	0	0 New Hal	bitat New Habitat	High	Absent	New Habitat	New Habitat			3 83
NoneylocustGleditsia triacanthosNSHLow000New HabitatNew HabitatHighAbsentNew HabitatNew HabitatMediumAbsentNew HabitatNew HabitatMigrate ++3386silverbellHalesia spp.NSLLow000UnknownMediumAbsentUnknownUnknownNew HabitatMigrate ++386southern magnoliaMagnolia grandifloraNSLLow000New HabitatMediumAbsentUnknownNew HabitatMigrate ++388sweetbayMagnolia virginianaNSLMedium000New HabitatMediumAbsentNew HabitatNew HabitatMigrate +389pin cherryPrunus pensylvanicaNSLLow000UnknownUnknownMediumAbsentUnknownUnknownUnknown09090swamp white oakQuercus bicolorNSLLow000UnknownUnknownUnknownUnknownUnknownUnknown091cherrybark oak; swamp red - Uuercus pagodaNSLMedium000New HabitatMediumAbsentNew HabitatNew HabitatMigrate +392water oakQuercus nigraWDHHigh00New HabitatMediumAbsentNew HabitatNew HabitatMigrate +392water oak<	black hickory	Carya texana	NDL	High	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3 84
silverbellHalesia spp.NSLLow000UnknownMediumAbsentUnknownUnknownNew Habitat0087southern magnoliaMagnolia grandifloraNSLLow000UnknownNew HabitatMediumAbsentUnknownNew HabitatNew HabitatMigrate +388sweetbayMagnolia virginianaNSLMedium000New HabitatNew Habitat<	black ash	Fraxinus nigra	WSH	Medium	0	0	0 Unknow	n New Habitat	Low	Absent	Unknown	New Habitat			3 85
Southern magnoliaMagnolia grandifloraNSLLow000New HabitatMediumAbsentUnknownNew HabitatNew HabitatMigrate +388sweetbayMagnolia virginianaNSLMedium000New HabitatNew H	honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0 New Hal	bitat New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3 86
sweetbayMagnolia virginianaNSLMedium000New HabitatNew Habi	silverbell	Halesia spp.	NSL	Low	0	0	0 Unknow	n Unknown	Medium	Absent	Unknown	Unknown			0 87
pin cherry Prunus pensylvanica NSL Low 0 0 0 Unknown Unknown Medium Absent Unknown Unknown Unknown Unknown 0 90 swamp white oak Quercus bicolor NSL Low 0 0 0 0 Unknown Unknown Unknown Medium Modeled Unknown Unknown Unknown 0 91 cherrybark oak; swamp red o Quercus pagoda NSL Medium 0 0 0 New Habitat New Ha	southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0 Unknow	n New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3 88
swamp white oak Quercus bicolor NSL Low 0 0 0 Unknown Unknown Medium Modeled Unknown Unknown Unknown 0 0 91 cherrybark oak; swamp red o Quercus pagoda NSL Medium 0 0 0 New Habitat New Habitat Medium Absent New Habitat New Habitat New Habitat Migrate + 3 92 water oak Quercus nigra WDH High 0 0 New Habitat	sweetbay	Magnolia virginiana	NSL	Medium	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3 89
cherrybark oak; swamp red o Quercus pagoda NSL Medium 0 0 0 New Habitat New Habitat New Habitat Medium Absent New Habitat New	pin cherry	Prunus pensylvanica	NSL	Low	0	0	0 Unknow	n Unknown	Medium	Absent	Unknown	Unknown			0 90
water oak Quercus nigra WDH High 0 0 0 New Habitat New Habitat Medium Absent New Habitat New Habitat Migrate + Migrate ++ 3 93	swamp white oak	Quercus bicolor	NSL	Low	0	0	0 Unknow	n Unknown	Medium	Modeled	Unknown	Unknown			0 91
water oak Quercus nigra WDH High 0 0 0 New Habitat New Habitat Medium Absent New Habitat New Habitat Migrate + Migrate ++ 3 93		Quercus pagoda	NSL	Medium	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3 92
			WDH	High	0	0	0 New Hal	bitat New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3 93
	pin oak	Quercus palustris	NSH	Low	0	0	0 Unknow	n Unknown	Low	Modeled	Unknown	Unknown			0 94



One x One Degree

Climate Change Atlas Tree Species

USDA Forest Service Northern Research Station Landscape Change Research Group Iverson, Peters, Prasad, Matthews

Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range I	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
live oak	Quercus virginiana	NDH H	High	0	C) (New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3 95
bluejack oak	Quercus incana	NSL I	Low	0	C) () Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3 96
cedar elm	Ulmus crassifolia	NDH I	Medium	0	C) (New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0 97

