Natchez Trace Parkway

National Park

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 9,700.0 3,745.2 271

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			Capability to Cope or Persist			
Ash	3		Model						Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	8	Abu	ndance	R	Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	4	Abundant	3	High	18	27	Increase	37	40	Very Good	18	17	Likely	5	5
Oak	17	Common	29	Medium	36	54	No Change	17	15	Good	11	17	Infill	25	25
Pine	3	Rare	43	Low	39	12	Decrease	20	19	Fair	20	19	Migrate	1	2
Other	40	Absent	16	FIA	1		New	13	13	Poor	12	8	•	31	32
•	75		91	_	94	93	Unknown	7	7	Very Poor	13	13			
							-	94	94	FIA Only	0	0			
										Unknown	6	6			
Potential Changes in Climate Variables										•	90	90			

Potential Changes in Climate Variables

Temperature (°F)											
	Scenario	2009	2039	2069	2099						
Annual	CCSM45	61.8	63.5	65.6	65.8						
Average	CCSM85	61.8	63.9	66.4	69.1						
	GFDL45	61.8	64.7	66.4	67.3						
	GFDL85	61.8	64.4	67.6	71.0						
	HAD45	61.8	64.3	67.3	68.5						
	HAD85	61.8	64.6	69.0	72.7						
Growing	CCSM45	75.7	77.3	79.0	79.5						
Season	CCSM85	75.7	77.7	80.2	83.5						
May—Sep	GFDL45	75.7	79.0	80.8	82.4						
	GFDL85	75.7	78.7	82.3	86.3						
	HAD45	75.7	79.1	82.0	83.1						
	HAD85	75.7	79.3	85.6	88.9						
Coldest	CCSM45	40.7	43.0	44.1	44.1						
Month	CCSM85	40.7	43.6	44.9	46.2						
Average	GFDL45	40.7	44.5	44.5	44.6						
	GFDL85	40.7	42.3	43.5	43.9						
	HAD45	40.7	41.2	43.2	43.8						
	HAD85	40.7	42.4	43.9	45.6						
Warmest	CCSM45	80.3	81.6	82.4	82.6						
Month	CCSM85	80.3	82.0	83.3	85.0						
Average	GFDL45	80.3	84.1	84.6	85.6						
	GFDL85	80.3	83.4	85.2	87.5						
	HAD45	80.3	84.8	86.9	87.2						
	HAD85	80.3	85.5	89.6	90.7						

Precipitation (in)													
	Scenario	2009	2039	2069	2099								
Annual	CCSM45	55.9	58.5	63.7	61.3								
Total	CCSM85	55.9	59.7	60.7	65.5								
	GFDL45	55.9	62.8	67.5	67.9								
	GFDL85	55.9	62.7	65.6	68.6								
	HAD45	55.9	53.6	58.6	60.1								
	HAD85	55.9	57.0	51.6	56.4								
Growing	CCSM45	21.4	21.1	21.8	21.7								
Season	CCSM85	21.4	20.5	20.1	21.2								
May—Sep	GFDL45	21.4	24.6	26.9	26.3								
	GFDL85	21.4	25.7	27.1	28.3								
	HAD45	21.4	19.6	21.0	19.9 ◆◆◆◆								
	HAD85	21.4	21.0	16.2	17.1								

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.

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C N	Calamatica Name	D	140	0/6-11	514	FLAS: Charac	,	Capability		Complian	C	CLUETAE		Peters, Prasa
Common Name	Scientific Name	Range				FIAiv Chng(Abund	Capabil45	Capabil85 Good	SHIFT45	SHIFT85	SSO N 1 1
loblolly pine	Pinus taeda	WDH	High	74.2	2361.5					Very Good				
sweetgum	Liquidambar styraciflua	WDH	High	78.4		12.3 Sm. ir		Medium		Very Good	Very Good			1 2
white oak	Quercus alba	WDH	Medium	61.9		10.1 Sm. d		High	Abundant	Good	Good			1 3
water oak	Quercus nigra	WDH	High	57.7	469.3	U	ŭ	Medium		Very Good	Very Good			1 4
yellow-poplar	Liriodendron tulipifera	WDH	High	48.5	331.4			High	Common	Fair	Fair			1 5
cherrybark oak; swamp ro	· -	NSL	Medium	42.3	330.3		0 0			Fair	Fair			1 6
shortleaf pine	Pinus echinata	WDH	High	37.1	224.8	0	_	Medium		Very Good	Very Good			1 7
post oak	Quercus stellata	WDH	High	45.4	217.5	J	_	High	Common	Very Good	Very Good			1 8
black cherry	Prunus serotina	WDL	Medium	63.9	212.7	3.5 No ch			Common	Poor	Poor			0 9
winged elm	Ulmus alata	WDL	Medium	66	205.4	-		Medium		Very Good	Very Good			1 10
pignut hickory	Carya glabra	WDL	Medium	51.5	201.4			Medium		Poor	Poor			0 11
southern red oak	Quercus falcata	WDL	Medium	51.5	190.7	3.7 Lg. inc	_	High	Common	Very Good	Very Good			1 12
red maple	Acer rubrum	WDH	High	53.6	175.3			High	Common	Very Good	Very Good			1 13
eastern redcedar	Juniperus virginiana	WDH	Medium	39.2	165.4	J	_	Medium		Very Good	Very Good	ı£:II .	ı£:!! .	1 14
chestnut oak	Quercus prinus	NDH	High	15.5		10.2 Sm. d		High	Common	Fair	Fair	Infill +	Infill +	1 15
mockernut hickory	Carya alba	WDL	Medium	50.5	156.3		J	High	Common	Very Good	Very Good			1 16
blackgum	Nyssa sylvatica	WDL	Medium	57.7	146.6			High	Common	Very Good	Very Good			1 17
sugarberry	Celtis laevigata	NDH	Medium	25.8	134.9	U		Medium		Very Good	Very Good			1 18
sycamore	Platanus occidentalis	NSL	Low	21.6	126.6					Poor	Fair			1 19
green ash	Fraxinus pennsylvanica	WSH	Low	42.3	112.9	J		Medium		Very Good	Very Good			1 20
sugar maple	Acer saccharum	WDH	High	13.4	108.2	_		High	Common	Fair	Fair			0 21
black oak	Quercus velutina	WDH	High	38.1	103.4				Common	Fair	Fair			1 22
American elm	Ulmus americana	WDH	Medium	38.1	96.2	_	_	Medium		Very Good	Very Good			1 23
boxelder	Acer negundo	WSH	Low	18.6	93.4			High	Common	Very Good	Very Good			1 24
·	scle Carpinus caroliniana	WSL	Low	28.9	87.4	J		Medium		Very Good	Very Good			1 25
scarlet oak	Quercus coccinea	WDL	Medium	18.6	86.9	4.7 Lg. de		Medium		Poor	Poor	Infill +	Infill +	0 26
flowering dogwood	Cornus florida	WDL	Medium	44.3	84.6			Medium		Good	Good			1 27
sourwood	Oxydendrum arboreum	NDL	High	21.6	84.5			High	Common	Fair	Fair			1 28
eastern cottonwood	Populus deltoides	NSH	Low	7.2	80.6		lec. Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0 29
eastern hophornbeam; ir	onw Ostrya virginiana	WSL	Low	32	64.3	2.0 Lg. inc	c. Lg. inc.	High	Common	Very Good	Very Good			1 30
slippery elm	Ulmus rubra	WSL	Low	17.5	62.5		-	Medium	Common	Fair	Good			1 31
American beech	Fagus grandifolia	WDH	High	21.6	62.2	2.9 Lg. inc	c. Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1 32
sassafras	Sassafras albidum	WSL	Low	20.6	47.7	2.3 Sm. ir	J	Medium		Fair	Good			1 33
shagbark hickory	Carya ovata	WSL	Medium	19.6	47.0	2.4 Sm. d	lec. Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 34
black walnut	Juglans nigra	WDH	Low	10.3	46.4	4.5 Sm. d	lec. Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 35
honeylocust	Gleditsia triacanthos	NSH	Low	11.3	44.9	4.0 Sm. ir	nc. Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1 36
black locust	Robinia pseudoacacia	NDH	Low	12.4	39.8	3.2 Sm. d	lec. Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 37
northern red oak	Quercus rubra	WDH	Medium	16.5	38.8	2.4 Sm. ir	nc. Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1 38
common persimmon	Diospyros virginiana	NSL	Low	30.9	34.7	1.3 Lg. inc	c. Lg. inc.	High	Rare	Good	Good			1 39
hackberry	Celtis occidentalis	WDH	Medium	5.2	33.0	6.4 No ch	nange No chang	e High	Rare	Fair	Fair	Infill +	Infill +	2 40
chinkapin oak	Quercus muehlenbergii	NSL	Medium	11.3	32.8	2.9 Sm. d	lec. Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 41
blackjack oak	Quercus marilandica	NSL	Medium	6.2	31.3	5.1 Sm. ir	nc. Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1 42
river birch	Betula nigra	NSL	Low	4.1	29.4	7.1 No ch	nange No chang	e Medium	Rare	Poor	Poor	Infill +	Infill +	2 43
overcup oak	Quercus lyrata	NSL	Medium	6.2	26.8	4.3 No ch	nange No chang	e Low	Rare	Very Poor	Very Poor			0 44
bitternut hickory	Carya cordiformis	WSL	Low	11.3	25.2	2.2 No ch	nange Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1 45
black willow	Salix nigra	NSH	Low	9.3	23.2	2.5 Sm. ir	nc. Lg. inc.	Low	Rare	Poor	Fair			1 46
swamp chestnut oak	Quercus michauxii	NSL	Low	9.3	21.8	2.4 No ch	nange No chang	e Medium	Rare	Poor	Poor	Infill +	Infill +	1 47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
white ash	Fraxinus americana	WDL	Medium	16.5	20.3	1.2	2 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1 48
Shumard oak	Quercus shumardii	NSL	Low	10.3	18.6	1.8	3 Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1 49
eastern redbud	Cercis canadensis	NSL	Low	15.5	17.9	1.2	2 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 50
willow oak	Quercus phellos	NSL	Low	9.3	17.5	1.9	Eg. inc.	Lg. inc.	Medium	Rare	Good	Good			1 51
pecan	Carya illinoinensis	NSH	Low	10.3	15.0	1.5	5 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1 52
florida maple	Acer barbatum	NSL	Low	5.2	14.0	2.7	7 No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2 53
sweetbay	Magnolia virginiana	NSL	Medium	3.1	13.7	4.4	1 No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2 54
Osage-orange	Maclura pomifera	NDH	Medium	4.1	13.5	3.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1 55
Nuttall oak	Quercus texana	NSH	Medium	4.1	13.2	3.2	No change	No change	High	Rare	Fair	Fair			0 56
laurel oak	Quercus laurifolia	NDH	Medium	3.1	13.1	4.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2 57
yellow buckeye	Aesculus flava	NSL	Low	2.1	12.8	6.2	2 Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0 58
red mulberry	Morus rubra	NSL	Low	12.4	9.9	0.8	3 Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1 59
water tupelo	Nyssa aquatica	NSH	Medium	1	9.5	9.2	No change	No change	Low	Rare	Very Poor	Very Poor			2 60
Virginia pine	Pinus virginiana	NDH	High	3.1	9.2	3.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2 61
shellbark hickory	Carya laciniosa	NSL	Low	6.2	9.0	1.5	Eg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 62
water hickory	Carya aquatica	NSL	Medium	3.1	8.2	2.7	7 No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 63
pawpaw	Asimina triloba	NSL	Low	3.1	6.8	2.2	2 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 64
bald cypress	Taxodium distichum	NSH	Medium	1	5.5	5.4	4 Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2 65
southern magnolia	Magnolia grandiflora	NSL	Low	6.2	5.2	0.8	B Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2 66
ailanthus	Ailanthus altissima	NSL	FIA	2.1	3.7	1.8	3 Unknown	Unknown	NA	Rare	NNIS	NNIS			0 67
American holly	Ilex opaca	NSL	Medium	6.2	3.1	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1 68
serviceberry	Amelanchier spp.	NSL	Low	3.1	2.9	0.9	9 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 69
black hickory	Carya texana	NDL	High	3.1	2.7	0.9	Eg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 70
blue ash	Fraxinus quadrangulata	NSL	Low	1	2.0	2.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0 71
cedar elm	Ulmus crassifolia	NDH	Medium	1	1.3	1.2	2 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2 72
cucumbertree	Magnolia acuminata	NSL	Low	2.1	1.0	0.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 73
swamp tupelo	Nyssa biflora	NDH	Medium	1	0.8	0.8	3 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2 74
American basswood	Tilia americana	WSL	Medium	1	0.5	0.5	5 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 75
ashe juniper	Juniperus ashei	NDH	High	0	0	(New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0 76
slash pine	Pinus elliottii	NDH	High	0	0	(New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 77
spruce pine	Pinus glabra	NSL	Low	0	0	(New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 78
longleaf pine	Pinus palustris	NSH	Medium	0	0	(New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 79
striped maple	Acer pensylvanicum	NSL	Medium	0	0		New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	,	,	3 80
silver maple	Acer saccharinum	NSH	Low	0	0	(Unknown	Unknown	High	Modeled	Unknown	Unknown			0 81
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	(Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 82
sweet birch	Betula lenta	NDH	High	0	0) Unknown	Unknown	Low	Absent	Unknown	Unknown			0 83
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp		Low	0			New Habitat	New Habitat	High	Absent		New Habitat	Migrate +	Migrate ++	3 84
black ash	Fraxinus nigra	WSH	Medium	0	0		New Habitat	New Habitat	Low	Absent	New Habitat		0	3	3 85
silverbell	Halesia spp.	NSL	Low	0	0	(New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3 86
redbay	Persea borbonia	NSL	Low	0	0		New Habitat			Absent	New Habitat				3 87
water elm	Planera aquatica	NSL	Low	0			New Habitat		U			New Habitat	Likelv +	Likely +	3 88
pin cherry	Prunus pensylvanica	NSL	Low	0			New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		zinci,	3 89
swamp white oak	Quercus bicolor	NSL	Low	0			Unknown	Unknown	Medium		Unknown	Unknown			0 90
turkey oak	Quercus laevis	NSH	Medium	0) Unknown	Unknown	High	Modeled	Unknown	Unknown			0 91
bur oak	Quercus macrocarpa	NDH	Medium	0			Unknown	Unknown	High	Absent	Unknown	Unknown			0 92
live oak	Quercus virginiana	NDH	High	0			New Habitat	New Habitat	Medium	Absent		New Habitat	Likely +	Likely +	3 93
bluejack oak	Quercus incana	NSL	Low	0	_		New Habitat	New Habitat	Medium	Absent	New Habitat		LIKCIY	Migrate +	3 94
Diacjack oak	Quercus iricuita	INJL	2000	U	U		. wew Habitat	.acw Habitat	Wicalulli	, water	I labitat	.vcvv Habitat		MIBIALE I	5 54

