

Climate Change Atlas Tree Species  
Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	145,600	56,216	3,199

Species Information

The columns below provide brief 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	Abundance		Model		Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential					
				Reliability	Adaptability	Scenario RCP45	Scenario RCP85	Scenario RCP45	Scenario RCP85	SHIFT RCP45	SHIFT RCP85				
Ash	4			High	20	27	Increase	19	25	Very Good	4	5	Likely	0	0
Hickory	7			Medium	39	59	No Change	30	28	Good	12	13	Infill	28	32
Maple	3	Abundant	1	Low	44	17	Decrease	30	26	Fair	11	15	Migrate	0	0
Oak	17	Common	16	FIA	7		New	9	12	Poor	26	22			
Pine	8	Rare	69				Unknown	22	19	Very Poor	25	23			
Other	47	Absent	23							FIA Only	6	6			
	<b>86</b>		<b>109</b>		<b>110</b>	<b>103</b>		<b>110</b>	<b>110</b>	Unknown	16	13			
											<b>100</b>	<b>97</b>			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	70.8	72.2	73.8	73.7	
	CCSM85	70.8	72.3	74.5	76.7	
	GFDL45	70.8	74.1	75.0	75.8	
	GFDL85	70.8	73.1	76.0	79.3	
	HAD45	70.8	72.5	74.7	75.9	
	HAD85	70.8	73.0	75.6	79.0	
Growing Season (May—Sep)	CCSM45	79.8	81.0	82.2	82.4	
	CCSM85	79.8	81.0	83.2	85.6	
	GFDL45	79.8	83.1	83.9	84.9	
	GFDL85	79.8	82.2	85.0	88.6	
	HAD45	79.8	82.1	83.9	85.2	
	HAD85	79.8	82.4	85.6	88.7	
Coldest Month (Average)	CCSM45	56.4	58.4	59.3	59.1	
	CCSM85	56.4	58.0	59.0	60.3	
	GFDL45	56.4	59.1	59.4	59.9	
	GFDL85	56.4	58.6	59.8	60.8	
	HAD45	56.4	56.4	57.7	58.3	
	HAD85	56.4	57.2	58.0	59.9	
Warmest Month (Average)	CCSM45	82.1	83.4	84.0	84.1	
	CCSM85	82.1	83.4	84.6	86.0	
	GFDL45	82.1	84.4	85.2	85.9	
	GFDL85	82.1	84.4	85.9	87.8	
	HAD45	82.1	84.7	85.5	86.1	
	HAD85	82.1	84.7	86.6	88.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	53.1	55.8	56.4	58.8	
	CCSM85	53.1	55.5	56.4	55.6	
	GFDL45	53.1	60.5	62.2	63.9	
	GFDL85	53.1	57.7	64.9	60.7	
	HAD45	53.1	52.9	53.8	55.3	
	HAD85	53.1	51.7	51.1	50.5	
Growing Season (May—Sep)	CCSM45	31.3	33.3	32.8	34.3	
	CCSM85	31.3	32.5	33.4	31.6	
	GFDL45	31.3	35.9	36.3	35.9	
	GFDL85	31.3	34.8	38.3	35.6	
	HAD45	31.3	31.1	31.1	29.6	
	HAD85	31.3	29.4	26.7	25.9	

**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-DGP30 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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Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
slash pine	Pinus elliottii	NDH	High	63.3	2003.2	36.7	No change	No change	Medium	Abundant	Good	Good			1	1
loblolly pine	Pinus taeda	WDH	High	22.7	477.7	17.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	2
laurel oak	Quercus laurifolia	NDH	Medium	51.9	437.5	10.5	No change	No change	Medium	Common	Fair	Fair			1	3
longleaf pine	Pinus palustris	NSH	Medium	26.5	422.3	17.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
pond cypress	Taxodium ascendens	NSH	Medium	27.5	373.7	17.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	5
live oak	Quercus virginiana	NDH	High	43.3	326.3	11.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
cabbage palmetto	Sabal palmetto	NDH	Medium	27.6	273.1	18.2	Lg. inc.	Lg. inc.	NA	Common	Unknown	Unknown			0	7
sand pine	Pinus clausa	NDH	High	9.1	252.2	26.8	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	8
swamp tupelo	Nyssa biflora	NDH	Medium	32.7	243.8	7.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
water oak	Quercus nigra	WDH	High	32.9	233.5	7.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
red maple	Acer rubrum	WDH	High	34.9	191.1	6.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
sweetgum	Liquidambar styraciflua	WDH	High	25.1	160.8	6.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
sweetbay	Magnolia virginiana	NSL	Medium	29	145.1	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
turkey oak	Quercus laevis	NSH	Medium	12.4	102.1	9.0	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	14
bald cypress	Taxodium distichum	NSH	Medium	15.4	94.8	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
loblolly-bay	Gordonia lasianthus	NSH	Medium	12.6	84.3	7.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	16
redbay	Persea borbonia	NSL	Low	24.8	61.1	3.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	17
pond pine	Pinus serotina	NSH	Medium	5.3	40.1	8.8	No change	No change	Low	Rare	Very Poor	Very Poor			0	18
black cherry	Prunus serotina	WDL	Medium	11	39.7	3.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	19
blackgum	Nyssa sylvatica	WDL	Medium	10.9	33.1	2.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	20
water tupelo	Nyssa aquatica	NSH	Medium	3.9	30.3	7.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	21
green ash	Fraxinus pennsylvanica	WSH	Low	6	30.2	4.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	22
American elm	Ulmus americana	WDH	Medium	12.9	24.4	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	23
southern magnolia	Magnolia grandiflora	NSL	Low	7.6	23.3	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	24
yellow-poplar	Liriodendron tulipifera	WDH	High	4.2	23.2	4.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	25
pumpkin ash	Fraxinus profunda	NSH	FIA	3.9	21.9	5.9	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	26
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	7.4	21.7	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	27
southern red oak	Quercus falcata	WDL	Medium	3.7	19.1	3.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	28
pignut hickory	Carya glabra	WDL	Medium	4.9	18.5	3.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
bluejack oak	Quercus incana	NSL	Low	6.2	16.4	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	30
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	1.6	13.1	6.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	31
common persimmon	Diospyros virginiana	NSL	Low	7.3	13.1	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	32
shortleaf pine	Pinus echinata	WDH	High	1	12.9	9.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	33
post oak	Quercus stellata	WDH	High	3.6	12.1	2.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	34
Carolina ash	Fraxinus caroliniana	NSL	FIA	6.2	11.7	4.2	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	35
American holly	Ilex opaca	NSL	Medium	6.3	8.7	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	36
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.2	8.5	3.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	37
mockernut hickory	Carya alba	WDL	Medium	2.8	8.2	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	38
eastern redcedar	Juniperus virginiana	WDH	Medium	3.3	7.7	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	39
sugarberry	Celtis laevigata	NDH	Medium	3.7	6.8	2.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	40
spruce pine	Pinus glabra	NSL	Low	2.1	6.7	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
flowering dogwood	Cornus florida	WDL	Medium	4	6.0	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	42
black willow	Salix nigra	NSH	Low	1.3	4.3	3.2	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	43
white oak	Quercus alba	WDH	Medium	1.3	3.8	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	44
eastern cottonwood	Populus deltoides	NSH	Low	0.1	3.4	50.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
swamp chestnut oak	Quercus michauxii	NSL	Low	1.6	3.2	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	46
water hickory	Carya aquatica	NSL	Medium	1	2.8	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
florida maple	Acer barbatum	NSL	Low	0.7	2.6	3.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	48
hackberry	Celtis occidentalis	WDH	Medium	1.3	2.6	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	49
overcup oak	Quercus lyrata	NSL	Medium	0.9	2.3	2.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	50
river birch	Betula nigra	NSL	Low	0.9	2.0	2.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	51
sycamore	Platanus occidentalis	NSL	Low	0.4	1.8	3.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	52
pecan	Carya illinoensis	NSH	Low	0.6	1.8	2.8	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	53
black walnut	Juglans nigra	WDH	Low	0.1	1.7	25.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
American beech	Fagus grandifolia	WDH	High	0.6	1.6	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	55
sourwood	Oxydendrum arboreum	NDL	High	0.8	1.3	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	56
white ash	Fraxinus americana	WDL	Medium	0.5	1.2	2.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	57
blackjack oak	Quercus marilandica	NSL	Medium	0.6	1.2	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	58
sand hickory	Carya pallida	NSL	FIA	0.2	1.0	3.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	59
red mulberry	Morus rubra	NSL	Low	0.5	1.0	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
American basswood	Tilia americana	WSL	Medium	0.3	0.9	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
winged elm	Ulmus alata	WDL	Medium	1.2	0.9	0.9	No change	Lg. inc.	Medium	Rare	Poor	Good			2	62
sassafras	Sassafras albidum	WSL	Low	0.7	0.6	0.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor	Infill +		2	63
slippery elm	Ulmus rubra	WSL	Low	0.4	0.6	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor	Infill +		2	64
Shumard oak	Quercus shumardii	NSL	Low	0.3	0.5	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	65
willow oak	Quercus phellos	NSL	Low	0.5	0.5	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	66
wild plum	Prunus americana	NSLX	FIA	0.3	0.5	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	67
bitternut hickory	Carya cordiformis	WSL	Low	0.3	0.4	0.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	68
eastern redbud	Cercis canadensis	NSL	Low	0.5	0.4	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	69
water elm	Planera aquatica	NSL	Low	0.4	0.4	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	70
boxelder	Acer negundo	WSH	Low	0.2	0.4	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	71
black oak	Quercus velutina	WDH	High	0.1	0.3	4.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	72
honeylocust	Gleditsia triacanthos	NSH	Low	0.1	0.2	3.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	73
waterlocust	Gleditsia aquatica	NSLX	FIA	0.4	0.2	1.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	74
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	0.1	0.1	2.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	75
white mulberry	Morus alba	NSL	FIA	0.1	0.1	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	76
cedar elm	Ulmus crassifolia	NDH	Medium	0.1	0.1	0.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +		2	77
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0.3	0.1	0.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +		2	78
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.1	0.1	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	79
Virginia pine	Pinus virginiana	NDH	High	0	0.1	0.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	80
cucumbertree	Magnolia acuminata	NSL	Low	0.1	0.1	0.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	81
black locust	Robinia pseudoacacia	NDH	Low	0.1	0.1	0.8	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	82
serviceberry	Amelanchier spp.	NSL	Low	0.1	0.0	0.4	No change	Sm. inc.	Medium	Rare	Poor	Fair			0	83
Nuttall oak	Quercus texana	NSH	Medium	0.1	0.0	0.4	No change	No change	High	Rare	Fair	Fair			0	84
pawpaw	Asimina triloba	NSL	Low	0.1	0.0	0.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	85
shagbark hickory	Carya ovata	WSL	Medium	0	0.0	0.1	No change	No change	Medium	Rare	Poor	Poor			0	86
balsam fir	Abies balsamea	NDH	High	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	87
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	NA	Absent	New Habitat	New Habitat			0	88
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	89
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	90
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	91
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	92
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	93
sweet birch	Betula lenta	NDH	High	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	94

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gray birch	Betula populifolia	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	95
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	96
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	97
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	98
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	99
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	100
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	101
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	102
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	NA	Absent	Unknown	Unknown			0	103
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	104
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	105
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	106
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	107
bur oak	Quercus macrocarpa	NDH	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	108
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	109
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	110