

**One x One Degree**  
 Climate Change Atlas Tree Species  
 Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	10,533	4,066.9	375

**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	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				High		Increase	RCP45	RCP85	Very Good	RCP45	RCP85	Likely	RCP45	RCP85	
Ash	3				14	23				13	13		0	0	
Hickory	7			Medium	35	52	No Change	22	22	Good	14	17	Infill	17	21
Maple	3	Abundant	2	Low	33	10	Decrease	16	13	Fair	11	12	Migrate	3	3
Oak	16	Common	25	FIA	3		New	6	6	Poor	18	15			
Pine	4	Rare	45				Unknown	10	10	Very Poor	12	11			
Other	39	Absent	12							FIA Only	3	3			
	<b>72</b>		<b>84</b>		<b>85</b>	<b>85</b>		<b>85</b>	<b>85</b>	Unknown	7	7			
											<b>78</b>	<b>78</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	65.6	67.3	69.0	69.2
	CCSM85	65.6	67.6	70.0	72.3
	GFDL45	65.6	68.3	69.6	70.8
	GFDL85	65.6	68.1	71.0	74.3
	HAD45	65.6	68.0	70.8	71.8
HAD85	65.6	68.3	72.1	75.7	
Growing Season May—Sep	CCSM45	78.7	80.2	81.5	81.9
	CCSM85	78.7	80.5	82.7	85.6
	GFDL45	78.7	81.8	82.9	85.2
	GFDL85	78.7	81.7	84.8	88.9
	HAD45	78.7	81.6	84.3	84.7
HAD85	78.7	81.9	86.6	89.7	
Coldest Month Average	CCSM45	46.1	48.8	49.7	49.8
	CCSM85	46.1	48.7	50.0	51.3
	GFDL45	46.1	49.5	49.6	49.5
	GFDL85	46.1	47.1	48.0	48.7
	HAD45	46.1	47.0	48.7	49.6
HAD85	46.1	48.5	50.0	51.9	
Warmest Month Average	CCSM45	82.9	84.1	84.5	84.6
	CCSM85	82.9	84.6	85.3	86.8
	GFDL45	82.9	86.9	86.7	88.4
	GFDL85	82.9	86.6	87.9	90.6
	HAD45	82.9	86.6	87.8	87.7
HAD85	82.9	87.0	89.5	90.4	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	54.9	55.4	62.2	60.5
	CCSM85	54.9	57.1	61.7	63.0
	GFDL45	54.9	58.4	68.7	59.6
	GFDL85	54.9	58.1	60.9	61.5
	HAD45	54.9	53.9	53.4	57.7
HAD85	54.9	56.9	49.7	53.1	
Growing Season May—Sep	CCSM45	20.3	20.6	22.3	21.4
	CCSM85	20.3	19.5	20.5	19.9
	GFDL45	20.3	22.8	29.2	23.6
	GFDL85	20.3	23.3	25.4	26.2
	HAD45	20.3	19.4	19.2	19.7
HAD85	20.3	19.7	15.8	16.2	

**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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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
loblolly pine	<i>Pinus taeda</i>	WDH	High	95.7	5271.8	41.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	92.3	929.7	7.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good				2
water oak	<i>Quercus nigra</i>	WDH	High	75.7	396.3	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				3
longleaf pine	<i>Pinus palustris</i>	NSH	Medium	25	392.5	11.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				4
white oak	<i>Quercus alba</i>	WDH	Medium	67.8	360.7	4.6	Sm. dec.	No change	High	Common	Fair	Good				5
shortleaf pine	<i>Pinus echinata</i>	WDH	High	60.9	353.9	4.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				6
southern red oak	<i>Quercus falcata</i>	WDL	Medium	75.8	317.8	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				7
slash pine	<i>Pinus elliottii</i>	NDH	High	17.9	299.9	10.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				8
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	69.9	266.9	2.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				9
post oak	<i>Quercus stellata</i>	WDH	High	53.4	206.7	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				10
red maple	<i>Acer rubrum</i>	WDH	High	76.5	192.0	2.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				11
cherrybark oak; swamp red o.	<i>Quercus pagoda</i>	NSL	Medium	46.5	185.2	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				12
green ash	<i>Fraxinus pennsylvanica</i>	WSH	Low	29.9	164.8	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				13
American hornbeam; muscle	<i>Carpinus caroliniana</i>	WSL	Low	52.6	149.2	2.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				14
winged elm	<i>Ulmus alata</i>	WDL	Medium	55.4	120.5	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				15
American beech	<i>Fagus grandifolia</i>	WDH	High	34.8	119.0	2.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				16
willow oak	<i>Quercus phellos</i>	NSL	Low	27.9	108.5	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				17
pecan	<i>Carya illinoensis</i>	NSH	Low	4.3	104.4	14.6	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	18
black willow	<i>Salix nigra</i>	NSH	Low	3.2	96.4	9.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	19
sweetbay	<i>Magnolia virginiana</i>	NSL	Medium	22.1	92.4	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				20
American elm	<i>Ulmus americana</i>	WDH	Medium	28.9	84.0	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				21
eastern hophornbeam; ironw	<i>Ostrya virginiana</i>	WSL	Low	42.1	81.2	1.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				22
mockernut hickory	<i>Carya alba</i>	WDL	Medium	46.1	79.6	1.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				23
laurel oak	<i>Quercus laurifolia</i>	NDH	Medium	15.5	66.3	2.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				24
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	9.9	65.5	2.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	25
bald cypress	<i>Taxodium distichum</i>	NSH	Medium	9.9	64.3	3.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	26
American holly	<i>Ilex opaca</i>	NSL	Medium	37.1	56.7	1.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				27
overcup oak	<i>Quercus lyrata</i>	NSL	Medium	8.4	41.2	2.6	No change	No change	Low	Rare	Very Poor	Very Poor				28
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	41.3	41.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				29
white ash	<i>Fraxinus americana</i>	WDL	Medium	30.7	36.4	1.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair				30
florida maple	<i>Acer barbatum</i>	NSL	Low	18.9	27.9	1.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				31
black cherry	<i>Prunus serotina</i>	WDL	Medium	33.5	27.3	0.7	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair				32
sassafras	<i>Sassafras albidum</i>	WSL	Low	30	26.8	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good				33
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	14.4	25.6	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	34
southern magnolia	<i>Magnolia grandiflora</i>	NSL	Low	14.6	25.1	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				35
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	3.8	23.8	6.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				36
sycamore	<i>Platanus occidentalis</i>	NSL	Low	8	21.6	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				37
black hickory	<i>Carya texana</i>	NDL	High	9.5	20.7	1.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	38
water hickory	<i>Carya aquatica</i>	NSL	Medium	6.2	18.6	0.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
honeylocust	<i>Gleditsia triacanthos</i>	NSH	Low	4.1	18.5	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	40
swamp tupelo	<i>Nyssa biflora</i>	NDH	Medium	2.2	18.1	5.9	No change	No change	Low	Rare	Very Poor	Very Poor				41
water elm	<i>Planera aquatica</i>	NSL	Low	2.5	15.4	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	42
swamp chestnut oak	<i>Quercus michauxii</i>	NSL	Low	6.8	14.9	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	43
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	5.7	13.9	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				44
black oak	<i>Quercus velutina</i>	WDH	High	5.7	12.2	2.1	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				45
eastern redcedar	<i>Juniperus virginiana</i>	WDH	Medium	6.9	11.9	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	46
redbay	<i>Persea borbonia</i>	NSL	Low	11.1	11.1	0.8	Lg. dec.	No change	High	Rare	Poor	Fair				47

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pignut hickory	<i>Carya glabra</i>	WDL	Medium	6.5	10.9	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
common persimmon	<i>Diospyros virginiana</i>	NSL	Low	7.6	10.4	0.9	No change	No change	High	Rare	Fair	Fair		Infill +		1 49
river birch	<i>Betula nigra</i>	NSL	Low	1.1	9.7	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	50
nuttall oak	<i>Quercus texana</i>	NSH	Medium	2.7	9.6	3.4	No change	No change	High	Rare	Fair	Fair				0 51
waterlocust	<i>Gleditsia aquatica</i>	NSLX	FIA	1.4	9.1	3.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 52
red mulberry	<i>Morus rubra</i>	NSL	Low	10.2	7.4	0.5	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 53
boxelder	<i>Acer negundo</i>	WSH	Low	2.9	6.8	1.6	No change	No change	High	Rare	Fair	Fair		Infill +		2 54
slippery elm	<i>Ulmus rubra</i>	WSL	Low	5.9	6.7	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		1 55
pond cypress	<i>Taxodium ascendens</i>	NSH	Medium	0.4	5.9	2.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +		2 56
bitternut hickory	<i>Carya cordiformis</i>	WSL	Low	1	5.3	2.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +		2 57
black walnut	<i>Juglans nigra</i>	WDH	Low	1.2	5.3	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 58
water tupelo	<i>Nyssa aquatica</i>	NSH	Medium	4.5	4.5	0.9	No change	No change	Low	Rare	Very Poor	Very Poor				2 59
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum</i> ssp.	NSL	Low	3.8	4.1	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2 60
bluejack oak	<i>Quercus incana</i>	NSL	Low	2.9	3.5	0.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 61
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0.9	2.3	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 62
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	3	1.9	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 63
wild plum	<i>Prunus americana</i>	NSLX	FIA	1.4	1.7	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 64
Osage-orange	<i>Maclura pomifera</i>	NDH	Medium	0.9	1.1	1.2	No change	Lg. inc.	High	Rare	Fair	Good				2 65
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	1.2	0.8	0.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +		2 66
shagbark hickory	<i>Carya ovata</i>	WSL	Medium	0.9	0.8	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				0 67
black ash	<i>Fraxinus nigra</i>	WSH	Medium	0.9	0.8	0.8	No change	No change	Low	Rare	Very Poor	Very Poor				0 68
silverbell	<i>Halesia</i> spp.	NSL	Low	0.9	0.4	0.4	No change	No change	Medium	Rare	Poor	Poor				0 69
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	0.9	0.3	0.3	No change	No change	Medium	Rare	Poor	Poor				0 70
ogeechee tupelo	<i>Nyssa ogeche</i>	NSLX	FIA	0.6	0.2	0.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 71
chestnut oak	<i>Quercus prinus</i>	NDH	High	0.9	0.1	0.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0 72
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 73
serviceberry	<i>Amelanchier</i> spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 74
shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 75
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 76
cucumber tree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 77
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 78
sourwood	<i>Oxydendrum arboreum</i>	NDL	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0 79
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 80
turkey oak	<i>Quercus laevis</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 81
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 82
northern red oak	<i>Quercus rubra</i>	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 83
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		3 84
American basswood	<i>Tilia americana</i>	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 85

