

**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    9,941.4    3,838.4      173

**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	25	Increase	RCP45	RCP85	Very Good	14	16	Likely	0	0	
Ash	2			Medium	34	53	No Change	11	8	Good	19	22	Infill	11	13
Hickory	6			Low	36	12	Decrease	26	25	Fair	14	9	Migrate	2	5
Maple	5	Abundant	3	FIA	5		New	12	13	Poor	7	7			
Oak	19	Common	33				Unknown	10	9	Very Poor	17	17			
Pine	4	Rare	40							FIA Only	2	2			
Other	40	Absent	15							Unknown	5	4			
	<b>76</b>		<b>91</b>		<b>93</b>	<b>90</b>		<b>93</b>	<b>93</b>		<b>78</b>	<b>77</b>		<b>13</b>	<b>18</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual	58.4	60.2	62.4	62.7	
Average	58.4	60.6	63.5	66.5	
Growing Season	74.0	75.8	77.6	78.2	
May—Sep	74.0	77.3	81.1	85.4	
Coldest Month	34.2	36.1	37.7	37.5	
Warmest Month	79.6	81.1	82.2	82.5	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual	51.4	51.3	57.7	55.7	
Total	51.4	55.8	56.0	59.0	
Growing Season	20.2	18.9	20.1	19.4	
May—Sep	20.2	23.2	24.2	25.2	
Coldest Month	20.2	18.4	18.0	17.4	
Warmest Month	20.2	18.8	14.4	15.1	

**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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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sweetgum	Liquidambar styraciflua	WDH	High	83.2	762.0	10.5	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
white oak	Quercus alba	WDH	Medium	53.4	656.1	10.6	No change	No change	High	Abundant	Very Good	Very Good			1	2
red maple	Acer rubrum	WDH	High	68.4	546.2	9.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
winged elm	Ulmus alata	WDL	Medium	79.2	486.6	7.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
southern red oak	Quercus falcata	WDL	Medium	56.3	429.3	7.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	5
loblolly pine	Pinus taeda	WDH	High	29.9	401.2	15.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
yellow-poplar	Liriodendron tulipifera	WDH	High	39.4	306.7	6.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	7
post oak	Quercus stellata	WDH	High	41.8	245.7	5.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	8
black cherry	Prunus serotina	WDL	Medium	44.6	236.3	5.4	No change	No change	Low	Common	Poor	Poor			0	9
pignut hickory	Carya glabra	WDL	Medium	46.1	228.7	4.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
green ash	Fraxinus pennsylvanica	WSH	Low	61.4	204.2	4.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
black oak	Quercus velutina	WDH	High	38.4	199.4	5.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	38.7	196.4	6.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
blackgum	Nyssa sylvatica	WDL	Medium	54.6	184.4	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	14
mockernut hickory	Carya alba	WDL	Medium	40.6	171.1	4.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
American elm	Ulmus americana	WDH	Medium	51.4	134.7	3.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	16
eastern redcedar	Juniperus virginiana	WDH	Medium	38.7	132.1	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
boxelder	Acer negundo	WSH	Low	33.4	125.0	5.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	18
sugar maple	Acer saccharum	WDH	High	28.9	124.3	4.4	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	19
chestnut oak	Quercus prinus	NDH	High	7.7	122.8	6.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	20
scarlet oak	Quercus coccinea	WDL	Medium	15.5	101.9	2.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	21
sycamore	Platanus occidentalis	NSL	Low	28.2	97.6	4.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
black willow	Salix nigra	NSH	Low	25.3	96.8	8.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
river birch	Betula nigra	NSL	Low	20.4	90.2	4.6	No change	Sm. inc.	Medium	Common	Fair	Good			1	24
sassafras	Sassafras albidum	WSL	Low	40.2	88.9	2.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	25
slippery elm	Ulmus rubra	WSL	Low	41.2	84.6	2.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
willow oak	Quercus phellos	NSL	Low	12.2	83.1	7.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
white ash	Fraxinus americana	WDL	Medium	19.9	79.3	4.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	28
flowering dogwood	Cornus florida	WDL	Medium	37.7	78.2	2.3	No change	Sm. inc.	Medium	Common	Fair	Good			1	29
common persimmon	Diospyros virginiana	NSL	Low	37.1	72.8	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	30
shagbark hickory	Carya ovata	WSL	Medium	37.8	71.8	2.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	31
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	22.7	64.8	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	32
northern red oak	Quercus rubra	WDH	Medium	13.9	64.3	4.6	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	33
silver maple	Acer saccharinum	NSH	Low	12.2	59.3	4.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	34
American beech	Fagus grandifolia	WDH	High	14.1	57.4	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	35
sourwood	Oxydendrum arboreum	NDL	High	10.1	55.7	2.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	36
water tupelo	Nyssa aquatica	NSH	Medium	6.5	48.3	15.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	37
black locust	Robinia pseudoacacia	NDH	Low	11.1	44.2	6.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	18.2	44.0	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	39
red mulberry	Morus rubra	NSL	Low	9.8	43.3	4.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
shingle oak	Quercus imbricaria	NDH	Medium	7.2	41.7	4.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
bitternut hickory	Carya cordiformis	WSL	Low	10.6	39.1	4.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	42
swamp chestnut oak	Quercus michauxii	NSL	Low	16.6	34.4	2.9	No change	No change	Medium	Rare	Poor	Poor			1	43
black walnut	Juglans nigra	WDH	Low	11.9	34.3	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
blackjack oak	Quercus marilandica	NSL	Medium	4	33.6	6.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	45
shellbark hickory	Carya laciniosa	NSL	Low	12.6	32.7	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
hackberry	Celtis occidentalis	WDH	Medium	15.1	27.5	2.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	47



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water oak	Quercus nigra	WDH	High	5.5	18.8	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
sugarberry	Celtis laevigata	NDH	Medium	9.1	16.6	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	49
chinkapin oak	Quercus muehlenbergii	NSL	Medium	6	15.8	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	50
eastern redbud	Cercis canadensis	NSL	Low	9.7	12.6	1.7	No change	No change	Medium	Rare	Poor	Poor			1	51
pin oak	Quercus palustris	NSH	Low	3.9	11.7	2.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	52
bald cypress	Taxodium distichum	NSH	Medium	14.1	10.6	4.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
serviceberry	Amelanchier spp.	NSL	Low	5.2	10.2	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
overcup oak	Quercus lyrata	NSL	Medium	10.6	8.1	3.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	55
eastern cottonwood	Populus deltoides	NSH	Low	8.6	7.7	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
swamp tupelo	Nyssa biflora	NDH	Medium	3.6	6.1	2.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	57
rock elm	Ulmus thomasii	NSLX	FIA	0.2	4.6	1.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	58
pitch pine	Pinus rigida	NSH	High	1	4.1	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
nuttall oak	Quercus texana	NSH	Medium	1	3.7	3.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	60
swamp white oak	Quercus bicolor	NSL	Low	2	3.0	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
American basswood	Tilia americana	WSL	Medium	2	2.8	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	62
water elm	Planera aquatica	NSL	Low	2.8	2.8	7.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	63
shortleaf pine	Pinus echinata	WDH	High	0.5	2.7	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	64
honeylocust	Gleditsia triacanthos	NSH	Low	8.5	2.5	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good		Infill ++	2	65
American holly	Ilex opaca	NSL	Medium	2	2.1	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	66
Shumard oak	Quercus shumardii	NSL	Low	1	2.0	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	67
Virginia pine	Pinus virginiana	NDH	High	0.5	1.8	1.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	68
paulownia	Paulownia tomentosa	NSL	FIA	5.3	1.2	1.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	69
ailanthus	Ailanthus altissima	NSL	FIA	0.5	0.8	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	70
wild plum	Prunus americana	NSLX	FIA	0.3	0.8	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
striped maple	Acer pensylvanicum	NSL	Medium	1	0.4	0.4	No change	No change	Medium	Rare	Poor	Poor			0	72
Ohio buckeye	Aesculus glabra	NSL	Low	1	0.4	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	73
Osage-orange	Maclura pomifera	NDH	Medium	4	0.3	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	74
pecan	Carya illinoensis	NSH	Low	3.8	0.2	0.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	75
white mulberry	Morus alba	NSL	FIA	3.4	0.2	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	76
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	77
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	79
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	80
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	81
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	82
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	83
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	84
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	85
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	86
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	87
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	88
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	89
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	90
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	91
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	92
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	93