

**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    10,421    4,023.6      355

**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	23	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	2			Medium	35	Increase	34	36	Very Good	12	16	Likely	1	1	
Hickory	6			Low	36	No Change	17	16	Good	20	18	Infill	13	17	
Maple	4	Abundant	3	FIA	7	Decrease	17	16	Fair	10	11	Migrate	3	3	
Oak	17	Common	23			New	10	11	Poor	11	9				
Pine	8	Rare	49			Unknown	18	17	Very Poor	13	13				
Other	38	Absent	16							FIA Only	4	4			
<b>75</b>		<b>91</b>		<b>96</b> <b>92</b>		<b>96</b> <b>96</b>		<b>81</b> <b>81</b>				<b>17</b> <b>21</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual	63.8	65.5	67.5	67.6	
Average	63.8	65.8	68.2	70.8	
	63.8	66.6	68.6	69.2	
	63.8	66.5	69.7	73.2	
	63.8	66.1	68.8	70.4	
	63.8	66.3	70.3	74.2	
Growing Season	76.7	78.2	79.8	80.3	
	76.7	78.3	80.8	84.0	
May—Sep	76.7	79.5	81.5	82.6	
	76.7	79.5	82.8	86.9	
	76.7	79.9	82.2	84.1	
	76.7	79.7	85.5	89.2	
Coldest Month	44.7	47.0	47.9	47.7	
Average	44.7	46.8	48.0	49.1	
	44.7	47.8	48.0	48.4	
	44.7	46.6	47.6	48.0	
	44.7	44.8	46.4	47.0	
	44.7	45.8	46.8	48.6	
Warmest Month	80.9	82.5	83.3	83.6	
Average	80.9	82.5	83.9	85.8	
	80.9	83.6	84.4	85.1	
	80.9	83.7	85.2	87.4	
	80.9	84.9	86.5	87.3	
	80.9	85.0	88.5	90.3	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual	47.9	50.1	52.9	53.6	
Total	47.9	50.7	53.8	59.7	
	47.9	52.7	55.7	59.1	
	47.9	52.9	56.3	55.3	
	47.9	45.9	50.2	51.0	
	47.9	50.5	46.3	49.4	
Growing Season	19.4	21.6	22.9	23.7	
May—Sep	19.4	21.0	22.4	24.7	
	19.4	23.9	25.8	26.6	
	19.4	23.8	26.8	26.8	
	19.4	19.0	19.8	19.5	
	19.4	20.3	16.5	17.0	

**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
loblolly pine	Pinus taeda	WDH	High	97.5	4949.9	37.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sweetgum	Liquidambar styraciflua	WDH	High	92.9	1286.3	9.7	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	93.4	828.3	6.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
longleaf pine	Pinus palustris	NSH	Medium	31.1	399.7	10.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	4
white oak	Quercus alba	WDH	Medium	47.3	285.5	4.3	No change	No change	High	Common	Good	Good			1	5
swamp tupelo	Nyssa biflora	NDH	Medium	29	281.5	6.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	6
southern red oak	Quercus falcata	WDL	Medium	61.7	277.7	3.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
slash pine	Pinus elliotii	NDH	High	14.2	276.0	10.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
laurel oak	Quercus laurifolia	NDH	Medium	31.1	275.3	4.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
yellow-poplar	Liriodendron tulipifera	WDH	High	55.1	264.4	3.2	No change	No change	High	Common	Good	Good			1	10
red maple	Acer rubrum	WDH	High	62.3	236.3	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
shortleaf pine	Pinus echinata	WDH	High	54.5	231.4	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
pignut hickory	Carya glabra	WDL	Medium	41.6	136.0	2.5	No change	No change	Medium	Common	Fair	Fair			1	13
black cherry	Prunus serotina	WDL	Medium	61.8	131.4	1.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
mockernut hickory	Carya alba	WDL	Medium	42.9	128.6	2.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
sweetbay	Magnolia virginiana	NSL	Medium	16.6	110.2	4.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	20.6	97.8	2.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	17
sand pine	Pinus clausa	NDH	High	3.8	97.5	25.4	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	18
flowering dogwood	Cornus florida	WDL	Medium	53.2	93.8	1.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	19
turkey oak	Quercus laevis	NSH	Medium	10.4	84.8	6.9	No change	No change	High	Common	Good	Good			1	20
eastern redcedar	Juniperus virginiana	WDH	Medium	27.6	79.9	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
common persimmon	Diospyros virginiana	NSL	Low	29.4	69.9	1.3	No change	Sm. inc.	High	Common	Good	Very Good			1	22
blackgum	Nyssa sylvatica	WDL	Medium	42	64.5	1.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
post oak	Quercus stellata	WDH	High	31.4	61.3	1.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
winged elm	Ulmus alata	WDL	Medium	30.6	59.3	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
American holly	Ilex opaca	NSL	Medium	24.4	53.3	1.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	15.5	49.7	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	27
blackjack oak	Quercus marilandica	NSL	Medium	18.6	46.5	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	28
pecan	Carya illinoensis	NSH	Low	4.1	45.2	6.6	No change	No change	Low	Rare	Very Poor	Very Poor			0	29
sourwood	Oxydendrum arboreum	NDL	High	19.9	44.8	1.7	No change	No change	High	Rare	Fair	Fair			1	30
chestnut oak	Quercus prinus	NDH	High	8.9	44.4	4.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	31
willow oak	Quercus phellos	NSL	Low	5.8	43.8	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	32
black willow	Salix nigra	NSH	Low	3.1	35.5	5.9	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	33
black oak	Quercus velutina	WDH	High	17.6	32.7	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
American beech	Fagus grandifolia	WDH	High	12.5	29.8	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	35
northern red oak	Quercus rubra	WDH	Medium	9.8	25.3	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	36
southern magnolia	Magnolia grandiflora	NSL	Low	6.3	23.5	1.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	37
scarlet oak	Quercus coccinea	WDL	Medium	9.9	23.4	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
florida maple	Acer barbatum	NSL	Low	13.7	22.6	1.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	39
sand hickory	Carya pallida	NSL	FIA	4.8	21.3	4.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	40
red mulberry	Morus rubra	NSL	Low	11	21.0	1.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	41
American elm	Ulmus americana	WDH	Medium	8.2	16.6	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	42
water tupelo	Nyssa aquatica	NSH	Medium	2.6	16.5	3.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	43
river birch	Betula nigra	NSL	Low	5.6	16.2	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	44
sassafras	Sassafras albidum	WSL	Low	13.2	15.8	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	45
slippery elm	Ulmus rubra	WSL	Low	4.1	15.7	3.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	46
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	12.3	14.6	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	47



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sugarberry	Celtis laevigata	NDH	Medium	3.2	13.3	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
silver maple	Acer saccharinum	NSH	Low	1	11.9	12.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	49
wild plum	Prunus americana	NSLX	FIA	5.7	10.3	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
Virginia pine	Pinus virginiana	NDH	High	1	9.9	10.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
bluejack oak	Quercus incana	NSL	Low	6.7	9.8	1.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	52
swamp chestnut oak	Quercus michauxii	NSL	Low	6.9	9.4	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
sycamore	Platanus occidentalis	NSL	Low	2.3	9.3	3.1	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	54
pond cypress	Taxodium ascendens	NSH	Medium	0.3	8.8	2.5	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	55
pond pine	Pinus serotina	NSH	Medium	1	8.1	8.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	56
shagbark hickory	Carya ovata	WSL	Medium	4.8	7.4	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	57
bald cypress	Taxodium distichum	NSH	Medium	0.3	7.2	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	58
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	2.8	7.2	2.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	59
boxelder	Acer negundo	WSH	Low	3.2	7.0	1.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	60
eastern redbud	Cercis canadensis	NSL	Low	9.7	6.3	0.6	No change	No change	Medium	Rare	Poor	Poor			1	61
overcup oak	Quercus lyrata	NSL	Medium	1.3	6.3	1.7	No change	No change	Low	Rare	Very Poor	Very Poor			2	62
spruce pine	Pinus glabra	NSL	Low	0.5	6.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	63
ailanthus	Ailanthus altissima	NSL	FIA	0.3	3.7	1.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	64
paulownia	Paulownia tomentosa	NSL	FIA	1.1	3.7	1.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	65
bitternut hickory	Carya cordiformis	WSL	Low	1	3.5	3.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	66
hackberry	Celtis occidentalis	WDH	Medium	2.3	3.2	0.9	Very Lg. dec.	Lg. dec.	High	Rare	Lost	Poor			0	67
American basswood	Tilia americana	WSL	Medium	1.9	2.0	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	68
white mulberry	Morus alba	NSL	FIA	1	1.9	0.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	69
durand oak	Quercus sinuata var. sinuata	NSL	FIA	1	1.9	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	70
cucumbertree	Magnolia acuminata	NSL	Low	1.9	1.7	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	71
black walnut	Juglans nigra	WDH	Low	1.9	1.6	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	72
white ash	Fraxinus americana	WDL	Medium	1	1.3	1.4	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair		Infill +	2	73
American chestnut	Castanea dentata	NSLX	FIA	1	0.6	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	74
redbay	Persea borbonia	NSL	Low	1	0.3	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	75
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	76
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	79
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	80
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	81
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	82
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	83
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	84
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	85
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	86
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	87
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	88
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	89
water elm	Planera aquatica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	90
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	91
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	92
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	93
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	94



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black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	95
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	96