

**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    10,306    3,979.1      360

**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	2			High	17	23	Increase	29	34	Very Good	12	13	Likely	0	0
Hickory	7			Medium	33	50	No Change	10	12	Good	17	21	Infill	12	16
Maple	3	Abundant	3	Low	33	12	Decrease	30	23	Fair	8	7	Migrate	1	1
Oak	17	Common	21	FIA	5		New	7	8	Poor	9	10			
Pine	6	Rare	50				Unknown	12	11	Very Poor	20	15			
Other	39	Absent	12							FIA Only	3	3			
	<b>74</b>		<b>86</b>		<b>88</b>	<b>85</b>		<b>88</b>	<b>88</b>	Unknown	7	6			
											<b>76</b>	<b>75</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	62.5	64.3	66.3	66.3	
	CCSM85	62.5	64.6	67.0	69.7	
	GFDL45	62.5	65.3	67.3	68.1	
	GFDL85	62.5	65.3	68.4	72.0	
	HAD45	62.5	64.8	67.6	69.1	
HAD85	62.5	65.1	69.1	73.1		
Growing Season (May—Sep)	CCSM45	76.0	77.6	79.4	79.8	
	CCSM85	76.0	77.7	80.3	83.7	
	GFDL45	76.0	79.0	80.9	82.3	
	GFDL85	76.0	79.0	82.4	86.5	
	HAD45	76.0	79.2	81.6	83.4	
HAD85	76.0	79.0	84.7	88.7		
Coldest Month (Average)	CCSM45	42.7	45.1	45.8	45.8	
	CCSM85	42.7	45.0	46.1	47.3	
	GFDL45	42.7	45.7	46.0	46.4	
	GFDL85	42.7	44.6	45.6	46.1	
	HAD45	42.7	43.0	44.7	45.3	
HAD85	42.7	44.0	44.9	46.6		
Warmest Month (Average)	CCSM45	80.7	82.5	83.4	83.5	
	CCSM85	80.7	82.7	84.1	86.0	
	GFDL45	80.7	83.3	84.1	85.0	
	GFDL85	80.7	83.6	85.2	87.4	
	HAD45	80.7	84.4	85.9	86.7	
HAD85	80.7	84.7	88.2	90.3		

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.8	47.9	50.5	51.9	
	CCSM85	44.8	47.8	52.0	57.6	
	GFDL45	44.8	50.1	53.3	56.4	
	GFDL85	44.8	49.5	54.9	54.5	
	HAD45	44.8	44.0	47.5	49.1	
HAD85	44.8	49.1	45.0	47.6		
Growing Season (May—Sep)	CCSM45	18.9	21.4	23.6	24.1	
	CCSM85	18.9	20.7	23.1	25.3	
	GFDL45	18.9	23.9	26.1	26.9	
	GFDL85	18.9	22.9	27.1	27.4	
	HAD45	18.9	19.0	19.4	20.0	
HAD85	18.9	21.2	17.0	17.3		

**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	97.6	5786.9	42.0	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sweetgum	Liquidambar styraciflua	WDH	High	94	1411.0	10.8	No change	No change	Medium	Abundant	Good	Good				1 2
water oak	Quercus nigra	WDH	High	87.1	663.3	5.4	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good				1 3
winged elm	Ulmus alata	WDL	Medium	68.3	319.9	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1 4
white oak	Quercus alba	WDH	Medium	57	287.8	3.8	No change	No change	High	Common	Good	Good				1 5
red maple	Acer rubrum	WDH	High	67.1	270.0	2.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				1 6
shortleaf pine	Pinus echinata	WDH	High	47.2	243.6	4.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 7
southern red oak	Quercus falcata	WDL	Medium	53.4	227.5	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1 8
yellow-poplar	Liriodendron tulipifera	WDH	High	46.4	196.4	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair				1 9
laurel oak	Quercus laurifolia	NDH	Medium	34.3	135.1	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 10
post oak	Quercus stellata	WDH	High	47.8	126.5	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1 11
pignut hickory	Carya glabra	WDL	Medium	41.7	122.9	2.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor				0 12
blackgum	Nyssa sylvatica	WDL	Medium	48.3	121.6	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1 13
black cherry	Prunus serotina	WDL	Medium	58.2	121.6	1.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good				1 14
slash pine	Pinus elliotii	NDH	High	8.6	115.6	10.0	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++		1 15
longleaf pine	Pinus palustris	NSH	Medium	12.5	113.5	9.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1 16
eastern redcedar	Juniperus virginiana	WDH	Medium	35.5	107.3	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 17
swamp tupelo	Nyssa biflora	NDH	Medium	15.9	97.5	5.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good				1 18
green ash	Fraxinus pennsylvanica	WSH	Low	23	96.6	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 19
flowering dogwood	Cornus florida	WDL	Medium	52.5	95.5	1.4	No change	Sm. inc.	Medium	Common	Fair	Good				1 20
willow oak	Quercus phellos	NSL	Low	22.4	71.2	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 21
mockernut hickory	Carya alba	WDL	Medium	31.9	70.9	1.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1 22
common persimmon	Diospyros virginiana	NSL	Low	23.3	69.8	2.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair				1 23
American holly	Ilex opaca	NSL	Medium	28.2	50.2	1.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1 24
pecan	Carya illinoensis	NSH	Low	4.1	49.6	5.3	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor				0 25
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	5.7	38.6	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		1 26
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	14.5	34.7	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good				1 27
scarlet oak	Quercus coccinea	WDL	Medium	11.6	33.3	2.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 28
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	13.2	31.1	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				1 29
shagbark hickory	Carya ovata	WSL	Medium	6.5	30.9	2.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 30
black oak	Quercus velutina	WDH	High	23.7	27.7	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 31
black willow	Salix nigra	NSH	Low	8	26.7	2.3	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +		1 32
northern red oak	Quercus rubra	WDH	Medium	11.4	26.1	1.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				1 33
American elm	Ulmus americana	WDH	Medium	12.6	25.8	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1 34
slippery elm	Ulmus rubra	WSL	Low	15.3	22.1	1.2	Lg. dec.	No change	Medium	Rare	Very Poor	Poor				1 35
florida maple	Acer barbatum	NSL	Low	13.5	21.8	0.9	No change	Sm. inc.	High	Rare	Fair	Good				1 36
sourwood	Oxydendrum arboreum	NDL	High	13.8	19.4	0.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				1 37
turkey oak	Quercus laevis	NSH	Medium	3	19.1	4.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		1 38
black walnut	Juglans nigra	WDH	Low	6.4	18.2	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 39
bald cypress	Taxodium distichum	NSH	Medium	3.4	17.9	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 40
sycamore	Platanus occidentalis	NSL	Low	6.3	17.3	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 41
white ash	Fraxinus americana	WDL	Medium	5.5	17.3	1.6	No change	No change	Low	Rare	Very Poor	Very Poor				2 42
swamp chestnut oak	Quercus michauxii	NSL	Low	4.6	16.5	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor				2 43
sugarberry	Celtis laevigata	NDH	Medium	8	14.4	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1 44
eastern redbud	Cercis canadensis	NSL	Low	10.7	14.2	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 45
chestnut oak	Quercus prinus	NDH	High	1.5	13.7	6.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 46
river birch	Betula nigra	NSL	Low	5.8	13.5	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				1 47



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blackjack oak	Quercus marilandica	NSL	Medium	6.6	12.7	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	48
American beech	Fagus grandifolia	WDH	High	7.1	12.3	1.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	49
ailanthus	Ailanthus altissima	NSL	FIA	1	11.7	12.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	50
sweetbay	Magnolia virginiana	NSL	Medium	3.6	11.2	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	51
sassafras	Sassafras albidum	WSL	Low	4.3	10.7	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	52
sand hickory	Carya pallida	NSL	FIA	3.1	9.8	2.2	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	53
live oak	Quercus virginiana	NDH	High	1	8.8	9.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	54
red mulberry	Morus rubra	NSL	Low	11	8.6	0.5	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good			1	55
boxelder	Acer negundo	WSH	Low	5.2	8.4	1.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	1	56
water tupelo	Nyssa aquatica	NSH	Medium	0.8	7.4	1.7	Lg. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	57
pond pine	Pinus serotina	NSH	Medium	1.4	5.5	2.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	58
bluejack oak	Quercus incana	NSL	Low	0.3	4.3	0.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	59
water hickory	Carya aquatica	NSL	Medium	0.8	3.9	0.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
honeylocust	Gleditsia triacanthos	NSH	Low	3.5	3.5	0.9	Lg. dec.	No change	High	Rare	Poor	Fair		Infill +	2	61
overcup oak	Quercus lyrata	NSL	Medium	1.4	3.3	1.4	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	62
hackberry	Celtis occidentalis	WDH	Medium	1.6	3.1	1.3	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	63
cucumbertree	Magnolia acuminata	NSL	Low	1	2.5	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	64
pawpaw	Asimina triloba	NSL	Low	0.3	2.4	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	65
bitternut hickory	Carya cordiformis	WSL	Low	1.1	2.0	0.6	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	66
redbay	Persea borbonia	NSL	Low	1.9	1.7	0.9	Lg. dec.	No change	High	Rare	Poor	Fair			0	67
southern magnolia	Magnolia grandiflora	NSL	Low	0.3	1.5	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	68
wild plum	Prunus americana	NSLX	FIA	0.1	0.8	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	69
paulownia	Paulownia tomentosa	NSL	FIA	0.1	0.6	0.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	70
Virginia pine	Pinus virginiana	NDH	High	1	0.5	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	71
yellow buckeye	Aesculus flava	NSL	Low	1	0.5	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	72
butternut	Juglans cinerea	NSLX	FIA	0.1	0.4	0.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	73
serviceberry	Amelanchier spp.	NSL	Low	1	0.3	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	74
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	75
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	76
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	77
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	78
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	81
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	84
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	85
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	87
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	88