

**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	10,066	3,886.5	219

**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	17	21	Increase	27	31	Very Good	10	11	Likely	3	3
Hickory	5			Medium	34	50	No Change	14	13	Good	15	19	Infill	15	19
Maple	3	Abundant	4	Low	29	12	Decrease	28	25	Fair	14	12	Migrate	1	1
Oak	18	Common	20	FIA	7		New	7	7	Poor	10	8			
Pine	6	Rare	52				Unknown	11	11	Very Poor	16	15			
Other	40	Absent	11							FIA Only	5	5			
	<b>76</b>		<b>87</b>		<b>87</b>	<b>83</b>		<b>87</b>	<b>87</b>	Unknown	4	4			
											<b>74</b>	<b>74</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	60.6	62.4	64.4	64.5	
	CCSM85	60.6	62.7	65.1	68.0	
	GFDL45	60.6	63.5	65.6	66.4	
	GFDL85	60.6	63.5	66.7	70.4	
	HAD45	60.6	62.7	65.6	67.1	
HAD85	60.6	63.0	66.7	70.9		
Growing Season (May—Sep)	CCSM45	74.8	76.5	78.2	78.7	
	CCSM85	74.8	76.5	79.1	82.6	
	GFDL45	74.8	77.8	80.1	81.4	
	GFDL85	74.8	78.0	81.5	85.6	
	HAD45	74.8	77.4	80.1	81.8	
HAD85	74.8	77.4	82.2	86.7		
Coldest Month (Average)	CCSM45	39.5	41.7	42.6	42.6	
	CCSM85	39.5	41.8	42.7	44.0	
	GFDL45	39.5	42.8	43.2	43.9	
	GFDL85	39.5	41.8	42.7	43.7	
	HAD45	39.5	40.1	41.8	42.2	
HAD85	39.5	40.5	41.7	43.3		
Warmest Month (Average)	CCSM45	79.9	82.0	83.0	83.0	
	CCSM85	79.9	82.1	83.8	85.3	
	GFDL45	79.9	82.6	83.5	84.6	
	GFDL85	79.9	83.1	84.9	87.3	
	HAD45	79.9	83.0	84.7	85.4	
HAD85	79.9	83.5	86.5	89.2		

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	46.0	51.6	53.4	55.0	
	CCSM85	46.0	51.7	54.7	61.7	
	GFDL45	46.0	50.2	54.7	57.6	
	GFDL85	46.0	50.0	56.4	57.3	
	HAD45	46.0	49.4	50.4	49.4	
HAD85	46.0	52.4	48.2	47.9		
Growing Season (May—Sep)	CCSM45	22.5	27.3	28.5	29.7	
	CCSM85	22.5	26.0	28.5	32.2	
	GFDL45	22.5	25.7	28.6	30.2	
	GFDL85	22.5	25.1	30.3	31.0	
	HAD45	22.5	24.1	23.9	23.6	
HAD85	22.5	26.4	23.2	21.3		

**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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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	Pinus taeda	WDH	High	86.4	3752.5	32.4	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	80.5	1499.2	14.3	No change	No change	Medium	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	82.9	921.4	8.8	No change	No change	High	Abundant	Very Good	Very Good			1	3
yellow-poplar	Liriodendron tulipifera	WDH	High	62.7	801.4	9.1	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	4
white oak	Quercus alba	WDH	Medium	53.7	392.5	6.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	5
water oak	Quercus nigra	WDH	High	55.5	340.5	5.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
longleaf pine	Pinus palustris	NSH	Medium	13.8	201.5	11.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	7
American holly	Ilex opaca	NSL	Medium	48.2	172.8	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
black cherry	Prunus serotina	WDL	Medium	40.4	166.3	3.2	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	9
swamp tupelo	Nyssa biflora	NDH	Medium	21.2	149.5	5.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	10
southern red oak	Quercus falcata	WDL	Medium	37.2	146.8	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
blackgum	Nyssa sylvatica	WDL	Medium	49.3	117.6	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
mockernut hickory	Carya alba	WDL	Medium	25.1	113.4	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
river birch	Betula nigra	NSL	Low	12.4	98.5	5.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	14
sourwood	Oxydendrum arboreum	NDL	High	36.8	90.3	2.0	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	15
pond pine	Pinus serotina	NSH	Medium	4.8	83.6	12.8	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	16
willow oak	Quercus phellos	NSL	Low	21.7	82.1	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
pignut hickory	Carya glabra	WDL	Medium	26.1	81.7	2.9	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	18
green ash	Fraxinus pennsylvanica	WSH	Low	14.5	81.4	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
flowering dogwood	Cornus florida	WDL	Medium	31.4	66.9	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
northern red oak	Quercus rubra	WDH	Medium	23.2	65.9	2.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	21
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	21.8	63.1	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
black oak	Quercus velutina	WDH	High	26.9	57.5	2.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	23
post oak	Quercus stellata	WDH	High	24.3	51.3	1.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
laurel oak	Quercus laurifolia	NDH	Medium	10.5	49.5	4.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
shortleaf pine	Pinus echinata	WDH	High	18.4	48.6	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	26
eastern redcedar	Juniperus virginiana	WDH	Medium	14.4	47.7	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	27
American elm	Ulmus americana	WDH	Medium	18.7	46.8	2.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	28
black willow	Salix nigra	NSH	Low	9.9	45.2	3.6	No change	No change	Low	Rare	Very Poor	Very Poor			0	29
bald cypress	Taxodium distichum	NSH	Medium	2.1	41.5	11.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	30
scarlet oak	Quercus coccinea	WDL	Medium	19.1	41.4	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
blackjack oak	Quercus marilandica	NSL	Medium	5.4	38.8	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	32
sweetbay	Magnolia virginiana	NSL	Medium	24.5	37.9	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	33
American beech	Fagus grandifolia	WDH	High	10.2	34.0	2.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	34
slash pine	Pinus elliottii	NDH	High	1.3	32.8	5.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	35
winged elm	Ulmus alata	WDL	Medium	12.5	30.4	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	36
slippery elm	Ulmus rubra	WSL	Low	7.9	29.4	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
turkey oak	Quercus laevis	NSH	Medium	4.2	19.4	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	38
boxelder	Acer negundo	WSH	Low	1	19.4	19.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	39
swamp chestnut oak	Quercus michauxii	NSL	Low	5.2	16.5	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
redbay	Persea borbonia	NSL	Low	7.2	16.1	2.0	No change	No change	High	Rare	Fair	Fair			1	41
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	2	13.4	6.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	42
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	6.5	12.3	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	43
loblolly-bay	Gordonia lasianthus	NSH	Medium	3.7	11.1	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
sycamore	Platanus occidentalis	NSL	Low	2.6	9.3	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	45
common persimmon	Diospyros virginiana	NSL	Low	6.9	9.3	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	46
bitternut hickory	Carya cordiformis	WSL	Low	3	8.2	2.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	47



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water tupelo	Nyssa aquatica	NSH	Medium	1	7.8	7.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	48
black walnut	Juglans nigra	WDH	Low	2	7.3	3.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
red mulberry	Morus rubra	NSL	Low	4	6.8	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
paulownia	Paulownia tomentosa	NSL	FIA	1.6	6.5	2.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	51
Shumard oak	Quercus shumardii	NSL	Low	3	6.3	2.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	52
sassafras	Sassafras albidum	WSL	Low	6.8	6.3	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	53
Virginia pine	Pinus virginiana	NDH	High	4.8	5.8	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	54
Carolina ash	Fraxinus caroliniana	NSL	FIA	0.5	5.5	2.6	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	55
eastern redbud	Cercis canadensis	NSL	Low	6.5	4.3	0.9	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor			0	56
white mulberry	Morus alba	NSL	FIA	1	4.3	4.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
chestnut oak	Quercus prinus	NDH	High	1	4.0	4.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	58
pecan	Carya illinoensis	NSH	Low	6.9	3.3	0.6	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	59
pumpkin ash	Fraxinus profunda	NSH	FIA	2.6	3.3	0.9	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	60
white ash	Fraxinus americana	WDL	Medium	4.2	3.0	0.5	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	61
eastern cottonwood	Populus deltoides	NSH	Low	1	2.9	2.9	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	62
overcup oak	Quercus lyrata	NSL	Medium	2.1	2.8	0.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	63
sweet birch	Betula lenta	NDH	High	0.6	2.6	1.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	64
serviceberry	Amelanchier spp.	NSL	Low	2	2.1	1.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	65
northern white-cedar	Thuja occidentalis	WSH	High	1	2.1	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
hackberry	Celtis occidentalis	WDH	Medium	1	2.0	2.0	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	67
shagbark hickory	Carya ovata	WSL	Medium	0.5	1.5	0.8	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	68
florida maple	Acer barbatum	NSL	Low	1	1.5	1.5	No change	No change	High	Rare	Fair	Fair		Infill +	2	69
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.8	1.5	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	70
bluejack oak	Quercus incana	NSL	Low	1.3	1.5	0.4	Very Lg. dec.	Sm. inc.	Medium	Rare	Lost	Fair		Infill +	2	71
sugarberry	Celtis laevigata	NDH	Medium	1	0.9	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	72
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.5	0.7	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	73
northern catalpa	Catalpa speciosa	NSHX	FIA	1	0.6	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	74
American chestnut	Castanea dentata	NSLX	FIA	1	0.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	75
wild plum	Prunus americana	NSLX	FIA	1	0.3	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	76
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	77
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	78
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	79
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	81
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	83
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	85
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	86
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	87