

**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    10,403    4,016.5      353

**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	1									
Hickory	4									
Maple	2	Abundant 6	High 14	17	Increase 23	31	Very Good 8	10	Likely 0	0
Oak	15	Common 14	Medium 32	52	No Change 19	15	Good 16	17	Infill 12	18
Pine	7	Rare 44	Low 31	11	Decrease 19	15	Fair 8	12	Migrate 0	1
Other	35	Absent 12	FIA 3		New 3	5	Poor 16	11		
	<b>64</b>	<b>76</b>	<b>80</b>	<b>80</b>	Unknown 16	14	Very Poor 10	8		
					<b>80</b>	<b>80</b>	FIA Only 3	3		
							Unknown 13	11		
							<b>74</b>	<b>72</b>		

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	65.8	67.4	69.3	69.3	
	CCSM85	65.8	67.6	69.9	72.5	
	GFDL45	65.8	68.4	70.3	71.1	
	GFDL85	65.8	68.4	71.4	74.9	
	HAD45	65.8	67.8	70.2	71.7	
HAD85	65.8	68.1	71.4	75.0		
Growing Season May—Sep	CCSM45	78.2	79.5	81.1	81.5	
	CCSM85	78.2	79.6	82.0	85.1	
	GFDL45	78.2	80.7	82.6	83.9	
	GFDL85	78.2	80.9	84.0	87.9	
	HAD45	78.2	80.9	83.1	84.6	
HAD85	78.2	80.9	85.4	88.9		
Coldest Month Average	CCSM45	47.1	49.4	50.1	50.0	
	CCSM85	47.1	49.1	50.3	51.5	
	GFDL45	47.1	49.8	50.2	50.7	
	GFDL85	47.1	49.1	50.2	50.9	
	HAD45	47.1	47.3	48.8	49.5	
HAD85	47.1	48.2	49.1	50.7		
Warmest Month Average	CCSM45	82.3	83.7	84.6	84.8	
	CCSM85	82.3	83.9	85.3	87.0	
	GFDL45	82.3	84.3	85.1	85.9	
	GFDL85	82.3	84.6	86.0	88.2	
	HAD45	82.3	85.4	86.5	87.1	
HAD85	82.3	85.6	88.3	89.9		

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	45.9	49.3	51.5	52.5	
	CCSM85	45.9	48.8	53.0	56.2	
	GFDL45	45.9	52.5	55.0	57.4	
	GFDL85	45.9	51.6	57.4	56.9	
	HAD45	45.9	43.6	45.0	46.5	
HAD85	45.9	46.4	43.0	44.1		
Growing Season May—Sep	CCSM45	22.6	26.1	27.5	27.4	
	CCSM85	22.6	24.6	28.0	28.9	
	GFDL45	22.6	29.0	30.6	31.6	
	GFDL85	22.6	28.1	32.8	33.2	
	HAD45	22.6	22.1	22.0	21.8	
HAD85	22.6	22.8	19.1	18.8		

**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	90.9	4304.7	36.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair				0 1
slash pine	Pinus elliotii	NDH	High	58.7	1199.9	15.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good				1 2
sweetgum	Liquidambar styraciflua	WDH	High	84.8	961.1	8.5	No change	No change	Medium	Abundant	Good	Good				1 3
water oak	Quercus nigra	WDH	High	83.4	777.9	7.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good				1 4
swamp tupelo	Nyssa biflora	NDH	Medium	72.5	683.4	7.5	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good				1 5
red maple	Acer rubrum	WDH	High	78	672.0	6.8	No change	No change	High	Abundant	Very Good	Very Good				1 6
laurel oak	Quercus laurifolia	NDH	Medium	61.3	428.6	5.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1 7
longleaf pine	Pinus palustris	NSH	Medium	29.9	383.2	9.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 8
pond cypress	Taxodium ascendens	NSH	Medium	23.2	207.3	6.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good				1 9
yellow-poplar	Liriodendron tulipifera	WDH	High	20.7	151.3	5.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair				1 10
southern red oak	Quercus falcata	WDL	Medium	16.6	113.7	5.2	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good				1 11
pond pine	Pinus serotina	NSH	Medium	15.5	110.7	5.1	No change	Sm. inc.	Low	Common	Poor	Fair				1 12
black cherry	Prunus serotina	WDL	Medium	32.6	103.5	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good				1 13
black willow	Salix nigra	NSH	Low	18.7	91.4	4.0	Sm. inc.	Lg. inc.	Low	Common	Fair	Good				1 14
willow oak	Quercus phellos	NSL	Low	16.4	90.2	4.1	No change	No change	Medium	Common	Fair	Fair				1 15
water tupelo	Nyssa aquatica	NSH	Medium	13.7	87.7	5.3	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +		0 16
sweetbay	Magnolia virginiana	NSL	Medium	30.8	76.9	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 17
bald cypress	Taxodium distichum	NSH	Medium	15.8	75.4	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1 18
redbay	Persea borbonia	NSL	Low	31.3	65.7	1.4	No change	Sm. inc.	High	Common	Good	Very Good				1 19
green ash	Fraxinus pennsylvanica	WSH	Low	23.4	53.3	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1 20
live oak	Quercus virginiana	NDH	High	16.6	48.6	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		2 21
loblolly-bay	Gordonia lasianthus	NSH	Medium	9.7	46.3	3.6	No change	No change	Medium	Rare	Poor	Poor				1 22
blackgum	Nyssa sylvatica	WDL	Medium	22.6	46.2	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good				1 23
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	17	43.3	2.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good				1 24
overcup oak	Quercus lyrata	NSL	Medium	9.6	42.9	3.7	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor				0 25
turkey oak	Quercus laevis	NSH	Medium	4.9	36.0	5.7	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +		1 26
sycamore	Platanus occidentalis	NSL	Low	11.1	32.6	2.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 27
post oak	Quercus stellata	WDH	High	12.9	32.0	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		1 28
southern magnolia	Magnolia grandiflora	NSL	Low	7.4	30.1	2.3	No change	No change	Medium	Rare	Poor	Poor				1 29
American elm	Ulmus americana	WDH	Medium	13.1	24.5	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1 30
water hickory	Carya aquatica	NSL	Medium	8	23.4	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 31
common persimmon	Diospyros virginiana	NSL	Low	10.8	22.1	1.1	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor				1 32
cabbage palmetto	Sabal palmetto	NDH	Medium	1	19.0	20.4	No change	Sm. inc.	Medium	Rare	Poor	Fair				0 33
pecan	Carya illinoensis	NSH	Low	3.9	17.9	2.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				2 34
white oak	Quercus alba	WDH	Medium	7.9	17.4	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		2 35
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	4.6	17.2	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 36
American holly	Ilex opaca	NSL	Medium	12.6	14.1	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair				1 37
swamp chestnut oak	Quercus michauxii	NSL	Low	3.8	12.4	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 38
sugarberry	Celtis laevigata	NDH	Medium	4.8	11.6	2.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		2 39
mockernut hickory	Carya alba	WDL	Medium	7	11.5	1.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++		1 40
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	0.8	10.0	2.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 41
spruce pine	Pinus glabra	NSL	Low	3.8	8.5	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 42
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.5	6.8	1.7	No change	No change	High	Rare	Fair	Fair		Infill +		1 43
eastern cottonwood	Populus deltoides	NSH	Low	2.5	6.0	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 44
sassafras	Sassafras albidum	WSL	Low	5.3	5.6	0.6	No change	No change	Medium	Rare	Poor	Poor		Infill +		1 45
winged elm	Ulmus alata	WDL	Medium	4.5	5.3	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1 46
red mulberry	Morus rubra	NSL	Low	7	5.1	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 47



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pignut hickory	<i>Carya glabra</i>	WDL	Medium	3.6	5.0	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +		2	48
slippery elm	<i>Ulmus rubra</i>	WDL	Low	5.5	4.3	0.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		1	49
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	4.3	3.3	0.7	No change	Sm. inc.	Medium	Rare	Poor	Fair				1	50
eastern redcedar	<i>Juniperus virginiana</i>	WDH	Medium	1.8	3.2	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +		2	51
bluejack oak	<i>Quercus incana</i>	NSL	Low	3.4	2.6	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++		2	52
wild plum	<i>Prunus americana</i>	NSLX	FIA	3.2	2.5	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0	53
shortleaf pine	<i>Pinus echinata</i>	WDH	High	1.7	2.5	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2	54
American beech	<i>Fagus grandifolia</i>	WDH	High	1	2.0	2.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor				0	55
sand pine	<i>Pinus clausa</i>	NDH	High	1	1.7	1.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				0	56
waterlocust	<i>Gleditsia aquatica</i>	NSLX	FIA	1.3	1.0	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0	57
river birch	<i>Betula nigra</i>	NSL	Low	1.9	0.9	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2	58
black oak	<i>Quercus velutina</i>	WDH	High	1.4	0.7	0.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				0	59
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	1.2	0.6	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2	60
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	1	0.5	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				0	61
serviceberry	<i>Amelanchier spp.</i>	NSL	Low	1	0.5	0.5	No change	No change	Medium	Rare	Poor	Poor				0	62
florida maple	<i>Acer barbatum</i>	NSL	Low	1.6	0.4	0.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0	63
water elm	<i>Planera aquatica</i>	NSL	Low	1	0.3	0.3	No change	No change	Medium	Rare	Poor	Poor		Infill +		2	64
Virginia pine	<i>Pinus virginiana</i>	NDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	65
boxelder	<i>Acer negundo</i>	WSH	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +		3	66
pawpaw	<i>Asimina triloba</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	67
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3	68
bitternut hickory	<i>Carya cordiformis</i>	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0	69
shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	70
shagbark hickory	<i>Carya ovata</i>	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0	71
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3	72
hackberry	<i>Celtis occidentalis</i>	WDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0	73
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0	74
black ash	<i>Fraxinus nigra</i>	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0	75
silverbell	<i>Halesia spp.</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	76
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	77
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	78
American basswood	<i>Tilia americana</i>	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	79
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0	80