

**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	2,726.3	1,052.6	19

**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			High	19	16	Increase	11	10	Very Good	2	2	Likely	5	4
Hickory	3			Medium	31	41	No Change	5	5	Good	8	7	Infill	15	15
Maple	2	Abundant	0	Low	17	11	Decrease	12	13	Fair	5	5	Migrate	11	14
Oak	8	Common	7	FIA	5		New	35	36	Poor	4	4		<b>31</b>	<b>33</b>
Pine	3	Rare	26				Unknown	9	8	Very Poor	9	10			
Other	16	Absent	39					<b>72</b>	<b>72</b>	FIA Only	1	1			
	<b>33</b>		<b>72</b>		<b>72</b>	<b>68</b>				Unknown	4	3			
											<b>33</b>	<b>32</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	53.7	55.4	57.4	57.7	
	CCSM85	53.7	55.8	58.1	61.0	
	GFDL45	53.7	60.1	59.0	60.1	
	GFDL85	53.7	56.7	60.2	64.1	
	HAD45	53.7	55.9	59.2	60.7	
	HAD85	53.7	55.8	59.9	64.2	
Growing Season (May—Sep)	CCSM45	69.3	71.1	72.7	73.1	
	CCSM85	69.3	71.3	73.6	77.0	
	GFDL45	69.3	76.4	75.3	76.5	
	GFDL85	69.3	72.7	76.6	80.6	
	HAD45	69.3	71.7	74.6	76.4	
	HAD85	69.3	70.9	75.4	79.8	
Coldest Month (Average)	CCSM45	30.5	32.3	33.8	34.3	
	CCSM85	30.5	33.0	34.2	36.0	
	GFDL45	30.5	33.8	34.9	35.7	
	GFDL85	30.5	33.6	35.1	37.0	
	HAD45	30.5	31.4	33.9	34.2	
	HAD85	30.5	32.5	34.4	37.0	
Warmest Month (Average)	CCSM45	75.5	77.5	78.4	78.4	
	CCSM85	75.5	77.6	79.1	80.8	
	GFDL45	75.5	78.4	80.0	81.1	
	GFDL85	75.5	79.3	81.5	84.0	
	HAD45	75.5	78.3	79.6	80.5	
	HAD85	75.5	77.7	79.7	82.5	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	47.1	48.9	49.7	54.1	
	CCSM85	47.1	50.0	52.5	55.2	
	GFDL45	47.1	52.6	56.5	54.9	
	GFDL85	47.1	51.3	55.1	58.2	
	HAD45	47.1	49.1	51.7	51.4	
	HAD85	47.1	53.3	51.2	53.8	
Growing Season (May—Sep)	CCSM45	20.0	23.7	23.1	25.1	
	CCSM85	20.0	22.4	24.0	23.5	
	GFDL45	20.0	21.4	22.0	23.3	
	GFDL85	20.0	21.2	22.2	23.5	
	HAD45	20.0	21.3	20.2	19.6	
	HAD85	20.0	21.9	19.6	19.9	

**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
black cherry	Prunus serotina	WDL	Medium	63.3	184.2	14.3	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	1
scarlet oak	Quercus coccinea	WDL	Medium	43.9	104.2	11.4	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	2
pitch pine	Pinus rigida	NSH	High	36.7	102.4	14.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	3
red maple	Acer rubrum	WDH	High	44.5	79.7	2.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
black locust	Robinia pseudoacacia	NDH	Low	29.4	68.1	13.2	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	5
black oak	Quercus velutina	WDH	High	33.8	64.5	6.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	6
white oak	Quercus alba	WDH	Medium	49.4	50.5	4.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	7
chestnut oak	Quercus prinus	NDH	High	7.8	36.5	4.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	8
blackgum	Nyssa sylvatica	WDL	Medium	23	33.1	5.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	9
eastern white pine	Pinus strobus	WDH	High	27.6	32.0	8.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	10
northern red oak	Quercus rubra	WDH	Medium	51.4	32.0	3.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	11
sweet birch	Betula lenta	NDH	High	12.7	29.9	7.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	12
sassafras	Sassafras albidum	WSL	Low	22.3	23.1	3.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	13
ailanthus	Ailanthus altissima	NSL	FIA	26.8	20.9	11.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	14
bigtooth aspen	Populus grandidentata	NSL	Medium	24	16.8	7.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	15
yellow-poplar	Liriodendron tulipifera	WDH	High	6.1	16.2	7.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	16
pin oak	Quercus palustris	NSH	Low	8.1	15.7	9.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	17
mockernut hickory	Carya alba	WDL	Medium	4.7	13.9	4.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	18
American beech	Fagus grandifolia	WDH	High	6	13.6	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	19
black walnut	Juglans nigra	WDH	Low	12.1	12.4	11.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	20
white mulberry	Morus alba	NSL	FIA	14.7	6.6	7.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	21
sweetgum	Liquidambar styraciflua	WDH	High	5.4	6.1	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	22
pignut hickory	Carya glabra	WDL	Medium	17.6	4.3	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	23
gray birch	Betula populifolia	NSL	Low	14.7	4.2	4.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	24
bitternut hickory	Carya cordiformis	WSL	Low	17.6	3.1	0.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	25
Norway maple	Acer platanoides	NSL	FIA	14.7	2.5	2.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
post oak	Quercus stellata	WDH	High	26.6	2.4	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	27
eastern redcedar	Juniperus virginiana	WDH	Medium	12.1	1.9	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	28
flowering dogwood	Cornus florida	WDL	Medium	20.3	1.5	0.6	Lg. inc.	Lg. dec.	Medium	Rare	Good	Very Poor			2	29
red pine	Pinus resinosa	NSH	Medium	5.7	1.4	0.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	30
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	20.3	1.3	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
Norway spruce	Picea abies	NSH	FIA	14.7	1.0	1.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	32
white ash	Fraxinus americana	WDL	Medium	11.9	0.8	0.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	33
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	34
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	35
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	36
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	37
pond pine	Pinus serotina	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	38
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	39
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	40
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	41
striped maple	Acer pensylvanicum	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	42
sugar maple	Acer saccharum	NSH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	43
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	44
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	45
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	46
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Likely +		3	47



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black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	48
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	49
green ash	<i>Fraxinus pennsylvanica</i>	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	50
loblolly-bay	<i>Gordonia lasianthus</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	51
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
sweetbay	<i>Magnolia virginiana</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	53
water tupelo	<i>Nyssa aquatica</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	54
swamp tupelo	<i>Nyssa biflora</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	55
eastern hophornbeam; ironw	<i>Ostrya virginiana</i>	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	56
sourwood	<i>Oxydendrum arboreum</i>	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	57
redbay	<i>Persea borbonia</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	58
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	59
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate ++	3	61
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	62
cherrybark oak; swamp red o	<i>Quercus pagoda</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	63
laurel oak	<i>Quercus laurifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	64
overcup oak	<i>Quercus lyrata</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	65
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	66
swamp chestnut oak	<i>Quercus michauxii</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	67
water oak	<i>Quercus nigra</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	68
willow oak	<i>Quercus phellos</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	70
winged elm	<i>Ulmus alata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	71
American elm	<i>Ulmus americana</i>	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72