

**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    10,642    4,108.9      160

**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	21	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	3			Medium	33	Increase	22	25	5	6	Likely	4	4	
Hickory	7			Low	32	No Change	23	22	14	13	Infill	37	35	
Maple	4	Abundant	3	FIA	3	Decrease	20	18	Fair	16	17	Migrate	1	1
Oak	15	Common	15			New	9	7	Poor	14	14			
Pine	4	Rare	50			Unknown	6	8	Very Poor	16	15			
Other	35	Absent	11							FIA Only	2	2		
										Unknown	3	5		
											70	72		
													<b>42</b>	<b>40</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual	67.6	69.1	70.8	70.9	
Average	67.6	69.4	71.7	73.9	
GFDL45	67.6	71.5	71.6	72.6	
GFDL85	67.6	70.0	73.0	76.2	
HAD45	67.6	69.8	72.4	73.5	
HAD85	67.6	70.0	73.4	76.9	
Growing Season	79.6	80.9	82.1	82.4	
May—Sep	79.6	81.2	83.3	85.7	
GFDL45	79.6	84.1	83.8	85.7	
GFDL85	79.6	82.4	85.5	89.4	
HAD45	79.6	82.3	84.7	85.3	
HAD85	79.6	82.5	86.7	89.6	
Coldest Month	49.0	51.4	52.3	52.2	
Average	49.0	51.7	52.9	54.1	
GFDL45	49.0	52.3	52.4	52.4	
GFDL85	49.0	50.2	51.0	51.7	
HAD45	49.0	49.9	51.6	52.4	
HAD85	49.0	51.2	52.6	54.4	
Warmest Month	83.0	84.0	84.4	84.6	
Average	83.0	84.4	85.1	86.5	
GFDL45	83.0	86.4	86.4	87.8	
GFDL85	83.0	86.1	87.5	89.8	
HAD45	83.0	86.2	87.3	87.4	
HAD85	83.0	86.4	88.9	89.8	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual	61.0	63.4	69.3	66.8	
Total	61.0	63.4	66.5	67.1	
GFDL45	61.0	66.2	75.4	66.8	
GFDL85	61.0	65.0	66.6	66.6	
HAD45	61.0	59.5	60.8	65.0	
HAD85	61.0	64.7	57.6	61.4	
Growing Season	25.9	26.9	28.8	28.0	
May—Sep	25.9	25.3	26.5	25.4	
GFDL45	25.9	29.8	36.1	29.9	
GFDL85	25.9	29.5	31.4	32.7	
HAD45	25.9	25.5	25.5	26.8	
HAD85	25.9	25.4	22.0	22.5	

**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-DGP30 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	50.2	1350.0	30.2	No change	No change	Medium	Abundant	Good	Good	Infill ++	Infill ++	1	1
slash pine	Pinus elliotii	NDH	High	19.2	634.3	25.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	0	2
sweetgum	Liquidambar styraciflua	WDH	High	66.5	548.3	10.0	No change	No change	Medium	Abundant	Good	Good			1	3
water oak	Quercus nigra	WDH	High	54.6	366.3	8.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
longleaf pine	Pinus palustris	NSH	Medium	16.9	212.7	12.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
blackgum	Nyssa sylvatica	WDL	Medium	43.1	156.6	3.9	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	6
sugarberry	Celtis laevigata	NDH	Medium	23	142.7	8.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	7
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	29.7	93.3	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
southern red oak	Quercus falcata	WDL	Medium	23.7	78.6	3.1	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	9
willow oak	Quercus phellos	NSL	Low	9.9	74.7	6.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	10
water hickory	Carya aquatica	NSL	Medium	16.3	71.7	5.9	Lg. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	11
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	29.9	70.3	4.0	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	12
red maple	Acer rubrum	WDH	High	37.3	67.0	1.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	13
American elm	Ulmus americana	WDH	Medium	29.1	66.1	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	14
American beech	Fagus grandifolia	WDH	High	16.6	63.5	3.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	15
green ash	Fraxinus pennsylvanica	WDL	Low	26.8	59.8	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
white oak	Quercus alba	WDH	Medium	16.8	58.6	2.7	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	17
bald cypress	Taxodium distichum	NSH	Medium	15.4	50.3	6.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	18
black willow	Salix nigra	NSH	Low	6	48.5	13.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	19
laurel oak	Quercus laurifolia	NDH	Medium	18.5	47.9	3.4	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	1	20
post oak	Quercus stellata	WDH	High	20.2	46.6	3.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	21
swamp chestnut oak	Quercus michauxii	NSL	Low	20.9	44.1	2.5	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	1	22
overcup oak	Quercus lyrata	NSL	Medium	22.6	40.0	3.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	23
nuttall oak	Quercus texana	NSH	Medium	11.1	38.7	4.3	No change	Sm. inc.	High	Rare	Fair	Good			0	24
pecan	Carya illinoensis	NSH	Low	4.3	33.8	5.1	No change	No change	Low	Rare	Very Poor	Very Poor			2	25
water tupelo	Nyssa aquatica	NSH	Medium	12.9	33.8	3.7	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	26
winged elm	Ulmus alata	WDL	Medium	37.7	32.4	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	27
American holly	Ilex opaca	NSL	Medium	13.5	24.1	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	28
mockernut hickory	Carya alba	WDL	Medium	8.3	23.1	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	29
black cherry	Prunus serotina	WDL	Medium	15	20.6	1.2	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	30
southern magnolia	Magnolia grandiflora	NSL	Low	12.1	20.3	2.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	31
eastern redcedar	Juniperus virginiana	WDH	Medium	2.8	19.1	6.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	32
sweetbay	Magnolia virginiana	NSL	Medium	6.5	19.0	2.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	33
flowering dogwood	Cornus florida	WDL	Medium	16.4	16.1	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
bitternut hickory	Carya cordiformis	WSL	Low	6.2	13.6	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	35
blackjack oak	Quercus marilandica	NSL	Medium	7.9	11.8	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	36
common persimmon	Diospyros virginiana	NSL	Low	2.7	11.3	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	37
pignut hickory	Carya glabra	WDL	Medium	10	7.7	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	38
swamp tupelo	Nyssa biflora	NDH	Medium	2.7	7.4	2.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	39
yellow-poplar	Liriodendron tulipifera	WDH	High	0.9	6.4	6.8	No change	No change	High	Rare	Fair	Fair	Infill +		2	40
honeylocust	Gleditsia triacanthos	NSH	Low	0.8	6.4	2.1	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	41
sassafras	Sassafras albidum	WSL	Low	7.8	6.4	0.7	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		1	42
wild plum	Prunus americana	NSLX	FIA	0.9	6.3	6.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	43
shortleaf pine	Pinus echinata	WDH	High	1.9	6.0	3.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	44
redbay	Persea borbonia	NSL	Low	3.8	5.4	1.4	No change	No change	High	Rare	Fair	Fair			0	45
eastern cottonwood	Populus deltoides	NSH	Low	1.7	4.8	2.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	46
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	9.1	4.8	1.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	47



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sycamore	Platanus occidentalis	NSL	Low	0.8	3.8	3.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
slippery elm	Ulmus rubra	WSL	Low	12.1	3.4	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	49
red mulberry	Morus rubra	NSL	Low	5.3	3.4	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
cedar elm	Ulmus crassifolia	NDH	Medium	0.5	3.1	1.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	51
black ash	Fraxinus nigra	WSH	Medium	0.7	2.2	1.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	52
swamp white oak	Quercus bicolor	NSL	Low	0.3	1.2	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
black oak	Quercus velutina	WDH	High	6.5	1.0	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
florida maple	Acer barbatum	NSL	Low	0.9	1.0	1.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	55
northern red oak	Quercus rubra	WDH	Medium	0.9	0.9	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	56
black locust	Robinia pseudoacacia	NDH	Low	2.2	0.9	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
bigleaf magnolia	Magnolia macrophylla	NSL	Low	1.9	0.7	0.4	No change	No change	Medium	Rare	Poor	Poor			0	58
boxelder	Acer negundo	WSH	Low	1.1	0.7	0.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	59
striped maple	Acer pensylvanicum	NSL	Medium	1.9	0.6	0.3	No change	No change	Medium	Rare	Poor	Poor			0	60
white ash	Fraxinus americana	WDL	Medium	0.9	0.5	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	61
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.9	0.5	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	62
shagbark hickory	Carya ovata	WSL	Medium	3.8	0.5	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	63
shellbark hickory	Carya laciniosa	NSL	Low	3.8	0.5	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	64
waterlocust	Gleditsia aquatica	NSLX	FIA	3.8	0.2	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	65
hackberry	Celtis occidentalis	WDH	Medium	3.8	0.2	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	66
pin cherry	Prunus pensylvanica	NSL	Low	3.8	0.1	0.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	67
white mulberry	Morus alba	NSL	FIA	2.2	0.1	0.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	68
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	69
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	70
pawpaw	Asimina triloba	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown			3	71
river birch	Betula nigra	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +	3	72
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown			3	75
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	76
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	77
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	79
American basswood	Tilia americana	WSL	Medium	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Likely +		3	80