

**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    10,188    3,933.4      290

**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	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	2			15	22	Increase	32	35	Very Good	10	13	Likely	0	0
Hickory	8			33	50	No Change	15	16	Good	22	22	Infill	13	17
Maple	4	Abundant	5	33	9	Decrease	21	17	Fair	10	11	Migrate	3	2
Oak	16	Common	28	1		New	8	8	Poor	16	13		<b>16</b>	<b>19</b>
Pine	3	Rare	36			Unknown	6	6	Very Poor	9	7			
Other	36	Absent	10	<b>82</b>	<b>81</b>		<b>82</b>	<b>82</b>	FIA Only	0	0			
	<b>69</b>		<b>79</b>						Unknown	5	5			
										<b>72</b>	<b>71</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual	60.9	62.6	64.7	65.0	
Average	60.9	63.1	65.6	68.4	
GFDL45	60.9	63.9	65.7	66.5	
GFDL85	60.9	63.6	66.7	70.2	
HAD45	60.9	63.5	66.5	67.7	
HAD85	60.9	63.8	68.3	72.0	
Growing Season	75.6	77.1	78.9	79.4	
May—Sep	75.6	77.7	80.2	83.7	
GFDL45	75.6	79.1	80.9	82.6	
GFDL85	75.6	78.7	82.3	86.5	
HAD45	75.6	79.1	82.0	83.2	
HAD85	75.6	79.3	85.8	89.2	
Coldest Month	38.7	40.8	42.1	42.2	
Average	38.7	41.6	42.7	44.2	
GFDL45	38.7	42.4	42.5	42.7	
GFDL85	38.7	40.3	41.5	42.0	
HAD45	38.7	39.3	41.4	41.8	
HAD85	38.7	40.4	42.1	43.8	
Warmest Month	80.7	82.0	82.8	83.0	
Average	80.7	82.8	83.9	85.6	
GFDL45	80.7	84.9	85.4	86.4	
GFDL85	80.7	84.0	85.9	88.3	
HAD45	80.7	85.4	87.6	87.9	
HAD85	80.7	86.2	90.5	91.6	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual	56.3	58.3	63.8	61.5	
Total	56.3	59.5	61.5	65.0	
GFDL45	56.3	63.2	67.6	68.4	
GFDL85	56.3	63.6	67.1	70.6	
HAD45	56.3	53.3	59.3	60.9	
HAD85	56.3	57.7	51.4	56.8	
Growing Season	21.4	20.8	21.1	21.4	
May—Sep	21.4	20.2	19.4	20.7	
GFDL45	21.4	24.2	25.8	26.2	
GFDL85	21.4	25.8	27.1	28.0	
HAD45	21.4	18.7	20.2	18.8	
HAD85	21.4	20.7	15.4	16.0	

**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	74.8	2208.6	20.3	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	90.6	1532.4	12.7	No change	No change	Medium	Abundant	Good	Good			1	2
southern red oak	Quercus falcata	WDL	Medium	77.1	662.6	6.5	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	3
white oak	Quercus alba	WDH	Medium	65.9	583.6	7.0	No change	No change	High	Abundant	Very Good	Very Good			1	4
winged elm	Ulmus alata	WDL	Medium	80.7	555.1	5.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
shortleaf pine	Pinus echinata	WDH	High	48	434.8	6.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
eastern redcedar	Juniperus virginiana	WDH	Medium	66.5	433.0	4.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
post oak	Quercus stellata	WDH	High	65.9	398.3	4.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	8
cherrybark oak; swamp red oak	Quercus pagoda	NSL	Medium	51.1	314.2	4.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
red maple	Acer rubrum	WDH	High	65.6	311.1	3.8	No change	Sm. inc.	High	Common	Good	Very Good			1	10
American elm	Ulmus americana	WDH	Medium	32.5	237.9	3.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	11
mockernut hickory	Carya alba	WDL	Medium	57.7	222.9	2.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
black cherry	Prunus serotina	WDL	Medium	65.4	216.4	2.5	No change	No change	Low	Common	Poor	Poor			0	13
pignut hickory	Carya glabra	WDL	Medium	54.4	207.2	3.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	14
green ash	Fraxinus pennsylvanica	WSH	Low	44.1	203.6	3.9	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	15
water oak	Quercus nigra	WDH	High	34.1	190.7	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
sycamore	Platanus occidentalis	NSL	Low	31.7	188.5	3.8	No change	No change	Medium	Common	Fair	Fair			1	17
yellow-poplar	Liriodendron tulipifera	WDH	High	42.3	164.8	2.9	No change	No change	High	Common	Good	Good			1	18
black oak	Quercus velutina	WDH	High	38.2	159.9	3.2	No change	No change	Medium	Common	Fair	Fair			1	19
flowering dogwood	Cornus florida	WDL	Medium	53.1	140.4	2.1	No change	No change	Medium	Common	Fair	Fair			1	20
sassafras	Sassafras albidum	WSL	Low	20.1	137.1	6.1	Sm. dec.	No change	Medium	Common	Poor	Fair			1	21
blackgum	Nyssa sylvatica	WDL	Medium	50.1	123.5	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
black willow	Salix nigra	NSH	Low	25.4	114.9	3.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
bald cypress	Taxodium distichum	NSH	Medium	8.8	113.0	12.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		0	24
river birch	Betula nigra	NSL	Low	17	111.6	6.7	Sm. dec.	No change	Medium	Common	Poor	Fair			1	25
common persimmon	Diospyros virginiana	NSL	Low	40.2	111.2	2.0	No change	Sm. inc.	High	Common	Good	Very Good			1	26
slippery elm	Ulmus rubra	WSL	Low	25.2	98.4	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	27
black locust	Robinia pseudoacacia	NDH	Low	8.2	94.9	7.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	28
boxelder	Acer negundo	WSH	Low	13.9	94.0	4.2	Sm. dec.	No change	High	Common	Fair	Good			1	29
willow oak	Quercus phellos	NSL	Low	13.2	86.5	5.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	30
eastern hophornbeam; ironwood	Ostrya virginiana	WSL	Low	32.2	65.2	1.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	31
scarlet oak	Quercus coccinea	WDL	Medium	16.1	63.8	3.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	32
shagbark hickory	Carya ovata	WSL	Medium	18.9	56.9	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	33
American hornbeam; muscadine	Carpinus caroliniana	WSL	Low	17.5	41.8	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	34
blackjack oak	Quercus marilandica	NSL	Medium	19.3	38.3	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	35
northern red oak	Quercus rubra	WDH	Medium	16.2	34.9	1.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	36
American beech	Fagus grandifolia	WDH	High	14	32.1	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	37
white ash	Fraxinus americana	WDL	Medium	19.7	31.6	1.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	38
eastern redbud	Cercis canadensis	NSL	Low	11.8	23.8	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
swamp chestnut oak	Quercus michauxii	NSL	Low	5.8	23.3	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
Osage-orange	Maclura pomifera	NDH	Medium	4.9	22.5	4.6	No change	No change	High	Rare	Fair	Fair		Infill +	2	41
silver maple	Acer saccharinum	NSH	Low	3.9	20.8	5.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	42
red mulberry	Morus rubra	NSL	Low	17.9	19.6	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	43
pecan	Carya illinoensis	NSH	Low	7.1	18.9	2.4	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	44
nuttall oak	Quercus texana	NSH	Medium	3.9	18.0	4.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	45
sugarberry	Celtis laevigata	NDH	Medium	7.6	16.4	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	46
water elm	Planera aquatica	NSL	Low	3.9	15.7	4.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	47



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Shumard oak	Quercus shumardii	NSL	Low	11.9	15.7	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	48
black hickory	Carya texana	NDL	High	4.9	14.0	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	49
swamp tupelo	Nyssa biflora	NDH	Medium	1	13.1	13.3	No change	No change	Low	Rare	Very Poor	Very Poor			2	50
chinkapin oak	Quercus muehlenbergii	NSL	Medium	2.6	11.7	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
florida maple	Acer barbatum	NSL	Low	2	10.2	2.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	52
bitternut hickory	Carya cordiformis	WSL	Low	8.5	10.0	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	53
overcup oak	Quercus lyrata	NSL	Medium	4.9	9.8	2.0	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	54
honeylocust	Gleditsia triacanthos	NSH	Low	2.5	7.9	2.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	55
black walnut	Juglans nigra	WDH	Low	3.4	6.5	1.6	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	56
laurel oak	Quercus laurifolia	NDH	Medium	1.1	4.9	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	2	57
sourwood	Oxydendrum arboreum	NDL	High	1	2.9	2.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	58
eastern cottonwood	Populus deltoides	NSH	Low	2	2.8	1.0	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	59
shellbark hickory	Carya laciniosa	NSL	Low	1	1.6	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
water hickory	Carya aquatica	NSL	Medium	1	1.3	1.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	61
pawpaw	Asimina triloba	NSL	Low	1.8	1.2	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	62
ailanthus	Ailanthus altissima	NSL	FIA	1	1.1	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	63
American holly	Ilex opaca	NSL	Medium	2	0.9	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	64
cedar elm	Ulmus crassifolia	NDH	Medium	1	0.8	0.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	65
serviceberry	Amelanchier spp.	NSL	Low	2	0.5	0.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
water tupelo	Nyssa aquatica	NSH	Medium	0.4	0.4	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	67
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1	0.3	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	68
slash pine	Pinus elliotii	NDH	High	1	0.1	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	69
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	70
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	71
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	73
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	74
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	75
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	77
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	79
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	81
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82