

**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    10,533    4,066.9      392

**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	26	Increase	RCP45	RCP85	Very Good	16	19	Likely	1	0	
Ash	3			Medium	37	56	No Change	15	15	Good	21	20	Infill	12	14
Hickory	6			Low	38	10	Decrease	24	21	Fair	7	6	Migrate	1	3
Maple	3	Abundant	4	FIA	3		New	9	10	Poor	13	14			
Oak	20	Common	29				Unknown	9	8	Very Poor	18	15			
Pine	6	Rare	45							FIA Only	3	3			
Other	40	Absent	15							Unknown	6	5			
	<b>78</b>		<b>93</b>		<b>93</b>	<b>92</b>		<b>93</b>	<b>93</b>		<b>84</b>	<b>82</b>		<b>14</b>	<b>17</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	65.1	66.7	68.6	68.6	
	CCSM85	65.1	66.9	69.4	71.8	
	GFDL45	65.1	67.7	69.5	70.3	
	GFDL85	65.1	67.5	70.5	73.9	
	HAD45	65.1	67.2	69.9	71.3	
	HAD85	65.1	67.5	71.2	75.1	
Growing Season (May—Sep)	CCSM45	77.5	79.0	80.5	80.9	
	CCSM85	77.5	79.0	81.5	84.5	
	GFDL45	77.5	80.2	81.8	83.2	
	GFDL85	77.5	80.0	83.1	87.0	
	HAD45	77.5	80.6	82.9	84.3	
	HAD85	77.5	80.5	85.8	89.2	
Coldest Month Average	CCSM45	46.2	48.3	49.2	48.9	
	CCSM85	46.2	48.4	49.7	50.8	
	GFDL45	46.2	49.6	49.8	49.9	
	GFDL85	46.2	47.8	48.9	49.4	
	HAD45	46.2	46.2	47.9	48.6	
	HAD85	46.2	47.4	48.6	50.4	
Warmest Month Average	CCSM45	81.0	82.5	83.1	83.3	
	CCSM85	81.0	82.4	83.7	85.5	
	GFDL45	81.0	83.9	84.4	85.2	
	GFDL85	81.0	83.1	84.5	86.7	
	HAD45	81.0	84.9	86.4	87.0	
	HAD85	81.0	85.1	88.4	89.9	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	59.3	61.4	66.1	65.3	
	CCSM85	59.3	63.5	64.5	70.5	
	GFDL45	59.3	65.6	70.0	70.5	
	GFDL85	59.3	65.5	68.2	68.4	
	HAD45	59.3	58.1	63.9	64.4	
	HAD85	59.3	64.5	57.7	59.9	
Growing Season (May—Sep)	CCSM45	25.0	26.6	28.2	27.8	
	CCSM85	25.0	25.1	26.2	28.4	
	GFDL45	25.0	29.8	32.8	31.2	
	GFDL85	25.0	30.6	33.4	33.9	
	HAD45	25.0	24.1	26.1	25.8	
	HAD85	25.0	26.8	20.7	21.5	

**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-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	92	4677.7	35.3	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	93.7	1035.6	8.3	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	94.3	878.6	6.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
longleaf pine	Pinus palustris	NSH	Medium	34.8	500.3	10.0	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
slash pine	Pinus elliottii	NDH	High	29.6	437.1	8.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
laurel oak	Quercus laurifolia	NDH	Medium	51.9	361.4	5.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
sweetbay	Magnolia virginiana	NSL	Medium	45.8	270.5	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
blackgum	Nyssa sylvatica	WDL	Medium	64.6	259.9	2.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
red maple	Acer rubrum	WDH	High	77.8	252.8	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
shortleaf pine	Pinus echinata	WDH	High	39.2	210.5	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
yellow-poplar	Liriodendron tulipifera	WDH	High	56.5	200.6	2.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
green ash	Fraxinus pennsylvanica	WSH	Low	34.1	160.2	3.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
spruce pine	Pinus glabra	NSL	Low	31.6	135.5	3.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	13
swamp tupelo	Nyssa biflora	NDH	Medium	24.1	134.6	3.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
southern red oak	Quercus falcata	WDL	Medium	54.3	132.2	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
flowering dogwood	Cornus florida	WDL	Medium	58.4	131.6	1.8	No change	No change	Medium	Common	Fair	Fair			1	16
American holly	Ilex opaca	NSL	Medium	54.5	127.8	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	41.2	122.7	2.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	18
white oak	Quercus alba	WDH	Medium	41	116.2	2.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
bald cypress	Taxodium distichum	NSH	Medium	13.9	114.6	6.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	20
water tupelo	Nyssa aquatica	NSH	Medium	5.1	114.2	11.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	21
black cherry	Prunus serotina	WDL	Medium	51.7	100.0	1.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	23.4	85.6	2.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	23
American beech	Fagus grandifolia	WDH	High	26.5	77.8	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
winged elm	Ulmus alata	WDL	Medium	32.1	73.3	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
eastern redcedar	Juniperus virginiana	WDH	Medium	26.5	71.6	1.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
sugarberry	Celtis laevigata	NDH	Medium	17.2	71.0	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
southern magnolia	Magnolia grandiflora	NSL	Low	25.6	69.5	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
overcup oak	Quercus lyrata	NSL	Medium	13.5	66.3	3.7	No change	Sm. inc.	Low	Common	Poor	Fair	Infill +	Infill +	1	29
pignut hickory	Carya glabra	WDL	Medium	21.4	58.5	1.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	30
water hickory	Carya aquatica	NSL	Medium	9.2	57.5	4.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	31
sourwood	Oxydendrum arboreum	NDL	High	30.9	56.3	1.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	32
post oak	Quercus stellata	WDH	High	24.1	53.2	1.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	33
mockernut hickory	Carya alba	WDL	Medium	29.2	43.4	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	34
American elm	Ulmus americana	WDH	Medium	22.5	39.8	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	35
willow oak	Quercus phellos	NSL	Low	19.3	39.5	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	36
florida maple	Acer barbatum	NSL	Low	10.5	39.2	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	37
common persimmon	Diospyros virginiana	NSL	Low	34.4	37.3	0.8	No change	Sm. inc.	High	Rare	Fair	Good			1	38
bluejack oak	Quercus incana	NSL	Low	2.3	35.2	8.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	16	34.9	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	40
nuttall oak	Quercus texana	NSH	Medium	4.9	33.6	5.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	41
pecan	Carya illinoensis	NSH	Low	8.1	29.2	3.3	No change	No change	Low	Rare	Very Poor	Very Poor			0	42
black willow	Salix nigra	NSH	Low	5.5	26.3	3.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	43
slippery elm	Ulmus rubra	WSL	Low	13	22.0	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
sycamore	Platanus occidentalis	NSL	Low	8.4	21.5	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	45
bigleaf magnolia	Magnolia macrophylla	NSL	Low	12.5	21.2	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
cucumbertree	Magnolia acuminata	NSL	Low	6.1	18.7	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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eastern cottonwood	Populus deltoides	NSH	Low	3.3	17.7	4.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
shagbark hickory	Carya ovata	WSL	Medium	7.3	17.5	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
redbay	Persea borbonia	NSL	Low	14.1	17.4	0.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	50
swamp chestnut oak	Quercus michauxii	NSL	Low	10.7	15.7	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	51
blackjack oak	Quercus marilandica	NSL	Medium	6	15.1	1.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	52
river birch	Betula nigra	NSL	Low	3.4	12.4	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	53
white ash	Fraxinus americana	WDL	Medium	6.1	12.0	1.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	54
turkey oak	Quercus laevis	NSH	Medium	2.2	11.2	2.0	No change	No change	High	Rare	Fair	Fair	Infill +		2	55
bitternut hickory	Carya cordiformis	WSL	Low	6.7	11.0	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	56
live oak	Quercus virginiana	NDH	High	0.8	9.6	8.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	57
Shumard oak	Quercus shumardii	NSL	Low	3.9	9.4	0.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	58
black oak	Quercus velutina	WDH	High	4.8	9.4	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
chinkapin oak	Quercus muehlenbergii	NSL	Medium	2.8	8.6	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	1.8	8.4	3.9	No change	No change	Low	Rare	Very Poor	Very Poor			2	61
black walnut	Juglans nigra	WDH	Low	2.4	8.4	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	62
boxelder	Acer negundo	WSH	Low	3.4	7.9	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	63
sassafras	Sassafras albidum	WSL	Low	11.5	6.6	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	64
northern red oak	Quercus rubra	WDH	Medium	2	6.2	1.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	65
eastern redbud	Cercis canadensis	NSL	Low	7.6	6.1	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	66
red mulberry	Morus rubra	NSL	Low	5.1	5.4	0.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	67
water elm	Planera aquatica	NSL	Low	2.6	5.1	0.8	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	68
pond cypress	Taxodium ascendens	NSH	Medium	0.3	4.3	1.6	Lg. dec.	No change	Medium	Rare	Very Poor	Poor			0	69
American basswood	Tilia americana	WSL	Medium	0.6	2.6	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	70
wild plum	Prunus americana	NSLX	FIA	5.7	2.6	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
honeylocust	Gleditsia triacanthos	NSH	Low	1.9	2.5	1.3	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	72
pumpkin ash	Fraxinus profunda	NSH	FIA	0.9	2.5	2.6	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	73
hackberry	Celtis occidentalis	WDH	Medium	2.4	2.4	0.8	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	74
Virginia pine	Pinus virginiana	NDH	High	0.9	2.4	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	75
black locust	Robinia pseudoacacia	NDH	Low	0.9	0.5	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	76
durand oak	Quercus sinuata var. sinuata	NSL	FIA	0.6	0.4	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	77
bur oak	Quercus macrocarpa	NDH	Medium	0.9	0.3	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	78
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	79
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	80
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	81
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	82
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	83
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	85
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	87
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	88
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	89
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Likely +		3	90
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	91
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	92
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	93