

**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    10,421    4,023.6      312

**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	23	Increase	RCP45	RCP85	Very Good	14	14	Likely	0	0	
Ash	2			Medium	32	48	No Change	9	9	Good	12	14	Infill	8	11
Hickory	7			Low	32	12	Decrease	31	29	Fair	8	8	Migrate	0	1
Maple	4	Abundant	4	FIA	5		New	7	8	Poor	19	17		8	12
Oak	18	Common	24				Unknown	10	9	Very Poor	15	15			
Pine	7	Rare	46							FIA Only	3	3			
Other	36	Absent	12							Unknown	5	4			
	<b>74</b>		<b>86</b>		<b>86</b>	<b>83</b>		<b>86</b>	<b>86</b>		<b>76</b>	<b>75</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	64.6	66.3	68.3	68.3	
Average	CCSM85	64.6	66.5	68.9	71.6	
	GFDL45	64.6	67.5	69.4	70.1	
	GFDL85	64.6	67.3	70.5	74.1	
	HAD45	64.6	66.9	69.5	71.1	
	HAD85	64.6	67.1	71.0	74.9	
Growing Season	CCSM45	77.6	79.0	80.7	81.1	
	CCSM85	77.6	79.1	81.6	84.9	
May—Sep	GFDL45	77.6	80.6	82.4	83.5	
	GFDL85	77.6	80.5	83.8	87.9	
	HAD45	77.6	80.8	83.1	85.0	
	HAD85	77.6	80.6	86.3	90.0	
Coldest Month	CCSM45	45.3	47.6	48.4	48.2	
	CCSM85	45.3	47.4	48.5	49.7	
Average	GFDL45	45.3	48.3	48.5	49.0	
	GFDL85	45.3	47.3	48.3	48.8	
	HAD45	45.3	45.5	47.0	47.8	
	HAD85	45.3	46.4	47.4	49.1	
Warmest Month	CCSM45	81.8	83.3	84.1	84.5	
	CCSM85	81.8	83.4	84.7	86.7	
Average	GFDL45	81.8	84.6	85.3	86.0	
	GFDL85	81.8	84.8	86.2	88.6	
	HAD45	81.8	85.7	87.2	88.0	
	HAD85	81.8	85.8	89.3	91.1	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	45.7	48.4	50.3	52.2	
Total	CCSM85	45.7	48.3	52.2	57.0	
	GFDL45	45.7	50.2	52.7	56.1	
	GFDL85	45.7	50.1	54.2	52.6	
	HAD45	45.7	43.3	46.6	47.9	
	HAD85	45.7	47.5	43.8	46.6	
Growing Season	CCSM45	19.3	22.0	23.0	24.4	
Season	CCSM85	19.3	20.9	23.4	25.1	
May—Sep	GFDL45	19.3	23.7	25.4	26.2	
	GFDL85	19.3	23.2	26.6	26.3	
	HAD45	19.3	18.9	19.4	19.2	
	HAD85	19.3	20.0	16.6	17.0	

**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	88.3	3650.1	32.0	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	87.7	1037.4	9.5	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	87.1	1032.2	9.2	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
slash pine	Pinus elliottii	NDH	High	37	999.1	19.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
red maple	Acer rubrum	WDH	High	61.3	449.9	5.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	5
laurel oak	Quercus laurifolia	NDH	Medium	43	354.0	5.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
swamp tupelo	Nyssa biflora	NDH	Medium	37.7	310.7	5.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
longleaf pine	Pinus palustris	NSH	Medium	19.5	244.9	10.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
southern red oak	Quercus falcata	WDL	Medium	42.4	177.9	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
yellow-poplar	Liriodendron tulipifera	WDH	High	27.4	166.6	4.5	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	10
black willow	Salix nigra	NSH	Low	14.9	143.8	8.1	No change	Sm. inc.	Low	Common	Poor	Fair			1	11
mockernut hickory	Carya alba	WDL	Medium	32.4	130.8	4.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
winged elm	Ulmus alata	WDL	Medium	37.7	127.1	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
white oak	Quercus alba	WDH	Medium	30.1	119.2	3.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	14
black cherry	Prunus serotina	WDL	Medium	57.3	113.7	1.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
green ash	Fraxinus pennsylvanica	WSH	Low	30.2	109.8	2.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
American elm	Ulmus americana	WDH	Medium	30.2	100.2	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
bald cypress	Taxodium distichum	NSH	Medium	7.2	85.6	8.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		0	18
willow oak	Quercus phellos	NSL	Low	17.5	84.4	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	19
shortleaf pine	Pinus echinata	WDH	High	32.5	82.5	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
pignut hickory	Carya glabra	WDL	Medium	30.8	77.3	2.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
post oak	Quercus stellata	WDH	High	22.6	76.7	3.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
sugarberry	Celtis laevigata	NDH	Medium	16	75.0	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
blackgum	Nyssa sylvatica	WDL	Medium	34.8	73.3	1.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
flowering dogwood	Cornus florida	WDL	Medium	27.8	67.7	1.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	25
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	21.7	66.5	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
common persimmon	Diospyros virginiana	NSL	Low	32.4	66.3	2.0	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	27
pond cypress	Taxodium ascendens	NSH	Medium	2.9	62.8	13.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	28
American holly	Ilex opaca	NSL	Medium	22.5	50.0	1.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	29
pecan	Carya illinoensis	NSH	Low	5	45.2	6.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	30
overcup oak	Quercus lyrata	NSL	Medium	8.4	42.8	3.2	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	31
sycamore	Platanus occidentalis	NSL	Low	7.5	40.6	4.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
river birch	Betula nigra	NSL	Low	8.9	34.6	2.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	33
sweetbay	Magnolia virginiana	NSL	Medium	14.6	34.3	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	34
swamp chestnut oak	Quercus michauxii	NSL	Low	10.8	34.1	2.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
turkey oak	Quercus laevis	NSH	Medium	3.8	33.0	5.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	36
American beech	Fagus grandifolia	WDH	High	7.3	31.8	2.6	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	37
sand pine	Pinus clausa	NDH	High	1	30.2	31.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	38
florida maple	Acer barbatum	NSL	Low	18.6	29.1	1.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	39
red mulberry	Morus rubra	NSL	Low	14.9	27.2	1.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
water tupelo	Nyssa aquatica	NSH	Medium	5.3	26.0	2.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	41
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	10.1	17.3	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	42
southern magnolia	Magnolia grandiflora	NSL	Low	7.2	14.5	1.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	43
black oak	Quercus velutina	WDH	High	5.3	13.2	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
blackjack oak	Quercus marilandica	NSL	Medium	3.4	12.9	3.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	45
slippery elm	Ulmus rubra	WSL	Low	7.8	11.8	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	46
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	3.3	11.6	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	47



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boxelder	Acer negundo	WSH	Low	3.8	10.7	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +		2 48
sassafras	Sassafras albidum	WSL	Low	7.9	10.6	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++		1 49
eastern redcedar	Juniperus virginiana	WDH	Medium	10	8.2	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1 50
scarlet oak	Quercus coccinea	WDL	Medium	4.3	7.3	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 51
spruce pine	Pinus glabra	NSL	Low	1.4	6.1	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 52
redbay	Persea borbonia	NSL	Low	2.9	5.9	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				1 53
hackberry	Celtis occidentalis	WDH	Medium	3.1	5.9	1.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 54
shagbark hickory	Carya ovata	WSL	Medium	3.8	5.6	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 55
silver maple	Acer saccharinum	NSH	Low	1	5.4	5.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 56
eastern redbud	Cercis canadensis	NSL	Low	4.5	5.4	1.1	No change	No change	Medium	Rare	Poor	Poor		Infill +		1 57
northern red oak	Quercus rubra	WDH	Medium	3.9	5.3	1.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0 58
sourwood	Oxydendrum arboreum	NDL	High	2.7	5.2	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 59
ailanthus	Ailanthus altissima	NSL	FIA	0.6	3.7	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 60
black locust	Robinia pseudoacacia	NDH	Low	1	3.6	3.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 61
water hickory	Carya aquatica	NSL	Medium	1	3.5	3.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 62
ogechee tupelo	Nyssa ogeche	NSLX	FIA	0.3	3.4	1.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 63
bitternut hickory	Carya cordiformis	WSL	Low	1.8	3.0	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 64
chestnut oak	Quercus prinus	NDH	High	2.3	2.2	0.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0 65
pond pine	Pinus serotina	NSH	Medium	1.1	1.7	0.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				0 66
pawpaw	Asimina triloba	NSL	Low	1.8	1.6	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 67
live oak	Quercus virginiana	NDH	High	1	1.5	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 68
white ash	Fraxinus americana	WDL	Medium	1	1.3	1.3	No change	No change	Low	Rare	Very Poor	Very Poor				0 69
sand hickory	Carya pallida	NSL	FIA	1	1.1	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only				0 70
Shumard oak	Quercus shumardii	NSL	Low	1	0.9	0.9	Lg. dec.	No change	High	Rare	Poor	Fair				0 71
white mulberry	Morus alba	NSL	FIA	0.4	0.9	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 72
wild plum	Prunus americana	NSLX	FIA	1.2	0.8	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 73
bluejack oak	Quercus incana	NSL	Low	1	0.7	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 74
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 75
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 76
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 77
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 78
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 79
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 80
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0 81
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 82
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 83
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 84
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 85
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 86