

**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      265

**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									
Hickory	3									
Maple	3	Abundant 6	High 13	19	Increase 29	33	Very Good 9	9	Likely 1	1
Oak	14	Common 10	Medium 33	44	No Change 11	13	Good 20	22	Infill 20	23
Pine	6	Rare 47	Low 25	11	Decrease 19	13	Fair 3	9	Migrate 0	0
Other	36	Absent 10	FIA 4		New 8	7	Poor 15	9		
	<b>63</b>	<b>73</b>	<b>75</b>	<b>74</b>	Unknown 8	9	Very Poor 12	10		
					<b>75</b>	<b>75</b>	FIA Only 3	3		
							Unknown 4	5		
							<b>66</b>	<b>67</b>		

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual CCSM45	66.3	67.8	69.8	69.8	
Average CCSM85	66.3	68.1	70.5	73.0	
GFDL45	66.3	69.0	70.9	71.6	
GFDL85	66.3	68.9	72.0	75.6	
HAD45	66.3	68.5	71.1	72.6	
HAD85	66.3	68.8	72.5	76.4	
Growing Season CCSM45	78.3	79.6	81.2	81.6	
Season CCSM85	78.3	79.7	82.1	85.2	
May—Sep GFDL45	78.3	81.0	82.9	84.0	
GFDL85	78.3	81.1	84.2	88.3	
HAD45	78.3	81.6	83.8	85.6	
HAD85	78.3	81.5	86.7	90.4	
Coldest Month CCSM45	47.9	50.1	51.0	50.6	
Month CCSM85	47.9	49.8	51.0	52.2	
Average GFDL45	47.9	50.7	51.0	51.4	
GFDL85	47.9	50.0	51.1	51.7	
HAD45	47.9	47.9	49.3	50.2	
HAD85	47.9	48.8	49.8	51.5	
Warmest Month CCSM45	81.9	83.3	84.1	84.5	
Month CCSM85	81.9	83.4	84.7	86.6	
Average GFDL45	81.9	84.5	85.2	85.9	
GFDL85	81.9	84.6	86.0	88.3	
HAD45	81.9	85.8	87.2	88.0	
HAD85	81.9	85.9	89.1	90.7	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual CCSM45	47.4	50.5	52.0	54.3	
Total CCSM85	47.4	49.9	53.9	56.9	
GFDL45	47.4	52.0	54.4	57.2	
GFDL85	47.4	51.5	56.4	54.1	
HAD45	47.4	44.6	47.1	49.1	
HAD85	47.4	47.9	44.4	46.9	
Growing Season CCSM45	20.8	23.4	23.8	25.2	
Season CCSM85	20.8	22.1	25.2	26.0	
May—Sep GFDL45	20.8	25.4	26.8	27.5	
GFDL85	20.8	24.9	28.8	28.1	
HAD45	20.8	20.0	20.3	20.1	
HAD85	20.8	20.5	17.4	17.9	

**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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Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
slash pine	Pinus elliottii	NDH	High	79.2	2987.7	29.1	No change	No change	Medium	Abundant	Good	Good			1	1
loblolly pine	Pinus taeda	WDH	High	66.6	1944.1	20.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
swamp tupelo	Nyssa biflora	NDH	Medium	66.9	913.3	10.8	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	3
water oak	Quercus nigra	WDH	High	68	857.0	9.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
red maple	Acer rubrum	WDH	High	71.5	809.3	9.2	No change	No change	High	Abundant	Very Good	Very Good			1	5
laurel oak	Quercus laurifolia	NDH	Medium	56.8	554.0	7.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	6
longleaf pine	Pinus palustris	NSH	Medium	23.5	478.0	15.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
pond cypress	Taxodium ascendens	NSH	Medium	25.2	342.0	10.9	Sm. dec.	No change	Medium	Common	Poor	Fair			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	25.5	327.0	9.8	No change	Sm. dec.	High	Common	Good	Fair			1	9
sweetgum	Liquidambar styraciflua	WDH	High	35.7	287.1	5.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
sweetbay	Magnolia virginiana	NSL	Medium	37.7	191.5	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
live oak	Quercus virginiana	NDH	High	18.4	134.8	5.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	12
black cherry	Prunus serotina	WDL	Medium	30.8	101.9	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
black willow	Salix nigra	NSH	Low	13.9	84.7	5.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
blackgum	Nyssa sylvatica	WDL	Medium	24.5	84.4	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
water tupelo	Nyssa aquatica	NSH	Medium	6.9	57.8	6.5	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	16
green ash	Fraxinus pennsylvanica	WSH	Low	14.7	49.9	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	17
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	12	48.3	3.8	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	18
pond pine	Pinus serotina	NSH	Medium	6.8	42.6	4.3	No change	No change	Low	Rare	Very Poor	Very Poor			0	19
bald cypress	Taxodium distichum	NSH	Medium	11.2	39.9	2.9	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	1	20
common persimmon	Diospyros virginiana	NSL	Low	20.8	39.5	1.6	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			1	21
American elm	Ulmus americana	WDH	Medium	4.1	36.6	6.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	22
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	4.6	33.2	4.9	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	23
willow oak	Quercus phellos	NSL	Low	3	32.5	6.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	24
overcup oak	Quercus lyrata	NSL	Medium	2.3	26.4	6.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	25
scarlet oak	Quercus coccinea	WDL	Medium	0.3	23.7	7.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
pecan	Carya illinoensis	NSH	Low	5.2	23.4	3.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	27
redbay	Persea borbonia	NSL	Low	7.1	21.4	1.4	Sm. dec.	No change	High	Rare	Poor	Fair			1	28
post oak	Quercus stellata	WDH	High	6.5	20.8	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	29
turkey oak	Quercus laevis	NSH	Medium	0.9	19.0	20.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	30
eastern redcedar	Juniperus virginiana	WDH	Medium	2.8	15.8	5.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	31
river birch	Betula nigra	NSL	Low	3.2	15.0	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	32
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	3.4	12.6	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	33
slippery elm	Ulmus rubra	WSL	Low	2.3	11.7	3.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	34
southern magnolia	Magnolia grandiflora	NSL	Low	3.5	10.5	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	35
sugarberry	Celtis laevigata	NDH	Medium	2.1	10.1	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	36
winged elm	Ulmus alata	WDL	Medium	4.7	9.5	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	37
southern red oak	Quercus falcata	WDL	Medium	6.1	8.6	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	38
spruce pine	Pinus glabra	NSL	Low	2.8	7.6	2.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
white oak	Quercus alba	WDH	Medium	1.3	7.6	3.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	40
shortleaf pine	Pinus echinata	WDH	High	0.3	7.0	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
pignut hickory	Carya glabra	WDL	Medium	2.2	7.0	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	42
sycamore	Platanus occidentalis	NSL	Low	1.7	6.5	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	43
silver maple	Acer saccharinum	NSH	Low	0.9	6.0	6.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	44
American beech	Fagus grandifolia	WDH	High	1.6	5.7	2.5	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	45
swamp chestnut oak	Quercus michauxii	NSL	Low	3	4.1	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	46
American holly	Ilex opaca	NSL	Medium	2.8	3.9	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	47

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USDA Forest Service  
Northern Research Station  
Landscape Change Research Group  
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N	
bluejack oak	Quercus incana	NSL	Low	3.6	3.6	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++		2	48
mockernut hickory	Carya alba	WDL	Medium	1.9	3.3	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2	49
loblolly-bay	Gordonia lasianthus	NSH	Medium	1	3.2	0.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		2	50
hackberry	Celtis occidentalis	WDH	Medium	1.7	2.9	1.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0	51
florida maple	Acer barbatum	NSL	Low	0.7	2.4	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0	52
red mulberry	Morus rubra	NSL	Low	1.5	2.0	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	53
sassafras	Sassafras albidum	WSL	Low	1.2	1.5	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		2	54
flowering dogwood	Cornus florida	WDL	Medium	0.2	1.4	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		2	55
white mulberry	Morus alba	NSL	FIA	1.5	1.1	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS				0	56
black locust	Robinia pseudoacacia	NDH	Low	0.9	1.0	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	57
serviceberry	Amelanchier spp.	NSL	Low	0.9	0.8	0.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor				0	58
blackjack oak	Quercus marilandica	NSL	Medium	1.7	0.7	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2	59
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.9	0.5	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2	60
wild plum	Prunus americana	NSLX	FIA	0.8	0.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0	61
waterlocust	Gleditsia aquatica	NSLX	FIA	0.9	0.3	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0	62
eastern redbud	Cercis canadensis	NSL	Low	0.9	0.2	0.3	No change	No change	Medium	Rare	Poor	Poor				0	63
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown				3	64
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3	65
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3	66
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3	67
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	68
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3	69
white ash	Fraxinus americana	WDL	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown				0	70
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0	71
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown				3	72
northern red oak	Quercus rubra	WDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0	73
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3	74
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3	75