

**One x One Degree**  
**Climate Change Atlas Tree Species**  
 Current and Potential Future Habitat, Capability, and Migration

Area of Region    sq. km    sq. mi    FIA Plots  
 5,707.3    2,203.6    162

**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					Increase	19	23	Very Good	9	9	
Hickory	4			Medium	34	51	No Change	5	3	Good	12	16
Maple	1	Abundant	6	Low	30	14	Decrease	33	31	Fair	7	6
Oak	15	Common	21	FIA	8		New	17	18	Poor	13	10
Pine	4	Rare	38				Unknown	16	15	Very Poor	11	10
Other	38	Absent	20							FIA Only	5	5
	<b>65</b>		<b>85</b>		<b>90</b>	<b>86</b>		<b>90</b>	<b>90</b>	Unknown	8	7
											<b>15</b>	<b>19</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	58.6	60.2	62.1	62.3
	CCSM85	58.6	60.5	62.8	65.4
	GFDL45	58.6	61.5	63.7	64.7
	GFDL85	58.6	61.6	64.9	68.6
	HAD45	58.6	60.6	63.6	64.9
	HAD85	58.6	60.9	64.3	68.3
Growing Season May—Sep	CCSM45	73.3	74.8	76.4	76.8
	CCSM85	73.3	74.9	77.3	80.5
	GFDL45	73.3	76.4	78.9	80.4
	GFDL85	73.3	76.8	80.4	84.6
	HAD45	73.3	75.6	78.2	79.7
	HAD85	73.3	75.5	79.4	83.5
Coldest Month Average	CCSM45	36.8	38.9	40.0	40.3
	CCSM85	36.8	39.4	40.3	41.7
	GFDL45	36.8	39.8	40.3	41.0
	GFDL85	36.8	39.0	40.1	41.5
	HAD45	36.8	37.7	39.5	39.8
	HAD85	36.8	38.2	39.6	41.4
Warmest Month Average	CCSM45	78.8	80.5	81.4	81.3
	CCSM85	78.8	80.5	82.2	83.4
	GFDL45	78.8	81.5	82.8	84.0
	GFDL85	78.8	82.6	84.4	86.8
	HAD45	78.8	81.4	83.0	83.6
	HAD85	78.8	81.6	83.8	86.3

**Precipitation (in)**

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	45.6	50.3	52.9	52.1
	CCSM85	45.6	50.5	52.0	58.4
	GFDL45	45.6	50.5	54.1	55.8
	GFDL85	45.6	48.7	53.9	55.2
	HAD45	45.6	48.9	49.1	47.2
	HAD85	45.6	52.6	47.7	47.9
Growing Season May—Sep	CCSM45	21.2	26.4	27.4	27.2
	CCSM85	21.2	25.2	26.2	29.7
	GFDL45	21.2	23.3	25.7	27.0
	GFDL85	21.2	22.3	25.6	26.4
	HAD45	21.2	23.9	22.3	20.1
	HAD85	21.2	24.3	20.9	19.6

**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	90.9	4004.1	24.3	No change	No change	Medium	Abundant	Good	Good			1	1
yellow-poplar	Liriodendron tulipifera	WDH	High	84.2	1158.0	7.9	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	88.7	1082.5	6.7	No change	No change	High	Abundant	Very Good	Very Good			1	3
sweetgum	Liquidambar styraciflua	WDH	High	84.4	1021.2	6.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
American holly	Ilex opaca	NSL	Medium	80.1	691.7	4.2	Lg. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
white oak	Quercus alba	WDH	Medium	69.6	682.4	5.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	6
Virginia pine	Pinus virginiana	NDH	High	57.2	396.6	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
American beech	Fagus grandifolia	WDH	High	55	309.7	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
blackgum	Nyssa sylvatica	WDL	Medium	65.5	218.2	1.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
southern red oak	Quercus falcata	WDL	Medium	57.3	205.7	2.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
mockernut hickory	Carya alba	WDL	Medium	48.1	143.0	2.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
swamp tupelo	Nyssa biflora	NDH	Medium	16.5	137.4	2.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
chestnut oak	Quercus prinus	NDH	High	16.8	135.2	4.6	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	13
black oak	Quercus velutina	WDH	High	45.1	129.9	2.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	14
swamp chestnut oak	Quercus michauxii	NSL	Low	11	127.4	4.7	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
scarlet oak	Quercus coccinea	WDL	Medium	31.4	121.4	2.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	16
northern red oak	Quercus rubra	WDH	Medium	28.6	115.9	2.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	17
black cherry	Prunus serotina	WDL	Medium	46.7	110.5	1.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
green ash	Fraxinus pennsylvanica	WSH	Low	14.2	96.4	5.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
pignut hickory	Carya glabra	WDL	Medium	31.5	81.4	1.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	20
willow oak	Quercus phellos	NSL	Low	18.2	79.0	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
sourwood	Oxydendrum arboreum	NDL	High	38.2	75.4	1.3	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	22
water oak	Quercus nigra	WDH	High	24.3	74.8	1.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	23
black locust	Robinia pseudoacacia	NDH	Low	8.1	61.2	1.7	Lg. dec.	Very Lg. dec.	Medium	Common	Poor	Lost			0	24
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	28.7	60.8	1.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
flowering dogwood	Cornus florida	WDL	Medium	30.6	59.7	1.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	26
sassafras	Sassafras albidum	WSL	Low	30.1	56.7	1.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	27
common persimmon	Diospyros virginiana	NSL	Low	5.3	44.9	3.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	28
black walnut	Juglans nigra	WDH	Low	7.6	44.8	2.6	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
bald cypress	Taxodium distichum	NSH	Medium	0.6	43.2	7.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	30
sycamore	Platanus occidentalis	NSL	Low	13.8	41.4	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	31
post oak	Quercus stellata	WDH	High	12.5	37.0	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	32
river birch	Betula nigra	NSL	Low	8.6	30.5	2.1	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	33
American elm	Ulmus americana	WDH	Medium	11.1	29.1	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	34
bitternut hickory	Carya cordiformis	WSL	Low	8.8	26.8	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	35
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	9.9	25.4	1.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	36
eastern redcedar	Juniperus virginiana	WDH	Medium	21.6	25.0	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
pin oak	Quercus palustris	NSH	Low	2.6	21.7	5.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	38
bigtooth aspen	Populus grandidentata	NSL	Medium	5.2	15.0	2.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
sweetbay	Magnolia virginiana	NSL	Medium	11.8	13.0	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	40
winged elm	Ulmus alata	WDL	Medium	4.5	12.7	0.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	41
eastern cottonwood	Populus deltoides	NSH	Low	0.9	12.5	3.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
butternut	Juglans cinerea	NSLX	FIA	1.6	11.6	6.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	43
white ash	Fraxinus americana	WDL	Medium	6	10.5	1.3	Very Lg. dec.	Lg. dec.	Low	Rare	Lost	Very Poor			0	44
paulownia	Paulownia tomentosa	NSL	FIA	4.8	9.4	1.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	45
pumpkin ash	Fraxinus profunda	NSH	FIA	0.6	9.2	1.7	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	46
hackberry	Celtis occidentalis	WDH	Medium	3.3	6.9	1.9	Sm. dec.	Very Lg. dec.	High	Rare	Poor	Lost	Infill +		2	47



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slippery elm	Ulmus rubra	WSL	Low	1	6.8	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	48
shortleaf pine	Pinus echinata	WDH	High	2	5.7	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	49
redbay	Persea borbonia	NSL	Low	1.2	5.2	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	50
chinkapin oak	Quercus muehlenbergii	NSL	Medium	1.1	4.7	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
northern catalpa	Catalpa speciosa	NSHX	FIA	1.8	3.9	2.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	52
serviceberry	Amelanchier spp.	NSL	Low	0.7	3.2	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
ailanthus	Ailanthus altissima	NSL	FIA	2.7	1.9	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	54
red mulberry	Morus rubra	NSL	Low	2.6	1.5	0.3	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	55
American chestnut	Castanea dentata	NSLX	FIA	3.4	1.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
shagbark hickory	Carya ovata	WSL	Medium	1	1.4	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	57
blackjack oak	Quercus marilandica	NSL	Medium	0.3	1.1	0.1	Very Lg. dec.	Lg. inc.	High	Rare	Lost	Good			2	58
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.5	1.1	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	59
chokecherry	Prunus virginiana	NSLX	FIA	1.7	1.0	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	60
eastern white pine	Pinus strobus	WDH	High	0.5	0.9	0.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	61
Shumard oak	Quercus shumardii	NSL	Low	1.7	0.9	0.5	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	62
southern magnolia	Magnolia grandiflora	NSL	Low	1.2	0.9	0.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	63
white mulberry	Morus alba	NSL	FIA	1.6	0.6	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	64
pawpaw	Asimina triloba	NSL	Low	1.7	0.6	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	65
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	66
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
pond pine	Pinus serotina	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	68
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	69
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	70
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	71
sweet birch	Betula lenta	NDH	High	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	72
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	73
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	76
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	79
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	80
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	82
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	83
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	84
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	85
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	86
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	87
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	88
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	89
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	90

