

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	383

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	RCP45	RCP85	Very Good	14	14	Likely	1	1
Ash	2			Medium	35	37	43	Good	23	26	Infill	12	15
Hickory	7			Low	38	27	25	Fair	9	9	Migrate	2	2
Maple	4	Abundant	3	FIA	5	8	7	Poor	13	13			
Oak	19	Common	28			New		Very Poor	17	14			
Pine	6	Rare	51			Unknown		FIA Only	4	4			
Other	44	Absent	10					Unknown	4	5			
	82		92						84	85			
												15	18

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.8	65.5	67.5	67.6	
	CCSM85	63.8	65.8	68.3	70.8	
	GFDL45	63.8	66.5	68.3	69.1	
	GFDL85	63.8	66.3	69.4	72.7	
	HAD45	63.8	66.1	69.0	70.3	
HAD85	63.8	66.4	70.5	74.3		
Growing Season (May—Sep)	CCSM45	77.1	78.7	80.4	80.8	
	CCSM85	77.1	78.9	81.5	84.6	
	GFDL45	77.1	80.1	81.8	83.3	
	GFDL85	77.1	79.8	83.1	87.1	
	HAD45	77.1	80.4	83.0	84.3	
HAD85	77.1	80.5	86.4	89.8		
Coldest Month (Average)	CCSM45	43.6	46.0	46.8	46.7	
	CCSM85	43.6	46.2	47.6	48.6	
	GFDL45	43.6	47.5	47.6	47.7	
	GFDL85	43.6	45.5	46.5	46.9	
	HAD45	43.6	43.7	45.5	46.2	
HAD85	43.6	45.0	46.3	48.0		
Warmest Month (Average)	CCSM45	81.2	82.7	83.4	83.5	
	CCSM85	81.2	82.8	84.1	85.9	
	GFDL45	81.2	84.5	85.0	85.9	
	GFDL85	81.2	83.7	85.2	87.4	
	HAD45	81.2	85.5	87.3	87.7	
HAD85	81.2	85.9	89.7	90.9		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	55.5	58.2	63.9	61.2	
	CCSM85	55.5	59.0	60.1	65.9	
	GFDL45	55.5	62.2	66.5	66.8	
	GFDL85	55.5	62.0	64.4	66.4	
	HAD45	55.5	53.9	59.4	60.0	
HAD85	55.5	58.0	52.8	56.0		
Growing Season (May—Sep)	CCSM45	21.4	21.9	23.6	22.7	
	CCSM85	21.4	20.5	21.2	22.7	
	GFDL45	21.4	25.7	27.8	26.8	
	GFDL85	21.4	26.7	28.6	29.5	
	HAD45	21.4	20.2	22.4	21.1	
HAD85	21.4	22.3	17.3	18.0		

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	96.6	5043.0	37.3	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	98.1	1451.6	10.3	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	88.4	667.8	5.1	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	3
red maple	Acer rubrum	WDH	High	80	296.9	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	4
shortleaf pine	Pinus echinata	WDH	High	55.9	285.3	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
yellow-poplar	Liriodendron tulipifera	WDH	High	58.3	262.9	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	6
eastern redcedar	Juniperus virginiana	WDH	Medium	31.8	262.2	6.5	No change	Sm. inc.	Medium	Common	Fair	Good			1	7
white oak	Quercus alba	WDH	Medium	64.6	241.1	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
southern red oak	Quercus falcata	WDL	Medium	50.5	198.2	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
green ash	Fraxinus pennsylvanica	WSH	Low	36	193.8	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
sugarberry	Celtis laevigata	NDH	Medium	26.4	187.7	5.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	45.1	185.8	2.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
blackgum	Nyssa sylvatica	WDL	Medium	69.5	181.4	1.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
willow oak	Quercus phellos	NSL	Low	38.7	171.8	2.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	39	154.6	2.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
post oak	Quercus stellata	WDH	High	44.4	140.3	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
winged elm	Ulmus alata	WDL	Medium	64.7	137.5	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
mockernut hickory	Carya alba	WDL	Medium	44.3	129.5	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
black cherry	Prunus serotina	WDL	Medium	56.3	112.1	1.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
flowering dogwood	Cornus florida	WDL	Medium	48.2	99.7	1.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
pignut hickory	Carya glabra	WDL	Medium	43.1	98.6	1.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
sourwood	Oxydendrum arboreum	NDL	High	39.4	80.8	1.6	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	22
black willow	Salix nigra	NSH	Low	16	63.5	2.0	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
bald cypress	Taxodium distichum	NSH	Medium	3.7	62.3	11.8	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	24
laurel oak	Quercus laurifolia	NDH	Medium	32.8	61.8	1.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
longleaf pine	Pinus palustris	NSH	Medium	6	60.2	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	26
Osage-orange	Maclura pomifera	NDH	Medium	8.7	59.8	5.0	Sm. dec.	No change	High	Common	Fair	Good		Infill ++	1	27
swamp chestnut oak	Quercus michauxii	NSL	Low	24.2	57.1	1.5	Sm. inc.	No change	Medium	Common	Good	Fair			1	28
overcup oak	Quercus lyrata	NSL	Medium	13.4	54.6	2.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	29
water tupelo	Nyssa aquatica	NSH	Medium	4.8	54.3	2.6	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	30
sweetbay	Magnolia virginiana	NSL	Medium	18	53.5	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	31
spruce pine	Pinus glabra	NSL	Low	15.5	48.0	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	32
American beech	Fagus grandifolia	WDH	High	16	46.9	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
common persimmon	Diospyros virginiana	NSL	Low	39.8	44.6	0.6	No change	Sm. inc.	High	Rare	Fair	Good			1	34
American elm	Ulmus americana	WDH	Medium	22.6	41.4	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	35
sycamore	Platanus occidentalis	NSL	Low	14.2	40.7	2.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	36
boxelder	Acer negundo	WSH	Low	14	39.6	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	37
shagbark hickory	Carya ovata	WSL	Medium	15.7	38.3	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17	37.7	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	39
American holly	Ilex opaca	NSL	Medium	20.9	30.3	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
Shumard oak	Quercus shumardii	NSL	Low	4.8	30.0	2.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	41
river birch	Betula nigra	NSL	Low	6.7	29.5	4.4	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	42
sassafras	Sassafras albidum	WSL	Low	22	25.6	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	43
durand oak	Quercus sinuata var. sinuata	NSL	FIA	9.1	23.4	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	44
black oak	Quercus velutina	WDH	High	13.9	22.5	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	45
southern magnolia	Magnolia grandiflora	NSL	Low	13.1	21.6	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	46
red mulberry	Morus rubra	NSL	Low	12.4	18.6	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	47



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bitternut hickory	<i>Carya cordiformis</i>	WSL	Low	10.5	18.5	1.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	48
slippery elm	<i>Ulmus rubra</i>	WSL	Low	15.1	18.0	0.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	49
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	10.8	16.3	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
pecan	<i>Carya illinoensis</i>	NSH	Low	5.9	15.1	2.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	51
white ash	<i>Fraxinus americana</i>	WDL	Medium	11.5	13.5	0.7	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	52
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	5.6	13.0	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	53
hackberry	<i>Celtis occidentalis</i>	WDH	Medium	2.4	10.1	3.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	54
swamp tupelo	<i>Nyssa biflora</i>	NDH	Medium	3.4	9.9	1.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	55
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	5.3	8.5	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
florida maple	<i>Acer barbatum</i>	NSL	Low	7.1	7.4	0.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	57
northern red oak	<i>Quercus rubra</i>	WDH	Medium	4.4	6.2	1.2	Very Lg. dec.	Lg. dec.	High	Rare	Lost	Poor			0	58
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	3.6	6.1	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	4.9	6.1	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	2.2	5.4	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
slash pine	<i>Pinus elliotii</i>	NDH	High	3.8	5.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	62
nuttall oak	<i>Quercus texana</i>	NSH	Medium	4.2	4.7	0.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	63
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	3.8	4.0	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	64
black walnut	<i>Juglans nigra</i>	WDH	Low	1.9	3.8	2.0	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	65
turkey oak	<i>Quercus laevis</i>	NSH	Medium	2.2	3.3	1.0	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	66
redbay	<i>Persea borbonia</i>	NSL	Low	4.1	3.2	0.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++		1	67
water hickory	<i>Carya aquatica</i>	NSL	Medium	1.9	2.9	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	68
black locust	<i>Robinia pseudoacacia</i>	NDH	Low	1.8	2.7	1.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	69
honeylocust	<i>Gleditsia triacanthos</i>	NSH	Low	1.9	2.3	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	70
waterlocust	<i>Gleditsia aquatica</i>	NSLX	FIA	0.5	1.9	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
chokecherry	<i>Prunus virginiana</i>	NSLX	FIA	0.9	1.5	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	72
serviceberry	<i>Amelanchier spp.</i>	NSL	Low	1	1.2	1.2	No change	No change	Medium	Rare	Poor	Poor			0	73
shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	0.7	0.9	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	74
silver maple	<i>Acer saccharinum</i>	NSH	Low	1	0.8	0.9	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	75
pawpaw	<i>Asimina triloba</i>	NSL	Low	1.4	0.7	0.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	76
water elm	<i>Planera aquatica</i>	NSL	Low	1	0.6	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	77
wild plum	<i>Prunus americana</i>	NSLX	FIA	1.4	0.3	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	78
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	1	0.2	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	79
Virginia pine	<i>Pinus virginiana</i>	NDH	High	1	0.2	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	80
ailanthus	<i>Ailanthus altissima</i>	NSL	FIA	1	0.2	0.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	81
bluejack oak	<i>Quercus incana</i>	NSL	Low	0.1	0.2	0.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	82
ashe juniper	<i>Juniperus ashei</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	83
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
mountain maple	<i>Acer spicatum</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	85
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	86
black ash	<i>Fraxinus nigra</i>	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	87
silverbell	<i>Halesia spp.</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	88
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown			3	89
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	90
chestnut oak	<i>Quercus prinus</i>	NDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	91
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	92
American basswood	<i>Tilia americana</i>	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	93
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	94

