

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	9,941.4	3,838.4	296

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	2			High	22	21	Increase	20	27	Very Good	11	11	Likely	1	2
Hickory	4			Medium	28	51	No Change	17	17	Good	10	14	Infill	14	19
Maple	5	Abundant	7	Low	31	12	Decrease	27	20	Fair	10	14	Migrate	4	10
Oak	10	Common	24	FIA	5		New	12	16	Poor	19	16			
Pine	6	Rare	38				Unknown	10	6	Very Poor	13	8			
Other	42	Absent	16							FIA Only	3	3			
	69		85		86	84		86	86	Unknown	5	1			
											71	67			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	55.6	57.4	59.6	59.7	
	CCSM85	55.6	57.9	60.3	63.2	
	GFDL45	55.6	58.3	60.9	61.7	
	GFDL85	55.6	58.7	62.0	65.8	
	HAD45	55.6	58.0	61.1	62.3	
HAD85	55.6	58.2	62.3	66.6		
Growing Season (May—Sep)	CCSM45	69.9	71.8	73.8	74.3	
	CCSM85	69.9	72.1	74.7	78.5	
	GFDL45	69.9	73.0	76.0	77.2	
	GFDL85	69.9	73.7	77.5	81.7	
	HAD45	69.9	73.0	76.0	77.4	
HAD85	69.9	72.9	78.3	82.9		
Coldest Month (Average)	CCSM45	34.4	36.5	37.4	37.7	
	CCSM85	34.4	36.8	37.8	38.9	
	GFDL45	34.4	37.8	38.1	38.8	
	GFDL85	34.4	36.6	37.6	38.7	
	HAD45	34.4	35.0	36.9	37.2	
HAD85	34.4	35.6	36.9	38.4		
Warmest Month (Average)	CCSM45	75.1	77.3	78.3	78.4	
	CCSM85	75.1	77.4	79.1	80.8	
	GFDL45	75.1	78.5	79.9	80.9	
	GFDL85	75.1	79.5	81.7	84.1	
	HAD45	75.1	78.5	80.6	81.3	
HAD85	75.1	79.4	82.7	85.5		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	45.8	49.2	52.3	53.1	
	CCSM85	45.8	51.1	52.9	57.9	
	GFDL45	45.8	51.3	54.0	56.8	
	GFDL85	45.8	49.0	55.0	55.5	
	HAD45	45.8	48.2	49.9	49.5	
HAD85	45.8	50.4	47.5	49.8		
Growing Season (May—Sep)	CCSM45	21.0	23.9	25.6	26.4	
	CCSM85	21.0	24.4	24.4	27.0	
	GFDL45	21.0	24.2	25.6	26.9	
	GFDL85	21.0	22.3	26.1	26.2	
	HAD45	21.0	22.2	22.0	22.5	
HAD85	21.0	23.8	22.0	22.7		

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
yellow-poplar	Liriodendron tulipifera	WDH	High	92.2	2070.0	16.1	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	92.1	1273.0	9.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
Virginia pine	Pinus virginiana	NDH	High	63.4	1152.4	10.9	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	3
eastern white pine	Pinus strobus	WDH	High	52.2	751.3	11.1	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
white oak	Quercus alba	WDH	Medium	73.3	636.1	6.0	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	5
chestnut oak	Quercus prinus	NDH	High	47	627.4	10.3	No change	Sm. dec.	High	Abundant	Very Good	Good			1	6
sourwood	Oxydendrum arboreum	NDL	High	65.3	525.6	5.6	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	7
black cherry	Prunus serotina	WDL	Medium	71.9	353.8	3.7	No change	No change	Low	Common	Poor	Poor			0	8
northern red oak	Quercus rubra	WDH	Medium	59.5	312.5	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
scarlet oak	Quercus coccinea	WDL	Medium	56	297.3	4.3	No change	Sm. dec.	Medium	Common	Fair	Poor			1	10
mockernut hickory	Carya alba	WDL	Medium	50.5	251.2	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
sweet birch	Betula lenta	NDH	High	32.5	225.3	5.8	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	12
black locust	Robinia pseudoacacia	NDH	Low	45.7	196.2	3.6	Sm. dec.	No change	Medium	Common	Poor	Fair			1	13
blackgum	Nyssa sylvatica	WDL	Medium	68.4	196.1	2.2	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
eastern redcedar	Juniperus virginiana	WDH	Medium	23.6	186.8	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
flowering dogwood	Cornus florida	WDL	Medium	65.8	178.7	1.9	No change	No change	Medium	Common	Fair	Fair			1	16
pignut hickory	Carya glabra	WDL	Medium	49.5	177.5	2.4	Sm. inc.	No change	Medium	Common	Good	Fair			1	17
American beech	Fagus grandifolia	WDH	High	41.9	173.9	2.7	No change	No change	Medium	Common	Fair	Fair			1	18
sweetgum	Liquidambar styraciflua	WDH	High	15.6	159.8	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
shortleaf pine	Pinus echinata	WDH	High	26.4	153.9	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
black oak	Quercus velutina	WDH	High	40.2	151.3	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
white ash	Fraxinus americana	WDL	Medium	32	105.9	2.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	22
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	32.2	103.5	2.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	23
loblolly pine	Pinus taeda	WDH	High	10.7	103.3	7.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
ailanthus	Ailanthus altissima	NSL	FIA	16.9	103.1	4.5	Unknown	Unknown	NA	Common	NNIS	NNIS			0	25
southern red oak	Quercus falcata	WDL	Medium	23.8	92.8	2.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	26
common persimmon	Diospyros virginiana	NSL	Low	16.9	83.5	3.4	Lg. dec.	No change	High	Common	Fair	Good			1	27
black walnut	Juglans nigra	WDH	Low	16.4	83.3	3.1	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	28
pitch pine	Pinus rigida	NSH	High	19.9	82.9	3.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	29
sycamore	Platanus occidentalis	NSL	Low	12.4	65.6	1.7	No change	Lg. inc.	Medium	Common	Fair	Very Good	Infill +	Infill ++	1	30
cucumbertree	Magnolia acuminata	NSL	Low	19.7	52.0	2.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	31
sassafras	Sassafras albidum	WSL	Low	22.9	48.2	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	32
eastern redbud	Cercis canadensis	NSL	Low	14.5	44.1	2.2	Lg. dec.	No change	Medium	Rare	Very Poor	Poor			1	33
American holly	Ilex opaca	NSL	Medium	17.5	40.3	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	34
eastern hemlock	Tsuga canadensis	NSH	High	10	36.9	3.2	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	35
river birch	Betula nigra	NSL	Low	6.3	36.6	3.3	No change	No change	Medium	Rare	Poor	Poor			1	36
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	12	33.6	1.6	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	37
butternut	Juglans cinerea	NSLX	FIA	3.9	32.7	8.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	38
Table Mountain pine	Pinus pungens	NSL	Low	6.6	31.7	4.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	39
shagbark hickory	Carya ovata	WSL	Medium	6.2	31.6	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
American basswood	Tilia americana	WSL	Medium	3.2	28.9	5.3	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		1	41
post oak	Quercus stellata	WDH	High	11.5	26.9	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	42
bitternut hickory	Carya cordiformis	WSL	Low	3.2	22.1	5.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	43
yellow birch	Betula alleghaniensis	NDL	High	4	20.7	5.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
American elm	Ulmus americana	WDH	Medium	8	18.7	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	45
green ash	Fraxinus pennsylvanica	WSH	Low	8.2	15.8	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	46
winged elm	Ulmus alata	WDL	Medium	3.6	15.0	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	47



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chokecherry	Prunus virginiana	NSLX	FIA	0.9	14.3	13.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 48
black willow	Salix nigra	NSH	Low	2.9	13.8	2.4	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +		2 49
yellow buckeye	Aesculus flava	NSL	Low	1.6	13.4	5.6	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				2 50
serviceberry	Amelanchier spp.	NSL	Low	10.5	12.5	1.1	No change	No change	Medium	Rare	Poor	Poor				1 51
willow oak	Quercus phellos	NSL	Low	2.1	9.1	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 52
sugar maple	Acer saccharum	WDH	High	5.9	7.9	1.3	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2 53
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.3	7.8	1.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2 54
slippery elm	Ulmus rubra	WSL	Low	4.1	6.5	1.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +		1 55
hackberry	Celtis occidentalis	WDH	Medium	0.4	5.7	0.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +		2 56
florida maple	Acer barbatum	NSL	Low	2.4	5.6	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2 57
striped maple	Acer pensylvanicum	NSL	Medium	5.8	5.3	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 58
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	2	4.3	2.1	No change	No change	Medium	Rare	Poor	Poor				0 59
southern magnolia	Magnolia grandiflora	NSL	Low	3	4.2	1.4	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +		2 60
pin cherry	Prunus pensylvanica	NSL	Low	2	3.6	1.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 61
red mulberry	Morus rubra	NSL	Low	0.4	2.4	0.2	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good				2 62
honeylocust	Gleditsia triacanthos	NSH	Low	1	2.1	2.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +		2 63
boxelder	Acer negundo	WSH	Low	1	1.3	1.3	Very Lg. dec.	No change	High	Rare	Lost	Fair		Infill +		2 64
American chestnut	Castanea dentata	NSLX	FIA	2.9	1.3	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 65
paulownia	Paulownia tomentosa	NSL	FIA	0.7	1.0	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 66
bigleaf magnolia	Magnolia macrophylla	NSL	Low	1	0.9	0.9	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost				0 67
bigtooth aspen	Populus grandidentata	NSL	Medium	0.2	0.7	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 68
laurel oak	Quercus laurifolia	NDH	Medium	0.2	0.2	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 69
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 70
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 71
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				3 72
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 73
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	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		Migrate +		3 75
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 76
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 77
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				3 78
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +		3 79
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 80
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +		3 81
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 82
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate +		3 83
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		3 84
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 85
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +		3 86