

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 3,838.4 305

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	26	Increase	25	34	Very Good	10	9	Likely	3	3
Ash	2			Medium	31	54	No Change	19	12	Good	16	23	Infill	9	10
Hickory	4			Low	39	15	Decrease	19	17	Fair	13	15	Migrate	4	17
Maple	6	Abundant	5	FIA	4		New	19	24	Poor	15	8			
Oak	9	Common	29				Unknown	15	10	Very Poor	8	7			
Pine	6	Rare	33							FIA Only	2	2			
Other	40	Absent	29							Unknown	11	6			
	67		96		97	95		97	97		75	70		16	30

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	52.4	54.3	56.5	56.6	
	CCSM85	52.4	54.7	57.1	60.1	
	GFDL45	52.4	55.3	57.8	58.6	
	GFDL85	52.4	55.6	58.9	62.7	
	HAD45	52.4	54.8	57.9	59.1	
	HAD85	52.4	55.1	59.2	63.3	
Growing Season (May—Sep)	CCSM45	66.4	68.3	70.3	70.8	
	CCSM85	66.4	68.6	71.2	75.1	
	GFDL45	66.4	69.8	72.6	73.9	
	GFDL85	66.4	70.3	74.2	78.3	
	HAD45	66.4	69.5	72.5	74.0	
	HAD85	66.4	69.5	75.1	79.4	
Coldest Month (Average)	CCSM45	31.5	33.6	34.6	34.8	
	CCSM85	31.5	34.1	35.1	36.1	
	GFDL45	31.5	34.9	35.1	35.8	
	GFDL85	31.5	33.6	34.6	35.7	
	HAD45	31.5	31.9	33.8	34.2	
	HAD85	31.5	32.7	34.1	35.7	
Warmest Month (Average)	CCSM45	71.4	73.5	74.6	74.7	
	CCSM85	71.4	73.6	75.3	77.0	
	GFDL45	71.4	74.9	76.5	77.4	
	GFDL85	71.4	76.1	78.4	80.8	
	HAD45	71.4	74.9	77.1	77.8	
	HAD85	71.4	75.8	79.4	82.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	47.0	50.1	52.9	53.6	
	CCSM85	47.0	51.9	53.3	58.0	
	GFDL45	47.0	52.2	54.2	57.1	
	GFDL85	47.0	50.1	55.4	55.6	
	HAD45	47.0	47.9	50.2	50.3	
	HAD85	47.0	50.4	47.6	49.5	
Growing Season (May—Sep)	CCSM45	21.6	24.1	25.7	26.2	
	CCSM85	21.6	24.8	24.4	26.9	
	GFDL45	21.6	24.7	25.5	26.7	
	GFDL85	21.6	22.9	25.9	26.0	
	HAD45	21.6	22.1	22.0	22.6	
	HAD85	21.6	23.7	21.6	22.2	

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	88.9	1527.4	11.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	92.7	1350.7	10.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
eastern white pine	Pinus strobus	WDH	High	57.9	1141.6	12.2	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	3
chestnut oak	Quercus prinus	NDH	High	76.5	1102.4	11.0	No change	No change	High	Abundant	Very Good	Very Good			1	4
black locust	Robinia pseudoacacia	NDH	Low	82	599.1	6.0	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
sweet birch	Betula lenta	NDH	High	73.8	481.3	5.3	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	6
northern red oak	Quercus rubra	WDH	Medium	76.4	466.1	4.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
sourwood	Oxydendrum arboreum	NDL	High	60.6	443.4	5.0	No change	No change	High	Common	Good	Good			1	8
scarlet oak	Quercus coccinea	WDL	Medium	59.7	431.6	4.8	No change	No change	Medium	Common	Fair	Fair			1	9
white oak	Quercus alba	WDH	Medium	58.8	347.3	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
eastern hemlock	Tsuga canadensis	NSH	High	46.5	266.6	4.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
black cherry	Prunus serotina	WDL	Medium	50.6	263.4	3.1	No change	Sm. inc.	Low	Common	Poor	Fair			1	12
blackgum	Nyssa sylvatica	WDL	Medium	67.2	233.3	2.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
pignut hickory	Carya glabra	WDL	Medium	54.1	224.8	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
Virginia pine	Pinus virginiana	NDH	High	23	206.0	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
sugar maple	Acer saccharum	WDH	High	35.7	188.0	4.7	Sm. inc.	No change	High	Common	Very Good	Good			1	16
American beech	Fagus grandifolia	WDH	High	35.8	176.4	3.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	35.9	166.3	3.4	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	18
white ash	Fraxinus americana	WDL	Medium	39.9	145.9	3.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	19
black oak	Quercus velutina	WDH	High	36.9	139.9	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
mockernut hickory	Carya alba	WDL	Medium	27.3	139.3	2.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
eastern redcedar	Juniperus virginiana	WDH	Medium	8	112.1	4.4	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	22
black walnut	Juglans nigra	WDH	Low	19.4	91.6	3.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	23
flowering dogwood	Cornus florida	WDL	Medium	36	85.3	1.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
sassafras	Sassafras albidum	WSL	Low	34.3	84.3	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
pitch pine	Pinus rigida	NSH	High	30.2	79.1	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
red spruce	Picea rubens	NDH	High	5.8	76.3	11.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	27
cucumbertree	Magnolia acuminata	NSL	Low	29.3	73.8	2.0	No change	No change	Medium	Common	Fair	Fair			1	28
ailanthus	Ailanthus altissima	NSL	FIA	8.2	69.3	4.8	Unknown	Unknown	NA	Common	NNIS	NNIS			0	29
shagbark hickory	Carya ovata	WSL	Medium	14.4	68.5	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	30
yellow buckeye	Aesculus flava	NSL	Low	15.8	61.5	2.9	No change	Sm. dec.	Low	Common	Poor	Poor			0	31
serviceberry	Amelanchier spp.	NSL	Low	39.8	61.2	1.2	No change	No change	Medium	Common	Fair	Fair			1	32
American basswood	Tilia americana	WSL	Medium	16.9	60.1	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	33
yellow birch	Betula alleghaniensis	NDL	High	16.3	59.1	2.7	No change	No change	Medium	Common	Fair	Fair			1	34
American holly	Ilex opaca	NSL	Medium	12.7	49.1	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
striped maple	Acer pensylvanicum	NSL	Medium	25	42.3	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
pin cherry	Prunus pensylvanica	NSL	Low	8.7	31.7	3.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
Table Mountain pine	Pinus pungens	NSL	Low	13	31.4	3.3	Sm. dec.	No change	High	Rare	Poor	Fair			1	38
green ash	Fraxinus pennsylvanica	WSH	Low	7.6	30.9	2.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	39
shortleaf pine	Pinus echinata	WDH	High	11.4	29.6	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	15	29.3	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	41
bitternut hickory	Carya cordiformis	WSL	Low	14.8	24.7	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	42
black willow	Salix nigra	NSH	Low	1.3	24.1	11.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	43
southern red oak	Quercus falcata	WDL	Medium	6.3	22.9	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	44
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	12.9	21.3	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	45
American elm	Ulmus americana	WDH	Medium	10.6	16.6	1.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	46
common persimmon	Diospyros virginiana	NSL	Low	3.3	16.3	3.9	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	47



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eastern redbud	Cercis canadensis	NSL	Low	3.3	15.2	1.1	No change	No change	Medium	Rare	Poor	Poor				1 48
sycamore	Platanus occidentalis	NSL	Low	5.7	15.1	1.1	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++		2 49
silverbell	Halesia spp.	NSL	Low	1.5	13.7	4.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 50
chinkapin oak	Quercus muehlenbergii	NSL	Medium	3.3	12.9	2.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		2 51
post oak	Quercus stellata	WDH	High	2	11.2	2.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 52
sweetgum	Liquidambar styraciflua	WDH	High	0.6	5.1	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 53
American chestnut	Castanea dentata	NSLX	FIA	12.8	4.8	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 54
boxelder	Acer negundo	WSH	Low	1	4.0	4.0	No change	No change	High	Rare	Fair	Fair		Infill +		2 55
loblolly pine	Pinus taeda	WDH	High	0.8	3.8	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 56
shingle oak	Quercus imbricaria	NDH	Medium	1	3.7	3.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 57
pawpaw	Asimina triloba	NSL	Low	3.3	2.8	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost				0 58
red mulberry	Morus rubra	NSL	Low	2.7	2.7	0.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		2 59
American mountain-ash	Sorbus americana	NSL	Low	1.8	2.4	1.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				0 60
eastern cottonwood	Populus deltoides	NSH	Low	1	2.2	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 61
mountain maple	Acer spicatum	NSL	Low	1.7	1.3	0.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				1 62
butternut	Juglans cinerea	NSLX	FIA	2	1.2	0.6	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 63
paulownia	Paulownia tomentosa	NSL	FIA	0.3	1.0	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 64
slippery elm	Ulmus rubra	WSL	Low	0.7	0.9	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 65
silver maple	Acer saccharinum	NSH	Low	1	0.8	0.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0 66
river birch	Betula nigra	NSL	Low	0.3	0.7	0.2	Very Lg. dec.	Lg. inc.	Medium	Rare	Lost	Good				2 67
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 68
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 69
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 70
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 71
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0 72
gray birch	Betula populifolia	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 73
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				3 74
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	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 +		3 77
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				3 79
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +		3 80
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 81
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 82
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 83
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 84
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		3 85
bigtooth aspen	Populus grandidentata	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 86
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 87
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 88
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 89
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 90
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 91
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		3 92
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 93
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 94

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live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	95
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	96
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	97