

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	9,813.8	3,789.1	330

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	19	25	Increase	20	29	Very Good	9	12	Likely	0	0
Hickory	4			Medium	30	50	No Change	12	12	Good	15	19	Infill	7	11
Maple	5	Abundant	6	Low	35	11	Decrease	31	22	Fair	11	8	Migrate	5	10
Oak	14	Common	29	FIA	5		New	11	14	Poor	12	14			
Pine	5	Rare	33				Unknown	15	12	Very Poor	13	7			
Other	38	Absent	20							FIA Only	2	2			
	68		88		89	86		89	89	Unknown	10	7			
											72	69			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	56.4	58.2	60.3	60.5	
	CCSM85	56.4	58.6	61.0	64.0	
	GFDL45	56.4	59.0	61.7	62.7	
	GFDL85	56.4	59.5	62.8	66.7	
	HAD45	56.4	58.7	62.0	63.2	
Growing Season (May—Sep)	CCSM45	71.3	73.1	75.1	75.6	
	CCSM85	71.3	73.4	76.1	79.9	
	GFDL45	71.3	74.2	77.4	78.9	
	GFDL85	71.3	75.1	78.9	83.1	
	HAD45	71.3	74.1	77.2	78.7	
Coldest Month (Average)	CCSM45	34.2	36.3	37.3	37.7	
	CCSM85	34.2	36.8	37.9	39.1	
	GFDL45	34.2	37.6	38.1	38.7	
	GFDL85	34.2	36.6	37.5	38.8	
	HAD45	34.2	35.6	37.4	37.6	
Warmest Month (Average)	CCSM45	76.9	79.2	80.1	80.3	
	CCSM85	76.9	79.3	81.1	82.7	
	GFDL45	76.9	80.1	81.6	82.8	
	GFDL85	76.9	81.3	83.3	85.8	
	HAD45	76.9	80.1	82.2	83.0	
HAD85	76.9	80.7	83.8	86.9		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.1	48.5	51.4	51.1	
	CCSM85	44.1	49.4	51.4	57.4	
	GFDL45	44.1	49.3	52.3	54.0	
	GFDL85	44.1	46.8	52.6	53.9	
	HAD45	44.1	47.4	48.3	46.9	
Growing Season (May—Sep)	CCSM45	20.0	24.3	25.5	25.4	
	CCSM85	20.0	23.8	24.7	27.5	
	GFDL45	20.0	22.1	23.5	24.5	
	GFDL85	20.0	20.6	23.9	24.5	
	HAD45	20.0	22.8	21.6	20.4	
HAD85	20.0	23.2	21.6	21.8		

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	68.1	2195.0	24.5	No change	Sm. inc.	Medium	Abundant	Good	Very Good			1	1
yellow-poplar	Liriodendron tulipifera	WDH	High	92.4	1304.8	10.4	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
white oak	Quercus alba	WDH	Medium	90.1	1064.4	8.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
Virginia pine	Pinus virginiana	NDH	High	84.1	1010.9	9.2	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	4
red maple	Acer rubrum	WDH	High	93.7	988.4	7.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
chestnut oak	Quercus prinus	NDH	High	41.1	627.7	8.2	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	6
sweetgum	Liquidambar styraciflua	WDH	High	52.6	470.1	6.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
scarlet oak	Quercus coccinea	WDL	Medium	58.4	326.5	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
eastern redcedar	Juniperus virginiana	WDH	Medium	73.7	293.0	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
southern red oak	Quercus falcata	WDL	Medium	66.2	266.0	3.2	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
mockernut hickory	Carya alba	WDL	Medium	76.4	239.9	2.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
blackgum	Nyssa sylvatica	WDL	Medium	78.7	239.4	2.1	No change	Sm. inc.	High	Common	Good	Very Good			1	12
pignut hickory	Carya glabra	WDL	Medium	76.9	227.2	2.1	No change	Sm. dec.	Medium	Common	Fair	Poor			1	13
northern red oak	Quercus rubra	WDH	Medium	59.2	219.4	2.6	No change	No change	High	Common	Good	Good			1	14
black oak	Quercus velutina	WDH	High	61.8	191.8	2.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
American beech	Fagus grandifolia	WDH	High	46.5	165.5	2.6	Sm. dec.	No change	Medium	Common	Poor	Fair			1	16
black cherry	Prunus serotina	WDL	Medium	65.7	164.3	1.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	17
shortleaf pine	Pinus echinata	WDH	High	43.2	139.9	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
sourwood	Oxydendrum arboreum	NDL	High	38.6	120.3	1.9	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	19
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	46.2	112.9	1.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
white ash	Fraxinus americana	WDL	Medium	34.7	90.9	1.6	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	21
flowering dogwood	Cornus florida	WDL	Medium	67.7	88.5	1.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	22
green ash	Fraxinus pennsylvanica	WSH	Low	26	85.8	1.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
black walnut	Juglans nigra	WDH	Low	15.7	78.2	1.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	24
post oak	Quercus stellata	WDH	High	39.2	75.1	1.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	25
black locust	Robinia pseudoacacia	NDH	Low	19.9	73.1	1.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	26
eastern redbud	Cercis canadensis	NSL	Low	36.6	70.1	1.5	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	27
ailanthus	Ailanthus altissima	NSL	FIA	20.1	64.4	2.4	Unknown	Unknown	NA	Common	NNIS	NNIS			0	28
shagbark hickory	Carya ovata	WSL	Medium	14.2	59.0	2.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	29
sassafras	Sassafras albidum	WSL	Low	17.3	58.4	2.7	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	30
sycamore	Platanus occidentalis	NSL	Low	24.4	56.7	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	31
river birch	Betula nigra	NSL	Low	13.9	54.0	2.8	Sm. dec.	Lg. inc.	Medium	Common	Poor	Very Good			1	32
winged elm	Ulmus alata	WDL	Medium	22.6	53.0	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	33
sweet birch	Betula lenta	NDH	High	11.3	51.0	3.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	34
common persimmon	Diospyros virginiana	NSL	Low	15.8	50.3	2.1	Lg. dec.	No change	High	Common	Fair	Good			1	35
willow oak	Quercus phellos	NSL	Low	14.6	41.9	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	36
bitternut hickory	Carya cordiformis	WSL	Low	13.1	38.0	1.4	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	1	37
American elm	Ulmus americana	WDH	Medium	28.3	37.8	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	38
pitch pine	Pinus rigida	NSH	High	3.5	26.3	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
hackberry	Celtis occidentalis	WDH	Medium	8.5	25.4	2.8	No change	No change	High	Rare	Fair	Fair			1	40
paulownia	Paulownia tomentosa	NSL	FIA	6.5	18.6	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	41
slippery elm	Ulmus rubra	WSL	Low	9.7	18.3	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	42
eastern white pine	Pinus strobus	WDH	High	3.1	13.2	1.2	No change	No change	Low	Rare	Very Poor	Very Poor			0	43
black willow	Salix nigra	NSH	Low	4.9	11.4	1.3	Lg. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	44
American basswood	Tilia americana	WSL	Medium	1.9	8.7	0.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	45
pin oak	Quercus palustris	NSH	Low	1	8.4	8.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	46
boxelder	Acer negundo	WSH	Low	2	7.6	3.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	47

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bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	0.4	7.4	2.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	48
American holly	Ilex opaca	NSL	Medium	5.2	7.0	0.8	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	49
sugar maple	Acer saccharum	WDH	High	3.9	6.6	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	50
pawpaw	Asimina triloba	NSL	Low	4.9	6.6	1.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	51
red mulberry	Morus rubra	NSL	Low	2.3	6.4	1.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	52
cucumbertree	Magnolia acuminata	NSL	Low	2.7	5.2	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	53
swamp chestnut oak	Quercus michauxii	NSL	Low	0.9	4.7	4.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	54
florida maple	Acer barbatum	NSL	Low	3	3.3	0.5	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	55
serviceberry	Amelanchier spp.	NSL	Low	2.7	3.3	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
yellow birch	Betula alleghaniensis	NDL	High	1.4	2.9	0.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	57
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.4	2.8	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	58
laurel oak	Quercus laurifolia	NDH	Medium	1.7	2.1	0.8	Lg. dec.	Lg. inc.	Medium	Rare	Very Poor	Good			2	59
bigtooth aspen	Populus grandidentata	NSL	Medium	2.6	1.8	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	60
eastern hemlock	Tsuga canadensis	NSH	High	0.3	1.6	0.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	61
white mulberry	Morus alba	NSL	FIA	1	1.5	1.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	62
Osage-orange	Maclura pomifera	NDH	Medium	0.2	1.2	0.3	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	63
American chestnut	Castanea dentata	NSLX	FIA	2	1.2	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	64
striped maple	Acer pensylvanicum	NSL	Medium	0.6	1.1	0.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	65
shingle oak	Quercus imbricaria	NDH	Medium	0.7	1.0	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	66
honeylocust	Gleditsia triacanthos	NSH	Low	2	1.0	0.5	No change	Lg. inc.	High	Rare	Fair	Good			2	67
blackjack oak	Quercus marilandica	NSL	Medium	0.6	0.9	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	68
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	69
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	70
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	71
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	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
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Migrate ++	3	74
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	75
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	77
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	79
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	80
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	82
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	83
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	85
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	86
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	87
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	88
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	89