

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	9,683.1	3,738.7	290

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	3			High	20	26	Increase	20	27	Very Good	5	7	Likely	0	0
Hickory	5			Medium	28	45	No Change	11	7	Good	22	23	Infill	5	11
Maple	4	Abundant	7	Low	36	16	Decrease	34	31	Fair	7	9	Migrate	3	8
Oak	10	Common	26	FIA	7		New	12	13	Poor	12	10		8	19
Pine	7	Rare	39				Unknown	14	13	Very Poor	17	12			
Other	43	Absent	19					91	91	FIA Only	3	3			
	72		91		91	87				Unknown	7	6			
											73	70			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	54.1	56.0	58.4	58.7	
	CCSM85	54.1	56.6	59.0	62.2	
	GFDL45	54.1	56.9	59.8	60.6	
	GFDL85	54.1	57.3	60.9	64.8	
	HAD45	54.1	56.7	60.2	61.6	
	HAD85	54.1	57.2	61.7	66.0	
Growing Season May—Sep	CCSM45	69.6	71.6	73.8	74.4	
	CCSM85	69.6	72.1	74.7	78.8	
	GFDL45	69.6	72.8	76.5	77.8	
	GFDL85	69.6	73.6	78.0	82.4	
	HAD45	69.6	72.9	76.3	78.1	
	HAD85	69.6	73.2	79.3	83.8	
Coldest Month Average	CCSM45	30.2	31.9	33.4	33.8	
	CCSM85	30.2	33.1	34.0	35.5	
	GFDL45	30.2	34.0	34.5	35.1	
	GFDL85	30.2	32.8	33.9	34.8	
	HAD45	30.2	30.9	33.2	33.4	
	HAD85	30.2	31.8	33.6	35.5	
Warmest Month Average	CCSM45	75.1	77.0	78.3	78.7	
	CCSM85	75.1	77.6	79.3	81.2	
	GFDL45	75.1	78.6	80.7	81.7	
	GFDL85	75.1	79.5	82.3	84.8	
	HAD45	75.1	78.9	81.6	82.9	
	HAD85	75.1	80.5	84.8	87.4	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	42.6	45.2	47.7	48.3	
	CCSM85	42.6	47.2	48.6	52.5	
	GFDL45	42.6	46.7	47.9	51.3	
	GFDL85	42.6	44.3	49.3	51.4	
	HAD45	42.6	43.3	44.2	43.5	
	HAD85	42.6	43.3	40.7	43.8	
Growing Season May—Sep	CCSM45	19.6	20.6	21.3	21.4	
	CCSM85	19.6	20.5	20.1	21.5	
	GFDL45	19.6	21.6	20.6	21.9	
	GFDL85	19.6	19.6	20.3	20.9	
	HAD45	19.6	20.2	18.1	18.6	
	HAD85	19.6	19.4	16.5	17.5	

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
white oak	Quercus alba	WDH	Medium	81	1410.1	12.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
yellow-poplar	Liriodendron tulipifera	WDH	High	77.2	1166.8	10.8	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	80.7	981.6	7.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
chestnut oak	Quercus prinus	NDH	High	64.8	805.4	7.0	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	4
sugar maple	Acer saccharum	WDH	High	70.5	733.5	7.8	No change	Sm. dec.	High	Abundant	Very Good	Good			1	5
black oak	Quercus velutina	WDH	High	73.9	543.9	5.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	6
Virginia pine	Pinus virginiana	NDH	High	51	520.9	7.0	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	7
pignut hickory	Carya glabra	WDL	Medium	68.5	441.3	4.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
white ash	Fraxinus americana	WDL	Medium	61.5	390.1	4.4	No change	No change	Low	Common	Poor	Poor			0	9
mockernut hickory	Carya alba	WDL	Medium	70.9	377.5	3.7	No change	Sm. inc.	High	Common	Good	Very Good			1	10
American beech	Fagus grandifolia	WDH	High	53.3	365.6	4.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
black locust	Robinia pseudoacacia	NDH	Low	47.6	357.4	5.1	Lg. dec.	No change	Medium	Common	Poor	Fair			1	12
northern red oak	Quercus rubra	WDH	Medium	57.5	311.8	3.1	Sm. inc.	No change	High	Common	Very Good	Good			1	13
scarlet oak	Quercus coccinea	WDL	Medium	44.5	306.3	4.5	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	14
blackgum	Nyssa sylvatica	WDL	Medium	58.2	251.5	2.7	No change	Sm. inc.	High	Common	Good	Very Good			1	15
American elm	Ulmus americana	WDH	Medium	40.4	237.8	5.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	16
black cherry	Prunus serotina	WDL	Medium	45.9	226.0	3.7	No change	Sm. inc.	Low	Common	Poor	Fair			1	17
sassafras	Sassafras albidum	WSL	Low	50.8	203.7	2.6	No change	No change	Medium	Common	Fair	Fair			1	18
sourwood	Oxydendrum arboreum	NDL	High	46.6	194.9	2.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	19
shagbark hickory	Carya ovata	WSL	Medium	62.3	176.1	2.2	No change	Sm. dec.	Medium	Common	Fair	Poor			1	20
sycamore	Platanus occidentalis	NSL	Low	28	173.9	5.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	21
eastern redbud	Cercis canadensis	NSL	Low	53.1	150.9	2.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	22
flowering dogwood	Cornus florida	WDL	Medium	41.6	142.8	2.5	No change	No change	Medium	Common	Fair	Fair			1	23
black walnut	Juglans nigra	WDH	Low	31.2	133.1	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	24
pitch pine	Pinus rigida	NSH	High	13.1	116.4	2.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	25
boxelder	Acer negundo	WSH	Low	18.7	116.1	5.0	No change	Lg. inc.	High	Common	Good	Very Good			1	26
slippery elm	Ulmus rubra	WSL	Low	45.5	107.3	1.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	27
yellow buckeye	Aesculus flava	NSL	Low	17.9	99.6	3.6	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	28
silver maple	Acer saccharinum	NSH	Low	7.2	97.3	13.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	29
post oak	Quercus stellata	WDH	High	18.7	82.2	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	30
ailanthus	Ailanthus altissima	NSL	FIA	16.7	81.9	3.5	Unknown	Unknown	NA	Common	NNIS	NNIS			0	31
bitternut hickory	Carya cordiformis	WSL	Low	26.3	81.5	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	32
pawpaw	Asimina triloba	NSL	Low	8.9	55.5	3.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	33
loblolly pine	Pinus taeda	WDH	High	1.9	46.6	7.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	34
shortleaf pine	Pinus echinata	WDH	High	11.6	46.0	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	35
green ash	Fraxinus pennsylvanica	WSH	Low	13.3	41.2	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	36
sweet birch	Betula lenta	NDH	High	5.1	39.1	1.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	37
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	22.4	35.6	1.1	No change	Lg. inc.	Medium	Rare	Poor	Good			1	38
common persimmon	Diospyros virginiana	NSL	Low	19.1	32.4	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	39
eastern redcedar	Juniperus virginiana	WDH	Medium	13.8	30.7	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
cucumbertree	Magnolia acuminata	NSL	Low	10.1	30.6	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
bigtooth aspen	Populus grandidentata	NSL	Medium	9.3	26.7	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
American basswood	Tilia americana	WSL	Medium	8.5	25.2	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	43
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	15.3	23.9	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	44
red pine	Pinus resinosa	NSH	Medium	1	21.8	21.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	45
river birch	Betula nigra	NSL	Low	3.1	21.6	7.0	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	46
sweetgum	Liquidambar styraciflua	WDH	High	2.1	21.6	10.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	47



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shellbark hickory	Carya laciniosa	NSL	Low	7.1	20.0	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 48
Osage-orange	Maclura pomifera	NDH	Medium	1	17.9	17.4	Sm. dec.	Sm. inc.	High	Rare	Poor	Good		Infill ++		2 49
shingle oak	Quercus imbricaria	NDH	Medium	3.8	15.0	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 50
eastern white pine	Pinus strobus	WDH	High	4.5	14.4	2.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				0 51
hackberry	Celtis occidentalis	WDH	Medium	8.3	13.5	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		1 52
serviceberry	Amelanchier spp.	NSL	Low	11.9	13.3	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 53
red mulberry	Morus rubra	NSL	Low	3.1	11.0	3.5	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +		1 54
paulownia	Paulownia tomentosa	NSL	FIA	1.7	9.3	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 55
white mulberry	Morus alba	NSL	FIA	2.1	8.9	4.3	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 56
southern red oak	Quercus falcata	WDL	Medium	3.2	5.6	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 57
black willow	Salix nigra	NSH	Low	1	5.4	5.2	Sm. dec.	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +		2 58
butternut	Juglans cinerea	NSLX	FIA	2.1	5.4	2.6	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 59
Scots pine	Pinus sylvestris	NSH	FIA	1	4.0	3.9	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 60
eastern hemlock	Tsuga canadensis	NSH	High	2.1	3.9	1.9	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				2 61
blue ash	Fraxinus quadrangulata	NSL	Low	0.4	3.8	1.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				0 62
honeylocust	Gleditsia triacanthos	NSH	Low	2.1	3.4	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good		Infill ++		2 63
chinkapin oak	Quercus muehlenbergii	NSL	Medium	3.1	3.3	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		2 64
Ohio buckeye	Aesculus glabra	NSL	Low	2.1	2.7	1.3	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost				0 65
wild plum	Prunus americana	NSLX	FIA	1	2.1	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 66
sugarberry	Celtis laevigata	NDH	Medium	1	1.6	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 67
pin oak	Quercus palustris	NSH	Low	1	1.2	1.2	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair		Infill +		2 68
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	1	1.0	0.9	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost				0 69
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0.1	0.8	0.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0 70
American chestnut	Castanea dentata	NSLX	FIA	2.1	0.8	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 71
American holly	Ilex opaca	NSL	Medium	1	0.4	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 72
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 73
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 74
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 75
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 76
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 77
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 78
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 79
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		3 80
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 81
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				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
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 85
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 86
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 87
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 88
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +		3 89
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 90
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0 91