

Climate Change Atlas Tree Species
Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	5,127.4	1,979.7	132

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	20	19	Increase	10	17	Very Good	5	5
Hickory	4			Medium	32	46	No Change	12	7	Good	8	14
Maple	4	Abundant	5	Low	26	13	Decrease	26	24	Fair	8	5
Oak	13	Common	18	FIA	6		New	23	23	Poor	15	15
Pine	3	Rare	31				Unknown	13	13	Very Poor	12	7
Other	28	Absent	26							FIA Only	1	1
	54		80		84	78		84	84	Unknown	7	7
											56	54

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	56.0	57.6	59.5	59.8	
	CCSM85	56.0	57.9	60.2	63.0	
	GFDL45	56.0	59.3	61.2	62.3	
	GFDL85	56.0	59.0	62.4	66.2	
	HAD45	56.0	58.2	61.2	62.5	
HAD85	56.0	58.3	61.9	65.9		
Growing Season (May—Sep)	CCSM45	71.4	73.0	74.6	74.9	
	CCSM85	71.4	73.1	75.4	78.6	
	GFDL45	71.4	75.1	77.2	78.6	
	GFDL85	71.4	75.0	78.7	82.8	
	HAD45	71.4	73.8	76.5	78.0	
HAD85	71.4	73.5	77.4	81.5		
Coldest Month (Average)	CCSM45	33.0	35.1	36.4	36.9	
	CCSM85	33.0	35.6	36.7	38.3	
	GFDL45	33.0	36.1	36.7	37.3	
	GFDL85	33.0	35.7	36.9	38.4	
	HAD45	33.0	34.1	36.2	36.5	
HAD85	33.0	34.9	36.5	38.5		
Warmest Month (Average)	CCSM45	77.4	79.1	79.9	80.0	
	CCSM85	77.4	79.2	80.8	82.1	
	GFDL45	77.4	80.1	81.6	82.8	
	GFDL85	77.4	81.2	83.3	85.7	
	HAD45	77.4	80.1	81.5	82.1	
HAD85	77.4	80.0	82.0	84.6		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.8	48.4	50.6	51.7	
	CCSM85	44.8	50.0	50.6	56.7	
	GFDL45	44.8	50.3	54.0	54.7	
	GFDL85	44.8	48.1	53.9	55.2	
	HAD45	44.8	47.9	49.1	47.7	
HAD85	44.8	52.4	47.3	49.5		
Growing Season (May—Sep)	CCSM45	19.9	24.2	24.9	26.1	
	CCSM85	19.9	24.1	24.1	26.8	
	GFDL45	19.9	21.7	24.0	25.1	
	GFDL85	19.9	21.0	23.9	24.5	
	HAD45	19.9	21.9	20.9	18.7	
HAD85	19.9	23.1	19.3	18.8		

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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Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
red maple	Acer rubrum	WDH	High	88	2040.0	19.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
loblolly pine	Pinus taeda	WDH	High	53.6	1122.4	18.7	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	2
sweetgum	Liquidambar styraciflua	WDH	High	80.1	1063.3	11.2	No change	No change	Medium	Abundant	Good	Good			1	3
yellow-poplar	Liriodendron tulipifera	WDH	High	53.5	674.6	8.1	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	4
white oak	Quercus alba	WDH	Medium	53.6	558.4	6.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
American holly	Ilex opaca	NSL	Medium	64.2	482.9	6.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	6
blackgum	Nyssa sylvatica	WDL	Medium	77.6	427.0	4.6	Sm. dec.	No change	High	Common	Fair	Good			1	7
black cherry	Prunus serotina	WDL	Medium	53.5	411.9	6.0	No change	No change	Low	Common	Poor	Poor			0	8
southern red oak	Quercus falcata	WDL	Medium	46.6	213.8	3.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
willow oak	Quercus phellos	NSL	Low	45.1	187.1	3.7	No change	Sm. inc.	Medium	Common	Fair	Good			1	10
black walnut	Juglans nigra	WDH	Low	8.9	186.1	8.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor		Infill +	0	11
Virginia pine	Pinus virginiana	NDH	High	32.7	181.8	4.2	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	12
American beech	Fagus grandifolia	WDH	High	22.6	178.9	4.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	13
eastern redcedar	Juniperus virginiana	WDH	Medium	10.8	144.1	3.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	14
sassafras	Sassafras albidum	WSL	Low	37.8	132.3	3.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
scarlet oak	Quercus coccinea	WDL	Medium	31.6	125.0	3.3	No change	Lg. dec.	Medium	Common	Fair	Poor			1	16
black locust	Robinia pseudoacacia	NDH	Low	6.6	93.3	11.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	17
black oak	Quercus velutina	WDH	High	28.2	82.3	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
silver maple	Acer saccharinum	NSH	Low	2.2	78.9	7.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	19
green ash	Fraxinus pennsylvanica	WSH	Low	12.1	71.2	4.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	20
swamp chestnut oak	Quercus michauxii	NSL	Low	22.7	67.8	2.2	No change	Sm. inc.	Medium	Common	Fair	Good			1	21
water oak	Quercus nigra	WDH	High	22.8	67.5	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
white ash	Fraxinus americana	WDL	Medium	17.6	61.7	4.8	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	23
northern red oak	Quercus rubra	WDH	Medium	19.7	61.4	2.4	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	24
eastern white pine	Pinus strobus	WDH	High	0.2	59.3	2.4	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	25
common persimmon	Diospyros virginiana	NSL	Low	17.5	48.4	2.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	26
mockernut hickory	Carya alba	WDL	Medium	11.3	44.4	1.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	27
pin oak	Quercus palustris	NSH	Low	16	42.1	3.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	28
sweetbay	Magnolia virginiana	NSL	Medium	25.3	41.3	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	29
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	7.5	34.3	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	30
boxelder	Acer negundo	WSH	Low	10.4	32.2	4.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	31
sycamore	Platanus occidentalis	NSL	Low	7.3	24.6	9.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	32
flowering dogwood	Cornus florida	WDL	Medium	11.4	19.4	1.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	33
black willow	Salix nigra	NSH	Low	5.1	17.9	2.4	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	34
chestnut oak	Quercus prinus	NDH	High	2	17.7	9.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	35
white mulberry	Morus alba	NSL	FIA	2	16.6	8.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
sweet birch	Betula lenta	NDH	High	4.7	14.4	3.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	37
river birch	Betula nigra	NSL	Low	10.3	12.9	1.8	Lg. dec.	Lg. inc.	Medium	Rare	Very Poor	Good		Infill ++	1	38
pignut hickory	Carya glabra	WDL	Medium	9.4	11.8	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	39
bald cypress	Taxodium distichum	NSH	Medium	1.7	10.7	4.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
slippery elm	Ulmus rubra	WSL	Low	1.4	9.1	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	41
sand hickory	Carya pallida	NSL	FIA	5.9	4.5	0.8	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	42
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	3.3	4.3	0.9	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	43
bitternut hickory	Carya cordiformis	WSL	Low	2	3.7	1.9	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	44
red mulberry	Morus rubra	NSL	Low	2	3.4	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
overcup oak	Quercus lyrata	NSL	Medium	2	3.2	1.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	46
American elm	Ulmus americana	WDH	Medium	2	3.2	1.7	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +		2	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
swamp white oak	Quercus bicolor	NSL	Low	2	2.8	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
post oak	Quercus stellata	WDH	High	3.8	1.9	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
Siberian elm	Ulmus pumila	NDH	FIA	1.7	1.8	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	50
Norway maple	Acer platanoides	NSL	FIA	2	1.5	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	51
bigtooth aspen	Populus grandidentata	NSL	Medium	4.9	1.3	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
ailanthus	Ailanthus altissima	NSL	FIA	1.1	1.1	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	53
paulownia	Paulownia tomentosa	NSL	FIA	5.5	0.5	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	54
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	56
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	57
pond pine	Pinus serotina	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate +	3	58
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	59
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	60
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	61
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
gray birch	Betula populifolia	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	64
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	65
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	66
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	67
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	69
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	73
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	74
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	75
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	79
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	80
Nuttall oak	Quercus texana	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	81
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	82
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	83
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	84