

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 8,696.4 3,357.7 257

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	20	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	1					Increase	24	29	Very Good	8	9	Likely	2	3
Hickory	4					No Change	22	21	Good	16	19	Infill	15	21
Maple	2	Abundant	4			Decrease	11	7	Fair	9	8	Migrate	2	3
Oak	15	Common	15			New	7	9	Poor	12	13			
Pine	5	Rare	38			Unknown	14	12	Very Poor	10	7			
Other	30	Absent	18						FIA Only	0	0			
	57		75				78	78	Unknown	14	12			
										69	68			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	67.1	68.6	70.3	70.4	
Average	67.1	68.8	71.2	73.4	
GFDL45	67.1	69.9	71.2	72.1	
GFDL85	67.1	69.4	72.4	75.7	
HAD45	67.1	69.2	71.7	72.9	
HAD85	67.1	69.4	72.8	76.3	
Growing Season	78.9	80.2	81.5	81.9	
May—Sep	78.9	81.9	83.0	84.5	
GFDL45	78.9	81.9	83.0	84.5	
GFDL85	78.9	81.4	84.4	88.3	
HAD45	78.9	81.6	83.9	84.8	
HAD85	78.9	81.7	86.1	89.1	
Coldest Month	48.9	51.1	51.9	51.8	
Average	48.9	51.4	52.7	53.7	
GFDL45	48.9	52.4	52.5	52.6	
GFDL85	48.9	50.4	51.5	52.2	
HAD45	48.9	49.2	50.8	51.6	
HAD85	48.9	50.7	51.9	53.6	
Warmest Month	82.1	83.3	83.6	83.8	
Average	82.1	83.3	84.3	85.8	
GFDL45	82.1	85.0	85.2	86.2	
GFDL85	82.1	84.4	85.8	87.9	
HAD45	82.1	85.4	86.7	87.0	
HAD85	82.1	85.7	88.2	89.3	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	63.1	65.5	70.7	69.0	
Total	63.1	66.4	67.7	71.0	
GFDL45	63.1	70.2	74.6	71.5	
GFDL85	63.1	68.3	70.2	70.3	
HAD45	63.1	60.2	63.4	66.4	
HAD85	63.1	67.3	59.3	62.2	
Growing Season	28.2	29.6	30.6	30.6	
May—Sep	28.2	27.9	29.4	29.2	
GFDL45	28.2	33.2	36.8	33.0	
GFDL85	28.2	32.8	35.3	36.5	
HAD45	28.2	26.9	27.7	29.1	
HAD85	28.2	28.9	22.9	23.5	

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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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
loblolly pine	Pinus taeda	WDH	High	79.5	2921.9	27.9	No change	No change	Medium	Abundant	Good	Good			1	1
slash pine	Pinus elliottii	NDH	High	61.7	1764.8	22.1	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	80.2	787.6	8.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
blackgum	Nyssa sylvatica	WDL	Medium	79.7	610.1	6.2	No change	No change	High	Abundant	Very Good	Very Good			1	4
sweetbay	Magnolia virginiana	NSL	Medium	67.9	484.2	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
longleaf pine	Pinus palustris	NSH	Medium	39.4	438.4	8.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
red maple	Acer rubrum	WDH	High	74.2	359.8	4.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
sweetgum	Liquidambar styraciflua	WDH	High	59.9	358.1	4.9	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	40.3	248.9	5.1	No change	Sm. dec.	High	Common	Good	Fair			1	9
swamp tupelo	Nyssa biflora	NDH	Medium	27.9	194.8	5.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	10
laurel oak	Quercus laurifolia	NDH	Medium	41.3	170.9	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
bald cypress	Taxodium distichum	NSH	Medium	25.1	168.8	7.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
black cherry	Prunus serotina	WDL	Medium	51.5	103.8	1.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
water tupelo	Nyssa aquatica	NSH	Medium	11.9	97.6	6.5	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	14
southern red oak	Quercus falcata	WDL	Medium	30.8	91.7	2.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
live oak	Quercus virginiana	NDH	High	16	82.8	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
American holly	Ilex opaca	NSL	Medium	24.5	57.5	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
flowering dogwood	Cornus florida	WDL	Medium	29.7	57.2	1.5	No change	No change	Medium	Common	Fair	Fair			1	18
shortleaf pine	Pinus echinata	WDH	High	10	56.6	3.8	No change	Sm. inc.	Medium	Common	Fair	Good			1	19
overcup oak	Quercus lyrata	NSL	Medium	9	48.9	5.3	No change	No change	Low	Rare	Very Poor	Very Poor			0	20
post oak	Quercus stellata	WDH	High	21.8	46.0	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	21
pond cypress	Taxodium ascendens	NSH	Medium	6.9	44.7	3.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	22
southern magnolia	Magnolia grandiflora	NSL	Low	20.5	42.5	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	13.4	40.4	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	24
willow oak	Quercus phellos	NSL	Low	9.3	36.7	3.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	25
water hickory	Carya aquatica	NSL	Medium	8.7	35.9	3.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	26
redbay	Persea borbonia	NSL	Low	26.9	33.4	1.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	27
green ash	Fraxinus pennsylvanica	WSH	Low	8.7	31.8	3.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	28
American beech	Fagus grandifolia	WDH	High	5.9	31.5	3.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
black willow	Salix nigra	NSH	Low	7.1	31.4	2.8	No change	No change	Low	Rare	Very Poor	Very Poor			0	30
spruce pine	Pinus glabra	NSL	Low	11.1	31.3	2.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
white oak	Quercus alba	WDH	Medium	19.4	27.8	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	32
river birch	Betula nigra	NSL	Low	3.6	26.9	3.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	33
blackjack oak	Quercus marilandica	NSL	Medium	12.6	25.7	1.7	No change	Lg. inc.	High	Rare	Fair	Good			1	34
common persimmon	Diospyros virginiana	NSL	Low	15.9	18.9	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	35
mockernut hickory	Carya alba	WDL	Medium	15	18.4	1.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	36
sourwood	Oxydendrum arboreum	NDL	High	11.6	17.1	1.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	37
sycamore	Platanus occidentalis	NSL	Low	6.8	16.1	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	38
swamp chestnut oak	Quercus michauxii	NSL	Low	5	15.1	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	39
American elm	Ulmus americana	WDH	Medium	6.4	10.4	1.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	40
pecan	Carya illinoensis	NSH	Low	2.2	8.4	3.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	41
water elm	Planera aquatica	NSL	Low	3.5	8.1	2.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	42
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	5.4	6.8	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	43
sassafras	Sassafras albidum	WSL	Low	5.2	4.6	0.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	44
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.1	3.2	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	45
silver maple	Acer saccharinum	NSH	Low	1.2	2.3	2.0	No change	No change	High	Rare	Fair	Fair			0	46
slippery elm	Ulmus rubra	WSL	Low	1.2	2.3	2.0	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N	
pignut hickory	<i>Carya glabra</i>	WDL	Medium	3.1	1.8	0.5	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +		2	48
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum</i> ssp.	NSL	Low	1.2	1.5	1.3	Sm. dec.	Lg. inc.	High	Rare	Poor	Good	Infill +			2	49
black oak	<i>Quercus velutina</i>	WDH	High	2.8	1.5	0.4	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost				0	50
red mulberry	<i>Morus rubra</i>	NSL	Low	2.3	1.3	0.6	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor				0	51
nuttall oak	<i>Quercus texana</i>	NSH	Medium	1.2	1.2	1.1	No change	No change	High	Rare	Fair	Fair				0	52
winged elm	<i>Ulmus alata</i>	WDL	Medium	1.2	1.0	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2	53
bluejack oak	<i>Quercus incana</i>	NSL	Low	1.4	0.8	0.2	Very Lg. dec.	No change	Medium	Rare	Lost	Poor		Infill +		2	54
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	1.2	0.6	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	55
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	1.2	0.6	0.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor				0	56
serviceberry	<i>Amelanchier</i> spp.	NSL	Low	1.2	0.2	0.2	No change	No change	Medium	Rare	Poor	Poor				0	57
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +			3	58
Table Mountain pine	<i>Pinus pungens</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0	59
florida maple	<i>Acer barbatum</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0	60
boxelder	<i>Acer negundo</i>	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3	61
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				3	62
pawpaw	<i>Asimina triloba</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	63
shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	64
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3	65
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3	66
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0	67
white ash	<i>Fraxinus americana</i>	WDL	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Migrate +		3	68
black ash	<i>Fraxinus nigra</i>	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0	69
silverbell	<i>Halesia</i> spp.	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown				3	70
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	71
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +		3	72
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	73
turkey oak	<i>Quercus laevis</i>	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0	74
northern red oak	<i>Quercus rubra</i>	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0	75
cabbage palmetto	<i>Sabal palmetto</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0	76
American basswood	<i>Tilia americana</i>	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	77
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3	78