

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	6,329.5	2,443.8	223

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	15	17	Increase	16	21	Very Good	12	13	Likely	3	3
Hickory	4			Medium	32	48	No Change	17	17	Good	6	7	Infill	8	12
Maple	1	Abundant	7	Low	27	9	Decrease	14	9	Fair	7	8	Migrate	1	4
Oak	11	Common	13	FIA	2		New	10	12	Poor	11	11		12	19
Pine	6	Rare	29				Unknown	19	17	Very Poor	9	6			
Other	24	Absent	20					76	76	FIA Only	2	2			
	49		69		76	74				Unknown	17	15			
											64	62			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	66.6	68.1	69.8	69.9	
	CCSM85	66.6	68.2	70.6	72.8	
	GFDL45	66.6	69.2	71.0	71.8	
	GFDL85	66.6	69.0	72.0	75.5	
	HAD45	66.6	68.5	71.0	72.3	
HAD85	66.6	68.8	72.0	75.5		
Growing Season (May—Sep)	CCSM45	78.5	79.7	81.1	81.4	
	CCSM85	78.5	79.7	82.0	84.6	
	GFDL45	78.5	81.0	82.7	84.0	
	GFDL85	78.5	80.9	83.9	87.8	
	HAD45	78.5	81.2	83.1	84.4	
HAD85	78.5	81.1	85.3	88.3		
Coldest Month Average	CCSM45	48.6	50.8	51.5	51.3	
	CCSM85	48.6	50.6	51.8	52.9	
	GFDL45	48.6	51.6	51.9	52.2	
	GFDL85	48.6	50.5	51.6	52.2	
	HAD45	48.6	48.6	50.1	50.8	
HAD85	48.6	49.8	50.9	52.6		
Warmest Month Average	CCSM45	81.7	82.9	83.4	83.7	
	CCSM85	81.7	82.7	83.9	85.4	
	GFDL45	81.7	84.1	84.8	85.5	
	GFDL85	81.7	83.6	85.0	87.1	
	HAD45	81.7	84.6	85.8	86.4	
HAD85	81.7	84.8	87.2	88.6		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	64.5	67.4	69.1	70.8	
	CCSM85	64.5	68.1	70.5	74.5	
	GFDL45	64.5	72.1	75.9	76.8	
	GFDL85	64.5	71.7	76.2	74.3	
	HAD45	64.5	61.3	67.4	70.4	
HAD85	64.5	68.9	61.4	65.4		
Growing Season (May—Sep)	CCSM45	30.2	32.7	32.8	33.6	
	CCSM85	30.2	31.2	32.9	33.9	
	GFDL45	30.2	36.5	38.5	37.1	
	GFDL85	30.2	36.9	40.5	40.0	
	HAD45	30.2	29.0	30.5	31.5	
HAD85	30.2	31.0	24.9	26.5		

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
slash pine	Pinus elliottii	NDH	High	68.5	2511.8	20.6	No change	No change	Medium	Abundant	Good	Good			1	1
longleaf pine	Pinus palustris	NSH	Medium	83.9	2478.6	22.1	No change	No change	Medium	Abundant	Good	Good			1	2
loblolly pine	Pinus taeda	WDH	High	39.2	1353.9	19.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
sand pine	Pinus clausa	NDH	High	43.1	1306.5	20.5	No change	No change	Low	Abundant	Fair	Fair			0	4
laurel oak	Quercus laurifolia	NDH	Medium	64.3	849.9	9.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
turkey oak	Quercus laevis	NSH	Medium	59.3	615.9	8.6	No change	No change	High	Abundant	Very Good	Very Good			1	6
sweetbay	Magnolia virginiana	NSL	Medium	44	526.7	7.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	7
swamp tupelo	Nyssa biflora	NDH	Medium	37.9	357.3	6.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	8
water oak	Quercus nigra	WDH	High	50.3	315.4	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
live oak	Quercus virginiana	NDH	High	37.2	298.7	6.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
southern red oak	Quercus falcata	WDL	Medium	22.9	167.6	5.0	No change	Sm. inc.	High	Common	Good	Very Good			1	11
pond cypress	Taxodium ascendens	NSH	Medium	4	166.7	10.0	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	2	12
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	11.1	135.1	8.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	13
water tupelo	Nyssa aquatica	NSH	Medium	6	110.6	9.0	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	14
yellow-poplar	Liriodendron tulipifera	WDH	High	21.7	106.0	3.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	15
red maple	Acer rubrum	WDH	High	34.3	100.9	1.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
sweetgum	Liquidambar styraciflua	WDH	High	20.8	94.6	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
post oak	Quercus stellata	WDH	High	15.1	74.6	3.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	18
blackgum	Nyssa sylvatica	WDL	Medium	26.1	65.0	1.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
southern magnolia	Magnolia grandiflora	NSL	Low	22.4	56.1	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
bluejack oak	Quercus incana	NSL	Low	25.1	48.8	1.9	No change	No change	Medium	Rare	Poor	Poor			1	21
flowering dogwood	Cornus florida	WDL	Medium	18.7	42.1	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	22
black walnut	Juglans nigra	WDH	Low	1.6	39.5	25.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
redbay	Persea borbonia	NSL	Low	9.2	38.5	2.7	No change	No change	High	Rare	Fair	Fair			1	24
green ash	Fraxinus pennsylvanica	WSH	Low	4.5	34.9	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	25
American holly	Ilex opaca	NSL	Medium	25.9	34.7	1.1	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	26
bald cypress	Taxodium distichum	NSH	Medium	5.5	25.3	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	27
pond pine	Pinus serotina	NSH	Medium	1.7	25.2	4.1	No change	No change	Low	Rare	Very Poor	Very Poor			2	28
common persimmon	Diospyros virginiana	NSL	Low	17.7	23.5	1.0	Lg. dec.	Lg. dec.	High	Rare	Very Poor	Poor			1	29
spruce pine	Pinus glabra	NSL	Low	5.7	18.5	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	30
white oak	Quercus alba	WDH	Medium	7.3	18.5	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	31
sourwood	Oxydendrum arboreum	NDL	High	7.3	12.4	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	32
eastern redcedar	Juniperus virginiana	WDH	Medium	4.8	12.0	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	33
black cherry	Prunus serotina	WDL	Medium	4.8	10.2	1.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	34
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	7.2	9.5	1.1	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	35
pignut hickory	Carya glabra	WDL	Medium	5	7.1	0.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	36
mockernut hickory	Carya alba	WDL	Medium	4.7	7.0	1.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	37
Carolina ash	Fraxinus caroliniana	NSL	FIA	3.1	3.4	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	38
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.2	3.1	0.9	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	39
blackjack oak	Quercus marilandica	NSL	Medium	4.7	3.0	0.6	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	40
overcup oak	Quercus lyrata	NSL	Medium	0.7	2.7	0.8	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	41
sassafras	Sassafras albidum	WSL	Low	1.6	2.1	1.3	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	42
pecan	Carya illinoensis	NSH	Low	1.6	2.0	1.2	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	43
sand hickory	Carya pallida	NSL	FIA	1.6	1.6	1.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	44
sycamore	Platanus occidentalis	NSL	Low	1.6	1.5	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	45
loblolly-bay	Gordonia lasianthus	NSH	Medium	1.6	0.7	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
white ash	Fraxinus americana	WDL	Medium	1.6	0.7	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	47

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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
serviceberry	Amelanchier spp.	NSL	Low	1.6	0.6	0.4	No change	No change	Medium	Rare	Poor	Poor			0	48
swamp chestnut oak	Quercus michauxii	NSL	Low	1.6	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	50
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	51
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	52
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	53
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown			3	54
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	55
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	56
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	57
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	59
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	60
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	61
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	62
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	64
water elm	Planera aquatica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	65
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	68
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	70
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	72
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
winged elm	Ulmus alata	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate ++	3	74
American elm	Ulmus americana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
slippery elm	Ulmus rubra	WSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	76