

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 10,533 4,066.9 357

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	14	Increase	26	30	Very Good	8	9	Likely	1	1
Hickory	4			Medium	32	No Change	11	11	Good	15	18	Infill	14	17
Maple	1	Abundant	5	Low	26	Decrease	17	13	Fair	9	9	Migrate	1	1
Oak	14	Common	13	FIA	3	New	11	12	Poor	10	8			
Pine	6	Rare	39			Unknown	10	9	Very Poor	10	10			
Other	30	Absent	16						FIA Only	3	3			
	57		73		75		75	75	Unknown	7	6		16	19
										62	63			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	66.4	68.0	69.9	69.9	
Average	66.4	68.2	70.6	73.1	
GFDL45	66.4	69.1	71.0	71.7	
GFDL85	66.4	69.0	72.1	75.6	
HAD45	66.4	68.6	71.2	72.7	
HAD85	66.4	69.0	72.5	76.4	
Growing Season	78.3	79.6	81.1	81.5	
May—Sep	78.3	80.9	82.7	83.8	
GFDL45	78.3	81.0	84.0	88.0	
GFDL85	78.3	81.4	83.7	85.4	
HAD45	78.3	81.5	86.4	90.1	
HAD85	78.3	81.5	86.4	90.1	
Coldest Month	48.4	50.7	51.6	51.3	
Average	48.4	50.4	51.5	52.8	
GFDL45	48.4	51.2	51.5	52.0	
GFDL85	48.4	50.7	51.8	52.5	
HAD45	48.4	48.4	49.7	50.7	
HAD85	48.4	49.3	50.2	52.0	
Warmest Month	82.0	83.3	84.2	84.5	
Average	82.0	83.4	84.8	86.6	
GFDL45	82.0	84.3	84.9	85.7	
GFDL85	82.0	84.4	85.8	88.1	
HAD45	82.0	85.6	86.9	87.7	
HAD85	82.0	85.8	88.8	90.4	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	47.1	50.2	51.6	53.6	
Total	47.1	49.6	53.3	55.7	
GFDL45	47.1	52.8	54.6	57.0	
GFDL85	47.1	51.6	57.1	55.2	
HAD45	47.1	44.7	45.2	47.8	
HAD85	47.1	46.7	43.9	45.5	
Growing Season	22.9	25.4	25.5	26.3	
May—Sep	22.9	24.2	27.2	27.8	
GFDL45	22.9	28.1	29.0	29.8	
GFDL85	22.9	27.3	31.5	31.1	
HAD45	22.9	22.2	21.6	21.6	
HAD85	22.9	22.1	19.0	19.1	

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	93.4	5110.0	35.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
loblolly pine	Pinus taeda	WDH	High	74	2259.5	19.2	No change	No change	Medium	Abundant	Good	Good			1	2
swamp tupelo	Nyssa biflora	NDH	Medium	76.1	911.5	7.7	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	3
red maple	Acer rubrum	WDH	High	85.2	704.7	5.7	No change	Sm. inc.	High	Abundant	Very Good	Very Good			1	4
water oak	Quercus nigra	WDH	High	64.5	563.9	5.3	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	5
longleaf pine	Pinus palustris	NSH	Medium	19.9	376.4	12.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
pond cypress	Taxodium ascendens	NSH	Medium	40.7	338.8	5.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	7
laurel oak	Quercus laurifolia	NDH	Medium	49	320.7	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
sweetbay	Magnolia virginiana	NSL	Medium	57.3	258.4	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
sweetgum	Liquidambar styraciflua	WDH	High	38.6	234.8	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
yellow-poplar	Liriodendron tulipifera	WDH	High	17.4	172.8	7.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	11
live oak	Quercus virginiana	NDH	High	13.9	108.5	4.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	12
redbay	Persea borbonia	NSL	Low	45.2	103.2	1.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	24.5	94.3	2.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
loblolly-bay	Gordonia lasianthus	NSH	Medium	18.3	88.1	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
sand pine	Pinus clausa	NDH	High	3.4	82.0	17.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	16
pond pine	Pinus serotina	NSH	Medium	10.2	69.4	3.7	No change	Sm. inc.	Low	Common	Poor	Fair			1	17
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	15.6	60.5	2.5	Unknown	Unknown	Low	Common	FIA Only	FIA Only			0	18
black willow	Salix nigra	NSH	Low	9.1	44.7	4.6	No change	No change	Low	Rare	Very Poor	Very Poor			0	19
turkey oak	Quercus laevis	NSH	Medium	9.6	38.9	3.5	Sm. dec.	No change	High	Rare	Poor	Fair			1	20
water tupelo	Nyssa aquatica	NSH	Medium	5.5	29.4	1.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	21
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	3.8	22.6	2.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	22
green ash	Fraxinus pennsylvanica	WSH	Low	4.3	21.5	1.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	23
American elm	Ulmus americana	WDH	Medium	5.2	20.8	2.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	24
willow oak	Quercus phellos	NSL	Low	5.4	17.1	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	25
post oak	Quercus stellata	WDH	High	10.3	16.0	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
southern red oak	Quercus falcata	WDL	Medium	7.2	15.2	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	27
bald cypress	Taxodium distichum	NSH	Medium	5.2	13.3	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	28
spruce pine	Pinus glabra	NSL	Low	3.7	12.6	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
overcup oak	Quercus lyrata	NSL	Medium	1.8	12.1	3.6	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	30
water hickory	Carya aquatica	NSL	Medium	1.2	11.2	5.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
blackgum	Nyssa sylvatica	WDL	Medium	6.3	10.0	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	32
American holly	Ilex opaca	NSL	Medium	8.4	8.1	0.8	No change	No change	Medium	Rare	Poor	Poor			1	33
winged elm	Ulmus alata	WDL	Medium	4.7	8.0	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	34
white oak	Quercus alba	WDH	Medium	1.5	6.2	1.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	35
sugarberry	Celtis laevigata	NDH	Medium	2.4	5.7	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	36
common persimmon	Diospyros virginiana	NSL	Low	4.1	4.7	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	37
swamp chestnut oak	Quercus michauxii	NSL	Low	2	4.5	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
flowering dogwood	Cornus florida	WDL	Medium	0.9	4.0	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	39
mockernut hickory	Carya alba	WDL	Medium	1.5	3.8	1.5	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	40
wild plum	Prunus americana	NSLX	FIA	1.5	3.6	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	41
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2	3.1	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	42
sassafras	Sassafras albidum	WSL	Low	1.9	2.8	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	43
bluejack oak	Quercus incana	NSL	Low	4.6	2.7	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	2	44
hackberry	Celtis occidentalis	WDH	Medium	0.5	2.3	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	45
river birch	Betula nigra	NSL	Low	1.2	2.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
pecan	Carya illinoensis	NSH	Low	3.8	2.1	0.5	Very Lg. dec.	Lg. dec.	Low	Rare	Lost	Very Poor			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
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	1.5	1.9	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor	Infill +			2 48
red mulberry	Morus rubra	NSL	Low	1.5	1.7	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 49
black oak	Quercus velutina	WDH	High	0.9	1.7	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 50
southern magnolia	Magnolia grandiflora	NSL	Low	0.9	0.8	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 51
pignut hickory	Carya glabra	WDL	Medium	1.9	0.6	0.3	Very Lg. dec.	No change	Medium	Rare	Lost	Poor				0 52
waterlocust	Gleditsia aquatica	NSLX	FIA	0.3	0.6	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 53
blackjack oak	Quercus marilandica	NSL	Medium	0.2	0.4	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 54
eastern redcedar	Juniperus virginiana	WDH	Medium	0.9	0.4	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 55
white ash	Fraxinus americana	WDL	Medium	0.1	0.2	0.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0 56
slippery elm	Ulmus rubra	WSL	Low	0.5	0.1	0.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good				2 57
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 58
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate +		3 59
boxelder	Acer negundo	WSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0 60
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 61
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 62
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				3 63
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown				3 64
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 65
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 66
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 67
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0 68
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 69
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3 70
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 71
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 72
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 73
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 74
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 75