

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 10,421 4,023.6 358

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	25	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	2					Increase	39	42	Very Good	12	14	Likely	0	0	
Hickory	7			Medium	36	52	No Change	11	8	Good	24	24	Infill	14	15
Maple	4	Abundant	3	Low	35	9	Decrease	23	23	Fair	8	10	Migrate	1	3
Oak	18	Common	21	FIA	2		New	6	7	Poor	16	11			
Pine	5	Rare	51				Unknown	8	7	Very Poor	11	13			
Other	39	Absent	8							FIA Only	1	1			
	75		83		87	86		87	87	Unknown	6	5			
											78	78			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.6	65.3	67.2	67.4	
	CCSM85	63.6	65.6	68.1	70.6	
	GFDL45	63.6	66.5	68.1	68.9	
	GFDL85	63.6	66.2	69.3	72.6	
	HAD45	63.6	66.0	68.9	70.1	
	HAD85	63.6	66.3	70.5	74.2	
Growing Season (May-Sep)	CCSM45	76.8	78.4	79.9	80.4	
	CCSM85	76.8	78.6	81.1	84.2	
	GFDL45	76.8	79.9	81.5	83.2	
	GFDL85	76.8	79.7	83.0	87.0	
	HAD45	76.8	80.1	82.8	83.9	
	HAD85	76.8	80.3	86.2	89.5	
Coldest Month (Average)	CCSM45	43.7	46.1	47.0	47.0	
	CCSM85	43.7	46.4	47.8	48.9	
	GFDL45	43.7	47.6	47.5	47.6	
	GFDL85	43.7	45.4	46.5	46.9	
	HAD45	43.7	44.1	45.9	46.6	
	HAD85	43.7	45.3	46.7	48.4	
Warmest Month (Average)	CCSM45	80.9	82.2	82.9	83.0	
	CCSM85	80.9	82.4	83.6	85.2	
	GFDL45	80.9	84.6	84.8	85.9	
	GFDL85	80.9	83.7	85.3	87.5	
	HAD45	80.9	85.2	87.1	87.3	
	HAD85	80.9	85.7	89.4	90.5	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	55.2	58.6	64.1	61.0	
	CCSM85	55.2	59.0	59.4	65.2	
	GFDL45	55.2	61.6	66.8	66.2	
	GFDL85	55.2	61.3	63.6	65.9	
	HAD45	55.2	53.8	58.3	60.2	
	HAD85	55.2	57.5	51.8	55.8	
Growing Season (May-Sep)	CCSM45	20.2	20.6	22.0	21.1	
	CCSM85	20.2	19.4	19.6	20.6	
	GFDL45	20.2	23.8	26.6	25.0	
	GFDL85	20.2	24.9	26.5	27.7	
	HAD45	20.2	18.7	20.7	19.6	
	HAD85	20.2	20.6	16.3	16.6	

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
loblolly pine	Pinus taeda	WDH	High	97.3	4600.7	34.7	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	99.7	1517.0	11.2	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	94.7	929.3	7.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
white oak	Quercus alba	WDH	Medium	71.3	354.2	3.4	No change	No change	High	Common	Good	Good			1	4
shortleaf pine	Pinus echinata	WDH	High	67.4	349.7	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
red maple	Acer rubrum	WDH	High	81.8	329.8	2.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
southern red oak	Quercus falcata	WDL	Medium	69.5	293.5	2.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
yellow-poplar	Liriodendron tulipifera	WDH	High	53.1	279.1	3.6	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	8
blackgum	Nyssa sylvatica	WDL	Medium	79.4	253.8	2.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	60	228.7	2.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
post oak	Quercus stellata	WDH	High	48.5	224.6	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
willow oak	Quercus phellos	NSL	Low	39.3	215.2	4.0	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
winged elm	Ulmus alata	WDL	Medium	75.3	203.0	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	49.2	159.9	2.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	14
sugarberry	Celtis laevigata	NDH	Medium	23.5	122.6	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
pignut hickory	Carya glabra	WDL	Medium	46.3	114.2	1.6	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
slippery elm	Ulmus rubra	WSL	Low	20.5	113.6	4.0	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	17
green ash	Fraxinus pennsylvanica	WSH	Low	38.3	109.9	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
black cherry	Prunus serotina	WDL	Medium	62.1	103.5	1.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
mockernut hickory	Carya alba	WDL	Medium	42.9	101.3	1.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
American elm	Ulmus americana	WDH	Medium	45	100.3	1.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
flowering dogwood	Cornus florida	WDL	Medium	57.8	84.6	1.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	22
eastern redcedar	Juniperus virginiana	WDH	Medium	37.8	74.1	1.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
spruce pine	Pinus glabra	NSL	Low	18.6	54.2	2.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	24
black willow	Salix nigra	NSH	Low	15	45.6	1.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	25
common persimmon	Diospyros virginiana	NSL	Low	42.6	44.9	0.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	26
sweetbay	Magnolia virginiana	NSL	Medium	12.5	43.2	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	27
overcup oak	Quercus lyrata	NSL	Medium	10.1	41.7	2.5	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	28
slash pine	Pinus elliotii	NDH	High	4.2	39.4	8.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
laurel oak	Quercus laurifolia	NDH	Medium	17.5	38.6	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
swamp chestnut oak	Quercus michauxii	NSL	Low	16.1	36.7	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	31
sourwood	Oxydendrum arboreum	NDL	High	24.8	34.3	0.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	32
American beech	Fagus grandifolia	WDH	High	19.8	32.0	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
sassafras	Sassafras albidum	WSL	Low	30	30.9	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	34
shagbark hickory	Carya ovata	WDL	Medium	14.9	30.5	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
black oak	Quercus velutina	WDH	High	24.9	29.8	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	18.1	24.5	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	37
blackjack oak	Quercus marilandica	NSL	Medium	12.6	21.7	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	38
Shumard oak	Quercus shumardii	NSL	Low	16.3	21.5	0.9	No change	Sm. inc.	High	Rare	Fair	Good			1	39
honeylocust	Gleditsia triacanthos	NSH	Low	1	20.9	21.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	40
white ash	Fraxinus americana	WDL	Medium	11	17.0	1.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	41
bald cypress	Taxodium distichum	NSH	Medium	2.1	16.0	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	42
American holly	Ilex opaca	NSL	Medium	14.5	14.4	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	43
water tupelo	Nyssa aquatica	NSH	Medium	3.7	13.4	1.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	44
water hickory	Carya aquatica	NSL	Medium	9.2	13.2	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
swamp tupelo	Nyssa biflora	NDH	Medium	5.8	13.0	2.3	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	46
florida maple	Acer barbatum	NSL	Low	1.7	13.0	6.5	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	47



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longleaf pine	Pinus palustris	NSH	Medium	3.3	13.0	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
sycamore	Platanus occidentalis	NSL	Low	7.6	12.9	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	49
boxelder	Acer negundo	WSH	Low	11.1	12.9	0.8	No change	Sm. inc.	High	Rare	Fair	Good			1	50
scarlet oak	Quercus coccinea	WDL	Medium	6.5	11.5	0.9	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor			0	51
eastern cottonwood	Populus deltoides	NSH	Low	0.5	9.0	4.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
bitternut hickory	Carya cordiformis	WSL	Low	7.4	8.2	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	53
northern red oak	Quercus rubra	WDH	Medium	2.8	7.5	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	54
pawpaw	Asimina triloba	NSL	Low	3.4	7.4	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
shellbark hickory	Carya laciniosa	NSL	Low	5.5	6.9	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
nuttall oak	Quercus texana	NSH	Medium	8.5	6.7	0.6	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	57
silver maple	Acer saccharinum	NSH	Low	1	6.1	6.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	58
eastern redbud	Cercis canadensis	NSL	Low	9.1	5.9	0.6	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
red mulberry	Morus rubra	NSL	Low	8.1	5.4	0.6	No change	No change	Medium	Rare	Poor	Poor			1	60
water elm	Planera aquatica	NSL	Low	1	4.1	4.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	61
southern magnolia	Magnolia grandiflora	NSL	Low	3.1	3.3	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	62
bigleaf magnolia	Magnolia macrophylla	NSL	Low	1	2.9	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	63
durand oak	Quercus sinuata var. sinuata	NSL	FIA	1	2.6	2.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	64
cedar elm	Ulmus crassifolia	NDH	Medium	2.9	2.6	0.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	65
Osage-orange	Maclura pomifera	NDH	Medium	1	2.6	2.7	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	66
river birch	Betula nigra	NSL	Low	1.4	2.2	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	67
serviceberry	Amelanchier spp.	NSL	Low	1	1.9	0.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	68
black walnut	Juglans nigra	WDH	Low	1	0.9	1.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	69
redbay	Persea borbonia	NSL	Low	1	0.9	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	70
live oak	Quercus virginiana	NDH	High	1	0.7	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	71
pecan	Carya illinoensis	NSH	Low	0.1	0.4	0.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	72
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.3	0.4	0.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	73
ailanthus	Ailanthus altissima	NSL	FIA	0.5	0.4	0.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	74
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1	0.2	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	75
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +	3	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	79
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	81
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
turkey oak	Quercus laevis	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	83
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	84
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	85
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	86
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	87