

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 4,023.6 318

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	Increase	RCP45	RCP85	Very Good	20	20	Likely	1	1	
Ash	2			Medium	37	56	No Change	16	16	Good	12	16	Infill	10	13
Hickory	8			Low	36	11	Decrease	27	23	Fair	13	13	Migrate	3	3
Maple	4	Abundant	3	FIA	2		New	9	9	Poor	14	12			
Oak	19	Common	32				Unknown	7	7	Very Poor	16	14			
Pine	6	Rare	43							FIA Only	2	2			
Other	39	Absent	12							Unknown	5	5			
	78		90		92	92		92	92		82	82		14	17

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	64.0	65.7	67.7	67.8	
Average	CCSM85	64.0	66.0	68.5	71.1	
	GFDL45	64.0	66.8	68.6	69.3	
	GFDL85	64.0	66.5	69.7	73.1	
	HAD45	64.0	66.3	69.0	70.5	
	HAD85	64.0	66.5	70.6	74.4	
Growing Season	CCSM45	77.1	78.7	80.4	80.8	
	CCSM85	77.1	78.8	81.4	84.6	
May—Sep	GFDL45	77.1	79.9	81.7	83.0	
	GFDL85	77.1	79.6	83.0	87.0	
	HAD45	77.1	80.4	82.8	84.5	
	HAD85	77.1	80.3	86.2	89.7	
Coldest Month	CCSM45	44.3	46.5	47.3	47.1	
Average	CCSM85	44.3	46.4	47.6	48.8	
	GFDL45	44.3	47.7	47.9	48.1	
	GFDL85	44.3	46.2	47.3	47.7	
	HAD45	44.3	44.3	45.9	46.6	
	HAD85	44.3	45.5	46.6	48.3	
Warmest Month	CCSM45	81.2	82.8	83.4	83.7	
Average	CCSM85	81.2	82.7	84.1	86.0	
	GFDL45	81.2	83.7	84.5	85.3	
	GFDL85	81.2	83.3	84.8	87.0	
	HAD45	81.2	85.5	87.2	87.9	
	HAD85	81.2	85.7	89.4	90.9	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	52.8	54.3	59.4	58.0	
Total	CCSM85	52.8	55.8	57.8	64.3	
	GFDL45	52.8	59.3	62.7	65.3	
	GFDL85	52.8	59.2	61.7	62.4	
	HAD45	52.8	51.2	56.9	57.1	
	HAD85	52.8	55.9	51.0	54.5	
Growing Season	CCSM45	20.6	21.7	23.8	23.2	
May—Sep	CCSM85	20.6	21.1	22.0	24.1	
	GFDL45	20.6	25.4	27.5	27.3	
	GFDL85	20.6	25.7	28.1	28.7	
	HAD45	20.6	19.7	21.6	20.7	
	HAD85	20.6	21.8	16.7	17.9	

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	93.1	4340.9	33.7	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	90.3	1261.0	9.6	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	85	924.1	7.5	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
southern red oak	Quercus falcata	WDL	Medium	53	297.8	4.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	4
yellow-poplar	Liriodendron tulipifera	WDH	High	53.7	275.7	3.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	5
red maple	Acer rubrum	WDH	High	60.1	263.2	3.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
white oak	Quercus alba	WDH	Medium	46.6	231.8	4.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
shortleaf pine	Pinus echinata	WDH	High	44.1	199.6	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
green ash	Fraxinus pennsylvanica	WDH	Low	30.7	165.9	4.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
mockernut hickory	Carya alba	WDL	Medium	43.4	163.7	2.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
pignut hickory	Carya glabra	WDL	Medium	49	160.0	2.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
flowering dogwood	Cornus florida	WDL	Medium	46.6	139.5	2.3	No change	No change	Medium	Common	Fair	Fair			1	12
post oak	Quercus stellata	WDH	High	46.1	138.1	2.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
longleaf pine	Pinus palustris	NSH	Medium	20.8	136.4	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
blackgum	Nyssa sylvatica	WDL	Medium	51.3	135.3	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
winged elm	Ulmus alata	WDL	Medium	51.5	128.5	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
sugarberry	Celtis laevigata	NDH	Medium	27.1	127.7	5.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
laurel oak	Quercus laurifolia	NDH	Medium	29.7	94.2	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
eastern redcedar	Juniperus virginiana	WDH	Medium	23.8	93.7	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	31.9	88.8	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
black cherry	Prunus serotina	WDL	Medium	45.3	85.1	1.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	21
American elm	Ulmus americana	WDH	Medium	26.3	81.0	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
sycamore	Platanus occidentalis	NSL	Low	14.7	80.6	5.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	23
sourwood	Oxydendrum arboreum	NDL	High	34.8	80.4	1.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	24
sweetbay	Magnolia virginiana	NSL	Medium	19.9	80.3	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
willow oak	Quercus phellos	NSL	Low	14.1	74.8	4.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
common persimmon	Diospyros virginiana	NSL	Low	48.4	72.1	1.3	Sm. dec.	No change	High	Common	Fair	Good			1	27
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	12.6	67.8	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
swamp tupelo	Nyssa biflora	NDH	Medium	7.7	67.4	12.0	No change	No change	Low	Common	Poor	Poor			0	29
boxelder	Acer negundo	WSH	Low	12.5	66.5	5.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	30
American beech	Fagus grandifolia	WDH	High	23.9	64.1	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	19.6	62.7	1.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	32
black oak	Quercus velutina	WDH	High	18.4	55.3	2.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	33
river birch	Betula nigra	NSL	Low	7.7	51.5	6.7	No change	No change	Medium	Common	Fair	Fair			1	34
Virginia pine	Pinus virginiana	NDH	High	10	50.4	3.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	35
chestnut oak	Quercus prinus	NDH	High	9.9	42.2	3.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	36
pecan	Carya illinoensis	NSH	Low	9.5	41.6	3.5	No change	No change	Low	Rare	Very Poor	Very Poor			0	37
Osage-orange	Maclura pomifera	NDH	Medium	9.9	38.2	5.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	38
water tupelo	Nyssa aquatica	NSH	Medium	3.6	36.8	4.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	39
northern red oak	Quercus rubra	WDH	Medium	8.3	33.2	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	40
eastern cottonwood	Populus deltoides	NSH	Low	4.4	33.1	5.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
black willow	Salix nigra	NSH	Low	14.6	32.3	2.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	42
honeylocust	Gleditsia triacanthos	NSH	Low	4.8	32.1	16.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	43
water hickory	Carya aquatica	NSL	Medium	3.3	31.0	6.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	44
shagbark hickory	Carya ovata	WSL	Medium	9.6	30.8	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
blackjack oak	Quercus marilandica	NSL	Medium	13.7	28.2	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	46
scarlet oak	Quercus coccinea	WDL	Medium	12.3	27.9	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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sassafras	Sassafras albidum	WSL	Low	18.6	27.8	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	48
swamp chestnut oak	Quercus michauxii	NSL	Low	9.4	23.6	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	49
spruce pine	Pinus glabra	NSL	Low	5.5	23.1	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
bald cypress	Taxodium distichum	NSH	Medium	5.3	22.2	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	51
red mulberry	Morus rubra	NSL	Low	10.7	20.7	1.1	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	52
florida maple	Acer barbatum	NSL	Low	13.8	18.6	0.8	No change	Sm. inc.	High	Rare	Fair	Good			1	53
durand oak	Quercus sinuata var. sinuata	NSL	FIA	5.2	17.1	1.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	54
turkey oak	Quercus laevis	NSH	Medium	4.8	16.9	3.5	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	55
American holly	Ilex opaca	NSL	Medium	10.6	12.8	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	56
bigleaf magnolia	Magnolia macrophylla	NSL	Low	4.8	12.7	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
black walnut	Juglans nigra	WDH	Low	5.3	12.4	1.6	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
southern magnolia	Magnolia grandiflora	NSL	Low	1	11.8	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	59
white ash	Fraxinus americana	WDL	Medium	4.3	10.2	1.4	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	60
eastern redbud	Cercis canadensis	NSL	Low	6	9.8	1.0	No change	No change	Medium	Rare	Poor	Poor			1	61
American basswood	Tilia americana	WSL	Medium	5	9.3	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	62
slash pine	Pinus elliotii	NDH	High	1	9.0	9.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	63
black locust	Robinia pseudoacacia	NDH	Low	2.3	8.2	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	64
slippery elm	Ulmus rubra	WSL	Low	11	7.4	0.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	1	65
overcup oak	Quercus lyrata	NSL	Medium	3.1	7.1	1.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	66
black hickory	Carya texana	NDL	High	1	7.0	7.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	67
cucumbertree	Magnolia acuminata	NSL	Low	2.9	4.1	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	68
Shumard oak	Quercus shumardii	NSL	Low	1.4	3.8	1.1	Sm. dec.	No change	High	Rare	Poor	Fair			0	69
bitternut hickory	Carya cordiformis	WSL	Low	3.1	3.6	0.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	70
wild plum	Prunus americana	NSLX	FIA	6.5	1.7	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
pawpaw	Asimina triloba	NSL	Low	1	1.2	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	72
silver maple	Acer saccharinum	NSH	Low	1	1.0	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	73
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.2	0.8	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	74
hackberry	Celtis occidentalis	WDH	Medium	1.9	0.6	0.3	No change	Lg. inc.	High	Rare	Fair	Good			2	75
bluejack oak	Quercus incana	NSL	Low	1	0.5	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	76
shellbark hickory	Carya laciniosa	NSL	Low	0.6	0.2	0.1	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	77
redbay	Persea borbonia	NSL	Low	1	0.2	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	78
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	79
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	80
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	83
sweet birch	Betula lenta	NDH	High	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	84
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	85
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	86
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	87
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	88
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	89
nuttall oak	Quercus texana	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	90
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	91
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	92

