

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	10,188	3,933.4	168

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	10	18	Increase	13	19	Very Good	1	3	Likely	4	4
Ash	2			Medium	24	33	No Change	13	10	Good	16	18	Infill	10	11
Hickory	6			Low	24	8	Decrease	21	18	Fair	7	4	Migrate	3	4
Maple	1	Abundant	2	FIA	2		New	8	8	Poor	10	11			
Oak	12	Common	15				Unknown	5	5	Very Poor	13	11			
Pine	2	Rare	32							FIA Only	1	1			
Other	26	Absent	10							Unknown	3	3			
	49		59		60	59		60	60					17	19

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	61.8	63.5	65.1	65.8	
	CCSM85	61.8	64.1	66.3	68.9	
	GFDL45	61.8	66.6	66.4	67.8	
	GFDL85	61.8	64.7	67.6	71.4	
	HAD45	61.8	64.0	66.7	67.7	
	HAD85	61.8	64.3	68.6	71.9	
Growing Season (May—Sep)	CCSM45	77.0	78.5	80.1	80.9	
	CCSM85	77.0	79.6	81.6	84.9	
	GFDL45	77.0	83.3	82.5	85.0	
	GFDL85	77.0	80.9	84.3	89.0	
	HAD45	77.0	79.2	81.7	82.5	
	HAD85	77.0	79.8	84.8	87.6	
Coldest Month (Average)	CCSM45	38.8	41.2	42.1	42.7	
	CCSM85	38.8	41.2	42.1	43.6	
	GFDL45	38.8	42.4	42.5	42.8	
	GFDL85	38.8	39.8	41.3	41.8	
	HAD45	38.8	39.3	41.6	41.8	
	HAD85	38.8	41.6	43.4	45.1	
Warmest Month (Average)	CCSM45	83.1	84.5	85.4	85.7	
	CCSM85	83.1	85.6	86.3	88.1	
	GFDL45	83.1	88.2	88.7	90.7	
	GFDL85	83.1	87.9	89.7	93.7	
	HAD45	83.1	85.3	86.7	87.0	
	HAD85	83.1	86.4	88.9	89.9	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	42.4	42.4	43.3	42.5	
	CCSM85	42.4	41.3	43.7	43.5	
	GFDL45	42.4	43.7	48.7	43.0	
	GFDL85	42.4	44.1	48.2	47.0	
	HAD45	42.4	43.4	43.4	45.8	
	HAD85	42.4	45.5	39.6	43.2	
Growing Season (May—Sep)	CCSM45	19.9	19.6	19.0	19.3	
	CCSM85	19.9	19.5	18.3	18.3	
	GFDL45	19.9	20.8	23.1	20.7	
	GFDL85	19.9	21.6	23.7	21.9	
	HAD45	19.9	20.2	19.7	20.7	
	HAD85	19.9	20.9	16.2	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
post oak	Quercus stellata	WDH	High	92.2	1522.0	26.0	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
winged elm	Ulmus alata	WDL	Medium	90.7	532.1	10.6	No change	No change	Medium	Abundant	Good	Good			1	2
blackjack oak	Quercus marilandica	NSL	Medium	67.4	405.4	8.2	No change	No change	High	Common	Good	Good			1	3
eastern redcedar	Juniperus virginiana	WDH	Medium	74.4	376.5	9.5	No change	Sm. inc.	Medium	Common	Fair	Good			1	4
green ash	Fraxinus pennsylvanica	WSH	Low	37.9	318.8	11.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	5
black hickory	Carya texana	NDL	High	59.6	263.6	6.9	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	6
Osage-orange	Maclura pomifera	NDH	Medium	63.7	199.8	6.1	No change	Sm. inc.	High	Common	Good	Very Good			1	7
black oak	Quercus velutina	WDH	High	58.3	167.1	5.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
American elm	Ulmus americana	WDH	Medium	54.5	149.7	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
southern red oak	Quercus falcata	WDL	Medium	7.4	105.9	15.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	10
shortleaf pine	Pinus echinata	WDH	High	4.2	96.4	6.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	11
honeylocust	Gleditsia triacanthos	NSH	Low	28.2	93.2	5.0	No change	Sm. inc.	High	Common	Good	Very Good			1	12
pecan	Carya illinoensis	NSH	Low	47.4	92.3	6.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
sycamore	Platanus occidentalis	NSL	Low	19.6	91.2	9.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	14
water oak	Quercus nigra	WDH	High	4.8	65.7	7.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	15
sugarberry	Celtis laevigata	NDH	Medium	51.3	61.6	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
common persimmon	Diospyros virginiana	NSL	Low	27.6	55.9	4.9	No change	No change	High	Common	Good	Good			1	17
boxelder	Acer negundo	WSH	Low	19.8	44.4	3.2	No change	Sm. inc.	High	Rare	Fair	Good			1	18
white ash	Fraxinus americana	WDL	Medium	48.7	41.5	2.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	19
hackberry	Celtis occidentalis	WDH	Medium	30.6	34.7	4.4	Sm. dec.	Sm. inc.	High	Rare	Poor	Good			1	20
slippery elm	Ulmus rubra	WSL	Low	24.4	27.0	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	21
chinkapin oak	Quercus muehlenbergii	NSL	Medium	26.5	23.4	4.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
Shumard oak	Quercus shumardii	NSL	Low	28.4	19.6	1.7	No change	Sm. inc.	High	Rare	Fair	Good			1	23
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	23.4	14.7	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	24
bur oak	Quercus macrocarpa	NDH	Medium	11.7	14.1	2.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	2	25
mockernut hickory	Carya alba	WDL	Medium	6.9	13.2	1.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	26
northern red oak	Quercus rubra	WDH	Medium	26.2	11.9	2.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	27
bitternut hickory	Carya cordiformis	WSL	Low	16.9	11.6	1.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +		1	28
eastern cottonwood	Populus deltoides	NSH	Low	7.8	10.4	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	29
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	1	9.9	10.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
river birch	Betula nigra	NSL	Low	3.4	9.9	2.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	31
wild plum	Prunus americana	NSLX	FIA	6.7	9.7	2.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	32
black willow	Salix nigra	NSH	Low	11	9.5	2.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	33
red mulberry	Morus rubra	NSL	Low	11.2	8.6	1.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	34
cedar elm	Ulmus crassifolia	NDH	Medium	2.9	8.5	1.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	35
black walnut	Juglans nigra	WDH	Low	18	8.0	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
overcup oak	Quercus lyrata	NSL	Medium	1.1	8.0	2.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	37
eastern redbud	Cercis canadensis	NSL	Low	14.7	7.9	0.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
ashe juniper	Juniperus ashei	NDH	High	4.8	6.0	8.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	39
black cherry	Prunus serotina	WDL	Medium	3.8	5.3	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	40
loblolly pine	Pinus taeda	WDH	High	1.3	4.1	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
water hickory	Carya aquatica	NSL	Medium	0.2	3.0	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
flowering dogwood	Cornus florida	WDL	Medium	9.8	3.0	1.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	43
blackgum	Nyssa sylvatica	WDL	Medium	0.2	2.5	0.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	44
shagbark hickory	Carya ovata	WSL	Medium	0.2	0.8	0.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
white mulberry	Morus alba	NSL	FIA	1	0.7	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
pin oak	Quercus palustris	NSH	Low	1	0.5	0.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	47



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pawpaw	Asimina triloba	NSL	Low	0.5	0.4	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
American basswood	Tilia americana	WSL	Medium	3.9	0.3	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	51
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	52
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	53
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	54
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	56
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	58
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	59
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	60