

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	9,813.8	3,789.1	94

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	12	20	Increase	18	19	Very Good	3	4	Likely	4	4
Hickory	6			Medium	21	36	No Change	11	12	Good	16	17	Infill	27	27
Maple	3	Abundant	0	Low	27	7	Decrease	14	12	Fair	8	8	Migrate	6	7
Oak	10	Common	21	FIA	4		New	13	14	Poor	10	9		37	38
Pine	0	Rare	26				Unknown	8	7	Very Poor	5	5			
Other	26	Absent	16					64	64	FIA Only	3	3			
	47		63		64	63				Unknown	4	3			
											49	49			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	56.7	58.6	60.5	60.8	
	CCSM85	56.7	59.3	61.6	64.5	
	GFDL45	56.7	61.8	61.9	62.9	
	GFDL85	56.7	59.7	62.5	66.6	
	HAD45	56.7	59.2	62.1	63.5	
HAD85	56.7	59.5	64.2	67.7		
Growing Season May—Sep	CCSM45	73.4	75.6	77.3	77.8	
	CCSM85	73.4	76.6	78.7	82.2	
	GFDL45	73.4	80.0	79.7	81.6	
	GFDL85	73.4	77.2	80.5	85.6	
	HAD45	73.4	76.0	78.5	79.9	
HAD85	73.4	76.4	82.0	85.2		
Coldest Month Average	CCSM45	30.7	32.7	34.0	34.5	
	CCSM85	30.7	33.3	34.3	36.0	
	GFDL45	30.7	34.9	35.2	35.1	
	GFDL85	30.7	33.0	34.2	35.1	
	HAD45	30.7	31.9	34.5	34.5	
HAD85	30.7	33.7	36.0	37.8		
Warmest Month Average	CCSM45	79.8	82.3	83.3	83.8	
	CCSM85	79.8	83.6	84.6	86.3	
	GFDL45	79.8	84.4	85.8	87.3	
	GFDL85	79.8	84.2	85.8	89.7	
	HAD45	79.8	82.7	84.4	85.1	
HAD85	79.8	84.0	86.9	88.4		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	46.0	43.7	46.3	45.7	
	CCSM85	46.0	44.6	46.5	46.4	
	GFDL45	46.0	50.0	51.5	49.6	
	GFDL85	46.0	49.6	57.1	55.3	
	HAD45	46.0	46.8	47.9	48.7	
HAD85	46.0	48.5	43.7	47.2		
Growing Season May—Sep	CCSM45	24.2	21.7	23.0	22.6	
	CCSM85	24.2	22.7	22.4	22.4	
	GFDL45	24.2	26.8	25.7	25.7	
	GFDL85	24.2	26.3	29.8	27.9	
	HAD45	24.2	24.0	24.7	24.9	
HAD85	24.2	25.2	20.6	21.8		

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
American elm	Ulmus americana	WDH	Medium	72.7	423.9	11.4	No change	No change	Medium	Common	Fair	Fair			1	1
Osage-orange	Maclura pomifera	NDH	Medium	55.4	367.2	14.1	No change	No change	High	Common	Good	Good			1	2
hackberry	Celtis occidentalis	WDH	Medium	63.6	310.0	13.0	No change	No change	High	Common	Good	Good			1	3
post oak	Quercus stellata	WDH	High	30.7	284.3	17.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
black oak	Quercus velutina	WDH	High	27.6	229.8	11.7	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
black walnut	Juglans nigra	WDH	Low	55.8	217.6	7.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	6
green ash	Fraxinus pennsylvanica	WSH	Low	39.1	214.0	10.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
pin oak	Quercus palustris	NSH	Low	39.5	128.9	8.6	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	8
slippery elm	Ulmus rubra	WSL	Low	22.8	121.4	8.7	Sm. dec.	No change	Medium	Common	Poor	Fair			1	9
silver maple	Acer saccharinum	NSH	Low	17.2	118.8	8.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	10
sycamore	Platanus occidentalis	NSL	Low	12.6	104.6	10.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	11
red mulberry	Morus rubra	NSL	Low	44.7	103.4	4.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	12
honeylocust	Gleditsia triacanthos	NSH	Low	33.1	94.4	4.9	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	1	13
eastern redcedar	Juniperus virginiana	WDH	Medium	18	90.7	9.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	14
boxelder	Acer negundo	WSH	Low	5.4	76.1	5.6	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	15
pecan	Carya illinoensis	NSH	Low	20.4	74.3	5.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	2	16
mockernut hickory	Carya alba	WDL	Medium	13.5	64.4	5.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	17
river birch	Betula nigra	NSL	Low	4.8	57.4	10.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	18
black willow	Salix nigra	NSH	Low	10.6	56.4	8.1	Sm. inc.	Lg. inc.	Low	Common	Fair	Good	Infill +	Infill ++	2	19
shagbark hickory	Carya ovata	WSL	Medium	16	51.9	6.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	20
white ash	Fraxinus americana	WDL	Medium	20	51.1	7.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	21
bitternut hickory	Carya cordiformis	WDL	Low	24.3	49.5	9.1	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	22
black hickory	Carya texana	NDL	High	23.8	47.4	4.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	23
common persimmon	Diospyros virginiana	NSL	Low	24	44.7	4.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	24
black cherry	Prunus serotina	WDL	Medium	31.7	32.9	2.4	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	25
blackjack oak	Quercus marilandica	NSL	Medium	19.3	31.3	3.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	26
sugarberry	Celtis laevigata	NDH	Medium	1	25.2	24.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	27
white oak	Quercus alba	WDH	Medium	7.1	23.5	2.2	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	28
northern red oak	Quercus rubra	WDH	Medium	8.7	14.8	7.7	Sm. inc.	No change	High	Rare	Good	Fair	Infill ++	Infill +	2	29
shellbark hickory	Carya laciniosa	NSL	Low	0.2	14.3	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
bur oak	Quercus macrocarpa	NDH	Medium	16.9	13.7	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	31
red maple	Acer rubrum	WDH	High	0.4	11.7	0.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
chinkapin oak	Quercus muehlenbergii	NSL	Medium	5.3	11.1	5.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
eastern cottonwood	Populus deltoides	NSH	Low	3.5	10.4	7.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	34
eastern redbud	Cercis canadensis	NSL	Low	14	10.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	35
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	9	9.7	4.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	36
Shumard oak	Quercus shumardii	NSL	Low	9.3	8.7	3.0	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	37
southern red oak	Quercus falcata	WDL	Medium	0.9	8.1	7.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	38
flowering dogwood	Cornus florida	WDL	Medium	0.8	7.0	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
sassafras	Sassafras albidum	WSL	Low	3.5	5.7	0.8	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			0	40
pawpaw	Asimina triloba	NSL	Low	5.1	5.3	3.0	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
white mulberry	Morus alba	NSL	FIA	2.6	5.0	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
chokecherry	Prunus virginiana	NSLX	FIA	2.2	2.8	6.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	43
wild plum	Prunus americana	NSLX	FIA	2	2.0	3.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	44
blackgum	Nyssa sylvatica	WDL	Medium	1	1.9	1.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	45
serviceberry	Amelanchier spp.	NSL	Low	1.9	0.8	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
American basswood	Tilia americana	WSL	Medium	4.1	0.2	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	48
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	49
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	50
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	51
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	52
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	53
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	54
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	56
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	57
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	58
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	59
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	60
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	61
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	62
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	63
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	64