

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	9,941.4	3,838.4	101

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	8	17	Increase	14	14	Very Good	0	0	Likely	0	1
Hickory	4			Medium	18	24	No Change	10	12	Good	10	10	Infill	14	14
Maple	3	Abundant	0	Low	20	7	Decrease	13	11	Fair	9	9	Migrate	3	4
Oak	8	Common	6	FIA	4		New	6	7	Poor	13	14			
Pine	0	Rare	35				Unknown	7	6	Very Poor	4	4			
Other	24	Absent	8							FIA Only	2	2			
	41		49		50	48		50	50	Unknown	3	2			
											41	41			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	59.4	61.3	63.0	63.6	
	CCSM85	59.4	61.8	64.0	66.8	
	GFDL45	59.4	65.6	64.4	65.6	
	GFDL85	59.4	62.3	65.2	69.2	
	HAD45	59.4	61.8	64.4	65.5	
	HAD85	59.4	62.0	66.6	69.8	
Growing Season (May—Sep)	CCSM45	75.6	77.8	79.4	80.1	
	CCSM85	75.6	78.5	80.6	83.9	
	GFDL45	75.6	83.9	81.7	84.0	
	GFDL85	75.6	79.4	82.8	87.9	
	HAD45	75.6	77.9	80.1	81.1	
	HAD85	75.6	78.4	83.6	86.2	
Coldest Month Average	CCSM45	34.5	36.8	37.9	38.6	
	CCSM85	34.5	37.1	37.9	39.6	
	GFDL45	34.5	38.6	38.8	38.8	
	GFDL85	34.5	36.0	37.4	38.1	
	HAD45	34.5	35.5	37.9	37.9	
	HAD85	34.5	37.5	39.5	41.3	
Warmest Month Average	CCSM45	81.9	84.2	85.3	85.8	
	CCSM85	81.9	85.0	86.0	87.8	
	GFDL45	81.9	86.8	87.9	89.6	
	GFDL85	81.9	86.5	88.1	92.4	
	HAD45	81.9	84.2	85.8	86.2	
	HAD85	81.9	85.6	88.1	89.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	39.7	38.2	40.3	39.3	
	CCSM85	39.7	39.0	40.0	40.8	
	GFDL45	39.7	42.0	45.2	42.2	
	GFDL85	39.7	42.5	47.8	46.2	
	HAD45	39.7	41.1	41.8	43.3	
	HAD85	39.7	41.3	36.9	41.0	
Growing Season (May—Sep)	CCSM45	21.2	19.2	20.1	19.9	
	CCSM85	21.2	20.2	19.5	20.2	
	GFDL45	21.2	22.5	23.3	22.6	
	GFDL85	21.2	23.2	26.3	24.3	
	HAD45	21.2	21.5	22.2	22.3	
	HAD85	21.2	21.7	17.8	19.5	

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	77.1	291.1	28.6	No change	No change	High	Common	Good	Good			1	1
blackjack oak	Quercus marilandica	NSL	Medium	71.3	149.0	14.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	2
eastern redcedar	Juniperus virginiana	WDH	Medium	54.1	85.0	9.5	No change	No change	Medium	Common	Fair	Fair			1	3
American elm	Ulmus americana	WDH	Medium	60.1	66.2	7.8	No change	No change	Medium	Common	Fair	Fair			1	4
pecan	Carya illinoensis	NSH	Low	39	59.5	11.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	5
red mulberry	Morus rubra	NSL	Low	20.9	58.1	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	6
hackberry	Celtis occidentalis	WDH	Medium	51.6	38.9	5.6	No change	No change	High	Rare	Fair	Fair			1	7
black oak	Quercus velutina	WDH	High	48.5	38.3	8.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	8
black hickory	Carya texana	NDL	High	52.7	38.1	4.5	No change	No change	Medium	Rare	Poor	Poor			1	9
green ash	Fraxinus pennsylvanica	WSH	Low	37.8	26.1	2.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	10
bitternut hickory	Carya cordiformis	WSL	Low	26.9	20.1	6.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	11
sugarberry	Celtis laevigata	NDH	Medium	24.4	20.1	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	12
common persimmon	Diospyros virginiana	NSL	Low	24.9	14.0	7.8	Lg. inc.	Sm. inc.	High	Rare	Good	Good			1	13
honeylocust	Gleditsia triacanthos	NSH	Low	17.5	10.3	6.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	14
wild plum	Prunus americana	NSLX	FIA	14.6	9.6	3.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	15
northern red oak	Quercus rubra	WDH	Medium	18.1	9.4	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	16
slippery elm	Ulmus rubra	WSL	Low	11.7	9.1	2.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	17
bur oak	Quercus macrocarpa	NDH	Medium	16.8	8.7	2.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	18
Shumard oak	Quercus shumardii	NSL	Low	17.3	7.9	4.7	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	19
white ash	Fraxinus americana	WDL	Medium	22.6	7.3	2.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	20
black walnut	Juglans nigra	WDH	Low	27	7.2	3.1	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair			1	21
Osage-orange	Maclura pomifera	NDH	Medium	10	6.7	2.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	22
white oak	Quercus alba	WDH	Medium	2.6	5.5	1.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	23
boxelder	Acer negundo	WSH	Low	9.1	4.9	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	24
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	24.9	4.8	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
eastern redbud	Cercis canadensis	NSL	Low	24.9	4.1	1.4	No change	No change	Medium	Rare	Poor	Poor			1	26
chinkapin oak	Quercus muehlenbergii	NSL	Medium	18.2	3.9	1.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	27
eastern cottonwood	Populus deltoides	NSH	Low	2.3	3.7	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	28
black willow	Salix nigra	NSH	Low	6.3	2.8	2.3	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	2	29
sycamore	Platanus occidentalis	NSL	Low	7.3	2.3	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	30
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	2.1	2.0	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
black locust	Robinia pseudoacacia	NDH	Low	2	1.0	1.9	Very Lg. dec.	No change	Medium	Rare	Lost	Poor			0	32
river birch	Betula nigra	NSL	Low	4	0.8	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
winged elm	Ulmus alata	WDL	Medium	11.6	0.5	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	34
silver maple	Acer saccharinum	NSH	Low	0.7	0.5	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	35
black cherry	Prunus serotina	WDL	Medium	6.7	0.4	0.2	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	36
serviceberry	Amelanchier spp.	NSL	Low	7.3	0.4	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
white mulberry	Morus alba	NSL	FIA	0.7	0.2	0.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	38
Siberian elm	Ulmus pumila	NDH	FIA	2.8	0.2	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
sugar maple	Acer saccharum	WDH	High	4	0.1	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	40
mockernut hickory	Carya alba	WDL	Medium	2	0.1	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	41
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	42
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	43
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	44
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	45
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	46
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	47



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pin oak	Quercus palustris	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Likely +	3	48
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	49
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	50