

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	9,683.1	3,738.7	25

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	5	12	Increase	4	5	Very Good	0	0
Hickory	2			Medium	15	26	No Change	9	7	Good	5	3
Maple	1	Abundant	0	Low	21	5	Decrease	11	12	Fair	4	6
Oak	3	Common	3	FIA	2		New	13	13	Poor	6	7
Pine	0	Rare	23				Unknown	6	6	Very Poor	9	8
Other	18	Absent	17							FIA Only	2	2
	26		43		43	43		43	43	Unknown	4	4
											30	30

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	54.7	56.6	58.5	59.0	
	CCSM85	54.7	57.2	59.4	62.0	
	GFDL45	54.7	60.9	59.7	60.9	
	GFDL85	54.7	57.6	60.5	64.7	
	HAD45	54.7	57.2	60.1	61.2	
HAD85	54.7	57.5	62.3	65.5		
Growing Season (May—Sep)	CCSM45	72.4	74.7	76.6	77.2	
	CCSM85	72.4	75.4	77.6	80.6	
	GFDL45	72.4	80.8	78.6	80.8	
	GFDL85	72.4	76.2	79.5	84.9	
	HAD45	72.4	74.5	76.8	78.0	
HAD85	72.4	75.2	80.4	83.2		
Coldest Month (Average)	CCSM45	27.4	29.2	30.4	31.1	
	CCSM85	27.4	29.7	30.5	32.1	
	GFDL45	27.4	31.2	31.7	31.8	
	GFDL85	27.4	29.4	30.7	31.8	
	HAD45	27.4	29.0	31.7	31.5	
HAD85	27.4	30.9	33.5	35.3		
Warmest Month (Average)	CCSM45	79.3	81.8	83.0	83.7	
	CCSM85	79.3	82.9	84.2	85.9	
	GFDL45	79.3	83.5	84.8	86.3	
	GFDL85	79.3	83.7	85.0	89.3	
	HAD45	79.3	81.3	83.0	83.6	
HAD85	79.3	83.2	85.8	87.3		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	35.7	34.7	36.0	34.3	
	CCSM85	35.7	36.0	35.8	37.1	
	GFDL45	35.7	38.9	41.1	39.3	
	GFDL85	35.7	39.6	45.8	42.8	
	HAD45	35.7	39.2	38.2	38.7	
HAD85	35.7	37.3	34.7	38.4		
Growing Season (May—Sep)	CCSM45	21.8	20.2	21.1	19.7	
	CCSM85	21.8	21.3	20.8	21.5	
	GFDL45	21.8	24.1	24.3	23.4	
	GFDL85	21.8	24.7	28.1	25.5	
	HAD45	21.8	22.8	23.3	23.1	
HAD85	21.8	21.9	19.5	20.5		

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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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
Osage-orange	Maclura pomifera	NDH	Medium	30.6	124.6	22.5	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	1
American elm	Ulmus americana	WDH	Medium	51.5	91.2	10.3	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	2
hackberry	Celtis occidentalis	WDH	Medium	44.4	90.1	14.9	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	3
green ash	Fraxinus pennsylvanica	WSH	Low	34.3	47.7	9.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	4
bur oak	Quercus macrocarpa	NDH	Medium	29.4	45.0	12.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	5
eastern redcedar	Juniperus virginiana	WDH	Medium	19.8	28.3	11.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	6
black walnut	Juglans nigra	WDH	Low	29.5	24.9	8.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	7
chinkapin oak	Quercus muehlenbergii	NSL	Medium	6.9	24.8	5.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	8
honeylocust	Gleditsia triacanthos	NSH	Low	26.7	23.7	6.3	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	9
bitternut hickory	Carya cordiformis	WSL	Low	18.2	19.8	8.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	10
eastern redbud	Cercis canadensis	NSL	Low	15.9	18.8	7.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	11
white ash	Fraxinus americana	WDL	Medium	8.7	18.2	23.0	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	12
slippery elm	Ulmus rubra	WSL	Low	18.4	13.3	7.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	13
eastern cottonwood	Populus deltoides	NSH	Low	4.9	11.6	18.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	14
sycamore	Platanus occidentalis	NSL	Low	7.5	10.1	10.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	15
northern red oak	Quercus rubra	WDH	Medium	5.8	10.0	14.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	16
red mulberry	Morus rubra	NSL	Low	16.6	9.5	4.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	17
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	17.3	9.1	5.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	18
northern catalpa	Catalpa speciosa	NSHX	FIA	2.5	8.5	19.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	19
boxelder	Acer negundo	WSH	Low	3.1	6.4	5.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
black willow	Salix nigra	NSH	Low	0.8	2.8	2.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	21
American basswood	Tilia americana	WSL	Medium	4.3	2.7	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0.2	1.5	0.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	23
shagbark hickory	Carya ovata	WSL	Medium	2.6	1.0	2.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	24
pawpaw	Asimina triloba	NSL	Low	3.2	0.9	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
Ohio buckeye	Aesculus glabra	NSL	Low	4.5	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	27
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	28
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	29
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	30
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	31
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	32
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	33
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	34
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	35
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	36
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	37
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	38
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	39
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	40
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	41
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	42
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	43