

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	8,837.4	3,412.1	29

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		Increase	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85	
Ash	2			6	12	8	8	0	0	Likely	0	0	
Hickory	1			14	17	No Change	2	2	4	5	Infill	11	11
Maple	3	Abundant	0	Low	6	Decrease	16	16	6	5	Migrate	2	4
Oak	4	Common	3	FIA	3	New	6	6	7	7		13	15
Pine	0	Rare	26			Unknown	3	3	8	8			
Other	19	Absent	6				35	35	Very Poor	8	8		
	29		35						FIA Only	3	3		
									Unknown	0	0		
										28	28		

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	44.9	46.8	49.7	50.2	
	CCSM85	44.9	47.7	50.8	54.3	
	GFDL45	44.9	51.5	50.2	51.5	
	GFDL85	44.9	48.0	51.3	56.1	
	HAD45	44.9	47.8	51.5	53.4	
HAD85	44.9	48.4	53.0	58.0		
Growing Season (May—Sep)	CCSM45	65.9	68.0	70.6	71.1	
	CCSM85	65.9	68.8	71.8	76.1	
	GFDL45	65.9	74.0	72.1	74.0	
	GFDL85	65.9	69.6	73.3	78.9	
	HAD45	65.9	68.6	71.6	73.7	
HAD85	65.9	69.0	73.4	78.2		
Coldest Month Average	CCSM45	11.3	13.3	15.7	16.4	
	CCSM85	11.3	13.5	15.7	18.0	
	GFDL45	11.3	15.0	16.4	16.7	
	GFDL85	11.3	15.0	16.8	19.4	
	HAD45	11.3	13.0	17.2	17.1	
HAD85	11.3	16.6	20.6	23.8		
Warmest Month Average	CCSM45	72.3	74.9	76.4	77.2	
	CCSM85	72.3	76.4	78.3	81.0	
	GFDL45	72.3	75.5	77.0	78.4	
	GFDL85	72.3	76.3	78.1	81.6	
	HAD45	72.3	75.0	76.9	78.1	
HAD85	72.3	76.4	78.7	82.1		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	29.5	30.5	30.0	29.4	
	CCSM85	29.5	29.5	29.4	30.0	
	GFDL45	29.5	32.7	35.1	32.3	
	GFDL85	29.5	33.2	35.7	34.3	
	HAD45	29.5	32.2	31.3	31.2	
HAD85	29.5	30.5	31.6	33.9		
Growing Season (May—Sep)	CCSM45	18.9	18.9	18.2	17.7	
	CCSM85	18.9	18.0	17.0	16.7	
	GFDL45	18.9	21.0	22.0	19.5	
	GFDL85	18.9	21.4	21.5	19.8	
	HAD45	18.9	19.5	18.2	17.9	
HAD85	18.9	18.0	17.2	17.1		

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
boxelder	Acer negundo	WSH	Low	46.4	102.4	24.8	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
green ash	Fraxinus pennsylvanica	WSH	Low	53.5	94.7	19.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	2
silver maple	Acer saccharinum	NSH	Low	18.6	53.1	34.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	3
American basswood	Tilia americana	WSL	Medium	33.8	44.1	8.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	4
American elm	Ulmus americana	WDH	Medium	37.7	32.1	8.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	5
sugar maple	Acer saccharum	WDH	High	25.3	31.4	10.5	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	6
bur oak	Quercus macrocarpa	NDH	Medium	25.9	26.3	4.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	7
northern red oak	Quercus rubra	WDH	Medium	19.9	25.6	10.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	8
eastern cottonwood	Populus deltoides	NSH	Low	15.5	21.3	8.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	9
slippery elm	Ulmus rubra	WSL	Low	41	20.5	5.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	10
hackberry	Celtis occidentalis	WDH	Medium	27.8	20.0	8.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	11
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	33.2	19.4	4.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	12
red mulberry	Morus rubra	NSL	Low	9.1	4.6	8.1	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	13
rock elm	Ulmus thomasii	NSLX	FIA	4.5	3.5	12.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	14
black cherry	Prunus serotina	WDL	Medium	14.3	3.3	2.5	Lg. inc.	Sm. inc.	Low	Rare	Fair	Poor	Infill +	Infill +	2	15
black walnut	Juglans nigra	WDH	Low	11.9	3.3	3.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	16
quaking aspen	Populus tremuloides	WDH	High	3.1	3.0	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	17
white oak	Quercus alba	WDH	Medium	4.5	3.0	10.7	No change	Sm. dec.	High	Rare	Fair	Poor	Infill +	Infill +	2	18
butternut	Juglans cinerea	NSLX	FIA	7.8	2.9	2.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	19
bitternut hickory	Carya cordiformis	WSL	Low	8.3	2.8	2.7	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	20
wild plum	Prunus americana	NSLX	FIA	3.2	2.3	5.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	21
paper birch	Betula papyrifera	WDH	High	0.3	2.2	0.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
yellow birch	Betula alleghaniensis	NDL	High	4.5	1.4	4.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
eastern redcedar	Juniperus virginiana	WDH	Medium	6.2	1.2	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	24
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0.9	0.7	0.5	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	25
bigtooth aspen	Populus grandidentata	NSL	Medium	0.3	0.5	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
black ash	Fraxinus nigra	WSH	Medium	3.1	0.4	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	27
white spruce	Picea glauca	NSL	Medium	4.5	0.3	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
black willow	Salix nigra	NSH	Low	3.6	0.1	0.3	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair		Infill +	2	29
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	30
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	31
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	32
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	33
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	34
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	35