

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	8,985.5	3,469.3	49

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	3			High	6	14	Increase	7	6	Very Good	0	0
Hickory	2			Medium	19	22	No Change	6	7	Good	8	7
Maple	3	Abundant	0	Low	15	6	Decrease	15	15	Fair	7	7
Oak	5	Common	10	FIA	3		New	10	10	Poor	5	6
Pine	2	Rare	21				Unknown	5	5	Very Poor	5	3
Other	16	Absent	11							FIA Only	2	2
	31		42		43	42		43	43	Unknown	2	2
											29	27

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	45.0	47.0	49.9	50.3	
	CCSM85	45.0	47.9	50.8	54.3	
	GFDL45	45.0	51.3	50.5	51.8	
	GFDL85	45.0	48.3	51.6	56.4	
	HAD45	45.0	47.9	51.7	53.5	
Growing Season (May—Sep)	CCSM45	65.1	67.2	69.8	70.3	
	CCSM85	65.1	68.2	70.8	75.1	
	GFDL45	65.1	72.9	71.5	73.6	
	GFDL85	65.1	69.1	72.8	78.6	
	HAD45	65.1	68.0	71.0	73.1	
Coldest Month Average	CCSM45	12.8	14.9	17.4	17.8	
	CCSM85	12.8	15.6	17.6	19.9	
	GFDL45	12.8	16.5	17.9	18.2	
	GFDL85	12.8	16.5	18.2	20.4	
	HAD45	12.8	14.2	18.5	18.3	
Warmest Month Average	CCSM45	71.3	73.8	75.3	76.0	
	CCSM85	71.3	75.3	77.0	79.6	
	GFDL45	71.3	74.5	76.0	77.7	
	GFDL85	71.3	75.4	77.3	81.3	
	HAD45	71.3	74.2	76.2	77.4	
HAD85	71.3	75.7	78.3	81.7		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	34.5	34.6	34.2	33.8	
	CCSM85	34.5	33.5	34.6	34.5	
	GFDL45	34.5	37.8	40.9	38.4	
	GFDL85	34.5	38.3	40.7	39.7	
	HAD45	34.5	36.7	36.8	36.4	
Growing Season (May—Sep)	CCSM45	21.6	21.2	20.4	20.6	
	CCSM85	21.6	20.1	20.3	19.2	
	GFDL45	21.6	23.4	25.1	22.6	
	GFDL85	21.6	23.9	24.0	22.4	
	HAD45	21.6	22.1	21.0	20.9	
HAD85	21.6	21.1	19.6	19.8		

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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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
boxelder	Acer negundo	WSH	Low	53.6	315.2	16.7	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
American elm	Ulmus americana	WDH	Medium	65.7	284.8	13.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	2
bur oak	Quercus macrocarpa	NDH	Medium	34.4	231.4	22.2	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	3
American basswood	Tilia americana	WSL	Medium	31.7	172.4	10.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	4
northern red oak	Quercus rubra	WDH	Medium	19.4	141.5	14.1	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	5
sugar maple	Acer saccharum	WDH	High	10.3	125.8	10.8	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	6
black walnut	Juglans nigra	WDH	Low	15.1	112.0	6.3	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	7
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	22.7	87.4	12.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	8
black cherry	Prunus serotina	WDL	Medium	37.2	58.0	6.0	Sm. inc.	No change	Low	Common	Fair	Poor	Infill +	Infill +	2	9
white oak	Quercus alba	WDH	Medium	7.6	51.9	5.2	No change	No change	High	Common	Good	Good			2	10
slippery elm	Ulmus rubra	WSL	Low	33.2	49.3	4.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	11
hackberry	Celtis occidentalis	WDH	Medium	32.2	47.5	4.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	12
eastern redcedar	Juniperus virginiana	WDH	Medium	13.2	35.9	5.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	13
green ash	Fraxinus pennsylvanica	WSH	Low	25.2	32.1	7.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	14
bitternut hickory	Carya cordiformis	WSL	Low	7.8	28.8	7.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	15
white spruce	Picea glauca	NSL	Medium	6.7	26.1	46.1	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	16
northern pin oak	Quercus ellipsoidalis	NSH	Medium	19.9	25.1	7.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	17
red pine	Pinus resinosa	NSH	Medium	3.3	24.3	14.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	18
chokecherry	Prunus virginiana	NSLX	FIA	15.6	21.3	2.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	19
silver maple	Acer saccharinum	NSH	Low	6.9	20.1	24.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	20
black ash	Fraxinus nigra	WSH	Medium	12.4	17.8	4.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			2	21
white ash	Fraxinus americana	WDL	Medium	8.3	16.5	4.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	22
bigtooth aspen	Populus grandidentata	NSL	Medium	5.6	13.1	15.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	23
eastern white pine	Pinus strobus	WDH	High	5.6	12.8	8.0	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	24
quaking aspen	Populus tremuloides	WDH	High	11.2	11.1	5.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	25
shagbark hickory	Carya ovata	WSL	Medium	1.1	2.4	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	26
black willow	Salix nigra	NSH	Low	0.2	2.3	0.4	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	27
wild plum	Prunus americana	NSLX	FIA	4.5	2.1	7.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	28
Siberian elm	Ulmus pumila	NDH	FIA	1	1.2	1.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	29
eastern cottonwood	Populus deltoides	NSH	Low	0.2	1.1	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	30
black oak	Quercus velutina	WDH	High	0.7	1.0	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	31
paper birch	Betula papyrifera	WDH	High	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Likely +		3	32
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	33
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	34
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	35
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	36
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	37
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	38
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	39
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	40
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	41
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	42
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	43