

	sq. km	sq. mi	FIA Plots
Area of Region	21,728	8,389.4	58

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	1			High	6	11	Increase	5	5	Very Good	0	0
Hickory	0			Medium	11	20	No Change	8	8	Good	1	3
Maple	2	Abundant	0	Low	14	2	Decrease	2	2	Fair	9	7
Oak	1	Common	2	FIA	4		New	14	14	Poor	5	5
Pine	1	Rare	17				Unknown	6	6	Very Poor	0	0
Other	14	Absent	14							FIA Only	2	2
	19		33		35	33		35	35	Unknown	2	2
											15	14

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	48.0	49.9	52.2	52.9	
	CCSM85	48.0	50.4	53.1	56.3	
	GFDL45	48.0	53.9	52.5	53.9	
	GFDL85	48.0	50.7	53.8	58.3	
	HAD45	48.0	51.0	54.7	56.0	
HAD85	48.0	51.5	56.6	60.6		
Growing Season (May—Sep)	CCSM45	67.7	69.8	72.4	73.1	
	CCSM85	67.7	70.6	73.2	77.3	
	GFDL45	67.7	75.4	73.5	75.5	
	GFDL85	67.7	71.1	74.7	80.3	
	HAD45	67.7	70.1	73.1	74.6	
HAD85	67.7	70.6	75.0	79.2		
Coldest Month Average	CCSM45	18.2	20.4	21.6	22.6	
	CCSM85	18.2	19.8	21.2	23.3	
	GFDL45	18.2	21.6	22.2	22.6	
	GFDL85	18.2	21.3	22.7	24.5	
	HAD45	18.2	20.9	24.6	23.9	
HAD85	18.2	23.9	28.4	30.4		
Warmest Month Average	CCSM45	75.0	77.7	79.6	80.3	
	CCSM85	75.0	79.1	80.7	83.7	
	GFDL45	75.0	78.7	80.1	81.3	
	GFDL85	75.0	79.4	80.9	84.6	
	HAD45	75.0	77.7	79.6	80.6	
HAD85	75.0	78.8	81.4	84.2		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	24.0	24.8	23.7	23.6	
	CCSM85	24.0	24.0	24.9	25.0	
	GFDL45	24.0	27.8	30.4	29.3	
	GFDL85	24.0	27.5	31.1	30.5	
	HAD45	24.0	27.6	26.3	27.4	
HAD85	24.0	25.8	26.8	29.0		
Growing Season (May—Sep)	CCSM45	15.4	15.2	14.1	13.7	
	CCSM85	15.4	14.2	14.9	14.2	
	GFDL45	15.4	18.2	19.7	18.3	
	GFDL85	15.4	18.0	19.5	18.6	
	HAD45	15.4	16.7	15.5	15.7	
HAD85	15.4	15.2	14.9	14.2		

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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Section 332D

EcoMap 2007

Climate Change Atlas Tree Species

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

Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern redcedar	Juniperus virginiana	WDH	Medium	39.5	149.9	28.8	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	1
bur oak	Quercus macrocarpa	NDH	Medium	29.9	115.8	28.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	2
hackberry	Celtis occidentalis	WDH	Medium	16.3	40.5	12.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	3
American elm	Ulmus americana	WDH	Medium	22.8	32.7	15.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	4
green ash	Fraxinus pennsylvanica	WSH	Low	25.1	29.7	12.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	5
Siberian elm	Ulmus pumila	NDH	FIA	4.5	25.6	13.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	6
eastern cottonwood	Populus deltoides	NSH	Low	10.2	23.0	17.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	7
black locust	Robinia pseudoacacia	NDH	Low	0.5	5.1	12.3	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +		2	8
black walnut	Juglans nigra	WDH	Low	2.8	3.8	8.1	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	9
Scots pine	Pinus sylvestris	NSH	FIA	1.9	2.1	17.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	10
boxelder	Acer negundo	WSH	Low	3.9	2.0	4.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	11
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.1	1.7	2.4	No change	No change	High	Rare	Fair	Fair	Infill +		2	12
northern catalpa	Catalpa speciosa	NSHX	FIA	0.5	1.5	3.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	13
red mulberry	Morus rubra	NSL	Low	5.2	1.4	1.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	14
silver maple	Acer saccharinum	NSH	Low	1.7	0.8	6.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	15
slippery elm	Ulmus rubra	WSL	Low	5.4	0.8	1.0	No change	No change	Medium	Rare	Poor	Poor			0	16
American basswood	Tilia americana	WSL	Medium	3.9	0.6	2.6	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	17
chokecherry	Prunus virginiana	NSLX	FIA	1.9	0.1	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	18
Osage-orange	Maclura pomifera	NDH	Medium	1.9	0.1	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	19
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	20
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	21
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	22
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	23
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	24
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	25
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	26
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	27
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	28
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	29
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	30
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	31
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	32
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	33
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	34
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	35

