

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	8,739.8	3,374.5	125

**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				Increase	15	17	Very Good	2	2	
Hickory	4				No Change	13	9	Good	17	18	
Maple	4	Abundant	High	20	Decrease	20	22	Fair	8	4	
Oak	7	Common	Medium	37	New	16	16	Poor	8	10	
Pine	3	Rare	Low	11	Unknown	7	7	Very Poor	11	11	
Other	31	Absent	FIA	4				FIA Only	1	1	
	<b>52</b>	<b>70</b>		<b>71</b>	<b>68</b>		<b>71</b>	<b>50</b>	<b>49</b>		
										<b>14</b>	<b>17</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	50.0	51.8	54.4	54.5
	CCSM85	50.0	52.4	54.9	58.2
	GFDL45	50.0	54.9	55.8	56.8
	GFDL85	50.0	53.3	56.9	61.2
	HAD45	50.0	53.1	56.6	58.3
	HAD85	50.0	53.3	57.9	62.9
Growing Season (May—Sep)	CCSM45	66.7	68.4	70.7	71.2
	CCSM85	66.7	69.0	71.5	75.5
	GFDL45	66.7	72.6	73.8	75.2
	GFDL85	66.7	70.8	75.0	79.9
	HAD45	66.7	70.2	73.2	75.6
	HAD85	66.7	70.0	75.6	81.1
Coldest Month Average	CCSM45	24.1	25.9	27.8	28.0
	CCSM85	24.1	26.9	28.1	30.2
	GFDL45	24.1	27.2	28.2	28.9
	GFDL85	24.1	27.6	28.8	30.4
	HAD45	24.1	25.4	28.5	28.6
	HAD85	24.1	26.7	29.2	32.0
Warmest Month Average	CCSM45	72.5	74.4	75.8	76.2
	CCSM85	72.5	75.2	76.8	79.1
	GFDL45	72.5	75.6	77.7	78.6
	GFDL85	72.5	76.6	78.8	81.7
	HAD45	72.5	76.4	78.5	80.1
	HAD85	72.5	77.2	81.1	84.9

**Precipitation (in)**

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	39.0	40.2	40.1	41.8
	CCSM85	39.0	40.6	41.4	42.6
	GFDL45	39.0	43.0	45.9	46.8
	GFDL85	39.0	41.1	46.5	48.8
	HAD45	39.0	39.7	40.7	40.5
	HAD85	39.0	41.1	38.0	41.5
Growing Season (May—Sep)	CCSM45	18.8	19.1	18.8	19.3
	CCSM85	18.8	18.5	18.9	18.2
	GFDL45	18.8	20.7	21.3	21.9
	GFDL85	18.8	19.6	21.2	21.5
	HAD45	18.8	19.2	17.3	18.2
	HAD85	18.8	18.8	15.3	16.1

**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
red maple	Acer rubrum	WDH	High	86.5	803.8	17.1	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
black cherry	Prunus serotina	WDL	Medium	78.8	420.2	13.5	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	2
sugar maple	Acer saccharum	WDH	High	48.7	354.0	11.4	No change	No change	High	Common	Good	Good			1	3
American elm	Ulmus americana	WDH	Medium	76.7	314.9	8.3	No change	No change	Medium	Common	Fair	Fair			1	4
yellow-poplar	Liriodendron tulipifera	WDH	High	28.6	249.7	14.8	No change	Sm. dec.	High	Common	Good	Fair			1	5
white ash	Fraxinus americana	WDL	Medium	62.2	240.1	8.5	Sm. inc.	No change	Low	Common	Fair	Poor			1	6
green ash	Fraxinus pennsylvanica	WSH	Low	58.6	229.2	8.5	No change	Sm. inc.	Medium	Common	Fair	Good			1	7
American beech	Fagus grandifolia	WDH	High	46.4	205.8	8.4	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
northern red oak	Quercus rubra	WDH	Medium	53.3	190.6	7.2	No change	No change	High	Common	Good	Good			1	9
shagbark hickory	Carya ovata	WSL	Medium	35.1	127.9	6.6	No change	No change	Medium	Common	Fair	Fair			1	10
pin oak	Quercus palustris	NSH	Low	33.2	126.1	8.9	Sm. dec.	No change	Low	Common	Poor	Poor			0	11
silver maple	Acer saccharinum	NSH	Low	31	124.2	8.7	No change	No change	High	Common	Good	Good			1	12
sassafras	Sassafras albidum	WSL	Low	22.8	88.1	8.1	No change	Sm. dec.	Medium	Common	Fair	Poor			1	13
sycamore	Platanus occidentalis	NSL	Low	19.1	81.8	10.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
bitternut hickory	Carya cordiformis	WDL	Low	28.6	79.4	5.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	15
eastern white pine	Pinus strobus	WDH	High	16	74.4	8.5	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	16
white oak	Quercus alba	WDH	Medium	24.6	70.8	5.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
American basswood	Tilia americana	WSL	Medium	40.1	64.9	5.3	No change	Sm. dec.	Medium	Common	Fair	Poor			1	18
Norway spruce	Picea abies	NSH	FIA	13	63.5	9.5	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
eastern cottonwood	Populus deltoides	NSH	Low	20.5	53.7	7.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	20
bigtooth aspen	Populus grandidentata	NSL	Medium	22.2	50.1	4.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	21
ailanthus	Ailanthus altissima	NSL	FIA	6.9	42.3	12.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	22
Scots pine	Pinus sylvestris	NSH	FIA	11.4	38.6	17.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	23
blackgum	Nyssa sylvatica	WDL	Medium	24.5	38.6	3.4	No change	Sm. inc.	High	Rare	Fair	Good			1	24
swamp white oak	Quercus bicolor	NSL	Low	9.2	37.6	7.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
slippery elm	Ulmus rubra	WSL	Low	16	30.7	3.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	26
Osage-orange	Maclura pomifera	NDH	Medium	2.3	29.3	12.8	No change	No change	High	Rare	Fair	Fair	Infill +		2	27
black walnut	Juglans nigra	WDH	Low	22.9	23.8	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	28
black locust	Robinia pseudoacacia	NDH	Low	15.3	23.2	7.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	29
black oak	Quercus velutina	WDH	High	5.7	21.3	11.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	30
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	22.9	20.6	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	31
black willow	Salix nigra	NSH	Low	16	19.5	7.3	Lg. dec.	Sm. inc.	Low	Rare	Very Poor	Poor	Infill +		1	32
cucumbertree	Magnolia acuminata	NSL	Low	11.4	15.5	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
boxelder	Acer negundo	WSH	Low	13.7	14.0	3.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	34
bur oak	Quercus macrocarpa	NDH	Medium	1.1	12.5	10.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	35
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	8	11.8	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	36
yellow birch	Betula alleghaniensis	NDL	High	3.4	11.5	3.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
chokecherry	Prunus virginiana	NSLX	FIA	6.9	11.4	5.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
quaking aspen	Populus tremuloides	WDH	High	6.9	6.4	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
eastern hemlock	Tsuga canadensis	NSH	High	5.7	3.8	3.1	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	40
serviceberry	Amelanchier spp.	NSL	Low	1.1	3.7	3.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
pignut hickory	Carya glabra	WDL	Medium	5.7	3.6	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	42
mockernut hickory	Carya alba	WDL	Medium	4.6	3.1	10.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	43
flowering dogwood	Cornus florida	WDL	Medium	1.9	2.4	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	44
black ash	Fraxinus nigra	WSH	Medium	5.7	1.6	0.9	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	45
Ohio buckeye	Aesculus glabra	NSL	Low	4.6	0.9	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
sweetgum	Liquidambar styraciflua	WDH	High	5	0.9	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	47

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sweet birch	Betula lenta	NDH	High	9.2	0.5	0.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	48
honeylocust	Gleditsia triacanthos	NSH	Low	4.6	0.3	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
hackberry	Celtis occidentalis	WDH	Medium	9.2	0.3	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	50
Virginia pine	Pinus virginiana	NDH	High	4.6	0.2	0.6	No change	Lg. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	51
scarlet oak	Quercus coccinea	WDL	Medium	4.6	0.1	0.4	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	52
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	53
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	54
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	55
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	56
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	57
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	58
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	59
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	60
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	61
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	63
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	65
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	67
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	68
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	70
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	71