

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	46,354	17,897	238

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	14	23	Increase	14	20	Very Good	2	3	Likely	1	1
Hickory	7			Medium	28	44	No Change	18	13	Good	10	12	Infill	35	35
Maple	5	Abundant	0	Low	31	11	Decrease	23	22	Fair	12	10	Migrate	4	10
Oak	11	Common	13	FIA	7		New	14	17	Poor	16	17			
Pine	3	Rare	49				Unknown	11	8	Very Poor	15	13			
Other	33	Absent	18							FIA Only	5	5			
	62		80		80	78		80	80	Unknown	4	1			
											64	61			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	48.2	49.8	51.5	51.8	
	CCSM85	48.2	50.4	52.3	54.6	
	GFDL45	48.2	52.2	52.6	53.3	
	GFDL85	48.2	50.6	53.3	56.6	
	HAD45	48.2	50.4	53.2	54.6	
	HAD85	48.2	50.8	54.6	58.1	
Growing Season (May—Sep)	CCSM45	62.8	64.6	66.0	66.7	
	CCSM85	62.8	65.4	67.2	69.9	
	GFDL45	62.8	67.7	67.9	69.2	
	GFDL85	62.8	65.8	68.9	73.0	
	HAD45	62.8	65.2	67.5	69.3	
	HAD85	62.8	65.5	70.0	73.5	
Coldest Month (Average)	CCSM45	24.6	26.0	27.6	27.8	
	CCSM85	24.6	27.0	28.1	29.4	
	GFDL45	24.6	28.1	28.7	29.2	
	GFDL85	24.6	27.4	28.6	29.5	
	HAD45	24.6	25.8	28.4	28.5	
	HAD85	24.6	27.5	30.0	31.8	
Warmest Month (Average)	CCSM45	67.6	69.4	70.5	71.1	
	CCSM85	67.6	70.6	72.0	73.2	
	GFDL45	67.6	70.2	71.6	72.5	
	GFDL85	67.6	70.8	72.3	74.9	
	HAD45	67.6	70.2	71.9	72.7	
	HAD85	67.6	71.5	74.2	76.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	30.8	29.6	31.0	30.3	
	CCSM85	30.8	30.1	30.9	31.2	
	GFDL45	30.8	33.8	36.0	36.8	
	GFDL85	30.8	33.7	38.1	38.4	
	HAD45	30.8	32.2	33.7	33.3	
	HAD85	30.8	33.0	31.8	34.4	
Growing Season (May—Sep)	CCSM45	15.6	15.0	15.4	14.2	
	CCSM85	15.6	14.4	14.6	14.1	
	GFDL45	15.6	16.6	17.1	17.6	
	GFDL85	15.6	16.8	18.0	17.5	
	HAD45	15.6	15.9	15.1	15.4	
	HAD85	15.6	15.8	13.7	13.9	

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
American elm	Ulmus americana	WDH	Medium	52.8	171.0	10.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	1
white oak	Quercus alba	WDH	Medium	30	116.9	11.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	2
silver maple	Acer saccharinum	NSH	Low	17	87.2	25.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	3
black cherry	Prunus serotina	WDL	Medium	41.1	85.6	7.6	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	4
black oak	Quercus velutina	WDH	High	20.4	85.5	10.0	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	5
sugar maple	Acer saccharum	WDH	High	18.6	76.5	10.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	6
black walnut	Juglans nigra	WDH	Low	38.8	76.0	9.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	7
shingle oak	Quercus imbricaria	NDH	Medium	21	71.7	9.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	8
shagbark hickory	Carya ovata	WSL	Medium	24.1	71.1	7.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	9
honeylocust	Gleditsia triacanthos	NSH	Low	24.4	70.0	10.8	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	1	10
hackberry	Celtis occidentalis	WDH	Medium	38.1	65.5	7.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	11
northern red oak	Quercus rubra	WDH	Medium	21.4	62.7	8.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	12
white ash	Fraxinus americana	WDL	Medium	20.7	58.5	7.3	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	13
Osage-orange	Maclura pomifera	NDH	Medium	22.3	47.8	11.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	14
black willow	Salix nigra	NSH	Low	12	47.3	16.9	Lg. dec.	No change	Low	Rare	Very Poor	Very Poor			2	15
bitternut hickory	Carya cordiformis	WSL	Low	20.6	44.7	6.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	16
green ash	Fraxinus pennsylvanica	WSH	Low	21.1	36.1	7.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	17
slippery elm	Ulmus rubra	WSL	Low	28.2	35.5	4.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	18
bur oak	Quercus macrocarpa	NDH	Medium	10.1	31.1	12.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	19
American basswood	Tilia americana	WSL	Medium	11.5	30.8	8.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	20
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17.2	29.9	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	21
sycamore	Platanus occidentalis	NSL	Low	7.8	27.7	13.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	22
black locust	Robinia pseudoacacia	NDH	Low	6.9	25.8	19.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	23
red mulberry	Morus rubra	NSL	Low	16.2	24.6	5.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	24
eastern cottonwood	Populus deltoides	NSH	Low	11.3	24.5	14.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	25
eastern redcedar	Juniperus virginiana	WDH	Medium	5.1	23.5	11.1	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	26
sassafras	Sassafras albidum	WSL	Low	10	18.5	3.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
boxelder	Acer negundo	WSH	Low	10.4	13.6	4.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	28
mockernut hickory	Carya alba	WDL	Medium	10	13.3	3.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	29
pignut hickory	Carya glabra	WDL	Medium	3.7	11.8	3.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	30
post oak	Quercus stellata	WDH	High	4.8	11.0	7.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	31
white mulberry	Morus alba	NSL	FIA	9.2	10.1	6.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	32
swamp white oak	Quercus bicolor	NSL	Low	2.9	8.7	5.0	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	33
eastern white pine	Pinus strobus	WDH	High	3.5	8.1	22.6	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	34
eastern redbud	Cercis canadensis	NSL	Low	6.5	6.5	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	35
chinkapin oak	Quercus muehlenbergii	NSL	Medium	8.6	5.3	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	36
Ohio buckeye	Aesculus glabra	NSL	Low	7.1	5.1	4.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
black maple	Acer nigrum	NSH	Low	4.7	4.9	5.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	38
northern catalpa	Catalpa speciosa	NSHX	FIA	3.5	4.5	20.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	39
flowering dogwood	Cornus florida	WDL	Medium	3.5	4.0	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	40
pin oak	Quercus palustris	NSH	Low	6.7	3.7	8.3	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	41
Siberian elm	Ulmus pumila	NDH	FIA	1.6	3.4	31.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
jack pine	Pinus banksiana	NSH	Medium	0	2.8	1.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	43
wild plum	Prunus americana	NSLX	FIA	0.4	2.3	5.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	44
red pine	Pinus resinosa	NSH	Medium	1.1	1.8	11.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	45
common persimmon	Diospyros virginiana	NSL	Low	0.4	1.7	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	46
pawpaw	Asimina triloba	NSL	Low	2	1.7	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
pecan	<i>Carya illinoensis</i>	NSH	Low	2.3	1.3	2.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	48
black hickory	<i>Carya texana</i>	NDL	High	2.8	1.2	3.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	49
cherrybark oak; swamp red o.	<i>Quercus pagoda</i>	NSL	Medium	0.1	1.1	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	50
Kentucky coffeetree	<i>Gymnocladus dioicus</i>	NSLX	FIA	0.1	0.9	1.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	51
American hornbeam; musclev	<i>Carpinus caroliniana</i>	WSL	Low	1.3	0.7	1.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	52
river birch	<i>Betula nigra</i>	NSL	Low	0.9	0.7	1.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	2.6	0.7	4.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	54
red maple	<i>Acer rubrum</i>	WDH	High	0.9	0.5	9.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	55
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	0.2	0.5	2.2	No change	Lg. inc.	High	Rare	Fair	Good	Infill +		2	56
blue ash	<i>Fraxinus quadrangulata</i>	NSL	Low	0.9	0.4	6.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	57
butternut	<i>Juglans cinerea</i>	NSLX	FIA	0.4	0.4	0.8	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	58
serviceberry	<i>Amelanchier spp.</i>	NSL	Low	1.1	0.2	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
bigtooth aspen	<i>Populus grandidentata</i>	NSL	Medium	0.9	0.1	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	60
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0.9	0.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
chokecherry	<i>Prunus virginiana</i>	NSLX	FIA	0.9	0.0	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	62
ashe juniper	<i>Juniperus ashei</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
loblolly pine	<i>Pinus taeda</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	64
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	65
yellow birch	<i>Betula alleghaniensis</i>	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	67
American beech	<i>Fagus grandifolia</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate ++	3	71
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	72
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	73
overcup oak	<i>Quercus lyrata</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	74
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	75
water oak	<i>Quercus nigra</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	76
willow oak	<i>Quercus phellos</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	78
winged elm	<i>Ulmus alata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	79
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	80