

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	28,310	10,930	179

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	4			High	15	22	Increase	14	16	Very Good	1	1	Likely	0	0
Hickory	4			Medium	28	46	No Change	17	14	Good	14	14	Infill	32	31
Maple	6	Abundant	0	Low	31	11	Decrease	25	26	Fair	9	12	Migrate	7	11
Oak	8	Common	14	FIA	11		New	15	15	Poor	14	9		39	42
Pine	5	Rare	53				Unknown	14	14	Very Poor	17	18			
Other	40	Absent	18							FIA Only	5	5			
	67		85		85	79		85	85	Unknown	3	3			
											63	62			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	43.8	45.1	46.8	46.9	
Average	CCSM85	43.8	45.5	47.3	49.4	
	GFDL45	43.8	47.3	47.5	48.2	
	GFDL85	43.8	45.9	48.2	51.1	
	HAD45	43.8	45.7	48.1	49.3	
	HAD85	43.8	46.0	49.1	52.5	
Growing Season	CCSM45	56.0	57.4	58.9	59.3	
	CCSM85	56.0	58.0	59.6	62.0	
May—Sep	GFDL45	56.0	60.3	60.5	61.6	
	GFDL85	56.0	58.6	61.3	64.8	
	HAD45	56.0	58.2	60.1	61.5	
	HAD85	56.0	58.1	61.7	65.1	
Coldest Month	CCSM45	24.2	25.1	26.8	26.8	
	CCSM85	24.2	25.9	27.1	28.3	
Average	GFDL45	24.2	26.8	27.5	27.8	
	GFDL85	24.2	26.7	27.6	28.7	
	HAD45	24.2	25.1	27.7	27.7	
	HAD85	24.2	26.8	28.9	30.9	
Warmest Month	CCSM45	60.1	61.5	62.5	63.0	
	CCSM85	60.1	62.5	63.7	64.8	
Average	GFDL45	60.1	62.2	63.3	64.1	
	GFDL85	60.1	62.9	64.2	66.3	
	HAD45	60.1	62.4	63.7	64.5	
	HAD85	60.1	63.1	65.3	67.6	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	25.2	24.9	24.6	24.7	
Total	CCSM85	25.2	25.0	24.8	25.3	
	GFDL45	25.2	26.9	29.7	30.0	
	GFDL85	25.2	27.5	31.0	31.4	
	HAD45	25.2	26.1	27.3	27.1	
	HAD85	25.2	27.2	25.6	27.7	
Growing Season	CCSM45	13.1	13.2	12.8	12.4	
	CCSM85	13.1	12.4	12.2	11.9	
May—Sep	GFDL45	13.1	13.5	14.9	15.0	
	GFDL85	13.1	14.2	15.1	14.8	
	HAD45	13.1	13.1	12.3	12.8	
	HAD85	13.1	13.1	11.0	11.3	

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
black cherry	Prunus serotina	WDL	Medium	54.5	321.6	16.8	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor	Infill +		0	1
boxelder	Acer negundo	WDH	Low	23.8	119.4	12.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	2
American elm	Ulmus americana	WDH	Medium	35	107.5	6.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	3
white oak	Quercus alba	WDH	Medium	33.4	100.7	8.8	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	4
black walnut	Juglans nigra	WDH	Low	29.5	89.1	7.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
black oak	Quercus velutina	WDH	High	26.2	89.1	9.0	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	2	6
green ash	Fraxinus pennsylvanica	WSH	Low	31	86.5	9.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	7
American basswood	Tilia americana	WSL	Medium	21.4	73.4	11.2	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	8
bur oak	Quercus macrocarpa	NDH	Medium	23.5	70.8	10.6	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	9
northern red oak	Quercus rubra	WDH	Medium	24.3	69.5	5.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	10
white ash	Fraxinus americana	WDL	Medium	24.1	64.5	5.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2	11
sassafras	Sassafras albidum	WSL	Low	17.3	57.1	5.9	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	12
sugar maple	Acer saccharum	WDH	High	11.7	54.0	4.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	13
shagbark hickory	Carya ovata	WSL	Medium	19.5	52.5	5.4	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	2	14
eastern white pine	Pinus strobus	WDH	High	4.7	44.1	11.9	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	15
red pine	Pinus resinosa	NSH	Medium	5	43.9	15.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	16
silver maple	Acer saccharinum	NSH	Low	20.8	43.6	17.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	17
red maple	Acer rubrum	WDH	High	11.2	36.5	4.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	18
quaking aspen	Populus tremuloides	WDH	High	7.7	36.4	7.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	19
Siberian elm	Ulmus pumila	NDH	FIA	0.4	35.3	100.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	20
eastern cottonwood	Populus deltoides	NSH	Low	17	29.3	15.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	21
black willow	Salix nigra	NSH	Low	10.1	25.9	4.6	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor			2	22
black locust	Robinia pseudoacacia	NDH	Low	10.4	25.5	9.4	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	23
yellow-poplar	Liriodendron tulipifera	WDH	High	2	24.3	9.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	24
pin oak	Quercus palustris	NSH	Low	9.4	18.6	8.7	No change	No change	Low	Rare	Very Poor	Very Poor			2	25
Norway spruce	Picea abies	NSH	FIA	2.1	16.7	14.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
bitternut hickory	Carya cordiformis	WSL	Low	11.6	15.4	2.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	27
Osage-orange	Maclura pomifera	NDH	Medium	3.6	15.2	8.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	28
hackberry	Celtis occidentalis	WDH	Medium	11.8	15.1	7.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	29
Scots pine	Pinus sylvestris	NSH	FIA	3.1	14.8	8.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	30
northern pin oak	Quercus ellipsoidalis	NSH	Medium	7.6	14.7	6.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	31
slippery elm	Ulmus rubra	WSL	Low	11.1	12.9	2.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	32
red mulberry	Morus rubra	NSL	Low	9.8	12.8	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
honeylocust	Gleditsia triacanthos	NSH	Low	8.3	12.8	14.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	34
eastern redcedar	Juniperus virginiana	WDH	Medium	7.2	11.6	16.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	35
pignut hickory	Carya glabra	WDL	Medium	4.2	11.4	6.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	36
blackgum	Nyssa sylvatica	WDL	Medium	9	10.2	4.4	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	37
river birch	Betula nigra	NSL	Low	3.5	9.4	9.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	38
black ash	Fraxinus nigra	WSH	Medium	1.7	7.1	6.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	39
white mulberry	Morus alba	NSL	FIA	13.8	6.4	3.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	40
swamp white oak	Quercus bicolor	NSL	Low	8.8	4.3	5.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	41
pin cherry	Prunus pensylvanica	NSL	Low	0.2	4.2	5.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	42
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	8.1	4.1	2.1	Sm. inc.	No change	High	Rare	Good	Fair		Infill +	2	43
mockernut hickory	Carya alba	WDL	Medium	0.1	3.4	2.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	44
northern catalpa	Catalpa speciosa	NSHX	FIA	0.2	3.2	5.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	45
Virginia pine	Pinus virginiana	NDH	High	0.4	2.5	7.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
jack pine	Pinus banksiana	NSH	Medium	3.5	2.4	7.3	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	47

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black maple	Acer nigrum	NSH	Low	4.3	2.1	4.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	48
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.6	2.0	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	49
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	1.7	1.9	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
shingle oak	Quercus imbricaria	NDH	Medium	2.8	1.4	8.0	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	51
bigtooth aspen	Populus grandidentata	NSL	Medium	4.3	1.2	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	52
butternut	Juglans cinerea	NSLX	FIA	1.4	1.0	1.7	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	53
sycamore	Platanus occidentalis	NSL	Low	4.3	1.0	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	54
American beech	Fagus grandifolia	WDH	High	2.1	1.0	1.0	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	55
serviceberry	Amelanchier spp.	NSL	Low	3.3	0.8	2.7	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
northern white-cedar	Thuja occidentalis	WSH	High	0.5	0.5	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	57
chokecherry	Prunus virginiana	NSLX	FIA	1.6	0.5	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	58
balsam poplar	Populus balsamifera	NSH	Medium	1.3	0.4	4.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
white spruce	Picea glauca	NSL	Medium	0.7	0.4	2.1	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	60
blue ash	Fraxinus quadrangulata	NSL	Low	1.6	0.3	1.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	61
wild plum	Prunus americana	NSLX	FIA	0.3	0.3	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	62
ailanthus	Ailanthus altissima	NSL	FIA	0.2	0.2	0.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	63
Ohio buckeye	Aesculus glabra	NSL	Low	0.2	0.1	0.2	No change	Lg. dec.	Medium	Rare	Poor	Very Poor			0	64
Norway maple	Acer platanoides	NSL	FIA	0.7	0.1	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	65
pawpaw	Asimina triloba	NSL	Low	1.4	0.1	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	66
flowering dogwood	Cornus florida	WDL	Medium	1.4	0.0	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	67
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	69
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	70
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	71
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	73
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	74
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	75
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
cucumber tree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	78
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	79
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			2	80
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	81
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	82
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	84
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	85