

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	32,557	12,570	276

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	22	24	Very Good	4	5	Likely	2	2
Hickory	7			Medium	25	42	No Change	16	16	Good	15	17	Infill	38	40
Maple	5	Abundant	1	Low	31	10	Decrease	17	15	Fair	16	15	Migrate	3	4
Oak	11	Common	16	FIA	8		New	12	12	Poor	7	8			
Pine	1	Rare	46				Unknown	11	11	Very Poor	11	9			
Other	36	Absent	14							FIA Only	5	5			
	63		77		78	75		78	78	Unknown	3	3			
											61	62			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	51.1	52.6	54.0	54.3	
	CCSM85	51.1	53.0	54.7	56.9	
	GFDL45	51.1	54.2	55.0	55.8	
	GFDL85	51.1	53.3	55.5	58.5	
	HAD45	51.1	53.0	55.1	56.1	
	HAD85	51.1	53.2	56.7	59.3	
Growing Season (May—Sep)	CCSM45	63.4	65.0	66.3	66.7	
	CCSM85	63.4	65.7	67.3	69.9	
	GFDL45	63.4	67.3	68.0	69.6	
	GFDL85	63.4	66.3	68.7	72.6	
	HAD45	63.4	65.3	67.1	68.2	
	HAD85	63.4	65.6	69.8	72.1	
Coldest Month (Average)	CCSM45	32.1	33.7	34.6	35.0	
	CCSM85	32.1	34.1	34.8	36.1	
	GFDL45	32.1	35.2	35.5	35.4	
	GFDL85	32.1	33.6	34.6	35.2	
	HAD45	32.1	32.9	34.9	34.9	
	HAD85	32.1	34.4	36.0	37.3	
Warmest Month (Average)	CCSM45	68.1	70.0	70.7	71.1	
	CCSM85	68.1	70.9	71.6	72.9	
	GFDL45	68.1	71.7	72.7	73.8	
	GFDL85	68.1	71.6	72.7	75.7	
	HAD45	68.1	70.2	71.5	72.0	
	HAD85	68.1	71.2	73.4	74.4	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	33.1	31.6	33.3	32.6	
	CCSM85	33.1	32.3	33.3	33.7	
	GFDL45	33.1	35.7	37.3	35.5	
	GFDL85	33.1	35.6	40.9	39.5	
	HAD45	33.1	33.8	34.9	35.6	
	HAD85	33.1	35.1	31.5	34.0	
Growing Season (May—Sep)	CCSM45	16.9	15.2	15.8	15.5	
	CCSM85	16.9	16.0	15.3	15.8	
	GFDL45	16.9	18.5	18.2	18.0	
	GFDL85	16.9	18.4	21.0	19.5	
	HAD45	16.9	16.9	17.3	17.5	
	HAD85	16.9	17.6	14.2	15.1	

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
black oak	Quercus velutina	WDH	High	31.9	542.5	20.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	0	1
post oak	Quercus stellata	WDH	High	32.4	371.0	14.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	2
white oak	Quercus alba	WDH	Medium	18.9	286.2	14.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	3
American elm	Ulmus americana	WDH	Medium	53.9	270.8	10.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	4
hackberry	Celtis occidentalis	WDH	Medium	46.2	181.7	11.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	5
Osage-orange	Maclura pomifera	NDH	Medium	28.7	165.2	16.0	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	6
black walnut	Juglans nigra	WDH	Low	35.2	119.4	5.7	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	7
blackjack oak	Quercus marilandica	NSL	Medium	22.9	103.4	6.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	8
bitternut hickory	Carya cordiformis	WSL	Low	22.8	100.8	6.0	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	1	9
eastern redcedar	Juniperus virginiana	WDH	Medium	23.4	87.6	7.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	10
northern red oak	Quercus rubra	WDH	Medium	18.5	87.0	7.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	11
black hickory	Carya texana	NDL	High	25.6	86.8	4.5	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	12
mockernut hickory	Carya alba	WDL	Medium	22.6	76.1	3.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	13
green ash	Fraxinus pennsylvanica	WSH	Low	29.9	70.0	10.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	14
pecan	Carya illinoensis	NSH	Low	14.4	68.8	12.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	2	15
red mulberry	Morus rubra	NSL	Low	29.2	60.2	4.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	16
black cherry	Prunus serotina	WDL	Medium	21.1	58.7	3.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	17
sassafras	Sassafras albidum	WSL	Low	16.7	46.7	3.4	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	18
sycamore	Platanus occidentalis	NSL	Low	10.6	45.3	5.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	19
flowering dogwood	Cornus florida	WDL	Medium	14.3	38.9	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	20
winged elm	Ulmus alata	WDL	Medium	14.9	38.1	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	21
chinkapin oak	Quercus muehlenbergii	NSL	Medium	12.4	36.4	2.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	22
honeylocust	Gleditsia triacanthos	NSH	Low	24.2	34.7	6.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	23
slippery elm	Ulmus rubra	WSL	Low	21.8	34.7	3.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	24
white ash	Fraxinus americana	WDL	Medium	15.1	31.6	5.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	25
silver maple	Acer saccharinum	NSH	Low	5.2	29.4	12.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	26
pin oak	Quercus palustris	NSH	Low	11.1	24.6	8.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	27
blackgum	Nyssa sylvatica	WDL	Medium	6.6	24.0	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	28
shortleaf pine	Pinus echinata	WDH	High	2.8	23.3	6.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
boxelder	Acer negundo	WSH	Low	8.9	21.5	6.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	30
sugarberry	Celtis laevigata	NDH	Medium	6.3	20.2	4.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	31
red maple	Acer rubrum	WDH	High	5.9	18.0	3.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
eastern redbud	Cercis canadensis	NSL	Low	12.9	16.7	2.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	33
common persimmon	Diospyros virginiana	NSL	Low	13.9	16.1	2.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	34
black willow	Salix nigra	NSH	Low	3.6	14.4	9.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	35
florida maple	Acer barbatum	NSL	Low	2.3	14.3	5.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	2	36
eastern cottonwood	Populus deltoides	NSH	Low	4.8	10.9	15.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	37
bur oak	Quercus macrocarpa	NDH	Medium	12.7	10.5	8.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	38
pignut hickory	Carya glabra	WDL	Medium	1.8	9.7	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
shagbark hickory	Carya ovata	WSL	Medium	4.8	7.3	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	40
black locust	Robinia pseudoacacia	NDH	Low	3.5	7.2	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	41
Siberian elm	Ulmus pumila	NDH	FIA	1.6	7.0	7.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
wild plum	Prunus americana	NSLX	FIA	3	7.0	4.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	43
sugar maple	Acer saccharum	WDH	High	3.4	6.2	2.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	44
Shumard oak	Quercus shumardii	NSL	Low	2.3	4.8	1.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	45
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	6.6	3.8	2.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	46
southern red oak	Quercus falcata	WDL	Medium	0.9	3.1	3.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			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
serviceberry	Amelanchier spp.	NSL	Low	4	2.8	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
white mulberry	Morus alba	NSL	FIA	2.2	2.5	2.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	49
pawpaw	Asimina triloba	NSL	Low	2.3	2.1	3.0	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
American basswood	Tilia americana	WSL	Medium	2.5	2.0	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1	1.5	0.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	52
ailanthus	Ailanthus altissima	NSL	FIA	0.7	1.4	1.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	53
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	3.2	1.0	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	54
chokecherry	Prunus virginiana	NSLX	FIA	1	0.9	9.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	55
blue ash	Fraxinus quadrangulata	NSL	Low	0.4	0.6	0.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	56
shellbark hickory	Carya laciniosa	NSL	Low	2	0.6	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
butternut	Juglans cinerea	NSLX	FIA	0.3	0.4	1.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	58
overcup oak	Quercus lyrata	NSL	Medium	0.3	0.4	1.2	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	59
northern catalpa	Catalpa speciosa	NSHX	FIA	1.1	0.3	3.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	60
yellow-poplar	Liriodendron tulipifera	WDH	High	0.1	0.2	0.3	Very Lg. dec.	Lg. inc.	High	Rare	Lost	Good			2	61
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.2	0.1	0.2	Lg. dec.	Lg. inc.	Medium	Rare	Very Poor	Good			2	62
Ohio buckeye	Aesculus glabra	NSL	Low	0.4	0.0	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	65
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	66
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	67
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	68
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	69
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	70
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	72
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	74
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	75
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	76
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	78