

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	68,684	26,519	1,760

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	Scenario	Scenario	Scenario	SHIFT	SHIFT			
				High	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	3			19	29	Increase	38	45	Very Good	12	18	Likely	0	0
Hickory	9			37	62	No Change	27	23	Good	24	26	Infill	24	25
Maple	7	Abundant	2	43	14	Decrease	28	25	Fair	20	13	Migrate	0	0
Oak	25	Common	34	FIA	11	New	4	4	Poor	15	18		24	25
Pine	7	Rare	68			Unknown	13	13	Very Poor	22	18			
Other	53	Absent	6						FIA Only	8	8			
	104		110				110	110	Unknown	2	2			
										103	103			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	61.6	63.3	65.3	65.6	
	CCSM85	61.6	63.7	66.3	68.9	
	GFDL45	61.6	64.9	66.2	67.1	
	GFDL85	61.6	64.2	67.4	70.8	
	HAD45	61.6	64.1	67.1	68.4	
HAD85	61.6	64.4	68.8	72.6		
Growing Season (May—Sep)	CCSM45	75.9	77.5	79.1	79.7	
	CCSM85	75.9	77.9	80.6	84.0	
	GFDL45	75.9	79.8	81.1	82.7	
	GFDL85	75.9	79.1	82.6	86.8	
	HAD45	75.9	79.3	82.2	83.4	
HAD85	75.9	79.6	85.8	89.2		
Coldest Month Average	CCSM45	39.6	41.8	43.0	43.2	
	CCSM85	39.6	42.5	43.7	45.1	
	GFDL45	39.6	43.4	43.5	43.6	
	GFDL85	39.6	41.2	42.3	42.8	
	HAD45	39.6	40.4	42.4	42.9	
HAD85	39.6	41.6	43.2	44.9		
Warmest Month Average	CCSM45	80.7	82.1	82.9	83.1	
	CCSM85	80.7	82.7	83.9	85.6	
	GFDL45	80.7	84.7	85.1	86.2	
	GFDL85	80.7	84.1	85.8	88.3	
	HAD45	80.7	85.2	87.3	87.6	
HAD85	80.7	86.1	90.1	91.3		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	54.9	56.7	62.2	59.8	
	CCSM85	54.9	58.4	59.6	63.1	
	GFDL45	54.9	61.5	66.5	66.5	
	GFDL85	54.9	61.5	65.0	67.9	
	HAD45	54.9	52.8	57.3	59.0	
HAD85	54.9	56.2	50.8	55.8		
Growing Season (May—Sep)	CCSM45	20.9	20.5	21.2	20.9	
	CCSM85	20.9	20.3	19.4	20.2	
	GFDL45	20.9	23.9	26.0	25.6	
	GFDL85	20.9	24.9	26.3	27.5	
	HAD45	20.9	19.0	20.0	19.0	
HAD85	20.9	20.2	15.7	16.2		

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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EcoMap 2007
Climate Change Atlas Tree Species

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
loblolly pine	Pinus taeda	WDH	High	61.4	1967.6	28.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	87.8	1224.6	12.8	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	48.8	401.1	6.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	3
winged elm	Ulmus alata	WDL	Medium	78.5	353.0	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
southern red oak	Quercus falcata	WDL	Medium	58.1	350.1	5.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	5
white oak	Quercus alba	WDH	Medium	54.3	329.3	5.3	No change	No change	High	Common	Good	Good			1	6
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	53	289.6	5.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
red maple	Acer rubrum	WDH	High	61.2	245.9	3.8	No change	Sm. inc.	High	Common	Good	Very Good			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	45.5	242.8	4.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	9
shortleaf pine	Pinus echinata	WDH	High	33.5	238.0	5.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	10
eastern redcedar	Juniperus virginiana	WDH	Medium	42.5	198.7	4.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	11
post oak	Quercus stellata	WDH	High	41.4	196.0	4.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
green ash	Fraxinus pennsylvanica	WSH	Low	45.7	169.8	3.9	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
pignut hickory	Carya glabra	WDL	Medium	49.9	167.9	3.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	14
black cherry	Prunus serotina	WDL	Medium	57.6	166.4	2.7	No change	Sm. inc.	Low	Common	Poor	Fair			1	15
American elm	Ulmus americana	WDH	Medium	48.1	165.8	3.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	16
boxelder	Acer negundo	WSH	Low	27.6	162.0	5.7	No change	No change	High	Common	Good	Good			1	17
sycamore	Platanus occidentalis	NSL	Low	28.5	136.1	4.5	No change	Sm. inc.	Medium	Common	Fair	Good			1	18
black willow	Salix nigra	NSH	Low	23.6	136.0	6.6	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	19
mockernut hickory	Carya alba	WDL	Medium	43	130.1	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
blackgum	Nyssa sylvatica	WDL	Medium	48.1	120.4	2.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
American hornbeam; musclev	Carpinus caroliniana	WDL	Low	31.8	100.1	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
black oak	Quercus velutina	WDH	High	27.1	97.9	3.3	No change	No change	Medium	Common	Fair	Fair			1	23
sugarberry	Celtis laevigata	NDH	Medium	19.1	92.4	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
willow oak	Quercus phellos	NSL	Low	16.8	87.6	4.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	34.4	85.1	2.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	26
American beech	Fagus grandifolia	WDH	High	24.3	81.7	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	27
slippery elm	Ulmus rubra	WSL	Low	33.2	79.4	2.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	28
flowering dogwood	Cornus florida	WDL	Medium	42.5	77.7	1.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	29
sassafras	Sassafras albidum	WSL	Low	26.7	77.4	3.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	30
common persimmon	Diospyros virginiana	NSL	Low	36.3	66.7	1.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	31
bald cypress	Taxodium distichum	NSH	Medium	9.8	65.6	7.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	32
pecan	Carya illinoensis	NSH	Low	11.6	61.5	3.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	33
black locust	Robinia pseudoacacia	NDH	Low	9.1	56.2	4.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	34
sugar maple	Acer saccharum	WDH	High	9.7	53.5	5.5	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	35
white ash	Fraxinus americana	WDL	Medium	24.6	50.4	1.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	36
river birch	Betula nigra	NSL	Low	11.4	42.6	4.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	37
swamp chestnut oak	Quercus michauxii	NSL	Low	12.7	34.2	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	38
bitternut hickory	Carya cordiformis	WSL	Low	14.2	31.5	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	39
water tupelo	Nyssa aquatica	NSH	Medium	3.7	30.7	7.2	No change	No change	Low	Rare	Very Poor	Very Poor			2	40
shagbark hickory	Carya ovata	WSL	Medium	16.6	30.3	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	41
silver maple	Acer saccharinum	NSH	Low	6.9	27.9	4.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	42
eastern cottonwood	Populus deltoides	NSH	Low	6.1	27.0	4.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	43
northern red oak	Quercus rubra	WDH	Medium	11.7	25.5	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	44
Shumard oak	Quercus shumardii	NSL	Low	11.2	25.0	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	45
scarlet oak	Quercus coccinea	WDL	Medium	8.5	24.5	3.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
red mulberry	Morus rubra	NSL	Low	15.8	24.0	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	47



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hackberry	Celtis occidentalis	WDH	Medium	6.1	22.4	2.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	48
honeylocust	Gleditsia triacanthos	NSH	Low	8.7	21.5	2.0	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	49
overcup oak	Quercus lyrata	NSL	Medium	6.4	21.4	2.6	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	50
blackjack oak	Quercus marilandica	NSL	Medium	8.4	18.6	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	51
black walnut	Juglans nigra	WDH	Low	8.1	18.1	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
sourwood	Oxydendrum arboreum	NDL	High	9.5	18.1	1.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	53
shellbark hickory	Carya laciniosa	NSL	Low	3.9	16.0	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	54
chinkapin oak	Quercus muehlenbergii	NSL	Medium	5.2	15.4	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	55
Nuttall oak	Quercus texana	NSH	Medium	3.3	14.8	3.8	No change	No change	High	Rare	Fair	Fair			0	56
swamp tupelo	Nyssa biflora	NDH	Medium	2.1	13.1	5.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	57
southern magnolia	Magnolia grandiflora	NSL	Low	7.3	12.7	1.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	58
florida maple	Acer barbatum	NSL	Low	5.2	11.3	1.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	59
water elm	Planera aquatica	NSL	Low	2.5	11.0	3.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	60
eastern redbud	Cercis canadensis	NSL	Low	9.2	10.7	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	61
water hickory	Carya aquatica	NSL	Medium	2.5	10.6	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	62
pin oak	Quercus palustris	NSH	Low	2	9.4	3.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	63
shingle oak	Quercus imbricaria	NDH	Medium	1.8	8.7	3.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	64
laurel oak	Quercus laurifolia	NDH	Medium	4.3	8.1	1.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	65
Osage-orange	Maclura pomifera	NDH	Medium	3.4	7.1	3.0	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	66
spruce pine	Pinus glabra	NSL	Low	1.4	6.7	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	67
American holly	Ilex opaca	NSL	Medium	6.5	6.2	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	68
sweetbay	Magnolia virginiana	NSL	Medium	2.5	5.8	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	69
bigleaf magnolia	Magnolia macrophylla	NSL	Low	3.5	5.5	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	70
cucumbertree	Magnolia acuminata	NSL	Low	2.3	5.2	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	71
black hickory	Carya texana	NDL	High	2.1	4.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	72
paulownia	Paulownia tomentosa	NSL	FIA	2.8	3.8	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	73
waterlocust	Gleditsia aquatica	NSLX	FIA	0.3	3.1	6.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	74
pawpaw	Asimina triloba	NSL	Low	2.8	2.5	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	75
Virginia pine	Pinus virginiana	NDH	High	0.2	2.5	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	76
pumpkin ash	Fraxinus profunda	NSH	FIA	0	2.3	4.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	77
chestnut oak	Quercus prinus	NDH	High	0.6	2.3	0.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	78
cedar elm	Ulmus crassifolia	NDH	Medium	0.4	2.2	0.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	79
live oak	Quercus virginiana	NDH	High	0.2	1.6	5.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	80
white mulberry	Morus alba	NSL	FIA	1.5	1.6	1.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	81
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0.3	1.5	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	82
longleaf pine	Pinus palustris	NSH	Medium	0.7	1.4	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	83
ailanthus	Ailanthus altissima	NSL	FIA	0.8	1.2	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	84
swamp white oak	Quercus bicolor	NSL	Low	1.5	1.2	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	85
serviceberry	Amelanchier spp.	NSL	Low	1.4	1.1	0.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	86
American basswood	Tilia americana	WSL	Medium	0.6	0.9	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	87
sand hickory	Carya pallida	NSL	FIA	0.4	0.7	1.3	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	88
durand oak	Quercus sinuata var. sinuata	NSL	FIA	0.3	0.7	2.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	89
pitch pine	Pinus rigida	NSH	High	0.1	0.6	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	90
slash pine	Pinus elliotii	NDH	High	0.4	0.6	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	91
redbay	Persea borbonia	NSL	Low	0.7	0.4	0.6	No change	No change	High	Rare	Fair	Fair			0	92
turkey oak	Quercus laevis	NSH	Medium	0.4	0.4	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	93
black maple	Acer nigrum	NSH	Low	0.1	0.2	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	94



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silverbell	Halesia spp.	NSL	Low	0.2	0.2	0.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	95
butternut	Juglans cinerea	NSLX	FIA	0.1	0.1	0.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	96
chokecherry	Prunus virginiana	NSLX	FIA	0.4	0.1	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	97
wild plum	Prunus americana	NSLX	FIA	0	0.1	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	98
yellow buckeye	Aesculus flava	NSL	Low	0.1	0.1	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	99
rock elm	Ulmus thomasii	NSLX	FIA	0	0.1	0.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	100
striped maple	Acer pensylvanicum	NSL	Medium	0.1	0.1	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	101
Ohio buckeye	Aesculus glabra	NSL	Low	0.1	0.1	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	102
bluejack oak	Quercus incana	NSL	Low	0.1	0.0	0.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	103
bur oak	Quercus macrocarpa	NDH	Medium	0.6	0.0	0.9	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	104
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	105
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	106
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	107
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	108
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	109
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	110