

Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
53,733 20,747 525

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	26	Increase	RCP45	RCP85	Very Good	1	2	Likely	1	1	
Ash	4			Medium	32	48	No Change	22	16	Good	21	23	Infill	35	38
Hickory	6			Low	36	13	Decrease	23	24	Fair	12	11	Migrate	5	7
Maple	5	Abundant	0	FIA	9		New	12	13	Poor	14	13			
Oak	14	Common	20				Unknown	14	13	Very Poor	16	15			
Pine	6	Rare	54							FIA Only	5	5			
Other	39	Absent	17							Unknown	5	4			
	74		91		91	87		91	91		74	73		41	46

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	47.9	49.3	51.0	51.2	
Average	CCSM85	47.9	49.8	51.7	54.0	
	GFDL45	47.9	51.4	52.1	52.8	
	GFDL85	47.9	50.2	52.8	56.0	
	HAD45	47.9	50.1	52.8	54.0	
	HAD85	47.9	50.4	54.0	57.5	
Growing Season	CCSM45	61.3	62.7	64.1	64.8	
	CCSM85	61.3	63.3	65.2	67.9	
May—Sep	GFDL45	61.3	65.4	66.2	67.3	
	GFDL85	61.3	64.1	67.2	70.9	
	HAD45	61.3	63.8	66.2	67.8	
	HAD85	61.3	64.0	68.6	72.1	
Coldest Month	CCSM45	26.6	27.7	29.0	29.2	
	CCSM85	26.6	28.8	29.7	30.9	
Average	GFDL45	26.6	29.9	30.3	30.7	
	GFDL85	26.6	29.1	30.0	30.8	
	HAD45	26.6	27.8	30.1	30.1	
	HAD85	26.6	29.0	30.9	32.7	
Warmest Month	CCSM45	65.6	67.1	68.0	68.6	
	CCSM85	65.6	68.1	69.4	70.8	
Average	GFDL45	65.6	68.0	69.3	70.1	
	GFDL85	65.6	68.6	70.2	72.5	
	HAD45	65.6	68.5	70.4	71.1	
	HAD85	65.6	69.6	72.7	74.8	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	32.0	31.1	33.0	32.4	
Total	CCSM85	32.0	32.7	32.8	34.1	
	GFDL45	32.0	35.7	38.2	39.2	
	GFDL85	32.0	35.0	39.4	40.8	
	HAD45	32.0	32.9	34.8	34.5	
	HAD85	32.0	33.9	32.3	34.9	
Growing Season	CCSM45	15.1	14.7	15.0	14.1	
	CCSM85	15.1	14.3	14.2	14.1	
May—Sep	GFDL45	15.1	16.6	16.9	17.5	
	GFDL85	15.1	16.3	17.2	17.2	
	HAD45	15.1	15.0	14.1	14.5	
	HAD85	15.1	14.9	12.5	12.6	

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
sugar maple	Acer saccharum	WDH	High	53.7	190.8	11.6	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	1
black cherry	Prunus serotina	WDL	Medium	64	159.9	6.9	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	2
black walnut	Juglans nigra	WDH	Low	53.5	130.0	7.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	3
American elm	Ulmus americana	WDH	Medium	69.2	126.9	5.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	4
white ash	Fraxinus americana	WDL	Medium	51.8	122.7	7.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	5
hackberry	Celtis occidentalis	WDH	Medium	57	107.9	6.5	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	6
silver maple	Acer saccharinum	NSH	Low	22.4	98.5	13.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	7
sassafras	Sassafras albidum	WSL	Low	32.1	88.2	5.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	8
shagbark hickory	Carya ovata	WSL	Medium	49.5	87.7	6.4	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	9
white oak	Quercus alba	WDH	Medium	39.4	79.7	7.4	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	10
green ash	Fraxinus pennsylvanica	WSH	Low	46.9	71.7	6.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	11
yellow-poplar	Liriodendron tulipifera	WDH	High	14.6	68.0	7.8	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	12
honeylocust	Gleditsia triacanthos	NSH	Low	30.7	66.1	8.3	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	13
red maple	Acer rubrum	WDH	High	26.5	65.9	6.7	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	14
boxelder	Acer negundo	WSH	Low	33.5	64.0	4.7	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	15
sycamore	Platanus occidentalis	NSL	Low	23.1	60.6	6.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	16
black oak	Quercus velutina	WDH	High	28.9	58.9	6.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	17
northern red oak	Quercus rubra	WDH	Medium	35.1	54.9	5.9	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	1	18
shingle oak	Quercus imbricaria	NDH	Medium	25.4	53.8	6.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	19
pignut hickory	Carya glabra	WDL	Medium	31.4	50.7	4.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	20
pin oak	Quercus palustris	NSH	Low	21.7	47.2	7.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	21
bitternut hickory	Carya cordiformis	WSL	Low	32.6	46.1	5.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	22
slippery elm	Ulmus rubra	WSL	Low	42.5	43.5	3.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	23
eastern cottonwood	Populus deltoides	NSH	Low	23.4	41.7	7.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	24
Osage-orange	Maclura pomifera	NDH	Medium	11.1	38.9	8.5	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	25
American basswood	Tilia americana	WSL	Medium	20.2	33.0	5.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	26
eastern white pine	Pinus strobus	WDH	High	3.5	31.0	17.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	27
black locust	Robinia pseudoacacia	NDH	Low	6.8	24.5	6.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	28
sweetgum	Liquidambar styraciflua	WDH	High	7.8	23.9	6.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	29
red mulberry	Morus rubra	NSL	Low	18.5	19.0	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
American beech	Fagus grandifolia	WDH	High	12.7	17.5	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	19.5	16.2	3.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
river birch	Betula nigra	NSL	Low	7.8	14.1	5.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	33
chinkapin oak	Quercus muehlenbergii	NSL	Medium	17.3	13.3	3.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	34
eastern redbud	Cercis canadensis	NSL	Low	12.5	13.2	2.2	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	35
mockernut hickory	Carya alba	WDL	Medium	16	11.4	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	36
common persimmon	Diospyros virginiana	NSL	Low	11.9	10.5	4.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	37
winged elm	Ulmus alata	WDL	Medium	0.9	9.6	28.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	38
Ohio buckeye	Aesculus glabra	NSL	Low	15	9.3	2.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	39
swamp white oak	Quercus bicolor	NSL	Low	9.6	9.1	4.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	40
red pine	Pinus resinosa	NSH	Medium	1.1	8.2	9.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	41
bur oak	Quercus macrocarpa	NDH	Medium	13.9	8.1	3.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	42
black willow	Salix nigra	NSH	Low	5.9	7.7	7.1	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	43
shellbark hickory	Carya laciniosa	NSL	Low	5	7.3	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	44
flowering dogwood	Cornus florida	WDL	Medium	11.3	6.8	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	45
blackgum	Nyssa sylvatica	WDL	Medium	6.1	6.7	2.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	46
bigtooth aspen	Populus grandidentata	NSL	Medium	1.9	5.7	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern redcedar	Juniperus virginiana	WDH	Medium	8.8	4.0	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	48
pawpaw	Asimina triloba	NSL	Low	6.6	3.8	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	3.9	3.6	3.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
pecan	Carya illinoensis	NSH	Low	2.9	3.5	3.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	51
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	10.4	3.3	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	52
Scots pine	Pinus sylvestris	NSH	FIA	0.9	3.2	4.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	53
white mulberry	Morus alba	NSL	FIA	4	3.1	2.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	54
blue ash	Fraxinus quadrangulata	NSH	Low	3.2	3.1	1.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	55
northern catalpa	Catalpa speciosa	NSHX	FIA	3.4	2.3	1.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
black maple	Acer nigrum	NSH	Low	0.6	2.2	3.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	57
Siberian elm	Ulmus pumila	NDH	FIA	3.7	2.0	3.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	58
ailanthus	Ailanthus altissima	NSL	FIA	0.7	2.0	3.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
Shumard oak	Quercus shumardii	NSL	Low	0.9	1.9	3.5	No change	Lg. inc.	High	Rare	Fair	Good			2	60
Virginia pine	Pinus virginiana	NDH	High	0.5	1.7	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	61
blackjack oak	Quercus marilandica	NSL	Medium	0.1	1.6	3.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	62
post oak	Quercus stellata	WDH	High	2.7	1.4	5.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	63
sugarberry	Celtis laevigata	NDH	Medium	1.7	0.8	3.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	64
black ash	Fraxinus nigra	WSH	Medium	1.8	0.8	1.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	65
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	1.4	0.8	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	66
swamp chestnut oak	Quercus michauxii	NSL	Low	0.1	0.6	1.9	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	67
waterlocust	Gleditsia aquatica	NSLX	FIA	0.2	0.5	2.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	68
rock elm	Ulmus thomasii	NSLX	FIA	0.9	0.5	1.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	69
serviceberry	Amelanchier spp.	NSL	Low	1.5	0.5	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	70
shortleaf pine	Pinus echinata	WDH	High	0.2	0.2	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	71
northern pin oak	Quercus ellipsoidalis	NSH	Medium	2.2	0.2	1.6	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	72
jack pine	Pinus banksiana	NSH	Medium	0.6	0.0	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	73
butternut	Juglans cinerea	NSLX	FIA	0.7	0.0	0.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	74
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	75
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	76
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	78
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	79
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	80
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	81
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	83
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	85
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	86
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	87
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	88
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	89
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	90
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	91