

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

sq. km sq. mi FIA Plots
 Area of Region 9,683.1 3,738.7 188

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	11	22	Increase	22	26	Very Good	6	9	Likely	1	1
Hickory	7			Medium	24	39	No Change	13	10	Good	17	17	Infill	9	10
Maple	5	Abundant	4	Low	31	8	Decrease	18	17	Fair	9	7	Migrate	4	6
Oak	12	Common	22	FIA	5		New	9	10	Poor	9	9			
Pine	0	Rare	32				Unknown	9	8	Very Poor	11	10			
Other	31	Absent	13							FIA Only	3	3			
	58		71		71	69		71	71	Unknown	4	3			
											59	58			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	55.2	57.1	59.0	59.4	
	CCSM85	55.2	57.7	60.2	63.4	
	GFDL45	55.2	58.8	60.4	61.4	
	GFDL85	55.2	58.0	61.1	65.1	
	HAD45	55.2	57.8	60.9	62.5	
	HAD85	55.2	58.1	62.9	66.6	
Growing Season (May—Sep)	CCSM45	72.0	74.2	75.7	76.4	
	CCSM85	72.0	75.0	77.5	81.6	
	GFDL45	72.0	76.3	78.3	79.9	
	GFDL85	72.0	75.6	79.3	84.2	
	HAD45	72.0	75.0	77.6	79.4	
	HAD85	72.0	75.4	81.2	84.6	
Coldest Month (Average)	CCSM45	28.4	30.6	32.1	32.6	
	CCSM85	28.4	31.3	32.5	34.3	
	GFDL45	28.4	32.8	33.2	33.5	
	GFDL85	28.4	31.3	32.6	33.5	
	HAD45	28.4	29.7	32.4	32.5	
	HAD85	28.4	31.5	34.1	36.0	
Warmest Month (Average)	CCSM45	78.4	80.8	82.0	82.5	
	CCSM85	78.4	81.7	83.2	84.9	
	GFDL45	78.4	82.2	83.8	84.8	
	GFDL85	78.4	82.4	84.1	87.5	
	HAD45	78.4	81.7	83.4	84.3	
	HAD85	78.4	83.1	86.4	88.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.0	42.3	46.8	45.2	
	CCSM85	44.0	44.3	46.0	45.5	
	GFDL45	44.0	48.3	49.3	49.4	
	GFDL85	44.0	48.1	54.1	53.9	
	HAD45	44.0	44.6	46.0	45.8	
	HAD85	44.0	45.8	43.1	46.3	
Growing Season (May—Sep)	CCSM45	22.6	21.5	23.9	22.4	
	CCSM85	22.6	22.7	22.6	21.9	
	GFDL45	22.6	24.9	23.7	24.4	
	GFDL85	22.6	24.8	26.6	26.1	
	HAD45	22.6	22.2	22.1	22.0	
	HAD85	22.6	22.5	19.2	20.2	

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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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
white oak	Quercus alba	WDH	Medium	54.6	1175.5	15.5	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
post oak	Quercus stellata	WDH	High	53.6	1099.4	16.1	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	2
eastern redcedar	Juniperus virginiana	WDH	Medium	80.6	993.7	12.1	No change	No change	Medium	Abundant	Good	Good			1	3
black oak	Quercus velutina	WDH	High	51.4	774.8	12.1	No change	No change	Medium	Abundant	Good	Good			1	4
black walnut	Juglans nigra	WDH	Low	68	438.3	6.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	5
shagbark hickory	Carya ovata	WSL	Medium	65.9	373.6	6.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	6
American elm	Ulmus americana	WDH	Medium	65.3	339.0	5.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
chinkapin oak	Quercus muehlenbergii	NSL	Medium	58.5	336.4	5.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
hackberry	Celtis occidentalis	WDH	Medium	49.8	286.4	5.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
northern red oak	Quercus rubra	WDH	Medium	51.9	274.9	4.8	No change	No change	High	Common	Good	Good			1	10
sugar maple	Acer saccharum	WDH	High	21.5	194.9	7.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	11
black hickory	Carya texana	NDL	High	32.3	194.1	4.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
honeylocust	Gleditsia triacanthos	NSH	Low	44.6	189.1	5.6	No change	Sm. inc.	High	Common	Good	Very Good			1	13
white ash	Fraxinus americana	WDL	Medium	57.3	183.8	3.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	14
bitternut hickory	Carya cordiformis	WSL	Low	32.1	181.2	5.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	15
sycamore	Platanus occidentalis	NSL	Low	21.6	135.3	5.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
mockernut hickory	Carya alba	WDL	Medium	34.3	123.6	3.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
slippery elm	Ulmus rubra	WSL	Low	39.5	118.6	2.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	18
shingle oak	Quercus imbricaria	NDH	Medium	42.9	114.7	3.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	19
black cherry	Prunus serotina	WDL	Medium	33.9	89.4	2.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	20
sassafras	Sassafras albidum	WSL	Low	24.4	87.2	3.6	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
blackjack oak	Quercus marilandica	NSL	Medium	14.5	76.6	3.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
pin oak	Quercus palustris	NSH	Low	8.7	55.5	5.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	23
flowering dogwood	Cornus florida	WDL	Medium	22	55.1	1.9	No change	No change	Medium	Common	Fair	Fair			1	24
red mulberry	Morus rubra	NSL	Low	29.7	53.7	1.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
boxelder	Acer negundo	WSH	Low	8.3	50.2	6.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	26
Shumard oak	Quercus shumardii	NSL	Low	13.6	46.5	4.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	27
black willow	Salix nigra	NSH	Low	8.5	45.5	8.2	No change	No change	Low	Rare	Very Poor	Very Poor			0	28
common persimmon	Diospyros virginiana	NSL	Low	17.3	42.1	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	29
green ash	Fraxinus pennsylvanica	WSH	Low	8.6	41.3	3.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	30
Osage-orange	Maclura pomifera	NDH	Medium	20	37.5	3.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	31
American basswood	Tilia americana	WSL	Medium	7.8	36.5	2.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	32
eastern redbud	Cercis canadensis	NSL	Low	30.5	36.5	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	33
black locust	Robinia pseudoacacia	NDH	Low	7.4	33.5	4.5	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	34
swamp white oak	Quercus bicolor	NSL	Low	4.9	30.5	7.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
silver maple	Acer saccharinum	NSH	Low	2.1	29.2	14.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	36
scarlet oak	Quercus coccinea	WDL	Medium	3.1	23.1	7.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	37
eastern cottonwood	Populus deltoides	NSH	Low	2.1	22.1	10.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	38
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	9.4	17.5	1.1	No change	Sm. inc.	High	Rare	Fair	Good			1	39
river birch	Betula nigra	NSL	Low	0.6	16.7	9.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	2.5	15.7	4.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	41
pignut hickory	Carya glabra	WDL	Medium	5.2	15.5	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	42
bur oak	Quercus macrocarpa	NDH	Medium	5.2	13.9	2.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	43
pecan	Carya illinoensis	NSH	Low	2.1	13.7	3.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	44
blue ash	Fraxinus quadrangulata	NSL	Low	10.7	10.6	1.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	45
white mulberry	Morus alba	NSL	FIA	6	9.5	1.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
Ohio buckeye	Aesculus glabra	NSL	Low	10.4	9.4	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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serviceberry	Amelanchier spp.	NSL	Low	7.7	9.2	1.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	5.9	7.5	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	49
red maple	Acer rubrum	WDH	High	5.2	6.7	1.3	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	50
pawpaw	Asimina triloba	NSL	Low	2.3	6.3	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	51
shellbark hickory	Carya laciniosa	NSL	Low	9.3	5.3	4.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
northern catalpa	Catalpa speciosa	NSHX	FIA	1	4.7	4.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	53
blackgum	Nyssa sylvatica	WDL	Medium	1	3.4	3.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	54
sugarberry	Celtis laevigata	NDH	Medium	2.1	3.1	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	55
wild plum	Prunus americana	NSLX	FIA	2.1	2.9	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
ailanthus	Ailanthus altissima	NSL	FIA	1	2.6	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
black maple	Acer nigrum	NSH	Low	0.8	1.0	0.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	58
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	59
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	60
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	61
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	62
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	63
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	69
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	70
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	71