

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 95

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	2			High	10	19	Increase	18	20	Very Good	4	4	Likely	1	1
Hickory	6			Medium	20	33	No Change	5	8	Good	14	16	Infill	17	20
Maple	4	Abundant	0	Low	27	7	Decrease	20	15	Fair	6	7	Migrate	3	7
Oak	11	Common	18	FIA	4		New	11	11	Poor	8	7			
Pine	0	Rare	29				Unknown	7	7	Very Poor	9	7			
Other	24	Absent	14							FIA Only	2	2			
	47		61		61	59		61	61	Unknown	3	3			
											46	46			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	55.3	57.1	59.1	59.5	
Average	CCSM85	55.3	57.9	60.2	63.0	
	GFDL45	55.3	60.2	60.4	61.5	
	GFDL85	55.3	58.1	61.1	65.2	
	HAD45	55.3	57.8	60.8	62.2	
	HAD85	55.3	58.1	62.9	66.4	
Growing Season	CCSM45	72.5	74.8	76.6	77.1	
	CCSM85	72.5	75.8	78.1	81.3	
May—Sep	GFDL45	72.5	78.9	78.8	80.7	
	GFDL85	72.5	76.2	79.7	84.9	
	HAD45	72.5	75.1	77.5	79.2	
	HAD85	72.5	75.5	81.1	84.3	
Coldest Month	CCSM45	27.8	29.7	31.2	31.7	
	CCSM85	27.8	30.5	31.4	33.1	
Average	GFDL45	27.8	32.0	32.4	32.5	
	GFDL85	27.8	30.4	31.6	32.8	
	HAD45	27.8	29.2	32.1	32.0	
	HAD85	27.8	31.2	33.8	35.8	
Warmest Month	CCSM45	79.1	81.6	82.7	83.3	
	CCSM85	79.1	83.0	84.3	85.9	
Average	GFDL45	79.1	83.1	84.6	86.0	
	GFDL85	79.1	83.3	84.8	88.8	
	HAD45	79.1	81.8	83.5	84.3	
	HAD85	79.1	83.3	86.2	87.8	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	42.6	40.8	43.2	41.7	
Total	CCSM85	42.6	41.9	42.9	42.9	
	GFDL45	42.6	46.5	47.3	46.2	
	GFDL85	42.6	46.5	52.8	51.3	
	HAD45	42.6	44.4	44.7	44.6	
	HAD85	42.6	44.4	41.1	44.8	
Growing Season	CCSM45	23.9	22.3	23.6	22.2	
	CCSM85	23.9	23.2	23.1	22.5	
May—Sep	GFDL45	23.9	26.5	25.1	25.1	
	GFDL85	23.9	26.4	29.0	27.4	
	HAD45	23.9	24.1	24.3	24.3	
	HAD85	23.9	24.3	21.0	22.1	

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
Osage-orange	Maclura pomifera	NDH	Medium	66.2	401.2	17.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	1
American elm	Ulmus americana	WDH	Medium	78.6	398.6	10.7	No change	No change	Medium	Common	Fair	Fair			1	2
black walnut	Juglans nigra	WDH	Low	68.6	281.9	10.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	3
honeylocust	Gleditsia triacanthos	NSH	Low	58.1	261.0	11.4	Sm. dec.	No change	High	Common	Fair	Good			1	4
green ash	Fraxinus pennsylvanica	WSH	Low	51.6	203.7	9.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
hackberry	Celtis occidentalis	WDH	Medium	65.4	200.1	5.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
silver maple	Acer saccharinum	NSH	Low	23	181.8	14.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	7
pin oak	Quercus palustris	NSH	Low	25.7	168.9	8.1	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	8
chinkapin oak	Quercus muehlenbergii	NSL	Medium	30.2	145.4	9.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	9
sugar maple	Acer saccharum	WDH	High	10.3	109.6	16.3	Lg. dec.	Sm. dec.	High	Common	Fair	Fair		Infill +	2	10
eastern redcedar	Juniperus virginiana	WDH	Medium	29.7	104.8	5.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	11
shagbark hickory	Carya ovata	WSL	Medium	36.9	92.2	4.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	12
boxelder	Acer negundo	WSH	Low	19	90.7	7.4	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	13
red mulberry	Morus rubra	NSL	Low	37.1	80.9	2.8	Sm. inc.	No change	Medium	Common	Good	Fair			1	14
shingle oak	Quercus imbricaria	NDH	Medium	19.1	65.0	9.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
pecan	Carya illinoensis	NSH	Low	26.9	56.5	5.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	16
bitternut hickory	Carya cordiformis	WSL	Low	20	53.1	4.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	17
bur oak	Quercus macrocarpa	NDH	Medium	22.6	50.7	5.4	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	18
northern red oak	Quercus rubra	WDH	Medium	27.4	46.5	5.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	19
post oak	Quercus stellata	WDH	High	15.6	44.5	3.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	20
eastern redbud	Cercis canadensis	NSL	Low	34.8	37.8	2.8	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	21
shellbark hickory	Carya laciniosa	NSL	Low	9.3	36.8	9.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
black willow	Salix nigra	NSH	Low	7.2	36.2	8.9	No change	No change	Low	Rare	Very Poor	Very Poor			2	23
black cherry	Prunus serotina	WDL	Medium	33	36.1	1.7	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	24
common persimmon	Diospyros virginiana	NSL	Low	23.5	30.3	5.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
white ash	Fraxinus americana	WDL	Medium	22.6	27.8	4.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	26
white oak	Quercus alba	WDH	Medium	2.3	25.0	12.7	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	27
eastern cottonwood	Populus deltoides	NSH	Low	10.2	23.7	5.2	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	28
sycamore	Platanus occidentalis	NSL	Low	13.7	20.2	6.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
slippery elm	Ulmus rubra	WSL	Low	28.5	16.2	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	30
black oak	Quercus velutina	WDH	High	10.6	14.7	3.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	31
red maple	Acer rubrum	WDH	High	5.1	11.6	6.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	32
wild plum	Prunus americana	NSLX	FIA	3.1	11.2	6.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
black locust	Robinia pseudoacacia	NDH	Low	0.3	8.2	2.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	34
American basswood	Tilia americana	WSL	Medium	1.3	7.3	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	3.7	4.4	3.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	36
blackjack oak	Quercus marilandica	NSL	Medium	2.1	3.4	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	37
Ohio buckeye	Aesculus glabra	NSL	Low	5.2	3.1	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
Siberian elm	Ulmus pumila	NDH	FIA	1	2.9	2.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
Shumard oak	Quercus shumardii	NSL	Low	8.3	2.4	4.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	40
mockernut hickory	Carya alba	WDL	Medium	9.6	2.0	0.8	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	41
pawpaw	Asimina triloba	NSL	Low	4	1.6	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	42
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.9	0.7	1.2	Sm. dec.	Lg. inc.	High	Rare	Poor	Good			0	43
swamp white oak	Quercus bicolor	NSL	Low	3	0.7	1.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	44
black hickory	Carya texana	NDL	High	1.3	0.6	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	45
flowering dogwood	Cornus florida	WDL	Medium	4.1	0.2	0.8	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
ailanthus	Ailanthus altissima	NSL	FIA	4.1	0.1	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	47



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ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	48
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	49
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	50
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	51
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	53
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	54
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	55
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	56
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	57
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	59
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	60
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	61