

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

Area of Region sq. km sq. mi FIA Plots
 9,813.8 3,789.1 275

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	16	24	Increase	24	34	Very Good	12	15	Likely	0	0
Hickory	5			Medium	24	39	No Change	9	3	Good	15	18	Infill	6	10
Maple	4	Abundant	4	Low	29	10	Decrease	18	14	Fair	7	6	Migrate	5	9
Oak	11	Common	24	FIA	5		New	12	13	Poor	5	3		11	19
Pine	3	Rare	28				Unknown	11	10	Very Poor	7	6			
Other	30	Absent	16					74	74	FIA Only	4	4			
	56		72		74	73				Unknown	6	5			
											56	57			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	55.5	57.4	59.4	59.7	
	CCSM85	55.5	57.9	60.4	63.6	
	GFDL45	55.5	58.3	60.7	61.7	
	GFDL85	55.5	58.4	61.4	65.3	
	HAD45	55.5	58.2	61.1	62.6	
	HAD85	55.5	58.4	63.1	66.8	
Growing Season (May—Sep)	CCSM45	71.5	73.7	75.2	75.9	
	CCSM85	71.5	74.3	76.8	80.8	
	GFDL45	71.5	74.8	77.8	79.5	
	GFDL85	71.5	75.3	78.7	83.6	
	HAD45	71.5	74.6	77.1	78.8	
	HAD85	71.5	74.9	80.7	84.1	
Coldest Month (Average)	CCSM45	30.2	32.3	33.7	34.1	
	CCSM85	30.2	33.2	34.4	36.1	
	GFDL45	30.2	34.7	34.9	35.2	
	GFDL85	30.2	32.7	34.0	34.8	
	HAD45	30.2	31.3	33.8	33.9	
	HAD85	30.2	33.0	35.3	37.1	
Warmest Month (Average)	CCSM45	77.8	80.2	81.2	81.6	
	CCSM85	77.8	80.8	82.1	83.8	
	GFDL45	77.8	82.1	83.5	84.8	
	GFDL85	77.8	82.0	83.7	87.1	
	HAD45	77.8	81.3	83.0	83.8	
	HAD85	77.8	82.4	85.7	87.2	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.9	43.9	48.2	46.9	
	CCSM85	44.9	45.9	47.3	47.6	
	GFDL45	44.9	49.5	51.0	50.6	
	GFDL85	44.9	49.4	56.1	55.7	
	HAD45	44.9	44.5	47.1	47.1	
	HAD85	44.9	47.4	43.5	46.1	
Growing Season (May—Sep)	CCSM45	20.6	19.4	21.2	20.2	
	CCSM85	20.6	20.6	19.7	20.1	
	GFDL45	20.6	23.0	22.0	22.9	
	GFDL85	20.6	22.8	25.0	24.4	
	HAD45	20.6	19.9	20.3	20.0	
	HAD85	20.6	20.9	17.2	17.8	

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	82.4	2014.1	15.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
post oak	Quercus stellata	WDH	High	85.8	1900.2	16.0	No change	Sm. inc.	High	Abundant	Very Good	Very Good			1	2
white oak	Quercus alba	WDH	Medium	86.2	1835.0	14.0	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
eastern redcedar	Juniperus virginiana	WDH	Medium	61.9	731.5	8.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
black hickory	Carya texana	NDL	High	75.5	489.1	4.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
black walnut	Juglans nigra	WDH	Low	55.4	408.7	5.7	No change	No change	Medium	Common	Fair	Fair			1	6
blackjack oak	Quercus marilandica	NSL	Medium	54.8	381.5	5.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
American elm	Ulmus americana	WDH	Medium	55.1	334.1	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
mockernut hickory	Carya alba	WDL	Medium	56.5	322.7	4.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
hackberry	Celtis occidentalis	WDH	Medium	30.9	228.6	3.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
northern red oak	Quercus rubra	WDH	Medium	41.8	228.4	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
shortleaf pine	Pinus echinata	WDH	High	12.7	213.5	9.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
chinkapin oak	Quercus muehlenbergii	NSL	Medium	28.7	179.8	4.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	13
flowering dogwood	Cornus florida	WDL	Medium	46.7	157.0	2.2	No change	No change	Medium	Common	Fair	Fair			1	14
sassafras	Sassafras albidum	WSL	Low	42.2	153.5	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
bitternut hickory	Carya cordiformis	WSL	Low	30.9	150.2	3.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	16
sycamore	Platanus occidentalis	NSL	Low	16.4	132.0	5.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
black cherry	Prunus serotina	WDL	Medium	35.1	109.8	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
white ash	Fraxinus americana	WDL	Medium	30.5	108.2	2.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
slippery elm	Ulmus rubra	WSL	Low	39.4	105.5	2.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	20
Shumard oak	Quercus shumardii	NSL	Low	18.1	94.7	4.3	No change	Sm. inc.	High	Common	Good	Very Good			1	21
red mulberry	Morus rubra	NSL	Low	32.4	94.0	2.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	22
common persimmon	Diospyros virginiana	NSL	Low	24.4	89.5	3.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
honeylocust	Gleditsia triacanthos	NSH	Low	19.9	84.3	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
shagbark hickory	Carya ovata	WSL	Medium	13.3	76.1	3.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	25
scarlet oak	Quercus coccinea	WDL	Medium	10.3	71.2	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	26
green ash	Fraxinus pennsylvanica	WSH	Low	11.6	55.3	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
eastern redbud	Cercis canadensis	NSL	Low	23.7	51.9	1.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	28
red maple	Acer rubrum	WDH	High	15.1	47.1	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	29
boxelder	Acer negundo	WSH	Low	3.9	40.2	4.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	1	30
sugar maple	Acer saccharum	WDH	High	7.2	38.9	2.8	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	31
blackgum	Nyssa sylvatica	WDL	Medium	13.4	31.1	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
shingle oak	Quercus imbricaria	NDH	Medium	7.9	23.8	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
pignut hickory	Carya glabra	WDL	Medium	6.6	21.2	2.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	34
wild plum	Prunus americana	NSLX	FIA	3.9	18.5	3.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	35
American basswood	Tilia americana	WSL	Medium	2.5	17.8	3.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
eastern white pine	Pinus strobus	WDH	High	0.1	15.8	1.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	37
winged elm	Ulmus alata	WDL	Medium	4.5	15.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	38
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.4	8.2	0.8	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	39
Siberian elm	Ulmus pumila	NDH	FIA	1	7.8	7.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	40
Osage-orange	Maclura pomifera	NDH	Medium	2.3	5.9	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good		Infill ++	2	41
serviceberry	Amelanchier spp.	NSL	Low	5	5.8	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
silver maple	Acer saccharinum	NSH	Low	2	5.6	2.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	43
swamp white oak	Quercus bicolor	NSL	Low	0.7	4.9	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
bur oak	Quercus macrocarpa	NDH	Medium	2.1	4.8	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	45
sugarberry	Celtis laevigata	NDH	Medium	1	3.4	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	1	2.2	2.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	47



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cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	3.1	2.1	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	48
butternut	Juglans cinerea	NSLX	FIA	0.3	2.1	0.6	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				49
Virginia pine	Pinus virginiana	NDH	High	1	1.6	1.6	Very Lg. dec.	Sm. inc.	Medium	Rare	Lost	Fair		Infill +		50
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	2.5	1.6	0.4	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good		Infill ++		51
pawpaw	Asimina triloba	NSL	Low	1.1	1.2	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				52
blue ash	Fraxinus quadrangulata	NSL	Low	0.1	0.9	0.1	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				53
Ohio buckeye	Aesculus glabra	NSL	Low	0.5	0.8	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				54
yellow-poplar	Liriodendron tulipifera	WDH	High	1	0.7	0.7	Very Lg. dec.	Lg. inc.	High	Rare	Lost	Good				55
peachleaf willow	Salix amygdaloides	NSLX	FIA	1	0.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				56
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				57
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		58
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				59
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				60
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				61
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +		62
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				63
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		64
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				65
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				66
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		67
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		68
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		69
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				70
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				71
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		72
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		73
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++		74