

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 3,789.1 346

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	24	RCP45	RCP85	Very Good	11	15	Likely	2	2	
Ash	2			Medium	30	44	17	11	Good	21	22	Infill	9	12
Hickory	6			Low	31	11	13	12	Fair	9	6	Migrate	5	6
Maple	4	Abundant	6	FIA	4		New	10	12	Poor	9	8		
Oak	15	Common	23				Unknown	12	10	Very Poor	8	7		
Pine	2	Rare	34							FIA Only	2	2		
Other	34	Absent	16							Unknown	8	6		
	63		79		81	79		81	81		68	66		

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	55.4	57.2	59.3	59.6	
Average	55.4	57.7	60.3	63.4	
GFDL45	55.4	58.2	60.6	61.5	
GFDL85	55.4	58.3	61.4	65.2	
HAD45	55.4	58.2	61.2	62.8	
HAD85	55.4	58.5	63.2	67.1	
Growing Season	71.5	73.5	75.1	75.8	
May—Sep	71.5	74.0	76.8	80.6	
GFDL45	71.5	74.7	77.7	79.1	
GFDL85	71.5	75.1	78.8	83.4	
HAD45	71.5	74.8	77.6	79.5	
HAD85	71.5	75.2	81.3	84.9	
Coldest Month	30.0	31.9	33.5	33.8	
Average	30.0	32.8	33.9	35.6	
GFDL45	30.0	34.5	34.7	35.1	
GFDL85	30.0	32.4	33.6	34.3	
HAD45	30.0	31.3	33.7	33.9	
HAD85	30.0	32.6	34.8	36.7	
Warmest Month	77.6	79.5	80.5	80.9	
Average	77.6	80.3	81.8	83.7	
GFDL45	77.6	81.6	82.9	83.9	
GFDL85	77.6	81.7	83.4	86.3	
HAD45	77.6	81.4	83.4	84.3	
HAD85	77.6	83.0	86.7	88.4	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	45.6	44.3	50.5	48.2	
Total	45.6	48.2	48.7	50.4	
GFDL45	45.6	52.4	54.7	55.1	
GFDL85	45.6	52.1	58.9	59.6	
HAD45	45.6	45.1	49.0	48.8	
HAD85	45.6	47.6	44.9	48.4	
Growing Season	19.3	18.0	20.2	18.7	
May—Sep	19.3	19.9	18.2	19.2	
GFDL45	19.3	22.2	22.0	23.0	
GFDL85	19.3	22.3	23.8	24.2	
HAD45	19.3	17.7	17.8	17.3	
HAD85	19.3	18.3	15.0	15.1	

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
white oak	Quercus alba	WDH	Medium	87.4	2193.2	18.4	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
black oak	Quercus velutina	WDH	High	88.8	1299.0	10.4	No change	No change	Medium	Abundant	Good	Good			1	2
post oak	Quercus stellata	WDH	High	79.6	982.8	8.7	Sm. inc.	Lg. inc.	High	Abundant	Very Good	Very Good			1	3
eastern redcedar	Juniperus virginiana	WDH	Medium	50.8	822.4	12.5	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
shortleaf pine	Pinus echinata	WDH	High	60.5	807.2	10.0	No change	Sm. inc.	Medium	Abundant	Good	Very Good			1	5
scarlet oak	Quercus coccinea	WDL	Medium	68.3	606.6	6.8	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	6
pignut hickory	Carya glabra	WDL	Medium	68.3	451.6	4.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
mockernut hickory	Carya alba	WDL	Medium	71.4	388.1	4.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
blackgum	Nyssa sylvatica	WDL	Medium	74.2	343.5	3.5	No change	No change	High	Common	Good	Good			1	9
sugar maple	Acer saccharum	WDH	High	58.6	336.2	4.2	No change	No change	High	Common	Good	Good			1	10
black hickory	Carya texana	NDL	High	73.6	319.9	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
northern red oak	Quercus rubra	WDH	Medium	52.3	295.5	4.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
American elm	Ulmus americana	WDH	Medium	40.4	196.3	3.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	46	195.7	3.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	14
winged elm	Ulmus alata	WDL	Medium	54.9	185.4	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
sassafras	Sassafras albidum	WSL	Low	54.9	183.9	2.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
shagbark hickory	Carya ovata	WSL	Medium	38.2	170.2	3.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	17
red maple	Acer rubrum	WDH	High	54.8	163.4	2.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	18
flowering dogwood	Cornus florida	WDL	Medium	62.7	131.2	1.6	No change	No change	Medium	Common	Fair	Fair			1	19
white ash	Fraxinus americana	WDL	Medium	43.8	128.2	2.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	20
chinkapin oak	Quercus muehlenbergii	NSL	Medium	26.6	126.1	3.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	21
slippery elm	Ulmus rubra	NSL	Low	39	104.2	1.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	22
sycamore	Platanus occidentalis	NSL	Low	18.7	100.7	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
black walnut	Juglans nigra	WDH	Low	37	91.4	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
bitternut hickory	Carya cordiformis	WSL	Low	18.1	69.4	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	25
blackjack oak	Quercus marilandica	NSL	Medium	22.8	69.1	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	26
silver maple	Acer saccharinum	NSH	Low	3.3	60.1	6.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	27
sweetgum	Liquidambar styraciflua	WDH	High	9	56.3	5.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	28
shingle oak	Quercus imbricaria	NDH	Medium	14.1	52.6	3.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	29
green ash	Fraxinus pennsylvanica	WSH	Low	20.9	49.9	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
hackberry	Celtis occidentalis	WDH	Medium	13.1	49.5	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	31
common persimmon	Diospyros virginiana	NSL	Low	26.6	47.8	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
eastern redbud	Cercis canadensis	NSL	Low	30	43.3	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	33
black willow	Salix nigra	NSH	Low	0.5	41.7	5.7	No change	No change	Low	Rare	Very Poor	Very Poor			2	34
honeylocust	Gleditsia triacanthos	NSH	Low	11.9	36.0	2.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	35
southern red oak	Quercus falcata	WDL	Medium	6.8	28.4	1.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	36
Osage-orange	Maclura pomifera	NDH	Medium	4.1	28.0	6.9	No change	Sm. inc.	High	Rare	Fair	Good		Infill ++	2	37
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	14.5	27.8	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	38
overcup oak	Quercus lyrata	NSL	Medium	1.9	26.8	11.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	39
Shumard oak	Quercus shumardii	NSL	Low	7.3	23.6	2.2	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	40
red mulberry	Morus rubra	NSL	Low	19.7	23.4	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	41
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17	20.9	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	42
Virginia pine	Pinus virginiana	NDH	High	1	18.3	18.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	43
river birch	Betula nigra	NSL	Low	5.1	16.7	3.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	1	44
boxelder	Acer negundo	WSH	Low	4.2	13.6	1.9	No change	Sm. inc.	High	Rare	Fair	Good			1	45
pin oak	Quercus palustris	NSH	Low	1.1	13.0	3.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	46
willow oak	Quercus phellos	NSL	Low	2	10.6	5.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	47



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American basswood	Tilia americana	WSL	Medium	1.3	9.4	3.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
serviceberry	Amelanchier spp.	NSL	Low	12	8.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
pawpaw	Asimina triloba	NSL	Low	4.9	8.6	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	1.4	7.8	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	51
Ohio buckeye	Aesculus glabra	NSL	Low	2	7.2	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
yellow-poplar	Liriodendron tulipifera	WDH	High	1.9	6.4	3.1	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	53
American beech	Fagus grandifolia	WDH	High	1	3.9	3.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	54
eastern cottonwood	Populus deltoides	NSH	Low	0.1	3.5	0.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	55
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1.8	2.7	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good		Infill ++	2	56
ailanthus	Ailanthus altissima	NSL	FIA	0.2	2.6	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
wild plum	Prunus americana	NSLX	FIA	3.6	2.1	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	58
white mulberry	Morus alba	NSL	FIA	1	1.8	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
sugarberry	Celtis laevigata	NDH	Medium	1	1.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	60
butternut	Juglans cinerea	NSLX	FIA	1	0.9	0.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	61
pecan	Carya illinoensis	NSH	Low	1	0.8	0.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	62
bur oak	Quercus macrocarpa	NDH	Medium	0.9	0.7	0.6	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	63
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	65
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	68
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	69
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	70
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	72
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
bigtooth aspen	Populus grandidentata	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	74
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	75
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	76
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	77
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	78
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	79
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	80
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	81