

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
 8,431.6 3,255.5 97

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	22	23	Increase	17	21	Very Good	3	5
Hickory	4			Medium	38	59	No Change	16	13	Good	14	14
Maple	5	Abundant	2	Low	33	13	Decrease	24	23	Fair	15	16
Oak	11	Common	23	FIA	6		New	29	30	Poor	12	9
Pine	3	Rare	38				Unknown	13	12	Very Poor	12	12
Other	37	Absent	34							FIA Only	2	2
	63		97		99	95		99	99	Unknown	7	6
											65	64

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	54.5	56.2	58.3	58.6
Average	CCSM85	54.5	56.5	59.1	62.1
	GFDL45	54.5	59.1	60.0	61.1
	GFDL85	54.5	57.7	61.2	65.3
	HAD45	54.5	57.1	60.4	61.9
	HAD85	54.5	57.2	61.3	65.9
Growing Season	CCSM45	70.5	72.2	74.1	74.5
	CCSM85	70.5	72.5	75.0	78.8
May—Sep	GFDL45	70.5	75.9	76.9	78.4
	GFDL85	70.5	74.5	78.4	82.9
	HAD45	70.5	73.5	76.5	78.4
	HAD85	70.5	73.2	78.0	83.0
Coldest Month	CCSM45	30.5	32.5	34.0	34.5
	CCSM85	30.5	32.8	34.2	35.9
Average	GFDL45	30.5	33.7	34.4	35.0
	GFDL85	30.5	33.5	34.7	36.2
	HAD45	30.5	32.2	34.5	34.7
	HAD85	30.5	32.8	34.6	36.6
Warmest Month	CCSM45	76.3	78.5	79.3	79.6
	CCSM85	76.3	78.6	80.4	82.0
Average	GFDL45	76.3	79.4	81.1	82.5
	GFDL85	76.3	80.8	83.0	85.8
	HAD45	76.3	79.7	81.5	82.6
	HAD85	76.3	79.9	82.7	86.2

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	44.6	47.8	50.0	52.2
Total	CCSM85	44.6	48.3	50.1	55.8
	GFDL45	44.6	50.0	53.7	53.7
	GFDL85	44.6	46.6	53.4	54.5
	HAD45	44.6	47.0	48.6	47.7
	HAD85	44.6	51.0	46.4	50.2
Growing Season	CCSM45	20.0	23.2	24.4	25.7
	CCSM85	20.0	22.9	23.4	26.2
May—Sep	GFDL45	20.0	21.1	23.1	23.5
	GFDL85	20.0	19.7	22.5	22.8
	HAD45	20.0	21.1	19.9	18.9
	HAD85	20.0	22.0	18.8	19.5

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
red maple	Acer rubrum	WDH	High	63	811.2	12.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
yellow-poplar	Liriodendron tulipifera	WDH	High	64.8	810.6	18.1	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
black cherry	Prunus serotina	WDL	Medium	52.6	373.1	9.3	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	3
blackgum	Nyssa sylvatica	WDL	Medium	52.6	250.8	4.8	Sm. dec.	No change	High	Common	Fair	Good			1	4
black oak	Quercus velutina	WDH	High	46.3	205.4	6.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
white oak	Quercus alba	WDH	Medium	47.2	194.7	5.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
Virginia pine	Pinus virginiana	NDH	High	8.6	192.9	15.4	No change	No change	Medium	Common	Fair	Fair			1	7
sweetgum	Liquidambar styraciflua	WDH	High	10	184.0	9.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	8
black locust	Robinia pseudoacacia	NDH	Low	26.3	173.0	10.3	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	9
American beech	Fagus grandifolia	WDH	High	37.2	172.0	6.0	No change	No change	Medium	Common	Fair	Fair			1	10
northern red oak	Quercus rubra	WDH	Medium	46.7	163.6	5.6	No change	No change	High	Common	Good	Good			1	11
mockernut hickory	Carya alba	WDL	Medium	28.3	163.6	5.7	No change	Sm. inc.	High	Common	Good	Very Good			1	12
chestnut oak	Quercus prinus	NDH	High	35.5	163.5	10.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	13
pignut hickory	Carya glabra	WDL	Medium	44.8	150.9	5.7	No change	Sm. dec.	Medium	Common	Fair	Poor			1	14
scarlet oak	Quercus coccinea	WDL	Medium	29.9	119.9	6.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
black walnut	Juglans nigra	WDH	Low	25.3	102.7	5.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
white ash	Fraxinus americana	WDL	Medium	30.2	100.5	4.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	17
sassafras	Sassafras albidum	WSL	Low	43.1	74.6	2.9	No change	No change	Medium	Common	Fair	Fair			1	18
boxelder	Acer negundo	WSH	Low	24.7	72.8	5.3	No change	Sm. inc.	High	Common	Good	Very Good			1	19
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	1.2	63.9	23.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	20
pin oak	Quercus palustris	NSH	Low	6.3	63.5	7.5	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	21
eastern white pine	Pinus strobus	WDH	High	7	63.3	18.2	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	22
slippery elm	Ulmus rubra	WSL	Low	3.7	61.4	9.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	23
loblolly pine	Pinus taeda	WDH	High	7.3	58.4	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	24
sycamore	Platanus occidentalis	NSL	Low	10.9	58.4	7.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
southern red oak	Quercus falcata	WDL	Medium	4.8	37.7	4.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
bitternut hickory	Carya cordiformis	WSL	Low	19.1	36.8	4.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	27
ailanthus	Ailanthus altissima	NSL	FIA	17.6	34.7	3.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
Norway maple	Acer platanoides	NSL	FIA	8	29.9	3.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	29
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	6.9	25.7	1.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	30
common persimmon	Diospyros virginiana	NSL	Low	7.5	25.7	2.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	31
American elm	Ulmus americana	WDH	Medium	9.2	25.1	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	32
sweet birch	Betula lenta	NDH	High	14.9	21.5	13.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	33
silver maple	Acer saccharinum	NSH	Low	5.3	19.5	14.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	34
shagbark hickory	Carya ovata	WSL	Medium	3	18.5	2.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	35
flowering dogwood	Cornus florida	WDL	Medium	18	15.8	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	36
willow oak	Quercus phellos	NSL	Low	2.9	14.8	1.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	37
shingle oak	Quercus imbricaria	NDH	Medium	1.8	12.3	4.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
eastern redcedar	Juniperus virginiana	WDH	Medium	4.8	10.3	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	39
pawpaw	Asimina triloba	NSL	Low	3.1	8.1	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
paulownia	Paulownia tomentosa	NSL	FIA	1.9	8.0	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	41
sweetbay	Magnolia virginiana	NSL	Medium	0.2	6.4	0.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	42
American holly	Ilex opaca	NSL	Medium	4.2	6.2	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	43
white mulberry	Morus alba	NSL	FIA	6.9	5.8	1.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
American basswood	Tilia americana	WSL	Medium	2	5.2	2.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	45
black willow	Salix nigra	NSH	Low	1.2	4.7	4.0	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair		Infill +	2	46
hackberry	Celtis occidentalis	WDH	Medium	8.8	3.1	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	47



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black ash	Fraxinus nigra	WSH	Medium	3.2	2.6	1.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	48
quaking aspen	Populus tremuloides	WDH	High	2	2.5	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
American chestnut	Castanea dentata	NSLX	FIA	2.4	2.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
red mulberry	Morus rubra	NSL	Low	1.2	2.0	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	51
northern catalpa	Catalpa speciosa	NSHX	FIA	1.4	1.8	1.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	52
bigtooth aspen	Populus grandidentata	NSL	Medium	0.8	1.4	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	53
swamp white oak	Quercus bicolor	NSL	Low	3.7	1.3	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
Osage-orange	Maclura pumifera	NDH	Medium	0.4	1.3	0.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	55
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	5.9	1.3	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	56
sugar maple	Acer saccharum	WDH	High	4.5	1.0	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	57
green ash	Fraxinus pennsylvanica	WSH	Low	1.8	0.5	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	58
white spruce	Picea glauca	NSL	Medium	4.7	0.5	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
eastern redbud	Cercis canadensis	NSL	Low	0.8	0.3	0.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	60
eastern cottonwood	Populus deltoides	NSH	Low	1.8	0.3	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	61
eastern hemlock	Tsuga canadensis	NSH	High	4.7	0.2	0.6	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	62
serviceberry	Amelanchier spp.	NSL	Low	0.8	0.1	0.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	65
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	66
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	69
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	71
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	72
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	73
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	74
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	75
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	76
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	78
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	80
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	82
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	83
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	84
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	85
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	86
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	87
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	88
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	89
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	90
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	91
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	92
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	93
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	94



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post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	95
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	96
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	97
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	98
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	99