

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 10,066 3,886.5 316

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	24	Increase	28	38	Very Good	11	10	Likely	1	1
Hickory	6		Medium	31	No Change	24	18	Good	15	25	Infill	12	18
Maple	7	Abundant 6	Low	39	Decrease	18	14	Fair	15	14	Migrate	8	8
Oak	12	Common 24	FIA	4	New	17	18	Poor	19	14			
Pine	6	Rare 44			Unknown	11	10	Very Poor	10	7			
Other	41	Absent 22						FIA Only	2	2			
	74	96		98	95	98	98	Unknown	7	6		21	27
									79	78			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	54.9	56.7	58.8	58.9	
Average	54.9	57.1	59.5	62.3	
GFDL45	54.9	57.6	60.0	60.8	
GFDL85	54.9	57.8	61.1	64.8	
HAD45	54.9	57.2	60.1	61.4	
HAD85	54.9	57.4	61.5	65.6	
Growing Season	68.1	69.9	71.9	72.3	
May—Sep	68.1	71.3	73.9	75.3	
GFDL45	68.1	71.3	73.9	75.3	
GFDL85	68.1	71.6	75.5	79.6	
HAD45	68.1	71.2	74.0	75.5	
HAD85	68.1	71.1	76.9	80.9	
Coldest Month	35.1	37.4	38.3	38.3	
Average	35.1	37.8	38.7	39.8	
GFDL45	35.1	38.4	38.5	39.1	
GFDL85	35.1	37.1	38.1	38.9	
HAD45	35.1	35.2	37.1	37.5	
HAD85	35.1	36.1	37.4	39.0	
Warmest Month	72.6	74.8	75.9	75.9	
Average	72.6	75.0	76.6	78.3	
GFDL45	72.6	76.0	77.2	78.1	
GFDL85	72.6	76.6	78.7	81.0	
HAD45	72.6	76.4	78.3	79.0	
HAD85	72.6	77.1	80.8	83.0	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	53.6	57.3	60.9	61.3	
Total	53.6	58.3	61.0	66.7	
GFDL45	53.6	59.7	62.5	66.1	
GFDL85	53.6	58.2	64.3	64.6	
HAD45	53.6	53.3	57.0	58.3	
HAD85	53.6	58.9	54.2	56.9	
Growing Season	23.3	26.2	28.1	28.8	
May—Sep	23.3	27.5	29.3	30.3	
GFDL45	23.3	27.5	29.3	30.3	
GFDL85	23.3	25.9	30.3	30.6	
HAD45	23.3	23.3	23.7	24.7	
HAD85	23.3	26.7	22.3	23.1	

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
yellow-poplar	Liriodendron tulipifera	WDH	High	92.6	1468.9	11.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
chestnut oak	Quercus prinus	NDH	High	76.1	1093.0	11.0	No change	No change	High	Abundant	Very Good	Very Good			1	2
red maple	Acer rubrum	WDH	High	91.6	1074.4	8.7	No change	No change	High	Abundant	Very Good	Very Good			1	3
Virginia pine	Pinus virginiana	NDH	High	49.8	821.8	9.6	No change	No change	Medium	Abundant	Good	Good			1	4
sourwood	Oxydendrum arboreum	NDL	High	87	637.4	5.2	No change	Sm. dec.	High	Abundant	Very Good	Good			1	5
white oak	Quercus alba	WDH	Medium	71	610.4	5.8	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	6
eastern white pine	Pinus strobus	WDH	High	51.7	487.2	7.1	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
scarlet oak	Quercus coccinea	WDL	Medium	66.2	481.7	5.0	No change	No change	Medium	Common	Fair	Fair			1	8
northern red oak	Quercus rubra	WDH	Medium	70.3	432.3	4.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
black locust	Robinia pseudoacacia	NDH	Low	75.5	414.9	4.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
sweet birch	Betula lenta	NDH	High	59.3	329.3	4.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	11
eastern hemlock	Tsuga canadensis	NSH	High	55.9	273.3	3.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	12
pignut hickory	Carya glabra	WDL	Medium	64.2	272.2	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
black oak	Quercus velutina	WDH	High	64	259.7	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
blackgum	Nyssa sylvatica	WDL	Medium	70.6	237.8	2.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	15
black cherry	Prunus serotina	WDL	Medium	45.2	200.6	2.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	16
loblolly pine	Pinus taeda	WDH	High	10.3	191.4	7.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	17
mockernut hickory	Carya alba	WDL	Medium	48.1	161.2	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
shortleaf pine	Pinus echinata	WDH	High	35	145.1	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
pitch pine	Pinus rigida	NSH	High	26.7	141.6	4.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
southern red oak	Quercus falcata	WDL	Medium	19.5	138.1	4.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
white ash	Fraxinus americana	WDL	Medium	29.9	130.9	3.7	Sm. dec.	No change	Low	Common	Poor	Poor			0	22
water oak	Quercus nigra	WDH	High	6.4	122.3	2.7	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	23
flowering dogwood	Cornus florida	WDL	Medium	56.4	106.1	1.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	24
sweetgum	Liquidambar styraciflua	WDH	High	11.7	104.6	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
sugar maple	Acer saccharum	WDH	High	20.7	103.6	3.6	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	26
American beech	Fagus grandifolia	WDH	High	37.8	97.7	1.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	27
black walnut	Juglans nigra	WDH	Low	17.1	66.1	3.6	No change	Sm. inc.	Medium	Common	Fair	Good			1	28
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	28.4	63.0	1.9	No change	No change	Low	Common	Poor	Poor			0	29
yellow birch	Betula alleghaniensis	NDL	High	12.6	52.2	2.9	No change	No change	Medium	Common	Fair	Fair			1	30
yellow buckeye	Aesculus flava	NSL	Low	14.4	44.5	2.5	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	31
cucumbertree	Magnolia acuminata	NSL	Low	15	41.2	2.1	No change	No change	Medium	Rare	Poor	Poor			1	32
silverbell	Halesia spp.	NSL	Low	19.4	39.1	1.8	No change	No change	Medium	Rare	Poor	Poor			1	33
sassafras	Sassafras albidum	WSL	Low	28.7	38.3	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	34
striped maple	Acer pensylvanicum	NSL	Medium	19	36.9	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
eastern redcedar	Juniperus virginiana	WDH	Medium	8.5	33.9	2.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	36
serviceberry	Amelanchier spp.	NSL	Low	30.2	33.8	0.9	No change	No change	Medium	Rare	Poor	Poor			1	37
bitternut hickory	Carya cordiformis	WSL	Low	13.9	33.6	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	38
American holly	Ilex opaca	NSL	Medium	14.1	31.0	1.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	39
pin cherry	Prunus pensylvanica	NSL	Low	5	28.1	4.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
American basswood	Tilia americana	WSL	Medium	10.8	27.2	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	41
green ash	Fraxinus pennsylvanica	WSH	Low	12.3	22.1	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	42
post oak	Quercus stellata	WDH	High	9.9	20.8	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	43
shagbark hickory	Carya ovata	WSL	Medium	9.6	19.4	1.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	44
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	10.9	19.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	45
red spruce	Picea rubens	NDH	High	3.8	18.3	4.6	No change	No change	Low	Rare	Very Poor	Very Poor			2	46
red mulberry	Morus rubra	NSL	Low	7.1	17.4	0.7	No change	No change	Medium	Rare	Poor	Poor			1	47



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American chestnut	Castanea dentata	NSLX	FIA	11.4	14.5	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	48
ailanthus	Ailanthus altissima	NSL	FIA	4.1	13.7	2.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	49
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	9.4	12.7	1.3	No change	Sm. inc.	High	Rare	Fair	Good			1	50
sycamore	Platanus occidentalis	NSL	Low	2	12.7	6.4	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	51
common persimmon	Diospyros virginiana	NSL	Low	5.6	11.2	0.8	No change	Sm. inc.	High	Rare	Fair	Good			1	52
boxelder	Acer negundo	WSH	Low	2.7	10.5	3.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	53
paulownia	Paulownia tomentosa	NSL	FIA	3	9.8	3.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	54
river birch	Betula nigra	NSL	Low	2.6	7.9	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	55
eastern redbud	Cercis canadensis	NSL	Low	5.7	5.7	1.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	56
pecan	Carya illinoensis	NSH	Low	0.1	5.7	0.7	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	57
American elm	Ulmus americana	WDH	Medium	5	5.1	1.0	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	58
Table Mountain pine	Pinus pungens	NSL	Low	3	5.0	1.7	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	1	59
sand hickory	Carya pallida	NSL	FIA	1.7	4.9	1.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	60
winged elm	Ulmus alata	WDL	Medium	2	4.4	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	61
slippery elm	Ulmus rubra	WSL	Low	2.2	4.3	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	62
honeylocust	Gleditsia triacanthos	NSH	Low	0.7	3.3	2.4	No change	No change	High	Rare	Fair	Fair		Infill +	2	63
chinkapin oak	Quercus muehlenbergii	NSL	Medium	1	2.8	2.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	64
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0.3	2.4	0.8	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	65
black willow	Salix nigra	NSH	Low	1	1.3	1.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	66
silver maple	Acer saccharinum	NSH	Low	1	0.9	0.9	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	67
florida maple	Acer barbatum	NSL	Low	1	0.8	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	68
blackjack oak	Quercus marilandica	NSL	Medium	0.3	0.8	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	69
mountain maple	Acer spicatum	NSL	Low	1	0.7	0.7	Sm. dec.	No change	High	Rare	Poor	Fair			0	70
willow oak	Quercus phellos	NSL	Low	1.3	0.7	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	71
pawpaw	Asimina triloba	NSL	Low	1	0.3	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	72
hackberry	Celtis occidentalis	WDH	Medium	0.5	0.3	0.1	Lg. dec.	Sm. inc.	High	Rare	Poor	Good			2	73
American mountain-ash	Sorbus americana	NSL	Low	1	0.2	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	74
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	75
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	76
spruce pine	Pinus glabra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	78
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	79
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
black maple	Acer nigrum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	81
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	82
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	85
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	86
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	87
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	88
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	89
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	90
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	91
turkey oak	Quercus laevis	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	92
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	93
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	94

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Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	95
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	96
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	97
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	98