

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 3,886.5 143

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	25	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	2					Increase	35	41	Very Good	13	17	Likely	1	1	
Hickory	8			Medium	36	52	No Change	17	13	Good	17	19	Infill	27	27
Maple	4	Abundant	1	Low	35	11	Decrease	18	16	Fair	15	13	Migrate	6	6
Oak	20	Common	31	FIA	5		New	14	15	Poor	14	10			
Pine	2	Rare	43				Unknown	8	7	Very Poor	8	8			
Other	39	Absent	16							FIA Only	2	2			
	75		91		92	88		92	92	Unknown	3	2			
											72	71			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	60.4	62.2	64.3	64.6	
Average	60.4	62.6	65.2	68.1	
GFDL45	60.4	64.4	65.3	66.1	
GFDL85	60.4	63.2	66.3	69.8	
HAD45	60.4	63.1	66.1	67.4	
HAD85	60.4	63.4	68.0	71.8	
Growing Season	75.8	77.5	79.1	79.8	
May—Sep	75.8	80.6	81.4	82.9	
GFDL45	75.8	79.1	82.7	87.0	
GFDL85	75.8	79.2	82.2	83.6	
HAD45	75.8	79.6	86.1	89.6	
HAD85	75.8	79.6	86.1	89.6	
Coldest Month	36.9	39.0	40.4	40.6	
Average	36.9	39.7	40.8	42.4	
GFDL45	36.9	40.6	40.7	41.0	
GFDL85	36.9	38.4	39.7	40.2	
HAD45	36.9	37.9	40.0	40.3	
HAD85	36.9	39.0	40.8	42.5	
Warmest Month	81.1	82.5	83.6	83.8	
Average	81.1	83.4	84.5	86.4	
GFDL45	81.1	85.1	85.8	86.8	
GFDL85	81.1	84.6	86.4	89.0	
HAD45	81.1	85.5	87.8	88.3	
HAD85	81.1	86.7	91.0	92.3	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	52.0	52.9	58.4	56.0	
Total	52.0	55.5	57.2	59.3	
GFDL45	52.0	58.6	62.5	63.8	
GFDL85	52.0	59.3	63.6	66.7	
HAD45	52.0	49.6	54.8	55.9	
HAD85	52.0	52.9	47.9	53.0	
Growing Season	19.6	18.7	19.4	19.1	
May—Sep	19.6	22.3	23.3	24.3	
GFDL45	19.6	23.6	24.9	25.8	
GFDL85	19.6	17.4	18.1	16.8	
HAD45	19.6	18.4	13.8	14.1	
HAD85	19.6	18.4	13.8	14.1	

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
sweetgum	Liquidambar styraciflua	WDH	High	61.5	847.7	15.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
black willow	Salix nigra	NSH	Low	34.9	405.4	20.1	No change	No change	Low	Common	Poor	Poor			0	2
winged elm	Ulmus alata	WDL	Medium	68.3	397.7	7.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	3
loblolly pine	Pinus taeda	WDH	High	27.9	383.6	15.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	50.6	267.2	7.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
American elm	Ulmus americana	WDH	Medium	52.3	262.9	6.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	6
southern red oak	Quercus falcata	WDL	Medium	31.1	206.1	6.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
white oak	Quercus alba	WDH	Medium	37.7	189.1	6.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	26.8	173.7	6.1	No change	No change	High	Common	Good	Good			1	9
eastern redcedar	Juniperus virginiana	WDH	Medium	26.3	170.8	5.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	10
boxelder	Acer negundo	WSH	Low	35.1	162.9	7.3	No change	Sm. inc.	High	Common	Good	Very Good			1	11
green ash	Fraxinus pennsylvanica	WSH	Low	43.5	162.8	5.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
red maple	Acer rubrum	WDH	High	38.1	134.7	3.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	40.5	131.6	3.9	No change	Sm. inc.	Low	Common	Poor	Fair			1	14
pignut hickory	Carya glabra	WDL	Medium	41.2	126.2	3.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
pecan	Carya illinoensis	NSH	Low	19.1	118.3	11.5	Sm. inc.	Lg. inc.	Low	Common	Fair	Good	Infill +	Infill ++	1	16
sycamore	Platanus occidentalis	NSL	Low	19.5	115.4	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
mockernut hickory	Carya alba	WDL	Medium	29.8	114.7	4.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
black oak	Quercus velutina	WDH	High	23.4	109.7	5.5	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	19
post oak	Quercus stellata	WDH	High	19.3	107.4	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	20
slippery elm	Ulmus rubra	WSL	Low	41.3	102.0	4.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	21
sugar maple	Acer saccharum	WDH	High	21.6	91.3	6.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	22
common persimmon	Diospyros virginiana	NSL	Low	34.6	91.3	3.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	23
willow oak	Quercus phellos	NSL	Low	14.6	72.0	5.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
sugarberry	Celtis laevigata	NDH	Medium	26.2	71.1	8.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
bald cypress	Taxodium distichum	NSH	Medium	13.2	66.7	7.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	26
bitternut hickory	Carya cordiformis	WSL	Low	13.8	65.4	5.0	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	27
blackgum	Nyssa sylvatica	WDL	Medium	19.2	59.8	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	28
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	22.9	59.0	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	29
sassafras	Sassafras albidum	WSL	Low	27.3	57.5	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	30
water oak	Quercus nigra	WDH	High	18.4	51.6	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	31
black locust	Robinia pseudoacacia	NDH	Low	15.8	51.5	5.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	32
American beech	Fagus grandifolia	WDH	High	11.4	49.7	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
swamp chestnut oak	Quercus michauxii	NSL	Low	13.4	47.3	5.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	34
white ash	Fraxinus americana	WDL	Medium	11	42.5	3.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	35
silver maple	Acer saccharinum	NSH	Low	13.5	32.0	4.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	36
flowering dogwood	Cornus florida	WDL	Medium	14.7	31.0	1.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	37
honeylocust	Gleditsia triacanthos	NSH	Low	9.8	30.2	3.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	38
hackberry	Celtis occidentalis	WDH	Medium	7.2	26.8	7.3	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	39
river birch	Betula nigra	NSL	Low	7.3	25.8	3.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
red mulberry	Morus rubra	NSL	Low	12.7	22.8	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	41
shortleaf pine	Pinus echinata	WDH	High	5.1	22.2	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	42
nuttall oak	Quercus texana	NSH	Medium	5	22.0	11.4	No change	No change	High	Rare	Fair	Fair			0	43
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	13.2	21.9	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	44
shagbark hickory	Carya ovata	WSL	Medium	21.5	20.2	2.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	45
overcup oak	Quercus lyrata	NSL	Medium	11.9	19.9	4.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	46
black walnut	Juglans nigra	WDH	Low	11.4	19.2	3.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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water tupelo	Nyssa aquatica	NSH	Medium	5.4	18.5	5.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	48
shellbark hickory	Carya laciniosa	NSL	Low	2.3	14.8	4.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
chinkapin oak	Quercus muehlenbergii	NSL	Medium	10.3	13.7	2.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
eastern cottonwood	Populus deltoides	NSH	Low	6.9	13.4	3.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	51
Shumard oak	Quercus shumardii	NSL	Low	6.2	13.2	2.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	52
northern red oak	Quercus rubra	WDH	Medium	5.9	7.8	4.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	53
water elm	Planera aquatica	NSL	Low	7	7.2	2.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	54
white mulberry	Morus alba	NSL	FIA	4	6.9	1.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	55
shingle oak	Quercus imbricaria	NDH	Medium	0.8	5.7	4.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
scarlet oak	Quercus coccinea	WDL	Medium	3.8	5.6	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	57
blackjack oak	Quercus marilandica	NSL	Medium	0.9	4.8	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	58
Osage-orange	Maclura pomifera	NDH	Medium	1	4.3	4.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	59
pawpaw	Asimina triloba	NSL	Low	3.6	3.0	2.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	60
paulownia	Paulownia tomentosa	NSL	FIA	6	3.0	1.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	61
eastern redbud	Cercis canadensis	NSL	Low	4	2.2	0.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	62
water hickory	Carya aquatica	NSL	Medium	2.8	1.7	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	63
serviceberry	Amelanchier spp.	NSL	Low	0.3	1.5	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	64
American basswood	Tilia americana	WSL	Medium	1.3	1.1	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	65
laurel oak	Quercus laurifolia	NDH	Medium	1	1.1	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			0	66
pin oak	Quercus palustris	NSH	Low	1	1.1	1.1	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	67
sand hickory	Carya pallida	NSL	FIA	0.8	1.0	0.8	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	68
American holly	Ilex opaca	NSL	Medium	1.1	0.9	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	69
waterlocust	Gleditsia aquatica	NSLX	FIA	5	0.6	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	70
yellow buckeye	Aesculus flava	NSL	Low	1	0.4	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	71
swamp tupelo	Nyssa biflora	NDH	Medium	0.1	0.3	0.0	No change	No change	Low	Rare	Very Poor	Very Poor			0	72
bur oak	Quercus macrocarpa	NDH	Medium	4	0.2	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	73
chestnut oak	Quercus prinus	NDH	High	0.1	0.2	0.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	74
ailanthus	Ailanthus altissima	NSL	FIA	2.6	0.1	0.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	75
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	76
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	79
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	81
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	82
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	83
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	84
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	85
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	86
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	87
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	88
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	89
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	90
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	91
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	92