

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
 9,941.4 3,838.4 160

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	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	3			15	25	Increase	39	42	Very Good	13	14	Likely	1	1
Hickory	8			33	47	No Change	12	9	Good	20	22	Infill	37	36
Maple	5	Abundant	1	34	12	Decrease	16	16	Fair	14	11	Migrate	1	3
Oak	19	Common	27	3		New	10	11	Poor	11	11			
Pine	2	Rare	42			Unknown	8	7	Very Poor	9	9			
Other	33	Absent	14						FIA Only	2	2			
	70		84				85	85	Unknown	5	4			
										74	73			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	58.6	60.4	62.4	62.8	
Average	58.6	60.8	63.5	66.4	
GFDL45	58.6	63.1	63.6	64.6	
GFDL85	58.6	61.5	64.5	68.2	
HAD45	58.6	61.3	64.3	65.8	
HAD85	58.6	61.6	66.2	70.1	
Growing Season	74.8	76.6	78.1	78.9	
May—Sep	74.8	77.2	80.0	83.6	
GFDL45	74.8	80.2	80.7	82.2	
GFDL85	74.8	78.3	81.9	86.4	
HAD45	74.8	78.1	80.9	82.6	
HAD85	74.8	78.5	84.7	88.2	
Coldest Month	33.6	35.6	37.1	37.4	
Average	33.6	36.3	37.5	39.1	
GFDL45	33.6	37.8	37.9	38.2	
GFDL85	33.6	35.5	36.8	37.3	
HAD45	33.6	34.8	37.0	37.1	
HAD85	33.6	36.0	38.0	39.8	
Warmest Month	80.6	82.3	83.4	83.7	
Average	80.6	83.2	84.5	86.4	
GFDL45	80.6	84.7	85.7	86.8	
GFDL85	80.6	84.5	86.2	89.0	
HAD45	80.6	84.6	86.6	87.3	
HAD85	80.6	86.0	89.9	91.4	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	47.4	46.5	53.0	49.6	
Total	47.4	49.8	51.0	52.6	
GFDL45	47.4	53.9	56.9	57.1	
GFDL85	47.4	53.8	59.7	61.0	
HAD45	47.4	46.2	51.0	51.3	
HAD85	47.4	49.6	45.7	49.6	
Growing Season	18.0	16.8	18.5	17.0	
May—Sep	18.0	18.0	16.3	17.0	
GFDL45	18.0	20.6	20.5	21.4	
GFDL85	18.0	20.9	22.2	22.6	
HAD45	18.0	16.4	16.7	15.8	
HAD85	18.0	17.3	13.3	13.2	

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	52.1	781.6	14.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
post oak	Quercus stellata	WDH	High	45.4	398.3	9.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	2
shortleaf pine	Pinus echinata	WDH	High	29.5	367.0	12.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	3
black oak	Quercus velutina	WDH	High	47.1	322.8	5.9	No change	No change	Medium	Common	Fair	Fair			1	4
sweetgum	Liquidambar styraciflua	WDH	High	35	197.3	13.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	5
mockernut hickory	Carya alba	WDL	Medium	47.2	183.8	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
scarlet oak	Quercus coccinea	WDL	Medium	21.7	176.7	5.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	7
blackgum	Nyssa sylvatica	WDL	Medium	47.8	170.6	3.5	No change	Sm. inc.	High	Common	Good	Very Good			1	8
southern red oak	Quercus falcata	WDL	Medium	39.1	167.3	5.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
black hickory	Carya texana	NDL	High	40	161.4	4.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
pignut hickory	Carya glabra	WDL	Medium	26.4	155.7	3.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	11
American elm	Ulmus americana	WDH	Medium	33.8	144.0	5.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	12
red maple	Acer rubrum	WDH	High	40.1	135.7	5.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
winged elm	Ulmus alata	WDL	Medium	53	134.1	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
eastern redcedar	Juniperus virginiana	WDH	Medium	23.4	106.8	5.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
sugarberry	Celtis laevigata	NDH	Medium	19.4	96.5	9.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
nuttall oak	Quercus texana	NSH	Medium	14.7	96.0	17.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	17
honeylocust	Gleditsia triacanthos	NSH	Low	12.1	78.3	5.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	18
white ash	Fraxinus americana	WDL	Medium	29.2	75.5	2.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	19
green ash	Fraxinus pennsylvanica	WSH	Low	41.7	73.0	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
sycamore	Platanus occidentalis	NSL	Low	12.5	69.3	4.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	21
black cherry	Prunus serotina	WDL	Medium	35.5	67.1	2.1	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	22
black willow	Salix nigra	NSH	Low	6.1	57.1	14.8	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	23
overcup oak	Quercus lyrata	NSL	Medium	11.1	55.4	6.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2	24
flowering dogwood	Cornus florida	WDL	Medium	36.1	53.9	1.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	25
willow oak	Quercus phellos	NSL	Low	18.1	52.6	7.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	26
chinkapin oak	Quercus muehlenbergii	NSL	Medium	12.4	51.8	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	27
slippery elm	Ulmus rubra	WSL	Low	27.2	51.4	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
eastern cottonwood	Populus deltoides	NSH	Low	3	42.8	14.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	29
common persimmon	Diospyros virginiana	NSL	Low	30.2	42.2	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	30
pin oak	Quercus palustris	NSH	Low	7	40.0	11.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	31
water oak	Quercus nigra	WDH	High	9.2	39.7	5.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	32
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	11.8	37.9	10.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	33
northern red oak	Quercus rubra	WDH	Medium	18.5	34.3	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	34
bitternut hickory	Carya cordiformis	WSL	Low	13.3	31.3	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	35
sugar maple	Acer saccharum	WDH	High	8.5	31.1	2.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	36
black walnut	Juglans nigra	WDH	Low	12.3	30.0	2.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	37
florida maple	Acer barbatum	NSL	Low	9.1	28.9	10.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	38
sassafras	Sassafras albidum	WSL	Low	18.7	28.5	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	39
water tupelo	Nyssa aquatica	NSH	Medium	1	26.1	26.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	40
hackberry	Celtis occidentalis	WDH	Medium	14.6	24.1	3.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	41
river birch	Betula nigra	NSL	Low	13.1	23.4	3.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	42
laurel oak	Quercus laurifolia	NDH	Medium	1	19.4	19.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	43
swamp chestnut oak	Quercus michauxii	NSL	Low	8	18.4	4.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	44
boxelder	Acer negundo	WSH	Low	8.7	17.4	2.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	45
silver maple	Acer saccharinum	NSH	Low	10.2	16.5	4.8	Sm. inc.	No change	High	Rare	Good	Fair	Infill ++	Infill +	2	46
shingle oak	Quercus imbricaria	NDH	Medium	5	16.0	3.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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American hornbeam; musclev	Carpinus caroliniana	WSL	Low	9	15.8	1.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	48
shagbark hickory	Carya ovata	WSL	Medium	10	11.8	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	49
red mulberry	Morus rubra	NSL	Low	8	11.7	0.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	50
blackjack oak	Quercus marilandica	NSL	Medium	7.4	11.6	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	51
eastern redbud	Cercis canadensis	NSL	Low	12.1	11.3	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	52
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	5.1	10.7	1.7	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	53
water elm	Planera aquatica	NSL	Low	1	9.0	9.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	54
wild plum	Prunus americana	NSLX	FIA	1.9	8.2	3.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	55
cedar elm	Ulmus crassifolia	NDH	Medium	1	8.1	8.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	56
water hickory	Carya aquatica	NSL	Medium	1	6.8	6.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	57
Shumard oak	Quercus shumardii	NSL	Low	9.4	5.0	3.6	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	58
pawpaw	Asimina triloba	NSL	Low	2.2	4.6	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
serviceberry	Amelanchier spp.	NSL	Low	4.1	3.8	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	60
American beech	Fagus grandifolia	WDH	High	7.6	3.0	5.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
yellow-poplar	Liriodendron tulipifera	WDH	High	4.2	2.9	4.3	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	62
ailanthus	Ailanthus altissima	NSL	FIA	0.6	2.5	1.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	63
butternut	Juglans cinerea	NSLX	FIA	1	2.5	2.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	64
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1.6	1.9	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	65
shellbark hickory	Carya laciniosa	NSL	Low	4	1.2	4.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
pecan	Carya illinoensis	NSH	Low	4	0.7	2.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	67
blue ash	Fraxinus quadrangulata	NSL	Low	1	0.5	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	68
bur oak	Quercus macrocarpa	NDH	Medium	1	0.4	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	69
loblolly pine	Pinus taeda	WDH	High	3	0.2	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	70
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	71
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	73
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	74
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	75
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	76
American holly	Ilex opaca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	78
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	79
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	81
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	82
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	83
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	85