

U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 8,000.0 3,088.8 227

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	21	Increase	20	26	Very Good	12	12
Hickory	5			Medium	27	No Change	10	10	Good	8	11
Maple	5	Abundant	5	Low	32	Decrease	32	26	Fair	13	17
Oak	13	Common	27	FIA	4	New	10	12	Poor	11	9
Pine	5	Rare	34			Unknown	12	10	Very Poor	14	9
Other	36	Absent	16						FIA Only	2	2
	66		82		84		84	84	Unknown	8	6
										68	66

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	58.6	60.5	62.6	62.7	
Average	58.6	60.8	63.3	66.2	
GFDL45	58.6	61.3	63.8	64.6	
GFDL85	58.6	61.6	64.9	68.7	
HAD45	58.6	60.9	64.0	65.4	
HAD85	58.6	61.2	65.2	69.6	
Growing Season	73.0	74.8	76.7	77.2	
May—Sep	73.0	75.1	77.7	81.4	
GFDL45	73.0	76.0	78.8	80.1	
GFDL85	73.0	76.6	80.2	84.5	
HAD45	73.0	76.0	78.9	80.5	
HAD85	73.0	76.0	81.2	85.9	
Coldest Month	37.3	39.4	40.3	40.5	
Average	37.3	39.6	40.6	41.8	
GFDL45	37.3	40.7	41.0	41.7	
GFDL85	37.3	39.5	40.5	41.6	
HAD45	37.3	38.0	39.8	40.1	
HAD85	37.3	38.4	39.7	41.2	
Warmest Month	78.4	80.4	81.5	81.5	
Average	78.4	80.6	82.3	83.9	
GFDL45	78.4	81.4	82.6	83.6	
GFDL85	78.4	82.1	84.1	86.6	
HAD45	78.4	81.7	83.6	84.4	
HAD85	78.4	82.5	85.7	88.6	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	44.9	49.1	51.8	53.1	
Total	44.9	50.3	52.8	58.2	
GFDL45	44.9	50.3	53.8	56.7	
GFDL85	44.9	48.9	55.0	55.7	
HAD45	44.9	48.1	49.5	49.1	
HAD85	44.9	50.3	47.1	49.1	
Growing Season	20.1	23.6	25.3	26.3	
May—Sep	20.1	23.4	24.2	27.1	
GFDL45	20.1	23.6	25.8	27.2	
GFDL85	20.1	22.3	26.7	27.0	
HAD45	20.1	21.5	21.5	21.9	
HAD85	20.1	23.6	21.3	21.4	

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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Northern Research Station
Landscape Change Research Group
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Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N	
Virginia pine	Pinus virginiana	NDH	High	73.7	1227.6	15.8	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +		0	1	
yellow-poplar	Liriodendron tulipifera	WDH	High	85	1216.7	13.6	Lg. dec.	Lg. dec.	High	Abundant	Good	Good	Infill ++	Infill ++		1	2
red maple	Acer rubrum	WDH	High	91.3	1069.9	11.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++		1	3
sweetgum	Liquidambar styraciflua	WDH	High	80	981.7	11.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++		1	4
white oak	Quercus alba	WDH	Medium	87.5	785.8	8.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++		1	5
loblolly pine	Pinus taeda	WDH	High	32.5	403.3	11.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1	6
shortleaf pine	Pinus echinata	WDH	High	56.3	360.5	6.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1	7
sourwood	Oxydendrum arboreum	NDL	High	66.3	276.3	4.0	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +			1	8
pignut hickory	Carya glabra	WDL	Medium	63.7	261.0	3.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +		0	9
eastern redcedar	Juniperus virginiana	WDH	Medium	63.7	240.9	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1	10
mockernut hickory	Carya alba	WDL	Medium	55	206.6	3.6	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++		1	11
American beech	Fagus grandifolia	WDH	High	51.3	199.0	3.7	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +		2	12
white ash	Fraxinus americana	WDL	Medium	57.5	195.8	3.2	Sm. dec.	No change	Low	Common	Poor	Poor	Infill +	Infill +		0	13
southern red oak	Quercus falcata	WDL	Medium	58.8	195.5	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++		1	14
blackgum	Nyssa sylvatica	WDL	Medium	67.5	162.4	2.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++		1	15
black cherry	Prunus serotina	WDL	Medium	68.7	159.9	2.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +		1	16
northern red oak	Quercus rubra	WDH	Medium	52.5	157.0	2.8	Sm. inc.	No change	High	Common	Very Good	Good	Infill ++	Infill ++		1	17
chestnut oak	Quercus prinus	NDH	High	12.5	146.8	11.2	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +			2	18
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	46.2	145.0	3.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +		1	19
flowering dogwood	Cornus florida	WDL	Medium	71.3	140.9	1.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +		1	20
scarlet oak	Quercus coccinea	WDL	Medium	37.5	131.7	3.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +		2	21
hackberry	Celtis occidentalis	WDH	Medium	16.2	125.6	7.3	Lg. dec.	Lg. dec.	High	Common	Fair	Fair				0	22
post oak	Quercus stellata	WDH	High	33.7	112.9	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++		2	23
American elm	Ulmus americana	WDH	Medium	40	108.5	2.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++		2	24
willow oak	Quercus phellos	NSL	Low	32.5	102.7	3.0	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +		2	25
black oak	Quercus velutina	WDH	High	30	94.6	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1	26
sycamore	Platanus occidentalis	NSL	Low	21.2	84.0	3.8	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++		2	27
winged elm	Ulmus alata	WDL	Medium	40	83.9	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		2	28
common persimmon	Diospyros virginiana	NSL	Low	28.7	57.1	1.9	Lg. dec.	Lg. dec.	High	Common	Fair	Fair				1	29
boxelder	Acer negundo	WSH	Low	12.5	55.5	4.2	Lg. dec.	Sm. dec.	High	Common	Fair	Fair		Infill +		2	30
black walnut	Juglans nigra	WDH	Low	15	55.3	3.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor				0	31
green ash	Fraxinus pennsylvanica	WSH	Low	18.8	51.1	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		2	32
florida maple	Acer barbatum	NSL	Low	12.5	49.2	3.7	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +		2	33
eastern redbud	Cercis canadensis	NSL	Low	22.5	36.9	1.6	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +		1	34
shagbark hickory	Carya ovata	WSL	Medium	15	34.4	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				2	35
river birch	Betula nigra	NSL	Low	10	30.9	2.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		2	36
slippery elm	Ulmus rubra	WSL	Low	12.5	28.0	2.1	No change	Sm. inc.	Medium	Rare	Poor	Fair				0	37
eastern white pine	Pinus strobus	WDH	High	6.3	25.0	3.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0	38
black locust	Robinia pseudoacacia	NDH	Low	10	24.1	2.3	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost				0	39
butternut	Juglans cinerea	NSLX	FIA	1.2	20.1	15.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0	40
sassafras	Sassafras albidum	WSL	Low	11.3	19.8	1.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++		2	41
ailanthus	Ailanthus altissima	NSL	FIA	7.5	12.5	1.6	Unknown	Unknown	NA	Rare	NNIS	NNIS				0	42
black willow	Salix nigra	NSH	Low	3.7	12.0	3.0	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +		2	43
American holly	Ilex opaca	NSL	Medium	6.2	11.3	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2	44
cucumbertree	Magnolia acuminata	NSL	Low	5	10.3	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	45
sugar maple	Acer saccharum	WDH	High	7.5	9.8	1.2	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost				0	46
water oak	Quercus nigra	WDH	High	3.7	8.8	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	2.5	8.8	3.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	48
sweet birch	Betula lenta	NDH	High	1.2	7.0	5.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	49
red mulberry	Morus rubra	NSL	Low	7.5	6.4	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	50
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.5	4.9	1.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	51
bitternut hickory	Carya cordiformis	WSL	Low	3.7	4.7	1.2	Very Lg. dec.	Sm. dec.	High	Rare	Lost	Poor			0	52
honeylocust	Gleditsia triacanthos	NSH	Low	3.7	4.5	1.1	No change	Sm. inc.	High	Rare	Fair	Good			2	53
chinkapin oak	Quercus muehlenbergii	NSL	Medium	1.3	3.5	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
laurel oak	Quercus laurifolia	NDH	Medium	5	2.6	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	55
white mulberry	Morus alba	NSL	FIA	2.5	2.4	0.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	56
pecan	Carya illinoensis	NSH	Low	1.2	2.3	1.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			2	57
serviceberry	Amelanchier spp.	NSL	Low	3.8	2.0	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
yellow birch	Betula alleghaniensis	NDL	High	2.5	1.8	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
striped maple	Acer pensylvanicum	NSL	Medium	1.2	1.1	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
sugarberry	Celtis laevigata	NDH	Medium	2.5	1.1	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
swamp tupelo	Nyssa biflora	NDH	Medium	1.2	0.8	0.6	No change	Sm. inc.	Low	Rare	Very Poor	Poor			2	62
swamp chestnut oak	Quercus michauxii	NSL	Low	1.2	0.8	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	63
pawpaw	Asimina triloba	NSL	Low	1.3	0.7	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	64
pitch pine	Pinus rigida	NSH	High	1.3	0.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	65
wild plum	Prunus americana	NSLX	FIA	1.2	0.4	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	66
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	67
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	68
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	69
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	70
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	71
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	72
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	73
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	74
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	75
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	76
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	79
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	81
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	82
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	83
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	84