

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
 8,900.0 3,436.3 242

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	22	Increase	19	28	Very Good	9	12	Likely	1	1
Hickory	6			Medium	27	48	No Change	13	10	Good	12	14	Infill	33	38
Maple	5	Abundant	6	Low	31	11	Decrease	27	21	Fair	12	15	Migrate	0	3
Oak	11	Common	26	FIA	4		New	11	12	Poor	12	7			
Pine	5	Rare	31				Unknown	13	12	Very Poor	10	7			
Other	34	Absent	15							FIA Only	2	2			
	63		78		83	81		83	83	Unknown	9	8			
											66	65			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	58.9	60.7	62.8	62.9	
Average	58.9	61.1	63.5	66.4	
GFDL45	58.9	61.6	64.0	64.9	
GFDL85	58.9	61.9	65.1	68.9	
HAD45	58.9	61.2	64.3	65.6	
HAD85	58.9	61.5	65.5	69.8	
Growing Season	73.2	75.0	76.9	77.4	
May—Sep	73.2	75.2	77.9	81.6	
GFDL45	73.2	76.2	78.9	80.3	
GFDL85	73.2	76.7	80.4	84.7	
HAD45	73.2	76.2	79.1	80.7	
HAD85	73.2	76.2	81.5	86.1	
Coldest Month	37.7	39.8	40.7	40.8	
Average	37.7	40.0	41.0	42.1	
GFDL45	37.7	41.1	41.3	42.0	
GFDL85	37.7	39.9	40.8	41.8	
HAD45	37.7	38.3	40.1	40.4	
HAD85	37.7	38.8	40.0	41.6	
Warmest Month	78.5	80.6	81.6	81.6	
Average	78.5	80.7	82.4	84.0	
GFDL45	78.5	81.5	82.7	83.7	
GFDL85	78.5	82.2	84.2	86.7	
HAD45	78.5	81.9	83.8	84.5	
HAD85	78.5	82.6	85.9	88.7	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	44.5	48.7	51.3	52.7	
Total	44.5	49.7	52.3	57.7	
GFDL45	44.5	49.8	53.4	56.3	
GFDL85	44.5	48.5	54.6	55.3	
HAD45	44.5	47.4	48.8	48.6	
HAD85	44.5	49.5	46.3	48.2	
Growing Season	19.9	23.2	24.8	25.9	
May—Sep	19.9	23.0	23.8	26.6	
GFDL45	19.9	23.3	25.6	26.9	
GFDL85	19.9	22.1	26.6	26.9	
HAD45	19.9	21.0	21.0	21.6	
HAD85	19.9	22.9	20.6	20.5	

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.

Cite as: Iverson, L.R.; Prasad, A.M.; Peters, M.P.; Matthews, S.N. 2019. Facilitating Adaptive Forest Management under Climate Change: A Spatially Specific Synthesis of 125 Species for Habitat Changes and Assisted Migration over the Eastern United States. *Forests*. 10(11): 989. <https://doi.org/10.3390/f10110989>.

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
sweetgum	Liquidambar styraciflua	WDH	High	84.3	1101.8	12.3	No change	No change	Medium	Abundant	Good	Good	Infill ++	Infill ++	1	1
Virginia pine	Pinus virginiana	NDH	High	66.3	1100.9	15.7	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +		0	2
yellow-poplar	Liriodendron tulipifera	WDH	High	80.9	1094.7	12.8	Lg. dec.	Lg. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	1	3
red maple	Acer rubrum	WDH	High	89.9	1011.4	10.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	1	4
white oak	Quercus alba	WDH	Medium	84.3	780.9	8.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	1	5
loblolly pine	Pinus taeda	WDH	High	36	607.4	15.9	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	1	6
shortleaf pine	Pinus echinata	WDH	High	57.3	489.3	8.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	7
eastern redcedar	Juniperus virginiana	WDH	Medium	69.7	310.0	4.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	8
sourwood	Oxydendrum arboreum	NDL	High	65.2	255.1	3.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	9
chestnut oak	Quercus prinus	NDH	High	15.7	211.0	12.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	10
southern red oak	Quercus falcata	WDL	Medium	55.1	206.9	3.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	11
pignut hickory	Carya glabra	WDL	Medium	58.4	194.2	3.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	12
black cherry	Prunus serotina	WDL	Medium	68.5	176.1	2.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	13
American beech	Fagus grandifolia	WDH	High	48.3	172.8	3.4	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	14
scarlet oak	Quercus coccinea	WDL	Medium	37.1	153.4	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +		0	15
mockernut hickory	Carya alba	WDL	Medium	51.7	138.6	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
white ash	Fraxinus americana	WDL	Medium	50.6	137.6	2.6	No change	Sm. inc.	Low	Common	Poor	Fair	Infill +	Infill +	1	17
flowering dogwood	Cornus florida	WDL	Medium	66.3	136.5	1.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	18
blackgum	Nyssa sylvatica	WDL	Medium	56.2	132.6	2.2	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
northern red oak	Quercus rubra	WDH	Medium	46.1	131.6	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	20
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	42.7	129.2	2.9	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	21
American elm	Ulmus americana	WDH	Medium	37.1	123.5	3.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	22
winged elm	Ulmus alata	WDL	Medium	43.8	120.2	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	23
post oak	Quercus stellata	WDH	High	30.3	119.5	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
green ash	Fraxinus pennsylvanica	WSH	Low	14.6	107.3	6.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
sycamore	Platanus occidentalis	NSL	Low	21.3	98.1	4.3	Sm. dec.	Sm. inc.	Medium	Common	Poor	Good	Infill +	Infill ++	1	26
willow oak	Quercus phellos	NSL	Low	25.8	87.0	3.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	27
black oak	Quercus velutina	WDH	High	28.1	66.3	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	28
hackberry	Celtis occidentalis	WDH	Medium	11.2	61.6	5.2	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	29
common persimmon	Diospyros virginiana	NSL	Low	25.8	54.7	2.0	Lg. dec.	Lg. dec.	High	Common	Fair	Fair		Infill +	1	30
florida maple	Acer barbatum	NSL	Low	10.1	54.4	5.1	Lg. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	2	31
black walnut	Juglans nigra	WDH	Low	12.4	51.9	4.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	32
boxelder	Acer negundo	WSH	Low	11.2	48.1	4.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	1	33
eastern redbud	Cercis canadensis	NSL	Low	18	42.6	2.2	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
shagbark hickory	Carya ovata	WSL	Medium	18	38.7	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	35
river birch	Betula nigra	NSL	Low	9	32.5	3.4	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	36
black willow	Salix nigra	NSH	Low	4.5	24.7	5.2	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	37
eastern white pine	Pinus strobus	WDH	High	4.5	21.0	4.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	38
butternut	Juglans cinerea	NSLX	FIA	2.2	20.1	8.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	39
American holly	Ilex opaca	NSL	Medium	10.1	19.6	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	40
slippery elm	Ulmus rubra	WSL	Low	9	18.0	1.9	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	41
ailanthus	Ailanthus altissima	NSL	FIA	6.7	15.8	2.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
black locust	Robinia pseudoacacia	NDH	Low	5.6	14.8	2.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	43
sassafras	Sassafras albidum	WSL	Low	9	13.4	1.4	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	44
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	2.2	7.9	3.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +		2	45
sugar maple	Acer saccharum	WDH	High	4.5	7.0	1.5	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	46
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.5	6.8	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	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
sweet birch	Betula lenta	NDH	High	1.1	6.3	5.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	48
red mulberry	Morus rubra	NSL	Low	6.7	5.8	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor	Infill +		2	49
water oak	Quercus nigra	WDH	High	2.2	4.7	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	50
honeylocust	Gleditsia triacanthos	NSH	Low	3.4	4.2	1.2	No change	Lg. inc.	High	Rare	Fair	Good			2	51
bitternut hickory	Carya cordiformis	WSL	Low	2.2	3.7	1.5	Very Lg. dec.	Sm. dec.	High	Rare	Lost	Poor			0	52
pecan	Carya illinoensis	NSH	Low	1.1	2.1	1.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +		2	53
longleaf pine	Pinus palustris	NSH	Medium	1.1	2.1	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	54
laurel oak	Quercus laurifolia	NDH	Medium	2.2	1.6	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	55
striped maple	Acer pensylvanicum	NSL	Medium	2.2	1.4	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
shellbark hickory	Carya laciniosa	NSL	Low	1.1	1.1	0.9	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	57
swamp tupelo	Nyssa biflora	NDH	Medium	1.1	0.7	0.6	No change	No change	Low	Rare	Very Poor	Very Poor			0	58
cucumbertree	Magnolia acuminata	NSL	Low	1.1	0.6	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	59
serviceberry	Amelanchier spp.	NSL	Low	2.2	0.4	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	60
sugarberry	Celtis laevigata	NDH	Medium	1.1	0.4	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
white mulberry	Morus alba	NSL	FIA	1.1	0.4	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	62
wild plum	Prunus americana	NSLX	FIA	1.1	0.4	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	63
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	65
pitch pine	Pinus rigida	NSH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	66
silver maple	Acer saccharinum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	67
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	68
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	70
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	71
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	72
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	73
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	75
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	76
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	79
Nuttall oak	Quercus texana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	80
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	81
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat	Migrate +		3	82
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	83