

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
 8,700.0 3,359.1 258

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	18	22	Increase	33	37	Very Good	16	15	Likely	1	1
Hickory	5			Medium	31	48	No Change	15	12	Good	14	17	Infill	13	15
Maple	4	Abundant	2	Low	32	12	Decrease	13	12	Fair	11	16	Migrate	5	7
Oak	16	Common	24	FIA	1		New	12	14	Poor	11	5			
Pine	4	Rare	36				Unknown	9	7	Very Poor	8	7			
Other	31	Absent	18							FIA Only	1	1			
	62		80		82	82		82	82	Unknown	8	6			
											69	67			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	60.8	62.6	64.7	64.7	
Average	60.8	62.9	65.4	68.1	
GFDL45	60.8	63.5	65.5	66.2	
GFDL85	60.8	63.4	66.6	70.1	
HAD45	60.8	63.0	66.0	67.4	
HAD85	60.8	63.4	67.7	71.4	
Growing Season	74.5	76.2	77.9	78.4	
May—Sep	74.5	77.1	80.8	84.8	
	74.5	77.7	80.4	81.9	
	74.5	77.7	84.0	87.4	
Coldest Month	40.4	42.8	43.6	43.6	
Average	40.4	43.8	43.9	44.2	
GFDL45	40.4	42.2	43.4	43.7	
GFDL85	40.4	40.3	42.2	42.6	
HAD45	40.4	41.5	42.8	44.4	
HAD85	40.4	41.5	42.8	44.4	
Warmest Month	79.2	81.0	81.8	81.9	
Average	79.2	81.0	82.5	84.4	
GFDL45	79.2	81.7	82.7	83.6	
GFDL85	79.2	81.7	83.6	85.6	
HAD45	79.2	83.4	85.4	86.0	
HAD85	79.2	83.8	87.9	89.4	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	53.4	55.4	59.2	58.9	
Total	53.4	56.3	58.7	64.6	
GFDL45	53.4	59.9	62.9	66.9	
GFDL85	53.4	59.7	62.7	64.6	
HAD45	53.4	51.9	57.9	58.6	
HAD85	53.4	57.4	51.4	55.9	
Growing Season	20.8	21.5	22.6	23.0	
May—Sep	20.8	25.4	27.2	27.8	
	20.8	25.3	27.4	28.5	
	20.8	20.0	22.1	21.0	
	20.8	22.6	16.6	18.3	

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
loblolly pine	Pinus taeda	WDH	High	93.1	3422.5	34.7	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	87.4	703.5	7.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
chestnut oak	Quercus prinus	NDH	High	52.9	435.9	7.8	Sm. inc.	No change	High	Common	Very Good	Good			1	3
yellow-poplar	Liriodendron tulipifera	WDH	High	57.5	432.8	7.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	4
shortleaf pine	Pinus echinata	WDH	High	71.3	402.8	5.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
water oak	Quercus nigra	WDH	High	60.9	381.2	5.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
white oak	Quercus alba	WDH	Medium	72.4	375.0	4.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
mockernut hickory	Carya alba	WDL	Medium	70.1	368.1	5.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
southern red oak	Quercus falcata	WDL	Medium	64.4	359.5	5.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
red maple	Acer rubrum	WDH	High	70.1	284.2	3.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
pignut hickory	Carya glabra	WDL	Medium	70.1	284.0	3.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
post oak	Quercus stellata	WDH	High	66.7	275.2	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
longleaf pine	Pinus palustris	NSH	Medium	28.7	226.6	7.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	72.4	216.4	2.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	14
blackgum	Nyssa sylvatica	WDL	Medium	78.2	210.4	2.5	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
sourwood	Oxydendrum arboreum	NDL	High	58.6	205.4	3.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	16
Virginia pine	Pinus virginiana	NDH	High	34.5	202.9	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
flowering dogwood	Cornus florida	WDL	Medium	66.7	184.9	2.6	No change	No change	Medium	Common	Fair	Fair			1	18
black oak	Quercus velutina	WDH	High	49.4	183.2	3.5	No change	No change	Medium	Common	Fair	Fair			1	19
blackjack oak	Quercus marilandica	NSL	Medium	35.6	129.2	3.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
scarlet oak	Quercus coccinea	WDL	Medium	34.5	116.8	3.2	No change	No change	Medium	Common	Fair	Fair			1	21
green ash	Fraxinus pennsylvanica	WSH	Low	27.6	103.6	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
northern red oak	Quercus rubra	WDH	Medium	36.8	102.9	2.6	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
winged elm	Ulmus alata	WDL	Medium	35.6	69.7	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
American elm	Ulmus americana	WDH	Medium	14.9	52.3	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
shagbark hickory	Carya ovata	WSL	Medium	18.4	50.6	2.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
willow oak	Quercus phellos	NSL	Low	12.6	40.2	3.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	27
American beech	Fagus grandifolia	WDH	High	20.7	36.8	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	28
American hornbeam; musclev	Carpinus caroliniana	WDL	Low	18.4	36.4	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	29
eastern redcedar	Juniperus virginiana	WSL	Medium	19.5	35.5	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
common persimmon	Diospyros virginiana	NSL	Low	29.9	33.6	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	31
sassafras	Sassafras albidum	WSL	Low	24.1	32.2	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	32
sugarberry	Celtis laevigata	NDH	Medium	6.9	28.4	3.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	8	24.6	2.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	34
white ash	Fraxinus americana	WDL	Medium	13.8	20.7	1.4	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair			1	35
sycamore	Platanus occidentalis	NSL	Low	6.9	19.7	2.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	36
florida maple	Acer barbatum	NSL	Low	10.3	16.5	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	37
swamp tupelo	Nyssa biflora	NDH	Medium	1.1	16.4	13.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	38
red mulberry	Morus rubra	NSL	Low	8	12.7	1.5	No change	No change	Medium	Rare	Poor	Poor			1	39
eastern redbud	Cercis canadensis	NSL	Low	8	12.1	1.4	No change	No change	Medium	Rare	Poor	Poor			1	40
laurel oak	Quercus laurifolia	NDH	Medium	5.7	11.1	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	41
sweetbay	Magnolia virginiana	NSL	Medium	3.4	9.4	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	42
boxelder	Acer negundo	WSH	Low	3.4	8.5	2.3	No change	No change	High	Rare	Fair	Fair		Infill +	2	43
chinkapin oak	Quercus muehlenbergii	NSL	Medium	2.3	8.2	3.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.9	8.1	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	45
hackberry	Celtis occidentalis	WDH	Medium	2.3	5.9	2.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	46
overcup oak	Quercus lyrata	NSL	Medium	1.1	5.2	4.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
black willow	Salix nigra	NSH	Low	4.6	4.2	0.9	No change	Lg. inc.	Low	Rare	Very Poor	Fair	Infill +		2	48
American basswood	Tilia americana	WSL	Medium	2.3	3.4	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
swamp chestnut oak	Quercus michauxii	NSL	Low	2.3	3.3	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
river birch	Betula nigra	NSL	Low	1.1	3.3	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++		2	51
Shumard oak	Quercus shumardii	NSL	Low	2.3	3.2	1.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	52
cucumbertree	Magnolia acuminata	NSL	Low	1.1	3.2	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
pecan	Carya illinoensis	NSH	Low	1.1	2.8	2.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +		2	54
honeylocust	Gleditsia triacanthos	NSH	Low	2.3	1.9	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	55
bitternut hickory	Carya cordiformis	WSL	Low	1.1	1.8	1.5	Sm. dec.	No change	High	Rare	Poor	Fair			0	56
slippery elm	Ulmus rubra	WSL	Low	2.3	1.7	0.7	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +		2	57
black locust	Robinia pseudoacacia	NDH	Low	1.1	1.0	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	58
bigleaf magnolia	Magnolia macrophylla	NSL	Low	1.1	1.0	0.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	59
pawpaw	Asimina triloba	NSL	Low	1.1	0.5	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	60
silver maple	Acer saccharinum	NSH	Low	1.1	0.5	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	61
butternut	Juglans cinerea	NSLX	FIA	1.1	0.3	0.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	62
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	64
spruce pine	Pinus glabra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	65
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	66
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	67
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
sweet birch	Betula lenta	NDH	High	0	0	0	Unknown	Unknown	Low	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		Migrate ++	3	71
water hickory	Carya aquatica	NSL	Medium	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	Migrate +	Migrate +	3	73
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	74
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	75
American holly	Ilex opaca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	76
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	77
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	78
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	79
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	80
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	81
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	82