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

	sq. km	sq. mi	FIA Plots
Area of Region	8,501.9	3,282.6	313

Species Information

The columns below provide breif 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 Reliability	Adaptability	Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85		Capability to Cope or Persist	Scenario RCP45	Scenario RCP85		Migration Potential	SHIFT RCP45	SHIFT RCP85
Ash	3																	
Hickory	5		Abundance			Reliability	Adaptability		RCP45	RCP85			RCP45	RCP85			RCP45	RCP85
Maple	2		Abundant	4		High	14	20	Increase	21	25	Very Good	7	9		Likely	4	4
Oak	10		Common	13		Medium	34	47	No Change	10	7	Good	9	11		Infill	12	14
Pine	6		Rare	42		Low	30	13	Decrease	23	22	Fair	10	9		Migrate	2	2
Other	33		Absent	21		FIA	5		New	10	11	Poor	12	11			**18**	**20**
	59			**80**			**83**	**80**	Unknown	19	18	Very Poor	15	14				
									83	**83**	FIA Only	4	4				
											Unknown	14	13				
												71	**71**				

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	67.2	68.6	70.3	70.4	
Average	CCSM85	67.2	68.8	71.1	73.3	
	GFDL45	67.2	69.9	71.6	72.3	
	GFDL85	67.2	69.6	72.6	76.1	
	HAD45	67.2	69.1	71.4	72.8	
	HAD85	67.2	69.4	72.5	76.0	
Growing	CCSM45	78.6	79.7	81.1	81.4	
Season	CCSM85	78.6	79.7	82.0	84.6	
May—Sep	GFDL45	78.6	81.2	82.8	84.0	
	GFDL85	78.6	81.0	84.0	87.9	
	HAD45	78.6	81.2	83.2	84.5	
	HAD85	78.6	81.2	85.3	88.2	
Coldest	CCSM45	49.5	51.8	52.6	52.3	
Month	CCSM85	49.5	51.5	52.7	53.8	
Average	GFDL45	49.5	52.4	52.8	53.2	
	GFDL85	49.5	51.6	52.8	53.5	
	HAD45	49.5	49.5	51.0	51.8	
	HAD85	49.5	50.7	51.7	53.5	
Warmest	CCSM45	81.6	82.8	83.4	83.7	
Month	CCSM85	81.6	82.7	83.9	85.3	
Average	GFDL45	81.6	83.9	84.6	85.3	
	GFDL85	81.6	83.7	85.0	87.1	
	HAD45	81.6	84.5	85.6	86.2	
	HAD85	81.6	84.7	86.9	88.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	60.7	64.6	66.2	67.6	
Total	CCSM85	60.7	63.9	67.5	70.2	
	GFDL45	60.7	67.4	70.6	72.2	
	GFDL85	60.7	67.2	72.5	69.9	
	HAD45	60.7	57.5	62.6	66.1	
	HAD85	60.7	62.5	56.9	60.8	
Growing	CCSM45	29.3	32.5	33.2	33.4	
Season	CCSM85	29.3	30.7	33.5	33.8	
May—Sep	GFDL45	29.3	35.5	36.8	36.2	
	GFDL85	29.3	35.9	39.9	38.8	
	HAD45	29.3	28.2	29.5	30.5	
	HAD85	29.3	29.0	24.1	25.5	

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.

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
slash pine	Pinus elliottii	NDH	High	83.2	4361.6	46.2	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sand pine	Pinus clausa	NDH	High	32.9	1093.2	26.3	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	2
loblolly pine	Pinus taeda	WDH	High	38.7	528.5	13.4	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	3
longleaf pine	Pinus palustris	NSH	Medium	35.8	518.9	11.6	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
laurel oak	Quercus laurifolia	NDH	Medium	48.2	482.0	8.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
sweetbay	Magnolia virginiana	NSL	Medium	57.5	422.6	6.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
swamp tupelo	Nyssa biflora	NDH	Medium	53	411.9	7.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
pond cypress	Taxodium ascendens	NSH	Medium	39.3	361.3	8.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	8
water oak	Quercus nigra	WDH	High	56.7	354.5	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
turkey oak	Quercus laevis	NSH	Medium	30	228.2	6.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
water tupelo	Nyssa aquatica	NSH	Medium	19.9	190.8	9.4	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	11
sweetgum	Liquidambar styraciflua	WDH	High	29.4	169.6	5.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
live oak	Quercus virginiana	NDH	High	19.9	83.6	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	13
green ash	Fraxinus pennsylvanica	WSH	Low	20.5	78.3	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
red maple	Acer rubrum	WDH	High	32.9	76.8	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
southern magnolia	Magnolia grandiflora	NSL	Low	20.8	70.4	2.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
blackgum	Nyssa sylvatica	WDL	Medium	24.8	50.1	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
common persimmon	Diospyros virginiana	NSL	Low	13.4	48.3	3.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	18
American elm	Ulmus americana	WDH	Medium	9.4	42.8	4.5	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	19
yellow-poplar	Liriodendron tulipifera	WDH	High	14	42.4	3.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	20
American holly	Ilex opaca	NSL	Medium	15.2	35.6	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	21
bald cypress	Taxodium distichum	NSH	Medium	11.8	33.2	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	22
bluejack oak	Quercus incana	NSL	Low	18.5	29.6	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
southern red oak	Quercus falcata	WDL	Medium	5	29.0	4.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	24
sycamore	Platanus occidentalis	NSL	Low	3.5	26.7	7.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	25
American hornbeam; musclew	Carpinus caroliniana	WSL	Low	12.9	26.6	2.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	26
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.1	24.9	3.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	27
overcup oak	Quercus lyrata	NSL	Medium	9.4	23.0	2.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	28
water hickory	Carya aquatica	NSL	Medium	5.9	22.5	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	29
pond pine	Pinus serotina	NSH	Medium	4.7	21.0	4.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	30
Carolina ash	Fraxinus caroliniana	NSL	FIA	5.8	20.0	3.3	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	31
spruce pine	Pinus glabra	NSL	Low	7	19.1	2.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	32
redbay	Persea borbonia	NSL	Low	13.1	16.7	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	33
sugarberry	Celtis laevigata	NDH	Medium	3.5	14.9	4.2	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	34
white oak	Quercus alba	WDH	Medium	5.9	12.3	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	35
post oak	Quercus stellata	WDH	High	8.1	12.2	1.5	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	36
eastern redcedar	Juniperus virginiana	WDH	Medium	7.1	11.7	1.6	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	37
black cherry	Prunus serotina	WDL	Medium	9.4	11.0	1.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	38
pumpkin ash	Fraxinus profunda	NSH	FIA	5.9	10.9	1.8	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	39
sourwood	Oxydendrum arboreum	NDL	High	4.7	9.9	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	40
pignut hickory	Carya glabra	WDL	Medium	8.2	9.6	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	41
hackberry	Celtis occidentalis	WDH	Medium	1.2	7.1	5.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	42
flowering dogwood	Cornus florida	WDL	Medium	6.9	6.7	0.9	No change	No change	Medium	Rare	Poor	Poor			1	43
boxelder	Acer negundo	WSH	Low	3.5	6.3	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
pecan	Carya illinoinensis	NSH	Low	1.2	6.2	5.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	45
mockernut hickory	Carya alba	WDL	Medium	2.4	3.9	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	46
slippery elm	Ulmus rubra	WSL	Low	3.5	3.6	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			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
river birch	Betula nigra	NSL	Low	4.7	3.4	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	48
swamp chestnut oak	Quercus michauxii	NSL	Low	3.5	3.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	1.2	3.1	2.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	50
bitternut hickory	Carya cordiformis	WSL	Low	1.2	2.9	2.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	51
American beech	Fagus grandifolia	WDH	High	2.4	2.8	1.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	52
eastern redbud	Cercis canadensis	NSL	Low	1.2	2.6	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	1.2	2.5	2.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	54
white mulberry	Morus alba	NSL	FIA	1.2	2.1	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	55
sassafras	Sassafras albidum	WSL	Low	1.2	1.6	1.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	56
water elm	Planera aquatica	NSL	Low	2.4	1.0	0.4	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			0	57
cedar elm	Ulmus crassifolia	NDH	Medium	1.2	0.5	0.4	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	58
waterlocust	Gleditsia aquatica	NSLX	FIA	1.2	0.2	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	59
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	60
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	61
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	62
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	63
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	64
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	65
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	66
white ash	Fraxinus americana	WDL	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	67
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	68
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	69
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	70
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	72
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	73
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	76
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	78
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	79
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	81
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	82
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83

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