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

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

	sq. km	sq. mi	FIA Plots
Area of Region	8,080.6	3,119.9	115

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
Ash	2
Hickory	1
Maple	1
Oak	4
Pine	5
Other	16
	29

Abundance	
Abundant	3
Common	10
Rare	16
Absent	4
	33

	Model Reliability	Adaptability
High	7	7
Medium	22	24
Low	7	5
FIA	0	
	36	**36**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	6	8
No Change	12	9
Decrease	11	12
New	1	1
Unknown	6	6
	36	**36**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	2	2
Good	5	6
Fair	5	5
Poor	11	10
Very Poor	5	4
FIA Only	0	0
Unknown	6	6
	34	**33**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	1	1
Infill	15	16
Migrate	0	0
	16	**17**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	72.4	73.8	75.1	75.1
	CCSM85	72.4	73.8	75.9	78.0
	GFDL45	72.4	76.4	76.4	77.3
	GFDL85	72.4	74.6	77.4	80.6
	HAD45	72.4	73.8	75.8	76.8
	HAD85	72.4	74.4	76.5	79.7
Growing Season May—Sep	CCSM45	80.2	81.3	82.5	82.6
	CCSM85	80.2	81.4	83.5	85.8
	GFDL45	80.2	84.2	84.1	85.1
	GFDL85	80.2	82.5	85.2	88.6
	HAD45	80.2	82.1	83.7	84.8
	HAD85	80.2	82.5	85.1	88.0
Coldest Month Average	CCSM45	59.5	61.3	62.3	62.0
	CCSM85	59.5	60.7	61.6	63.0
	GFDL45	59.5	62.0	62.5	63.0
	GFDL85	59.5	61.7	62.9	64.0
	HAD45	59.5	59.4	60.6	61.1
	HAD85	59.5	60.0	60.8	62.6
Warmest Month Average	CCSM45	82.3	83.3	84.1	84.0
	CCSM85	82.3	83.5	84.7	86.1
	GFDL45	82.3	84.4	85.3	86.0
	GFDL85	82.3	84.6	86.2	87.9
	HAD45	82.3	84.3	84.9	85.5
	HAD85	82.3	84.3	85.7	87.0

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	50.6	53.2	52.6	55.8
	CCSM85	50.6	52.6	52.0	50.4
	GFDL45	50.6	59.1	60.0	62.4
	GFDL85	50.6	54.8	63.7	59.2
	HAD45	50.6	50.6	49.6	51.1
	HAD85	50.6	47.2	49.3	46.5
Growing Season May—Sep	CCSM45	31.1	33.2	31.4	34.3
	CCSM85	31.1	33.0	32.1	29.3
	GFDL45	31.1	35.3	35.3	34.9
	GFDL85	31.1	33.3	36.9	34.3
	HAD45	31.1	31.1	29.6	28.1
	HAD85	31.1	28.4	26.5	25.1

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	63.5	911.4	33.5	No change	No change	Medium	Abundant	Good	Good	Infill ++	Infill ++	2	1
cabbage palmetto	Sabal palmetto	NDH	Medium	69.5	756.1	26.2	No change	No change	Medium	Abundant	Good	Good			0	2
pond cypress	Taxodium ascendens	NSH	Medium	33.3	546.5	33.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2	3
longleaf pine	Pinus palustris	NSH	Medium	36.1	471.5	26.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	4
red maple	Acer rubrum	WDH	High	34.5	347.3	16.0	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	5
live oak	Quercus virginiana	NDH	High	58.9	252.4	14.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	6
laurel oak	Quercus laurifolia	NDH	Medium	49.8	140.3	7.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	7
redbay	Persea borbonia	NSL	Low	33.8	120.1	6.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	8
pond pine	Pinus serotina	NSH	Medium	8.2	108.2	19.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	9
sweetgum	Liquidambar styraciflua	WDH	High	14.5	71.5	7.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	10
loblolly-bay	Gordonia lasianthus	NSH	Medium	11.1	57.7	7.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	11
American elm	Ulmus americana	WDH	Medium	22.6	52.9	4.9	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	2	12
sand pine	Pinus clausa	NDH	High	1.2	50.1	35.8	No change	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	13
swamp tupelo	Nyssa biflora	NDH	Medium	19.7	47.5	3.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	14
sweetbay	Magnolia virginiana	NSL	Medium	9.8	31.6	4.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	15
sugarberry	Celtis laevigata	NDH	Medium	6.8	22.0	3.5	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	16
water oak	Quercus nigra	WDH	High	8.5	13.7	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	17
green ash	Fraxinus pennsylvanica	WSH	Low	1.2	9.6	6.8	No change	No change	Medium	Rare	Poor	Poor			2	18
bald cypress	Taxodium distichum	NSH	Medium	7.4	8.1	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	19
loblolly pine	Pinus taeda	WDH	High	1.2	7.7	5.5	No change	No change	Medium	Rare	Poor	Poor			0	20
American basswood	Tilia americana	WSL	Medium	0.9	6.9	3.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	21
eastern redcedar	Juniperus virginiana	WDH	Medium	6.2	4.0	1.6	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	22
pignut hickory	Carya glabra	WDL	Medium	1.1	3.2	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	2.3	3.1	1.0	No change	No change	Medium	Rare	Poor	Poor			0	24
turkey oak	Quercus laevis	NSH	Medium	5	2.9	8.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	25
hackberry	Celtis occidentalis	WDH	Medium	1.1	1.2	0.8	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	26
common persimmon	Diospyros virginiana	NSL	Low	1.1	0.6	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	27
white ash	Fraxinus americana	WDL	Medium	3.6	0.4	0.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	28
southern magnolia	Magnolia grandiflora	NSL	Low	3.6	0.4	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	30
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	31
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	32
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	33
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	34
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	35
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	36