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 8,500.0 3,281.9 103

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

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						Potentia	al Change	in Habitat Suitability	Capability	to Cope o	r Persist	Migration	Poten	tial
Ash	2				Model			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	1	Abu	ndance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	0	Abundant	2	High	3	9	Increase	0	1	Very Good	0	0	Likely	4	4
Oak	7	Common	2	Medium	10	12	No Change	10	9	Good	1	1	Infill	3	4
Pine	0	Rare	15	Low	10	4	Decrease	6	6	Fair	6	6	Migrate	0	0
Other	9	Absent	6	FIA	3		New	5	5	Poor	4	5	-	7	8
<u>-</u>	19	_	25	•	26	25	Unknown	5	5	Very Poor	4	3			
							•	26	26	FIA Only	3	3			
										Unknown	2	2			
Potential Changes in Climate Variables											20	20			

Potential Changes in Climate Variables

Temperatu	ıre (°F)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	66.2	67.9	69.1	69.7
Average	CCSM85	66.2	68.2	70.3	72.6
	GFDL45	66.2	71.0	70.4	72.0
	GFDL85	66.2	69.0	72.0	75.6
	HAD45	66.2	68.4	70.8	71.8
	HAD85	66.2	68.8	72.3	75.4
Growing	CCSM45	79.6	81.1	82.0	82.8
Season	CCSM85	79.6	81.7	83.5	86.4
May—Sep	GFDL45	79.6	85.6	84.4	87.0
	GFDL85	79.6	83.2	86.7	91.2
	HAD45	79.6	81.8	83.8	84.5
	HAD85	79.6	82.3	86.1	88.9
Coldest	CCSM45	45.9	48.2	48.7	49.1
Month	CCSM85	45.9	48.2	49.2	50.5
Average	GFDL45	45.9	49.5	49.4	49.5
	GFDL85	45.9	47.0	48.0	48.4
	HAD45	45.9	46.3	48.0	48.5
	HAD85	45.9	48.8	50.2	51.9
Warmest	CCSM45	84.3	85.4	86.2	86.5
Month	CCSM85	84.3	86.3	87.0	88.5
Average	GFDL45	84.3	89.0	89.3	90.9
	GFDL85	84.3	89.1	90.8	94.0
	HAD45	84.3	86.6	87.6	87.9
	HAD85	84.3	87.4	89.3	90.2

Precipitati	on (in)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	33.7	33.6	35.9	33.3
Total	CCSM85	33.7	33.4	36.9	35.3
	GFDL45	33.7	33.4	38.8	31.6
	GFDL85	33.7	32.7	34.8	32.8
	HAD45	33.7	34.8	33.8	34.6 ◆◆◆◆
	HAD85	33.7	34.4	30.8	33.0
Growing	CCSM45	15.2	16.5	16.2	15.4
Season	CCSM85	15.2	15.5	16.4	14.6
May—Sep	GFDL45	15.2	15.6	18.8	14.6
	GFDL85	15.2	15.7	16.4	15.4 ◆◆◆◆
	HAD45	15.2	15.3	14.5	15.5 ◆◆◆◆
	HAD85	15.2	15.0	13.0	14.0

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
ashe juniper	Juniperus ashei	NDH	High	76.5	2188.8	56.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0 1
live oak	Quercus virginiana	NDH	High	61.2	753.0	22.6	No change	No change	Medium	Abundant	Good	Good			1 2
cedar elm	Ulmus crassifolia	NDH	Medium	71.8	473.2	22.9	No change	No change	Low	Common	Poor	Poor			0 3
sugarberry	Celtis laevigata	NDH	Medium	22.4	58.3	4.6	No change	No change	Medium	Common	Fair	Fair			1 4
pecan	Carya illinoinensis	NSH	Low	16.5	46.0	18.9	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1 5
black walnut	Juglans nigra	WDH	Low	1.2	29.6	21.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 6
durand oak	Quercus sinuata var. sinuata	NSL	FIA	5.9	27.3	10.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0 7
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp	. NSL	Low	20	25.1	2.9	No change	No change	High	Rare	Fair	Fair			1 8
post oak	Quercus stellata	WDH	High	7.1	22.3	7.3	No change	No change	High	Rare	Fair	Fair			1 9
Texas ash	Fraxinus texensis	NDH	FIA	12.9	14.2	2.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 10
Shumard oak	Quercus shumardii	NSL	Low	2.4	12.6	4.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 11
hackberry	Celtis occidentalis	WDH	Medium	7.1	12.3	6.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1 12
American elm	Ulmus americana	WDH	Medium	5.9	8.5	8.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1 13
green ash	Fraxinus pennsylvanica	WSH	Low	9.4	7.9	11.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 14
black willow	Salix nigra	NSH	Low	4.7	6.9	20.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0 15
black cherry	Prunus serotina	WDL	Medium	1.2	2.6	1.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0 16
blackjack oak	Quercus marilandica	NSL	Medium	1.2	1.8	1.3	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0 17
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	4.7	0.6	1.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0 18
bur oak	Quercus macrocarpa	NDH	Medium	4.7	0.5	1.5	No change	No change	High	Rare	Fair	Fair			0 19
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 20
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3 21
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 22
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3 23
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3 24
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 25
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 26

