HUC 120602 Middle Brazos-Bosque

HUC 6 Watershed
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	18,945	7,314.5	299

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	3
Hickory	1
Maple	1
Oak	7
Pine	0
Other	19
	31

Abundance	
Abundant	2
Common	6
Rare	23
Absent	5
	36

	Model Reliability	Adaptability
High	4	10
Medium	13	21
Low	17	5
FIA	3	
	37	**36**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	5	7
No Change	10	9
Decrease	13	12
New	0	0
Unknown	9	9
	37	**37**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	1	1
Good	4	7
Fair	7	5
Poor	8	7
Very Poor	8	8
FIA Only	3	3
Unknown	6	6
	37	**37**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	0	0
Infill	9	8
Migrate	0	0
	9	**8**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	57.6	58.7	59.9	60.4
	CCSM85	57.6	59.2	60.7	62.7
	GFDL45	57.6	60.4	61.0	62.2
	GFDL85	57.6	59.9	62.2	65.2
	HAD45	57.6	59.3	61.3	62.0
	HAD85	57.6	59.6	62.6	65.0
Growing Season May—Sep	CCSM45	68.9	69.9	71.0	71.6
	CCSM85	68.9	70.6	72.0	74.4
	GFDL45	68.9	72.4	72.9	75.0
	GFDL85	68.9	72.0	74.7	78.5
	HAD45	68.9	70.5	72.2	72.6
	HAD85	68.9	70.9	74.2	76.3
Coldest Month Average	CCSM45	40.7	42.5	43.0	43.4
	CCSM85	40.7	42.4	43.1	44.1
	GFDL45	40.7	43.4	43.4	43.5
	GFDL85	40.7	41.4	42.4	42.6
	HAD45	40.7	41.1	42.6	42.9
	HAD85	40.7	43.1	44.5	45.7
Warmest Month Average	CCSM45	73.2	74.0	74.8	75.0
	CCSM85	73.2	74.8	75.3	76.7
	GFDL45	73.2	77.3	77.5	79.0
	GFDL85	73.2	77.5	78.8	81.9
	HAD45	73.2	74.9	75.8	76.0
	HAD85	73.2	75.5	77.2	77.9

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	25.5	26.2	26.1	25.0
	CCSM85	25.5	24.7	27.5	26.7
	GFDL45	25.5	25.6	29.9	24.4
	GFDL85	25.5	25.2	27.2	25.8
	HAD45	25.5	26.0	25.5	26.6
	HAD85	25.5	25.9	23.2	25.5
Growing Season May—Sep	CCSM45	12.0	13.1	11.8	11.9
	CCSM85	12.0	12.1	12.5	11.6
	GFDL45	12.0	12.4	14.8	11.8
	GFDL85	12.0	12.5	13.2	12.4
	HAD45	12.0	11.9	11.7	12.4
	HAD85	12.0	11.7	9.7	11.1

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
ashe juniper	Juniperus ashei	NDH	High	70.5	1502.5	37.5	No change	No change	Medium	Abundant	Good	Good			0	1
post oak	Quercus stellata	WDH	High	45.4	971.1	25.4	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
cedar elm	Ulmus crassifolia	NDH	Medium	68.5	428.5	11.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	3
live oak	Quercus virginiana	NDH	High	57.1	405.2	13.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
sugarberry	Celtis laevigata	NDH	Medium	36.5	107.1	7.3	No change	No change	Medium	Common	Fair	Fair			1	5
blackjack oak	Quercus marilandica	NSL	Medium	19	99.9	6.3	No change	No change	High	Common	Good	Good			1	6
pecan	Carya illinoinensis	NSH	Low	24.7	76.5	7.7	Sm. dec.	No change	Low	Common	Poor	Poor			0	7
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	27	70.3	4.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
Texas ash	Fraxinus texensis	NDH	FIA	22.5	42.3	4.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	9
bur oak	Quercus macrocarpa	NDH	Medium	5.8	41.2	15.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	10
black willow	Salix nigra	NSH	Low	3	31.3	12.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	11
hackberry	Celtis occidentalis	WDH	Medium	11.5	22.6	4.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	12
American elm	Ulmus americana	WDH	Medium	14.8	15.1	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	13
green ash	Fraxinus pennsylvanica	WSH	Low	13.6	10.4	5.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	14
eastern redcedar	Juniperus virginiana	WDH	Medium	10.3	8.6	2.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	15
winged elm	Ulmus alata	WDL	Medium	5.4	7.4	4.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	16
Osage-orange	Maclura pomifera	NDH	Medium	10.6	7.1	2.6	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	17
eastern cottonwood	Populus deltoides	NSH	Low	2.6	5.5	10.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	18
honeylocust	Gleditsia triacanthos	NSH	Low	5.6	5.0	2.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	19
water elm	Planera aquatica	NSL	Low	2.1	2.6	20.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	20
Shumard oak	Quercus shumardii	NSL	Low	5.3	2.6	0.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	21
white ash	Fraxinus americana	WDL	Medium	1.1	1.8	1.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	22
boxelder	Acer negundo	WSH	Low	2.1	1.5	11.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	23
eastern redbud	Cercis canadensis	NSL	Low	5.2	1.3	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	24
durand oak	Quercus sinuata var. sinuata	NSL	FIA	2.5	0.9	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
black oak	Quercus velutina	WDH	High	0.5	0.8	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
red mulberry	Morus rubra	NSL	Low	5.6	0.7	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	27
black walnut	Juglans nigra	WDH	Low	2	0.3	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
slippery elm	Ulmus rubra	WSL	Low	2.1	0.2	1.5	No change	Lg. inc.	Medium	Rare	Poor	Good			0	29
wild plum	Prunus americana	NSLX	FIA	2.1	0.1	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	30
black locust	Robinia pseudoacacia	NDH	Low	2.1	0.0	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	32
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	33
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	34
black cherry	Prunus serotina	WDL	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	35
southern red oak	Quercus falcata	WDL	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	36
sassafras	Sassafras albidum	WSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	37