

HUC 120701 Lower Brazos

HUC 6 Watershed

Climate Change Atlas Tree Species

Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service
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Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	20,480	7,907.5	218

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	10	16	Increase	6	6	Very Good	0	0
Hickory	7			Medium	24	38	No Change	12	14	Good	7	7
Maple	1	Abundant	1	Low	24	5	Decrease	34	32	Fair	7	8
Oak	13	Common	10	FIA	1		New	1	1	Poor	15	15
Pine	1	Rare	42				Unknown	6	6	Very Poor	23	22
Other	29	Absent	5							FIA Only	1	1
	53		58		59	59		59	59	Unknown	5	5
											14	16

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	56.4	57.6	58.3	58.7
	CCSM85	56.4	57.8	59.2	60.7
	GFDL45	56.4	59.2	59.2	60.2
	GFDL85	56.4	58.2	60.2	62.6
	HAD45	56.4	57.8	59.6	60.2
HAD85	56.4	58.1	60.5	62.7	
Growing Season (May—Sep)	CCSM45	65.1	66.2	66.7	67.1
	CCSM85	65.1	66.5	67.8	69.6
	GFDL45	65.1	68.6	68.2	70.0
	GFDL85	65.1	67.4	69.7	72.6
	HAD45	65.1	66.7	68.2	68.6
HAD85	65.1	67.0	69.7	71.6	
Coldest Month (Average)	CCSM45	43.0	44.6	45.0	45.2
	CCSM85	43.0	44.6	45.4	46.1
	GFDL45	43.0	45.4	45.5	45.5
	GFDL85	43.0	43.7	44.5	44.8
	HAD45	43.0	43.3	44.4	44.8
HAD85	43.0	44.7	45.7	46.9	
Warmest Month (Average)	CCSM45	68.1	68.9	69.3	69.5
	CCSM85	68.1	69.4	69.8	70.8
	GFDL45	68.1	71.1	71.2	72.3
	GFDL85	68.1	71.1	72.2	74.2
	HAD45	68.1	69.9	70.5	70.7
HAD85	68.1	70.3	71.6	72.2	

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	27.1	26.5	30.1	27.8
	CCSM85	27.1	27.4	29.7	28.9
	GFDL45	27.1	27.4	31.7	26.0
	GFDL85	27.1	26.8	28.4	27.2
	HAD45	27.1	28.0	26.7	28.1
HAD85	27.1	28.5	25.0	26.5	
Growing Season (May—Sep)	CCSM45	11.3	11.7	12.7	11.7
	CCSM85	11.3	11.4	11.8	10.7
	GFDL45	11.3	12.1	15.1	11.4
	GFDL85	11.3	12.2	12.9	12.5
	HAD45	11.3	11.2	10.7	11.6
HAD85	11.3	11.5	9.9	10.1	

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
post oak	Quercus stellata	WDH	High	65	954.8	28.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
cedar elm	Ulmus crassifolia	NDH	Medium	67.3	265.7	14.2	No change	No change	Low	Common	Poor	Poor			0	2
water oak	Quercus nigra	WDH	High	49.9	262.6	10.5	No change	No change	Medium	Common	Fair	Fair			1	3
eastern redcedar	Juniperus virginiana	WDH	Medium	48.6	219.1	8.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	4
winged elm	Ulmus alata	WDL	Medium	42.2	215.0	9.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	5
blackjack oak	Quercus marilandica	NSL	Medium	32.2	119.9	7.4	No change	No change	High	Common	Good	Good			1	6
loblolly pine	Pinus taeda	WDH	High	6.1	112.3	10.8	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	7
sugarberry	Celtis laevigata	NDH	Medium	55.6	106.9	6.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
American elm	Ulmus americana	WDH	Medium	34.6	80.9	6.2	No change	No change	Medium	Common	Fair	Fair			1	9
pecan	Carya illinoensis	NSH	Low	26.3	76.5	8.9	No change	No change	Low	Common	Poor	Poor			0	10
green ash	Fraxinus pennsylvanica	WSH	Low	36.9	67.2	6.5	Sm. dec.	No change	Medium	Common	Poor	Fair			1	11
Osage-orange	Maclura pomifera	NDH	Medium	17.9	49.2	5.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	12
black hickory	Carya texana	NDL	High	16.3	39.3	4.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	13
mockernut hickory	Carya alba	WDL	Medium	13.2	38.2	4.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	14
white ash	Fraxinus americana	WDL	Medium	14.7	30.6	4.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	15
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp. NSL	Low	22.9	27.0	2.3	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	16	
hackberry	Celtis occidentalis	WDH	Medium	10.6	26.3	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	17
live oak	Quercus virginiana	NDH	High	14.8	24.5	5.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	18
honeylocust	Gleditsia triacanthos	NSH	Low	12.3	17.8	2.6	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	19
common persimmon	Diospyros virginiana	NSL	Low	3.1	13.7	8.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	20
American holly	Ilex opaca	NSL	Medium	2.7	13.2	7.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	21
willow oak	Quercus phellos	NSL	Low	8.3	10.1	6.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	22
bluejack oak	Quercus incana	NSL	Low	1.7	8.7	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
boxelder	Acer negundo	WSH	Low	9.1	8.1	2.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	24
flowering dogwood	Cornus florida	WDL	Medium	4.1	7.6	2.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	25
slippery elm	Ulmus rubra	WSL	Low	7.4	7.4	2.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	26
black willow	Salix nigra	NSH	Low	3.5	6.8	6.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	27
southern red oak	Quercus falcata	WDL	Medium	3.8	6.4	2.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	28
black walnut	Juglans nigra	WDH	Low	3.8	5.6	5.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
water elm	Planera aquatica	NSL	Low	0.5	5.1	10.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
sassafras	Sassafras albidum	WSL	Low	4	3.8	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	31
eastern cottonwood	Populus deltoides	NSH	Low	3.6	3.5	13.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
red mulberry	Morus rubra	NSL	Low	12.6	3.5	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
water hickory	Carya aquatica	NSL	Medium	5.3	2.4	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
laurel oak	Quercus laurifolia	NDH	Medium	0.3	2.3	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
Shumard oak	Quercus shumardii	NSL	Low	4	1.8	2.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	36
eastern redbud	Cercis canadensis	NSL	Low	2.9	1.7	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
river birch	Betula nigra	NSL	Low	2.1	1.6	3.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
sweetgum	Liquidambar styraciflua	WDH	High	1.7	1.3	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	39
blackgum	Nyssa sylvatica	WDL	Medium	2.4	1.1	1.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	40
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0.6	0.9	0.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	41
black cherry	Prunus serotina	WDL	Medium	0.5	0.8	1.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	42
shagbark hickory	Carya ovata	WSL	Medium	0.5	0.7	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	43
sycamore	Platanus occidentalis	NSL	Low	0.7	0.6	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
ashe juniper	Juniperus ashei	NDH	High	0.5	0.4	0.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	45
bald cypress	Taxodium distichum	NSH	Medium	0.6	0.4	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
durand oak	Quercus sinuata var. sinuata	NSL	FIA	0.1	0.4	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N	
sweetbay	Magnolia virginiana	NSL	Medium	0.1	0.4	0.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	48
black oak	Quercus velutina	WDH	High	0.1	0.2	0.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	49
bitternut hickory	Carya cordiformis	WSL	Low	3.8	0.2	0.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0	50
bur oak	Quercus macrocarpa	NDH	Medium	1.4	0.2	1.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0	51
black locust	Robinia pseudoacacia	NDH	Low	2	0.2	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	52
pignut hickory	Carya glabra	WDL	Medium	2	0.1	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	53
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3	54
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0	55
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	56
American beech	Fagus grandifolia	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0	57
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0	58
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0	59