

HUC 110500 Lower Cimarron

HUC 6 Watershed Climate Change Atlas Tree Species Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service
Northern Research Station
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Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	18,241	7,042.8	91

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	
		Abundant	Common	High	Low	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT
				Reliability	Adaptability	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	2		0	9	17	Increase	7	9	Very Good	1	1
Hickory	4		4	18	27	No Change	13	13	Good	5	6
Maple	1	Abundant		21	5	Decrease	13	11	Fair	8	9
Oak	8	Common		3		New	9	9	Poor	10	8
Pine	0	Rare	32			Unknown	9	9	Very Poor	9	9
Other	21	Absent	13						FIA Only	1	1
	36		49	51	49		51	51	Unknown	6	6
										40	40

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	48.0	49.1	50.1	50.4	
Average	CCSM85	48.0	49.4	50.5	52.2	
	GFDL45	48.0	51.5	50.8	51.6	
	GFDL85	48.0	49.7	51.4	53.8	
	HAD45	48.0	49.4	50.9	51.5	
	HAD85	48.0	49.5	52.2	53.9	
Growing Season	CCSM45	57.8	59.1	60.1	60.5	
	CCSM85	57.8	59.4	60.6	62.7	
May—Sep	GFDL45	57.8	62.7	61.4	62.7	
	GFDL85	57.8	60.1	62.2	65.2	
	HAD45	57.8	59.0	60.3	60.7	
	HAD85	57.8	59.4	62.3	63.6	
Coldest Month	CCSM45	33.5	34.8	35.4	35.8	
	CCSM85	33.5	34.9	35.3	36.3	
Average	GFDL45	33.5	35.6	35.7	35.8	
	GFDL85	33.5	34.2	34.9	35.4	
	HAD45	33.5	34.1	35.4	35.4	
	HAD85	33.5	35.3	36.5	37.5	
Warmest Month	CCSM45	61.7	63.0	63.8	64.1	
	CCSM85	61.7	63.5	64.0	65.2	
Average	GFDL45	61.7	64.6	65.1	66.2	
	GFDL85	61.7	64.5	65.6	68.1	
	HAD45	61.7	62.8	63.7	63.8	
	HAD85	61.7	63.6	65.0	65.6	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	18.6	18.1	18.7	18.2	
Total	CCSM85	18.6	18.3	19.1	19.1	
	GFDL45	18.6	19.4	21.3	19.8	
	GFDL85	18.6	19.8	21.6	20.7	
	HAD45	18.6	19.7	19.5	20.3	
	HAD85	18.6	19.2	16.9	19.6	
Growing Season	CCSM45	10.3	9.3	9.6	9.5	
	CCSM85	10.3	9.9	9.9	9.9	
May—Sep	GFDL45	10.3	10.7	11.8	11.0	
	GFDL85	10.3	11.4	12.4	11.6	
	HAD45	10.3	10.8	11.0	11.1	
	HAD85	10.3	10.1	8.7	9.9	

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
eastern redcedar	Juniperus virginiana	WDH	Medium	46.5	187.5	28.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	1
post oak	Quercus stellata	WDH	High	20.5	105.0	14.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	2
American elm	Ulmus americana	WDH	Medium	34.1	72.2	15.7	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	3
blackjack oak	Quercus marilandica	NSL	Medium	19	57.3	6.0	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	4
eastern cottonwood	Populus deltoides	NSH	Low	11	28.2	16.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	5
hackberry	Celtis occidentalis	WDH	Medium	24.1	27.5	9.3	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	6
black locust	Robinia pseudoacacia	NDH	Low	4.8	22.7	30.9	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	7
black willow	Salix nigra	NSH	Low	6.3	21.6	20.7	No change	No change	Low	Rare	Very Poor	Very Poor			2	8
black oak	Quercus velutina	WDH	High	11.6	20.4	3.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	9
red mulberry	Morus rubra	NSL	Low	9.3	19.1	6.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	10
black hickory	Carya texana	NDL	High	9.7	16.7	3.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	11
honeylocust	Gleditsia triacanthos	NSH	Low	5.8	13.9	33.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	12
common persimmon	Diospyros virginiana	NSL	Low	5.7	12.0	12.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	13
green ash	Fraxinus pennsylvanica	WSH	Low	11.1	11.4	3.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	14
sugarberry	Celtis laevigata	NDH	Medium	15.3	9.0	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	15
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	14.9	8.8	5.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	16
Osage-orange	Maclura pomifera	NDH	Medium	6.8	5.0	2.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	17
black walnut	Juglans nigra	WDH	Low	11.1	4.8	5.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	18
wild plum	Prunus americana	NSLX	FIA	8.5	4.8	4.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	19
bur oak	Quercus macrocarpa	NDH	Medium	6.8	4.7	6.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	20
Siberian elm	Ulmus pumila	NDH	FIA	5.2	3.7	6.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	21
pecan	Carya illinoensis	NSH	Low	5.3	3.1	7.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	22
white oak	Quercus alba	WDH	Medium	0.7	3.0	2.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	23
bitternut hickory	Carya cordiformis	WSL	Low	4.1	3.0	9.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	24
chinkapin oak	Quercus muehlenbergii	NSL	Medium	11	2.4	2.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	25
white ash	Fraxinus americana	WDL	Medium	1.1	1.9	1.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	26
eastern redbud	Cercis canadensis	NSL	Low	11.5	1.8	2.1	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	27
slippery elm	Ulmus rubra	WSL	Low	4.1	1.5	5.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	28
northern red oak	Quercus rubra	WDH	Medium	5.1	1.2	2.0	No change	No change	High	Rare	Fair	Fair			0	29
Shumard oak	Quercus shumardii	NSL	Low	2	1.2	8.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	30
boxelder	Acer negundo	WSH	Low	2.2	0.5	3.7	No change	Sm. inc.	High	Rare	Fair	Good			2	31
river birch	Betula nigra	NSL	Low	2	0.4	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
winged elm	Ulmus alata	WDL	Medium	2.4	0.2	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	33
white mulberry	Morus alba	NSL	FIA	1.9	0.1	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
mockernut hickory	Carya alba	WDL	Medium	0.2	0.0	0.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
black cherry	Prunus serotina	WDL	Medium	2	0.0	0.3	Lg. dec.	No change	Low	Rare	Very Poor	Very Poor			0	36
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	37
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	38
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	39
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	40
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	41
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	42
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	43
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	44
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	45
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	46
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	47



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southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	48
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	49
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	50
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	51