

# HUC 110400 Upper Cimarron

## 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	31,136	12,022	1

### 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	0			High	4	7	Increase	2	2	Very Good	0	0
Hickory	0			Medium	7	12	No Change	2	2	Good	2	2
Maple	0	Abundant	0	Low	9	2	Decrease	5	5	Fair	0	0
Oak	0	Common	0	FIA	2		New	10	10	Poor	5	5
Pine	0	Rare	11				Unknown	3	3	Very Poor	2	1
Other	11	Absent	11							FIA Only	1	1
	11		22		22	21		22	22	Unknown	1	1
											11	10

### Potential Changes in Climate Variables

#### Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	44.4	45.3	46.3	46.6
	CCSM85	44.4	45.6	46.6	48.1
	GFDL45	44.4	47.6	46.9	47.6
	GFDL85	44.4	45.9	47.5	49.6
	HAD45	44.4	45.7	47.1	47.6
	HAD85	44.4	45.8	48.2	49.6
Growing Season (May—Sep)	CCSM45	53.2	54.4	55.5	55.7
	CCSM85	53.2	54.6	55.7	57.6
	GFDL45	53.2	57.5	56.3	57.5
	GFDL85	53.2	55.2	57.0	59.6
	HAD45	53.2	54.3	55.5	55.9
	HAD85	53.2	54.6	57.1	58.2
Coldest Month (Average)	CCSM45	31.9	32.8	33.3	33.7
	CCSM85	31.9	33.0	33.3	34.1
	GFDL45	31.9	33.7	33.8	34.0
	GFDL85	31.9	32.6	33.2	33.6
	HAD45	31.9	32.7	33.7	33.7
	HAD85	31.9	33.7	34.9	35.6
Warmest Month (Average)	CCSM45	56.7	57.9	58.8	59.0
	CCSM85	56.7	58.4	59.0	60.2
	GFDL45	56.7	59.0	59.5	60.5
	GFDL85	56.7	59.0	59.8	62.0
	HAD45	56.7	57.6	58.4	58.4
	HAD85	56.7	58.4	59.5	60.1

#### Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	11.7	11.7	11.4	11.2
	CCSM85	11.7	11.8	12.3	12.0
	GFDL45	11.7	12.3	13.3	12.7
	GFDL85	11.7	12.5	13.3	12.5
	HAD45	11.7	13.1	12.2	13.2
	HAD85	11.7	12.1	10.9	13.0
Growing Season (May—Sep)	CCSM45	7.2	6.5	6.3	6.2
	CCSM85	7.2	6.8	7.0	6.8
	GFDL45	7.2	7.5	8.1	7.7
	GFDL85	7.2	7.9	8.4	7.8
	HAD45	7.2	8.0	7.8	8.2
	HAD85	7.2	7.1	6.4	7.3

**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.

**Cite as:** Iverson, L.R.; Prasad, A.M.; Peters, M.P.; Matthews, S.N. 2019. Facilitating Adaptive Forest Management under Climate Change: A Spatially Specific Synthesis of 125 Species for Habitat Changes and Assisted Migration over the Eastern United States. *Forests*. 10(11): 989. <https://doi.org/10.3390/f10110989>.



# HUC 110400 Upper Cimarron

## HUC 6 Watershed Climate Change Atlas Tree Species

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

### Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern cottonwood	Populus deltoides	NSH	Low	3.3	3.7	13.5	No change	No change	Medium	Rare	Poor	Poor			2	1
hackberry	Celtis occidentalis	WDH	Medium	16.7	3.3	7.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	2
Osage-orange	Maclura pomifera	NDH	Medium	2.4	2.5	6.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	3
eastern redcedar	Juniperus virginiana	WDH	Medium	11.1	2.4	30.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	4
black walnut	Juglans nigra	WDH	Low	3.3	2.4	8.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	5
red mulberry	Morus rubra	NSL	Low	11.1	2.4	29.3	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	6
honeylocust	Gleditsia triacanthos	NSH	Low	13.4	2.3	8.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	7
American elm	Ulmus americana	WDH	Medium	2.4	2.1	5.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	8
northern catalpa	Catalpa speciosa	NSHX	FIA	2.4	1.4	3.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	9
black locust	Robinia pseudoacacia	NDH	Low	11.1	0.8	10.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	10
Siberian elm	Ulmus pumila	NDH	FIA	3.3	0.7	2.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	11
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	12
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	13
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	14
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	15
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	16
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	17
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	18
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	19
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	20
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	21
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	22