

HUC 080201 Lower Mississippi-Helena

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

	sq. km	sq. mi	FIA Plots
Area of Region	1,537.5	593.6	34

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	Scenario	Scenario	Scenario	SHIFT	SHIFT			
				High	21	RCP45	RCP85	Very Good	6	6	Likely	4	4	
Ash	2			Medium	30	43	10	10	Good	12	14	Infill	13	13
Hickory	5			Low	26	7	25	23	Fair	13	11	Migrate	5	5
Maple	5	Abundant	3	FIA	1		14	14	Poor	11	12			
Oak	11	Common	24				3	3	Very Poor	10	9			
Pine	0	Rare	28						FIA Only	1	1			
Other	32	Absent	16						Unknown	2	2			
	55		71		71	71	71	71		55	55		22	22

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	42.3	42.8	43.5	43.6	
	CCSM85	42.3	43.0	43.8	44.7	
	GFDL45	42.3	43.4	43.8	44.2	
	GFDL85	42.3	43.2	44.2	45.4	
	HAD45	42.3	43.1	44.1	44.5	
HAD85	42.3	43.2	44.7	46.0		
Growing Season (May—Sep)	CCSM45	47.3	47.8	48.3	48.5	
	CCSM85	47.3	48.0	48.8	50.0	
	GFDL45	47.3	48.7	49.1	49.7	
	GFDL85	47.3	48.5	49.6	51.1	
	HAD45	47.3	48.5	49.4	49.8	
HAD85	47.3	48.5	50.7	51.8		
Coldest Month (Average)	CCSM45	34.6	35.3	35.7	35.8	
	CCSM85	34.6	35.5	35.8	36.4	
	GFDL45	34.6	35.8	35.9	35.9	
	GFDL85	34.6	35.1	35.5	35.7	
	HAD45	34.6	34.9	35.6	35.7	
HAD85	34.6	35.3	35.8	36.4		
Warmest Month (Average)	CCSM45	49.0	49.4	49.8	49.8	
	CCSM85	49.0	49.8	50.1	50.7	
	GFDL45	49.0	50.5	50.6	51.0	
	GFDL85	49.0	50.3	50.8	51.8	
	HAD45	49.0	50.5	51.2	51.3	
HAD85	49.0	50.8	52.2	52.6		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	17.7	18.3	19.9	19.3	
	CCSM85	17.7	18.6	19.5	20.3	
	GFDL45	17.7	19.6	21.2	20.8	
	GFDL85	17.7	19.5	20.7	21.5	
	HAD45	17.7	16.9	18.6	19.5	
HAD85	17.7	18.5	16.3	18.1		
Growing Season (May—Sep)	CCSM45	6.2	6.0	6.1	6.2	
	CCSM85	6.2	5.8	5.6	5.9	
	GFDL45	6.2	6.9	7.5	7.4	
	GFDL85	6.2	7.3	7.8	7.9	
	HAD45	6.2	5.5	5.8	5.5	
HAD85	6.2	6.1	4.5	4.6		

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
sugarberry	Celtis laevigata	NDH	Medium	96.8	3166.3	15.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
boxelder	Acer negundo	WSH	Low	78.1	1195.6	6.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
green ash	Fraxinus pennsylvanica	WSH	Low	95.2	1144.7	4.5	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	3
pecan	Carya illinoensis	NSH	Low	58	411.1	4.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	4
sycamore	Platanus occidentalis	NSL	Low	49.9	402.1	4.6	No change	No change	Medium	Common	Fair	Fair			1	5
bald cypress	Taxodium distichum	NSH	Medium	46.2	395.7	5.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
black willow	Salix nigra	NSH	Low	32.2	393.6	5.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
American elm	Ulmus americana	WDH	Medium	77	381.3	2.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
eastern cottonwood	Populus deltoides	NSH	Low	43.3	298.7	3.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
willow oak	Quercus phellos	NSL	Low	23.4	246.8	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
slippery elm	Ulmus rubra	WSL	Low	48.3	186.3	1.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
water tupelo	Nyssa aquatica	NSH	Medium	15	185.5	8.6	Sm. dec.	No change	Low	Common	Poor	Poor	Infill +		0	12
sweetgum	Liquidambar styraciflua	WDH	High	39.5	164.4	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
American beech	Fagus grandifolia	WDH	High	6.8	153.2	2.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +		2	14
Shumard oak	Quercus shumardii	NSL	Low	1.9	152.8	0.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	15
overcup oak	Quercus lyrata	NSL	Medium	18.4	146.2	3.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	16
yellow-poplar	Liriodendron tulipifera	WDH	High	6.8	126.0	4.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	17
water elm	Planera aquatica	NSL	Low	12.5	116.0	5.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	18
white oak	Quercus alba	WDH	Medium	13.4	106.2	1.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	19
common persimmon	Diospyros virginiana	NSL	Low	41.8	101.2	1.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	20
Nuttall oak	Quercus texana	NSH	Medium	30.3	99.6	2.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	21
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	12.5	92.5	0.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
pignut hickory	Carya glabra	WDL	Medium	1.3	88.1	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
silver maple	Acer saccharinum	NSH	Low	36.6	84.6	2.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	24
pawpaw	Asimina triloba	NSL	Low	24.1	80.1	2.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	25
water hickory	Carya aquatica	NSL	Medium	18.9	73.3	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
water oak	Quercus nigra	WDH	High	29.8	70.1	4.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.8	57.0	0.9	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	28
black oak	Quercus velutina	WDH	High	5.8	53.8	7.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	29
red maple	Acer rubrum	WDH	High	24.4	42.5	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	30
florida maple	Acer barbatum	NSL	Low	6	40.7	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	31
shagbark hickory	Carya ovata	WSL	Medium	4	38.8	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	32
red mulberry	Morus rubra	NSL	Low	18.3	37.0	0.7	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
hackberry	Celtis occidentalis	WDH	Medium	3.6	36.9	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	34
sassafras	Sassafras albidum	WSL	Low	28.3	29.6	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	35
mockernut hickory	Carya alba	WDL	Medium	7.3	27.6	1.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	36
blackgum	Nyssa sylvatica	WDL	Medium	0.9	24.7	0.6	No change	No change	High	Rare	Fair	Fair		Infill +	2	37
honeylocust	Gleditsia triacanthos	NSH	Low	7.9	23.2	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	38
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.9	21.5	0.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
northern red oak	Quercus rubra	WDH	Medium	0.9	20.8	0.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	40
swamp chestnut oak	Quercus michauxii	NSL	Low	2.4	19.3	0.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	41
cucumbertree	Magnolia acuminata	NSL	Low	5.8	18.2	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
Osage-orange	Maclura pomifera	NDH	Medium	2.8	18.0	1.2	No change	Sm. inc.	High	Rare	Fair	Good		Infill ++	2	43
flowering dogwood	Cornus florida	WDL	Medium	8.3	17.5	0.3	No change	No change	Medium	Rare	Poor	Poor			1	44
black walnut	Juglans nigra	WDH	Low	0.9	16.6	0.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
black cherry	Prunus serotina	WDL	Medium	0.9	16.6	0.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	46
eastern redbud	Cercis canadensis	NSL	Low	13	16.4	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			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
sugar maple	Acer saccharum	WDH	High	0.9	15.9	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	48
American basswood	Tilia americana	WSL	Medium	0.9	10.4	0.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
cedar elm	Ulmus crassifolia	NDH	Medium	3.8	6.2	0.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	50
black locust	Robinia pseudoacacia	NDH	Low	5.8	4.6	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	51
chinkapin oak	Quercus muehlenbergii	NSL	Medium	5.8	4.4	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	52
white ash	Fraxinus americana	WDL	Medium	4.7	3.5	0.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	53
winged elm	Ulmus alata	WDL	Medium	11.2	1.5	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	54
waterlocust	Gleditsia aquatica	NSLX	FIA	3.3	1.4	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	55
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	56
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	58
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	59
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	60
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	61
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	62
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	64
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	65
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	66
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	67
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
post oak	Quercus stellata	WDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	71