

HUC 111102 Lower Arkansas-Fourche La Fave

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

Area of Region sq. km sq. mi FIA Plots
21,726 8,388.6 626

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	26	Increase	25	28	Very Good	12	14	
Ash	2			Medium	35	57	No Change	22	23	Good	15	16
Hickory	8			Low	37	12	Decrease	18	14	Fair	11	10
Maple	5	Abundant	7	FIA	5		New	19	19	Poor	12	13
Oak	16	Common	19				Unknown	12	12	Very Poor	14	11
Pine	2	Rare	44							FIA Only	4	4
Other	37	Absent	26							Unknown	7	7
	70		96		96	95		96	96		75	75
											27	32

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	54.2	55.6	57.1	57.4	
Average	54.2	55.9	57.8	60.0	
GFDL45	54.2	56.5	57.9	58.8	
GFDL85	54.2	56.5	58.7	61.6	
HAD45	54.2	56.1	58.4	59.5	
HAD85	54.2	56.3	59.9	62.8	
Growing Season	66.0	67.4	68.6	69.1	
May—Sep	66.0	67.8	69.7	72.4	
GFDL45	66.0	68.8	70.4	72.0	
GFDL85	66.0	69.0	71.5	75.2	
HAD45	66.0	68.3	70.5	71.5	
HAD85	66.0	68.6	73.3	75.8	
Coldest Month	36.2	38.1	39.0	39.1	
Average	36.2	38.2	39.0	40.3	
GFDL45	36.2	39.3	39.6	39.6	
GFDL85	36.2	37.2	38.3	38.8	
HAD45	36.2	37.0	38.6	38.8	
HAD85	36.2	38.0	39.5	40.8	
Warmest Month	70.6	71.9	72.7	72.8	
Average	70.6	72.5	73.1	74.6	
GFDL45	70.6	74.4	75.2	76.2	
GFDL85	70.6	74.2	75.4	78.2	
HAD45	70.6	73.3	74.7	75.1	
HAD85	70.6	74.2	76.9	77.8	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	39.7	38.8	41.7	40.7	
Total	39.7	40.0	42.4	42.8	
GFDL45	39.7	42.3	46.3	43.4	
GFDL85	39.7	42.8	47.0	46.9	
HAD45	39.7	38.9	42.3	43.4	
HAD85	39.7	43.2	37.6	40.6	
Growing Season	15.6	14.8	15.0	14.9	
May—Sep	15.6	16.6	17.4	17.1	
GFDL45	15.6	17.2	18.8	18.0	
HAD45	15.6	14.8	15.3	14.8	
HAD85	15.6	15.9	11.9	12.3	

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-DGP30 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
shortleaf pine	Pinus echinata	WDH	High	66.6	1953.3	20.7	No change	No change	Medium	Abundant	Good	Good			1	1
post oak	Quercus stellata	WDH	High	77	1138.3	10.5	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	2
white oak	Quercus alba	WDH	Medium	67	1034.8	9.4	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
loblolly pine	Pinus taeda	WDH	High	28.8	834.6	20.0	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
eastern redcedar	Juniperus virginiana	WDH	Medium	67.1	797.4	9.6	No change	No change	Medium	Abundant	Good	Good			1	5
black hickory	Carya texana	NDL	High	73.3	573.8	5.6	No change	No change	Medium	Abundant	Good	Good			1	6
sweetgum	Liquidambar styraciflua	WDH	High	60.6	519.6	6.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	7
northern red oak	Quercus rubra	WDH	Medium	51.9	484.0	5.9	No change	No change	High	Common	Good	Good			1	8
winged elm	Ulmus alata	WDL	Medium	75.5	357.5	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
mockernut hickory	Carya alba	WDL	Medium	57.7	298.7	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
blackgum	Nyssa sylvatica	WDL	Medium	54	278.6	3.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
black oak	Quercus velutina	WDH	High	51.6	257.4	3.0	No change	No change	Medium	Common	Fair	Fair			1	12
southern red oak	Quercus falcata	WDL	Medium	42.7	244.5	4.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
willow oak	Quercus phellos	NSL	Low	22.1	222.4	10.2	No change	No change	Medium	Common	Fair	Fair			1	14
red maple	Acer rubrum	WDH	High	55.4	215.8	2.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
green ash	Fraxinus pennsylvanica	WSH	Low	36.9	155.5	3.5	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	16
black cherry	Prunus serotina	WDL	Medium	45.3	128.7	2.0	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	17
water oak	Quercus nigra	WDH	High	20.7	127.1	5.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
blackjack oak	Quercus marilandica	NSL	Medium	30	117.0	2.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
common persimmon	Diospyros virginiana	NSL	Low	19.6	84.7	3.5	No change	Sm. inc.	High	Common	Good	Very Good			1	20
sugarberry	Celtis laevigata	NDH	Medium	10.4	78.2	7.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	21
honeylocust	Gleditsia triacanthos	NSH	Low	9.7	74.9	5.6	No change	No change	High	Common	Good	Good			1	22
flowering dogwood	Cornus florida	WDL	Medium	37.3	69.7	1.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	23
American elm	Ulmus americana	WDH	Medium	19.9	69.5	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
pecan	Carya illinoensis	NSH	Low	4.4	68.5	10.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	25
white ash	Fraxinus americana	WDL	Medium	21.5	61.6	1.8	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	26
black willow	Salix nigra	NSH	Low	3.5	57.6	14.8	No change	No change	Low	Rare	Very Poor	Very Poor			0	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	27.4	55.9	1.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	28
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	10.9	49.8	4.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	29
slippery elm	Ulmus rubra	WSL	Low	14.3	46.2	2.3	No change	No change	Medium	Rare	Poor	Poor			1	30
sycamore	Platanus occidentalis	NSL	Low	6.3	46.0	4.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	31
American beech	Fagus grandifolia	WDH	High	6.1	44.1	4.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	32
boxelder	Acer negundo	WSH	Low	6.3	40.1	6.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	33
shagbark hickory	Carya ovata	WSL	Medium	11.1	39.9	3.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
overcup oak	Quercus lyrata	NSL	Medium	6.4	38.0	6.7	No change	No change	Low	Rare	Very Poor	Very Poor			0	35
bitternut hickory	Carya cordiformis	WSL	Low	12	35.0	2.2	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	36
silver maple	Acer saccharinum	NSH	Low	4.1	34.3	8.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	37
florida maple	Acer barbatum	NSL	Low	8.7	34.1	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	38
hackberry	Celtis occidentalis	WDH	Medium	8	33.9	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	39
sassafras	Sassafras albidum	WSL	Low	13	33.1	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
eastern cottonwood	Populus deltoides	NSH	Low	2.1	32.4	13.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	41
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	11.3	26.8	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	42
black locust	Robinia pseudoacacia	NDH	Low	10.2	25.5	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	43
Nuttall oak	Quercus texana	NSH	Medium	4.6	23.4	4.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
serviceberry	Amelanchier spp.	NSL	Low	18	21.8	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
Osage-orange	Maclura pomifera	NDH	Medium	1.6	21.4	11.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	46
river birch	Betula nigra	NSL	Low	5.5	20.4	3.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	47



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eastern redbud	Cercis canadensis	NSL	Low	12	19.1	1.2	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair			1	48
Shumard oak	Quercus shumardii	NSL	Low	2.6	18.5	5.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	49
black walnut	Juglans nigra	WDH	Low	5.8	17.2	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
red mulberry	Morus rubra	NSL	Low	8.5	16.9	1.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	51
cedar elm	Ulmus crassifolia	NDH	Medium	3.7	13.0	5.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	52
pignut hickory	Carya glabra	WDL	Medium	6.9	12.8	1.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	53
chinkapin oak	Quercus muehlenbergii	NSL	Medium	3.7	11.3	1.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	54
American basswood	Tilia americana	WSL	Medium	5.9	10.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
water hickory	Carya aquatica	NSL	Medium	4.2	8.5	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	56
sugar maple	Acer saccharum	WDH	High	2.1	4.8	1.1	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	57
shellbark hickory	Carya laciniosa	NSL	Low	1.4	4.2	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	58
bur oak	Quercus macrocarpa	NDH	Medium	0.8	3.9	3.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	59
swamp tupelo	Nyssa biflora	NDH	Medium	0.5	3.5	7.7	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	60
northern catalpa	Catalpa speciosa	NSHX	FIA	0.6	3.1	2.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	61
American holly	Ilex opaca	NSL	Medium	0.4	2.6	0.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	62
wild plum	Prunus americana	NSLX	FIA	2.1	2.0	2.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	63
laurel oak	Quercus laurifolia	NDH	Medium	0.5	1.3	2.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	64
cucumbertree	Magnolia acuminata	NSL	Low	0.2	1.1	0.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	65
pawpaw	Asimina triloba	NSL	Low	0.5	0.9	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	0.9	0.6	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	67
ailanthus	Ailanthus altissima	NSL	FIA	0.1	0.6	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	68
swamp chestnut oak	Quercus michauxii	NSL	Low	0.5	0.2	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	69
waterlocust	Gleditsia aquatica	NSLX	FIA	0.3	0.1	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	70
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	71
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	72
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	73
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	74
eastern white pine	Pinus strobus	WDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	75
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	76
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	77
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	79
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	80
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	81
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	84
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	85
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	86
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	87
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	88
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	89
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	90
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	91
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	92
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	93
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	94



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	95
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	96