

HUC 120302 Lower Trinity

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	15,880	6,131.2	386

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	3			High	11	21	Increase	16	19	Very Good	7	7	Likely	0	0
Hickory	7			Medium	34	51	No Change	32	32	Good	13	15	Infill	21	21
Maple	3	Abundant	5	Low	35	10	Decrease	20	17	Fair	11	11	Migrate	0	0
Oak	16	Common	20	FIA	5		New	1	3	Poor	21	20			
Pine	4	Rare	48				Unknown	16	14	Very Poor	15	14			
Other	40	Absent	12							FIA Only	3	3			
	73		85		85	82		85	85	Unknown	11	9			
											81	79			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	58.8	60.1	61.1	61.4	
Average	58.8	60.5	62.2	64.0	
GFDL45	58.8	61.0	62.0	63.0	
GFDL85	58.8	60.8	63.1	65.7	
HAD45	58.8	60.5	62.5	63.2	
HAD85	58.8	60.8	63.5	66.1	
Growing Season	68.7	69.8	70.4	70.9	
May—Sep	68.7	71.1	73.6	76.9	
Coldest Month	43.8	45.8	46.4	46.5	
Average	43.8	46.6	46.7	46.7	
GFDL45	43.8	44.7	45.5	45.9	
HAD45	43.8	44.2	45.5	45.9	
HAD85	43.8	45.7	46.8	48.2	
Warmest Month	72.0	72.8	73.1	73.3	
Average	72.0	75.3	75.3	76.6	
GFDL45	72.0	75.1	76.3	78.6	
HAD45	72.0	74.1	74.9	75.1	
HAD85	72.0	74.5	76.1	76.8	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	35.5	35.1	39.8	37.6	
Total	35.5	36.1	39.1	38.5	
GFDL45	35.5	36.4	42.3	35.5	
GFDL85	35.5	35.8	37.9	37.0	
HAD45	35.5	36.0	34.4	37.2	
HAD85	35.5	37.2	32.5	34.4	
Growing Season	14.7	15.3	16.8	15.5	
May—Sep	14.7	16.0	19.9	15.5	
HAD45	14.7	14.2	13.6	14.9	
HAD85	14.7	14.6	12.3	12.6	

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-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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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
loblolly pine	Pinus taeda	WDH	High	58	2633.3	32.7	No change	No change	Medium	Abundant	Good	Good			1	1
post oak	Quercus stellata	WDH	High	64.7	1247.7	14.2	No change	No change	High	Abundant	Very Good	Very Good			1	2
sweetgum	Liquidambar styraciflua	WDH	High	62.4	761.7	9.6	No change	No change	Medium	Abundant	Good	Good			1	3
water oak	Quercus nigra	WDH	High	68.7	739.9	8.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
winged elm	Ulmus alata	WDL	Medium	71.2	625.3	6.7	No change	No change	Medium	Abundant	Good	Good			1	5
sugarberry	Celtis laevigata	NDH	Medium	40.2	319.4	7.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
southern red oak	Quercus falcata	WDL	Medium	51.5	309.8	5.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
shortleaf pine	Pinus echinata	WDH	High	24.7	245.6	6.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
eastern redcedar	Juniperus virginiana	WDH	Medium	29.5	216.5	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
willow oak	Quercus phellos	NSL	Low	28.8	193.5	6.9	No change	No change	Medium	Common	Fair	Fair			1	10
green ash	Fraxinus pennsylvanica	WSH	Low	33	177.7	5.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
cedar elm	Ulmus crassifolia	NDH	Medium	23.2	160.3	6.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
pecan	Carya illinoensis	NSH	Low	13.3	156.8	16.3	Sm. dec.	No change	Low	Common	Poor	Poor			0	13
American elm	Ulmus americana	WDH	Medium	23.2	148.0	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
black hickory	Carya texana	NDL	High	24.9	128.8	3.8	No change	No change	Medium	Common	Fair	Fair			1	15
blackjack oak	Quercus marilandica	NSL	Medium	25.1	118.4	4.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	16
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	21	98.0	3.9	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	17
blackgum	Nyssa sylvatica	WDL	Medium	27.4	77.4	2.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	18
black willow	Salix nigra	NSH	Low	6.7	66.8	7.2	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	19
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	11.4	65.6	4.9	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
white ash	Fraxinus americana	WDL	Medium	16.9	65.4	2.3	Sm. dec.	No change	Low	Common	Poor	Poor			0	21
mockernut hickory	Carya alba	WDL	Medium	16	61.9	2.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	11.9	58.8	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	23
honeylocust	Gleditsia triacanthos	NSH	Low	19.3	56.7	3.0	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	24
white oak	Quercus alba	WDH	Medium	8.7	50.2	3.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	25
sassafras	Sassafras albidum	WSL	Low	16	49.7	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
laurel oak	Quercus laurifolia	NDH	Medium	6.3	45.9	3.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
bluejack oak	Quercus incana	NSL	Low	8.1	45.1	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	11.1	42.2	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	29
bald cypress	Taxodium distichum	NSH	Medium	4.6	38.9	7.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	30
American holly	Ilex opaca	NSL	Medium	13.9	38.3	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	31
slash pine	Pinus elliotii	NDH	High	3.9	33.2	6.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	32
river birch	Betula nigra	NSL	Low	6	31.6	2.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	33
water hickory	Carya aquatica	NSL	Medium	9.2	30.8	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	34
overcup oak	Quercus lyrata	NSL	Medium	5.9	29.3	3.6	No change	No change	Low	Rare	Very Poor	Very Poor			2	35
swamp chestnut oak	Quercus michauxii	NSL	Low	4	28.5	4.2	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	36
water tupelo	Nyssa aquatica	NSH	Medium	2.1	25.1	13.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	37
red maple	Acer rubrum	WDH	High	10.2	24.5	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	38
black walnut	Juglans nigra	WDH	Low	1.2	22.1	11.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
Osage-orange	Maclura pomifera	NDH	Medium	4.9	22.0	3.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	40
flowering dogwood	Cornus florida	WDL	Medium	14.3	19.9	1.0	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	41
common persimmon	Diospyros virginiana	NSL	Low	14.1	19.4	1.2	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			1	42
southern magnolia	Magnolia grandiflora	NSL	Low	3.1	19.2	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	43
Nuttall oak	Quercus texana	NSH	Medium	3.6	17.6	2.1	No change	No change	High	Rare	Fair	Fair			0	44
slippery elm	Ulmus rubra	WSL	Low	4.5	16.2	3.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	45
boxelder	Acer negundo	WSH	Low	2.6	14.4	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	46
sycamore	Platanus occidentalis	NSL	Low	2.9	13.8	4.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	47

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water elm	Planera aquatica	NSL	Low	4.7	12.3	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
American beech	Fagus grandifolia	WDH	High	2.5	12.0	3.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	49
red mulberry	Morus rubra	NSL	Low	7.9	11.6	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	50
eastern redbud	Cercis canadensis	NSL	Low	8.4	10.5	2.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	51
black cherry	Prunus serotina	WDL	Medium	7.6	9.4	1.0	No change	No change	Low	Rare	Very Poor	Very Poor			0	52
Siberian elm	Ulmus pumila	NDH	FIA	0.6	8.6	13.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	53
Shumard oak	Quercus shumardii	NSL	Low	4.9	6.5	2.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	54
eastern cottonwood	Populus deltoides	NSH	Low	1.3	6.3	5.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
American basswood	Tilia americana	WSL	Medium	4.7	5.9	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
shagbark hickory	Carya ovata	WSL	Medium	1.3	5.9	4.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
sweetbay	Magnolia virginiana	NSL	Medium	2.6	5.8	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	58
hackberry	Celtis occidentalis	WDH	Medium	2.6	5.6	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	59
waterlocust	Gleditsia aquatica	NSLX	FIA	0.6	5.5	8.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	60
pignut hickory	Carya glabra	WDL	Medium	1.6	5.0	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
longleaf pine	Pinus palustris	NSH	Medium	1.3	3.4	2.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	62
black oak	Quercus velutina	WDH	High	0.4	3.2	0.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	63
redbay	Persea borbonia	NSL	Low	1.8	2.5	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	64
Carolina ash	Fraxinus caroliniana	NSL	FIA	0.6	1.9	3.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	65
wild plum	Prunus americana	NSLX	FIA	0.6	1.6	2.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	66
bitternut hickory	Carya cordiformis	WSL	Low	0.8	1.0	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	67
swamp tupelo	Nyssa biflora	NDH	Medium	0.6	1.0	1.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	68
bur oak	Quercus macrocarpa	NDH	Medium	0.6	0.6	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	69
live oak	Quercus virginiana	NDH	High	2.5	0.5	3.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	70
black locust	Robinia pseudoacacia	NDH	Low	0.6	0.5	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	71
white mulberry	Morus alba	NSL	FIA	0.3	0.5	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	72
florida maple	Acer barbatum	NSL	Low	0.3	0.1	0.1	No change	No change	High	Rare	Fair	Fair			0	73
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	75
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	76
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	79
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
northern red oak	Quercus rubra	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	84
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	85