

HUC 080102 Hatchie-Obion

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 25,838 9,976.1 460

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					Potential Change in Habitat Suitability			Capability to Cope or Persist			Migration Potential		
				Model		Scenario		Scenario							
		Abundance		Reliability		Adaptability		RCP45		RCP85		RCP45		RCP85	
Ash	2			High	17	26	Increase	34	42	Very Good	13	14	Likely	0	0
Hickory	9			Medium	36	56	No Change	19	12	Good	17	21	Infill	21	22
Maple	6	Abundant	2	Low	38	13	Decrease	26	25	Fair	17	16	igrate	3	4
Oak	21	Common	30	FIA	8		New	11	11	Poor	15	13		24	26
Pine	4	Rare	55				Unknown	9	9	Very Poor	16	14			
Other	45	Absent	12					99	99	FIA Only	5	5			
	87		99		99	95				Unknown	1	1			
												84	84		
Potential Changes in Climate Variables															

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	54.0	55.4	57.1	57.4
Average	CCSM85	54.0	55.8	57.9	60.2
	GFDL45	54.0	56.6	57.9	58.6
	GFDL85	54.0	56.2	58.7	61.5
	HAD45	54.0	56.1	58.6	59.6
	HAD85	54.0	56.4	60.1	63.1
Growing	CCSM45	66.2	67.5	68.9	69.4
Season	CCSM85	66.2	67.9	70.2	73.1
May—Sep	GFDL45	66.2	69.2	70.6	71.8
	GFDL85	66.2	68.8	71.7	75.1
	HAD45	66.2	68.9	71.3	72.5
	HAD85	66.2	69.2	74.5	77.2
Coldest	CCSM45	35.4	37.0	38.2	38.4
Month	CCSM85	35.4	37.7	38.6	39.9
Average	GFDL45	35.4	38.4	38.4	38.6
	GFDL85	35.4	36.6	37.6	38.0
	HAD45	35.4	36.1	37.8	38.1
	HAD85	35.4	37.0	38.5	39.8
Warmest	CCSM45	70.5	71.6	72.4	72.6
Month	CCSM85	70.5	72.2	73.2	74.7
Average	GFDL45	70.5	73.6	74.2	75.0
	GFDL85	70.5	73.2	74.7	76.7
	HAD45	70.5	74.1	76.0	76.3
	HAD85	70.5	75.0	78.5	79.6

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	42.4	43.0	47.6	45.9
Total	CCSM85	42.4	45.4	46.4	48.7
	GFDL45	42.4	47.9	51.2	52.5
	GFDL85	42.4	48.5	51.9	54.7
	HAD45	42.4	40.3	44.4	45.0
	HAD85	42.4	42.7	39.1	43.2
Growing	CCSM45	16.3	15.6	16.1	16.0
Season	CCSM85	16.3	16.3	14.8	15.9
May—Sep	GFDL45	16.3	18.7	19.5	20.3
	GFDL85	16.3	19.6	20.5	21.4
	HAD45	16.3	14.5	15.0	14.0
	HAD85	16.3	15.3	11.5	12.0

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	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sweetgum	Liquidambar styraciflua	WDH	High	81.3	870.8	12.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
loblolly pine	Pinus taeda	WDH	High	35.3	647.1	17.3	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	2
winged elm	Ulmus alata	WDL	Medium	70.8	369.3	6.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	3
red maple	Acer rubrum	WDH	High	61.8	365.3	6.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	4
southern red oak	Quercus falcata	WDL	Medium	49	324.1	6.5	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	5
yellow-poplar	Liriodendron tulipifera	WDH	High	47.8	292.2	5.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	6
white oak	Quercus alba	WDH	Medium	45.8	281.6	5.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
eastern redcedar	Juniperus virginiana	WDH	Medium	38.5	207.0	4.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
shortleaf pine	Pinus echinata	WDH	High	17.5	195.3	9.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	9
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	47.1	195.1	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
post oak	Quercus stellata	WDH	High	34.8	181.7	4.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
American elm	Ulmus americana	WDH	Medium	48.3	178.0	4.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
green ash	Fraxinus pennsylvanica	WSH	Low	51.8	170.2	4.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
black cherry	Prunus serotina	WDL	Medium	44	169.1	4.0	No change	No change	Low	Common	Poor	Poor			0	14
black willow	Salix nigra	NSH	Low	29.3	169.0	10.1	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	15
boxelder	Acer negundo	WSH	Low	36.4	146.6	6.6	No change	No change	High	Common	Good	Good			1	16
black oak	Quercus velutina	WDH	High	33.7	145.2	4.1	No change	Sm. inc.	Medium	Common	Fair	Good			1	17
pignut hickory	Carya glabra	WDL	Medium	45	137.6	3.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	18
mockernut hickory	Carya alba	WDL	Medium	36.9	137.1	4.0	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
sycamore	Platanus occidentalis	NSL	Low	31.2	120.1	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
blackgum	Nyssa sylvatica	WDL	Medium	37.8	111.8	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
sugar maple	Acer saccharum	WDH	High	20.4	91.7	6.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	22
sassafras	Sassafras albidum	WSL	Low	31.6	87.7	3.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	23
willow oak	Quercus phellos	NSL	Low	15.7	80.9	7.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
black locust	Robinia pseudoacacia	NDH	Low	11.8	77.6	6.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	25
flowering dogwood	Cornus florida	WDL	Medium	32.8	75.4	1.9	No change	No change	Medium	Common	Fair	Fair			1	26
slippery elm	Ulmus rubra	WSL	Low	37.4	75.0	3.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	27
bald cypress	Taxodium distichum	NSH	Medium	16	69.5	9.0	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	28
American beech	Fagus grandifolia	WDH	High	19.7	67.4	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	29
common persimmon	Diospyros virginiana	NSL	Low	32.9	63.2	2.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	30
scarlet oak	Quercus coccinea	WDL	Medium	11.7	57.8	2.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	31
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	18.7	50.8	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	32
river birch	Betula nigra	NSL	Low	15	48.7	4.1	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	33
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	24.3	47.4	2.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	34
silver maple	Acer saccharinum	NSH	Low	13.5	47.1	4.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	35
shagbark hickory	Carya ovata	WSL	Medium	24.7	46.9	2.3	No change	No change	Medium	Rare	Poor	Poor			1	36
sugarberry	Celtis laevigata	NDH	Medium	15.4	46.6	5.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	37
white ash	Fraxinus americana	WDL	Medium	18.1	45.1	3.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	38
bitternut hickory	Carya cordiformis	WSL	Low	11.4	40.3	3.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	39
water oak	Quercus nigra	WDH	High	16.1	39.7	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	40
red mulberry	Morus rubra	NSL	Low	13	34.8	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
blackjack oak	Quercus marilandica	NSL	Medium	5.9	30.3	3.5	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	42
swamp chestnut oak	Quercus michauxii	NSL	Low	14.5	29.1	3.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	43
pecan	Carya illinoensis	NSH	Low	12.5	26.8	5.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	44
northern red oak	Quercus rubra	WDH	Medium	13.9	26.6	2.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	45
water tupelo	Nyssa aquatica	NSH	Medium	5.4	23.9	9.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	46
black walnut	Juglans nigra	WDH	Low	11.6	23.4	2.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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eastern cottonwood	Populus deltoides	NSH	Low	11.3	22.1	5.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 48
sourwood	Oxydendrum arboreum	NDL	High	7.4	21.8	2.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		1 49
hackberry	Celtis occidentalis	WDH	Medium	6.2	20.5	3.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		1 50
shellbark hickory	Carya laciniosa	NSL	Low	4.5	20.3	3.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 51
chinkapin oak	Quercus muehlenbergii	NSL	Medium	8.3	17.5	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 52
shingle oak	Quercus imbricaria	NDH	Medium	3.2	17.3	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				2 53
honeylocust	Gleditsia triacanthos	NSH	Low	10.4	14.1	2.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		1 54
Shumard oak	Quercus shumardii	NSL	Low	7.3	13.3	2.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++		2 55
Nuttall oak	Quercus texana	NSH	Medium	2.3	11.1	9.8	No change	No change	High	Rare	Fair	Fair				0 56
eastern redbud	Cercis canadensis	NSL	Low	9.1	11.0	1.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor				1 57
overcup oak	Quercus lyrata	NSL	Medium	6.9	9.0	3.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +		2 58
swamp tupelo	Nyssa biflora	NDH	Medium	2.1	7.5	2.7	No change	No change	Low	Rare	Very Poor	Very Poor				2 59
paulownia	Paulownia tomentosa	NSL	FIA	6.5	7.4	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 60
chestnut oak	Quercus prinus	NDH	High	2.7	7.3	4.9	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor				0 61
American holly	Ilex opaca	NSL	Medium	3.8	4.8	1.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		1 62
Osage-orange	Maclura pomifera	NDH	Medium	3.4	4.2	3.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++		2 63
white mulberry	Morus alba	NSL	FIA	3.9	3.2	1.3	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 64
water elm	Planera aquatica	NSL	Low	3.2	3.2	3.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +		2 65
ailanthus	Ailanthus altissima	NSL	FIA	1.8	2.8	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 66
florida maple	Acer barbatum	NSL	Low	1.2	2.5	2.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		2 67
pawpaw	Asimina triloba	NSL	Low	2	2.2	1.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2 68
sweetbay	Magnolia virginiana	NSL	Medium	0.3	2.2	4.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 69
serviceberry	Amelanchier spp.	NSL	Low	2.5	2.2	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 70
laurel oak	Quercus laurifolia	NDH	Medium	1.2	1.6	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good				0 71
pin oak	Quercus palustris	NSH	Low	0.8	1.5	1.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				0 72
American basswood	Tilia americana	WSL	Medium	1.2	1.4	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 73
sand hickory	Carya pallida	NSL	FIA	1.2	1.3	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only				0 74
swamp white oak	Quercus bicolor	NSL	Low	0.4	0.5	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 75
Virginia pine	Pinus virginiana	NDH	High	0.4	0.4	1.1	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				0 76
butternut	Juglans cinerea	NSLX	FIA	0.8	0.4	1.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 77
water hickory	Carya aquatica	NSL	Medium	0.5	0.3	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 78
wild plum	Prunus americana	NSLX	FIA	0.1	0.3	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 79
rock elm	Ulmus thomasii	NSLX	FIA	0.4	0.2	0.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 80
yellow buckeye	Aesculus flava	NSL	Low	0.2	0.2	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0 81
waterlocust	Gleditsia aquatica	NSLX	FIA	1.2	0.2	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 82
striped maple	Acer pensylvanicum	NSL	Medium	0.4	0.1	0.4	No change	Sm. inc.	Medium	Rare	Poor	Fair				0 83
Ohio buckeye	Aesculus glabra	NSL	Low	0.4	0.1	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 84
black hickory	Carya texana	NDL	High	0.2	0.1	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 85
bur oak	Quercus macrocarpa	NDH	Medium	1.5	0.1	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				0 86
slash pine	Pinus elliotii	NDH	High	0.2	0.1	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 87
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 88
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 89
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 90
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 91
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 92
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 93
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 94

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bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	95
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	96
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	97
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	98
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	99