

HUC 030102 Albemarle-Chowan

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

Area of Region sq. km sq. mi FIA Plots
24,072 9,294.2 588

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	4			High	19	24	Increase	23	29	Very Good	9	12	Likely	1	1
Hickory	6			Medium	37	56	No Change	16	13	Good	12	17	Infill	15	20
Maple	4	Abundant	3	Low	40	17	Decrease	36	33	Fair	12	8	Migrate	5	7
Oak	17	Common	22	FIA	7		New	14	15	Poor	17	16			
Pine	4	Rare	57				Unknown	14	13	Very Poor	19	18			
Other	47	Absent	21							FIA Only	4	4			
	82		103		103	97		103	103	Unknown	7	6			
											80	81			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	52.5	53.8	55.2	55.4	
Average	CCSM85	52.5	54.0	55.8	57.9	
	GFDL45	52.5	54.5	56.2	56.9	
	GFDL85	52.5	54.6	57.1	59.8	
	HAD45	52.5	53.9	56.1	57.0	
	HAD85	52.5	54.2	56.7	59.6	
Growing Season	CCSM45	63.2	64.5	65.7	66.1	
	CCSM85	63.2	64.6	66.5	69.0	
May—Sep	GFDL45	63.2	65.3	67.3	68.4	
	GFDL85	63.2	65.7	68.4	71.4	
	HAD45	63.2	64.9	66.8	67.9	
	HAD85	63.2	64.9	67.9	70.8	
Coldest Month	CCSM45	36.6	38.2	38.9	39.1	
	CCSM85	36.6	38.4	39.1	40.1	
Average	GFDL45	36.6	39.0	39.3	39.8	
	GFDL85	36.6	38.1	38.9	39.8	
	HAD45	36.6	37.2	38.5	38.8	
	HAD85	36.6	37.4	38.4	39.6	
Warmest Month	CCSM45	67.3	68.7	69.4	69.4	
	CCSM85	67.3	68.8	70.1	71.1	
Average	GFDL45	67.3	69.4	70.3	71.1	
	GFDL85	67.3	70.0	71.3	73.0	
	HAD45	67.3	69.2	70.4	70.8	
	HAD85	67.3	69.5	71.2	73.0	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	35.1	39.0	40.9	40.4	
Total	CCSM85	35.1	39.1	40.6	45.6	
	GFDL45	35.1	38.2	40.9	42.6	
	GFDL85	35.1	37.5	41.0	42.0	
	HAD45	35.1	38.5	38.4	36.8	
	HAD85	35.1	40.2	36.8	36.2	
Growing Season	CCSM45	16.7	20.7	21.6	21.5	
	CCSM85	16.7	19.6	20.7	23.6	
May—Sep	GFDL45	16.7	18.3	20.0	21.2	
	GFDL85	16.7	17.6	20.4	21.1	
	HAD45	16.7	19.0	17.9	16.5	
	HAD85	16.7	19.6	17.3	15.7	

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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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	90.6	3181.8	33.6	No change	No change	Medium	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	87.7	923.4	10.0	No change	No change	High	Abundant	Very Good	Very Good			1	2
sweetgum	Liquidambar styraciflua	WDH	High	86.5	855.2	9.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
yellow-poplar	Liriodendron tulipifera	WDH	High	68.2	446.9	6.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	4
swamp tupelo	Nyssa biflora	NDH	Medium	44.5	322.3	6.7	No change	No change	Low	Common	Poor	Poor			0	5
pond pine	Pinus serotina	NSH	Medium	13.2	291.0	18.6	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	6
white oak	Quercus alba	WDH	Medium	54	269.5	4.7	No change	No change	High	Common	Good	Good			1	7
American holly	Ilex opaca	NSL	Medium	60.5	146.6	2.6	No change	No change	Medium	Common	Fair	Fair			1	8
redbay	Persea borbonia	NSL	Low	22.3	131.6	4.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	9
water oak	Quercus nigra	WDH	High	44.2	106.0	2.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
water tupelo	Nyssa aquatica	NSH	Medium	9.5	105.5	11.2	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	11
southern red oak	Quercus falcata	WDL	Medium	39.1	92.1	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
bald cypress	Taxodium distichum	NSH	Medium	20.8	91.9	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
American beech	Fagus grandifolia	WDH	High	29.9	90.4	2.7	Sm. dec.	No change	Medium	Common	Poor	Fair			1	14
willow oak	Quercus phellos	NSL	Low	29.8	87.6	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
green ash	Fraxinus pennsylvanica	WSH	Low	32.6	78.9	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
sweetbay	Magnolia virginiana	NSL	Medium	34	77.9	2.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	17
blackgum	Nyssa sylvatica	WDL	Medium	47.9	68.3	1.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	35.1	67.8	1.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	19
mockernut hickory	Carya alba	WDL	Medium	26.1	61.8	1.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
sourwood	Oxydendrum arboreum	NDL	High	34.4	61.6	1.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	21
pond cypress	Taxodium ascendens	NSH	Medium	5.4	57.2	9.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	22
river birch	Betula nigra	NSL	Low	19.4	55.8	2.8	No change	Lg. inc.	Medium	Common	Fair	Very Good			1	23
scarlet oak	Quercus coccinea	WDL	Medium	22.7	51.1	2.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	24
loblolly-bay	Gordonia lasianthus	NSH	Medium	4.3	51.0	10.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	25
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	11.8	50.3	5.6	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	26
black cherry	Prunus serotina	WDL	Medium	30.1	49.1	1.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	27
black oak	Quercus velutina	WDH	High	24.2	48.4	1.9	No change	No change	Medium	Rare	Poor	Poor			1	28
American elm	Ulmus americana	WDH	Medium	28	39.9	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	29
northern red oak	Quercus rubra	WDH	Medium	15.8	39.1	2.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	30
winged elm	Ulmus alata	WDL	Medium	21	37.5	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	31
pignut hickory	Carya glabra	WDL	Medium	22.9	36.8	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
eastern redcedar	Juniperus virginiana	WDH	Medium	20.9	35.2	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
sycamore	Platanus occidentalis	NSL	Low	11.6	34.3	2.4	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	1	34
slippery elm	Ulmus rubra	WSL	Low	11.7	33.6	2.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
shortleaf pine	Pinus echinata	WDH	High	10.8	31.8	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	36
laurel oak	Quercus laurifolia	NDH	Medium	14.4	25.0	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	37
Virginia pine	Pinus virginiana	NDH	High	9.7	23.3	1.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	38
post oak	Quercus stellata	WDH	High	13.6	20.8	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	39
swamp chestnut oak	Quercus michauxii	NSL	Low	15.2	20.3	1.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	40
black willow	Salix nigra	NSH	Low	6.8	18.9	2.5	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	41
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	10	16.0	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	42
bitternut hickory	Carya cordiformis	WSL	Low	6.7	14.3	2.3	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			1	43
common persimmon	Diospyros virginiana	NSL	Low	7.5	13.7	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	44
white ash	Fraxinus americana	WDL	Medium	9.8	13.7	1.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	45
flowering dogwood	Cornus florida	WDL	Medium	24.1	13.0	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	46
hackberry	Celtis occidentalis	WDH	Medium	4.1	7.4	1.7	Lg. dec.	Lg. dec.	High	Rare	Poor	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
shagbark hickory	Carya ovata	WSL	Medium	2.9	7.3	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	48
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.3	7.3	1.8	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	49
sassafras	Sassafras albidum	WSL	Low	8.6	6.7	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
florida maple	Acer barbatum	NSL	Low	4.5	6.1	1.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	51
chestnut oak	Quercus prinus	NDH	High	2.2	5.7	2.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +		2	52
black walnut	Juglans nigra	WDH	Low	2.9	5.7	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
overcup oak	Quercus lyrata	NSL	Medium	4.5	4.8	1.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	54
eastern redbud	Cercis canadensis	NSL	Low	4.7	4.5	0.5	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
eastern cottonwood	Populus deltoides	NSH	Low	2.1	4.1	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
butternut	Juglans cinerea	NSLX	FIA	0.6	3.5	3.6	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	57
ailanthus	Ailanthus altissima	NSL	FIA	1.3	3.5	0.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	58
black locust	Robinia pseudoacacia	NDH	Low	1.2	2.9	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	59
boxelder	Acer negundo	WSH	Low	4.6	2.4	0.6	Very Lg. dec.	Lg. dec.	High	Rare	Lost	Poor		Infill +	2	60
cucumbertree	Magnolia acuminata	NSL	Low	0.5	1.8	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
red mulberry	Morus rubra	NSL	Low	1	1.2	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	62
pumpkin ash	Fraxinus profunda	NSH	FIA	2.5	1.2	1.2	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	63
Osage-orange	Maclura pomifera	NDH	Medium	0.5	1.2	2.9	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	64
blackjack oak	Quercus marilandica	NSL	Medium	1.2	1.1	0.7	No change	Lg. inc.	High	Rare	Fair	Good			2	65
pin oak	Quercus palustris	NSH	Low	0.2	1.1	1.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	66
sugar maple	Acer saccharum	WDH	High	1.4	1.1	0.8	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	67
yellow birch	Betula alleghaniensis	NDL	High	0.1	0.9	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	68
sand hickory	Carya pallida	NSL	FIA	0.5	0.5	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	69
honeylocust	Gleditsia triacanthos	NSH	Low	1	0.4	0.5	Very Lg. dec.	Sm. inc.	High	Rare	Lost	Good			2	70
sweet birch	Betula lenta	NDH	High	0.5	0.3	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	71
pawpaw	Asimina triloba	NSL	Low	0.5	0.3	0.7	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	72
Carolina ash	Fraxinus caroliniana	NSL	FIA	2.4	0.3	1.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	73
white mulberry	Morus alba	NSL	FIA	0.5	0.3	0.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	74
paulownia	Paulownia tomentosa	NSL	FIA	0.1	0.2	0.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	75
Shumard oak	Quercus shumardii	NSL	Low	0.5	0.2	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	76
pin cherry	Prunus pensylvanica	NSL	Low	0.5	0.2	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	77
yellow buckeye	Aesculus flava	NSL	Low	0.5	0.2	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	78
swamp white oak	Quercus bicolor	NSL	Low	0.5	0.1	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	79
pecan	Carya illinoensis	NSH	Low	0.1	0.1	0.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	80
bigtooth aspen	Populus grandidentata	NSL	Medium	0.1	0.1	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	81
serviceberry	Amelanchier spp.	NSL	Low	2	0.0	0.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			0	82
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	83
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	84
spruce pine	Pinus glabra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	85
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	86
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	87
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	88
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	89
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	90
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	91
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	92
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	93
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	94

HUC 030102 Albemarle-Chowan

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	95
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	96
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	97
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	98
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	99
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	100
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	101
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	102
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	103