

HUC 020403 Mid Atlantic Coastal

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	11,430	4,413.3	152

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	19	17	Increase	16	21	Very Good	4	4	Likely	2	2
Hickory	4			Medium	31	47	No Change	14	12	Good	10	13	Infill	14	21
Maple	4	Abundant	3	Low	25	12	Decrease	24	21	Fair	9	12	Migrate	5	8
Oak	16	Common	11	FIA	7		New	14	14	Poor	14	11			
Pine	7	Rare	47				Unknown	14	14	Very Poor	14	8			
Other	27	Absent	18							FIA Only	2	2			
	61		79		82	76		82	82	Unknown	7	7			
											60	57			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	44.6	45.5	46.5	46.6	
Average	CCSM85	44.6	45.7	46.9	48.4	
	GFDL45	44.6	46.2	47.4	48.0	
	GFDL85	44.6	46.2	48.1	50.1	
	HAD45	44.6	45.8	47.4	48.1	
	HAD85	44.6	45.8	47.8	49.9	
Growing Season	CCSM45	53.1	54.0	54.8	55.0	
	CCSM85	53.1	54.0	55.3	57.0	
May—Sep	GFDL45	53.1	54.8	56.2	57.0	
	GFDL85	53.1	55.0	57.0	59.2	
	HAD45	53.1	54.4	55.8	56.6	
	HAD85	53.1	54.1	56.2	58.4	
Coldest Month	CCSM45	32.1	33.2	33.9	34.2	
	CCSM85	32.1	33.5	34.1	35.0	
Average	GFDL45	32.1	33.8	34.2	34.6	
	GFDL85	32.1	33.6	34.3	35.2	
	HAD45	32.1	32.6	33.7	33.9	
	HAD85	32.1	33.1	33.9	35.1	
Warmest Month	CCSM45	56.4	57.4	57.8	57.8	
	CCSM85	56.4	57.4	58.2	59.0	
Average	GFDL45	56.4	58.0	58.8	59.4	
	GFDL85	56.4	58.5	59.6	60.9	
	HAD45	56.4	57.9	58.6	58.9	
	HAD85	56.4	57.8	58.8	60.2	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	24.8	26.5	27.6	28.5	
Total	CCSM85	24.8	27.4	27.9	30.6	
	GFDL45	24.8	27.9	29.7	29.9	
	GFDL85	24.8	27.0	29.8	30.8	
	HAD45	24.8	26.6	27.4	26.8	
	HAD85	24.8	29.0	26.6	27.4	
Growing Season	CCSM45	10.7	13.0	13.1	13.9	
	CCSM85	10.7	12.8	12.9	13.8	
May—Sep	GFDL45	10.7	11.8	12.7	13.4	
	GFDL85	10.7	11.6	12.8	13.4	
	HAD45	10.7	11.8	11.3	10.1	
	HAD85	10.7	12.4	10.5	9.9	

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
pitch pine	Pinus rigida	NSH	High	57.3	1674.6	40.1	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
red maple	Acer rubrum	WDH	High	60.7	727.2	9.5	No change	No change	High	Abundant	Very Good	Very Good			1	2
loblolly pine	Pinus taeda	WDH	High	23.6	722.6	15.4	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2	3
white oak	Quercus alba	WDH	Medium	52.2	453.3	9.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	4
sweetgum	Liquidambar styraciflua	WDH	High	28	274.2	5.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	17.3	229.8	21.8	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	6
blackgum	Nyssa sylvatica	WDL	Medium	52.7	215.6	4.4	No change	No change	High	Common	Good	Good			1	7
scarlet oak	Quercus coccinea	WDL	Medium	48.5	200.7	6.1	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
black oak	Quercus velutina	WDH	High	45.7	195.8	4.8	Sm. inc.	No change	Medium	Common	Good	Fair			1	9
black cherry	Prunus serotina	WDL	Medium	24.1	190.4	5.7	No change	No change	Low	Common	Poor	Poor			0	10
American holly	Ilex opaca	NSL	Medium	35.4	149.6	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
chestnut oak	Quercus prinus	NDH	High	15.3	119.7	7.2	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	12
sassafras	Sassafras albidum	WSL	Low	44.9	87.2	2.6	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	13
southern red oak	Quercus falcata	WDL	Medium	28.5	60.3	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
shortleaf pine	Pinus echinata	WDH	High	11.9	45.3	5.3	Lg. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +	1	15
black locust	Robinia pseudoacacia	NDH	Low	2	40.3	2.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	16
yellow-poplar	Liriodendron tulipifera	WDH	High	7.1	38.1	2.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	17
eastern redcedar	Juniperus virginiana	WDH	Medium	10.2	37.7	4.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	18
northern red oak	Quercus rubra	WDH	Medium	14.4	36.3	4.7	No change	Lg. dec.	High	Rare	Fair	Poor	Infill +	Infill +	1	19
sweetbay	Magnolia virginiana	NSL	Medium	19.6	34.6	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	20
Virginia pine	Pinus virginiana	NDH	High	12.1	34.4	2.2	Lg. inc.	Lg. dec.	Medium	Rare	Good	Very Poor	Infill ++		1	21
post oak	Quercus stellata	WDH	High	19.3	34.0	2.1	Sm. dec.	Lg. inc.	High	Rare	Poor	Good		Infill ++	1	22
blackjack oak	Quercus marilandica	NSL	Medium	13.6	20.8	2.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	23
water oak	Quercus nigra	WDH	High	11.8	19.9	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	24
swamp chestnut oak	Quercus michauxii	NSL	Low	4	15.5	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	25
mockernut hickory	Carya alba	WDL	Medium	4.5	14.1	1.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	26
eastern white pine	Pinus strobus	WDH	High	8.9	14.0	2.1	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	27
black walnut	Juglans nigra	WDH	Low	2.1	13.9	10.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	28
American beech	Fagus grandifolia	WDH	High	3.2	13.7	1.0	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	29
swamp tupelo	Nyssa biflora	NDH	Medium	3.8	13.5	1.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	30
willow oak	Quercus phellos	NSL	Low	7.9	13.2	1.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	31
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	12.5	12.3	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	32
bald cypress	Taxodium distichum	NSH	Medium	1.6	8.2	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	33
flowering dogwood	Cornus florida	WDL	Medium	5.2	7.0	0.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	34
green ash	Fraxinus pennsylvanica	WSL	Low	0.9	6.4	0.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	35
white ash	Fraxinus americana	WDL	Medium	2.9	5.9	1.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	36
ailanthus	Ailanthus altissima	NSL	FIA	2	5.3	1.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	37
pond pine	Pinus serotina	NSH	Medium	1.4	4.6	5.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	38
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	1	4.6	0.4	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	39
bigtooth aspen	Populus grandidentata	NSL	Medium	5.1	4.4	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
silver maple	Acer saccharinum	NSH	Low	1.4	3.8	4.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	41
pin oak	Quercus palustris	NSH	Low	1.4	3.3	3.8	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	42
pecan	Carya illinoensis	NSH	Low	0.9	3.2	2.4	Lg. dec.	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	43
Norway maple	Acer platanoides	NSL	FIA	2.8	3.2	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
gray birch	Betula populifolia	NSL	Low	3.9	2.9	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	45
common persimmon	Diospyros virginiana	NSL	Low	3.4	2.8	1.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	2	46
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.7	2.5	0.1	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	47



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river birch	Betula nigra	NSL	Low	1.2	2.5	2.4	No change	Lg. inc.	Medium	Rare	Poor	Good			2	48
black willow	Salix nigra	NSH	Low	1.4	2.3	2.7	No change	Lg. inc.	Low	Rare	Very Poor	Fair	Infill +		2	49
Scots pine	Pinus sylvestris	NSH	FIA	1.4	1.9	2.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	50
boxelder	Acer negundo	WSH	Low	1.4	1.7	2.0	Sm. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	51
Norway spruce	Picea abies	NSH	FIA	1.4	1.3	1.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	52
sourwood	Oxydendrum arboreum	NDL	High	0.7	1.0	0.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	53
sand hickory	Carya pallida	NSL	FIA	1.2	0.9	0.9	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	54
red mulberry	Morus rubra	NSL	Low	1.1	0.9	0.2	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	55
Siberian elm	Ulmus pumila	NDH	FIA	1.2	0.8	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	56
swamp white oak	Quercus bicolor	NSL	Low	1.4	0.7	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	57
black ash	Fraxinus nigra	WSH	Medium	1.4	0.6	0.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	58
serviceberry	Amelanchier spp.	NSL	Low	1.3	0.6	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
turkey oak	Quercus laevis	NSH	Medium	1.8	0.5	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	60
pignut hickory	Carya glabra	WDL	Medium	0.7	0.4	0.2	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +		2	61
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	62
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	63
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	64
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	65
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	66
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			2	67
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	69
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	70
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	71
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	72
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	74
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	79
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	81
American elm	Ulmus americana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	82