

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 5,624.4 2,171.6 120

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	2			High	18	17	Increase	14	15	Very Good	3	3
Hickory	1			Medium	31	47	No Change	6	7	Good	12	11
Maple	4	Abundant	4	Low	25	11	Decrease	23	21	Fair	4	7
Oak	13	Common	11	FIA	5		New	23	24	Poor	12	9
Pine	7	Rare	33				Unknown	13	12	Very Poor	8	6
Other	21	Absent	27							FIA Only	1	1
	48		75		79	75		79	79	Unknown	8	7
											48	44

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	54.3	55.9	57.9	58.1	
Average	54.3	56.3	58.6	61.4	
GFDL45	54.3	57.8	59.5	60.5	
GFDL85	54.3	57.3	60.6	64.4	
HAD45	54.3	56.5	59.5	60.9	
HAD85	54.3	56.5	60.2	64.3	
Growing Season	70.0	71.6	73.1	73.5	
May—Sep	70.0	71.7	74.0	77.2	
GFDL45	70.0	73.8	75.7	77.0	
GFDL85	70.0	73.4	77.1	81.0	
HAD45	70.0	72.4	75.0	76.6	
HAD85	70.0	71.9	75.9	80.0	
Coldest Month	31.2	33.2	34.5	35.0	
Average	31.2	33.7	34.9	36.5	
GFDL45	31.2	34.4	35.2	35.9	
GFDL85	31.2	34.2	35.4	37.1	
HAD45	31.2	32.1	34.3	34.7	
HAD85	31.2	33.1	34.7	36.9	
Warmest Month	76.0	77.9	78.7	78.7	
Average	76.0	77.9	79.5	80.9	
GFDL45	76.0	78.9	80.5	81.5	
GFDL85	76.0	79.8	81.9	84.3	
HAD45	76.0	78.8	80.1	80.8	
HAD85	76.0	78.6	80.5	83.2	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	45.2	48.0	50.2	52.5	
Total	45.2	49.7	50.8	55.6	
GFDL45	45.2	50.9	54.3	54.4	
GFDL85	45.2	49.3	54.4	56.4	
HAD45	45.2	48.2	49.9	49.1	
HAD85	45.2	52.6	48.5	50.3	
Growing Season	19.3	23.3	23.8	25.5	
May—Sep	19.3	22.9	23.3	24.9	
GFDL45	19.3	21.3	22.9	24.2	
GFDL85	19.3	21.1	23.2	24.3	
HAD45	19.3	21.2	20.2	18.3	
HAD85	19.3	22.3	18.8	17.9	

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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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
pitch pine	Pinus rigida	NSH	High	79.3	3235.8	42.7	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
white oak	Quercus alba	WDH	Medium	51	695.0	15.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	57.2	691.2	10.9	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	3
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	28.2	585.2	20.9	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
scarlet oak	Quercus coccinea	WDL	Medium	47.9	353.7	8.1	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	5
black oak	Quercus velutina	WDH	High	50.8	311.2	6.3	Sm. inc.	No change	Medium	Common	Good	Fair			1	6
blackgum	Nyssa sylvatica	WDL	Medium	54.6	286.3	5.1	No change	No change	High	Common	Good	Good			1	7
black cherry	Prunus serotina	WDL	Medium	13.2	223.9	10.9	No change	No change	Low	Common	Poor	Poor			0	8
sweetgum	Liquidambar styraciflua	WDH	High	13.1	158.9	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
American holly	Ilex opaca	NSL	Medium	19.9	108.5	4.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
chestnut oak	Quercus prinus	NDH	High	17.1	107.6	6.8	No change	Lg. dec.	High	Common	Good	Fair			1	11
sassafras	Sassafras albidum	WSL	Low	48.6	107.0	2.4	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	12
American beech	Fagus grandifolia	WDH	High	3.9	70.2	7.8	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	2	13
shortleaf pine	Pinus echinata	WDH	High	15.4	68.4	6.6	Lg. dec.	Sm. inc.	Medium	Common	Poor	Good			1	14
black walnut	Juglans nigra	WDH	Low	4.7	55.7	19.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
eastern white pine	Pinus strobus	WDH	High	11.8	48.2	4.6	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	16
post oak	Quercus stellata	WDH	High	26	48.1	2.3	Lg. dec.	Lg. inc.	High	Rare	Poor	Good		Infill ++	1	17
southern red oak	Quercus falcata	WDL	Medium	21.8	47.7	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	18
blackjack oak	Quercus marilandica	NSL	Medium	19.4	42.3	2.1	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			1	19
Virginia pine	Pinus virginiana	NDH	High	10.1	40.2	2.7	Lg. inc.	Lg. dec.	Medium	Rare	Good	Very Poor	Infill ++		1	20
sweetbay	Magnolia virginiana	NSL	Medium	28.3	35.5	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	21
northern red oak	Quercus rubra	WDH	Medium	15.5	31.0	5.5	Lg. inc.	No change	High	Rare	Good	Fair	Infill ++	Infill +	1	22
eastern redcedar	Juniperus virginiana	WDH	Medium	6.5	29.2	6.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
pignut hickory	Carya glabra	WDL	Medium	2.1	27.1	4.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	24
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	17.7	22.8	1.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
slippery elm	Ulmus rubra	WSL	Low	1.1	14.1	5.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
pin oak	Quercus palustris	NSH	Low	3.7	12.0	3.9	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	27
yellow-poplar	Liriodendron tulipifera	WDH	High	1.1	10.5	3.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	28
pond pine	Pinus serotina	NSH	Medium	1.8	9.4	5.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	29
black willow	Salix nigra	NSH	Low	2.7	9.3	2.0	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	30
silver maple	Acer saccharinum	NSH	Low	1.8	7.7	4.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	31
willow oak	Quercus phellos	NSL	Low	4.7	7.5	1.3	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	32
Norway maple	Acer platanoides	NSL	FIA	4.3	5.0	1.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	33
white ash	Fraxinus americana	WDL	Medium	2.9	4.9	1.0	No change	No change	Low	Rare	Very Poor	Very Poor			0	34
gray birch	Betula populifolia	NSL	Low	5.8	4.6	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
Scots pine	Pinus sylvestris	NSH	FIA	1.8	3.9	2.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
boxelder	Acer negundo	WSH	Low	1.8	3.5	2.0	Sm. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	37
common persimmon	Diospyros virginiana	NSL	Low	1.8	3.5	2.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	2	38
loblolly pine	Pinus taeda	WDH	High	1.8	2.9	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	39
bigtooth aspen	Populus grandidentata	NSL	Medium	1.8	2.8	1.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	40
Norway spruce	Picea abies	NSH	FIA	2.9	2.7	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	41
black locust	Robinia pseudoacacia	NDH	Low	2.5	2.5	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	42
swamp chestnut oak	Quercus michauxii	NSL	Low	1.8	1.6	0.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	43
ailanthus	Ailanthus altissima	NSL	FIA	4.3	1.4	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
black ash	Fraxinus nigra	WSH	Medium	1.8	1.2	0.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	45
serviceberry	Amelanchier spp.	NSL	Low	1.8	1.1	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	46
yellow birch	Betula alleghaniensis	NDL	High	1.8	1.1	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
laurel oak	Quercus laurifolia	NDH	Medium	2.5	0.6	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	48
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	49
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	50
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	51
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	52
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	53
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	54
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			2	56
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	57
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	58
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	59
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	60
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	61
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	62
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	63
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Migrate +	3	65
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	66
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	67
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	68
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	72
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	73
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	74
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	75
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	76
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	77
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
American elm	Ulmus americana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	79