

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

sq. km sq. mi FIA Plots
 Area of Region 7,494.3 2,893.6 177

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	16	19	Increase	11	14	Very Good	5	6	Likely	2	2
Hickory	4			Medium	34	48	No Change	10	10	Good	6	10	Infill	6	11
Maple	2	Abundant	4	Low	28	12	Decrease	26	23	Fair	10	7	Migrate	7	10
Oak	14	Common	16	FIA	4		New	25	24	Poor	11	9			
Pine	3	Rare	31				Unknown	10	11	Very Poor	13	10			
Other	25	Absent	28							FIA Only	2	2			
	51		79		82	79		82	82	Unknown	6	7			
											53	51			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	56.9	58.4	60.2	60.4	
Average	56.9	58.7	60.9	63.5	
GFDL45	56.9	60.1	61.9	63.0	
GFDL85	56.9	59.8	63.1	66.8	
HAD45	56.9	58.9	61.8	63.0	
HAD85	56.9	59.1	62.4	66.2	
Growing Season	72.0	73.4	74.9	75.2	
May—Sep	72.0	73.5	75.8	78.8	
GFDL45	72.0	75.5	77.6	79.0	
GFDL85	72.0	75.4	79.0	83.1	
HAD45	72.0	74.1	76.7	78.0	
HAD85	72.0	73.9	77.5	81.3	
Coldest Month	34.4	36.5	37.7	38.2	
Average	34.4	37.0	38.1	39.5	
GFDL45	34.4	37.3	37.9	38.5	
GFDL85	34.4	36.8	37.9	39.4	
HAD45	34.4	35.4	37.4	37.7	
HAD85	34.4	36.2	37.7	39.5	
Warmest Month	77.9	79.4	80.2	80.2	
Average	77.9	79.5	81.0	82.1	
GFDL45	77.9	80.5	81.9	83.0	
GFDL85	77.9	81.6	83.6	85.9	
HAD45	77.9	80.3	81.7	82.2	
HAD85	77.9	80.3	82.1	84.4	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	44.4	48.0	50.2	50.4	
Total	44.4	50.0	49.9	56.1	
GFDL45	44.4	49.7	53.3	54.3	
GFDL85	44.4	47.7	53.3	54.5	
HAD45	44.4	47.7	48.5	46.8	
HAD85	44.4	52.3	46.8	48.2	
Growing Season	19.5	24.0	24.6	25.3	
May—Sep	19.5	24.2	23.7	26.5	
GFDL45	19.5	21.4	23.9	24.9	
GFDL85	19.5	20.9	23.8	24.4	
HAD45	19.5	21.8	20.9	18.3	
HAD85	19.5	23.0	19.2	18.1	

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	84.1	2698.5	29.2	No change	No change	Medium	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	89.6	1738.6	19.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
sweetgum	Liquidambar styraciflua	WDH	High	86	1045.0	11.7	No change	No change	Medium	Abundant	Good	Good			1	3
American holly	Ilex opaca	NSL	Medium	77.9	567.3	7.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
white oak	Quercus alba	WDH	Medium	55.5	404.9	7.0	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	5
blackgum	Nyssa sylvatica	WDL	Medium	81.4	370.4	4.4	Sm. dec.	No change	High	Common	Fair	Good			1	6
black cherry	Prunus serotina	WDL	Medium	43.8	213.5	5.7	No change	No change	Low	Common	Poor	Poor			0	7
yellow-poplar	Liriodendron tulipifera	WDH	High	39.6	211.5	5.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
southern red oak	Quercus falcata	WDL	Medium	53.1	182.9	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
Virginia pine	Pinus virginiana	NDH	High	26.9	129.9	3.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	10
sassafras	Sassafras albidum	WSL	Low	35.5	105.1	2.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	11
scarlet oak	Quercus coccinea	WDL	Medium	30.8	101.1	3.5	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	12
willow oak	Quercus phellos	NSL	Low	32.1	91.4	2.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
water oak	Quercus nigra	WDH	High	38.1	82.5	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
swamp chestnut oak	Quercus michauxii	NSL	Low	19.3	73.6	2.9	No change	No change	Medium	Common	Fair	Fair			1	15
American beech	Fagus grandifolia	WDH	High	24.2	71.0	3.1	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	16
black oak	Quercus velutina	WDH	High	19.3	69.3	3.1	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	1	17
green ash	Fraxinus pennsylvanica	WSH	Low	10.7	60.8	5.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
mockernut hickory	Carya alba	WDL	Medium	8.5	60.7	6.3	Sm. dec.	No change	High	Common	Fair	Good			1	19
sweetbay	Magnolia virginiana	NSL	Medium	27.4	55.7	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
white ash	Fraxinus americana	WDL	Medium	9.7	47.9	5.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	21
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	9.5	34.9	2.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	22
common persimmon	Diospyros virginiana	NSL	Low	7.8	30.5	2.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	23
bald cypress	Taxodium distichum	NSH	Medium	3.8	23.1	5.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	24
flowering dogwood	Cornus florida	WDL	Medium	11.1	21.1	1.7	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
northern red oak	Quercus rubra	WDH	Medium	10.1	20.1	1.4	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost	Infill +		2	26
eastern redcedar	Juniperus virginiana	WDH	Medium	6.4	12.6	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	9	12.5	1.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	28
chestnut oak	Quercus prinus	NDH	High	1.3	12.1	9.1	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	29
post oak	Quercus stellata	WDH	High	2.7	11.8	4.4	No change	Lg. inc.	High	Rare	Fair	Good			2	30
sycamore	Platanus occidentalis	NSL	Low	1.3	11.3	8.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	31
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	4	8.8	2.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	32
pin oak	Quercus palustris	NSH	Low	1.8	8.4	2.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	33
pignut hickory	Carya glabra	WDL	Medium	5.4	8.3	1.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	34
American elm	Ulmus americana	WDH	Medium	3	8.3	3.7	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	2	35
wild plum	Prunus americana	NSLX	FIA	1.3	7.2	5.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	36
shortleaf pine	Pinus echinata	WDH	High	2.6	7.0	2.6	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	2	37
river birch	Betula nigra	NSL	Low	2.5	5.6	1.9	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good		Infill ++	2	38
black ash	Fraxinus nigra	WSH	Medium	1.3	5.3	4.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	39
sand hickory	Carya pallida	NSL	FIA	5.3	5.2	1.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	40
black walnut	Juglans nigra	WDH	Low	1.3	4.4	3.3	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	41
overcup oak	Quercus lyrata	NSL	Medium	2.7	4.1	1.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	42
black willow	Salix nigra	NSH	Low	2.7	4.1	1.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	43
black locust	Robinia pseudoacacia	NDH	Low	1.3	2.6	1.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	44
bitternut hickory	Carya cordiformis	WSL	Low	1.3	2.5	1.9	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	45
red mulberry	Morus rubra	NSL	Low	1.3	2.3	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
swamp white oak	Quercus bicolor	NSL	Low	1.3	1.9	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			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
Siberian elm	Ulmus pumila	NDH	FIA	1.2	1.2	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	48
Norway maple	Acer platanoides	NSL	FIA	1.3	1.0	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	49
bigtooth aspen	Populus grandidentata	NSL	Medium	3.3	0.9	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
pawpaw	Asimina triloba	NSL	Low	1.4	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	51
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	52
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	53
pond pine	Pinus serotina	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	54
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	55
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown			3	56
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	57
gray birch	Betula populifolia	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	58
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	59
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	60
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	61
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	62
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	64
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	65
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	67
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	71
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	72
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	75
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	76
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	77
nuttall oak	Quercus texana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	78
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	80
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	81
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	82