

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	1,884.0	727.4	46

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	19	15	Increase	9	10	Very Good	1	2	Likely	0	0
Hickory	4			Medium	20	34	No Change	11	12	Good	11	12	Infill	8	11
Maple	3	Abundant	4	Low	18	9	Decrease	19	17	Fair	5	7	Migrate	5	6
Oak	5	Common	18	FIA	2		New	15	18	Poor	13	7		13	17
Pine	3	Rare	19				Unknown	5	2	Very Poor	7	8			
Other	24	Absent	18					59	59	FIA Only	1	1			
	41		59		59	58				Unknown	3	0			
											41	37			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	49.5	51.2	53.2	53.4	
	CCSM85	49.5	51.7	54.0	56.8	
	GFDL45	49.5	53.7	54.9	56.1	
	GFDL85	49.5	52.4	56.1	60.4	
	HAD45	49.5	52.1	55.4	57.0	
	HAD85	49.5	52.2	56.4	61.3	
Growing Season (May—Sep)	CCSM45	65.2	67.0	68.6	68.9	
	CCSM85	65.2	67.2	69.4	72.6	
	GFDL45	65.2	69.6	71.0	72.2	
	GFDL85	65.2	68.2	72.3	76.7	
	HAD45	65.2	67.7	70.7	72.8	
	HAD85	65.2	67.3	72.1	77.1	
Coldest Month Average	CCSM45	25.7	27.1	28.6	29.3	
	CCSM85	25.7	28.2	29.1	31.2	
	GFDL45	25.7	28.9	30.4	31.6	
	GFDL85	25.7	29.2	31.0	33.3	
	HAD45	25.7	27.7	30.1	30.5	
	HAD85	25.7	28.8	30.8	33.8	
Warmest Month Average	CCSM45	71.6	73.7	74.6	74.6	
	CCSM85	71.6	73.9	75.3	76.7	
	GFDL45	71.6	74.2	75.7	76.8	
	GFDL85	71.6	74.7	77.1	79.6	
	HAD45	71.6	74.3	75.9	77.0	
	HAD85	71.6	73.6	76.3	79.4	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.5	48.1	46.6	53.0	
	CCSM85	49.5	48.8	50.6	54.5	
	GFDL45	49.5	52.7	55.0	54.0	
	GFDL85	49.5	51.2	53.9	56.2	
	HAD45	49.5	50.3	54.9	53.7	
	HAD85	49.5	53.4	53.7	54.6	
Growing Season (May—Sep)	CCSM45	19.0	19.9	18.0	19.7	
	CCSM85	19.0	18.7	19.7	19.9	
	GFDL45	19.0	18.0	17.4	17.7	
	GFDL85	19.0	18.7	17.2	17.0	
	HAD45	19.0	19.6	20.2	19.4	
	HAD85	19.0	19.2	18.9	19.6	

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
red maple	Acer rubrum	WDH	High	91.2	2762.7	22.7	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
eastern white pine	Pinus strobus	WDH	High	81.9	1994.9	16.7	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	2
northern red oak	Quercus rubra	WDH	Medium	71.3	663.3	4.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
black oak	Quercus velutina	WDH	High	73.2	585.4	3.9	No change	No change	Medium	Abundant	Good	Good			1	4
eastern hemlock	Tsuga canadensis	NSH	High	55.8	342.2	5.2	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	5
sugar maple	Acer saccharum	WDH	High	26.5	333.5	2.9	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	6
scarlet oak	Quercus coccinea	WDL	Medium	27.8	300.6	5.6	Sm. inc.	No change	Medium	Common	Good	Fair			1	7
white oak	Quercus alba	WDH	Medium	54.3	248.8	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	8
blackgum	Nyssa sylvatica	WDL	Medium	49.7	208.3	4.1	No change	No change	High	Common	Good	Good			1	9
pignut hickory	Carya glabra	WDL	Medium	10.9	186.5	8.6	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	10
black cherry	Prunus serotina	WDL	Medium	35.3	185.3	4.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	11
white ash	Fraxinus americana	WDL	Medium	40.6	173.6	2.1	No change	No change	Low	Common	Poor	Poor			0	12
American beech	Fagus grandifolia	WDH	High	37.2	170.3	1.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
sweet birch	Betula lenta	NDH	High	36.3	127.2	2.0	No change	Lg. dec.	Low	Common	Poor	Very Poor			0	14
white spruce	Picea glauca	NSL	Medium	0.7	110.4	2.6	Very Lg. dec.	Very Lg. dec.	Medium	Common	Lost	Lost			0	15
red pine	Pinus resinosa	NSH	Medium	0.7	109.9	2.6	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	16
green ash	Fraxinus pennsylvanica	WSH	Low	10.2	105.6	6.1	No change	Lg. inc.	Medium	Common	Fair	Very Good	Infill +	Infill ++	1	17
shagbark hickory	Carya ovata	WSL	Medium	30.8	104.0	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	18
black willow	Salix nigra	NSH	Low	3.2	75.8	8.6	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor		Infill +	0	19
pitch pine	Pinus rigida	NSH	High	2.7	73.4	7.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	20
Norway maple	Acer platanoides	NSL	FIA	6.3	71.7	5.9	Unknown	Unknown	NA	Common	NNIS	NNIS			0	21
bigtooth aspen	Populus grandidentata	NSL	Medium	15.7	55.3	4.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +		0	22
paper birch	Betula papyrifera	WDH	High	19.4	43.1	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	23
American basswood	Tilia americana	WSL	Medium	7.4	36.5	0.4	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	24
yellow birch	Betula alleghaniensis	NDL	High	22.4	36.4	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
black walnut	Juglans nigra	WDH	Low	5.2	36.1	6.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
quaking aspen	Populus tremuloides	WDH	High	7.7	30.4	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	27
swamp white oak	Quercus bicolor	NSL	Low	14.8	29.6	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
black locust	Robinia pseudoacacia	NDH	Low	8.1	29.5	2.0	No change	No change	Medium	Rare	Poor	Poor			1	29
eastern redcedar	Juniperus virginiana	WDH	Medium	25	23.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	30
mockernut hickory	Carya alba	WDL	Medium	0.4	21.2	0.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	5	21.0	1.2	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	1	32
American elm	Ulmus americana	WDH	Medium	26.7	20.2	0.9	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	1	33
sassafras	Sassafras albidum	WSL	Low	13.2	17.1	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	34
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0.5	8.2	0.1	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	2	35
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	4.8	8.1	1.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	36
gray birch	Betula populifolia	NSL	Low	5.3	7.0	0.3	Sm. inc.	No change	Medium	Rare	Fair	Poor			1	37
pin cherry	Prunus pensylvanica	NSL	Low	4.8	6.0	1.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	38
butternut	Juglans cinerea	NSLX	FIA	1.2	3.2	0.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	39
bitternut hickory	Carya cordiformis	WSL	Low	5.3	2.7	0.5	Lg. dec.	No change	High	Rare	Poor	Fair		Infill +	2	40
serviceberry	Amelanchier spp.	NSL	Low	11.9	0.7	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	41
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	42
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	43
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	44
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	45
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	46
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	47

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Northern Research Station
Landscape Change Research Group
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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	48
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	49
American holly	Ilex opaca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	51
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	52
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	53
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	54
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	55
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	56
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	57
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	58
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	59