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

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	sq. km	sq. mi	FIA Plots
Area of Region	9,273.2	3,580.4	264

Species Information

The columns below provide breif 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
Ash	1
Hickory	4
Maple	5
Oak	6
Pine	5
Other	34
	55

Abundance	
Abundant	9
Common	18
Rare	28
Absent	21
	76

	Model Reliability	Adaptability
High	23	20
Medium	23	42
Low	24	12
FIA	7	
	77	**74**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	22	22
No Change	8	7
Decrease	18	19
New	16	17
Unknown	13	12
	77	**77**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	9	10
Good	12	12
Fair	9	9
Poor	9	7
Very Poor	8	7
FIA Only	4	4
Unknown	6	5
	57	**54**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	3	3
Infill	6	9
Migrate	5	11
	14	**23**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	46.4	48.4	50.7	50.9
	CCSM85	46.4	48.8	51.3	54.6
	GFDL45	46.4	49.3	52.4	53.6
	GFDL85	46.4	49.9	53.7	58.0
	HAD45	46.4	49.4	52.8	54.5
	HAD85	46.4	49.5	53.8	59.0
Growing Season May—Sep	CCSM45	63.1	65.2	67.1	67.6
	CCSM85	63.1	65.4	68.0	71.9
	GFDL45	63.1	66.1	70.1	71.5
	GFDL85	63.1	67.2	71.5	76.1
	HAD45	63.1	66.4	69.3	71.6
	HAD85	63.1	65.9	70.8	76.6
Coldest Month Average	CCSM45	20.9	22.8	24.6	25.0
	CCSM85	20.9	23.4	24.6	26.7
	GFDL45	20.9	24.1	25.4	26.2
	GFDL85	20.9	24.2	25.8	27.9
	HAD45	20.9	22.8	25.6	25.8
	HAD85	20.9	24.0	26.1	29.0
Warmest Month Average	CCSM45	68.9	71.4	72.5	72.8
	CCSM85	68.9	71.7	73.4	75.5
	GFDL45	68.9	71.9	74.1	75.3
	GFDL85	68.9	73.2	75.7	78.7
	HAD45	68.9	72.6	74.2	75.7
	HAD85	68.9	72.5	75.4	79.5

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	45.8	47.1	47.2	51.2
	CCSM85	45.8	47.5	50.0	52.2
	GFDL45	45.8	50.7	53.3	52.5
	GFDL85	45.8	48.1	52.3	55.1
	HAD45	45.8	47.8	48.8	48.1
	HAD85	45.8	49.6	48.2	51.3
Growing Season May—Sep	CCSM45	21.4	23.2	23.0	24.5
	CCSM85	21.4	22.5	24.0	23.7
	GFDL45	21.4	22.1	22.2	23.0
	GFDL85	21.4	21.2	22.1	22.6
	HAD45	21.4	22.5	20.5	20.7
	HAD85	21.4	21.7	20.5	21.5

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
red maple	Acer rubrum	WDH	High	94.8	2852.4	22.7	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
sugar maple	Acer saccharum	WDH	High	58.4	919.6	12.0	No change	No change	High	Abundant	Very Good	Very Good			1	2
eastern hemlock	Tsuga canadensis	NSH	High	52.7	857.2	12.3	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	3
American beech	Fagus grandifolia	WDH	High	50.1	685.0	9.8	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
chestnut oak	Quercus prinus	NDH	High	41.5	610.3	12.3	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	5
white oak	Quercus alba	WDH	Medium	38.7	595.7	11.4	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	6
white ash	Fraxinus americana	WDL	Medium	61.9	590.5	6.7	Sm. inc.	No change	Low	Abundant	Good	Fair			1	7
black cherry	Prunus serotina	WDL	Medium	59.9	580.7	6.6	Sm. inc.	No change	Low	Abundant	Good	Fair			1	8
sweet birch	Betula lenta	NDH	High	64.7	506.5	5.7	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	9
northern red oak	Quercus rubra	WDH	Medium	51.7	366.7	5.5	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
eastern white pine	Pinus strobus	WDH	High	28.1	303.5	6.7	Sm. inc.	No change	Low	Common	Fair	Poor			1	11
scarlet oak	Quercus coccinea	WDL	Medium	29.8	261.6	6.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
yellow birch	Betula alleghaniensis	NDL	High	46.9	242.4	4.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	13
sassafras	Sassafras albidum	WSL	Low	23.8	131.4	4.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
quaking aspen	Populus tremuloides	WDH	High	18.5	126.9	5.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
black locust	Robinia pseudoacacia	NDH	Low	7.2	120.2	9.4	No change	No change	Medium	Common	Fair	Fair			1	16
white spruce	Picea glauca	NSL	Medium	1.4	108.1	39.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
bigtooth aspen	Populus grandidentata	NSL	Medium	17.9	104.4	4.7	Sm. inc.	Sm. dec.	Medium	Common	Good	Poor			1	18
pignut hickory	Carya glabra	WDL	Medium	21.2	99.4	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	33.2	96.4	2.2	No change	Sm. inc.	High	Common	Good	Very Good			1	20
black oak	Quercus velutina	WDH	High	17.9	90.4	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
blackgum	Nyssa sylvatica	WDL	Medium	20.6	89.1	3.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
serviceberry	Amelanchier spp.	NSL	Low	30.5	87.1	1.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	23
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	5.2	70.8	13.1	Unknown	Unknown	Medium	Common	FIA Only	FIA Only			0	24
Norway spruce	Picea abies	NSH	FIA	2.7	69.6	6.8	Unknown	Unknown	NA	Common	NNIS	NNIS			0	25
American basswood	Tilia americana	WSL	Medium	21.7	67.8	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
Scots pine	Pinus sylvestris	NSH	FIA	3.3	54.9	12.2	Unknown	Unknown	NA	Common	NNIS	NNIS			0	27
eastern cottonwood	Populus deltoides	NSH	Low	3.2	49.3	15.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	28
bitternut hickory	Carya cordiformis	WSL	Low	11.6	45.2	3.7	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	29
shagbark hickory	Carya ovata	WSL	Medium	15.4	39.8	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
red spruce	Picea rubens	NDH	High	7.1	38.3	3.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	31
red pine	Pinus resinosa	NSH	Medium	3.4	36.5	6.9	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	32
yellow-poplar	Liriodendron tulipifera	WDH	High	9.2	30.7	3.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	33
ailanthus	Ailanthus altissima	NSL	FIA	2.2	29.7	13.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
gray birch	Betula populifolia	NSL	Low	14.7	27.3	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
American elm	Ulmus americana	WDH	Medium	9.6	25.0	1.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	36
paper birch	Betula papyrifera	WDH	High	2.5	24.9	3.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	37
pitch pine	Pinus rigida	NSH	High	8.7	24.8	2.3	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			1	38
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	13.2	22.8	1.4	No change	Lg. inc.	Medium	Rare	Poor	Good			1	39
pin cherry	Prunus pensylvanica	NSL	Low	4.3	20.1	4.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	40
chokecherry	Prunus virginiana	NSLX	FIA	1.1	19.3	17.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	41
striped maple	Acer pensylvanicum	NSL	Medium	10.8	18.3	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
sycamore	Platanus occidentalis	NSL	Low	2.2	13.2	6.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	43
silver maple	Acer saccharinum	NSH	Low	1.1	13.2	12.2	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	44
tamarack (native)	Larix laricina	NSH	High	0.8	12.9	9.0	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	45
mockernut hickory	Carya alba	WDL	Medium	4.6	10.6	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	46
black walnut	Juglans nigra	WDH	Low	3.3	8.9	1.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	47

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boxelder	Acer negundo	WSH	Low	2.2	6.7	3.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	48
butternut	Juglans cinerea	NSLX	FIA	2.2	4.9	2.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	49
eastern redcedar	Juniperus virginiana	WDH	Medium	1.1	3.8	3.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	50
river birch	Betula nigra	NSL	Low	0.3	3.3	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
Virginia pine	Pinus virginiana	NDH	High	0.5	2.7	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	52
flowering dogwood	Cornus florida	WDL	Medium	1.1	1.6	1.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair		Infill +	2	53
slippery elm	Ulmus rubra	WSL	Low	2.2	1.1	0.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	54
American chestnut	Castanea dentata	NSLX	FIA	1.1	0.6	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	55
balsam fir	Abies balsamea	NDH	High	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	56
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	57
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	58
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	59
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	60
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	61
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	62
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	63
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	64
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	65
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	71
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	72
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	73
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	74
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	75
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	76
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77