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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	8,532.9	3,294.6	341

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	2
Hickory	0
Maple	5
Oak	4
Pine	3
Other	21
	35

Abundance	
Abundant	7
Common	17
Rare	11
Absent	16
	51

	Model Reliability	Adaptability
High	13	15
Medium	21	28
Low	15	8
FIA	2	
	51	**51**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	14	13
No Change	7	8
Decrease	12	12
New	15	15
Unknown	3	3
	51	**51**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	7	6
Good	10	10
Fair	5	7
Poor	7	5
Very Poor	2	1
FIA Only	2	2
Unknown	1	1
	34	**32**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	1	1
Infill	5	5
Migrate	6	7
	12	**13**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	41.1	42.8	45.8	46.2
	CCSM85	41.1	43.6	47.0	50.7
	GFDL45	41.1	44.1	46.6	48.2
	GFDL85	41.1	44.3	47.8	52.8
	HAD45	41.1	44.1	47.9	49.8
	HAD85	41.1	44.7	49.1	54.9
Growing Season May—Sep	CCSM45	62.5	64.2	66.8	67.3
	CCSM85	62.5	65.2	68.4	72.5
	GFDL45	62.5	65.6	68.8	70.9
	GFDL85	62.5	66.2	69.9	75.6
	HAD45	62.5	65.5	68.5	70.6
	HAD85	62.5	65.4	69.7	75.6
Coldest Month Average	CCSM45	6.6	8.5	10.7	11.1
	CCSM85	6.6	8.3	10.8	13.3
	GFDL45	6.6	10.4	12.0	12.6
	GFDL85	6.6	10.9	12.6	15.8
	HAD45	6.6	8.5	12.7	12.4
	HAD85	6.6	12.1	15.6	19.4
Warmest Month Average	CCSM45	69.1	71.2	72.7	73.3
	CCSM85	69.1	72.6	74.7	77.2
	GFDL45	69.1	72.5	74.0	75.7
	GFDL85	69.1	73.1	75.2	78.4
	HAD45	69.1	72.4	74.0	75.7
	HAD85	69.1	72.7	75.1	79.1

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	27.0	27.9	28.0	27.3
	CCSM85	27.0	27.2	26.9	27.0
	GFDL45	27.0	30.1	31.8	29.3
	GFDL85	27.0	30.3	33.1	32.0
	HAD45	27.0	29.1	27.3	29.1
	HAD85	27.0	29.1	28.2	30.1
Growing Season May—Sep	CCSM45	17.3	17.2	16.7	16.6
	CCSM85	17.3	16.7	15.6	15.0
	GFDL45	17.3	19.6	20.0	18.2
	GFDL85	17.3	19.6	20.5	19.1
	HAD45	17.3	17.8	16.2	16.5
	HAD85	17.3	17.6	15.3	15.2

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
quaking aspen	Populus tremuloides	WDH	High	93.3	2698.9	20.8	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
bur oak	Quercus macrocarpa	NDH	Medium	89.7	1272.4	9.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
northern red oak	Quercus rubra	WDH	Medium	75.4	892.4	9.0	No change	Sm. dec.	High	Abundant	Very Good	Good			1	3
red pine	Pinus resinosa	NSH	Medium	49.1	827.7	13.9	No change	No change	Low	Abundant	Fair	Fair			0	4
jack pine	Pinus banksiana	NSH	Medium	53	753.2	11.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
paper birch	Betula papyrifera	WDH	High	73.2	731.4	7.8	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	6
red maple	Acer rubrum	WDH	High	61.4	535.7	6.3	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	7
black ash	Fraxinus nigra	WSH	Medium	55.7	487.9	5.6	No change	No change	Low	Common	Poor	Poor			0	8
bigtooth aspen	Populus grandidentata	NSL	Medium	50.9	468.5	7.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	9
green ash	Fraxinus pennsylvanica	WSH	Low	56.8	464.2	5.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
American basswood	Tilia americana	WSL	Medium	38.3	374.1	6.9	Sm. inc.	No change	Medium	Common	Good	Fair			1	11
northern pin oak	Quercus ellipsoidalis	NSH	Medium	43.2	374.0	6.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
tamarack (native)	Larix laricina	NSH	High	15.9	288.5	10.0	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
American elm	Ulmus americana	WDH	Medium	56.9	267.8	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
eastern white pine	Pinus strobus	WDH	High	25.5	196.1	5.6	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	15
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	48.3	186.6	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	16
sugar maple	Acer saccharum	WDH	High	25.1	115.6	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
balsam fir	Abies balsamea	NDH	High	23.7	114.6	3.6	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	18
northern white-cedar	Thuja occidentalis	WSH	High	3.3	96.4	11.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	19
silver maple	Acer saccharinum	NSH	Low	3.5	86.2	24.5	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	20
white spruce	Picea glauca	NSL	Medium	14.9	85.1	4.4	Sm. dec.	No change	Medium	Common	Poor	Fair			1	21
balsam poplar	Populus balsamifera	NSH	Medium	17.7	55.2	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	22
boxelder	Acer negundo	WSH	Low	16.6	55.0	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
black cherry	Prunus serotina	WDL	Medium	31.5	54.2	1.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	24
chokecherry	Prunus virginiana	NSLX	FIA	30.2	25.9	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
yellow birch	Betula alleghaniensis	NDL	High	2.2	24.7	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	26
black spruce	Picea mariana	NSH	High	7.5	19.8	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	27
butternut	Juglans cinerea	NSLX	FIA	2.2	16.0	3.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	28
pin cherry	Prunus pensylvanica	NSL	Low	11.4	12.8	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	29
slippery elm	Ulmus rubra	WSL	Low	3.8	11.8	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	30
serviceberry	Amelanchier spp.	NSL	Low	11.7	9.3	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	31
white oak	Quercus alba	WDH	Medium	3.4	8.4	2.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	32
eastern cottonwood	Populus deltoides	NSH	Low	1.8	7.2	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	33
mountain maple	Acer spicatum	NSL	Low	6.6	4.3	0.5	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			1	34
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	3.5	1.3	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	35
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	36
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	37
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	38
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	39
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	40
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	41
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	42
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	45
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	46
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	47

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post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	48
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	49
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	51