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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	6,451.7	2,491.0	307

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	4
Oak	2
Pine	3
Other	19
	30

Abundance	
Abundant	6
Common	7
Rare	17
Absent	18
	48

	Model Reliability	Adaptability
High	11	14
Medium	16	25
Low	18	9
FIA	3	
	48	**48**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	17	18
No Change	4	3
Decrease	6	6
New	17	16
Unknown	4	5
	48	**48**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	2	2
Good	14	16
Fair	6	6
Poor	3	1
Very Poor	2	1
FIA Only	3	3
Unknown	1	2
	31	**31**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	3	3
Infill	8	8
Migrate	7	9
	18	**20**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	38.4	39.9	42.7	43.1
	CCSM85	38.4	40.7	44.1	47.7
	GFDL45	38.4	41.6	44.1	45.8
	GFDL85	38.4	41.6	45.5	50.8
	HAD45	38.4	41.7	45.3	47.4
	HAD85	38.4	42.2	46.4	52.6
Growing Season May—Sep	CCSM45	60.2	61.8	64.2	64.7
	CCSM85	60.2	62.8	65.7	69.6
	GFDL45	60.2	63.9	67.0	68.9
	GFDL85	60.2	64.0	68.1	73.9
	HAD45	60.2	63.4	66.3	68.8
	HAD85	60.2	63.3	67.2	73.7
Coldest Month Average	CCSM45	2.6	4.3	6.6	6.8
	CCSM85	2.6	3.4	6.2	8.5
	GFDL45	2.6	6.2	8.1	9.0
	GFDL85	2.6	7.3	9.1	12.7
	HAD45	2.6	4.9	9.1	8.8
	HAD85	2.6	8.3	11.6	15.9
Warmest Month Average	CCSM45	67.0	68.8	70.3	70.8
	CCSM85	67.0	70.2	72.3	74.7
	GFDL45	67.0	71.0	72.5	74.1
	GFDL85	67.0	71.2	73.6	76.6
	HAD45	67.0	70.5	71.9	73.8
	HAD85	67.0	70.6	72.7	76.8

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	25.0	25.5	25.6	24.7
	CCSM85	25.0	24.9	25.2	24.6
	GFDL45	25.0	27.2	29.0	28.3
	GFDL85	25.0	29.0	29.5	30.2
	HAD45	25.0	26.2	24.4	25.7
	HAD85	25.0	25.3	25.6	27.0
Growing Season May—Sep	CCSM45	17.1	17.2	16.8	16.2
	CCSM85	17.1	16.4	16.2	15.3
	GFDL45	17.1	18.8	19.6	19.2
	GFDL85	17.1	19.9	20.0	19.6
	HAD45	17.1	17.1	15.0	15.2
	HAD85	17.1	16.2	15.0	14.5

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
tamarack (native)	Larix laricina	NSH	High	79.4	2814.0	26.9	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	1
black spruce	Picea mariana	NSH	High	72.3	2366.9	25.9	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	2
quaking aspen	Populus tremuloides	WDH	High	66.5	1735.6	16.1	No change	No change	Medium	Abundant	Good	Good			1	3
northern white-cedar	Thuja occidentalis	WSH	High	46.2	1121.7	15.3	Sm. dec.	No change	Medium	Abundant	Fair	Good			1	4
balsam poplar	Populus balsamifera	NSH	Medium	58.3	786.9	8.8	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
black ash	Fraxinus nigra	WSH	Medium	53.9	552.4	6.5	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	6
paper birch	Betula papyrifera	WDH	High	68.3	417.9	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
balsam fir	Abies balsamea	NDH	High	52.2	395.1	4.7	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	8
white spruce	Picea glauca	NSL	Medium	41.6	162.7	2.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
jack pine	Pinus banksiana	NSH	Medium	6.5	161.4	10.2	No change	No change	High	Common	Good	Good			1	10
red pine	Pinus resinosa	NSH	Medium	5.8	95.1	7.3	No change	Sm. inc.	Low	Common	Poor	Fair	Infill +	Infill +	1	11
green ash	Fraxinus pennsylvanica	WSH	Low	25.4	88.0	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
American basswood	Tilia americana	WSL	Medium	14.2	60.0	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	13
eastern white pine	Pinus strobus	WDH	High	6.6	45.5	4.6	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	14
sugar maple	Acer saccharum	WDH	High	5.8	43.8	7.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	15
bur oak	Quercus macrocarpa	NDH	Medium	15.3	38.6	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	16
red maple	Acer rubrum	WDH	High	8.3	37.9	3.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	17
American elm	Ulmus americana	WDH	Medium	20.3	33.5	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	18
boxelder	Acer negundo	WSH	Low	9.8	19.4	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	19
chokecherry	Prunus virginiana	NSLX	FIA	17.1	16.1	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	20
mountain maple	Acer spicatum	NSL	Low	9.5	11.0	0.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	21
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.1	6.9	2.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	22
serviceberry	Amelanchier spp.	NSL	Low	8.3	6.4	0.4	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	23
northern red oak	Quercus rubra	WDH	Medium	3.1	5.0	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	24
peachleaf willow	Salix amygdaloides	NSLX	FIA	1	3.6	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
black cherry	Prunus serotina	WDL	Medium	1.5	1.9	1.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	26
bigtooth aspen	Populus grandidentata	NSL	Medium	1.5	1.1	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	27
American mountain-ash	Sorbus americana	NSL	Low	1.5	0.7	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	28
hackberry	Celtis occidentalis	WDH	Medium	0.5	0.4	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	29
wild plum	Prunus americana	NSLX	FIA	1.3	0.3	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	30
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	31
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	32
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	33
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	34
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	35
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	36
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	37
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	38
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	39
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	40
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	41
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Migrate +		3	42
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate +	3	44
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	45
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	46
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	47

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slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	48