RhodeIsland

States

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	2,784.4	1,075.1	122

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	3
Maple	4
Oak	6
Pine	4
Other	25
	44

Abundance	
Abundant	6
Common	17
Rare	21
Absent	22
	66

	Model Reliability	Adaptability
High	23	19
Medium	24	36
Low	19	11
FIA	2	
	68	**66**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	18	21
No Change	9	5
Decrease	15	16
New	20	20
Unknown	6	6
	68	**68**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	9	8
Good	13	16
Fair	5	3
Poor	8	7
Very Poor	6	7
FIA Only	1	1
Unknown	4	4
	46	**46**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	1	1
Infill	6	8
Migrate	5	11
	12	**20**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	50.2	51.8	53.8	54.0
	CCSM85	50.2	52.3	54.6	57.3
	GFDL45	50.2	53.2	55.4	56.5
	GFDL85	50.2	53.0	56.6	60.6
	HAD45	50.2	52.3	55.8	57.4
	HAD85	50.2	52.1	56.6	61.1
Growing Season May—Sep	CCSM45	65.8	67.6	69.1	69.4
	CCSM85	65.8	67.7	70.0	73.1
	GFDL45	65.8	68.9	71.4	72.5
	GFDL85	65.8	68.7	72.7	76.8
	HAD45	65.8	67.8	71.1	73.2
	HAD85	65.8	66.9	72.1	76.6
Coldest Month Average	CCSM45	26.6	27.8	29.3	30.0
	CCSM85	26.6	28.8	29.9	31.7
	GFDL45	26.6	30.0	31.2	32.3
	GFDL85	26.6	30.0	31.7	33.8
	HAD45	26.6	27.9	30.3	30.7
	HAD85	26.6	28.9	30.9	33.6
Warmest Month Average	CCSM45	72.1	74.0	74.8	74.8
	CCSM85	72.1	74.1	75.5	77.0
	GFDL45	72.1	74.7	76.2	77.1
	GFDL85	72.1	75.3	77.6	80.0
	HAD45	72.1	74.2	75.8	76.9
	HAD85	72.1	73.1	75.7	78.7

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	49.9	49.6	49.1	54.6
	CCSM85	49.9	50.7	52.2	56.3
	GFDL45	49.9	53.2	56.4	54.3
	GFDL85	49.9	52.1	55.2	57.1
	HAD45	49.9	50.6	55.0	54.6
	HAD85	49.9	54.0	54.9	56.4
Growing Season May—Sep	CCSM45	19.4	21.1	19.7	21.3
	CCSM85	19.4	20.3	20.9	20.9
	GFDL45	19.4	18.8	18.6	19.0
	GFDL85	19.4	19.4	18.4	18.7
	HAD45	19.4	19.7	20.4	19.6
	HAD85	19.4	19.8	19.8	20.4

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	96.1	3464.6	20.1	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
eastern white pine	Pinus strobus	WDH	High	67.9	1306.0	9.4	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	2
northern red oak	Quercus rubra	WDH	Medium	74.9	1079.8	8.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
scarlet oak	Quercus coccinea	WDL	Medium	73.5	1003.7	9.0	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	4
white oak	Quercus alba	WDH	Medium	87.5	962.6	6.2	No change	No change	High	Abundant	Very Good	Very Good			1	5
black oak	Quercus velutina	WDH	High	77.1	962.2	6.8	No change	No change	Medium	Abundant	Good	Good			1	6
sweet birch	Betula lenta	NDH	High	60.3	393.8	4.0	No change	No change	Low	Common	Poor	Poor			0	7
black cherry	Prunus serotina	WDL	Medium	38.7	293.7	5.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	8
blackgum	Nyssa sylvatica	WDL	Medium	55.6	210.4	2.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
white ash	Fraxinus americana	WDL	Medium	53	191.5	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	10
yellow birch	Betula alleghaniensis	NDL	High	45.9	186.2	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
pitch pine	Pinus rigida	NSH	High	24.9	178.8	6.3	No change	Lg. dec.	Medium	Common	Fair	Poor			1	12
eastern hemlock	Tsuga canadensis	NSH	High	12.9	160.4	3.3	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor	Infill +		0	13
gray birch	Betula populifolia	NSL	Low	30.7	144.3	2.5	No change	Sm. inc.	Medium	Common	Fair	Good			1	14
sassafras	Sassafras albidum	WSL	Low	46.3	93.9	1.6	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1	15
mockernut hickory	Carya alba	WDL	Medium	25.5	83.7	1.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
pignut hickory	Carya glabra	WDL	Medium	26	82.0	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
eastern redcedar	Juniperus virginiana	WDH	Medium	24.3	75.1	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
sugar maple	Acer saccharum	WDH	High	37.6	72.1	1.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
pin cherry	Prunus pensylvanica	NSL	Low	8.5	70.6	6.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	20
quaking aspen	Populus tremuloides	WDH	High	11.2	65.9	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	21
green ash	Fraxinus pennsylvanica	WSH	Low	11.6	55.0	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
chestnut oak	Quercus prinus	NDH	High	13.1	51.8	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	23
American beech	Fagus grandifolia	WDH	High	23.9	46.3	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	24
shagbark hickory	Carya ovata	WSL	Medium	21.5	43.1	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
bigtooth aspen	Populus grandidentata	NSL	Medium	33	39.9	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	26
hackberry	Celtis occidentalis	WDH	Medium	1.6	34.7	4.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	27
American elm	Ulmus americana	WDH	Medium	13.5	31.2	1.5	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	1	28
silver maple	Acer saccharinum	NSH	Low	1.8	28.6	4.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	29
balsam poplar	Populus balsamifera	NSH	Medium	3.6	27.2	7.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
balsam fir	Abies balsamea	NDH	High	3.6	26.2	7.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	31
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	2.7	17.1	3.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	32
swamp white oak	Quercus bicolor	NSL	Low	7.1	10.5	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
yellow-poplar	Liriodendron tulipifera	WDH	High	6	10.0	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	34
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	14.8	8.7	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	35
boxelder	Acer negundo	WSH	Low	1.8	7.6	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	36
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.2	6.2	0.9	No change	Lg. inc.	High	Rare	Fair	Good		Infill ++	1	37
American holly	Ilex opaca	NSL	Medium	3.6	3.8	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	1	38
American chestnut	Castanea dentata	NSLX	FIA	12.5	3.7	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	39
red pine	Pinus resinosa	NSH	Medium	1	3.4	0.3	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	40
black locust	Robinia pseudoacacia	NDH	Low	3.6	1.6	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
American mountain-ash	Sorbus americana	NSL	Low	2.4	1.6	0.3	No change	No change	Low	Rare	Very Poor	Very Poor			0	42
Scots pine	Pinus sylvestris	NSH	FIA	3.6	1.4	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	43
paper birch	Betula papyrifera	WDH	High	1.8	0.8	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
tamarack (native)	Larix laricina	NSH	High	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	45
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	46
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	47

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Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	48
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	49
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	50
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	51
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	52
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	53
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	54
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	55
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	56
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	57
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	NA	Absent	Unknown	Unknown			0	58
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	59
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	61
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	62
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	63
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	64
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	65
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	66
American basswood	Tilia americana	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	67
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	68