Saint Croix

National Park
Climate Change Atlas Tree Species
Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service
Northern Research Station
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Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	8,600.0	3,320.5	520

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	3
Hickory	1
Maple	4
Oak	6
Pine	4
Other	25
	43

Abundance	
Abundant	9
Common	16
Rare	18
Absent	19
	62

	Model Reliability	Adaptability
High	16	20
Medium	22	31
Low	21	10
FIA	3	
	62	**61**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	14	14
No Change	14	14
Decrease	12	12
New	17	17
Unknown	5	5
	62	**62**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	7	7
Good	13	13
Fair	8	7
Poor	7	8
Very Poor	4	4
FIA Only	2	2
Unknown	2	2
	43	**43**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	2	1
Infill	6	6
Migrate	4	7
	12	**14**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	42.0	43.7	46.9	47.0
	CCSM85	42.0	44.7	47.9	51.5
	GFDL45	42.0	45.0	47.8	49.3
	GFDL85	42.0	45.4	49.0	54.2
	HAD45	42.0	45.2	48.9	50.8
	HAD85	42.0	45.8	50.1	55.8
Growing Season May—Sep	CCSM45	62.4	64.2	66.8	67.1
	CCSM85	62.4	65.1	68.1	72.3
	GFDL45	62.4	65.8	69.4	71.5
	GFDL85	62.4	66.6	70.5	76.5
	HAD45	62.4	65.7	68.7	70.9
	HAD85	62.4	65.7	70.2	76.0
Coldest Month Average	CCSM45	9.1	10.6	13.1	13.4
	CCSM85	9.1	10.7	13.0	15.5
	GFDL45	9.1	12.6	14.5	14.9
	GFDL85	9.1	13.2	15.0	18.2
	HAD45	9.1	10.8	15.2	15.0
	HAD85	9.1	14.5	17.7	21.4
Warmest Month Average	CCSM45	68.9	70.9	72.4	72.9
	CCSM85	68.9	72.1	74.1	76.7
	GFDL45	68.9	72.5	74.0	75.7
	GFDL85	68.9	73.3	75.4	78.8
	HAD45	68.9	72.5	74.0	75.7
	HAD85	68.9	73.1	75.4	79.3

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	31.3	32.5	32.1	32.1
	CCSM85	31.3	30.7	31.0	31.4
	GFDL45	31.3	34.7	36.1	33.6
	GFDL85	31.3	34.4	37.6	36.2
	HAD45	31.3	33.2	32.2	33.2
	HAD85	31.3	32.8	33.6	35.2
Growing Season May—Sep	CCSM45	19.5	19.8	18.8	19.0
	CCSM85	19.5	18.8	18.0	17.2
	GFDL45	19.5	21.6	21.6	19.7
	GFDL85	19.5	21.4	22.2	19.8
	HAD45	19.5	19.5	17.8	18.2
	HAD85	19.5	19.1	17.3	17.3

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	91.9	1406.3	15.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
red maple	Acer rubrum	WDH	High	94.2	915.6	9.7	No change	No change	High	Abundant	Very Good	Very Good			1	2
northern pin oak	Quercus ellipsoidalis	NSH	Medium	57	777.8	13.7	No change	Sm. dec.	High	Abundant	Very Good	Good			1	3
red pine	Pinus resinosa	NSH	Medium	51.2	644.4	12.6	No change	No change	Low	Abundant	Fair	Fair			0	4
sugar maple	Acer saccharum	WDH	High	62.8	591.0	9.4	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
northern red oak	Quercus rubra	WDH	Medium	75.6	561.6	7.4	No change	No change	High	Abundant	Very Good	Very Good			1	6
bur oak	Quercus macrocarpa	NDH	Medium	61.6	533.8	8.7	No change	No change	High	Abundant	Very Good	Very Good			1	7
jack pine	Pinus banksiana	NSH	Medium	40.7	520.3	12.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	8
black ash	Fraxinus nigra	WSH	Medium	58.1	505.1	8.7	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	9
bigtooth aspen	Populus grandidentata	NSL	Medium	55.8	378.2	6.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
American basswood	Tilia americana	WSL	Medium	66.3	374.8	5.7	No change	No change	Medium	Common	Fair	Fair			1	11
eastern white pine	Pinus strobus	WDH	High	48.8	328.0	6.7	Sm. inc.	No change	Low	Common	Fair	Poor			1	12
paper birch	Betula papyrifera	WDH	High	82.6	327.7	4.0	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
tamarack (native)	Larix laricina	NSH	High	38.4	297.1	7.7	No change	No change	Low	Common	Poor	Poor			0	14
green ash	Fraxinus pennsylvanica	WSH	Low	55.8	247.8	4.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
balsam fir	Abies balsamea	NDH	High	41.9	227.6	5.4	Sm. dec.	No change	Low	Common	Poor	Poor			0	16
black spruce	Picea mariana	NSH	High	30.2	186.5	6.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
American elm	Ulmus americana	WDH	Medium	52.3	151.7	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
white oak	Quercus alba	WDH	Medium	30.2	151.4	5.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	67.4	148.1	2.2	No change	Sm. inc.	High	Common	Good	Very Good			1	20
white spruce	Picea glauca	NSL	Medium	27.9	114.9	4.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
black cherry	Prunus serotina	WDL	Medium	54.7	101.3	1.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	22
yellow birch	Betula alleghaniensis	NDL	High	27.9	67.9	2.4	No change	No change	Medium	Common	Fair	Fair			1	23
northern white-cedar	Thuja occidentalis	WSH	High	14	60.2	4.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
boxelder	Acer negundo	WSH	Low	8.1	51.2	6.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	25
silver maple	Acer saccharinum	NSH	Low	5.8	41.6	7.2	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	26
white ash	Fraxinus americana	WDL	Medium	23.3	38.3	1.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	27
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	38.4	37.6	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
eastern cottonwood	Populus deltoides	NSH	Low	2.3	37.4	16.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
slippery elm	Ulmus rubra	WSL	Low	5.8	26.9	4.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	30
Scots pine	Pinus sylvestris	NSH	FIA	2.3	24.7	10.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	31
eastern hemlock	Tsuga canadensis	NSH	High	8.1	19.5	2.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	32
balsam poplar	Populus balsamifera	NSH	Medium	4.7	18.9	4.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
bitternut hickory	Carya cordiformis	WSL	Low	10.5	17.8	1.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	34
serviceberry	Amelanchier spp.	NSL	Low	18.6	14.6	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
eastern redcedar	Juniperus virginiana	WDH	Medium	1.2	14.0	12.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	36
butternut	Juglans cinerea	NSLX	FIA	8.1	13.9	1.7	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	37
chokecherry	Prunus virginiana	NSLX	FIA	14	6.8	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
pin cherry	Prunus pensylvanica	NSL	Low	4.7	3.6	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	39
swamp white oak	Quercus bicolor	NSL	Low	2.3	2.2	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
hackberry	Celtis occidentalis	WDH	Medium	1.2	1.3	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	41
black oak	Quercus velutina	WDH	High	1.2	0.9	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	42
black walnut	Juglans nigra	WDH	Low	1.2	0.3	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	43
mountain maple	Acer spicatum	NSL	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown	Likely +		3	44
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	45
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	46
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	47

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black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	48
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	49
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	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			3	52
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	53
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	54
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	55
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	56
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	57
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	58
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	59
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate +	3	60
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	61
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	62