

# HUC 040201 Southcentral Lake Superior

## HUC 6 Watershed

### Climate Change Atlas Tree Species

#### Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service  
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Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	13,290	5,131.2	754

### Species Information

The columns below provide brief 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	Abundance		Model		Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential		
		High	Common	Reliability	Adaptability	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT	
						RCP45	RCP85	RCP45	RCP85	RCP45	RCP85	
Ash	3											
Hickory	0											
Maple	6	Abundant	7	High	20	19	Increase	16	16	Very Good	4	4
Oak	2	Common	14	Medium	26	37	No Change	7	5	Good	15	13
Pine	4	Rare	16	Low	23	14	Decrease	11	13	Fair	5	7
Other	22	Absent	35	FIA	3		New	29	33	Poor	4	5
	<b>37</b>		<b>72</b>		<b>72</b>	<b>70</b>	Unknown	9	5	Very Poor	5	3
								<b>72</b>	<b>72</b>	FIA Only	1	1
										Unknown	6	2
											<b>40</b>	<b>35</b>

### Potential Changes in Climate Variables

#### Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	38.2	39.3	41.5	41.5	
Average	CCSM85	38.2	39.9	42.1	44.7	
	GFDL45	38.2	40.5	42.7	43.7	
	GFDL85	38.2	40.8	43.5	47.3	
	HAD45	38.2	40.6	43.0	44.4	
	HAD85	38.2	40.9	43.7	48.1	
Growing Season	CCSM45	51.6	52.6	54.4	54.5	
	CCSM85	51.6	53.1	55.0	57.8	
May—Sep	GFDL45	51.6	54.6	57.5	59.1	
	GFDL85	51.6	55.1	58.4	63.0	
	HAD45	51.6	53.9	55.5	57.2	
	HAD85	51.6	53.7	56.5	60.7	
Coldest Month	CCSM45	17.7	18.6	20.5	20.2	
	CCSM85	17.7	18.9	20.6	22.4	
Average	GFDL45	17.7	19.5	20.9	21.3	
	GFDL85	17.7	20.2	21.4	23.6	
	HAD45	17.7	19.4	22.3	22.3	
	HAD85	17.7	21.5	23.4	26.7	
Warmest Month	CCSM45	56.0	57.3	58.4	58.5	
	CCSM85	56.0	57.9	59.2	60.7	
Average	GFDL45	56.0	59.3	60.6	61.7	
	GFDL85	56.0	59.8	61.6	63.6	
	HAD45	56.0	58.5	59.1	60.5	
	HAD85	56.0	58.5	59.9	62.7	

#### Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	22.6	23.7	23.7	23.3	
Total	CCSM85	22.6	22.3	23.1	23.4	
	GFDL45	22.6	24.5	25.6	25.1	
	GFDL85	22.6	24.2	26.7	26.8	
	HAD45	22.6	23.8	24.4	24.3	
	HAD85	22.6	23.9	25.2	26.1	
Growing Season	CCSM45	11.5	12.0	11.2	11.3	
	CCSM85	11.5	11.0	11.2	10.4	
May—Sep	GFDL45	11.5	12.4	12.5	12.4	
	GFDL85	11.5	12.4	13.3	12.5	
	HAD45	11.5	11.4	11.1	10.6	
	HAD85	11.5	11.4	10.5	10.7	

**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-DGP30 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
sugar maple	Acer saccharum	WDH	High	93.3	2970.5	20.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	95.1	1861.9	12.3	No change	No change	High	Abundant	Very Good	Very Good			1	2
balsam fir	Abies balsamea	NDH	High	92.8	1111.0	7.2	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	3
quaking aspen	Populus tremuloides	WDH	High	74	1059.1	9.2	No change	No change	Medium	Abundant	Good	Good			1	4
eastern hemlock	Tsuga canadensis	NSH	High	72.8	709.2	7.1	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	5
northern white-cedar	Thuja occidentalis	WSH	High	69.1	708.6	6.2	No change	No change	Medium	Abundant	Good	Good			1	6
yellow birch	Betula alleghaniensis	NDL	High	86.4	640.5	4.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	7
white spruce	Picea glauca	NSL	Medium	79.5	419.0	3.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
paper birch	Betula papyrifera	WDH	High	61.8	359.5	2.9	Sm. inc.	No change	Medium	Common	Good	Fair			1	9
red pine	Pinus resinosa	NSH	Medium	22.8	261.4	7.1	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	10
American basswood	Tilia americana	WSL	Medium	55.6	256.5	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
black ash	Fraxinus nigra	WSH	Medium	61.5	252.1	2.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	12
black spruce	Picea mariana	NSH	High	43.2	249.2	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	13
northern red oak	Quercus rubra	WDH	Medium	41.8	243.9	3.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
eastern white pine	Pinus strobus	WDH	High	41.5	239.0	3.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
white ash	Fraxinus americana	WDL	Medium	35.5	143.0	2.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	16
bigtooth aspen	Populus grandidentata	NSL	Medium	33.2	140.8	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	61.8	139.3	1.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	18
jack pine	Pinus banksiana	NSH	Medium	12.1	133.8	8.6	No change	Sm. dec.	High	Common	Good	Fair			1	19
black cherry	Prunus serotina	WDL	Medium	53.9	117.7	1.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	20
tamarack (native)	Larix laricina	NSH	High	22.1	92.1	2.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	21
American elm	Ulmus americana	WDH	Medium	32	47.4	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	22
chokecherry	Prunus virginiana	NSLX	FIA	8.1	25.2	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	23
green ash	Fraxinus pennsylvanica	WSH	Low	10.7	20.8	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	24
serviceberry	Amelanchier spp.	NSL	Low	12.3	14.1	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	25
balsam poplar	Populus balsamifera	NSH	Medium	7.5	12.2	1.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
silver maple	Acer saccharinum	NSH	Low	1.5	9.7	6.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	27
mountain maple	Acer spicatum	NSL	Low	10	8.7	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	28
Scots pine	Pinus sylvestris	NSH	FIA	0.8	5.3	7.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	29
northern pin oak	Quercus ellipsoidalis	NSH	Medium	1.6	5.2	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	30
striped maple	Acer pensylvanicum	NSL	Medium	4	4.7	0.4	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	31
pin cherry	Prunus pensylvanica	NSL	Low	5	4.5	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	32
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	3	4.0	1.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	33
black willow	Salix nigra	NSH	Low	0.8	3.9	5.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	34
American mountain-ash	Sorbus americana	NSL	Low	2.5	2.9	0.8	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	35
boxelder	Acer negundo	WSH	Low	3	2.3	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	36
Norway spruce	Picea abies	NSH	FIA	0.8	0.4	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	37
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	38
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	39
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	40
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	41
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	42
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	44
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	45
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	46
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
hackberry	<i>Celtis occidentalis</i>	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	48
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 49
American beech	<i>Fagus grandifolia</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	50
honeylocust	<i>Gleditsia triacanthos</i>	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	51
black walnut	<i>Juglans nigra</i>	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	52
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 53
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 54
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 55
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 56
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 57
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	58
white oak	<i>Quercus alba</i>	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	59
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	60
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 61
bur oak	<i>Quercus macrocarpa</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	62
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 63
pin oak	<i>Quercus palustris</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	64
chestnut oak	<i>Quercus prinus</i>	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 65
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 66
black oak	<i>Quercus velutina</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	67
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 68
black locust	<i>Robinia pseudoacacia</i>	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
sassafras	<i>Sassafras albidum</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	70
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0 71
slippery elm	<i>Ulmus rubra</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72