

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

	sq. km	sq. mi	FIA Plots
Area of Region	9,559.1	3,690.8	696

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					
				Reliability	Adaptability	Scenario RCP45	Scenario RCP85	Scenario RCP45	Scenario RCP85	SHIFT RCP45	SHIFT RCP85				
Ash	3			High	18	19	Increase	16	17	Very Good	5	4	Likely	1	1
Hickory	0			Medium	24	32	No Change	7	5	Good	11	13	Infill	3	4
Maple	5	Abundant	4	Low	20	12	Decrease	10	11	Fair	7	6	Migrate	9	12
Oak	3	Common	17	FIA	3		New	24	27	Poor	6	6		13	17
Pine	4	Rare	15				Unknown	8	5	Very Poor	3	3			
Other	21	Absent	28					65	65	FIA Only	1	1			
	36		64		65	63				Unknown	5	2			
											38	35			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	40.1	41.7	44.9	44.8	
Average	40.1	42.6	45.7	49.3	
GFDL45	40.1	43.3	46.4	47.9	
GFDL85	40.1	43.8	47.5	53.0	
HAD45	40.1	43.6	46.9	48.9	
HAD85	40.1	43.9	48.0	54.0	
Growing Season	59.4	61.0	63.6	63.7	
May—Sep	59.4	63.6	67.7	69.9	
GFDL45	59.4	63.6	67.7	69.9	
GFDL85	59.4	64.4	68.9	75.3	
HAD45	59.4	62.8	65.1	67.6	
HAD85	59.4	62.6	66.6	72.5	
Coldest Month	10.4	11.5	14.2	13.8	
Average	10.4	11.9	14.2	16.8	
GFDL45	10.4	13.0	15.1	15.6	
GFDL85	10.4	14.0	15.8	18.8	
HAD45	10.4	12.5	16.7	16.6	
HAD85	10.4	15.7	18.4	22.9	
Warmest Month	65.6	67.4	69.0	69.3	
Average	65.6	68.3	70.2	72.5	
GFDL45	65.6	70.2	71.9	73.5	
GFDL85	65.6	70.8	73.3	76.3	
HAD45	65.6	69.2	70.1	72.0	
HAD85	65.6	69.3	71.3	75.3	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	32.0	33.6	33.2	33.1	
Total	32.0	31.7	32.7	33.1	
GFDL45	32.0	34.7	36.2	35.4	
GFDL85	32.0	34.4	37.8	37.7	
HAD45	32.0	33.5	34.3	34.3	
HAD85	32.0	33.7	35.4	36.6	
Growing Season	17.2	17.9	16.6	17.0	
May—Sep	17.2	18.6	18.7	18.4	
GFDL45	17.2	18.6	18.7	18.4	
GFDL85	17.2	18.5	19.8	18.5	
HAD45	17.2	17.0	16.6	16.0	
HAD85	17.2	17.0	15.6	16.0	

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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Current and Potential Future Habitat, Capability, and Migration

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	97.9	2598.8	25.3	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	98.5	1288.5	12.8	No change	No change	High	Abundant	Very Good	Very Good			1	2
quaking aspen	Populus tremuloides	WDH	High	84.3	1059.7	12.5	No change	No change	Medium	Abundant	Good	Good			1	3
balsam fir	Abies balsamea	NDH	High	96.8	927.7	9.5	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	4
yellow birch	Betula alleghaniensis	NDL	High	90.5	495.9	5.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	5
eastern hemlock	Tsuga canadensis	NSH	High	76.5	481.0	6.1	No change	Sm. dec.	Low	Common	Poor	Poor			0	6
northern white-cedar	Thuja occidentalis	WSH	High	73.9	465.3	6.2	No change	No change	Medium	Common	Fair	Fair			1	7
white spruce	Picea glauca	NSL	Medium	92	397.7	4.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
American basswood	Tilia americana	WSL	Medium	70.7	288.8	3.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
black spruce	Picea mariana	NSH	High	60.7	254.0	4.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
red pine	Pinus resinosa	NSH	Medium	32.4	248.9	7.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
black ash	Fraxinus nigra	WSH	Medium	72.7	236.6	3.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	12
eastern white pine	Pinus strobus	WDH	High	48.1	206.3	4.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
paper birch	Betula papyrifera	WDH	High	67.9	184.3	2.7	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1	14
black cherry	Prunus serotina	WDL	Medium	79.4	167.4	2.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
jack pine	Pinus banksiana	NSH	Medium	17.8	138.4	7.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	16
northern red oak	Quercus rubra	WDH	Medium	38.7	126.9	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
tamarack (native)	Larix laricina	NSH	High	35.6	119.7	3.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	18
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	61.6	103.2	1.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	19
white ash	Fraxinus americana	WDL	Medium	40.3	102.6	2.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	20
bigtooth aspen	Populus grandidentata	NSL	Medium	42.8	101.4	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
balsam poplar	Populus balsamifera	NSH	Medium	10.5	37.2	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
American elm	Ulmus americana	WDH	Medium	42.5	33.9	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
silver maple	Acer saccharinum	NSH	Low	2.1	13.5	6.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	24
green ash	Fraxinus pennsylvanica	WSH	Low	11.5	13.2	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	25
Scots pine	Pinus sylvestris	NSH	FIA	2.1	9.5	4.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
black willow	Salix nigra	NSH	Low	2.1	6.6	3.2	No change	No change	Low	Rare	Very Poor	Very Poor			2	27
serviceberry	Amelanchier spp.	NSL	Low	11.5	6.6	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	4.2	5.6	1.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	29
pin cherry	Prunus pennsylvanica	NSL	Low	6.3	3.9	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	30
mountain maple	Acer spicatum	NSL	Low	11.5	3.8	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	31
northern pin oak	Quercus ellipsoidalis	NSH	Medium	3.1	3.6	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
boxelder	Acer negundo	WSH	Low	4.2	3.2	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	33
chokecherry	Prunus virginiana	NSLX	FIA	5.2	1.1	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	34
bur oak	Quercus macrocarpa	NDH	Medium	1	0.7	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
Norway spruce	Picea abies	NSH	FIA	1	0.6	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	37
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	38
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	39
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	40
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	42
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	44
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	45
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	46
flowering dogwood	Cornus florida	WDL	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
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	48
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	49
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	51
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	52
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	53
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	54
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	55
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	56
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
pin oak	Quercus palustris	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	59
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	60
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	61
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	62
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	64
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	65