

HUC 101301 Lake Oahe

HUC 6 Watershed Climate Change Atlas Tree Species

Current and Potential Future Habitat, Capability, and Migration

USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

sq. km sq. mi FIA Plots
Area of Region 42,197 16,293

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	Adaptability		Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential	
				Reliability			Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT
							RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	0			High	5	7	Increase	0	0	Very Good	0	0
Hickory	0			Medium	9	11	No Change	0	0	Good	0	0
Maple	0	Abundant	0	Low	6	2	Decrease	0	0	Fair	0	0
Oak	0	Common	0	FIA	0		New	16	16	Poor	0	0
Pine	0	Rare	0				Unknown	4	4	Very Poor	0	0
Other	0	Absent	18							FIA Only	0	0
	0		18		20	20		20	20	Unknown	4	4
											4	4

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	38.2	39.2	40.7	41.2	
	CCSM85	38.2	39.6	41.5	43.6	
	GFDL45	38.2	41.8	40.9	41.8	
	GFDL85	38.2	39.7	41.7	44.6	
	HAD45	38.2	40.2	42.5	43.6	
	HAD85	38.2	40.4	43.6	46.6	
Growing Season May—Sep	CCSM45	50.9	52.3	53.7	54.2	
	CCSM85	50.9	52.7	54.5	57.1	
	GFDL45	50.9	55.6	54.4	55.6	
	GFDL85	50.9	52.9	55.1	58.6	
	HAD45	50.9	52.8	54.5	55.8	
	HAD85	50.9	52.7	55.3	58.5	
Coldest Month Average	CCSM45	18.3	19.1	20.4	20.5	
	CCSM85	18.3	18.7	20.0	21.4	
	GFDL45	18.3	20.2	20.8	21.1	
	GFDL85	18.3	20.3	21.2	22.7	
	HAD45	18.3	20.1	22.5	22.1	
	HAD85	18.3	21.9	25.1	26.2	
Warmest Month Average	CCSM45	55.5	57.3	58.2	58.6	
	CCSM85	55.5	57.8	59.1	60.7	
	GFDL45	55.5	57.8	58.7	59.5	
	GFDL85	55.5	58.0	59.1	61.3	
	HAD45	55.5	57.8	58.7	59.7	
	HAD85	55.5	57.5	59.1	61.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	11.4	11.5	11.6	11.0	
	CCSM85	11.4	11.4	11.4	11.6	
	GFDL45	11.4	13.3	14.5	13.6	
	GFDL85	11.4	13.3	14.9	14.4	
	HAD45	11.4	12.1	11.8	12.1	
	HAD85	11.4	12.4	12.2	13.2	
Growing Season May—Sep	CCSM45	8.0	7.5	7.5	7.1	
	CCSM85	8.0	7.4	7.5	7.0	
	GFDL45	8.0	9.3	10.1	9.2	
	GFDL85	8.0	9.0	10.0	9.3	
	HAD45	8.0	7.8	7.3	7.2	
	HAD85	8.0	7.9	7.3	6.9	

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
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	1
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	2
red pine	Pinus resinosa	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	3
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	4
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	5
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	6
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	7
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	8
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	9
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	10
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	11
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	12
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	13
quaking aspen	Populus tremuloides	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	14
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	15
bur oak	Quercus macrocarpa	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	16
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	17
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	18
American basswood	Tilia americana	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	19
American elm	Ulmus americana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	20