

# HUC 090202 Devils Lake-Sheyenne

## 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	28,603	11,044	18

### 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	
		Abundant	Common	High	Low	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT
				Reliability	Adaptability	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	1			6	11	Increase	2	2	Very Good	0	0
Hickory	0			13	18	No Change	2	3	Good	2	2
Maple	1	Abundant	0	13	5	Decrease	7	6	Fair	0	0
Oak	1	Common	0	3		New	16	16	Poor	3	4
Pine	0	Rare	14			Unknown	8	8	Very Poor	6	4
Other	11	Absent	19						FIA Only	2	2
	<b>14</b>		<b>33</b>	<b>35</b>	<b>34</b>		<b>35</b>	<b>35</b>	Unknown	5	5
										<b>18</b>	<b>17</b>

### Potential Changes in Climate Variables

#### Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	37.4	38.5	40.2	40.6	
Average	37.4	38.9	41.2	43.5	
GFDL45	37.4	41.5	40.4	41.5	
GFDL85	37.4	39.2	41.4	44.7	
HAD45	37.4	39.6	42.2	43.4	
HAD85	37.4	39.9	43.1	46.8	
Growing Season	51.9	53.2	54.8	55.2	
May—Sep	51.9	53.7	55.8	58.4	
GFDL45	51.9	56.9	55.7	57.0	
GFDL85	51.9	54.1	56.5	60.2	
HAD45	51.9	54.0	55.8	57.4	
HAD85	51.9	53.9	56.6	60.3	
Coldest Month	14.3	15.3	16.8	16.8	
Average	14.3	15.0	16.5	18.2	
GFDL45	14.3	16.5	17.2	17.6	
GFDL85	14.3	16.8	17.9	19.8	
HAD45	14.3	16.3	18.8	18.6	
HAD85	14.3	18.1	21.1	23.1	
Warmest Month	56.4	58.3	59.2	59.5	
Average	56.4	58.8	60.2	61.8	
GFDL45	56.4	58.9	59.9	60.7	
GFDL85	56.4	59.0	60.3	62.6	
HAD45	56.4	58.9	59.8	61.1	
HAD85	56.4	58.7	60.4	62.8	

#### Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	12.8	12.5	12.9	12.4	
Total	12.8	12.6	12.7	12.7	
GFDL45	12.8	14.3	15.7	14.9	
GFDL85	12.8	14.9	16.2	15.8	
HAD45	12.8	13.2	12.5	13.0	
HAD85	12.8	13.1	12.9	14.1	
Growing Season	9.0	8.4	8.7	8.2	
May—Sep	9.0	8.5	8.5	8.1	
GFDL45	9.0	10.1	11.1	10.2	
GFDL85	9.0	10.2	11.0	10.3	
HAD45	9.0	8.9	8.1	8.0	
HAD85	9.0	8.6	7.8	7.7	

**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-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	1.8	57.1	25.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	1
green ash	Fraxinus pennsylvanica	WSH	Low	14.8	35.9	24.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	2
boxelder	Acer negundo	WSH	Low	11.8	33.9	23.1	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	3
bur oak	Quercus macrocarpa	NDH	Medium	12.6	26.7	24.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	4
eastern cottonwood	Populus deltoides	NSH	Low	2.3	14.5	33.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	5
balsam poplar	Populus balsamifera	NSH	Medium	0.2	6.2	3.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	6
Siberian elm	Ulmus pumila	NDH	FIA	3	4.5	9.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	7
American elm	Ulmus americana	WDH	Medium	6.4	4.2	8.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	8
American basswood	Tilia americana	WSL	Medium	1.9	2.4	8.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	9
wild plum	Prunus americana	NSLX	FIA	1.5	1.2	13.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	10
chokecherry	Prunus virginiana	NSLX	FIA	1.6	1.1	5.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	11
eastern redcedar	Juniperus virginiana	WDH	Medium	1.5	0.4	4.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	12
serviceberry	Amelanchier spp.	NSL	Low	1.7	0.2	0.8	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	13
pin cherry	Prunus pensylvanica	NSL	Low	0.2	0.1	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	14
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	15
red pine	Pinus resinosa	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	16
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	17
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	18
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	19
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	20
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	21
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	22
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	23
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	24
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	25
black cherry	Prunus serotina	WDL	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	26
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	27
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	28
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	29
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	30
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	31
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	32
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	33
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	34
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	35