

## Appendix B: Climate Change Vulnerability Index and Confidence Rankings

Vulnerability ranks include: extremely vulnerable (EV), highly vulnerable (HV), moderately vulnerable (MV), and less vulnerable (LV). Confidence ranks include: Very High, High, Moderate (Mod\*), and Low.

Michigan Tribal Climate Change Vulnerability Assessments 2016									
Vegetation Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Andromeda polifolia</i>	Bog Rosemary	HV	EV	HV	EV	Very High	Low	Very High	Low
<i>Zizania palustris</i>	Northern Wild Rice	HV	HV	HV	EV	Low	Very High	Mod*	Very High
<i>Zizania aquatica</i>	Southern Wild Rice	MV	HV	MV	EV	High	Very High	Mod*	High
<i>Fraxinus nigra</i>	Black Ash	MV	HV	HV	HV	Mod*	High	High	Mod*
<i>Picea mariana</i>	Black Spruce	HV	HV	HV	-	Low	Very High	Very High	-
<i>Carex scirpoidea</i>	Bulrush Sedge	HV	HV	HV	HV	Low	Mod*	High	Mod*
<i>Polygala paucifolia</i>	Fringed Polygala	MV	HV	HV	MV	Mod*	High	High	Mod*
<i>Ledum groenlandicum</i>	Labrador Tea	MV	HV	HV	HV	Low	Mod*	Mod*	Mod*
<i>Vaccinium macrocarpon</i>	Large Cranberry	MV	HV	HV	HV	Very High	Mod*	Mod*	Mod*
<i>Thuja occidentalis</i>	Northern White Cedar	MV	HV	HV	HV	Very High	Very High	Very High	Very High
<i>Betula papyrifera</i>	Paper Birch	MV	HV	HV	HV	Very High	Low	High	Mod*
<i>Mitchella repens</i>	Partridge Berry	MV	HV	HV	HV	High	Mod*	Mod*	Low
<i>Chimaphila umbellata</i>	Pipsissewa / Prince's Pine	HV	HV	HV	HV	Low	Low	Low	High
<i>Vaccinium oxycoccos</i>	Small Cranberry	MV	MV	MV	HV	Mod	High	High	Mod
<i>Cypripedium parviflorum</i>	Yellow Lady's Slipper	HV	HV	HV	HV	Very High	Mod*	Mod*	High
<i>Fagus grandifolia</i>	American Beech	MV	MV	MV	MV	Low	Very High	Very High	High
<i>Ulmus americana</i>	American Elm	LV	LV	LV	MV	High	Mod*	Low	Low
<i>Abies balsamea</i>	Balsam Fir	MV	MV	MV	MV	Mod*	High	High	Mod*
<i>Gaylussacia baccata</i>	Black Huckleberry	MV	MV	MV	MV	High	Very High	Very High	Low
<i>Salix nigra</i>	Black Willow	LV	MV	MV	MV	Low	Very High	Very High	High
<i>Sagittaria latifolia</i>	Broadleaf Arrowhead	LV	MV	MV	MV	Mod*	Mod*	Mod*	Mod*
<i>Lobelia cardinalis</i>	Cardinal Flower	LV	MV	MV	MV	High	Mod*	Mod*	Mod*
<i>Trillium grandiflorum</i>	Common Trillium	MV	MV	MV	MV	Mod*	High	High	High
<i>Gaultheria hispida</i>	Creeping Snowberry	LV	MV	MV	MV	High	Mod*	Mod*	Mod*
<i>Crataegus douglasii</i>	Douglas/Black Hawthorn	MV	MV	MV	MV	Very High	Mod*	Mod*	Mod*

EV=Extremely Vulnerable HV=Highly Vulnerable MV=Moderately Vulnerable LV=Less Vulnerable Mod\*=Moderate

Vegetation Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Coptis trifolia</i> ssp. <i>Groenlandica</i>	Goldthread	LV	MV	MV	MV	Low	Mod*	Mod*	Mod*
<i>Schoenoplectus acutus</i>	Hardstem Bulrush	MV	MV	MV	MV	Very High	Very High	Very High	Very High
<i>Tsuga canadensis</i>	Hemlock	MV	MV	MV	MV	Very High	Very High	Very High	Very High
<i>Athyrium filix-femina</i> ssp. <i>Angustum</i>	Ladyfern	LV	MV	MV	MV	High	Mod*	Mod*	Mod*
<i>Vaccinium angustifolium</i>	Lowbush Blueberry	LV	MV	MV	MV	Mod*	Very High	High	High
<i>Caltha palustris</i>	Marsh Marigold	LV	MV	MV	MV	Mod*	Mod*	Mod*	Mod*
<i>Acer pensylvanicum</i>	Moosewood / Striped Maple	LV	MV	MV	MV	Mod*	Mod*	High	Low
<i>Ilex mucronata</i>	Mountain Holly	LV	LV	MV	MV	Very High	Low	Mod*	Low
<i>Prunus pensylvanica</i>	Pin Cherry	LV	MV	MV	MV	Mod*	High	Very High	Mod*
<i>Cypripedium acaule</i>	Pink Lady's Slipper	MV	MV	MV	MV	High	High	High	Mod*
<i>Lycopodium obscurum</i>	Princess Pine	LV	MV	MV	MV	Mod*	Very High	Very High	Low
<i>Impatiens capensis</i>	Spotted Touch Me Not/Jewelweed	MV	MV	MV	MV	Mod*	High	High	High
<i>Acer saccharum</i>	Sugar Maple	MV	MV	MV	MV	Mod*	Very High	Very High	Low
<i>Asclepias incarnata</i>	Swamp Milkweed	LV	MV	MV	MV	Low	Mod*	Mod*	Very High
<i>Acorus americanus</i>	Sweetflag	LV	MV	MV	MV	Low	Very High	Very High	High
<i>Hierochloa odorata</i>	Sweetgrass	MV	MV	MV	MV	Very High	Very High	Very High	Very High
<i>Larix laricina</i>	Tamarack	MV	MV	MV	MV	Very High	Very High	Very High	Very High
<i>Schoenoplectus americanus</i>	Three-square bulrush	MV	MV	MV	MV	Mod*	High	High	High
<i>Pinus strobus</i>	White Pine	MV	MV	MV	MV	Mod*	Very High	Very High	High
<i>Betula alleghaniensis</i>	Yellow Birch	MV	MV	MV	MV	Mod*	Very High	Very High	Mod*
<i>Sphagnum capillifolium</i>	Northern Peatmoss	LV	MV	MV	MV	Mod*	Mod*	Mod*	Mod*
<i>Sphagnum central</i>	Sphagnum	LV	MV	MV	MV	Mod*	Mod*	Mod*	Mod*
<i>Myrica gale</i>	Sweetgale	MV	MV	MV	MV	Low	Very High	Very High	High
<i>Tilia americana</i>	Basswood	LV	LV	LV	LV	Very High	Mod*	Mod*	High
<i>Corylus cornuta</i>	Beaked hazelnut	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Arctostaphylos uva-ursi</i>	Bearberry	LV	LV	LV	LV	Very High	Very High	Very High	Very High

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Vegetation Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Populus grandidentata</i>	Bigtooth Aspen	LV	LV	LV	LV	High	Mod*	Mod*	Very High
<i>Carya cordiformis</i>	Bitternut Hickory	-	-	-	LV	-	-	-	Very High
<i>Caulophyllum thalictroides</i>	Blue Cohosh	LV	LV	LV	LV	Very High	Low	Low	Mod*
<i>Pteridium aquilinum</i>	Bracken Fern	LV	LV	LV	LV	Very High	High	High	Very High
<i>Typha latifolia</i>	Broadleaf Cattail	LV	LV	LV	LV	Very High	Low	Low	Low
<i>Eupatorium perfoliatum</i>	Common Boneset	LV	LV	LV	LV	Very High	Mod*	Mod*	High
<i>Equisetum hyemale</i>	Common Horsetail/Scouring rush	LV	LV	LV	LV	Very High	High	High	Very High
<i>Asclepias syriaca</i>	Common Milkweed	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Phragmites australis</i>	Common Reed	LV	LV	LV	LV	High	Low	Low	Low
<i>Lithospermum carolinense</i>	Golden Puccoon	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Medeola virginiana</i>	Indian Cucumber Root	LV	LV	LV	LV	Very High	Low	Low	Mod*
<i>Apocynum cannabinum</i>	Indian Hemp	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Lobelia inflata</i>	Indian Tobacco	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Ostrya virginiana</i>	Ironwood	LV	LV	LV	LV	Very High	Mod*	Low	Mod*
<i>Arisaema triphyllum</i> ssp. <i>Triphyllum</i>	Jack in the Pulpit	LV	LV	LV	LV	Very High	Low	Low	Low
<i>Adiantum pedatum</i>	Maidenhair Fern	LV	LV	LV	LV	Very High	Mod*	Low	High
<i>Quercus rubra</i>	Northern Red Oak	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Anaphalis margaritacea</i>	Pearly Everlasting	LV	LV	LV	LV	Very High	Mod*	Mod*	High
<i>Acer rubrum</i>	Red Maple	LV	LV	LV	LV	Very High	Mod*	Mod*	High
<i>Cornus sericea</i>	Red Osier Dogwood	LV	LV	LV	LV	Very High	High	High	Very High
<i>Vitis riparia</i>	Riverbank Grape	LV	LV	LV	LV	Very High	Low	Low	Mod*
<i>Onoclea sensibilis</i>	Sensitive Fern	LV	LV	LV	LV	Very High	Mod*	Mod*	Mod*
<i>Ulmus rubra</i>	Slippery Elm	LV	LV	LV	LV	Very High	High	High	Very High
<i>Alnus incana</i> <i>Rugosa</i>	Speckled/Tag Alder	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Eupatorium maculatum</i>	Spotted Joe Pye Weed	LV	LV	LV	LV	Very High	Very High	Very High	Very High

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Vegetation Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Nymphaea odorata</i>	White Water Lily	LV	LV	LV	LV	Very High	Very High	High	Very High
<i>Ilex verticillata</i>	Winterberry/Michigan Holly	LV	LV	LV	LV	Very High	Very High	Very High	Very High

Wildlife Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Alces alces</i>	Moose	EV	EV	-	-	Very High	Very High	-	-
<i>Lepus americanus</i>	Snowshoe hare	EV	EV	EV	EV	Very High	Very High	Very High	Very High
<i>Castor canadensis</i>	American Beaver	MV	MV	MV	MV	High	Mod*	Mod*	Very High
<i>Martes americana</i>	American Marten	MV	MV	MV	MV	High	Mod*	Mod*	Mod*
<i>Martes pennanti</i>	Fisher	MV	MV	MV	-	Mod*	Mod*	High	-
<i>Gavia immer</i>	Common Loon	LV	MV	MV	MV	Low	High	High	Very High
<i>Bonasa umbellus</i>	Ruffed Grouse	LV	LV	LV	MV	Mod*	Low	Low	Mod*
<i>Falciennes canadensis</i>	Spruce Grouse	LV	MV	-	-	Low	Mod*	-	-
<i>Tympanuchus phasianellus</i>	Sharp-tailed Grouse	LV	LV	MV	-	Very High	Low	High	-
<i>Taxidea taxus</i>	American Badger	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Ursus americanus</i>	American Black Bear	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Neovison vison</i>	American Mink	LV	LV	LV	LV	Very High	High	High	High
<i>Lynx rufus</i>	Bobcat	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Canis latrans</i>	Coyote	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Sylvilagus floridanus</i>	Eastern Cottontail Rabbit	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Cervus elaphus</i>	Elk	-	-	LV	LV	-	-	Mod*	High
<i>Canis lupus</i>	Gray Wolf	LV	LV	LV	LV	Very High	Low	Low	Low
<i>Erethizon dorsatum</i>	North American Porcupine	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Lontra canadensis</i>	North American River Otter	LV	LV	LV	LV	Very High	Mod*	Mod*	High
<i>Odocoileus virginianus</i>	White-tailed Deer	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Haliaeetus leucocephalus</i>	Bald Eagle	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Anas discors</i>	Blue Winged Teal	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Branta canadensis</i>	Canada Goose	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Ardea herodias</i>	Great Blue Heron	LV	LV	LV	LV	Very High	Mod*	Mod*	Mod*

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Wildlife Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Anas platyrhynchos</i>	Mallard	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Grus canadensis</i>	Sandhill Crane	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Meleagris gallopavo</i>	Wild Turkey	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Chrysemys picta</i>	Northern Painted Turtle	LV	LV	LV	LV	Very High	High	Mod*	Mod*
<i>Chelydra serpentina</i>	Snapping Turtle	LV	LV	LV	LV	Very High	Low	Low	Low

Fish Species		CCVI Vulnerability Rank				Confidence Ranking			
Scientific Name	Common Name	WUP	EUP	NLP	SLP	WUP	EUP	NLP	SLP
<i>Acipenser fulvescens</i>	Lake Sturgeon	MV	EV	MV	HV	Very High	Very High	Very High	Very High
<i>Sander vitreus</i>	Walleye	MV	MV	HV	MV	Very High	Very High	Mod*	Low
<i>Salvelinus fontinalis</i>	Brook Trout	MV	MV	MV	MV	Very High	Very High	Very High	Low
<i>Lota lota</i>	Burbot	GL: MV				Very High	Very High	Very High	Very High
<i>Salvelinus namaycush</i>	Lake Trout	GL: MV				Very High	Very High	Very High	Very High
<i>Coregonus artedii</i>	Cisco/Lake Herring	GL: MV				Very High	Very High	Very High	Very High
<i>Coregonus clupeaformis</i>	Whitefish	GL: MV				Very High	Very High	Very High	Very High
<i>Esox lucius</i>	Northern Pike	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Perca flavescens</i>	Yellow Perch	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Osmerus mordax</i>	Smelt	GL: LV				Very High	Very High	Very High	Very High
<i>Esox masquinongy</i>	Muskellunge	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Pemoxis nigromaculatus</i>	Black Crappie	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Lepomis microchirus</i>	Bluegill	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Catostomus commersonii</i>	White Sucker	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Catostomus catostomus</i>	Longnose Sucker	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Micropterus salmoides</i>	Largemouth Bass	LV	LV	LV	LV	Very High	Very High	Very High	Very High
<i>Micropterus dolomieu</i>	Smallmouth Bass	LV	LV	LV	LV	Very High	Very High	Very High	Very High

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