

VASCULAR PLANTS ONLY

Notations Used

E	Endangered
T	Threatened
SC	Special Concern
N	None (location records maintained by DNR, in most cases)
N (X)	None, and probably extirpated from Minnesota (location records maintained by DNR, in most cases)
--	None (location records <i>not</i> yet maintained by DNR)
*	Change in scientific name accompanies change in status

CHANGE IN SCIENTIFIC NAME NOT ACCOMPANIED BY A CHANGE IN STATUS

<u>Old Scientific Name</u>	<u>New Scientific Name</u>	<u>Status</u>
<i>Achillea sibirica</i>	<i>Achillea alpina</i>	T
<i>Ammophila breviligulata</i>	<i>Ammophila breviligulata</i> ssp. <i>breviligulata</i>	T
<i>Androsace septentrionalis</i> ssp. <i>puberulenta</i>	<i>Androsace septentrionalis</i>	SC
<i>Arabis holboellii</i> var. <i>retrofracta</i>	<i>Boechnera retrofracta</i>	T
<i>Asplenium trichomanes</i>	<i>Asplenium trichomanes</i> ssp. <i>trichomanes</i>	T
<i>Astragalus alpinus</i>	<i>Astragalus alpinus</i> var. <i>alpinus</i>	E
<i>Astragalus flexuosus</i>	<i>Astragalus flexuosus</i> var. <i>flexuosus</i>	SC
<i>Astragalus missouriensis</i>	<i>Astragalus missouriensis</i> var. <i>missouriensis</i>	SC
<i>Baptisia alba</i>	<i>Baptisia lactea</i> var. <i>lactea</i>	SC
<i>Baptisia bracteata</i> var. <i>leucophaea</i>	<i>Baptisia bracteata</i> var. <i>glabrescens</i>	SC
<i>Botrychium lanceolatum</i>	<i>Botrychium lanceolatum</i> ssp. <i>angustisegmentum</i>	T
<i>Cacalia suaveolens</i>	<i>Hasteola suaveolens</i>	E
<i>Cirsium hillii</i>	<i>Cirsium pumilum</i> var. <i>hillii</i>	SC
<i>Cristatella jamesii</i>	<i>Polanisia jamesii</i>	E
<i>Cymopterus acaulis</i>	<i>Cymopterus glomeratus</i>	SC
<i>Eleocharis olivacea</i>	<i>Eleocharis flavescens</i> var. <i>olivacea</i>	T
<i>Eleocharis parvula</i>	<i>Eleocharis coloradoensis</i>	SC
<i>Empetrum eamesii</i>	<i>Empetrum atropurpureum</i>	E
<i>Euphrasia hudsoniana</i>	<i>Euphrasia hudsoniana</i> var. <i>ramosior</i>	SC
<i>Gentianella amarella</i> ssp. <i>acuta</i>	<i>Gentianella amarella</i>	SC
<i>Glaux maritima</i>	<i>Lysimachia maritima</i>	E
<i>Helictotrichon hookeri</i>	<i>Avenula hookeri</i>	SC
<i>Lechea tenuifolia</i>	<i>Lechea tenuifolia</i> var. <i>tenuifolia</i>	E
<i>Lesquerella ludoviciana</i>	<i>Physaria ludoviciana</i>	E
<i>Littorella uniflora</i>	<i>Littorella americana</i>	SC
<i>Machaeranthera pinnatifida</i>	<i>Xanthisma spinulosum</i> var. <i>spinulosum</i>	SC
<i>Oryzopsis hymenoides</i>	<i>Achnatherum hymenoides</i>	E
<i>Paronychia fastigiata</i>	<i>Paronychia fastigiata</i> var. <i>fastigiata</i>	E
<i>Polygonum careyi</i>	<i>Persicaria careyi</i>	SC
<i>Psoralidium tenuiflorum</i>	<i>Psoralidium tenuiflorum</i>	E
<i>Ruppia maritima</i>	<i>Ruppia cirrhosa</i>	SC
<i>Scutellaria ovata</i>	<i>Scutellaria ovata</i> var. <i>versicolor</i>	T
<i>Sedum integrifolium</i> ssp. <i>leedyi</i>	<i>Rhodiola integrifolia</i> ssp. <i>leedyi</i>	E
<i>Senecio canus</i>	<i>Packera cana</i>	E
<i>Silene drummondii</i>	<i>Silene drummondii</i> ssp. <i>drummondii</i>	SC
<i>Stellaria longipes</i>	<i>Stellaria longipes</i> ssp. <i>longipes</i>	SC
<i>Subularia aquatica</i>	<i>Subularia aquatica</i> ssp. <i>americana</i>	T
<i>Triplasis purpurea</i>	<i>Triplasis purpurea</i> var. <i>purpurea</i>	SC
<i>Viola lanceolata</i>	<i>Viola lanceolata</i> var. <i>lanceolata</i>	T
<i>Waldsteinia fragarioides</i>	<i>Waldsteinia fragarioides</i> var. <i>fragarioides</i>	SC
<i>Woodsia scopulina</i>	<i>Woodsia scopulina</i> ssp. <i>laurentiana</i>	T

EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

CHANGE IN STATUS; STATUS SHEET PROVIDED

<u>Common Name</u>	<u>Scientific Name</u>	<u>Current Status</u>	<u>Proposed Status</u>
Allegheny Vine	<i>Adlumia fungosa</i>	N	SC
Moschatel	<i>Adoxa moschatellina</i>	SC	N
* Rough Bentgrass	<i>Agrostis geminata</i>	SC	N
Winter Bentgrass	<i>Agrostis hyemalis</i>	N	E
Narrow-leaved Water Plantain	<i>Alisma gramineum</i>	N	SC
Nodding Wild Onion	<i>Allium cernuum</i>	T	SC
* Wild Chives	<i>Allium schoenoprasum</i> var. <i>sibiricum</i>	T	E
Smooth Rock Cress	<i>Arabis laevigata</i> var. <i>laevigata</i>	N	SC
Green Dragon	<i>Arisaema dracontium</i>	N	SC
Slimspike Three-awn	<i>Aristida longespica</i> var. <i>geniculata</i>	N	E
Seaside Three-awn	<i>Aristida tuberculosa</i>	SC	T
Great Indian Plantain	<i>Arnoglossum reniforme</i>	N	T
Clasping Milkweed	<i>Asclepias amplexicaulis</i>	SC	T
* Short's Aster	<i>Aster shortii</i>	T	SC
Water-hyssop	<i>Bacopa rotundifolia</i>	SC	T
Stream Parsnip	<i>Berula erecta</i>	--	T
Discoïd Beggarticks	<i>Bidens discoïdea</i>	N	SC
Tailed Grapefern	<i>Botrychium acuminatum</i>	N	SC
Upswept Moonwort	<i>Botrychium ascendens</i>	N	E
Slender Moonwort	<i>Botrychium lineare</i>	N	E
Goblin Fern	<i>Botrychium mormo</i>	SC	T
Blunt-lobed Grapefern	<i>Botrychium oneidense</i>	E	T
Pale Moonwort	<i>Botrychium pallidum</i>	E	SC
St. Lawrence Grapefern	<i>Botrychium rugulosum</i>	T	SC
Spatulate Moonwort	<i>Botrychium spathulatum</i>	N	E
Purple Reedgrass	<i>Calamagrostis purpurascens</i>	SC	E
Larger Water Starwort	<i>Callitriche heterophylla</i>	SC	T
Cuckoo Flower	<i>Cardamine pratensis</i> var. <i>palustris</i>	N	T
Carey's Sedge	<i>Carex careyana</i>	T	E
Raven's Foot Sedge	<i>Carex crus-corvi</i>	SC	N (X)
Gray's Sedge	<i>Carex grayi</i>	N	SC
Hooker's Sedge	<i>Carex hookerana</i>	--	SC
* Field Sedge	<i>Carex katahdinensis</i>	T	N
Intermediate Sedge	<i>Carex media</i>	N	SC
Muskingum Sedge	<i>Carex muskingumensis</i>	N	SC
New England Sedge	<i>Carex novae-angliae</i>	N	T
Necklace Sedge	<i>Carex ormostachya</i>	N	SC
Ross' Sedge	<i>Carex rossii</i>	N	T
* Weak Arctic Sedge	<i>Carex supina</i> var. <i>spaniocarpa</i>	SC	E
Wood's Sedge	<i>Carex woodii</i>	SC	N
Hairy Lip-fern	<i>Cheilanthes lanosa</i>	E	N
Carolina Spring Beauty	<i>Claytonia caroliniana</i>	SC	N
Slender Dayflower	<i>Commelina erecta</i>	--	E
Late Hawthorn	<i>Crataegus calpodendron</i>	--	SC
Black Hawthorn	<i>Crataegus douglasii</i>	T	SC
Rattlebox	<i>Crotalaria sagittalis</i>	--	SC
Silvery Spleenwort	<i>Deparia acrostichoides</i>	N	SC
Slender Hair Grass	<i>Deschampsia flexuosa</i>	SC	T
Big Tick Trefoil	<i>Desmodium cuspidatum</i> var. <i>longifolium</i>	SC	T
Stemless Tick Trefoil	<i>Desmodium nudiflorum</i>	SC	T
Obovate Beakgrain	<i>Diarrhena obovata</i>	SC	E
Hoary Whitlow Grass	<i>Draba cana</i>	N	E
Marginal Shield Fern	<i>Dryopteris marginalis</i>	T	E

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Statement of Need and Reasonableness: August 10, 2012

<u>Common Name</u>	<u>Scientific Name</u>	<u>Current Status</u>	<u>Proposed Status</u>
Three-stamened Waterwort	<i>Elatine triandra</i>	N	SC
Neat Spikerush	<i>Eleocharis nitida</i>	T	SC
Robbins' Spikerush	<i>Eleocharis robbinsii</i>	N	T
Two Leaf Waterweed	<i>Elodea bifoliata</i>	--	E
Black Huckleberry	<i>Gaylussacia baccata</i>	--	T
Northern Oak Fern	<i>Gymnocarpium robertianum</i>	N	SC
Kentucky Coffee Tree	<i>Gymnocladus dioica</i>	N	SC
Witch-hazel	<i>Hamamelis virginiana</i>	SC	T
Canada Frostweed	<i>Helianthemum canadense</i>	N	SC
Beach Heather	<i>Hudsonia tomentosa</i>	SC	T
Appalachian Fir Moss	<i>Huperzia appalachiana</i>	N	SC
Eastern Green-violet	<i>Hybanthus concolor</i>	N	E
* Butternut	<i>Juglans cinerea</i>	SC	E
Jointed Rush	<i>Juncus articulatus</i>	N	E
Marginated Rush	<i>Juncus marginatus</i>	SC	E
Slender Rush	<i>Juncus subtilis</i>	N	E
Catchfly Grass	<i>Leersia lenticularis</i>	SC	T
* Small-flowered Woodrush	<i>Luzula parviflora</i> ssp. <i>melanocarpa</i>	SC	T
Rock Sandwort	<i>Minuartia dawsonensis</i>	SC	T
Broadleaf Water Milfoil	<i>Myriophyllum heterophyllum</i>	N	SC
Southern Naiad	<i>Najas guadalupensis</i> ssp. <i>olivacea</i>	--	SC
Old Field Toadflax	<i>Nuttallanthus canadensis</i>	N	SC
Clustered Broomrape	<i>Orobanche fasciculata</i>	SC	T
* Louisiana Broomrape	<i>Orobanche ludoviciana</i>	SC	T
One-flowered Broomrape	<i>Orobanche uniflora</i>	SC	T
Canada Forked Chickweed	<i>Paronychia canadensis</i>	T	E
Franklin's Phacelia	<i>Phacelia franklinii</i>	SC	T
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	T	E
Wild Sweet William	<i>Phlox maculata</i>	--	SC
Canadian Ricegrass	<i>Piptatherum canadense</i>	N	T
Scouler's Popcornflower	<i>Plagiobothrys scouleri</i> var. <i>panicullatus</i>	N	SC
Slender Plantain	<i>Plantago elongata</i>	T	SC
Tuberled Rein Orchid	<i>Platanthera flava</i> var. <i>herbiola</i>	E	T
* Alpine Bistort	<i>Polygonum viviparum</i>	SC	T
Christmas Fern	<i>Polystichum acrostichoides</i>	T	E
Braun's Holly Fern	<i>Polystichum braunii</i>	E	T
Algae-like Pondweed	<i>Potamogeton confervoides</i>	N	E
Oakes' Pondweed	<i>Potamogeton oakesianus</i>	N	E
Spotted Pondweed	<i>Potamogeton pulcher</i>	N	E
* Sheathed Pondweed	<i>Potamogeton vaginatus</i>	SC	E
Vasey's Pondweed	<i>Potamogeton vaseyi</i>	SC	N
Nodding Rattlesnakeroot	<i>Prenanthes crepidinea</i>	SC	N (X)
Rough-fruited Fairybells	<i>Prosartes trachycarpa</i>	N	E
Swamp White Oak	<i>Quercus bicolor</i>	N	SC
Sooty-colored Beak Rush	<i>Rhynchospora fusca</i>	SC	N
Bristle-berry	<i>Rubus fulleri</i>	--	T
Missouri Dewberry	<i>Rubus missouricus</i>	--	E
Kinnickinnick Dewberry	<i>Rubus multiflorus</i>	--	SC
Prince Edward Island Blackberry	<i>Rubus quaesitus</i>	--	SC
Swamp Blackberry	<i>Rubus semisetosus</i>	N	T
Bristle-berry	<i>Rubus stipulatus</i>	N	E
Vermont Blackberry	<i>Rubus vermontanus</i>	--	SC
* Three-leaved Coneflower	<i>Rudbeckia triloba</i>	SC	T
Wild Petunia	<i>Ruellia humilis</i>	N (X)	SC
Short-beaked Arrowhead	<i>Sagittaria brevirostra</i>	N	E

<u>Common Name</u>	<u>Scientific Name</u>	<u>Current Status</u>	<u>Proposed Status</u>
Hooded Arrowhead	<i>Sagittaria calycina</i> var. <i>calycina</i>	N	T
Satiny Willow	<i>Salix pellita</i>	SC	T
False Mountain Willow	<i>Salix pseudomonticola</i>	--	SC
Encrusted Saxifrage	<i>Saxifraga paniculata</i>	T	SC
* Clinton's Bulrush	<i>Scirpus clintonii</i>	SC	T
* Elegant Groundsel	<i>Senecio indecorus</i>	SC	E
Soapberry	<i>Shepherdia canadensis</i>	--	SC
Cliff Goldenrod	<i>Solidago sciaphila</i>	SC	N
Clustered Bur Reed	<i>Sparganium glomeratum</i>	SC	N
Case's Ladies' Tresses	<i>Spiranthes casei</i> var. <i>casei</i>	N	T
Coralberry	<i>Symphoricarpos orbiculatus</i>	SC	N
Yellow Pimpernel	<i>Taenidia integerrima</i>	N	SC
* Rough-seeded Fameflower	<i>Talinum rugospermum</i>	E	T
Hairy-jointed Meadow-parsnip	<i>Thaspium barbinode</i>	--	SC
* Bitter Fleabane	<i>Trimorpha acris</i> var. <i>asteroides</i>	SC	E
* Short Ray Fleabane	<i>Trimorpha lonchophylla</i>	SC	T
Spike Trisetum	<i>Trisetum spicatum</i>	--	SC
* Eastern Hemlock	<i>Tsuga canadensis</i>	SC	E
Hidden-fruit Bladderwort	<i>Utricularia geminiscapa</i>	N	T
Purple-flowered Bladderwort	<i>Utricularia purpurea</i>	SC	E
Lavender Bladderwort	<i>Utricularia resupinata</i>	SC	T
Alpine Bilberry	<i>Vaccinium uliginosum</i>	T	E
* Silverleaf Grape	<i>Vitis aestivalis</i>	SC	T
Alpine Woodsia	<i>Woodsia alpina</i>	SC	T
Oregon Woodsia	<i>Woodsia oregana</i> ssp. <i>cathcartiana</i>	N	SC

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Adlumia fungosa* (Ait.) Greene ex B.S.P.

FAMILY: Fumariaceae

COMMON NAME: Allegheny Vine

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This biennial, herbaceous vine was known to occur in nearby Wisconsin and Ontario but until recently the evidence for it occurring as a native species in Minnesota was ambiguous. Three collections from small populations in Cass and Cook counties in 2000, 2006, and 2008 have now confirmed the presence of Allegheny Vine in the state. The species is usually associated with rocky or sandy soils in hardwood and coniferous forests, although it probably does not survive in the deep shade found under a forest canopy. Instead, it appears to be an edge species or perhaps a disturbance-dependent species that follows fire. Insufficient information is available at this time to detect population trends, but given that extensive botanical surveys have been conducted in appropriate habitat within the species' potential range in the state and only a handful of locations have been found, it is reasonable to conclude that Allegheny Vine is rare in Minnesota. Further survey work is needed to clarify the species' distribution and abundance but based on the small number of documented populations and the small size of those populations, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

- Boufford, D. E. 1997. *Adlumia*. Page 347 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 3. Oxford University Press, New York, New York.
- Judziwicz, E. J. 2001. Flora and vegetation of the Grand Traverse Islands (Lake Michigan), Wisconsin and Michigan. *Michigan Botanist* 40:81-208.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 7 May 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Adoxa moschatellina* L.

FAMILY: Adoxaceae

COMMON NAME: Moschatel

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When designated a Special Concern species in 1984, this small, herbaceous plant was primarily known from southeast-facing slopes in remnant stands of northern hardwoods along the North Shore of Lake Superior. A few populations had also been documented on wooded, north-facing slopes and algific talus slopes in southeastern Minnesota. The main concern leading to its listing was the reduction of available habitat resulting from forest clearing for timber harvest and agricultural purposes. However, targeted rare plant surveys over the past two decades have resulted in the discovery of nearly 100 additional populations, including some populations with thousands of plants. Moschatel is now known to be more common and widely distributed in Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

Cochrane, T. S., and P. J. Salamun. 1974. Preliminary reports on the flora of Wisconsin No. 64. Adoxaceae - moschatel family. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 62:247-252.

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Ostlie, W. R. 1990. Completion of the algific slope/moderate cliff landsnail survey in Minnesota. Final report submitted to the Nongame Wildlife Program, Minnesota Department of Natural Resources. Unpaged.

United States Department of Agriculture, Forest Service. 2008. Superior National Forest Rare Plant Guide: Moschatel [web application]. United States Forest Service, Duluth, Minnesota.
<<http://www.fs.fed.us/r9/forests/superior/documents/Moschatel.pdf>>. Accessed 11 June 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Agrostis geminata* Trin.

FAMILY: Poaceae

COMMON NAME: Rough Bentgrass

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When this perennial grass was designated a Special Concern species in 1984, only nine collections were documented from Minnesota and all but one of them dated from the late 1800s and early 1900s. Recent taxonomic studies have determined that this species is not separable from Rough Bentgrass (*Agrostis scabra*), which is relatively common in Minnesota. For this reason, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Harvey, M. J. 2007. *Agrostis*. Pages 633-662 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 24. Oxford University Press, New York, New York.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 8 July 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Agrostis hyemalis* (Walt.) B.S.P.

FAMILY: Poaceae

COMMON NAME: Winter Bentgrass

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Winter Bentgrass is perennial grass species that was first discovered in Minnesota in 1902 in Winona County; that site has never been relocated. It was not seen again in the state until 1996 when a small population was found in a remnant sand savanna in Fillmore County. With only one recently known occurrence in the state, the range of habitats the species could occupy is not definitively known. It can be said with a fair degree of confidence, however, that it occurs in native habitats that are characterized by dry, sandy soil, direct sunlight, and little competition from other plants. This likely includes sand savannas, sand barrens, and possibly sand dunes and bluff prairies. All of these habitats are rare in Minnesota, so habitat availability is likely a limiting factor for the species. Another indication of the species' rarity is the fact that all of the suspected habitats have been extensively targeted for botanical searches by the Minnesota County Biological Survey and still no additional locations of Winter Bentgrass have been found.

The single extant occurrence of Winter Bentgrass is located in the rapidly developing city limits of Rushford. Consequently, this population is threatened by encroaching housing developments and associated residential activities. The sandy soil in which the species is rooted is too fragile to support much recreational activity and soil disturbance caused by vehicles almost always results in an increase of non-native, invasive species such as Spotted Knapweed (*Centaurea stoebe*) and Hoary Alyssum (*Berteroa incana*), which can out-compete and displace native species. Given the limited amount of potential habitat for the species in the state, the documentation of only one population in the past 100 years, the absence of the species in apparently suitable habitat, and the vulnerability of the only known population to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

Harvey, M. J. 2007. *Agrostis*. Pages 633-662 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 24. Oxford University Press, New York, New York.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 26 June 2009.

Randall, J. M., and J. Marnelli. 1996. Invasive plants: Weeds of the global garden. Brooklyn Botanic Gardens, Inc., Brooklyn, New York. 111 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Alisma gramineum* Lej.

FAMILY: Alismataceae

COMMON NAME: Narrow-leaved Water Plantain

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: In the past twenty years of aquatic plant inventories including surveys of more than 1,500 lakes, this species has been documented only 16 times. Most of the locations are from the central part of the state. There are also a handful of records from the prairie region of western Minnesota, but most of these are from the first half of the 20th Century and they have not been relocated. Narrow-leaved Water Plantain is associated with sandy, gravelly lake shorelines and is typically submersed in shallow water less than 1 meter deep. Most of the lakes where it has been found have good water clarity and it appears to inhabit areas that are sparsely vegetated.

The primary threat to the species is loss or degradation of habitat, principally through impaired water quality (pollution), non-compatible recreational activities (e.g., uprooting by motor boats, trampling), and destructive shoreline practices (e.g., use of weed-rollers, increased sedimentation, herbicide run-off). Intense agricultural expansion in the prairie region of the state likely resulted in the decline or loss of many of the western Narrow-leaved Water Plantain populations, although more survey work in this part of the state is needed to confirm this. In addition to the threats mentioned above, the western populations likely face additional risks from livestock grazing, which often leads to nutrient enrichment of lakes and wetlands. Until further survey work clarifies the species' distribution and abundance in the state, Special Concern status is needed and reasonable based on the small number of documented populations and the increasing pressure on lakeshore habitats.

SELECTED REFERENCES:

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 27 May 2009.

Haynes, R. R., and C. B. Hellquist. *Alisma*. Pages 23-25 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 22. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Allium cernuum* Roth

FAMILY: Liliales

COMMON NAME: Nodding Wild Onion

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This small woodland plant is restricted to southeast Minnesota, where it typically occurs on north- or northwest facing slopes above creeks or rivers. Its presence in the state was unknown until 1981 when a population was discovered at Lake Louis State Park in Mower County. This remained the only known population when Nodding Wild Onion was designated a Threatened species in 1984. Since that time, more than 40 additional populations have been documented in Fillmore, Mower, Olmsted, and Winona counties. The species is now known to be more common and widely distributed in Minnesota than was formerly believed and Threatened status is no longer necessary. However, Special Concern status is still needed and reasonable given the species' restricted range in the state and the threats posed by timber harvest, livestock grazing, and invasive species.

SELECTED REFERENCES:

- McNeal, D. W., Jr., and T. D. Jacobsen. 2002. *Allium*. Pages 224-276 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 26. Oxford University Press, New York, New York.
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- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Allium schoenoprasum* var. *sibiricum* (L.) Hartman

NEW SCIENTIFIC NAME: *Allium schoenoprasum* L.

FAMILY: Liliaceae

COMMON NAME: Wild Chives

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This circumboreal species occurs in Minnesota along the southern margin of its range and is apparently limited to a very specific habitat type. It has been documented just eleven times from the rocky shorelines and ledges along Lake Superior and the north-facing, rocky ridges above the St. Louis River. While the species' rarity was apparent when it was designated a Threatened species in 1996, northeastern Minnesota had not yet been systematically surveyed for rare plant species. Now, after several years of targeted field inventories by the Minnesota County Biological Survey, only four additional populations have been documented. The species was absent from many apparently suitable sites, and several of the previously documented populations could not be relocated. Furthermore, the significant increase in development pressures and recreational activities in the vicinity of the known populations could threaten the long-term viability of the species. Activities as seemingly innocuous as hiking can result in serious damage to the species' fragile shoreline habitats. For these reasons, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Arabis laevigata* var. *laevigata* (Muhl. ex Willd.) Poir.

FAMILY: Brassicaceae

COMMON NAME: Smooth Rock Cress

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This species is restricted to southeastern Minnesota, where it occurs on steep slopes in mesic, deciduous forests. In most cases, the slopes are composed of talus and occur at the base of tall cliffs. Extensive searches of forested habitats in the region have revealed Smooth Rock Cress to be quite rare. It appears to be dependent on a narrow range of environmental conditions that are not well understood, and has only been documented 24 times since its initial collection in 1880. Furthermore, all of the populations are small and sparsely scattered. The loss of canopy cover from development or forest management activities and the invasion of aggressive, non-native species, especially Common Buckthorn (*Rhamnus cathartica*) and Eurasian Honeysuckle shrubs (*Lonicera* spp.), have been identified as the primary threats to the species. On the basis of the small number of known populations and the small size of those populations, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Arisaema dracontium* (L.) Schott

FAMILY: Araceae

COMMON NAME: Green Dragon

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Green Dragon is a perennial forb that is found in active floodplain forests dominated by Cottonwood (*Populus deltoides*) and Silver Maple (*Acer saccharinum*) and in floodplain forest communities on elevated river terraces. As such, it only occurs in southeastern Minnesota. Targeted botanical surveys conducted in this region since 1987 have resulted in the discovery of only 48 Green Dragon occurrences. Furthermore, most of the occurrences are small, containing fewer than 30 individuals.

Perhaps the most notable feature of Green Dragon is its ability to survive in flood-prone habitats. In fact, it appears to be restricted to habitats that flood at least intermittently and in some cases, every spring. The flooding can be severe, resulting in large quantities of silt being scoured from the forest floor in one area and deposited in other areas. Habitats that are deprived of their normal flood cycles would likely not continue to support this species. Outright loss of remnant floodplain forest habitats as a result of increased development pressures and the gradual degradation of habitats is also a concern. At some sites, disturbance associated with the loss of tree canopy cover has resulted in the spread of Reed Canary Grass (*Phalaris arundinacea*), a destructive non-native grass species that quickly invades and displaces native flora. Given the species' restrictive habitat requirements and limited geographic range in the state, the historic loss and degradation of floodplain forest habitats, and the current threats posed by land use changes and invasive species, a status of Special Concern is reasonable and needed.

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- Randall, J. M., and J. Marnelli. 1996. Invasive plants: Weeds of the global garden. Brooklyn Botanic Gardens, Inc., Brooklyn, New York. 111 pp.
- Thompson, S. A. 2000. *Arisaema*. Pages 139-141 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 22. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Aristida longespica* var. *geniculata* (Raf.) Fern.

FAMILY: Poaceae

COMMON NAME: Slimspike Three-awn

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Slimspike Three-awn is an annual, warm season grass of open, sandy, wet meadow habitats. It was first discovered in Minnesota in 1999 when a single population comprised of four patches was documented on the Anoka Sandplain in Anoka County. Despite targeted surveys of wet meadow habitats since the species' initial discovery, no additional populations have been located in the state. Land conversion is the most imminent threat facing Slimspike Three-awn since the only known population is located in an area that is experiencing intense development pressure. In addition, Slimspike Three-awn is an early successional species that appears to be adapted to fire and the seasonal fluctuations of groundwater. In the absence of wildfire, the species will likely require active management such as prescribed burns or brush control in order to maintain its open habitat conditions.

Given the limited amount of potential habitat for the species in the state, the documentation of only one population despite intensive surveys, the absence of the species in apparently suitable habitat, the vulnerability of the only known population to degradation or destruction, and the need for active management, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Aristida tuberculosa* Nutt.

FAMILY: Poaceae

COMMON NAME: Seaside Three-awn

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Seaside Three-awn is a small, tufted, annual grass that occurs exclusively in sand savanna, sand prairie, and dune habitats in southeastern Minnesota. It requires open, sparsely vegetated areas where there is dry, shifting sand (blow-outs). The natural, active processes that create and maintain such unstable sand habitats are essential to the survival of Seaside Three-awn. Under normal conditions, competing vegetation in these habitats is maintained by wildfire and perhaps periodic drought; grazing by bison and elk was once also probably important. These processes keep the dunes from becoming overgrown by woody vegetation or dense thatches of herbaceous vegetation, which would eliminate the habitat for Seaside Three-awn. In the absence of such natural processes, active management in the form of prescribed burns or brush control will be necessary in order to maintain open habitat conditions.

When Seaside Three-awn was originally listed as a Special Concern species in 1984, it was known to be rare and to have unique habitat requirements but targeted botanical surveys had not been conducted to determine the extent of its rarity, and threats to its persistence had not been fully assessed. Since that time, a comprehensive biological survey of the region has been completed by the Minnesota County Biological Survey. Less than 20 populations were documented and all are located in small, remnant habitats. Furthermore, threats from pipeline construction, utility corridor maintenance, residential development, golf course expansion, county landfill development, campground construction, tree planting, recreational activities, and invasive species were identified at many of the documented locations. More than 99% of the prairie and savanna habitat that was present in the state before settlement has already been destroyed or degraded so any further habitat loss or degradation seriously jeopardizes the viability of Seaside Three-awn in Minnesota.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of remaining habitat for the species in the state, its restrictive/unique habitat requirements and limited geographic range in the state, the historic and present loss of prairie and savanna habitats, and the current threats posed by land use changes, succession, and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Allred, K. W. 2003. *Aristida*. Pages 315-342 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 25. Oxford University Press, New York, New York.
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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Arnoglossum reniforme* (Hook.) H.E. Robins.

FAMILY: Asteraceae

COMMON NAME: Great Indian Plantain

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial forb occurs at the northwestern periphery of its range in southeastern Minnesota. Since 1980 a comprehensive botanical survey of most of the species' potential habitat has been conducted, during which only 17 populations were located in just five counties (Houston, Fillmore, Mower, Olmsted, and Winona). Furthermore, all of the populations are quite small. As this species is distinctive, it is unlikely that it would have been overlooked during any surveys. Great Indian Plantain is typically associated with floodplain forest communities on alluvial terraces along smaller streams. It appears to prefer areas with a patchy canopy and is rarely found in dense shade. Since settlement times, large expanses of floodplain forests in southern Minnesota have been lost due to conversion to agriculture, urbanization, and the damming and channelization of rivers. Unfortunately, this trend is continuing and habitat loss still poses an eminent threat to the species.

Given the limited amount of potential habitat for the species in the state and its limited geographic range, the small number of documented populations despite intensive surveys and the small size of those populations, the historic loss and degradation of floodplain forest habitat, and the current threats posed by competing land use practices, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Anderson, L. C. 2006. *Arnoglossum*. Pages 622-625 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 20. Oxford University Press, New York, New York.

Minnesota Department of Natural Resources. 2005. Field guide to the native plant communities of Minnesota: the eastern broadleaf forest province. Ecological Land Classification Program, Minnesota County Biological Survey, and Natural Heritage and Nongame Research Program. Minnesota Department of Natural Resources, St. Paul, Minnesota. 394 pp.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Asclepias amplexicaulis* Sm.

FAMILY: Asclepiadaceae

COMMON NAME: Clasping Milkweed

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Claspig Milkweed reaches the northwestern limit of its range in Minnesota where it occurs exclusively in dry, sandy, sparsely vegetated soil in savannas and prairies in the southeastern part of the state. As more than 99% of the prairie and savanna habitat that was present in the state before settlement has now been destroyed or severely degraded, habitat availability is extremely limited and often consists of tiny, isolated remnants of larger habitats. Much of this information was known when Claspig Milkweed was listed as a Special Concern species in 1984, however targeted botanical surveys had not yet been completed to determine the extent of its rarity, and threats to its populations had not been fully assessed. Since that time, a comprehensive biological survey of the region has been completed by the Minnesota County Biological Survey during which only 24 occurrences of the species were documented. Furthermore, the small number of remaining populations are threatened by conversion to agricultural, grazing, sand and gravel mining, urban development, and the disruption of natural ecological processes.

The open and minimally treed conditions of prairie and savanna habitats developed under a regime of periodic wildfire started by lightning strikes. This favored herbaceous vegetation and discouraged woody vegetation. Since uncontrolled wildfires are essentially a thing of the past, prairie and savanna habitats are frequently degraded by encroaching woody vegetation, which shades out herbaceous plants. The invasion of non-native, sod-forming grasses, such as Smooth Brome (*Bromus inermis*), is especially detrimental to Claspig Milkweed as they are able to outcompete the native species for light, space, nutrients, and/or water. The loss or degradation of any additional habitat seriously jeopardizes the viability of Claspig Milkweed in Minnesota.

Given the limited amount of remaining habitat for the species in the state, its restrictive/unique habitat requirements and limited geographic range in the state, the historic and present loss of prairie and savanna habitats, and the current threats posed by habitat conversion and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
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- Randall, J. M., and J. Marnelli. 1996. Invasive plants: Weeds of the global garden. Brooklyn Botanic Gardens, Inc., Brooklyn, New York. 111 pp.
- Woodson, R. E. 1954. The North American species of *Asclepias* L. Annals of the Missouri Botanical Garden 41:1-208.

EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Aster shortii* Lindl.

NEW SCIENTIFIC NAME: *Symphyotrichum shortii* (Lindl.) Nesom

FAMILY: Asteraceae

COMMON NAME: Short's Aster

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This woodland aster was known from only 15 sites in southeastern Minnesota when it was designated a Threatened species in 1996. Since that time, it has been found at an additional ten sites in Fillmore and Winona counties. Furthermore, Short's Aster is a late-flowering species that may have been overlooked because it is less likely to be noticed during the typical botanical field season. The species appears to prefer mesic to dry-mesic, forested slopes and level terrain dominated by White Oak (*Quercus alba*), Northern Red Oak (*Q. rubra*), Sugar Maple (*Acer saccharum*), and Basswood (*Tilia americana*). It typically grows in somewhat closed canopy forests, often in gaps or where partial sunlight reaches the forest floor. Given that the species is more abundant than previously thought, Threatened status is no longer necessary. However, because its habitat is threatened by residential development, livestock grazing, timber harvest, and invasive species, a status of Special Concern is still needed and reasonable.

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- Brouillet, L., J. C. Semple, G. A. Allen, K. L. Chambers, and S. D. Sundberg. 2006. *Symphyotrichum*. Pages 465-539 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 20. Oxford University Press, New York, New York.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Bacopa rotundifolia* (Michx.) Wettst.

FAMILY: Scrophulariaceae

COMMON NAME: Water-hyssop

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Water-hyssop is a small, aquatic species that is restricted to the prairie region of southwestern Minnesota. It is primarily found in small rainwater pools that form in depressions on rock outcrops and occasionally along the margins of shallow ponds. During the course of the growing season, the habitat of Water-hyssop changes from aquatic to terrestrial as the water in these ephemeral pools evaporates leaving sediments at the bottom of the pools moist or sometimes dry and cracked.

Between 1888 and 1981, only seven locations of this species were recorded in Minnesota. At the time it was listed as a Special Concern species in 1984, it was assumed that this very small and inconspicuous plant had been overlooked, and that its habitat was probably secure. However, since then a comprehensive biological survey of potential habitat in southwestern Minnesota has been completed by the Minnesota County Biological Survey. Only 22 occurrences of the species were documented and many of the populations are relatively small. Furthermore, all of the occurrences are in areas where human land use practices are intensifying and conflicting with conservation of the species. Rock quarrying, cattle grazing, and herbicide application are the most prominent threats. Mining in particular has been a growing issue over the past decade, fueled by federal highway construction standards now requiring crushed bedrock instead of gravel. Another recent threat evidenced in Rock County is the conversion of rocky pastures to cornfields by excavating the bedrock.

Given the limited amount of potential habitat for the species in the state and its limited geographic range, the small number and size of documented populations, its specialized habitat requirements and unique life history characteristics, and the current threats posed by competing land use practices, a status of Threatened is reasonable and needed.

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Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Berula erecta* (Huds.) Coville

FAMILY: Apiaceae

COMMON NAME: Stream Parsnip

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Stream Parsnip is associated with calcareous, hydrologically active habitats such as the margins of small, spring-fed streams and pools. These may occur in forest ravines, in wet seepage meadows, and in calcareous fens within southern Minnesota. Rarely does the species occur more than a few meters from where spring water flows from the ground. Several of these habitats are suspected of having been recently degraded or destroyed, mostly by road construction and water appropriation projects. Since the habitats are sustained by groundwater aquifers, which can be regional in extent, they can be damaged by projects many miles away. Any activity that interferes with normal groundwater dynamics, such as large-capacity wells, the dewatering of gravel pits or rock quarries, or deep roadcuts, could have a deleterious and irreversible effect on the species and its habitat.

Nearly half of the Stream Parsnip specimens at the J. F. Bell Museum of Natural History Herbarium were collected prior to 1975. Only a dozen new locations have been documented over the last two decades, suggesting that the species remains rare in the state. Given the species very restrictive habitat requirements, the significant threats posed by hydrological alterations, and the low rate of discovery of new locations despite botanical surveys in much of the species' potential habitat, a status of Threatened is needed and reasonable.

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- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Bidens discoidea* (Torr. & Gray) Britt.

FAMILY: Asteraceae

COMMON NAME: Discoid Beggarticks

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Discoid Beggarticks occurs on hummocks and along the edges of a variety of wetland habitats including marshes, pond margins, and river sloughs. Seasonal fluctuations in water levels may be an important characteristic of suitable habitat while strong currents or wave action could be counter-indicative. There are only 33 confirmed records of this species from Minnesota. Most are from lakes and marshes in the northeast part of the state, but three are from the Mississippi River in the southeast. Given its sporadic and widespread collection history, it is difficult to assess the status of Discoid Beggarticks in Minnesota. The small number of records may be an indication of rarity, but it is also possible that the species has been overlooked due to its superficial resemblance to two common species of *Bidens*. This is most likely true in Mississippi River habitats south of the Twin Cities, where other river species have been poorly surveyed and documented. Until a targeted botanical survey has been completed, a status of Special Concern is needed and reasonable based on the small number of occurrences.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium acuminatum* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Tailed Grapefern

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This small, perennial fern has a highly restricted range, having only been documented in Ontario, Michigan, and Minnesota. Its occurrence in Minnesota is known by a single confirmed record from Minnesota Point near the Duluth Harbor. Two specimens were found in 1995 growing in sand among the grasses and shrubs of the dune/sandbar habitat. The Tailed Grapefern plants were located among thousands of Matricary Grapefern (*Botrychium matricariifolium*) plants, which is the species it is most similar to and often confused with. In fact, Tailed Grapefern is so similar to Matricary Grapefern, a relatively common species, that any suspected specimens must be reviewed by an authority to confirm their identification. Given the great difficulty in identifying this species and the possibility that it has been overlooked, a status of Special Concern has been deemed most appropriate at this time. A more protective status may be warranted in the future if additional targeted surveys confirm the species' suspected rarity in the state.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium ascendens* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Upswept Moonwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This small, perennial fern is primarily a western species, with only a handful of records east of the Rocky Mountains. A single population of two patches was discovered in Minnesota in 1998 near Trommald in Crow Wing County and confirmed by electrophoresis in 2005. Since that time, three other populations have been reported; one from the same general area as the original find, one near Leetonia in St. Louis County, and one near Oaks Corner, Lake of the Woods County. All of the sites are associated with drained sediment basins that had previously been used to dispose of mine tailings. Over the past 30-50 years, the basins have evolved into young forests with scattered groves of early successional tree species and a patchy ground-layer of grasses and broad-leaved forbs. It is not known exactly which aspect of this habitat is so attractive to moonworts, but several different species of rare or unusual moonworts have been documented at each of the sites. The fact that the sediment basin habitats were man-made, coupled with how rapidly the species was able to colonize them, leads us to believe that a stable source of propagules may occur in more natural habitats nearby. This is supported by the occurrence of Upswept Moonwort in natural habitats in other parts of its range including coniferous forests, mesic meadows, and maritime beaches.

While several species in the genus *Botrychium* are very difficult to identify and require genetic testing that can only be performed in a laboratory, this does not appear to be the case with Upswept Moonwort. It does closely resemble several other moonwort species, however, a trained botanist can differentiate it using relatively simple morphological characters. Considering the increased interest in *Botrychium* species in recent years and the number of surveys conducted, the finding of only three populations seems to indicate that this is a very rare species in Minnesota. Like most moonwort species, Upswept Moonwort is disturbance-dependent and it tends to occur in open to partially open habitats. Habitat conditions at the Minnesota sites are presumably in a state of flux, or at least in a state of vegetational succession. In the absence of natural disturbances (e.g., wildfire, floods, rock slides, blowdowns) that periodically delay or restart succession, these habitats will turn into more mature, forested habitats that are unsuitable for Upswept Moonwort. It should be noted that the intensity, scale, and frequency of disturbance needed for the perpetuation of the species is not yet known, and it would be incorrect to assume that all types of disturbance are beneficial. Natural and man-made disturbances can have very different effects and very intense disturbances, such as those associated with development projects or heavy machinery use, may eliminate favorable habitat conditions for the species. The persistence of the species likely depends on landscape level dynamics in which patches of open habitats are continually created and lost by disturbances of varying degrees.

Given the documentation of only three populations despite targeted botanical surveys, the small size of those populations, the vulnerability of the populations to habitat succession, and the potential need for active management to maintain habitat conditions, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium lineare* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Slender Moonwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This small, perennial fern is still relatively new to science, having only been officially described in 1994. It was first discovered in Minnesota in Crow Wing County in 2005, and has only been recorded from one other location in St. Louis County. Both of the sites are associated with drained sediment basins that had previously been used to dispose of mine tailings. The fact that these basins are man-made, coupled with how rapidly the species was able to colonize them, leads us to believe that a stable source of propagules may occur in natural habitats nearby. This is supported by the occurrence of the species in grassy meadows, woodlands, and cliffs and scree slopes in other parts of its range.

While several species in the genus *Botrychium* are very difficult to identify and require genetic testing that can only be performed in a laboratory, this does not appear to be the case with Slender moonwort, which can be readily differentiated by several morphological characters by a trained botanist. Considering the increased interest in *Botrychium* species in recent years and the number of surveys conducted, the finding of only two populations seems to indicate that this is a very rare species in Minnesota. Slender Moonwort is a disturbance-dependent species that tends to occur in open to partially open habitats. However, the intensity, scale, and interval of disturbance needed for the perpetuation of the species is not yet known. Given what we do know, threats to the species would include habitat succession, the intentional planting of trees, invasive species, particularly Hawkweeds (*Hieracium* spp.), and herbicide spraying. The natural forces that periodically reset successional processes to an earlier stage, such as fire, floods, insect infestations, and windstorms, are large-scale ecological processes that do not appear to function in artificial tailings basins. As such, the long-term viability of the two known Minnesota populations is questionable. It should be noted that natural and man-made disturbances can have very different effects and it would be incorrect to assume that all types of disturbance are beneficial. Very intense disturbances, such as those associated with development projects or heavy machinery use, may eliminate favorable habitat conditions for the species. The persistence of Slender moonwort likely depends on landscape level dynamics in which patches of open habitats are continually created and lost by disturbances of varying degrees.

The hope is that additional surveys will result in the species being found in a more natural habitat in Minnesota, or at least in a habitat that can be maintained by natural disturbances. Until that time, the extremely small number of known populations, the small size of those populations, the vulnerability of the populations to habitat succession, and the potential need for active management makes a status of Endangered reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium mormo* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Goblin Fern

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This small fern is endemic to Minnesota, Wisconsin, Michigan, and possibly Quebec. Most of the records in Minnesota are from the north-central part of the state, particularly in the Chippewa National Forest, where it occurs in undisturbed, mature mesic hardwood forests dominated by Sugar Maple (*Acer saccharum*). The species requires an intact tree canopy in order to have consistently shaded, moist conditions. While concerns over habitat loss and degradation from timber management activities and land clearing prompted the species' listing as Special Concern in 1984, an even more insidious threat has emerged in recent years. The invasion of non-native earthworms is responsible for an accelerating and alarming rate of habitat degradation. The worms, which were introduced from Europe, rapidly consume the humus layer of the soil thereby rendering the habitat unsuitable for Goblin Fern. A significant number of populations of this fern have disappeared within the last decade and the trend appears to be continuing. In light of this new information, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium oneidense* (Gilbert) House

FAMILY: Ophioglossaceae

COMMON NAME: Blunt-lobed Grapefern

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Blunt-lobed Grapefern was discovered in Minnesota in 1991 in Aitkin County. This sparked the beginning of an intensive search to determine the species' range and habitat preferences in the state. By the time it was designated an Endangered species in 1996, only a handful of populations had been documented. Since that time, additional botanical surveys have been conducted and a total of 43 populations have now been located. Most of the populations are located in moist depressions in hardwood forests in the central part of the state, with a few populations recorded in extreme southeastern Minnesota. This new information indicates that this species is not as rare as previously thought, and Endangered status is no longer necessary. However, because most of the populations are small and localized around small forest wetlands, they are vulnerable to certain forest management activities, particularly practices that create significant canopy openings. Hydrologic changes and exotic earthworms may also pose a threat to the species and its habitat. Given these concerns, it is needed and reasonable to retain the species in Threatened status.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium pallidum* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Pale Moonwort

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This tiny fern has been found in a diversity of habitats including open fields, dry sand and gravel ridges, roadsides, wet depressions, marshy lakeshores, and tailings basins, as well as second-growth forests and shaded, moist, mixed hardwood forests. The species had recently been discovered in the state and very few populations were known to exist when it was designated an Endangered species in 1996. Since that time, our understanding of the species' habitat preferences has evolved and nearly 60 additional populations have been discovered in northern Minnesota. Pale Moonwort is now known to be more widely distributed and occur in a broader range of habitats than was formerly believed, and Endangered status is no longer necessary. However, it is needed and reasonable to retain the species in Special Concern status given its vulnerability to habitat encroachment, habitat succession, and invasive species.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium rugulosum* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: St. Lawrence Grapefern

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This small fern grows in low, moist habitats in brushy or grassy areas and in forest openings. It is easily confused with two other *Botrychium* species, and consequently has often been misidentified. When designated a Threatened species in 1996, it was known from less than 20 locations in northern Minnesota. Since that time, our understanding of the species' habitat preferences has evolved and nearly 50 additional populations have been discovered. St. Lawrence Grapefern is now known to be more widely distributed in Minnesota than was formerly believed, and Threatened status is no longer necessary. However, it is needed and reasonable to retain the species in Special Concern status given its vulnerability to habitat alteration and habitat succession.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Botrychium spathulatum* W.H. Wagner

FAMILY: Ophioglossaceae

COMMON NAME: Spatulate Moonwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This small, perennial fern has a widespread yet limited distribution, with scattered localities across Montana, Michigan, Wisconsin, Minnesota, and Canada. It was not known to occur in Minnesota until 1998, when a single population was found near Trommald in Crow Wing County. One other population was discovered in the same general area in 2008. Both of the sites are associated with drained sediment basins that had previously been used to dispose of mine tailings. Over the past 30-50 years, the basins have evolved into young forests with scattered groves of early successional tree species and a patchy ground-layer of grasses and broad-leaved forbs. The fact that the basins were man-made, coupled with how rapidly the species was able to colonize them, leads us to believe that a stable source of propagules may occur in more natural habitats nearby. This is supported by the occurrence of the species in natural habitats in other parts of its range including grassy meadows and sand dunes along lake and maritime shores, grassy riverbanks, shrub-grassland complexes, and subalpine slopes.

While several species in the genus *Botrychium* are very difficult to identify and require genetic testing that can only be performed in a laboratory, this does not appear to be the case with Spatulate Moonwort. It does closely resemble several other moonwort species, however, it can be readily differentiated by several morphological characters by a trained botanist. Considering the increased interest in *Botrychium* species in recent years and the number of surveys conducted, the finding of only two populations seems to indicate that this is a very rare species in Minnesota. Like most moonwort species, Spatulate Moonwort is disturbance-dependent and it tends to occur in open to partially open habitats. Habitat conditions at the only Minnesota sites are presumably in a state of flux, or at least in a state of vegetational succession. In the absence of natural disturbances (e.g., wildfire, floods, rock slides, blowdowns) that periodically delay or restart succession, these habitats will turn into more mature, forested habitats that are unsuitable for Spatulate Moonwort. It should be noted that the intensity, scale, and frequency of disturbance needed for the perpetuation of the species is not yet known, and it would be incorrect to assume that all types of disturbance are beneficial. Natural and man-made disturbances can have very different effects and very intense disturbances, such as those associated with development projects or heavy machinery use, may eliminate favorable habitat conditions for the species. The persistence of the species likely depends on landscape level dynamics in which patches of open habitats are continually created and lost by disturbances of varying degrees.

Given the documentation of only two populations despite targeted botanical surveys, the small size of those populations, the vulnerability of the populations to habitat succession, and the potential need for active management to maintain habitat conditions, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Calamagrostis purpurascens* R. Br.

FAMILY: Poaceae

COMMON NAME: Purple Reedgrass

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Within the state, this extremely rare grass species is only known by four collections from the Border Lakes region of northeastern Minnesota, where it occurs in crevices and ledges of tall cliffs. While its rarity was apparent when it was designated a species of Special Concern in 1996, the lack of current data prevented it from being assigned a more protective status at that time. However, northeastern Minnesota has recently been the subject of a comprehensive biological inventory during which only one of the previously documented populations was relocated. No new populations of Purple Reedgrass were discovered. Although there are relatively few human threats to the species' habitat, logging activities or other major disturbance on the land above occupied cliffs could result in increased erosion. In addition, recreational rock climbing, an increasingly popular activity, can dislodge the small vegetation mats growing in rock crevices and on narrow ledges. Given the documentation of only two populations since 1938 despite intensive surveys, the limited amount of potential habitat in the state, and the vulnerability of the extant populations to degradation or destruction, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Callitriche heterophylla* Pursh

OLD FAMILY: Callitrichaceae

NEW FAMILY: Plantaginaceae

COMMON NAME: Larger Water Starwort

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Larger Water Starwort is a small, aquatic plant with two disjunct ranges and habitats in Minnesota. Plants in the southwest part of the state (Big Stone, Nicollet, Pipestone, and Rock counties) occur in shallow rainwater pools on Sioux Quartzite outcrops. Plants in the northeast (Lake and St. Louis counties) occur in the shallow margins of protected bays of lakes. With only five known collections, four of which hadn't been seen since the 1940s and 1950s, Larger Water Starwort was suspected of being rare when it was designated a species of Special Concern in 1996. However, lack of current data and the amount of potential habitat that had not been adequately surveyed prevented it from being assigned a more protective status at that time. Extensive botanical surveys have now been conducted in appropriate habitat within the species' potential range, and only five additional populations have been found. In addition, one of the historical locations is suspected of having been destroyed by a quartzite mine.

Water quality degradation, herbicide treatments, and the invasion of non-native aquatic species currently threaten the lake populations of Larger Water Starwort. The rainwater pool habitats in the southwest are much smaller and more fragile than the lake habitats, and they face additional issues. Since these habitats are usually in agricultural regions, they are often subjected to cattle grazing, which can cause nutrient enrichment from manure and trampling of exposed sediments that may harbor the plant's seed bank. Herbicide drift from the routine aerial application of agricultural herbicides is another concern. Most recently, mining of rock outcrops has emerged as a serious threat, fueled by federal highway construction standards now requiring crushed bedrock instead of gravel. Given the documentation of only four populations since 1984 despite intensive surveys and the vulnerability of the extant populations to degradation and destruction, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cardamine pratensis* var. *palustris* Wimm. & Grab.

FAMILY: Brassicaceae

COMMON NAME: Cuckoo Flower

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This rare, perennial forb is known from several widely scattered and diverse locations in northern Minnesota. There are a total of ten known populations, only six of which have been located since 1964. A comprehensive biological survey of potential habitat in the region has been nearly completed by the Minnesota County Biological Survey, so it is unlikely that many additional populations will be found. The species' marsh, bog, swamp, and streamside habitats do not appear to be particularly unusual or limited, but for unknown reasons, Cuckoo Flower is absent from most apparently suitable habitat. This leads us to believe that some unknown but unique microhabitat characteristics might be a factor in the species' distribution. Potential threats to the known populations include hydrologic changes in adjacent streams and drainages, forest management activities that would result in significant canopy removal or soil disturbances, and the expansion of mining operations and associated impacts (road building, infrastructure improvements, wetland drainage, etc.) in northern Minnesota.

Given the small number of documented populations despite targeted botanical surveys, the small size of those populations, the absence of the species in apparently suitable habitat, and the vulnerability of the known populations to land use changes, a status of Threatened is reasonable and needed.

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Wisconsin Department of Natural Resources. 2007. Cuckooflower (*Cardamine pratensis*) factsheet. <<http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=20&SpecCode=PDBRA0K0Z0>>. Accessed 9 July 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex careyana* Torr. ex Dewey

FAMILY: Cyperaceae

COMMON NAME: Carey's Sedge

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial sedge reaches the northwestern limit of its range in southeastern Minnesota. It has only been documented from six locations in Houston, Fillmore, Wabasha, and Winona counties. All of the populations are on cool, shaded slopes and narrow valley bottomlands. While the species' extreme rarity was known when it was designated a Threatened species in 1996, it was hoped that a few more populations might be found with additional surveys. A comprehensive botanical survey of the region has been completed by the Minnesota County Biological Survey, and unfortunately no additional locations of Carey's Sedge have been located in the past 13 years. It is now clear that this is one of the rarest species in the state. The species' habitats are fragile and vulnerable to a variety of incompatible land use practices including canopy removal, livestock grazing, and road and trail construction. Furthermore, the invasion of nonnative species, particularly Wild Garlic Mustard (*Alliaria petiolaris*), poses a significant threat to the few remaining populations. For these reasons, a status of Endangered is reasonable and needed.

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- Gleason, H. A., and A. Cronquist. 1991. *Manual of vascular plants of northeastern United States and adjacent Canada*. Second Edition. New York Botanical Garden, Bronx, New York. 910 pp.
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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex crus-corvi* Shuttlw. ex Kunze

FAMILY: Cyperaceae

COMMON NAME: Raven's Foot Sedge

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None, and Probably Extirpated from Minnesota

BASIS FOR PROPOSED MINNESOTA STATUS: When this distinctive sedge was designated a Special Concern species in 1996, only two populations had ever been recorded in Minnesota. The collections dated 1885 and 1926, respectively and both were from bottomland areas of the Mississippi River. Some potential habitat still remained to be surveyed at the time of listing, and it was hoped that additional inventory efforts would result in the discovery of remnant populations. Unfortunately, this has not been the case and Raven's Foot Sedge is now considered extinct in Minnesota. For this reason, Special Concern status is no longer needed or reasonable.

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- Mackenzie, K. K. 1935. Cyperaceae, Tribe 1, Cariceae. North American Flora 18:169-478.
- Michigan Natural Features Inventory. 2007. Rare Species Explorer [web application]. Michigan Natural Features Inventory, Lansing, Michigan. <<http://web4.msue.msu.edu/mnfi/explorer>>. Accessed 23 June 2009.
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- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Rosendahl, C. O., and J. W. Moore. 1947. A new variety of *Sedum rosea* from southeastern Minnesota and additional notes on the flora of the region. Rhodora 49:197-202.
- Standley, L. A. 2002. *Carex* sect. *Vulpinae*. Pages 273-278 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 23. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex grayi* Carey

FAMILY: Cyperaceae

COMMON NAME: Gray's Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This sedge reaches the northwestern limits of its range in Minnesota where it is found predominately along the Mississippi River from about Hastings (Dakota County) downstream to the Iowa border. It is also found near the mouths of major tributaries such as the Zumbro and Cannon rivers. In all cases, it is very rare and dependent on complex and dynamic riverine processes. Under natural conditions, the alluvial forests in which it occurs would be flooded nearly every spring. However, because the Mississippi River is currently maintained as a navigation channel and its water levels are controlled by a series of locks and dams, this natural flooding cycle has been disrupted. This may limit the species' dispersal ability as its large, inflated seeds likely float downstream and establish in new areas during flood events. The increasing demands being placed upon the river for recreation, transportation, and industry uses is also a concern. Lastly, although not as big of a threat, logging and other land clearing activities would be destructive to the species' forest habitat. For these reasons, a status of Special Concern is reasonable and needed.

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Reznicek, A. A. 2002. *Carex* sect. *Lupulinae*. Pages 511-514 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 23. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex hookerana* Dewey

FAMILY: Cyperaceae

COMMON NAME: Hooker's Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial sedge is considered rare or uncommon throughout its North American range. It has been known from North Dakota for some time, but its presence in Minnesota was unknown until its discovery at a single site in Becker County in 2005. In general, Hooker's Sedge is considered a prairie species. The Becker County population, which consists of approximately 25 plants, occurs in roughly one acre of habitat comprised of non-native perennial grasses and brushy oak woodland. It may be a remnant of a larger population that declined following contraction and degradation of its prairie and savanna habitat. Ongoing surveys are attempting to find other populations of Hooker's Sedge nearby. Until such surveys can clarify the species' abundance and distribution in the state, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

Ball, P. W. 2002. *Carex* sect. *Phaestoglochin*. Pages 285-297 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 23. Oxford University Press, New York, New York.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 27 May 2009.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Carex katahdinensis* Fern.

NEW SCIENTIFIC NAME: *Carex conoidea* Schkuhr ex Willd.

FAMILY: Cyperaceae

COMMON NAME: Field Sedge

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When this sedge was designated a Threatened species in 1996, it appeared to be restricted to the sandy beaches of two large lakes in the Boundary Waters Canoe Area Wilderness. Subsequent taxonomic research has indicated that Katahdin Sedge may be a dwarf race of the more widespread prairie species, Field sedge (*Carex conoidea*). It appears that Katahdin Sedge has some level of genetic and ecological uniqueness, but it is no longer appropriate to consider it a separate species. For this reason, Threatened status is no longer needed or reasonable.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Lakela, O. 1954. Previously unreported plants from Minnesota with additional place records of rarities. *Rhodora* 56:39-41.
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- Ownbey, G. B., and T. Morley. 1991. *Vascular plants of Minnesota: a checklist and atlas*. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex media* R. Br.

FAMILY: Cyperaceae

COMMON NAME: Intermediate Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This rare perennial occurs primarily on the shore rocks of Lake Superior, specifically in boggy vegetation mats that develop in rock crevices and along the margins of small rock pools. There is surprisingly little of this habitat along the shore; most of the shoreline consists of jumbled rocks, boulders, or cobblestones, which are not suitable habitats for this species. Intermediate Sedge also occurs, although less commonly, in similar habitats inland from the lake and along the Kettle River in Pine County. There is some potential for the species to be found on algal talus slopes in the southeast part of the state, as has been the case in Wisconsin, but to date no Minnesota populations have been found in this type of habitat. All of the habitats in which the species occurs are small, fragile and vulnerable to a number of recreational activities and forest management practices. Only a decade ago it was assumed that rare plants along the bedrock shoreline of Lake Superior were adequately protected by the remoteness and inaccessibility of their habitat. Since then, the region has experienced a tremendous residential, recreational, and commercial boom. This has raised new concerns about the conservation needs of shore plants. The small vegetation mats where Intermediate Sedge occurs are very fragile and easily destroyed. Activities as benign as hiking can become a serious threat if concentrated along the rocky shore. For these reasons, a status of Special Concern is reasonable and needed.

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- Michigan Natural Features Inventory. 2007. Rare Species Explorer [web application]. Michigan Natural Features Inventory, Lansing, Michigan. <<http://web4.msue.msu.edu/mnfi/explorer>>. Accessed 23 June 2009.
- Murray, D. F. 2002. *Carex* sect. *Racemosae*. Pages 401-414 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 23. Oxford University Press, New York, New York.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex muskingumensis* Schwein.

FAMILY: Cyperaceae

COMMON NAME: Muskingum Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This rare sedge occurs infrequently in alluvial forests along the Mississippi River, north to about Little Falls (Morrison County). There is an 1885 herbarium specimen labeled "Center City" Chisago County, which ostensibly came from the St. Croix River valley, but that particular occurrence has never been confirmed on the ground. The initial construction and operation of locks and dams on the Mississippi River in the 1930s was responsible for the destruction of most of the floodplain forests that remained at that time. Even today, all but one of the approximately 30 known Muskingum Sedge populations occurs in remnant habitat that is directly or indirectly influenced by dam operations. In many cases, the dams prevent the seasonal flooding that sustains the floodplain forests, thereby degrading this species' habitat and the habitat of similar species that rely on periodic flooding to create optimal habitat conditions. Although not nearly as serious a threat as water level manipulation, logging occasionally occurs in the species' habitat and can be problematic if there is significant canopy removal or soil disturbance. For these reasons, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

Mastrogiuseppe, J., P. E. Rothrock, A. C. Dibble, and A. A. Reznicek. 2002. *Carex* sect. Ouales. Pages 332-378 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 23. Oxford University Press, New York, New York.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex novae-angliae* Schwein.

FAMILY: Cyperaceae

COMMON NAME: New England Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial sedge went undiscovered in Minnesota until 2001 when it was found in a moist conifer/hardwood forest in Lake County. Since then, there has been a concerted effort to determine how rare this species is in Minnesota and what its habitat requirements are. Only 28 populations have been found in moist upland forests, particularly mixed conifer/hardwood stands, and in wetland/upland ecotones. Most of the populations are small and all are concentrated within the southern half of Lake County. This represents the western edge of the species' range in North America. Furthermore, all of the known sites are in forests that are actively managed for timber production. Of particular concern is the rapid conversion of the species' mixed forest habitat to stands of spruce. Although New England Sedge has been found in forest gaps near intermediate disturbances such as old trails or blow downs, large disturbances that result in substantial canopy removal (clear-cutting) and a corresponding loss of shade and moisture could threaten the long-term viability of this species. In addition, New England Sedge may not be able to compete with the more aggressive weedy or invasive species that tend to establish after large timber harvests.

Given the small number of documented populations despite targeted botanical surveys, the small size and restricted range of those populations, the current threats posed by competing land use practices, and the vulnerability of known populations to habitat loss and degradation, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Crins, W. J., and J. H. Rettig. 2002. *Carex* sect. *Montanae*. Pages 532-545 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 23. Oxford University Press, New York, New York.
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- Shackleford, R. 2004. Conservation Assessment for New England Sedge (*Carex novae-angliae* Schwein.). United States Forest Service, Eastern Region, Milwaukee, Wisconsin. 33 pp.
- United States Department of Agriculture, Forest Service, Eastern Region (Region 9). 2006. Regional Forester Sensitive Plants. United States Forest Service, Milwaukee, Wisconsin; 21 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex ormostachya* Wieg.

FAMILY: Cyperaceae

COMMON NAME: Necklace Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial sedge occurs sporadically in upland hardwood and hardwood-conifer forests in northeastern Minnesota, typically in areas with mesic, loamy soils and moderate shade. The species has been suspected of being rare in Minnesota for a long time, but because it is somewhat of a habitat generalist and because it occurs in a relatively large portion of the state, it was thought that intensive searches would likely discover many more populations. This has not been the cases. Targeted searches in more than half of the species' potential range have been completed and only 16 populations were located. Critical aspects of the species' habitat are still poorly known, but it is clearly dependent on hardwood forests of the type that are being increasingly utilized for timber production. When surveys are completed, it may be necessary to reassess the status of this species. Until that time, the small number of known occurrences in combination with perceived threats to the species' habitat makes it reasonable and needed to list Necklace Sedge as Special Concern.

SELECTED REFERENCES:

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex rossii* Boott

FAMILY: Cyperaceae

COMMON NAME: Ross' Sedge

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial sedge was first documented in Minnesota in 1896 at an unknown location in Carlton County. In spite of intensive searches, it was not found again until 1999 when three small populations were discovered in Cook County. Since that time, only two additional populations have been documented; one in Carlton County and one in Lake County. This brings the total number of historical and recent discoveries to just six. All of the known populations occur in isolated south-facing cliff habitats, where the species typically roots in shallow crevices and ledges where small quantities of wind- or water-borne soil accumulate. Although cliffs themselves are generally permanent and indestructible, the highly specialized plants that occur on them and their microhabitats are often vulnerable to human activities. Recreational rock climbing, logging on adjacent upslope habitats, and the routing of recreational trails along cliff tops have been identified as the major potential threats to Ross' Sedge.

Given the small number of documented populations despite targeted botanical surveys, the species' restrictive/unique habitat requirements and limited geographic range in the state, the limited amount of suitable habitat, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Crins, W. J., and J. H. Rettig. 2002. *Carex* sect. *Montanae*. Pages 532-545 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 23. Oxford University Press, New York, New York.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Carex supina* var. *spaniocarpa* (Steud.) Boivin

NEW SCIENTIFIC NAME: *Carex supina* ssp. *spaniocarpa* (Steud.)Hulten

FAMILY: Cyperaceae

COMMON NAME: Weak Arctic Sedge

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: When this sedge was listed as Special Concern in 1996, it was only known by two old records (1889 and 1936) from cliffs adjacent to lakes in northern Cook County. It was not assigned a more protective status at that time because not enough inventory work had been completed in that portion of the state to evaluate the significance of the two populations. Now, after several years of targeted field surveys in potential cliff habitats, no additional populations have been discovered, indicating that it is very rare in the state.

The cliff habitat at Clearwater Lake occurs in the Boundary Waters Canoe Area Wilderness and is apparently secure from most human disturbance. The site at South Fowl Lake is just outside the federal wilderness boundary and logging operations have occurred on state land nearby. It is not certain what affect logging would have on the cliff habitat, but increased erosion is a possibility. Recreational rock climbing on the sensitive cliff faces could potentially pose a threat to both populations.

Given the limited amount of potential habitat for the species in the state, the documentation of only two populations despite intensive surveys, the absence of the species in apparently suitable habitat, and the vulnerability of just two populations to degradation or destruction, a status of Endangered is reasonable and needed.

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Ball, P. W., and D. F. Murray. 2002. *Carex* sect. *Lamprochlaena*. Pages 556-557 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 23. Oxford University Press, New York, New York.

Butters, F. K., and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. *Rhodora* 55:21-201.

Coffin, B., and L. Pfannmuller, editors. 1988. *Minnesota's endangered flora and fauna*. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

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Ownbey, G. B., and T. Morley. 1991. *Vascular plants of Minnesota: a checklist and atlas*. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Carex woodii* Dewey

FAMILY: Cyperaceae

COMMON NAME: Wood's Sedge

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When designated a Special Concern species in 1984, this perennial sedge was believed to be restricted to a handful of sites in mature forests in southeastern Minnesota. An increased awareness of the species and targeted rare plant surveys over the past two decades have resulted in the discovery of over 90 additional populations in mesic hardwood forests, including several unexpected populations in the central and northeast part of the state. Wood's Sedge is now known to be much more common and widely distributed in Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

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Rothrock, P. E., and A. A. Reznicek. 2002. *Carex* sect. Paniceae. Pages 426-431 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 23. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cheilanthes lanosa* (Michx.) D.C. Eat.

FAMILY: Pteridaceae

COMMON NAME: Hairy Lip-fern

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: This small fern was thought to occur at a single location in Winona County when it was listed as Endangered in 1996. The specimen collected from this site has since been determined to be a closely related species, Slender Lip Fern (*Cheilanthes feei*). There is also a 19th Century herbarium specimen of Hairy Lip-fern labeled "Dalles of the St. Croix", but this could place the location in either Minnesota or Wisconsin. While it is possible that Hairy Lip-fern occurs in the state, the evidence at this time is too tenuous to justify its remaining on the state endangered species list. For this reason, Endangered status is no longer needed or reasonable.

SELECTED REFERENCES:

Cobb, B. 1984. A field guide to ferns and their related families, northeastern and central North America. Houghton Mifflin Company, Boston, Massachusetts. xv + 281 pp.

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Windham, M. D., and E. W. Rabe. 1993. *Cheilanthes*. Pages 152-169 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 2. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Claytonia caroliniana* Michx.

FAMILY: Portulacaceae

COMMON NAME: Carolina Spring Beauty

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When designated a Special Concern species in 1984, this small woodland plant was believed to be largely restricted to old growth northern hardwood forests along the North Shore of Lake Superior. While the species' range is limited to extreme northeastern Minnesota, targeted rare plant surveys over the past two decades have resulted in the discovery of more than 100 populations in a broader range of forested habitats. Furthermore, many of the populations are quite large numbering in the hundreds and thousands of plants. Carolina Spring Beauty is now known to be more common and widely distributed in Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

Coffin, B., and L. Pfanmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Davis, R. J. 1966. The North American perennial species of *Claytonia*. *Brittonia* 18:193-284.

Miller, J. M. 2003. *Claytonia*. Pages 465-476 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 4. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Commelina erecta* L.

FAMILY: Commelinaceae

COMMON NAME: Slender Dayflower

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This species is known to occur at only one location in Minnesota: a sand prairie in Wabasha County that is characterized by both stabilized and active sand dunes. Based on information from adjacent states, the species may also be found in habitats associated with dry bluff prairies, talus, or rock outcrops. All potential habitats in the state have been extensively targeted for botanical searches by the Minnesota County Biological Survey and unfortunately no additional locations of Slender Dayflower were found. This is not too surprising since more than 99% of the prairie and savanna habitat that was present in the state before settlement has now been destroyed or severely degraded.

Given the limited amount of potential habitat for the species in the state, the documentation of only one population despite years of systematic botanical surveys, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Crataegus calpodendron* (Ehrh.) Medik.

FAMILY: Rosaceae

COMMON NAME: Late Hawthorn

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This large shrub has been documented from less than 15 widely-scattered sites in southeastern Minnesota, and only four small populations in Le Sueur, Rice, Mower, and Wabasha counties are known to be extant. The species presents some unusual conservation and management challenges. It is clearly associated with remnants of the large expanse of mesic hardwood forest that once spread from the southeast corner of the state to the Twin Cities area. Yet it does not reproduce well, if at all, under a dense canopy of Sugar Maple (*Acer saccharum*), which is the tree that typically dominates these habitats. Since conservation of such habitat remnants typically favors sites with a uniform, unbroken canopy of Sugar Maple, the specific habitat for Late Hawthorn is often unintentionally excluded. Larger habitat tracts that have a significant amount of topographical relief and a greater amount of microhabitat included within the forest would provide much better conservation value for the species. The continuing loss of habitat to residential, commercial, and industrial development, and the spread of invasive species, particularly Common Buckthorn (*Rhamnus cathartica*), also pose threats to the species. Further survey work is needed to clarify the species' current distribution in the state but based on the small number and size of known populations, Special Concern status is needed and reasonable at this time.

SELECTED REFERENCES:

- Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.
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- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Crataegus douglasii* Lindl.

FAMILY: Rosaceae

COMMON NAME: Black Hawthorn

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This thorny shrub occurs along rocky/gravelly stream banks, lakeshores, shrub thickets, forest margins, and rock outcrops near the Lake Superior shore. When it was designated a Threatened species in 1996, it had only been documented a handful of times and all of the populations were quite small. Since then, Black Hawthorn has been discovered at approximately 20 additional sites. This new information indicates that this species is not as rare as previously thought, and Threatened status is no longer necessary. However, it is needed and reasonable to retain the species in Special Concern status given its unique habitat preferences and restricted geographic range in the state.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Crotalaria sagittalis* L.

FAMILY: Fabaceae

COMMON NAME: Rattlebox

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Historically, this species is known to have occurred in five counties in east central and southeast Minnesota, but the only recent records are from Washington and Houston counties. Its native habitat appears to be sand prairies and sand savannas, which are in very short supply. These habitats have always been relatively rare in Minnesota, but since settlement times they have been nearly eliminated by agriculture and urban and suburban developments. Only small fragments of habitat remain and it is unclear if they can support viable populations of Rattlebox. Further survey work is needed to clarify the species' abundance and distribution in Minnesota, but given the small number of known populations and the significant loss of prairie and savanna habitats, a status of Special Concern is reasonable and needed at this time.

SELECTED REFERENCES:

Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.

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Wisconsin Department of Natural Resources. 2007. Arrow-headed Rattle-box (*Crotalaria sagittalis*) factsheet. <<http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=20&SpecCode=PDFAB160E0>>. Accessed 26 June 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Deparia acrostichoides* (Sw.) M. Kato

FAMILY: Dryopteridaceae

COMMON NAME: Silvery Spleenwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial fern reaches the northwestern limits of its range in Minnesota, where it occurs in bluffland and bottomland forest habitats in the southeastern corner of the state. Most of the species' potential habitat in the region has been systematically surveyed by the Minnesota County Biological Survey, during which approximately three dozen populations were found. The species is distinctive, so it unlikely that it was overlooked or that many more populations will be found. Woodland and bluffland habitats are becoming exceedingly rare and fragmented in southeastern Minnesota, so habitat availability is likely a limiting factor for the species. Furthermore, the species is vulnerable to livestock grazing, forest clearing, and residential development. In addition to reducing available habitat, these activities also often result in the spread of invasive species, particularly Common Buckthorn (*Rhamnus cathartica*) and Eurasian Honeysuckle shrubs (*Lonicera* spp.). Given the species' restricted range in the state, the historic loss and degradation of its bluffland and woodland habitats, and the current threats posed by land use changes and invasive species, a status of Special Concern is reasonable and needed.

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Masahiro, K. 1993. *Deparia*. Pages 254-255 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 2. Oxford University Press, New York, New York.

Minnesota Department of Natural Resources. 2005. Field guide to the native plant communities of Minnesota: the eastern broadleaf forest province. Ecological Land Classification Program, Minnesota County Biological Survey, and Natural Heritage and Nongame Research Program. Minnesota Department of Natural Resources, St. Paul, Minnesota. 394 pp.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Deschampsia flexuosa* (L.) Trin.

FAMILY: Poaceae

COMMON NAME: Slender Hair Grass

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial grass of dry, sandy, or rocky soils, often under or in association with pine forests, has only been documented seven times in Minnesota. Most of the records are from an 8-mile area between Grand Portage and Pigeon Point in northeastern Cook County. The other two records are from central Cook County near Grand Marais and Minnesota Point in St. Louis County. Six of the seven records were known when Slender Hair Grass was designated a Special Concern species in 1984, but none of them had been seen since 1975. The Minnesota Point and Pigeon Point collection sites are at the extreme eastern and western extent of Lake Superior shoreline in Minnesota, a distance of about 150 miles. It was hoped that future botanical searches of suitable near-shore habitat between these two areas would discover additional populations. This has not been the case. A comprehensive biological survey of most of the intervening area has now been completed by the Minnesota County Biological Survey, and only one additional population (Grand Marias) was found. A small, remnant population was relocated at Minnesota Point, but it is threatened by increasing development pressures and recreational activities.

Given the limited amount of potential habitat for the species in the state, the small number of documented populations despite targeted botanical surveys, the even smaller number of extant populations, and the vulnerability of those populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Barkworth, M. E. 2007. *Deschampsia*. Pages 624-633 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 24. Oxford University Press, New York, New York.
- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Desmodium cuspidatum* var. *longifolium* (Torr. & Gray) Schub.

FAMILY: Fabaceae

COMMON NAME: Big Tick Trefoil

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial forb inhabits mesic, deciduous forests in the southeast portion of the state, particularly in the region that has traditionally been called the "Big Woods". When it was listed as Special Concern in 1996, it was only known to occur at nine sites in three counties and it was believed to be extirpated from at least four other counties. However, some potential habitat remained unsearched in the Minnesota River valley and in several south central counties, and the hope was that more populations would be located when further surveys were completed. A comprehensive botanical survey of the region has now been completed by the Minnesota County Biological Survey, and unfortunately no additional locations of Big Tick Trefoil were found.

At least 90% of the species' forest habitat in the "Big Woods" has been cleared for agriculture and housing, and much of the remaining 10% has been degraded by livestock grazing and timber cutting. In addition, the invasion of non-native species, particularly Common Buckthorn (*Rhamnus cathartica*), Eurasian Honeysuckle shrubs (*Lonicera* spp.), and Wild Garlic Mustard (*Alliaria petiolaris*) seriously threatens the few remaining Big Tick Trefoil populations, which can't compete with these aggressive species. White-tailed Deer (*Odocoileus virginianus*) can also cause considerable damage to the species from grazing.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of remaining habitat in the state, and the current threats posed by competing land use practices and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Isely, D. I. 1955. The leguminosae of the north-central United States 2. Hederaceae. Iowa State College Journal of Science 30:33-118.
- Isely, D. 1998. Native and naturalized Leguminosae (*Fabaceae*) of the United States. Brigham Young University Press, Provo, Utah. 1,007 pp.
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- Randall, J. M., and J. Marnelli. 1996. Invasive plants: Weeds of the global garden. Brooklyn Botanic Gardens, Inc., Brooklyn, New York. 111 pp.

EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Desmodium nudiflorum* (L.) DC.

FAMILY: Fabaceae

COMMON NAME: Stemless Tick Trefoil

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial forest forb occurs primarily in mature, mesic oak forests. When it was listed as Special Concern in 1996, a total of 15 populations were known from Fillmore, Houston, Pine, Washington, Wabasha, and Winona counties. A comprehensive botanical survey of the region has now been completed by the Minnesota County Biological Survey, but only a handful of additional populations have been documented, including two populations in Chisago County.

Mature, mesic forests were widespread and extensive in the southeastern part of the state at the time of settlement. However, agricultural and urban expansion have subsequently fragmented and isolated these forested habitats into small postage stamp size remnants. Stemless Tick Trefoil occurs in only a small percentage of the surviving habitats and even where it does occur, the number of individuals is typically low. The primary threats to the long-term viability of the species include residential and commercial development, timber harvest, cattle grazing, and the invasion of aggressive, non-native species, particularly Common Buckthorn (*Rhamnus cathartica*), Eurasian Honeysuckle shrubs (*Lonicera* spp.), and Wild Garlic Mustard (*Alliaria petiolaris*).

Given the small number of documented populations despite targeted botanical surveys, the small size of those populations, the limited amount of remaining habitat in the state, and the current threats posed by competing land use practices and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Diarrhena obovata* (Gleason) Brandenburg

FAMILY: Poaceae

COMMON NAME: Obovate Beakgrain

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: When this woodland grass was listed as Special Concern in 1996, it had just recently been discovered in the state in a mature, mesic hardwood forest in Fillmore County. Many questions regarding its range in the state, habitat requirements, and threats to its survival remained unanswered. A comprehensive botanical survey of the region, and what is presumed to include the species' potential habitat, has now been completed by the Minnesota County Biological Survey. Unfortunately, no additional populations of Obovate Beakgrain were found. Furthermore, several potential threats to the only known population have been identified. These include forest clearing, livestock grazing, and the invasion of aggressive, non-native species, especially Common Buckthorn (*Rhamnus cathartica*) and Wild Garlic Mustard (*Alliaria petiolaris*).

Given the documentation of only one population despite intensive surveys, the absence of the species in apparently suitable habitat, and the vulnerability of the only known population to degradation or destruction, a status of Endangered is reasonable and needed.

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Brandenburg, D. M., J. R. Estes, and S. L. Collins. 1991. A revision of *Diarrhena* (Poaceae) in the United States. Bulletin of the Torrey Botanical Club 118:128-136.

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O'Connor, R. P., and M. R. Penskar. 2004. Special plant abstract for *Diarrhena americana* (American Beak Grass). Michigan Natural Features Inventory, Lansing, Michigan. 3 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Draba cana* Rydb.

FAMILY: Brassicaceae

COMMON NAME: Hoary Whitlow Grass

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This arctic disjunct was first discovered in Minnesota in 2001 on a small, bedrock island along the Lake Superior shore. A second population was subsequently located in the Boundary Water Canoe Area Wilderness in 2002. In both cases, the plants were found in crevices and shelves of cliff faces adjacent to water bodies. This habitat preference essentially limits the potential range of the species in Minnesota to the northeast corner of the state. The unique flora associated with cliff habitats has attracted botanists for decades resulting in extensive surveys of potential habitat. This combined with the distinctive nature of the plant makes it unlikely that the species has been overlooked or that many, if any, additional populations will be found. Furthermore, recreation rock climbing poses a potential threat to the Boundary Waters population, and the accumulation of guano from a large, nesting gull colony threatens the Lake Superior island population.

Given the documentation of only two populations despite intensive surveys, the small size of those populations, the species' unique/restrictive habitat requirements and limited geographic range in the state, and the vulnerability of the known populations to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

Michigan Natural Features Inventory. 2007. Rare Species Explorer [web application]. Michigan Natural Features Inventory, Lansing, Michigan. <<http://web4.msue.msu.edu/mnfi/explorer>>. Accessed 28 May 2009.

Voss, E. G. 1985. Michigan Flora. Part II: Dicots. Cranbrook Institute of Science Bulletin 59 and the University of Michigan Herbarium. University of Michigan, Ann Arbor, Michigan. 727 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Dryopteris marginalis* (L.) Gray

FAMILY: Dryopteridaceae

COMMON NAME: Marginal Shield Fern

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial fern was first discovered in Minnesota in 1981 on a sandstone bluff in Houston County. When it was designated a Threatened species in 1984, this was the only known population in the state. It was assumed that the species had been overlooked because of its rarity and its superficial resemblance to other members of the genus *Dryopteris*, but not enough inventory work had been completed at that time to confirm these suspicions. Now, after years of targeted field inventories by the Minnesota County Biological Survey, only one additional population of Marginal Shield Fern has been documented on a steep sand terrace in Fillmore County. It is clear that Marginal Shield Fern is one of the rarest species in the state. For this reason, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

- Cobb, B. 1984. A field guide to ferns and their related families, northeastern and central North America. Houghton Mifflin Company, Boston, Massachusetts. xv + 281 pp.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Elatine triandra* Schkuhr

FAMILY: Elatinaceae

COMMON NAME: Three-stamened Waterwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This tiny aquatic plant has been documented just 32 times in Minnesota, from two distinct habitat types and ranges. Approximately half of the records are from shallow rainwater pools that form in depressions on rock outcrops in the southwestern portion of the state. These habitats are under considerable pressure from cattle grazing, herbicide application, and rock quarrying. Mining in particular has been a growing issue over the past decade, fueled by federal highway construction standards now requiring crushed bedrock instead of gravel. The excavation of bedrock outcrops in order to plant corn for ethanol is another emerging threat.

The remainder of the Three-stamened Waterwort records are from clear, soft-water lakes with sandy substrates in the northeastern part of the state. While this habitat type is not as threatened as the species' rock outcrop habitat, it is susceptible to lakeshore development and the activities that often accompany such development. Furthermore, there appears to be an important microhabitat characteristic associated with the species' lake habitat that is not yet understood. This is suggested by the absence of the species in many seemingly suitable lakes. Because the species is so small, it may have been overlooked in both habitat types during some surveys. Further inventory work is needed to clarify the species' abundance and distribution in Minnesota. Until that time, the small number of known occurrences in combination with perceived threats from agricultural activities, mining, and lakeshore development make it needed and reasonable to list Three-stamened Waterwort as Special Concern.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Eleocharis nitida* Fern.

FAMILY: Cyperaceae

COMMON NAME: Neat Spikerush

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This short sedge occurs in both wet soil and in shallow water, but is absent from deeper water and marshy areas where there is dense vegetation. Though historically it was found along Lake Superior, the preferred habitat is not the typical rocky shoreline favored by many Lake Superior species. Rather, Neat Spikerush appears to be primarily associated with moist or wet peat, silt, or loam in brushy or marshy habitats. It may also occur in moist, disturbed sites, such as logging roads that cut through wetlands, ruts in trails where water collects, and shallow ditch bottoms where rainwater drains slowly. When it was designated a Threatened species in 1996, it was known by six historical records, only two of which had been relocated. Since that time, a renewed interest in the species has resulted in the discovery of over 40 additional populations. Neat Spikerush is now known to be more common and widely distributed in Minnesota than was formerly believed, and Threatened status is no longer necessary. However, it is needed and reasonable to retain the species in Special Concern status given its restricted range in the northeast corner of the state.

SELECTED REFERENCES:

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Eleocharis robbinsii* Oakes

FAMILY: Cyperaceae

COMMON NAME: Robbins' Spikerush

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This aquatic perennial was first documented in Minnesota in 1995, but after more than a decade of statewide floristic inventories of over 1,500 lakes, it is still known from just 16 sites in 8 northeastern Minnesota counties. Each of the sites supports a very fragile habitat occupied by a relatively small population of Robbin's Spikerush. Habitat conditions include shallow water (less than 1.5 meters deep) along sandy/gravelly shorelines and in protected bays of lakes in northern Minnesota. These habitats are increasingly threatened by lakeshore development and the nutrient enrichment, herbicide application, recreational activity, and vegetation management that almost always accompanies such development.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the increasing pressure on lakeshore habitats, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 7 May 2009.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Elodea bifoliata* St. John

FAMILY: Hydrocharitaceae

COMMON NAME: Two Leaf Waterweed

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This aquatic species reaches the eastern edge of its North American range in Minnesota. It has only been documented twice in the state at two widely disjunct locations: Crystal Lake in Blue Earth County and the St. Louis River near Duluth. These collections are dated 1958 and 1949, respectively, and have not been recently relocated. Aquatic plant surveys of more than 1,500 lakes have been conducted over the past decade, but no additional locations of Two Leaf Waterweed have been found. This lack of recent records gives reason to suspect a population decline. A decline is further indicated by a general degradation of aquatic habitats resulting from the significant statewide increase in lakeshore and river developments. Activities typically associated with such developments, namely nutrient enrichment, increased sedimentation, herbicide application, and vegetation management, could all pose a serious threat to the long-term viability of the species. The spread of invasive species is also a serious concern. In light of significant efforts to restore and protect the St. Louis River over the past decade, there is hope that a remnant population of Two Leaf Waterweed will be relocated in this system.

Given the extremely small number of documented populations despite targeted botanical surveys, the absence of the species in seemingly suitable habitats, the increasing statewide pressure on lakeshore habitats, and the vulnerability of aquatic species to degradation or destruction, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Gaylussacia baccata* (Wangenh.) K. Koch

FAMILY: Ericaceae

COMMON NAME: Black Huckleberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This understory shrub is common in eastern states but quite rare in Minnesota, where it has historically been documented from seven eastern counties as far north as Pine County. The occurrences are from well-drained, sandy soil or dry sandstone outcrops in forests of Northern Pin Oak (*Quercus ellipsoidalis*), Jack Pine (*Pinus banksiana*), or Red Pine (*P. resinosa*), usually in full or partial shade. Forest habitats in the eastern part of the state have been greatly reduced by more than a century of agriculture and urban development, and today only isolated fragments of suitable habitat remain. A large percentage of these fragments have been extensively searched for Black Huckleberry, yet only five populations have been located in the past 35 years. Furthermore, the species likely needs active fire management in order to maintain favorable habitat conditions. When wildfires are suppressed, as is now often the case, fire-sensitive tree species begin to invade the understory and take over the canopy. These fire-sensitive trees, typically Red Maple (*Acer rubrum*), cast more shade than the fire-dependent species they replace, and create conditions where Black Huckleberry is at a competitive disadvantage with species that are more shade-tolerant. Consequently, prescribed burns will likely be needed if this rare species is to survive in Minnesota.

Given its limited geographic range in the state, the limited amount of remaining potential habitat, the small number of documented populations despite targeted botanical surveys, the vulnerability of the known populations to successional changes, and the need for active management, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Gymnocarpium robertianum* (Hoffmann) Newman

FAMILY: Dryopteridaceae

COMMON NAME: Northern Oak Fern

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial fern has been documented 14 times in Minnesota, although about a third of the populations have not been seen since the 1960s and 1970s. The species has two disjunct ranges and habitats in the state. Populations in the southeast (Fillmore and Winona counties) are found on algalic talus slopes. These unique habitats, where environmental conditions simulate those normally found in boreal habitats, are very small (less than one acre each) and extremely fragile. Populations in the north (Becker, Beltrami, Cass, Clearwater, Hubbard, and St. Louis counties) are found in a type of conifer swamp known as forested rich peatlands. Habitats of the northern populations are perhaps less threatened than the southern ones, yet the species is extremely rare in the north and found in only a small percentage of seemingly suitable habitats. Both of the species' habitat types are considered stable, old growth or climax communities that develop in the absence of disturbance. Some potential habitat in the northern part of the state still remains to be surveyed, but given the small number of known populations, the species' restrictive habitat requirements, its absence in apparently suitable habitat, and the vulnerability of the known populations to degradation or destruction, a status of Special Concern is reasonable and needed at this time.

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- Choberka, E. G., M. R. Penskar, and P. J. Higman. 2001. Special plant abstract for *Gymnocarpium robertianum* (limestone oak fern). Michigan Natural Features Inventory, Lansing, Michigan. 2 pp.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 27 May 2009.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Gymnocladus dioica* (L.) k. Koch

FAMILY: Fabaceae

COMMON NAME: Kentucky Coffee Tree

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This unusual tree is found sporadically in hardwood forests on terraces of the Minnesota River, the Mississippi River below the Twin Cities, and a few major tributaries. Although it is clearly a forest tree, its seedlings do not do well in the shade of a dense forest canopy. It does produce suckers directly from its roots, which seem to do fairly well in the shade. However, because Kentucky Coffee Trees are usually either male or female, some sites are known to consist entirely of single-sex clones derived by root suckers from a single parent. This would not be an issue except that its populations are typically small and so far apart that there may be no gene flow between them. Sexual reproduction (via seed) may be necessary for the long-term viability of the species. Unfortunately, none of the populations are known to be reproducing in this manner. No animal that currently shares the tree's habitat is known to eat the seeds or disperse them. The pods simply fall from the tree and eventually rot where they land. It has been theorized that the animal that evolved to disperse the seeds may have become extinct near the end of the Pleistocene era. This could explain why Kentucky Coffee Trees have become so uncommon and the surviving populations are so isolated and scattered. Given its limited distribution in the state and the concerns over reproduction, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Hamamelis virginiana* L.

FAMILY: Hamamelidaceae

COMMON NAME: Witch-hazel

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This large shrub reaches the northwestern periphery of its range in Minnesota, where it occurs very sporadically in the understory of dry to moist deciduous forests in the southeastern corner of the state. When it was listed as Special Concern in 1984, only four populations were known in the state, but it was hoped that unexplored potential habitat would produce more records once further surveys were conducted. A comprehensive botanical survey of the region has now been completed by the Minnesota County Biological Survey, and only eight additional Witch-hazel populations have been discovered, indicating that it is very rare in the state.

Because of the extensive loss of forested habitats in southeast Minnesota, the extant Witch-hazel populations are restricted to about a half dozen small habitat fragments. There is concern that these fragments may not have retained the ecosystem processes that are necessary to maintain ideal habitat conditions and assure the perpetuation of the species. Other identified threats to the long-term viability of the species include forest clearing, livestock grazing, and residential development. In addition to reducing available habitat, these activities also often result in the spread of invasive species, particularly Common Buckthorn (*Rhamnus cathartica*), and Eurasian Honeysuckle shrubs (*Lonicera* spp.). If Witch-hazel is to persist in Minnesota, active management in the form of manual removal of invasive species or the creation of habitat buffers may be needed at some sites.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of remaining habitat for the species in the state, the absence of the species in apparently suitable habitat, the current threats posed by land use changes and invasive species, and the potential need for active management, a status of Threatened is reasonable and needed.

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- Fulling, E. H. 1953. American witch hazel: history, nomenclature and modern utilization. *Economic Botany* 7:359-381.
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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Helianthemum canadense* (L.) Michx.

FAMILY: Cistaceae

COMMON NAME: Canada Frostweed

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This plant occurs in remnant sand savannas, sand prairies, dunes, and barrens in southeastern Minnesota. All of these habitats are rare, small, and fragile, and they have been extensively targeted for botanical searches by the Minnesota County Biological Survey. Despite this, Canada Frostweed has been documented at only 23 locations in the state, and many of these occurrences are known to have been destroyed or degraded by livestock grazing, woody encroachment, vehicle traffic, and development. The sandy soils in which the species occurs are too fragile to support much activity and soil disturbance almost always results in an increase of non-native, invasive species such as Spotted Knapweed (*Centaurea stoebe*) and Hoary Alyssum (*Berteroa incana*). Because more than 99% of the prairie and savanna habitat that was present in the state before settlement has already been destroyed or degraded, any further habitat loss or degradation could jeopardize the long-term viability of Canada Frostweed in Minnesota. For this reason, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Hudsonia tomentosa* Nutt.

FAMILY: Cistaceae

COMMON NAME: Beach Heather

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This low, spreading, evergreen shrub requires active sand dunes, a formation that is very rare in Minnesota. While the species' rarity and restrictive habitat needs were known when it was listed as Special Concern in 1996, the degree to which its populations were threatened by accelerating habitat degradation had not yet been realized. Sand dunes are dynamic habitats with high crests and bowl-shaped depressions, called blowouts. If the blowouts are not kept open by wind, they become overgrown by grasses and other plants, rendering them unsuitable for Beach Heather. Many of the dunes in Minnesota have been planted to conifers or converted to some form of agricultural use. In addition, the increasing popularity of all-terrain vehicles, particularly in challenging sandy areas, poses an imminent threat to the species' dune habitat, which is just too fragile to sustain any vehicle use.

Given the small number of documented populations despite targeted botanical surveys, the species' restrictive/unique habitat requirements, the limited amount of remaining habitat in the state, the vulnerability of the known populations to degradation or destruction, and the potential need for active management to control competing vegetation, a status of Threatened is reasonable and needed.

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- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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- Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Huperzia appalachiana* Beitel & Mickel

FAMILY: Lycopodiaceae

COMMON NAME: Appalachian Fir Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Appalachian Fir Moss, which is actually a fern rather than a moss, has been found at approximately 20 scattered locations in four northeastern counties. However, most of the records are concentrated in a relatively small area near the shore of Lake Superior in Lake County. All of the populations are small and isolated on rather sensitive portions of cliff habitats. Although cliffs themselves are relatively permanent and indestructible, the highly specialized plants that occur on them and their microhabitats are often vulnerable to human activities. Any activities that would result in the sloughing of substrates or increased erosion, such as recreational rock climbing, logging on adjacent upslope habitats, or the routing of recreational trails along cliff tops, could threaten the long-term viability of the species. Given the limited amount of potential habitat for Appalachian Fir Moss in the state, the small number and size of documented populations, and the potential threats to the few known populations, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Hybanthus concolor* (T.F. Forst.) Spreng.

FAMILY: Violaceae

COMMON NAME: Eastern Green-violet

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Despite targeted botanical surveys, this extremely rare member of the violet family is only known to occur at one site in Minnesota - an undisturbed hardwood forest in Winona County. The forest is a mature, mesic forest dominated by Sugar Maple (*Acer saccharum*) and Basswood (*Tilia americana*), and the Eastern Green-violet population consists of approximately 20 plants growing in rich, rocky silt on a narrow valley floor below a 180-foot, east-facing bluff. Eastern Green-violet is a shade-loving species so any disturbance that reduces the tree canopy of this forested habitat and allows additional sunlight to reach the forest floor, threatens the long-term viability of the population. In addition, the soil in which the species grows is too soft and the plants themselves are too shallowly rooted to withstand much direct disturbance, such as from motorized vehicles. Given the documentation of only one population in the state despite intensive surveys, the small size of that population, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Juglans cinerea* L.

NEW SCIENTIFIC NAME: *Juglans cinerea* var. *cinerea* L.

FAMILY: Juglandaceae

COMMON NAME: Butternut

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Butternut occurs in mesic hardwood forests in loamy or alluvial soils and is perhaps most common on elevated river terraces. Until recently, it was a fairly common forest tree in east-central and southeastern Minnesota, although it typically occurs as single individuals or in small localized stands. The species is now experiencing a rapid decline due to the spread of a lethal fungal disease known as butternut canker (*Sirococcus clavigignenti-juglandacearum*). The disease was first reported in Wisconsin in 1967 and reached southeastern Minnesota in the 1970s. It has since spread throughout the state and the species' North American range. There is no known treatment or control for butternut canker. In some areas, healthy and presumably resistant trees have been found growing adjacent to diseased trees. Unfortunately, the resistant individuals likely do not breed disease resistant progeny through sexual reproduction. This combined with the fact that butternut is a relatively short lived tree means it is unlikely that many, if any, butternut populations will be able to persist in the long-term. Cuttings may be able to be taken from the healthy trees and propagated for tree plantation or landscaping purposes, but the future for wild butternut is bleak. Given the high potential for butternut to become extirpated in Minnesota forests, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Juncus articulatus* L.

FAMILY: Juncaceae

COMMON NAME: Jointed Rush

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial rush was first documented from the shores of White Bear Lake in Ramsey County in 1926. It was not recorded again in the state until 1998, when it was found along the north bay of Glacier Lake in Aitkin County. This population represents the only recent observation of the species in Minnesota despite targeted botanical surveys of more than 1,500 lakes conducted by the Minnesota County Biological Survey. Jointed Rush is a distinctive species, so it is unlikely that it would have been overlooked during surveys. The fate of the White Bear Lake population is unknown, but presumed to have been destroyed, given the significant amount of development along the lake.

Glacier Lake is a high quality lake with only private access. Currently only a portion of the lakeshore is developed, but the entire lake is heavily used for recreational activities. The fact that the plants are located along the sandy shoreline immediately adjacent to the lake access makes them especially vulnerable to disturbance from trampling and pollution. Nutrient enrichment, herbicide application, and vegetation management, all activities typically associated with lakeshore development, also pose a serious threat to the long-term viability of this population.

Given the documentation of only one extant population despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the increasing statewide pressure on lakeshore habitats, particularly sandy lakeshores, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Juncus marginatus* Rostk.

FAMILY: Juncaceae

COMMON NAME: Marginated Rush

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Marginated Rush is a species of shallow wetlands and wetland margins on the Anoka Sandplain. These habitats develop where depressions in the land dip slightly below the water table allowing water to saturate the otherwise well-drained, sandy soil. When the species was listed as Special Concern in 1996, it was only known by a single population that had not been seen since 1927. It was feared that the species may have been extirpated in the state, but there was still some potential habitat that remained to be searched. In 1999, a cluster of small colonies was unexpectedly found in isolated habitat fragments near Blaine in Anoka County.

The habitat fragments where the species occurs are located in a rapidly developing area of the Twin Cities metropolitan area. They are in very fragile condition and need active management to survive. Protection/restoration of the natural hydrological regime is the primary concern, although non-compatible recreational uses in such areas, particularly off-road vehicle use, also pose a threat to the species' viability. Lastly, vegetation management to control encroaching shrubs and invasive species is needed since the habitat fragments have been isolated from the ecosystem processes that would normally maintain them. The spread of Common Buckthorn (*Rhamnus cathartica*) and Reed Canary Grass (*Phalaris arundinacea*) pose the greatest threat to the species.

Given the recent documentation of only one population despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the absence of the species in apparently suitable habitat, the historic and present loss of wetland habitats, the vulnerability of the known populations to degradation or destruction, and the need for active management, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Juncus subtilis* E. Mey.

FAMILY: Juncaceae

COMMON NAME: Slender Rush

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This small, aquatic rush was unknown in Minnesota until it was discovered in the Border Lakes region of Cook County in 1998. This is an ecologically unique area that has long been known to harbor a disproportionately high number of rare plant species. Scattered patches of Slender Rush were found in shallow water over a sandy substrate in a small bay of an oligotrophic lake that has exceptionally high water quality. Previous and subsequent searches of similar habitats nearby were unsuccessful in locating any additional populations of the rare rush. The species appears to have a unique adaptation that allows it to survive being submerged under several inches or feet of water when lake levels are high, and being stranded on a beach when water levels have receded. In fact, this pattern of being alternately exposed and submerged may be crucial to certain aspects of its population biology, particularly reproduction and recruitment.

Since the Minnesota population of Slender Rush is located in a federal wilderness area, it is protected from most forms of human disturbance. However, this particular wilderness area is heavily used by recreationalists, and shallow, sandy bays are a great attraction to visitors. While casual visitation, including canoeing, swimming and fishing should not threaten the population, establishing a campsite in the bay or routing a portage to or from the bay could jeopardize the viability of Minnesota's only known population.

Given the documentation of only one Slender Rush population despite intensive surveys, the absence of the species in apparently suitable habitat, its unique and potentially restrictive habitat requirements, its limited geographic range in the state, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Leersia lenticularis* Michx.

FAMILY: Poaceae

COMMON NAME: Catchfly Grass

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial grass reaches the northwestern limit of its range in Minnesota where it is restricted to forested habitats on the floodplain of the Mississippi River in three southeastern counties. It is rather unique in that it is adapted to the harsh conditions of annual flooding. When the species was listed as Special Concern in 1984, not enough inventory work had been completed to evaluate the significance of the handful of known populations. But now, after years of intensive field inventory only four additional populations have been discovered, confirming that it is very rare in the state.

Threats to the long-term viability of the few remaining Catchfly Grass populations include the manipulation of water levels on the Mississippi River to accommodate barge traffic, which disrupts the natural flood cycles of floodplain forests, and the invasion of aggressive, non-native species, particularly Reed Canary Grass (*Phalaris arundinacea*), which renders the species' habitat unsuitable. Given the small number of documented populations despite targeted botanical surveys, the species' unique/restrictive habitat requirements and limited geographic range in the state, the historic and present loss of floodplain forest habitats, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

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- Pyrah, G. L. 2007. *Leersia*. Pages 42-45 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 24. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Luzula parviflora* ssp. *melanocarpa* (Michx.) Hamet-Ahti

NEW SCIENTIFIC NAME: *Luzula parviflora* (Ehrh.) Desv.

COMMON NAME: Small-flowered Woodrush

FAMILY: Juncaceae

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Small-flowered Woodrush is a short-lived perennial that is restricted to the Arrowhead region in the northeastern corner of the state. It is adapted to shaded, acidic, forest environments including conifer swamps, wet hardwood forests, and upland forests with a variety of hardwoods or conifers. When the species was listed as Special Concern in 1984, only three pre-1948 locations from the rocky shoreline of Lake Superior had been recorded. Because that part of the state had never been systematically surveyed for rare plant species, it was assigned to Special Concern status until systematic surveys could be completed. Now, after several years of targeted field inventories by the Minnesota County Biological Survey, only 23 additional populations have been documented, confirming that it is indeed very rare in the state. None of the historical records could be relocated, but all but one of the recent records is within a few miles of Lake Superior.

It is unclear why this species is so rare and why so few individuals exist at each site, but it is likely related to the biology of the species. The only immediate management consideration is the maintenance of important habitat parameters. This entails preserving the structure of the forest canopy and the integrity of the soil environment in which the species occurs. Mining, road and trail building, clearcutting and associated site preparation, and lakeshore development are all activities that could negatively impact the species' habitat and threaten its populations. Given the documentation of so few populations despite intensive surveys, the small size of those populations, the absence of the species in apparently suitable habitat, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Cheney, L. S. 1893. A contribution to the flora of the Lake Superior Region. Transactions of the Wisconsin Academy of Sciences, Arts and Letters 9:234-254.
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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Minuartia dawsonensis* (Britt.) House

FAMILY: Caryophyllaceae

COMMON NAME: Rock Sandwort

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This small, loosely tufted perennial grows on sedimentary bedrock exposures in the southeastern corner of the state, and on sand and gravel deposits in the northwestern corner of the state. When it was listed as Special Concern in 1984, only eight populations had been recorded in the state, with the most recent record dated 1962. Because the species' potential habitat had never been systematically surveyed for rare plants, it was assigned to Special Concern status until such surveys could be completed. Now, after years of targeted field inventories by the Minnesota County Biological Survey, only 17 additional populations have been documented in the state, and none of the historical records could be relocated.

For unknown reasons, the vast majority of habitats that appear to be suitable do not harbor this rare species. When found, the habitats tend to be small (sometimes only a few square meters in size), fragile, and isolated from other similar habitats. Furthermore, the populations themselves tend to be small. This combination of factors allows for very little leeway when considering potential threats. The sites are simply too small to be able to withstand any competing use, even passive recreational use such as hiking or camping. Motorized vehicle use, livestock grazing, herbicide use, and extractive activity at occupied sites would all stand to threaten the long-term viability of the species in the state. The encroachment of woody vegetation due to fire suppression is also a concern since the species generally needs full sunlight, and it does not appear to compete well with more aggressive species.

Given the small number of documented populations despite targeted botanical surveys, the small size of the populations, the absence of the species in apparently suitable habitat, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Myriophyllum heterophyllum* Michx.

FAMILY: Haloragaceae

COMMON NAME: Broadleaf Water Milfoil

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Despite botanical surveys of more than 1,500 lakes by DNR surveyors, this submerged aquatic plant has only been documented from two connected lakes in northern St. Louis County. It is uncertain if this population is a stable, long-surviving population or merely transient, although its presence in the Superior National Forest appears to support a stable history. It is also unclear why the species has been found in only these two lakes and not in any other nearby lakes. Further inventory work is needed to help answer these questions and clarify the species' distribution in the state. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

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Robert W. Freckmann Herbarium, University of Wisconsin, Stevens Point. 2009. *Plants of Wisconsin* web site. <<http://wisplants.uwsp.edu>>. Accessed 24 June 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Najas guadalupensis* ssp. *olivacea* (Rosendahl & Butters) Haynes & C.B. Hellquist

FAMILY: Najadaceae

COMMON NAME: Southern Naiad

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This submerged aquatic plant is considered a Great Lakes endemic. It was first documented in Minnesota in Norway Lake, Kandiyohi County in 1932. Since that time, botanical surveys of more than 1,500 lakes have been completed by the Minnesota County Biological Survey during which Southern Naiad was recorded in about seven dozen lakes in the central part of the state. The species occurs along the margins of fairly alkaline lakes in 1-2 meters of water with sand or silt substrates. The greatest threat to the species is the rapid development of lakeshore property and the deterioration of aquatic habitats that often accompanies such development. Activities that result in acidification of lake conditions would be particularly detrimental. Given the relatively small number of documented populations despite targeted botanical surveys, the increasing statewide pressure on lakeshore habitats, and the importance of Minnesota's populations to the global security of the species, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Nuttallanthus canadensis* (L.) D.A. Sutton

FAMILY: Scrophulariaceae

COMMON NAME: Old Field Toadflax

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Despite extensive surveys of potential habitat, this annual forb has only been documented approximately 25 times in Minnesota in 11 counties. The counties occur along a southeast to northwest line from Houston County to Benton County. Habitats vary slightly, but they are usually some type of dry, sparsely vegetated grasslands that develop on sand dunes and sandy outwash plains. This type of habitat has always been uncommon in Minnesota, but high quality examples have become quite rare since settlement times. Agriculture, urban development, and invasive species have all contributed to the loss and degradation of the species' habitat, and this trend is continuing.

As an annual, Old Field Toadflax has the capacity to take advantage of recently disturbed soils where competition has been reduced. This includes small areas such as a pocket-gopher mound or large areas such as a plowed field. However, in most cases, the species only occupies disturbed habitats that are within a larger area of native habitat. It is unclear how well the species can persist in small habitat fragments that have lost important natural ecosystem processes such as fire and, in the case of dune habitats, active wind erosion. The absence of keystone animal species such as pocket gophers, which limit competing vegetation, may also pose a problem for the long-term viability of the species. On the basis of the small number of known populations and the limited amount of potential habitat for the species in the state, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Orobanche fasciculata* Nutt.

FAMILY: Orobanchaceae

COMMON NAME: Clustered Broomrape

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This parasitic plant completely lacks chlorophyll, deriving its nutritional needs from the roots of other plant species. It occurs in prairies and sand dunes, particularly in excessively drained, loose, sandy or gravelly soil. While severe habitat loss of these community types was apparent when Clustered Broomrape was designated a species of Special Concern in 1984, the lack of systematic surveys prevented it from being assigned a more protective status at that time. All of the northwestern and southeastern counties within the species' suspected range have now been the subject of a comprehensive botanical inventory, during which only 13 populations were discovered. This brings the total number of historical and recent discoveries to 21, confirming that this is a very rare species in Minnesota.

Furthermore, the fragmented habitat remnants in which the species survives today are threatened by the invasion of non-native species, sand and gravel mining, economic pressures to utilize grasslands for energy production, and the expansion of residential developments. And while the parasitic nature of the species does not imply any specific management or conservation needs, it does make it even more important to maintain the health of the whole community of plants in which it lives.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of remaining habitat for the species in the state, the historic and present loss of prairie and sand dune habitats, its unique life history characteristics, and the current threats posed by land use changes and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Orobanche ludoviciana* Nutt.

NEW SCIENTIFIC NAME: *Orobanche ludoviciana* var. *ludoviciana* Nutt.

FAMILY: Orobanchaceae

COMMON NAME: Louisiana Broomrape

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This small plant has likely always been rare in Minnesota but it is known to have occurred sporadically in sand dunes and gravelly prairies in western and southeastern Minnesota. It is an obligate root parasite that lacks chlorophyll, and consequently it is limited to sites where suitable host plants are present. When designated a Special Concern species in 1984, it was known from just five sites in northwestern Minnesota. However, the lack of systematic surveys prevented it from being assigned a more protective status at that time. Now, after years of targeted field inventories by the Minnesota County Biological Survey only nineteen populations have been documented in the state. This is not entirely surprising given that over 99% of the prairie and savanna habitat that was present in the state before settlement has been destroyed or degraded.

Many of the known Louisiana Broomrape populations are quite small and the fragmented habitat remnants in which they occur are susceptible to the invasion of non-native species, sand and gravel mining exploits, energy production ventures, and the expansion of residential developments. Furthermore, the parasitic nature of the plant likely restricts the species to habitats where host plants have large and healthy populations. In a fragmented landscape, it may be very difficult for the species to find and colonize such habitats.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat in the state, the historic and present loss of prairie and sand dune habitats, the species' unique life history characteristics, and the current threats posed by habitat fragmentation, land use changes, and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Orobanche uniflora* L.

FAMILY: Orobanchaceae

COMMON NAME: One-flowered Broomrape

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: As with all species in this genus, One-flowered Broomrape is a root parasite that derives its nutritional needs from other plant species. However, unlike the other two *Orobanche* species in Minnesota, this particular species is associated with woodland and bluff prairie habitats. When it was designated a Special Concern species in 1984, only seven populations had been documented from central and southeastern Minnesota and none since 1967. Because the species is small and easily overlooked, it was hoped that unexplored potential habitats would yield more records once further surveys could be conducted. Unfortunately, after more than two decades of rare plant inventories, only eight additional populations have been discovered. Furthermore, all of the populations are quite small. Woodland and bluff prairie habitats are becoming exceedingly rare in southeastern Minnesota, so habitat availability is likely a limiting factor for the species. In addition, the parasitic nature of the plant likely restricts it to habitats where host plants have large and healthy populations. In a fragmented landscape, it may be very difficult for One-flowered Broomrape to find and colonize such habitats.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat in the state, the historic and present loss of woodland and bluff habitats, the species' unique life history characteristics, and the current threats posed by habitat fragmentation, land use changes, and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Kuijt, F. 1969. The biology of parasitic plants. University of California Press, Berkeley, California.

Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Paronychia canadensis* (L.) Wood

FAMILY: Caryophyllaceae

COMMON NAME: Canada Forked Chickweed

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Canadian Forked Chickweed is a small, herbaceous annual of dry, sandy woodlands. In Minnesota, it is associated with oak or jack pine savannas in the southeast, often on slightly raised river terraces in partial sun. It has only been documented from five locations in Houston and Fillmore counties, and one of the populations has not been successfully relocated since its last observation in 1920. The species' extreme rarity was known when it was designated a Threatened species in 1996, however it was hoped that more populations might be found with additional surveys. A comprehensive botanical survey of the region has been completed by the Minnesota County Biological Survey, and unfortunately no additional populations of Canadian Forked Chickweed have been located in the past 13 years. In addition, the known populations are threatened by further habitat loss and degradation. Current threats include residential developments, vegetation changes that remove open microhabitats, and conversion to agriculture, including tree plantations. For these reasons, a status of Endangered is reasonable and needed.

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- Core, E. L. 1941. North American species of *Paronychia*. *The American Midland Naturalist* 26:369-397.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Phacelia franklinii* (R. Br.) Gray

FAMILY: Hydrophyllaceae

COMMON NAME: Franklin's Phacelia

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: When Franklin's Phacelia was listed as Special Concern in 1996, there were only five documented records of the species from Minnesota; all were from the northeast corner of the state and dated prior to 1951. The lack of current data and systematic surveys prevented it from being assigned a more protective status at that time. Now, after years of targeted field inventories by the Minnesota County Biological Survey, only four additional populations have been documented in the state (Lake and Cook counties), and none of the previously known populations could be relocated. Furthermore, each of the extant populations is extremely small, consisting of just 1-10 individuals. Since the species is relatively large and conspicuous, it is unlikely that it has been overlooked during surveys or that many additional populations will be located.

Exactly why the species is so rare is still not known. It has been documented from a number of slightly different habitat types near lakes including cliffs, talus, tip-up mounds, and rocks. All of these are considered early successional, sparsely vegetated habitats, which corresponds with the species' apparent need for small patches of disturbance. The disturbances tend to be quite small in scale; just enough to allow for direct sunlight and minimal root competition. Such disturbances are often caused by a single tree tipping over or a single boulder falling from a cliff. Large scale disturbances such as clearcutting or mining do not appear to be appropriate and may have the opposite effect of eliminating the greater habitat in which the species' microhabitat occurs. Invasive species including Spotted Knapweed (*Centaurea maculosa*) and several non-native Hawkweeds (*Hieracium* spp.) are also becoming more abundant in Franklin's Phacelia habitat, which may pose a serious risk to the long-term viability of the remaining populations.

Given the recent documentation of only four populations despite targeted botanical surveys, the extremely small size of those populations, the absence of the species in apparently suitable habitat, and the vulnerability of such a small number of populations to degradation or destruction, a status of Threatened is reasonable and needed.

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Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Phegopteris hexagonoptera* (Michx.) Fee

FAMILY: Thelypteridaceae

COMMON NAME: Broad Beech Fern

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This woodland fern reaches the northwestern edge of its range in southeastern Minnesota. It has been documented a total of six times from Houston, Fillmore, Winona, and Wabasha counties, although three of the populations have not been seen since 1903, 1958, and 1979, respectively. All of the populations were found in rich, moist soil, primarily on north-facing, forest slopes dominated by Sugar Maple (*Acer saccharum*), Oaks, (*Quercus* spp.), and Basswood (*Tilia americana*). While the species' extreme rarity was apparent when it was designated a Threatened species in 1996, it was hoped that a few more populations might be found with additional surveys. A comprehensive botanical survey of the region has been nearly completed by the Minnesota County Biological Survey, and unfortunately only one population of Broad Beech Fern has been found in the past 14 years. Furthermore, woodlands in the southeast corner of the state are especially fragile because of their rugged, stream-dissected topography. The long-term viability of the species depends on the maintenance of cool, moist, shaded habitat conditions. Activities including canopy removal, livestock grazing, and road and trail construction would all be detrimental. Furthermore, the invasion of nonnative species, particularly Wild Garlic Mustard (*Alliaria petiolaris*), poses a significant threat to the few remaining populations. For these reasons, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Phlox maculata* L.

FAMILY: Polemoniaceae

COMMON NAME: Wild Sweet William

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Wild Sweet William was relatively widespread and perhaps even common in Minnesota at the time of settlement. In fact, its mesic prairie, wet prairie, and wet meadow habitats were once abundant in several southeastern counties. Regrettably, more than 99% of the prairie and meadow habitat that was present in that part of the state before settlement has since been destroyed or degraded. Most of the habitat was converted to agricultural purposes such as crop production and livestock grazing, although additional losses can be attributed to the expansion of urban areas and road building. Given the severe loss of habitat, it is reasonable to assume that Wild Sweet William has also suffered a significant population decline. This is further supported by the documentation of just 12 populations in the past 30 years. Further survey work is needed to clarify this species' distribution in wet meadow habitats, but given the small number of known populations and the well-documented loss of its prairie habitat, a status of Special Concern is reasonable and needed at this time.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Piptatherum canadense* (Poiret) Dorn

FAMILY: Poaceae

COMMON NAME: Canadian Ricegrass

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial grass was first discovered in Minnesota in 2003, and to date a total of eight populations have been recorded. Six of these populations are concentrated within a 3-mile area in western Lake County. All of these sites are within the Superior National Forest in areas that have undergone some harvest activity in the past. The single outlier population is located on gravelly, upland islands and knobs in a Black Spruce (*Picea mariana*) swamp in western St. Louis County. Because surveys in this part of the state have been extensive and because the species is distinctive, it is unlikely that it has been overlooked or that many additional populations will be found.

Canadian Ricegrass is likely a fire-dependent species and it occurs under scattered canopies and in small forest openings. It appears to require some level of disturbance to maintain these canopy gaps and prevent succession. While the species is presumably adapted to natural disturbances such as wildfires and windthrow, its threshold of tolerance for human-caused disturbances is unknown. The invasion of Spotted Knapweed (*Centaurea maculosa*) or Orange Hawkweed (*Hieracium aurantiacum*), which often accompany human disturbances, and herbicide use in occupied areas would certainly pose a threat to the species.

Given the small number of documented populations despite targeted botanical surveys, the relatively small size of the populations, the absence of the species in apparently suitable habitat, and the vulnerability of the few known populations to degradation or destruction, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Plagiobothrys scouleri* var. *penicillatus* (Hook. & Arn.) I.M. Johnston

FAMILY: Boraginaceae

COMMON NAME: Scouler's Popcornflower

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This small wetland plant is restricted to the prairie region of southwestern Minnesota, where it is associated with bedrock outcrops. It has been documented 11 times from a three county area. In all cases, the species has been found in and along the margins of small, ephemeral rainwater pools that form in depressions on rock outcrops. All of the populations are in areas where human land use practices are intensifying and competing with conservation practices. Rock quarrying, cattle grazing, and herbicide application are the most prominent threats to the species and its habitat. Mining in particular has been a growing issue over the past decade, fueled by federal highway construction standards now requiring crushed bedrock instead of gravel. Another recent threat evidenced in Rock County is the conversion of rocky pastures to cornfields by excavating the bedrock. Survey work for this species is still ongoing, but given its restricted range and habitat type, the small number of known occurrences, and the perceived threats from land use changes, a status of Special Concern is needed and reasonable at this time.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Plantago elongata* Pursh

FAMILY: Plantaginaceae

COMMON NAME: Slender Plantain

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This tiny, annual plant is restricted to southwest Minnesota where it occurs in seepage and rainwater pools that form on and between bedrock outcrops. When designated a Threatened species in 1984, it was known from just three records in Rock and Pipestone counties, two of which had not been seen since 1945. Since that time, both of the historical records have been relocated and an additional seven populations have been discovered. All of the populations are quite large, numbering in the hundreds and thousands of plants. Furthermore, the species appears to be tolerant of livestock grazing as evidenced by its presence in moist areas of several heavily grazed prairies. Slender Plantain is very small, and it is visible for only a short period of time before it disappears. This likely explains why it was overlooked in past surveys. This new information indicates that this species is not as rare as previously thought, and Threatened status is no longer necessary. However, Special Concern status is still needed and reasonable given the species' restricted range in the state and the potential threats from herbicide application and bedrock mining.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Platanthera flava* var. *herbiola* (R. Br. ex Ait. f.) Luer

FAMILY: Orchidaceae

COMMON NAME: Tubercled Rein Orchid

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This unusual orchid reaches the northwestern limit of its range in Minnesota, where it occurs in wet prairies and meadows, swales in mesic prairies, and sandy or peaty habitats along the edges of marshes, swamps, or lakeshores. When it was designated an Endangered species in 1984, only eight populations had been reported in the state and only two of those had been confirmed. Since that time, extensive surveys in potential habitats have resulted in the discovery of nearly 40 additional populations in central, northeastern, and southeastern Minnesota. Given that the species is more abundant and widely distributed than previously thought, Endangered status is no longer necessary. However, because several of the populations are known to have been destroyed, many of the others are in areas experiencing tremendous development pressures, and the species may be sought after by orchid fanciers, it is needed and reasonable to retain the species in Threatened status.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Polygonum viviparum* L.

NEW SCIENTIFIC NAME: *Bistorta vivipara* (L.) S.F. Gray

FAMILY: Polygonaceae

COMMON NAME: Alpine Bistort

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This small, viviparous plant occurs in small mats of vegetation that develop primarily on the wet cobble beaches, and to a lesser extent in bedrock crevices, along the shore of Lake Superior. These habitats are generally within 30 meters of the shore and exist only because of the unique environment provided by the lake. Approximately ten populations of Alpine Bistort have been documented in the state, most of which are in a relatively small area along the shore in Cook County. All of the populations are small and confined to microhabitats that are often only a square meter in size. While the species' rarity and restrictive habitat needs were known when it was listed as Special Concern in 1984, threats to its populations from recreational activities and development along the shore had not yet materialized. The small vegetation mats where Alpine Bistort occurs are very fragile and easily destroyed. Activities as benign as hiking can become a serious threat if concentrated along the rocky shore.

Given the small number and size of populations in Minnesota, the species' restrictive habitat requirements, the limited amount of available habitat in the state, and the vulnerability of the known populations to degradation or destruction from increasing development pressures and associated activities, a status of Threatened is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Polystichum acrostichoides* (Michx.) Schott

FAMILY: Dryopteridaceae

COMMON NAME: Christmas Fern

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This evergreen fern reaches the northwestern edge of its range in southeastern Minnesota. It has only been documented twice in the state; once in Houston County and once in Winona County. Both times the species was found on river bluffs in mesic hardwood forests and both records are from 1979. While the species' extreme rarity was known when it was designated a Threatened species in 1996, it was hoped that some unexplored potential habitat would yield more records. A comprehensive botanical survey of the region has now been completed by the Minnesota County Biological Survey, and unfortunately no additional locations of Christmas Fern have been found. It is now clear that this is one of the rarest species in the state. Furthermore, the widespread use of this species in the horticultural trade could threaten the genetic integrity of Minnesota populations if plantings of different genetic stock are done in the vicinity of native populations. For these reasons, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Polystichum braunii* (Spenner) Fee

FAMILY: Dryopteridaceae

COMMON NAME: Braun's Holly Fern

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This rare fern was first discovered in Minnesota in 1966 in a gorge of the Kadunce River in Cook County. By the time it was listed as an Endangered species in 1984, it had only been found at one other location in a similar habitat approximately 4 kilometers away. Since that time, most of the species' potential habitat has been surveyed and a total of 12 populations are now known to occur in Cook and Lake counties. Most of the additional populations have been found along slopes, rocky draws, and ephemeral streams in rich hardwood forests dominated by Sugar Maple (*Acer saccharum*) and Yellow Birch (*Betula allegheniensis*). All of the known sites are cool, moist, and shaded, and occur within 8.5 kilometers of Lake Superior. The largest populations contain up to 150 plants, but most colonies have 5-30 individuals.

The recent survey results indicate that Braun's Holly Fern is not quite as rare as previously thought, and Endangered status is no longer necessary. However, given the species' restricted range in the state, its absence from apparently suitable habitats, the small size and localized nature of its populations, and the vulnerability of the populations to trampling, tree canopy removal, and water table or stream manipulations, it is needed and reasonable to retain the species in Threatened status.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Potamogeton confervoides* Reichenb.

FAMILY: Potamogetonaceae

COMMON NAME: Algae-like Pondweed

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This submersed aquatic occurs primarily in eastern North America, with disjunct populations in several Great Lakes states. It was first discovered in Minnesota in 2008 in a small bog pond in the Boundary Waters Canoe Area Wilderness. This remains the only known population in the state. Throughout its range, Algae-like Pondweed occurs in shallow waters of acidic bogs, soft water lakes, peatlands, and slow-moving streams. It is a visually distinctive species that would not be easily overlooked by a trained botanist. Considering the extensive amount of botanical work that has been completed in northern Minnesota, particularly in lake and bog habitats, this is possibly one of the rarest species in the state.

Algae-like Pondweed requires acidic environments and any activities that would result in eutrophication or increased alkalinity of its habitats would be detrimental. Such activities could include lakeshore development, peat mining, intensive timber harvest, herbicide treatment, and liming of ponds for fisheries management. While the single Minnesota population is located in a remote wilderness area and presumed to be reasonably secure, it would still be highly vulnerable to changes in water chemistry or modifications to its hydrological regime.

Given the documentation of only one population despite years of botanical surveys, the species' restrictive water chemistry requirements, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Potamogeton oakesianus* J.W. Robbins

FAMILY: Potamogetonaceae

COMMON NAME: Oakes' Pondweed

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This submerged aquatic plant has been documented just 18 times in central and northeastern Minnesota despite the comprehensive floristic inventory of more than 1,500 lakes conducted by the Minnesota County Biological Survey. All of the locations have been along shores and bays of small to medium size lakes that have sandy or silty bottoms and good water clarity. Several of the lake habitats are bog-shored and others have bedrock shorelines. Presently, many of the lakes have been minimally developed and some intact, wooded shorelines remain. However, roadways border portions of all of the lakes and the increasing development and recreational pressures being placed on lakeshore habitats in northern Minnesota is a serious concern. Because lakes are fluid and typically contained systems, a perturbation at one location can have far reaching effects and impact an entire aquatic community. Such disturbances may include shoreline manipulation, erosion, runoff and nutrient enrichment from fertilizers, road salt, and other pollutants, herbicide treatment, use of weed rollers, and invasion of non-native species. Any activity that would increase eutrophication or sedimentation, decrease water clarity, or substantially alter lake substrates would threaten the viability of an Oakes' Pondweed population.

Given the small number of documented populations despite targeted botanical surveys, the increasing pressure on lakeshore habitats, and the significant vulnerability of the known populations to degradation or destruction, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Potamogeton pulcher* Tuckerman

FAMILY: Potamogetonaceae

COMMON NAME: Spotted Pondweed

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This submerged, aquatic plant is known from only three lakes in Minnesota: Allen Lake in Clearwater County, Colby Lake in Chisago County, and Egg Lake in Cass County. Botanical surveys of more than 1,500 lakes have now been completed by the Minnesota County Biological Survey, and the results indicate this is one of the rarest plants in the state. Where found, the species occurs in water less than 2-meters deep, in substrates of deep silt and fine, organic sediments. Additionally, all three lakes have good water clarity. Any deterioration of water quality in these lakes could lead to the extirpation of the species in Minnesota. Therefore, on the basis of extreme rarity and perceived threats, a status of Endangered is reasonable and needed.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Potamogeton vaginatus* Turcz.

NEW SCIENTIFIC NAME: *Stuckenia vaginata* (Turcz.) Holub

FAMILY: Potamogetonaceae

COMMON NAME: Sheathed Pondweed

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Despite floristic inventories of more than 1,500 lakes, this submerged aquatic plant has been documented only eight times in northern Minnesota since 1956. Where found, it has been growing in deepwater zones and near shore areas of very large, fairly alkaline lakes. The relatively small number of such lakes in Minnesota is likely a limiting factor for the species. While the species' rarity was suspected when it was listed as Special Concern in 1996, it was hoped that unexplored potential habitat would produce many more records once further surveys were conducted. Unfortunately, that hasn't been the case.

Potential threats to the few known Sheathed Pondweed populations include lakeshore development, declining water quality, invasion of non-native species, herbicide treatment, and artificial water and shoreline manipulation. In addition, the direct traffic and wave action produced by large watercraft, which can cause the plants to be uprooted, is a serious concern. At least two of the known populations are located in precarious spots in the main boat channel and near the public water access site.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the increasing statewide pressure on lakeshore habitats, and the vulnerability of the known populations to degradation or destruction, a status of Endangered is reasonable and needed.

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- Ownbey, G. B., and T. Morley. 1991. *Vascular plants of Minnesota: a checklist and atlas*. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Pip, E. 1987. The ecology of *Potamogeton* species in central North America. *Hydrobiologica* 153:203-216.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Potamogeton vaseyi* J.W. Robbins

FAMILY: Potamogetonaceae

COMMON NAME: Vasey's Pondweed

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: This rooted, aquatic plant inhabits small, soft water lakes. When it was designated a Special Concern species in 1984, it had only been documented in northeastern Minnesota 12 times and half of those records predated 1960. Since that time, rare aquatic plant inventories of more than 1,500 lakes have been completed and approximately 100 additional populations have been discovered. Vasey's Pondweed is now known to be more common and widely distributed in Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

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- Hellquist, C. B. 1977. Observations on some uncommon vascular aquatic plants in New England. *Rhodora* 79:445-452.
- Pip, E. 1987. The ecology of *Potamogeton* species in central North America. *Hydrobiologia* 153:203-216.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Prenanthes crepidinea* Michx.

FAMILY: Asteraceae

COMMON NAME: Nodding Rattlesnakeroot

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None, and Probably Extirpated from Minnesota

BASIS FOR PROPOSED MINNESOTA STATUS: When this prairie plant was designated a Special Concern species in 1996, only one population had ever been recorded in Minnesota. The collection was from Houston County and dated 1900. Several small fragments of potential habitat still remained to be surveyed at the time of listing, and it was hoped that additional inventory efforts would result in the discovery of remnant populations. Unfortunately, this has not been the case and Nodding Rattlesnakeroot is now considered extinct in Minnesota. For this reason, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

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- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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- Ownbey, G. B., and T. Morley. 1991. *Vascular plants of Minnesota: a checklist and atlas*. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Rosendahl, C. O., and J. W. Moore. 1947. A new variety of *Sedum rosea* from southeastern Minnesota and additional notes on the flora of the region. *Rhodora* 49:197-202.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Prosartes trachycarpa* S. Wats.

FAMILY: Liliaceae

COMMON NAME: Rough-fruited Fairybells

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial herb was first discovered in Minnesota in 1999. A single population containing approximately 60 plants was found scattered across 80-meters of semi-open, forested ridge-top and slope habitat in northern Cook County. Similar habitats in the region have been intensively botanized before and after 1999, but no other populations of Rough-fruited Fairybells have been located. The single population is disjunct hundreds of miles from the main range of the species, which raises the possibility that this is a unique and isolated occurrence. Of primary concern is the fragility of the habitat where the population occurs. The soils are loose and prone to erosion or dislocation; they are held together only by lichens and the roots of small grasses and sedges. As such, the primary threat to the species is competing recreational activities. This is evidenced by a recent proposal to put a hiking trail precariously close to the only known population. A single disturbance or random event could easily cause the extirpation of this species in Minnesota.

Given the documentation of only one population despite intensive surveys, the absence of the species in apparently suitable habitat, and the vulnerability of the only known population to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

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United States Department of Agriculture, Forest Service. 2008. Superior National Forest Rare Plant Guide: Rough-fruited Fairy Bells [web application]. United States Forest Service, Duluth, Minnesota. <<http://www.fs.fed.us/r9/forests/superior/documents/Rough-fruitedFairyBells.pdf>>. Accessed 20 May 2009.

Utech, F. H. 2002. *Prosartes*. Pages 142-145 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 26. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Quercus bicolor* Willd.

FAMILY: Fagaceae

COMMON NAME: Swamp White Oak

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This large tree is restricted to lowland hardwood forests on the floodplain of the Mississippi River. Historically it occurred as far upstream as the Twin Cities area, but it has not been found above Wabasha (Wabasha County) for many years. Most of its habitat was lost early in the 20th Century when a series of eight locks and dams were constructed on the river. The dams turned the Mississippi River from a free-flowing river into a series of interconnected navigation pools. The only original forests that survived intact were located immediately downstream from the dams, where water levels remained more or less natural. Today, Swamp White Oak is only known to occur in a handful of widely separated sites along the river, and there is a concern over whether these populations are regenerating. The remaining habitats are typically flooded in the early spring when snowmelt and rainfall cause the river level to rise. Flooding typically lasts only a few weeks and usually subsides before the growing season begins. The shallow root system of Swamp White Oak is particularly well adapted to survive this type of flooding and the accompanying sedimentation.

Since loss and degradation of habitat is the main cause of the species' decline, recovery will likely depend on improving and increasing appropriate habitat as well as preserving existing habitat. Fortunately, most of the remaining populations of Swamp White Oak are located within the Upper Mississippi River Wildlife and Fish Refuge where threats are considered to be relatively low. Additionally, this presents an opportunity for cooperative management, research, and monitoring between state and federal resource agencies. Some level of recognition is necessary for Swamp White Oak given the very small number and size of remaining populations in Minnesota, the limited amount of potential habitat, and the concerns over natural regeneration. Because the majority of the remaining populations appear to be adequately protected from further land use changes, a status of Special Concern is considered needed and reasonable at this time.

SELECTED REFERENCES:

- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 29 June 2009.
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- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rhynchospora fusca* (L.) Ait. f.

FAMILY: Cyperaceae

COMMON NAME: Sooty-colored Beak Rush

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: When designated a Special Concern species in 1984, this perennial sedge had only been documented in the state 13 times and it was believed to be restricted to water tracks in large patterned peatland complexes. Targeted rare plant surveys over the past two decades have resulted in the discovery of nearly 90 additional populations in a broader range of habitats. The species has now been found in hummocks of *Sphagnum* moss on boggy shores, floating mats at the margins of lakes and bog ponds, boggy pools, and puddles and depressions in fens. Furthermore, it is expected that more populations will be located during botanical surveys of the Border Lakes region. Sooty-colored Beak Rush is now known to be more common and widely distributed in northern Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Crow, G. E., and C. B. Hellquist. 2000. Aquatic and wetland plants of northeastern North America. Volume 2. Angiosperms: Monocotyledons. University of Wisconsin Press, Madison, Wisconsin. 400 pp.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus fulleri* Bailey

FAMILY: Rosaceae

COMMON NAME: Bristle-berry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial shrub occurs in shallow wetlands on sandplains in ten counties in central and east-central Minnesota. This is a very fragile habitat type that is susceptible to being drained, filled, invaded by exotic species, or otherwise destroyed. In fact, after more than 100 years of agricultural and urban development in this area, there are very few remaining habitats that are suitable to sustain populations of this species. Bristle-berry is known to be especially sensitive to livestock grazing, competition from invasive species, particularly Reed Canary Grass (*Phalaris arundinacea*), and changes in groundwater levels, and it does not readily colonize grossly disturbed habitats. In addition, active management in the form of brush removal or prescribed burns may be necessary to control encroaching vegetation near several of the approximately 12 known populations.

Given the small number of populations and limited amount of remaining habitat in the state, the historic loss and degradation of sandplain habitats, the current threats posed by land use changes and invasive species, and the potential need for active management, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.

Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus missouricus* Bailey

FAMILY: Rosacea

COMMON NAME: Missouri Dewberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial shrub is currently known from only one site in Minnesota, a small, remnant habitat on the Anoka Sandplain. It was discovered in 2003 during a ten-year, statewide survey of *Rubus* species and habitats. Although several hundred *Rubus* populations representing 33 different species were located during the survey, only one population of Missouri Dewberry was discovered. This population was found in a groundwater-sustained sedge meadow on moist sand in nearly full sunlight. All indications tell us that the species is very habitat-sensitive. Disturbances such as changes in drainage patterns, overtopping by trees or larger shrubs, encroachment from non-native plant species, herbicides, and compaction/disturbance of the soil would render the habitat incapable of supporting a viable population of this rare species. This is a serious concern since the only known population is located in an area that is experiencing intense development pressure.

Given the limited amount of potential habitat for the species in the state, the documentation of only one population despite intensive surveys, the historic and present loss of wetland habitats, and the current threats posed by land use changes and invasive species, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.

Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus multiflorus* Bailey

FAMILY: Rosaceae

COMMON NAME: Kinnickinnick Dewberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This low growing shrub is found in high-quality oak savanna remnants on the Anoka Sandplain, and on a few bedrock exposures in prairie habitats elsewhere in central and east-central Minnesota. In the past, these habitats were probably common and Kinnickinnick Dewberry was perhaps correspondingly common. However, the situation has now changed dramatically. More than 99% of the prairie and savanna habitat that was present in the state before settlement has been destroyed or severely degraded and habitat availability is extremely limited. Remaining habitats are typically small, fragmented, and isolated from the ecosystem processes, such as fire, that are needed to maintain favorable conditions. Without fire, the habitats quickly succeed to a closed-canopy forest and lose their characteristic savanna flora, thus making them unsuitable for Kinnickinnick Dewberry. On the basis of the small number of known populations and the limited amount of remaining habitat for the species in the state, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

- Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.
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- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.
- Widrechner, M. P. 1998. The genus *Rubus* L. in Iowa. *Castanea* 63:415-465.
- Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus quaesitus* Bailey

FAMILY: Rosaceae

COMMON NAME: Prince Edward Island Blackberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Little is known about this midsize shrub other than it is apparently rare throughout its range. Authenticated specimens are only known from a few locations in New Brunswick, Wisconsin, and Minnesota. The species was first discovered in Minnesota by Albert Fuller in 1958 in Kanabec County, but attempts to relocate this population have been unsuccessful. The only other known population in Minnesota was discovered in 1998 in a mature forest of Trembling Aspen (*Populus tremuloides*) and Paper Birch (*Betula papyrifera*) in Carlton County. As a measure of its rarity, this population was the only discovery of Prince Edward Island Blackberry among 500 or more Blackberry populations investigated during a ten-year, statewide field survey. Further survey work is needed to clarify this species' distribution and habitat preferences in Minnesota but based on its apparent rarity, Special Concern status is needed and reasonable at this time.

SELECTED REFERENCES:

- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.
- Widrechner, M. P. 1998. The genus *Rubus* L. in Iowa. *Castanea* 63:415-465.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus semisetosus* Blanch.

FAMILY: Rosaceae

COMMON NAME: Swamp Blackberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Most of the approximately 20 known populations of this perennial shrub occur in savanna remnants in Anoka, Isanti, and Sherburne counties, although a few scattered outlying populations have been found as far north as Aitkin County, some of them in tamarack swamps. The savanna populations typically grow in moist sand along the margins of groundwater-fed swales or marshes, but also in surface-dry uplands that are just above the water table. These are usually grass- or sedge-dominated habitats, often with scattered brush and direct sunlight or partial shade. Because of conversion to agricultural uses, and more recently to residential and commercial uses, such diverse, well-structured habitats have become exceedingly rare. Perhaps more importantly, these habitats have been reduced to small fragments that are isolated from the ecosystem processes, such as fire, that are needed to maintain them. Without fire, the habitats quickly succeed to a closed-canopy forest and lose their characteristic savanna flora, thus making them unsuitable for Swamp Blackberry. This species is apparently also sensitive to livestock grazing and does not compete well with invasive species that typically follow human disturbance, such as Reed Canary Grass (*Phalaris arundinacea*).

Given the small number of documented populations despite targeted botanical surveys, the limited amount of remaining habitat for the species in the state, the historic and present loss of savanna and wetland habitats, the potential need for active management, and the current threats posed by land use changes and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.
- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.
- Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus stipulatus* Bailey

FAMILY: Rosaceae

COMMON NAME: Bristle-berry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial shrub is rare throughout its range, which encompasses only small parts of Minnesota, Wisconsin, and formerly Iowa. Since settlement times, the original savanna ecosystem that sustained this species has been largely supplanted by agricultural fields and more recently by suburban developments. Furthermore, the shallow, groundwater sustained wetlands in which the species is typically associated have survived only to the extent that they could not be drained or filled and were able to resist the invasion of non-native species, particularly Reed Canary Grass (*Phalaris arundinacea*). Such habitat loss was confirmed during a ten-year, statewide survey of *Rubus* species and their habitats. During this study, Bristle-berry was located only twice in Anoka County and once in Rice County; a historic population in Kanabek County is believed to have been destroyed.

Given the limited amount of potential habitat for the species in the state, the documentation of only three extant populations despite intensive surveys, the historic and present loss of wetland habitats, and the current threats posed by land use changes and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.
- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.
- Widrechner, M. P. 1998. The genus *Rubus* L. in Iowa. *Castanea* 63:415-65.
- Wovcha, D. S., B. C. Delaney, and G. E. Nordquist. 1995. Minnesota's St. Croix River Valley and Anoka Sandplain, a guide to native habitats. University of Minnesota Press, Minneapolis, Minnesota. 234 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rubus vermontanus* Blanch.

FAMILY: Rosaceae

COMMON NAME: Vermont Blackberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This midsize shrub was documented approximately 15 times during a ten-year, statewide survey of Blackberry species and their habitats. It occurs in both the shallow wetland and the upland prairie components of savannas, and in open woodlands and brushland habitats, but always in direct sunlight. True savannas are extremely rare these days as most were cleared for agricultural purposes during settlement times. The remaining habitats have been reduced to small fragments that are now isolated from the ecosystem processes, such as fire, that are needed to maintain them. Without fire, the habitats quickly succeed to a closed-canopy forest and lose their characteristic savanna flora, thus making them unsuitable for Vermont Blackberry. Additional threats to the species include livestock grazing, spread of invasive species, herbicide application, and trampling as a result of vehicle traffic. On the basis of the small number of known populations, the limited amount of remaining habitat, and potential threats, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

- Davis, H. A., A. M. Fuller, and T. Davis. 1968. Contributions toward the revision of the *Eubati* of eastern North America. II. *Setosi*. *Castanea* 33:50-76.
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- Widrechner, M. P. 1998. The genus *Rubus* L. in Iowa. *Castanea* 63:415-65.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Rudbeckia triloba* L.

NEW SCIENTIFIC NAME: *Rudbeckia triloba* var. *triloba* L.

FAMILY: Asteraceae

COMMON NAME: Three-leaved Coneflower

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Three-leaved Coneflower reaches the northern limit of its natural range in southeastern Minnesota, where it occurs in mesic hardwood forests and floodplain forests. When it was listed as a Special Concern species in 1984, it had only been documented in the state five times, and not since 1960. The lack of current data and systematic surveys prevented it from being assigned a more protective status at that time. Now, after a comprehensive biological inventory of much of the region, only five additional populations have been documented in Houston and Mower counties, and none of the historical records could be relocated. Furthermore, each of the extant populations is small, often consisting of just 10-15 plants.

Within its forested habitats, Three-leaved Coneflower tends to be found where stream beds or other ecotones create canopy gaps and allow more light to reach the forest floor. Since settlement times, large expanses of floodplain forests in southern Minnesota have been lost due to conversion to agriculture, urbanization, and the damming and channelization of rivers. Unfortunately, this trend is continuing and habitat loss and degradation still pose an eminent threat to the species. The invasion of aggressive, non-native species, particularly Common Buckthorn (*Rhamnus cathartica*), Eurasian Honeysuckle shrubs (*Lonicera* spp.), and Wild Garlic Mustard (*Alliaria petiolaris*) is also a serious concern.

Given the limited amount of potential habitat for the species in the state and its limited geographic range, the small number of documented populations despite intensive surveys and the small size of those populations, the historic loss and degradation of floodplain forest habitat, and the current threats posed by competing land use practices and invasive species, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Ruellia humilis* Nutt.

FAMILY: Acanthaceae

COMMON NAME: Wild Petunia

CURRENT MINNESOTA STATUS: None, and Probably Extirpated from Minnesota

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR MINNESOTA STATUS: This rare plant was originally placed on the state endangered species list in 1984 due to the occurrence of only one population in Minnesota, and subsequently delisted in 1996 when the species was presumed to be extinct in the state. However, in 2005 the population at Afton State Park in Washington County was rediscovered in a dry-mesic grassland habitat on the margins of a woodland. This habitat was most likely a mix of oak woodland and prairie before settlement, but was converted to a pasture at one point in time. After extensive field surveys of remnant dry prairie and oak savanna habitats, the Afton State Park population remains the only known population in the state. While this population is relatively small, it should be able to persist if its habitat can be maintained. However, the habitat is being invaded by several aggressive, non-native plant species including Smooth Brome (*Bromus inermis*), Crown Vetch (*Coronilla varia*), Birds Foot Trefoil (*Lotus corniculatus*), and Common Buckthorn (*Rhamnus cathartica*). Additionally, the encroachment of woody vegetation is resulting in habitat succession to a closed-canopy forest, which will eventually make the habitat unsuitable for Wild Petunia. Fortunately, the population is located in a state park where there is a greater likelihood that active management in the form of prescribed burns, brush removal, and/or invasive species control can be undertaken to protect the long-term viability of the population.

Because the only known Wild Petunia population is located in an area that was formerly a pasture, there is some question as to how it became established. For this reason, a status of Special Concern has been deemed most appropriate at this time. A more protective status may be warranted in the future if thorough searches of native habitats within Afton State Park result in the discovery of additional populations.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
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- Minnesota Department of Natural Resources. 2006. Tomorrow's habitat for the wild and rare: An action plan for Minnesota wildlife, comprehensive wildlife conservation strategy. Division of Ecological Services, Minnesota Department of Natural Resources. 297 pp. + appendices.
- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sagittaria brevirostra* Mackenzie & Bush

FAMILY: Alismataceae

COMMON NAME: Short-beaked Arrowhead

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR MINNESOTA STATUS: Only three small populations of this emergent aquatic plant are known to survive in Minnesota. One is located in a small, spring-fed stream on bottomlands of the lower Minnesota River (Scott County), another is in a quiet backwater of the Mississippi River (Washington County), and the third is in a marshy zone around a prairie lake (Pipestone County). All of these habitats are relatively small, isolated, and fragile. They depend on seasonal fluctuations of water levels and a specific rate of silt deposition, so they can be negatively influenced by a variety of human activities anywhere within their watershed. The critical factor in the conservation of Short-beaked Arrowhead is maintaining the natural hydrological regime that supports its habitat. Dams, flood control structures, and impoundments are all detrimental since they limit or prevent the natural rise and fall of water levels, and they are likely responsible for the species' decline in Minnesota. The accelerating spread of invasive, non-native species also threatens to further degrade the species' habitat.

Given the documentation of only three extant populations despite targeted searches of over 100 potential habitats across southern Minnesota in 2006, the species' unique habitat requirements, and the vulnerability of the few known populations to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

Haynes, R. R., and C. B. Hellquist. 2000. *Sagittaria*. Pages 11-23 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 22. Oxford University Press, New York, New York.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 26 June 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sagittaria calycina* var. *calycina* Engelm.

FAMILY: Alismataceae

COMMON NAME: Hooded Arrowhead

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR MINNESOTA STATUS: This emergent aquatic plant likely occurs sporadically throughout backwaters of the lower Minnesota River and the Mississippi River south of the Twin Cities, but it is certainly not common. It is known by five historic collections, all of which are presumed destroyed, and seven recent collections. The recent records are the result of a targeted search in 2006 of over 100 potential sites across southern Minnesota. The species has specialized habitat requirements and requires a seasonal cycle of water level fluctuations including flooding and draw-downs. Its high quality wetland habitats and these complex hydrological regimes are easily disrupted by human activities, and it is estimated that at least 90% of its habitat has been degraded or destroyed within historic times. Dams, flood control structures, and impoundments all pose serious threats to the long-term viability of Hooded Arrowhead populations as they all limit or prevent necessary hydrologic cycles. The accelerating spread of invasive, non-native species also threatens to further degrade the species' habitat. On the basis of the small number of known populations, the limited amount of suitable habitat, and the vulnerability of the few known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Haynes, R. R., and C. B. Hellquist. 2000. *Sagittaria*. Pages 11-23 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 22. Oxford University Press, New York, New York.
- Michigan Natural Features Inventory. 2007. Rare Species Explorer [web application]. Michigan Natural Features Inventory, Lansing, Michigan. <<http://web4.msue.msu.edu/mnfi/explorer>>. Accessed 29 June 2009.
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- Wisconsin Department of Natural Resources. 2007. Long-lobe Arrowhead (*Sagittaria calycina*) factsheet. <<http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=20&SpecCode=PMALI04040>>. Accessed 29 June 2009.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Salix pellita* (Anderss.) Anderss. ex Schneid.

FAMILY: Salicaceae

COMMON NAME: Satiny Willow

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This tall shrub reaches the southwestern periphery of its range in the Arrowhead Region of Minnesota, where it has been found along sandy and rocky shores of large lakes, and stream banks and gravel bars. When it was listed as a Special Concern species in 1996, there were only four known collection records in the state, with the most recent dated 1958. The lack of current data and systematic surveys prevented it from being assigned a more protective status at that time. Now, after years of targeted surveys by the Minnesota County Biological Survey, only eight additional populations have been discovered in the state (Cook and St. Louis counties), and none of the populations discovered before 1958 could be relocated. Furthermore, most of the extant populations are small, consisting of just a handful of plants.

The habitat for Satiny Willow occurs in a narrow band along streams and lakes. As such, any type of shoreline development or disturbance could be damaging to the species. Since all of the known populations are on state, federal, or tribal lands, development is probably not a major concern. However, shoreline stabilization with rip-rap, manipulation of water levels with artificial structures, the invasion of non-native species, and concentrated recreational activity are all actions that could threaten the long-term viability of Satiny Willow populations. Extensive off-road vehicle use has already been documented at one of the river populations.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the increasing pressure on shoreline habitats, and the vulnerability of the few known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

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Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Salix pseudomonticola* Ball

FAMILY: Salicaceae

COMMON NAME: False Mountain Willow

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This large shrub was not known to occur in Minnesota until 1993 when a series of previously misidentified herbarium specimens collected between 1939 and 1952 along the St. Louis River near Fond du Lac (St. Louis County) were correctly identified. Since then, the species has been found at another location along the St. Louis River in Carlton County and at a handful of locations in extreme northwestern Minnesota. The populations in the northwest appear to be continuous with populations in Canada, but the populations along the St. Louis River seem to be anomalous disjuncts. In the northwest, the species occurs in wet mineral soil and shallow peat in wet brush prairies and shrub swamps. This habitat type is common in that region, and yet False Mountain Willow appears to be rare or at least uncommon. Many of these habitats have become fragmented by agriculture and this in combination with a lack of wildfire may be a limiting factor for the species. Habitats along the St. Louis River are more difficult to characterize but appear to be wet seeps on clay banks or hillsides, in sunny or partially shaded forest openings. Additional survey work is needed to clarify the species' abundance and distribution in the state, but based on its apparent rarity, a status of Special Concern is needed and reasonable at this time.

SELECTED REFERENCES:

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 26 June 2009.

Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Saxifraga paniculata* P. Mill.

COMMON NAME: Encrusted Saxifrage

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This arctic-alpine species occurs in rock crevices and on small ledges on generally north-facing, shady cliffs in Cook and Lake counties. When it was designated a Threatened species in 1984, only a handful of populations had been documented from a small area in northern Cook County. Since that time, approximately 15 additional populations have been discovered in a broader area including the North Shore of Lake Superior. The species is now known to be more widely distributed than previously thought and Threatened status is no longer necessary. However, Special Concern status is still needed and reasonable given the relative rarity of the species, its restricted range in Minnesota, and the limited amount of suitable cliff habitat in the state.

SELECTED REFERENCES:

Butters, F. K. 1944. The American varieties of *Saxifraga aizoon*. *Rhodora* 46:61-69.

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Penskar, M. R. 2008. Special plant abstract for *Saxifraga paniculata* (encrusted saxifrage). Michigan Natural Features Inventory, Lansing, Michigan. 3 pp.

Voss, E. G. 1985. Michigan Flora. Part II: Dicots. Cranbrook Institute of Science Bulletin 59 and the University of Michigan Herbarium. University of Michigan, Ann Arbor, Michigan. 727 pp.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Scirpus clintonii* Gray

NEW SCIENTIFIC NAME: *Trichophorum clintonii* (Gray) S.G. Sm.

FAMILY: Cyperaceae

COMMON NAME: Clinton's Bulrush

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Clinton's Bulrush has a disjunct and widespread distribution in Minnesota, yet it is quite rare. When it was listed as a Special Concern species in 1996, it was known from just ten herbarium records. However, the lack of systematic surveys prevented it from being assigned a more protective status at that time. Now, after years of targeted surveys, only a handful of additional populations have been found. The species' habitat preferences are as curious as its distribution. While they appear to be very specific, they are not easily defined or found on the landscape. All of the habitats have sandy soils and they tend to be small and ecotonal in nature, meaning that they occur as small inclusions in larger habitat mosaics. Such habitats have included sandy ridges within forests; an acid peat meadow; depressional swales near upland/wetland edges; transition zones between wet meadows and prairies, sand prairies and woodland slopes, and mesic prairies and wet prairies; a moist, open field; and shallow swales among dunes in prairies.

The habitats of Clinton's Bulrush require cyclical, naturally occurring disturbance such as ground fire or possibly seasonally fluctuating water levels to sustain them. Because most of the recent collections are from habitat fragments in rapidly developing areas of the Twin Cities Metropolitan Area, there is concern that these fragments may not have retained the ecosystem processes necessary to create ideal habitat conditions and assure the perpetuation of the species. Simply protecting the small patches of habitat where this species is found, while ignoring larger landscape dynamics may not be enough. In the absence of such natural processes, active management in the form of prescribed fire or brush removal may be necessary to control competing vegetation and maintain open habitat conditions. One of the populations in Anoka County was observed to have increased abundance and vigor following a fire in 2000. The spread of invasive species, particularly Reed Canary Grass (*Phalaris arundinacea*), also poses a serious risk to the long-term viability of the remaining populations.

Given the small number of documented populations despite targeted botanical surveys, the species' restrictive/unique habitat requirements, the current threats posed by land use changes and invasive species, and the potential need for active management, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

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Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Senecio indecorus* Greene

NEW SCIENTIFIC NAME: *Packera indecora* (Greene) A.& D. Lév

FAMILY: Asteraceae

COMMON NAME: Elegant Groundsel

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This boreal species is seemingly rare throughout the Upper Great Lakes region and occurs in northeastern Minnesota only where rugged topography and climate-modifying effects of Lake Superior influence the southerly reaches of the boreal biome. Not surprisingly, its habitat conditions are cool, moist, sandy, and gravelly to rocky. When Elegant Groundsel was designated a Special Concern species in 1996, it had only been documented a handful of times and most of the records were quite old. The lack of current data and systematic surveys prevented it from being assigned a more protective status at that time. Since then, a comprehensive botanical survey of northeastern Minnesota has been initiated by the Minnesota County Biological Survey, and much of the species' potential habitat has been searched. Only one additional population has been found, on a steep, crumbly sandstone slope and the adjacent rocky creek bank in Cut Face Creek Canyon in Cook County. The population consists of 3-4 small patches of plants totaling around 36 individuals.

While such rugged habitats may seem permanent and indestructible, the highly specialized plants that occur in them and their microhabitats are often vulnerable to human activities. Any activities that would result in the sloughing of substrates or increased erosion, such as recreational rock climbing, logging on adjacent upslope habitats, or the routing of recreational trails along cliff tops, could threaten the long-term viability of the species. The invasion of Orange Hawkweed (*Hieracium aurantiacum*), an aggressive non-native species, is also a concern.

Given the documentation of only one recent population despite targeted botanical surveys, the species' restrictive/unique habitat requirements and limited geographic range in the state, and the vulnerability of a single population to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

- Butters, F. K., and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. *Rhodora* 55:21-201.
- Lakela, O. 1965. A flora of northeastern Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 541 pp.
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- Penskar, M. R. 2008. Special plant abstract for *Senecio indecorus* (rayless mountain ragwort). Michigan Natural Features Inventory, Lansing, Michigan. 3 pp.
- Trock, D. K. 2006. *Packera*. Pages 570-602 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 20. Oxford University Press, New York, New York.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Shepherdia canadensis* (L.) Nutt.

FAMILY: Elaeagnaceae

COMMON NAME: Soapberry

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Soapberry is primarily a shrub of boreal and montaine regions, reaching Minnesota sporadically from the north. It has been documented several times in forests near the North Shore of Lake Superior, but most of the approximately 25 known records are from the northern border region in Cook, Lake, Roseau, and Kittson counties. While essentially a forest species, this shrub does not do well in deep shade, and it seems to thrive only under a thin canopy or along an exposed edge. It is also known to prefer calcareous substrates, which limits its distribution even further especially in the northeast, where substrates tend to be acidic. Extensive searches have found far fewer occurrences of this species than expected. This is true even where apparently suitable habitat exists. It is not known which factors limit its occurrence in Minnesota but it could be that our climate is only marginally suited for this species. Other factors could include soil conditions, availability of pollinators, and seed dispersal agents. On the basis of the small number of known populations and the small size of those populations, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 26 June 2009.

Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Solidago sciaphila* Steele

FAMILY: Portulacaceae

COMMON NAME: Cliff Goldenrod

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: This distinctive perennial is endemic to the western Great Lakes region, where it typically occurs in crevices of sandstone or dolomite cliffs and outcrops. It may also occur in sandy or rocky soil, particularly on exposed bluffs. When designated a Special Concern species in Minnesota in 1984, Cliff Goldenrod had been documented just 14 times from the southeast corner of the state, and half of the records predated 1947. Since that time, targeted rare plant surveys of the region have been conducted by the Minnesota County Biological Survey and approximately 75 additional populations have been discovered. Given that the species is more abundant than previously thought, Special Concern status is no longer reasonable or needed.

SELECTED REFERENCES:

Coffin, B., and L. Pfanmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

Semple, J. C., and R. E. Cook. *Solidago*. Pages 107-166 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 20. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sparganium glomeratum* Laestad. ex Beurling

FAMILY: Sparganiaceae

COMMON NAME: Clustered Bur Reed

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: This aquatic plant was thought to be one of the rarest plants in Minnesota (and North America) when it was designated an Endangered species in 1984. By the time it was reclassified as Special Concern in 1996, the number of known Minnesota populations had increased tenfold. This trend has continued and the number of documented locations is now approaching 150, more than double what was known in 1996. Furthermore, the species has been documented from a broader range of wetland habitats throughout northern Minnesota, and none of the habitats appear to be particularly threatened. Clustered Bur Reed is clearly much more common and widely distributed in Minnesota than was formerly believed. For these reasons, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Spiranthes casei* var. *casei* Catling & Cruise

FAMILY: Orchidaceae

COMMON NAME: Case's Ladies' Tresses

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This rare orchid was first discovered in Minnesota in 2000 and has been documented at a total of four locations in a 20-mile long area in Itasca and St. Louis counties. So far it has only been found in drained sediment basins that had previously been used to dispose of taconite tailings. The fact that such habitats did not occur 30 years ago coupled with how rapidly the species was able to colonize the basins, leads us to believe that a stable seed source may occur in a nearby older habitat. This is supported by the occurrence of the species in sandstone bluff and jack-pine barren habitats in neighboring Wisconsin.

Case's Ladies' Tresses is an early successional, disturbance dependent species whose habitat will be overtaken by trees and shrubs if successional changes are able to proceed. The natural forces that periodically reset the successional process to an earlier stage, such as fire, insect infestations and windstorms, are large-scale ecological processes that likely do not function in the artificial tailings basins. As such, the long-term viability of these populations is questionable. The hope is that additional surveys will result in the species being found in a more natural habitat, or at least in a habitat that can be maintained by natural disturbances. Until that time, the small number of occurrences and the vulnerability of those occurrences make a status of Threatened reasonable and needed.

SELECTED REFERENCES:

Catling, P. M. 1983. Pollination of northeastern North America *Spiranthes* (Orchidaceae). *Canadian Journal of Botany* 61:1080-1093.

Catling, P. M., and J. E. Cruise. 1974. *Spiranthes casei*, a new species from northeastern North America. *Rhodora* 76:526-536.

Hapeman, J. R. 2009. Orchids of Wisconsin: an interactive flora [web application]. *Spiranthes casei* Catling & Cruise. <<http://www.botany.wisc.edu/orchids/casei.html>>. Accessed 27 May 2009.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Symphoricarpos orbiculatus* Moench

FAMILY: Caprifoliaceae

COMMON NAME: Coralberry

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: Coralberry is long-lived shrub that has a wide, natural range in the eastern United States, but is frequently cultivated as an ornamental outside of this range. A native population of the species was thought to have been located in Houston County in 1979 prompting the species' listing as Special Concern in 1984. However, 25 years later, no additional populations have been found and the origin of the Houston County population still remains in question. There are no known voucher specimens of Coralberry in any herbaria that were definitively collected from a native Minnesota population. Given the lack of evidence that the species is either native or naturalized in Minnesota, Special Concern status is no longer needed or reasonable.

SELECTED REFERENCES:

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Stephens, H. A. 1973. Woody plants of the North Central Plains. The University Press of Kansas, Lawrence, Kansas. 530 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Taenidia integerrima* (L.) Drude

FAMILY: Apiaceae

COMMON NAME: Yellow Pimpernel

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial forb is an uncommon species of southeastern Minnesota, where it occurs in remnant oak savannas and open oak woodlands. Although this habitat type was common at the time of settlement, it has since become quite rare. Botanical surveys of most of the species' remaining habitats have been completed, and Yellow Pimpernel is now known to occur at only 30 sites. All of the populations are local and widely scattered across an 11-county area. There is concern that these remaining habitats may be too isolated and fragmented to have retained the ecosystem processes necessary for maintaining ideal habitat conditions and the perpetuation of the species. Furthermore, several of the populations are threatened by encroaching development and the spread of invasive species. For these reasons, a status of Special Concern is reasonable and needed.

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SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Talinum rugospermum* Holz.

NEW SCIENTIFIC NAME: *Phemeranthus rugospermus* (Holz.) Kiger

FAMILY: Portulacaceae

COMMON NAME: Rough-seeded Fameflower

CURRENT MINNESOTA STATUS: Endangered

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Rough-seeded Fameflower occurs primarily in open, sandy habitats including sandy terraces, fluvial sand dunes associated with rivers, and sand barrens. A secondary habitat is rock outcrops and dry, igneous rock ledges. When it was designated an Endangered species in 1984, it had only been documented from six sites. Since that time, targeted searches have resulted in the discovery of eight additional populations in southeastern Minnesota and four of the six previously known sites have been relocated. Given that the species is slightly more abundant than previously thought, Endangered status is no longer necessary. However, because overall population numbers are low, suitable habitats are quite limited, and several of the populations are threatened by agricultural activities or development pressures, it is reasonable and needed to retain the species in Threatened status.

SELECTED REFERENCES:

Cochrane, T. S. 1993. Status and distribution of *Talinum rugospermum* Holz. (Portulacaceae). *Natural Areas Journal* 13(1):33-41.

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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Thaspium barbinode* (Michx.) Nutt.

FAMILY: Apiaceae

COMMON NAME: Hairy-jointed Meadow-parsnip

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This perennial plant reaches the northwestern limit of its range in southern Minnesota, where it is restricted to edges of dry bluff forests. It appears to have an affinity for calcareous substrates. Based on specimens at the J. F. Bell Museum of Natural History Herbarium, the species has been collected from just eleven sites in Blue Earth, Brown, Jackson, Nicollet, and Winona counties. All but the Winona County collection are from the prairie region of the state, where forests are extremely restricted. Habitat descriptions are scanty, but the species appears to favor the edges of naturally-occurring dry- mesic forest remnants near major rivers.

Only three of the herbarium collections were made in the last 25 years, and all of these are from valleys of the Minnesota and Des Moines rivers. The rather open, dry forests in which the species occurs are frequently grazed, and when not, are highly subject to invasion by Common Buckthorn (*Rhamnus cathartica*). Because Hairy-jointed Meadow-parsnip bears a superficial resemblance to other members of the carrot family, it may have been overlooked in past surveys. Further survey work is needed to clarify the species' current distribution in the state, but Special Concern status is needed and reasonable at this time based on its apparent rarity.

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- Kartesz, J. T. 1994. A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. 2 volumes. Second Edition. Timber Press, Portland, Oregon.
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- Wisconsin Department of Natural Resources. 2007. Hairy-jointed Meadow-parsnip (*Thaspium barbinode*) factsheet. <<http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=20&SpecCode=PDAPI28010>>. Accessed 01 July 2009.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Trimorpha acris* var. *asteroides* (Andrz. ex Bess.) Nesom

NEW SCIENTIFIC NAME: *Erigeron acris* var. *kamtschaticus* (DC.) Herder

FAMILY: Asteraceae

COMMON NAME: Bitter Fleabane

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This circumboreal species occurs in northeastern Minnesota only where rugged topography and climate-modifying effects of Lake Superior influence the southerly reaches of the boreal biome. Having only been documented three times before in 1929, 1944, and 1945, Bitter Fleabane was suspected of being quite rare when designated a Special Concern species in 1996. However, a comprehensive field survey of its potential habitat had not yet been conducted. Since that time, targeted botanical inventories in northeastern Minnesota have been initiated by the Minnesota County Biological Survey, and most of the species' potential habitat has been searched. Only two additional populations have been found, confirming that this is one of the rarest plants in the state. Furthermore, none of the three previously recorded populations have been relocated.

The extant populations of Bitter Fleabane occur on the steep, canyon walls of a Lake Superior stream and on a steep, rocky, forested slope roughly two-miles inland from the lake. Both of the populations are very small with approximately eight flowering plants each. One of the populations is within the boundary of a state park, which presumably offers some degree of protection. However, even natural areas in state parks can be threatened by a host of recreational activities and nearby developments. The other population is on county land and currently threatened by rock climbing and trails. The spread and establishment of non-native species is a concern for both populations.

Given the species' restrictive/unique habitat requirements, the limited amount of potential habitat in the state, the documentation of only two recent populations despite targeted botanical surveys, the extremely small size of those populations, and the vulnerability of the two populations to degradation or destruction, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

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- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Voss, E. G. 1996. Michigan Flora. Part III: Dicots Concluded. Cranbrook Institute of Science Bulletin 61 and University of Michigan Herbarium. Ann Arbor, Michigan. 622 pp.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Trimorpha lonchophylla* (Hook.) Nesom

NEW SCIENTIFIC NAME: *Erigeron lonchophyllus* Hook.

FAMILY: Asteraceae

COMMON NAME: Short Ray Fleabane

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: When Short Ray Fleabane was designated a Special Concern species in 1996, it was only known from ten locations in Wilkin, Polk, Norman, and Kittson counties in northwestern Minnesota. The species was suspected of having suffered a population decline given the drastic decline of its prairie wetland habitat, however, targeted botanical surveys had not yet been completed and threats to the populations had not been fully assessed. Since that time most, if not all, of the species' potential habitat has been surveyed by the Minnesota County Biological Survey and no additional populations have been discovered. Furthermore, continued habitat loss and degradation from development activities, livestock grazing, herbicide application, and the spread of invasive species have been identified as significant threats to the few remaining populations.

Given the small number of documented populations despite targeted botanical surveys, the limited amount of habitat in the state, the historic and present loss of prairie wetland habitats, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Trisetum spicatum* (L.) Richter

FAMILY: Poaceae

COMMON NAME: Spike Trisetum

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This arctic disjunct is restricted to the North Shore of Lake Superior, where it has been found in crevices of exposed bedrock along the shore and on the upper portions of basalt cliffs. Some potential habitat still remains to be surveyed, but given that the species has only been found at approximately 35 sites since its initial discovery in 1886, it appears to be quite rare. Furthermore, more than half of the documented locations haven't been seen since the 1940s. Only a decade ago it was assumed that rare plants along the bedrock shoreline of Lake Superior were adequately protected by the remoteness and inaccessibility of their habitat. Since then, the region has experienced a tremendous residential, recreational, and commercial boom. This has raised new concerns about the conservation needs of shore plants. Even activities as benign as hiking can become a serious threat if concentrated along fragile shoreline habitats. For these reasons, a status of Special Concern is reasonable and needed.

SELECTED REFERENCES:

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 26 June 2009.

Rumely, J. H. 2007. *Trisetum*. Pages 744-753 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 24. Oxford University Press, New York, New York.

Wisconsin Department of Natural Resources. 2007. Narrow False Oats (*Trisetum spicatum*) factsheet. <<http://dnr.wi.gov/org/land/er/biodiversity/index.asp?mode=info&Grp=20&SpecCode=PMPOA690C0>>. Accessed 27 June 2009.

EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Tsuga canadensis* (L.) Carr.

NEW SCIENTIFIC NAME: *Tsuga canadensis* var. *canadensis* (L.) Carr.

FAMILY: Pinaceae

COMMON NAME: Eastern Hemlock

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Eastern Hemlock is one of Minnesota's rarest and most imperiled trees. Where found, it is usually scattered in mixed hardwood-conifer forests with Yellow Birch (*Betula alleghaniensis*), Northern White Cedar (*Thuja occidentalis*), White Pine (*Pinus strobus*), or White Spruce (*Picea glauca*), typically on moist, well-drained soils in cool, sheltered valleys and ravines. It has always been relatively rare in Minnesota, which represents the northwestern edge of its range, but has suffered a population decline during the last century and a half. Logging, poor reproduction and recruitment, and significant deer browse have all contributed to the decline. Currently, there are only 19 known sites containing Eastern Hemlock, with a total of perhaps 50 mature trees. The largest population consists of just 12 mature trees. Other sites may have only a single tree, and rarely more than four or five. Furthermore, all but one of the sites exhibit little, if any, reproduction. Without extraordinary management efforts to protect hemlock seedlings from deer, it is unlikely that another generation of trees will be able to establish themselves. Eastern Hemlock has become so rare that it no longer has any significant value to the timber industry in Minnesota.

Given the very small number of populations in Minnesota, the small size of those populations, the species' limited geographic range in the state, and serious concerns over the long term viability of the few remaining populations, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

- Anderson, R. C. and O. L. Loucks. 1979. White-tail deer (*Odocoileus virginianus*) influence on structure and composition of *Tsuga canadensis* forests. *Journal of Applied Ecology* 16:855-861.
- Calcote, R. R. 1986. Hemlock in Minnesota: 1200 years as a rare species. M.S. Thesis, University of Minnesota, Minneapolis, Minnesota.
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SPECIES STATUS SHEET

SCIENTIFIC NAME: *Utricularia geminiscapa* Benj.

FAMILY: Lentibulariaceae

COMMON NAME: Hidden-fruit Bladderwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This floating aquatic plant reaches the western edge of its range in Minnesota and was first recorded in the state in Lake County in 2004. It has been documented five times since then in a handful of bog pools and poor fens in the northern half of the state. Since the availability of such habitat types does not appear to be a limiting factor, the species may have very specific microhabitat requirements that are not well understood. Some potential habitat still remains to be searched, but it is not expected that many additional populations will be found.

All of the known populations of Hidden-fruit Bladderwort are very small and local in distribution, and they have not successfully proliferated in available habitats. Furthermore, all are located in close proximity to roads and trails, thereby increasing the potential for disturbance from human activities, particularly off-road vehicle use and the introduction of invasive species. Changes in water levels that could result from poorly designed or maintained roads, deterioration of water quality, shifts in pH as a result of surrounding land uses, liming for fisheries management, or intensive leech harvesting could also contribute to the degradation of the species' sensitive bog and fen habitat.

Given the small number and size of populations in Minnesota, the absence of the species in apparently suitable habitat, its seemingly restrictive habitat requirements, and the vulnerability of the known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

Fassett, N. C. 1957. A manual of aquatic plants. University of Wisconsin Press, Madison, Wisconsin. 405 pp.

Taylor, P. 1989. The genus *Utricularia*: a taxonomic monograph. Kew Bulletin Additional Series XIV. Royal Botanic Gardens, Kew, London. 724 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Utricularia purpurea* Walt.

FAMILY: Lentibulariaceae

COMMON NAME: Purple-flowered Bladderwort

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This floating, aquatic plant reaches the northwestern edge of its range in Minnesota, and was first recorded from two sites in Cass County in 1992. By the time it was designated a Special Concern species in 1996, four additional occurrences had been found in shallow, bog-lined lakes in Cass, Pine, and Crow Wing counties. At that time, the species' habitat was presumed to be secure from most human disturbances, and there was an assumption that additional populations would be found once more surveys had been conducted. While the latter is true, the results are extremely disappointing. In botanical surveys of more than 1,500 lakes since then, only three additional populations have been located. This brings the total number of known populations in the state to nine. Furthermore, the significant increase in lakeshore development over the past decade now poses a serious risk to the long-term viability of the species. Activities typically associated with lakeshore developments, namely nutrient enrichment, increased sedimentation, herbicide application, and vegetation management, all threaten to degrade the species' aquatic habitat. Because lakes are fluid and typically contained systems, it only takes a perturbation at one location to have far reaching effects and impact an entire aquatic community. Purple-flowered Bladderwort is only found in lakes with very low alkalinity, so any changes in a lake's water chemistry could render the habitat unsuitable.

Given the very small number of documented populations despite targeted botanical surveys, the limited amount of potential habitat for the species in the state, the increasing statewide pressure on lakeshore habitats, and the vulnerability of the few known populations to degradation or destruction, a status of Endangered is reasonable and needed.

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Fassett, N.C. 1957. A manual of aquatic plants. Univ. of Wisconsin Press, Madison. 405pp.

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Myhre, K.M. 1992. Minnesota County Biological Survey. Results of a rare plant search in Cass County, 1992. 6 pp.

Richards, J. H. 2001. Bladder function in *Utricularia purpurea* (Lentibulariaceae): Is carnivory important? American Journal of Botany 88(1):170-176.

Taylor, P. 1989. The genus *Utricularia*: a taxonomic monograph. Kew Bulletin Additional Series XIV. Royal Botanic Gardens, Kew, London. 724 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Utricularia resupinata* B.D. Greene ex Bigelow

FAMILY: Lentibulariaceae

COMMON NAME: Lavender Bladderwort

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This carnivorous, aquatic plant reaches the periphery of its range in northeastern Minnesota, where it has been found in the shallow waters of protected bays in large, oligotrophic lakes. When it was designated a Special Concern species in 1996, it was known from just five lakes in the Border Lakes region of Cook and Lake counties. The hope was that unexplored potential habitat would produce more records once further surveys were conducted. Botanical surveys of over 1,500 lakes have now been completed by the Minnesota County Biological Survey, and only ten additional populations have been documented in the state. Just two of the populations are located outside of the Border Lakes region, with one in central St. Louis County and one in northeastern Itasca County.

Lavender Bladderwort typically only occurs where lake bottoms are sandy, gradually sloping, and free of competition from other plant species. In some of the habitats, the plants may become stranded above the water line as the shoreline recedes during the course of the summer. Most of the known populations are within the Boundary Waters Canoe Area Wilderness and as such, they receive a high degree of protection from large-scale human disturbance. However, this particular wilderness area is heavily used by recreationalists, and shallow, sandy bays are a great attraction to visitors. While casual visitation, including canoeing, swimming, and fishing should not harm the species, establishing a campsite in an occupied bay or routing a portage to or from a bay could threaten the long-term viability of a population. There is much greater concern for the two Lavender Bladderwort populations located outside of the wilderness area, as they are subject to the increasing development pressures placed on the state's shoreline habitats. All of the populations would be vulnerable to changes in lake water chemistry or modifications to hydrological regimes.

Given the small number of documented populations despite targeted botanical surveys, the species' unique and potentially restrictive habitat requirements, its limited geographic range in the state, and the inherent vulnerability of a few populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Coffin, B., and L. Pfannmuller, editors. 1988. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota. 473 pp.
- Fassett, N. C. 1957. A manual of aquatic plants. University of Wisconsin Press, Madison, Wisconsin. 405 pp.
- Lloyd, F. E. 1942. The carnivorous plants. The Cronica Botanica Company, Waltham, Massachusetts. 352 pp.
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EXTRACTED FROM

Proposed Amendment of Minnesota Rules, Chapter 6134: Endangered and Threatened Species
Statement of Need and Reasonableness: August 10, 2012

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Vaccinium uliginosum* L.

FAMILY: Ericaceae

COMMON NAME: Alpine Bilberry

CURRENT MINNESOTA STATUS: Threatened

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: This arctic/subarctic shrub has only been documented three times in Minnesota, all from the North Shore of Lake Superior in Cook County. It was originally discovered near Grand Portage in 1891 and subsequently collected a few kilometers away on Long Island in 1937. In 1982, the Grand Portage site was relocated after a period of 91 years. The island site was revisited in 1980, but the Alpine Bilberry population could not be located. While the species' rarity was apparent when it was designated a Threatened species in 1984, it was hoped that additional intensive searches of shoreline habitats would yield more records. Unfortunately, this has not been the case and the Grand Portage population is the only one currently known to occur in Minnesota. The site is rather isolated and not obviously threatened by human activities. Nevertheless, the low number of plants in such a small area makes it susceptible to extirpation by natural processes such as ice scouring and storm waves, as well as from human factors. On the basis of extreme rarity, a status of Endangered is reasonable and needed.

SELECTED REFERENCES:

Butters, F. K., and E. C. Abbe. 1953. A floristic study of Cook County, northeastern Minnesota. *Rhodora* 55:21-201.

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Voss, E. G. 1996. Michigan Flora. Part III: Dicots Concluded. Cranbrook Institute of Science Bulletin 61 and University of Michigan Herbarium. Ann Arbor, Michigan. 622 pp.

Young, S. B. 1970. On the taxonomy and distribution of *Vaccinium uliginosum*. *Rhodora* 72:439-57.

SPECIES STATUS SHEET

OLD SCIENTIFIC NAME: *Vitis aestivalis* Michx.

NEW SCIENTIFIC NAME: *Vitis aestivalis* var. *bicolor* Deam

FAMILY: Vitaceae

COMMON NAME: Silverleaf Grape

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This climbing vine reaches the northwestern limit of its range in southeastern Minnesota. It appears to be restricted to hardwood forests in Houston, Wabasha, and Winona counties, where the terrain is defined by deep valleys and tall bluffs. Silverleaf Grape prefers oak forests, especially the margins of oak forests where there is more sunlight, but it also occurs in brushy habitats and in pioneering stands of young forest trees. While its rarity was apparent when it was designated a Special Concern species in 1996, the degree of its rarity had not yet been realized. In more than a decade of botanical surveys since its initial listing, only one additional population has been found. This brings the total number of historical and recent populations to eleven. Furthermore, at least one of the populations is known to have been partially destroyed, presumably in a misguided effort to manage the forest for the benefit of individual canopy trees rather than the forest community as a whole. Under certain conditions in highly disturbed forests, Silverleaf Grape can grow rampantly, clambering over shrubs and tree saplings. However, the potential damage caused to a host should not be overemphasized; this vine is a rare and benign member of the natural forest community to which it is well adapted.

Given the limited amount of potential habitat for the species in the state and its limited geographic range, the small number of documented populations despite years of botanical surveys, and the vulnerability of known populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Comeaux, B. L., W. B. Nesbitt, and P. R. Fantz. 1987. Taxonomy of the native grapes of North Carolina. *Castanea* 52:197-215.
- Minnesota Department of Natural Resources, Division of Fish and Wildlife. 1995. Statement of need and reasonableness in the matter of proposed amendment of Minnesota Rules, Chapter 6134: endangered and threatened species. Minnesota Department of Natural Resources, St. Paul, Minnesota. 336 pp.
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- Moore, M. O. 1991. Classification and systematics of eastern North American *Vitis* L. (Vitaceae) north of Mexico. *Sida* 14:339-367.
- Ownbey, G. B., and T. Morley. 1991. Vascular plants of Minnesota: a checklist and atlas. University of Minnesota Press, Minneapolis, Minnesota. 307 pp.
- Smith, W. R. 2008. Trees and shrubs of Minnesota. University of Minnesota Press, Minneapolis, Minnesota. 703 pp.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Woodsia alpina* (Bolton) S.F. Gray

FAMILY: Dryopteridaceae

COMMON NAME: Alpine Woodsia

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: This small fern is found in crevices and on small ledges of moist, partially shaded cliffs. In Minnesota, it is restricted to only 32 locations in Lake and Cook counties. While its rarity was suspected when it was designated a Special Concern species in 1996, a comprehensive survey of potential habitat had not yet been conducted. Since that time, targeted botanical inventories in northeastern Minnesota have been initiated by the Minnesota County Biological Survey, and much of the species' potential habitat has been searched. The discovery of so few populations confirms that this is indeed a very rare plant in the state.

Almost all of the sites harboring this rare fern are along the shore of Lake Superior where development pressures are great and increasing every year. Of particular concern are threats related to trail and road construction, recreational rock climbing, and timber management. These threats are especially problematic because most of the Alpine Woodsia locations contain only a few plants, and extirpations could occur as a result of even small disturbances. Given the species' restrictive/unique habitat requirements, the limited amount of potential habitat in the state, the small number of documented populations despite targeted botanical surveys, the small size of those populations, and the vulnerability of the populations to degradation or destruction, a status of Threatened is reasonable and needed.

SELECTED REFERENCES:

- Brown, D. F. M. 1964. A monographic study of the fern genus *Woodsia*. *Nova Hedwigia* 16:1-154.
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- Windham, M. D. 1993. *Woodsia*. Pages 270-280 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 2. Oxford University Press, New York, New York.

SPECIES STATUS SHEET

SCIENTIFIC NAME: *Woodsia oregana* ssp. *cathcartiana* (B.L. Robins.) Windham

FAMILY: Dryopteridaceae

COMMON NAME: Oregon Woodsia

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: This small fern occurs in crevices of bedrock exposures (both granite and sedimentary) and on associated talus. It has been reported from approximately 35 sites although targeted surveys have not been completed. A few of the locations are from steep, cliff faces in northeastern Minnesota and from bluffs in southeastern Minnesota. However, the bulk of the occurrences are from rock outcrop communities in the Upper Minnesota River valley and Pipestone and Rock counties. Rock quarrying, cattle grazing, and herbicide application currently threaten this rare community type and its associated flora. Mining in particular has been a growing issue over the past decade, fueled by federal highway construction standards now requiring crushed bedrock instead of gravel. Until further survey work can be completed for this species and threats to the populations are adequately assessed, a status of Special Concern is needed and reasonable.

SELECTED REFERENCES:

Harris, F. 2009. Rock pools on the prairie. *Minnesota Conservation Volunteer* 72(423):30-39.

Minnesota County Biological Survey. 2007. Native plant communities and rare species of the Minnesota River valley counties. Minnesota Department of Natural Resources, Division of Ecological Resources, St. Paul, Minnesota. 153 pp.

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Windham, M. D. 1993. *Woodsia*. Pages 270-280 in *Flora of North America* Editorial Committee, editors. *Flora of North America north of Mexico*. Volume 2. Oxford University Press, New York, New York.