

## MOSES AND LIVERWORTS 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>Schistostegia pennata</i>	<i>Schistostega pennata</i>	E

### CHANGE IN STATUS; STATUS SHEET PROVIDED

<u>Common Name</u>	<u>Scientific Name</u>	<u>Current Status</u>	<u>Proposed Status</u>
Lidded Earth Moss	<i>Aphanorhegma serratum</i>	--	SC
Wave-leaved Crane's-bill Moss	<i>Atrichum crispum</i>	--	SC
Little Saw Moss	<i>Atrichum tenellum</i>	--	SC
Bud-headed Thread Moss	<i>Aulacomnium androgynum</i>	--	SC
Differential Branched Crease Capsule Moss	<i>Aulacomnium heterostichum</i>	--	SC
Sword Moss	<i>Bryoxiphium norvegicum</i>	SC	E
Egg-leaf True Moss	<i>Bryum cyclophyllum</i>	--	SC
Bug-on-a-stick Moss	<i>Buxbaumia aphylla</i>	--	SC
Hair-pointed Feather Moss	<i>Cirriphyllum piliferum</i>	--	T
Hidden-perianth Liverwort	<i>Cryptocolea imbricata</i>	--	T
Mowed Mosquito Moss	<i>Cynodontium schisti</i>	--	T
Pygmy Plume Moss	<i>Cyrt-hypnum pygmaeum</i>	--	SC
Tall Extinguisher Moss	<i>Encalypta procera</i>	--	SC
Selwyn's Ear-leaf Liverwort	<i>Frullania selwyniana</i>	--	SC
Spaced-out Tangle Moss	<i>Heterocladium dimorphum</i>	--	SC
Rolled-leaf Wet-ground Moss	<i>Hyophila involuta</i>	--	SC
Wright's Blunt Leaved True Moss	<i>Jaffuelobryum wrightii</i>	--	SC
Lustrous Bow Moss	<i>Lescurea saxicola</i>	--	T
Swan Moss	<i>Meesia uliginosa</i>	--	SC
Urn-bearing Hair Moss	<i>Pogonatum urnigerum</i>	--	SC
Cushion Peat Moss	<i>Sphagnum compactum</i>	--	T
Red Twisted Peat Moss	<i>Sphagnum lescurii</i>	--	T
Red Parasol Moss	<i>Splachnum rubrum</i>	--	E
Nipple Moss	<i>Thelia hirtella</i>	--	SC
* Curved-leaved Golden Moss	<i>Tomenthypnum falcifolium</i>	SC	N
Shortleaf Chalk Moss	<i>Tortella inclinata</i>	--	SC
Down Liverwort	<i>Trichocolea tomentella</i>	--	T

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: *Aphanorrhagma serratum* (Wilson & Hooker) Sullivant

COMMON NAME: Lidded Earth Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Lidded Earth Moss is an endemic to eastern North America within the temperate bioclimatic zone. It has been recorded regionally from Ontario, Nebraska, Iowa, and Wisconsin. In Minnesota, only a single small population in Chisago County has been found. The species occurs along river banks and areas prone to flooding. Because only one population has been documented, there is too little information available to detect a statewide population trend at this time. The species may occur more widely in Minnesota, but until a targeted survey is completed, it is not possible to fully define its distribution in the state or the potential threats to its survival. However, because of its apparent rarity, a status of Special Concern is needed and reasonable.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Atrichum crispum* (James) Sullivant

COMMON NAME: Wave-leaved Crane's-bill Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Wave-leaved Crane's-bill Moss is disjunct in the boreal bioclimatic zone, occurring in Europe and eastern North America. It has been recorded regionally from Ontario, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, just three populations have been located in Lake and Rice counties. The species grows as a colonist on wet soils in woods and hummocky seepage fens. Because only a few populations have been documented, there is too little information available to detect a statewide population trend at this time. Further survey work is needed to clarify the species' abundance and distribution in Minnesota, but based on its apparent rarity, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

- Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.
- Janssens, J. A. 2001. Bryophyte survey of the Cannon River Wilderness Area County Park calcareous fen site, Rice County, Minnesota. Report to the Minnesota Department of Natural Resources, Division of Waters. 5 pp.
- Janssens, J. A. 2001. Bryophyte survey of the Pheasants Forever calcareous fen site, Dodge County, Minnesota. Report to the Minnesota Department of Natural Resources, Division of Waters. 5 pp.
- Janssens, J. A. 2001. Bryophyte survey of the Stewartville calcareous fen site, Olmsted County, Minnesota. Report to the Minnesota Department of Natural Resources, Division of Waters. 5 pp.
- Janssens, J. A. 2001. Bryophyte survey of the Sucker Creek calcareous fen site, Meeker County, Minnesota. Report to the Minnesota Department of Natural Resources, Division of Waters. 5 pp.
- Janssens, J. A. 2002. Bryophyte survey of the Perched Valley calcareous fen, Goodhue County, Minnesota. Report to the Minnesota Department of Natural Resources, Division of Waters. 4 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Atrichum tenellum* (Röhling) Bruch & Schimper

COMMON NAME: Little Saw Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Little Saw Moss has a nearly continuous distribution in the temperate regions of the Northern Hemisphere. It has been recorded regionally from Ontario, Manitoba, and Wisconsin. In Minnesota, a single population has been found in the blufflands of Fillmore County. As a colonist, the species inhabits wet soils in open hardwood forests. But because it has few distinguishing characters, it might be easily overlooked or seldom collected. With only one recorded population in Minnesota, there is too little information available to detect a statewide population trend at this time. Further inventory work is needed to clarify the species' abundance and distribution in the state and the potential threats to its survival. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Aulacomnium androgynum* (Hedwig) Schwägrichen

COMMON NAME: Bud-headed Thread Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Bud-headed Thread Moss has a disjunct global distribution in the temperate bioclimatic zone, including western North America, scattered portions of eastern North America, and eastern Asia, Europe, and Patagonia. It has been recorded regionally from Ontario, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, three populations have been found in Cook County from the North Shore Highlands subsection and the Susie Islands. Generally, Bud-headed Thread Moss frequents sedge meadows, treed fens, and conifer forests as a colonist. In Europe, it is often found on charred stumps in disturbed conifer forests. Because so few populations have been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Further survey work is needed to clarify the species' abundance and distribution, but based on its apparent rarity, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 1999. The bryophytes of the Susie Islands, Lake Superior, Cook County, Minnesota, based on surveys by J. A. Janssens and R. M. Schuster. Report submitted to the Minnesota Department of Natural Resources, County Biological Survey. 28 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Aulacomnium heterostichum* (Hedwig) Bruch & Schimper

COMMON NAME: Differential Branched Crease Capsule Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Differential Branched Crease Capsule Moss is a disjunct Arcto-Tertiary species in the temperate bioclimatic zone, presently occurring in eastern North America and Japan. It has been recorded regionally from Ontario, Iowa, and Wisconsin. In Minnesota, only a single population has been found in the blufflands of Winona County. The moss is a non-aggressive perennial stayer found on soil or rocks in open, deciduous woods and along creeks. Because only one population has been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Further inventory work is needed to clarify the species' abundance and distribution in the state, and the potential threats to its survival. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

- Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.
- Janssens, J. A., D. G. Horton, and J. F. Basinger. 1979. *Aulacomnium heterostichoides* sp. nov., an Eocene moss from south central British Columbia. *Canadian Journal of Botany* 57:2150-2161.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Bryoxiphium norvegicum* (Bridel) Mitten

COMMON NAME: Sword Moss

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: Endangered

**BASIS FOR PROPOSED MINNESOTA STATUS:** Sword Moss has a scattered northern hemisphere distribution without zonal affinity. In continental North America, it is considered a glacial relict that survived in the driftless area during the last glaciation. It has been recorded regionally from Iowa and Wisconsin, and a single Minnesota population was observed in the blufflands of Winona County from 1893-1905. Based on the herbarium label description of the Minnesota specimen and on general information from specimens collected elsewhere, the species usually occurs as a colonist in caves and other shaded, moist recesses such as cliffs and gorges. Unfortunately, the Minnesota population is believed to have been destroyed and no additional populations have been discovered during routine ecological surveys in suitable habitat.

Most of the known Sword Moss populations in the United States are experiencing limited to no spore production, which severely limits the species' dispersal ability and exacerbates the problems of already small, isolated populations. Other threats to the species include physical damage from walking or climbing on exposed habitats, impoundments, erosion, heat, and drying. Furthermore, Sword Moss is a prime candidate for extinction by climate change throughout its entire range since the loss of moist, shaded habitat conditions would decimate the species. Given its relatively recent discovery in Iowa, there is hope that a remnant Sword Moss population will be relocated in Minnesota. A dedicated survey of potential habitat is warranted during non-drought years. On the basis of the species' extreme rarity, its restrictive habitat requirements and documented habitat loss, and perceived global threats, a status of Endangered is needed and reasonable.

### SELECTED REFERENCES:

Allen, B. H. 1979. *Bryoxiphium norvegicum* in Colorado. *The Bryologist* 82:490.

Hill, S. R. 2002. Conservation Assessment for Sword Moss (*Bryoxiphium norvegicum*) (Brid.) Mitt. United States Forest Service, Eastern Region, Milwaukee, Wisconsin. 25 pp.

Janssens, J. A. 1988. Non-vascular plants: Mosses. Pages 219-229 in Coffin and Pfannmuller, editors. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

Minnesota Department of Natural Resources, Division of Ecological Resources. 2008. Rare species guide: an online encyclopedia of Minnesota's rare native plants and animals [web application]. Minnesota Department of Natural Resources, St. Paul, Minnesota. <[www.dnr.state.mn.us/rsg](http://www.dnr.state.mn.us/rsg)>. Accessed 12 June 2009.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

Peck, J. H. 1980. *Bryoxiphium norvegicum* in Iowa. *The Bryologist* 83:535.

Pursell, R. A. 2007. *Bryoxiphium*. Pages 329-330 in Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 27. Oxford University Press, New York, New York.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Bryum cyclophyllum* (Schwägrichen) Bruch & Schimper

COMMON NAME: Egg-leaf True Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Egg-leaf True Moss has a nearly continuous northern hemisphere distribution of boreal affinity. It occurs as a colonist on wet soils subject to inundation. The species has been recorded regionally from Ontario and Wisconsin. In Minnesota, a single population has been found on Susie Island in Cook County. With only one recorded population, there is too little information available at this time to detect a statewide population trend. Further inventory work is needed to clarify the species' abundance and distribution in the state. However, until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

- Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.
- Janssens, J. A. 1999. The bryophytes of the Susie Islands, Lake Superior, Cook County, Minnesota, based on surveys by J. A. Janssens and R. M. Schuster. Report submitted to the Minnesota Department of Natural Resources, County Biological Survey. 28 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- Kentucky State Nature Preserves Commission. 2009. Endangered, threatened, and special concern plants, animals, and natural communities of Kentucky with habitat description. Kentucky State Nature Preserves Commission, Frankfort, Kentucky. <<http://www.naturepreserves.ky.gov/NR/rdonlyres/7B61A56A-C89E-4C02-8E67-82ADC25DE32F/0/specieshabitat2009.pdf>>. Accessed 27 September 2009.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.
- United States Department of Agriculture, Natural Resources Conservation Service. 2009. The PLANTS Database - *Bryum cyclophyllum* (Schwägr.) Bruch & Schimp. National Plant Data Center, Baton Rouge, Louisiana. <<http://plants.usda.gov/java/profile?symbol=BRCY70>>. Accessed 15 June 2009.



## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Buxbaumia aphylla* Hedwig

COMMON NAME: Bug-on-a-stick Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Bug-on-a-stick Moss has a nearly continuous world distribution of temperate affinity. It has been recorded regionally from Ontario, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, only a single population has been found in the bluffs of Winona County. The species occurs as a pioneering colonist on disturbed soils or old logs in hardwood forests at the edge of creeks. Because only one population has ever been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Further survey work is needed to better define the species' distribution and specific habitat needs in Minnesota. However, based on its apparent rarity, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cirriphyllum piliferum* (Hedwig) Grout

COMMON NAME: Hair-pointed Feather Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Hair-pointed Feather Moss has a nearly continuous northern hemisphere distribution of temperate affinity. The species grows as a non-aggressive perennial stayer on soil and decayed wood in moist, shady places within mesohabitats such as algific slopes and spring fens. It has been recorded regionally from Ontario and the Upper Peninsula of Michigan. In Minnesota, only two populations have been found in Fillmore and Washington counties. Despite extensive surveys of suitable habitat of algific slopes in the region and spring fens throughout the state, no additional populations have been encountered. While there is too little information available to detect a statewide population trend at this time, climate change and the resulting disappearance of these specialized mesohabitats will stress survival of the existing populations in the state. On the basis of the species' extreme rarity and perceived threats to its habitat, a status of Threatened is needed and reasonable.

### SELECTED REFERENCES:

- Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.
- Janssens, J. A. 1997. Bryophyte floristics of algific slopes, Olmsted and Fillmore counties, southeastern Minnesota. Report submitted to the Minnesota Department of Natural Resources, County Biological Survey. 11 pp.
- Janssens, J. A., M. G. Noble, S. P. Main, and J. L. Haferman. 1999. Long-term ecological research on spring-fen communities at the St. Croix Watershed Research Station, Washington County, Minnesota. Report submitted to the St. Croix Watershed Research Station, Science Museum of Minnesota. 35 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- Kentucky State Nature Preserves Commission. 2009. Endangered, threatened, and special concern plants, animals, and natural communities of Kentucky with habitat description. Kentucky State Nature Preserves Commission, Frankfort, Kentucky. <<http://www.naturepreserves.ky.gov/NR/rdonlyres/7B61A56A-C89E-4C02-8E67-82ADC25DE32F/0/specieshabitat2009.pdf>>. Accessed 27 September 2009.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.
- United States Department of Agriculture, Natural Resources Conservation Service. 2009. The PLANTS Database - *Cirriphyllum piliferum* (Hedw.) Grout. National Plant Data Center, Baton Rouge, Louisiana. <<http://plants.usda.gov/java/profile?symbol=CIP170>>. Accessed 15 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

SCIENTIFIC NAME: *Cryptocolea imbricata* Schuster

COMMON NAME: Hidden-perianth Liverwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

**BASIS FOR PROPOSED MINNESOTA STATUS:** Hidden-perianth Liverwort is endemic to northeastern North America and Greenland within the montane bioclimatic zone. It has been recorded regionally from Isle Royal in the Upper Peninsula of Michigan. In Minnesota, the species was originally described in 1951 based on specimens from the Porcupine and Susie Islands in Cook County. Hidden-perianth Liverwort occurs as a colonist on moist soil as indicated by the Minnesota type location. A search for the original population has not yet been possible as the site is not easily accessible. However, no additional populations were found on nearby islands during surveys of suitable habitat. Because Hidden-perianth Liverwort is part of the "Tundra Strip" flora and requires a specific arctic-montane habitat, its populations may be susceptible to local extinction due to climate change. The species' biogeography is unique and its habitat is susceptible to drying conditions and trampling. The long-term viability of Hidden-perianth Liverwort depends on the maintenance of cool, moist, habitat conditions.

Given the species' extreme rarity and limited geographic range in the state, its restrictive habitat requirements, the vulnerability of populations to degradation or destruction, and concerns over a rangewide decline, a status of Threatened is reasonable and needed.

### SELECTED REFERENCES:

- Janssens, J. A. 1999. The bryophytes of the Susie Islands, Lake Superior, Cook County, Minnesota, based on surveys by J. A. Janssens and R. M. Schuster. Report submitted to the Minnesota Department of Natural Resources, County Biological Survey. 28 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- Jessup, S. L. 2001. *Cryptocolea*. Bryophyte Flora of North America. Volume 3. <[http://www.efloras.org/florataxon.aspx?flora\\_id=50&taxon\\_id=108523](http://www.efloras.org/florataxon.aspx?flora_id=50&taxon_id=108523)>. Accessed 10 June 2009.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.
- Schuster, R. M. 1953. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. *American Midland Naturalist* 49:257-684.
- Schuster, R. M. 1958. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. III. Phytogeography. *American Midland Naturalist* 58:257-332.
- Schuster, R. M. 1969. The Hepaticae and Anthocerotae of North America, east of the hundredth Meridian. Volume II. Columbia University Press, New York. 1062 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: *Cynodontium schisti* (Weber & Mohr) Lindberg

COMMON NAME: Mowed Mosquito Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

**BASIS FOR PROPOSED MINNESOTA STATUS:** Mowed Mosquito Moss has a nearly continuous northern hemisphere distribution at high latitudes, extending southward into mountains and coastal regions. It has been recorded regionally from Wisconsin, Ontario and the Upper Peninsula of Michigan. In Minnesota, a single population has been found in Cook County, on Little Brick Island in Lake Superior. Mowed Mosquito Moss grows as a colonist in shaded crevices of cliffs and boulders. Despite extensive surveys of the three other Susie islands as well as suitable mesohabitats on the mainland along the North Shore of Lake Superior, no additional populations have been found. Because Mowed Mosquito Moss is part of the "Tundra Strip" flora and requires a specific arctic-montane habitat, its populations may be susceptible to local extinction due to climate change. The species' biogeography is unique and its habitat is susceptible to drying conditions and trampling. The long-term viability of Mowed Mosquito Moss depends on the maintenance of cool, moist, habitat conditions.

Given the species' extreme rarity and limited geographic range in the state, its restrictive habitat requirements, the vulnerability of populations to degradation or destruction, and concerns over a rangewide decline, a status of Threatened is reasonable and needed.

### SELECTED REFERENCES:

- Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.
- Janssens, J. A. 1997. Bryophyte floristics at Sugarloaf Cove, Cook County, Minnesota. Report submitted to the University of Minnesota, Sugarloaf Interpretive Center Association, Duluth, Minnesota.
- Janssens, J. A. 1999. The bryophytes of the Susie Islands, Lake Superior, Cook County, Minnesota, based on surveys by J. A. Janssens and R. M. Schuster. Report submitted to the Minnesota Department of Natural Resources, County Biological Survey. 28 pp.
- Janssens, J. A. 2003. Bryophytes of the Northern Superior Uplands and the Superior National Forest: Inventory, Assessment, and Recommendations for Conservation. Report submitted to the Minnesota Department of Natural Resources and the Superior National Forest. 382 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.
- Schuster, R. M. 1958. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. III. Phytogeography. *American Midland Naturalist* 58:257-332.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Cyrto-hypnum pygmaeum* (Schimper) Buck

COMMON NAME: Pygmy Plume Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Pygmy Plume Moss is an endemic to eastern North America within the temperate bioclimatic zone. It has been recorded regionally from Ontario, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, only two populations have been found in the blufflands of Houston and Wabasha counties. Pygmy Plume Moss is a non-aggressive perennial stayer that forms smooth mats in mesic forests, on cliffs, and in rocky creek-bed habitat. Because only a few populations have been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Further inventory work is needed to clarify the species' abundance and distribution in the state, and the potential threats to its survival. Given its specific local microhabitat preferences in the driftless region, climate change may eventually stress survival of the existing populations in the state. On the basis of the species' apparent rarity and restrictive habitat requirements, a status of Special Concern is needed and reasonable.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 2000. Bryophytes of the Paleozoic Plateau Ecological Region, southeastern Minnesota. II. Non-transect data submitted to the Minnesota Department of Natural Resources, County Biological Survey, St. Paul, Minnesota.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Encalypta procera* Bruch

COMMON NAME: Tall Extinguisher Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

**BASIS FOR PROPOSED MINNESOTA STATUS:** Tall Extinguisher Moss has a nearly continuous world distribution of boreal affinity. It has been recorded regionally from Ontario, Manitoba, North Dakota, South Dakota, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, two populations have recently been discovered in Cook and Lake counties, and the species has also been recorded historically from the southeastern part of the state. Tall Extinguisher Moss grows as a colonist on calcareous rock or soil in moist crevices, on talus, and on cliff ledges. Because only a few populations have been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Trampling has been identified as a potential threat to one of the known populations where a bike-path overpass is proposed be built near the species' ravine habitat. Further inventory work is needed to clarify the species' distribution in the state and to adequately assess threats to its survival. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Horton, D. G. 1983. A revision of the Encalyptaceae (Musci), with particular reference to the North American taxa. Part II. Journal of the Hattori Botanical Laboratory 54:353-532.

Janssens, J. A. 2003. Bryophytes of the Northern Superior Uplands and the Superior National Forest: Inventory, Assessment, and Recommendations for Conservation. Report submitted to the Minnesota Department of Natural Resources and the Superior National Forest. 382 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Frullania selwyniana* Pearson

COMMON NAME: Selwyn's Ear-leaf Liverwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Selwyn's Ear-leaf Liverwort is a rare endemic to eastern North America within the boreal bioclimatic zone. It has been recorded regionally from Ontario, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, the species has been recorded in Cook, Lake, and St. Louis counties. Selwyn's Ear-leaf Liverwort is restricted to humid paludified cedar and cedar/ash swamps, growing only on White Cedar (*Thuja occidentalis*) bark of large-diameter, older trees. A targeted survey of the Superior National Forest in 2008 turned up many new locations, but only within this particular microhabitat. Because many of the old-growth cedar forests in Minnesota are senescing and cedar swamps in general are threatened by poor regeneration, habitat availability is likely a limiting factor for this species. Given the species' narrow geographic range in the state, its specialized and restrictive habitat requirements, and the limited amount of available habitat, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

- Janssens, J. A. 2003. Bryophytes of the Northern Superior Uplands and the Superior National Forest: Inventory, Assessment, and Recommendations for Conservation. Report submitted to the Minnesota Department of Natural Resources and the Superior National Forest. 382 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2008. Occurrence of the Liverwort *Frullania selwyniana* on the Superior National Forest, Minnesota. Report submitted to the Superior National Forest, Laurentian Ranger District, Aurora, Minnesota. 59 pp.
- Janssens, J. A., and J. T. Greenlee. 2009. Occurrences of the liverwort *Frullania selwyniana* in the Superior National Forest, Minnesota: Overlooked or recovered? *Evansia* (in press).
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Heterocladium dimorphum* (Bridel) Bruch & Schimper

COMMON NAME: Spaced-out Tangle Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Spaced-out Tangle Moss has a disjunct distribution in the northern hemisphere in the boreal bioclimatic zone, ranging across parts of North America, northern and central Europe, and the Caucasus region. It has been recorded regionally from Ontario and the Upper Peninsula of Michigan. In Minnesota, only a single population has been recorded from Cook County. The species grows on boulders and crevices in cliffs and along moist streambanks as a non-aggressive perennial stayer. Because only one population has been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. However, the known population is located in an area that is highly vulnerable to destruction by trampling from rock scrambling and climbing. Additional survey work is needed to clarify the species' abundance and distribution in the state, but until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

- Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.
- Janssens, J. A. 1997. Bryophyte floristics at Sugarloaf Cove, Cook County, Minnesota. Report submitted to the University of Minnesota, Sugarloaf Interpretive Center Association, Duluth, Minnesota.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.



## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Hyophila involuta* (Hooker) Jaeger

COMMON NAME: Rolled-leaf Wet-ground Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

**BASIS FOR PROPOSED MINNESOTA STATUS:** Rolled-leaf Wet-ground Moss has a nearly continuous world distribution without zonal affinity. It has been recorded regionally from Ontario, Iowa, and Wisconsin. In Minnesota, only a single population has been found in the blufflands of Houston County. Rolled-leaf Wet-ground Moss is a short-lived shuttle species that grows on wet rocks, often in streams. Because only one population has been documented in Minnesota, there is too little information available at this time to detect a statewide population trend. While further survey work is needed to clarify the species' abundance and distribution in the state, its specific microhabitat suggests that climate change might eventually stress survival of any existing populations in the state. Therefore, based on its apparent rarity and restrictive habitat requirements, a status of Special Concern is needed and reasonable.

### SELECTED REFERENCES:

- Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Jaffuelobryum wrightii* (Sullivant) Thériot

COMMON NAME: Wright's Blunt Leaved True Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Wright's Blunt Leaved True Moss is endemic to eastern North America within the temperate bioclimatic zone. It has been recorded regionally from Ontario, South Dakota, Nebraska, Iowa, and Wisconsin. In Minnesota, only a single population in Le Sueur County has been found. Wright's Blunt Leaved True Moss grows in dry saxicolous habitat as a colonist. Because only one population has been documented in Minnesota, there is too little information available at this time to detect a statewide population trend. Further inventory work is needed to clarify the species' distribution in the state and potential threats to its survival. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Lescuraea saxicola* (Schimper in Bruch & Schimper) Milde

COMMON NAME: Lustrous Bow Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Lustrous Bow Moss has a scattered northern hemisphere distribution of montane affinity. There are no regional records from states or provinces adjacent to Minnesota. In the state, several small patches were discovered at a single site in Cook County in 2001. Here the species occurs as a colonist on exposed rocks in a riverine black ash swamp along the narrow deep canyon of the Brule River. Because the patches belong to the only documented population in Minnesota, there is too little information available to detect a statewide population trend at this time. However, similar mesohabitats have been extensively searched in the region and no additional populations have been found. Lustrous Bow Moss' specific arctic-montane habitat and its dependence on the maintenance of cool, moist conditions will likely make the species susceptible to local and global extinction from climate change.

Given the species' extreme rarity and limited geographic range in the state, its restrictive habitat requirements, the vulnerability of populations to degradation or destruction, and concerns over a potential rangewide decline, a status of Threatened is reasonable and needed.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 2003. Bryophytes of the Northern Superior Uplands and the Superior National Forest: Inventory, Assessment, and Recommendations for Conservation. Report submitted to the Minnesota Department of Natural Resources and the Superior National Forest. 382 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Meesia uliginosa* Hedwig

COMMON NAME: Swan Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Swan Moss has a nearly continuous northern hemisphere distribution of subarctic and boreal affinity. It has been recorded regionally from Ontario, Manitoba, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, a single population was found in a large patterned peatland in Koochiching County in 1984. Swan Moss is an excellent, but rare, indicator of calcareous fens and swamps. Because only one population has been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. However, the species' short life cycle is a limiting factor, which makes any population vulnerable to local extinction. Further survey work is needed to clarify the species' distribution in Minnesota and potential threats to its survival, but based on its apparent rarity, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Pogonatum urnigerum* (Hedwig) Beauvois

COMMON NAME: Urn-bearing Hair Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Urn-bearing Hair Moss has a nearly continuous world distribution of subarctic and boreal affinity, where it occurs as a colonist along roadbanks and in cliff crevices. It has been recorded regionally from Ontario and Wisconsin. In Minnesota, several small patches were discovered at a single site in Cook County in 1995. Because only one population has been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. However, the known population is located in an area that is vulnerable to destruction by trampling from rock scrambling and climbing. Additional survey work is needed to clarify the species' distribution and specific habitat needs in the state, but until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

- Flora of North America. 2007. Flora of North America Editorial Committee, editors. Flora of North America north of Mexico. Volume 27, Bryophyta, part 1. New York and Oxford, Oxford University Press. 713 pp.
- Janssens, J. A. 1997. Bryophyte floristics at Sugarloaf Cove, Cook County, Minnesota. Report submitted to the University of Minnesota, Sugarloaf Interpretive Center Association, Duluth, Minnesota.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sphagnum compactum* Lamarck & de Candolle

COMMON NAME: Cushion Peat Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Cushion Peat Moss has a nearly continuous world distribution without zonal affinity. It has been recorded regionally from Ontario, Manitoba, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, a single population was found in St. Louis County in 1996. This carpet-forming species occurs along the dry margins of open bogs, and also pioneers farther north on sand, rock, and bare peat. An intensive search of the original locality has not been able to relocate the species, and it is thought that this particular small population may have been extirpated by chance collecting during a previous ecological survey. Furthermore, years of additional surveys throughout the state in suitable mesohabitats have not resulted in the discovery of any additional records. Given the species' extreme rarity and limited geographic range in the state, its restrictive habitat requirements, and the vulnerability of populations to degradation or destruction, a status of Threatened is reasonable and needed.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

Reich, P. B., P. Bakken, D. Carlson, L. Frelich, K. Friedman, and D. F. Grigal. 2001. Influence of logging, fire, and forest type on biodiversity and productivity in southern boreal forests. *Ecology* 82:2731-2748.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Sphagnum lescurii* Sullivant

COMMON NAME: Red Twisted Peat Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Red Twisted Peat Moss has a disjunct northern hemisphere world distribution of temperate affinity including eastern North America and Europe. It has been recorded regionally from Ontario, Wisconsin, Iowa, and the Upper Peninsula of Michigan. In Minnesota, a single population was discovered in Lake County in 2003. Red Twisted Peat Moss occurs in somewhat minerotrophic conditions along pond margins and in transitional fens. Despite numerous research projects and surveys in suitable mesohabitats throughout the state, no additional locations have been found. Individual transitional fen habitats are quite vulnerable as they occupy only a short phase in the peatland successional chronosequence, and consequently, local extinctions of Red Twisted Peat Moss are likely. On the basis of extreme rarity, documented habitat loss, and perceived threats, a status of Threatened is needed and reasonable.

### SELECTED REFERENCES:

- Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.
- Janssens, J. A. 2003. Bryophytes of the Northern Superior Uplands and the Superior National Forest: Inventory, Assessment, and Recommendations for Conservation. Report submitted to the Minnesota Department of Natural Resources and the Superior National Forest. 382 pp.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 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

SCIENTIFIC NAME: *Splachnum rubrum* Hedwig

COMMON NAME: Red Parasol Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Endangered

BASIS FOR PROPOSED MINNESOTA STATUS: Red Parasol Moss is an exceedingly rare and disjunctly scattered species in the boreal bioclimatic zone including northern Europe, North America, and Asia. It has been recorded regionally from Ontario and Isle Royale in Michigan. In Minnesota, three populations have been located in Cook County, two in 1984 and one in 2004. This short-lived shuttle species grows exclusively on old Moose (*Alces alces*) dung and thus only occurs throughout the range of moose. The substantial decline of Minnesota's northwestern Moose population over the past decade and the predicted decline of the northeastern Moose population are cause for concern. Furthermore, the short life-history of Red Parasol Moss makes any population quite vulnerable to local extinction. Populations with mature sporophytes are also extremely obvious and run a definite risk of being extirpated by avid collectors. On the basis of extreme rarity, limited state and regional distribution, highly specialized microhabitat and life-history, and obvious and perceived threats, a status of Endangered is needed and reasonable.

### SELECTED REFERENCES:

- Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.
- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- Marino, P. C. 1997. Competition, dispersal and coexistence of Splachnaceae in patchy habitats. Pages 241-263 in R. E. Longton, editor. Advances in Bryology 6. International Association of Bryologists, Reading, United Kingdom.
- Moose Advisory Committee. 2009. Report to the Minnesota Department of Natural Resources (DNR) by the Moose Advisory Committee. 49 pp.  
<[http://files.dnr.state.mn.us/fish\\_wildlife/wildlife/moose/mac/macreport.pdf](http://files.dnr.state.mn.us/fish_wildlife/wildlife/moose/mac/macreport.pdf)> Accessed 22 September 2009.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.



## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Thelia hirtella* (Hedwig) Sullivant

COMMON NAME: Nipple Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Nipple Moss is an endemic to eastern North America within the temperate bioclimatic zone. It has been recorded regionally from Ontario, Nebraska, Iowa, and Wisconsin. In Minnesota, two populations were discovered in St. Louis County in 1976. Nipple Moss grows on bark near the base of hardwood trees as a colonist. Because only a few populations have been documented in Minnesota, there is too little information available at this time to detect a statewide population trend. Further inventory work is needed to clarify the species' distribution in the state and potential threats to its survival. Until this information becomes available, a status of Special Concern is needed and reasonable based on the species' apparent rarity.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Tomenthypnum falcifolium* (Renauld ex Nichols) Tuomikoski

COMMON NAME: Curved-leaved Golden Moss

CURRENT MINNESOTA STATUS: Special Concern

PROPOSED MINNESOTA STATUS: None

BASIS FOR PROPOSED MINNESOTA STATUS: Curved-leaved Golden Moss is a North American and Asiatic species in the boreal and subarctic bioclimatic zones. It has been recorded regionally from Ontario, Manitoba, Wisconsin, and the Upper Peninsula of Michigan. When it was listed as a Special Concern species in 1984, it had only been documented from a handful of sites in five counties. Since that time, additional surveys have resulted in the discovery of many new populations. Approximately 40 populations have now been found in Beltrami, Cass, Clearwater, Cook, Itasca, Koochiching, Lake, Marshall, Roseau, and St. Louis counties. Curved-leaved Golden Moss characteristically occurs among *Sphagnum* hummocks in slightly minerotrophic poor fens. It turns out to be as common or even more common as its congener *Tomentypnum* Moss (*Tomentypnum nitens*), which is a rich-fen and extreme rich-fen species. Curved-leaved Golden Moss was fairly recently described as a new species but because it is now routinely found during poor-fen surveys, Special Concern status is no longer warranted.

### SELECTED REFERENCES:

Crum, H. A., and L. E. Anderson. 1981. Mosses of eastern North America. 2 volumes. Columbia University Press, New York, New York.

Janssens, J. A. 1988. Non-vascular plants: Mosses. Pages 219-229 *in* Coffin and Pfannmuller, editors. Minnesota's endangered flora and fauna. University of Minnesota Press, Minneapolis, Minnesota.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

Minnesota Department of Natural Resources, Division of Ecological Resources. 2008. Rare species guide: an online encyclopedia of Minnesota's rare native plants and animals [web application]. Minnesota Department of Natural Resources, St. Paul, Minnesota. <[www.dnr.state.mn.us/rsg](http://www.dnr.state.mn.us/rsg)>. Accessed 12 June 2009.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

Vitt, D. H., and C. D. Hamilton. 1975. Taxonomic status of *Tomenthypnum falcifolium*. *The Bryologist* 78: 168-177.

Wheeler, G. A., and P. H. Glaser. 1982. *Tomenthypnum falcifolium* in Minnesota. *The Michigan Botanist* 21:66.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Tortella inclinata* (Hedwig f.) Limpricht

COMMON NAME: Shortleaf Chalk Moss

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Special Concern

BASIS FOR PROPOSED MINNESOTA STATUS: Shortleaf Chalk Moss is a widespread species in the temperate bioclimatic zone of both hemispheres. It has been recorded regionally from Ontario, Iowa, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, a single population was discovered in Cook County in 1975. Shortleaf Chalk Moss grows as a pioneering colonist in calcareous habitats, on stabilized dune, and in sand and gravel. Because only one population has ever been documented in Minnesota, there is too little information available to detect a statewide population trend at this time. Further survey work is needed to better define the species' distribution and specific habitat needs in Minnesota, but based on its apparent rarity, a status of Special Concern is reasonable and needed.

### SELECTED REFERENCES:

Flora of North America Editorial Committee, editors. 2007. Flora of North America north of Mexico. Volume 27, Bryophyta. Oxford University Press, New York, New York. 713 pp.

Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.

Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.

Ohio Department of Natural Resources, Division of Natural Areas and Preserves. 1993. Curved tortella (*Tortella inclinata*) factsheet. <<http://www.dnr.state.oh.us/dnap/Abstracts/t/tortincl/tabid/1634/Default.aspx>>. Accessed 27 September 2009.

United States Department of Agriculture, Natural Resources Conservation Service. 2009. The PLANTS Database - *Tortella inclinata* (R. Hedw.) Limpr. National Plant Data Center, Baton Rouge, Louisiana. <<http://plants.usda.gov/java/profile?symbol=TOIN4>>. Accessed 15 June 2009.

## SPECIES STATUS SHEET

SCIENTIFIC NAME: *Trichocolea tomentella* (Ehrhart) Dumortier

COMMON NAME: Down Liverwort

CURRENT MINNESOTA STATUS: None

PROPOSED MINNESOTA STATUS: Threatened

BASIS FOR PROPOSED MINNESOTA STATUS: Down Liverwort is disjunct to oceanic and suboceanic regions in the northern hemisphere within the temperate bioclimatic zone. It has been recorded regionally from Ontario, Wisconsin, and the Upper Peninsula of Michigan. In Minnesota, three populations have been documented in Cass, Lake, and Itasca counties in 1992, 2001, and 2007, respectively. This wet-forming perennial species is found in black ash/conifer and cedar swamps. The general senescence of old-growth cedar forests in Minnesota and their poor regeneration as a result of deer browsing is a serious concern which threatens the long-term viability of the species' customary mesohabitat. A dedicated search of potential habitats was conducted in 2008 across all districts of the Superior National Forest, but no new Down Liverwort populations were discovered. On the basis of extreme rarity, documented habitat loss, and perceived threats, a status of Threatened is needed and reasonable.

### SELECTED REFERENCES:

- Janssens, J. A. 2005. Proposed candidates of endangered, threatened, and special concern species of bryophytes for Minnesota, update June 2005. Report to the Minnesota Department of Natural Resources, County Biological Survey. 18 pp.
- Janssens, J. A. 2008. Occurrence of the Liverwort *Frullania selwyniana* on the Superior National Forest, Minnesota. Report submitted to the Superior National Forest, Laurentian Ranger District, Aurora, Minnesota. 59 pp.
- Janssens, J. A. 2009. MS Access<sup>®</sup> Database on Minnesota Bryophytes. Lambda-Max Ecological Research, Minneapolis, Minnesota.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <<http://www.natureserve.org/explorer>>. Accessed 10 June 2009.
- Schuster, R. M. 1966. The Hepaticae and Anthocerotae of North America, east of the hundredth Meridian. Volume I. Columbia University Press, New York. 802 pp.
- Schuster, R. M. 1977 (1953). Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. *American Midland Naturalist* 49:257-684.