Botrychium campestre - W.H. Wagner & Farrar ex W.H. & F. Wagner
Prairie Dunewort

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Other English Common Names: Iowa Moonwort, Plains Grapefern, Prairie Moonwort
Taxonomic Status: Accepted
Related ITIS Name(s): *Botrychium campestre* W.H. Wagner & Farrar (TSN 501018)
French Common Names: botryche champêtre, botryche des champs
Unique Identifier: ELEMENT_GLOBAL.2.145970
Element Code: PPOPH010W0
Informal Taxonomy: Plants, Vascular - Ferns and relatives

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Filicinophyta	Ophioglossopsida	Ophioglossales	Ophioglossaceae	Botrychium

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Concept Reference
Expand

Conservation Status
Collapse

NatureServe Status

Global Status: G3G4
Global Status Last Reviewed: 01Nov2011
Global Status Last Changed: 16Jul2002
Rounded Global Status: G3 - Vulnerable
Reasons: *Botrychium campestre* occurs over a fairly broad range in the northern United States and Canada but it is rare in most of this range, with a few areas of modest concentration and several isolated, disjunct populations. However it is inconspicuous and difficult to locate, search efforts early in the spring, suitable for this species, will most likely reveal additional populations as well as provide better assessment of known populations.
Nation: United States
National Status: N3N4
Nation: Canada
National Status: N2 (17Sep2010)

U.S. & Canada State/Province Status	
United States	Colorado (S1), Illinois (S1), Iowa (S2), Michigan (S2), Minnesota (S3), Montana (S1S2), Nebraska (S1), New York (SH), North Dakota (S1), Oregon (S1), South Dakota (S2S3), Vermont (S1), Wisconsin (S1), Wyoming (S1)
Canada	Alberta (S1), Manitoba (S1), New Brunswick (SH), Ontario (S1), Saskatchewan (S1)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: *Botrychium campestre* has a wide range with disjunct populations. It is most common in Minnesota, Iowa and Michigan, however ranges west to Washington and Oregon in the U.S. and northward in Alberta, Saskatchewan, Manitoba and Ontario in Canada (Kartesz 1999). It ranges as far south as northeastern Colorado. Despite this wide range, populations appear to be concentrated in the Great Lakes region with a few widely separated occurrences elsewhere. Populations east of the Great Lakes (historial occurrences in New York and New Brunswick) may need verification. The reported occurrence in Newfoundland has been revised to *B. ascendens*.

Number of Occurrences: 21 - 300
Number of Occurrences Comments: MN: Hole-in-the-Mountain, Lincoln Co. and Frenchman's Bluff Preserve, Norman Co.; MI: Sleeping Bear Dunes (Lake Michigan), Grand Sable Dunes (Lake Superior), Crawford Co., Garden City (South Manitoba Island), Chippewa Co.; Ontario, CANADA: Marathon, Thunder Bay District; IA: Dickinson Co., Fremont Co., Monona Co., Plymouth Co., Pottawattamie Co., Woodbury Co.; ND; NE; OR: Hurricane Creek, Wallowa Co.; Alberta, Manitoba, Saskatchewan and Ontario, CANADA. Historical records from NY, and specimens of questionable id. from New Brunswick, Newfoundland, and Quebec, CANADA. (Coffin & Pfannmuller (eds.), 1988; Wagner & Wagner, 1990). Populations of *B. campestre* east of the Great Lakes need verification. Revisited location in NF identified as *B. ascendens* (Farrar pers. comm. 2002, IN Anderson & Cariveau 2003).

2 EOs in CO, 1 in IL, 5 in IA, 10 in MI, 54 in MN, 5 in MT, 1 in NE, 1 in ND, 1 in OR, 5 in SD, 4 in WI, 1 in WY; USA; 4 in AB, 1 in MB, 1 in SK, 1 in ON; CANADA.
Because *Botrychium campestre* is extremely inconspicuous as well as very early phenology, occurrences of this species are likely underdocumented.

Population Size Comments: Because this species is inconspicuous and the root bases do not produce an aboveground leaf every year, the sizes of populations are very difficult to estimate. Some sites are known with populations of at least 100 plants, however the majority of populations consist only of a few to a half dozen individuals. *Botrychiums* also can exist within 'genus communities' of many *Botrychium* species, making specific population numbers for each species difficult to assess. *B. campestre* with its very early phenology may also be missed with the timing of surveys.

Number of Occurrences with Good Viability/Integrity: Some (13-40) occurrences with good viability
Viability/Integrity Comments: Many EOs are only verified as extant with viability not assessed. Many occurrences in Minnesota and several in South Dakota and Michigan are considered good to fair estimated viability. Overall 31% of all EOs are considered excellent, good or fair viability.

Environmental Specificity: Narrow. Specialist or community with key requirements common.
Environmental Specificity Comments: loess unaltered prairie habitat, mycorrhizal dependency, narrow window of opportunity for growth and reproduction due to ephemeral soil moisture availability (Anderson and Cariveau 2003)

Overall Threat Impact: High - medium
Overall Threat Impact Comments: The primary threat to *Botrychium campestre* is the loss of habitat - the historic and present plowing of native prairies. This species requires unaltered prairie habitat and has never been found in any area that has been historically plowed. Other possible threats are pasturing, the invasion of cool-season grasses, and successional overgrowth, although the degree of impact for these factors, including fire, needs to be studied. Climate change, which could bring increased drought to some areas could have serious impacts (Anderson and Cariveau 2003).

Intrinsic Vulnerability Comments: specific reproductive biology, low dispersal capability, reduced habitat and genetic connectivity

Short-term Trend: Relatively stable (=10% change)
Short-term Trend Comments: Detailed ecological monitoring of *B. campestre* in western Minnesota including long-term tracking of individual plants indicates that in general the plants had become smaller and fewer throughout its range (Johnson-Groh and Farrar, 1989). Data is insufficient to evaluate rangewide population trends and local population trends can show high

variation between years (Anderson and Cariveau 2003).

Long-term Trend: Increase of 10-25% to decline of 30%
Long-term Trend Comments: Historically *B. campestre* populations probably were more prevalent. Continued alteration of prairie habitat for agriculture will reduce available habitat. *B. campestre* has never been located in historically plowed habitat. This combined with mycorrhizae dependency make restoration efforts impossible. Drought is a most significant factor for stalk emergence and survival, hence climate change with more drought conditions may influence populations. (Anderson and Cariveau 2003).

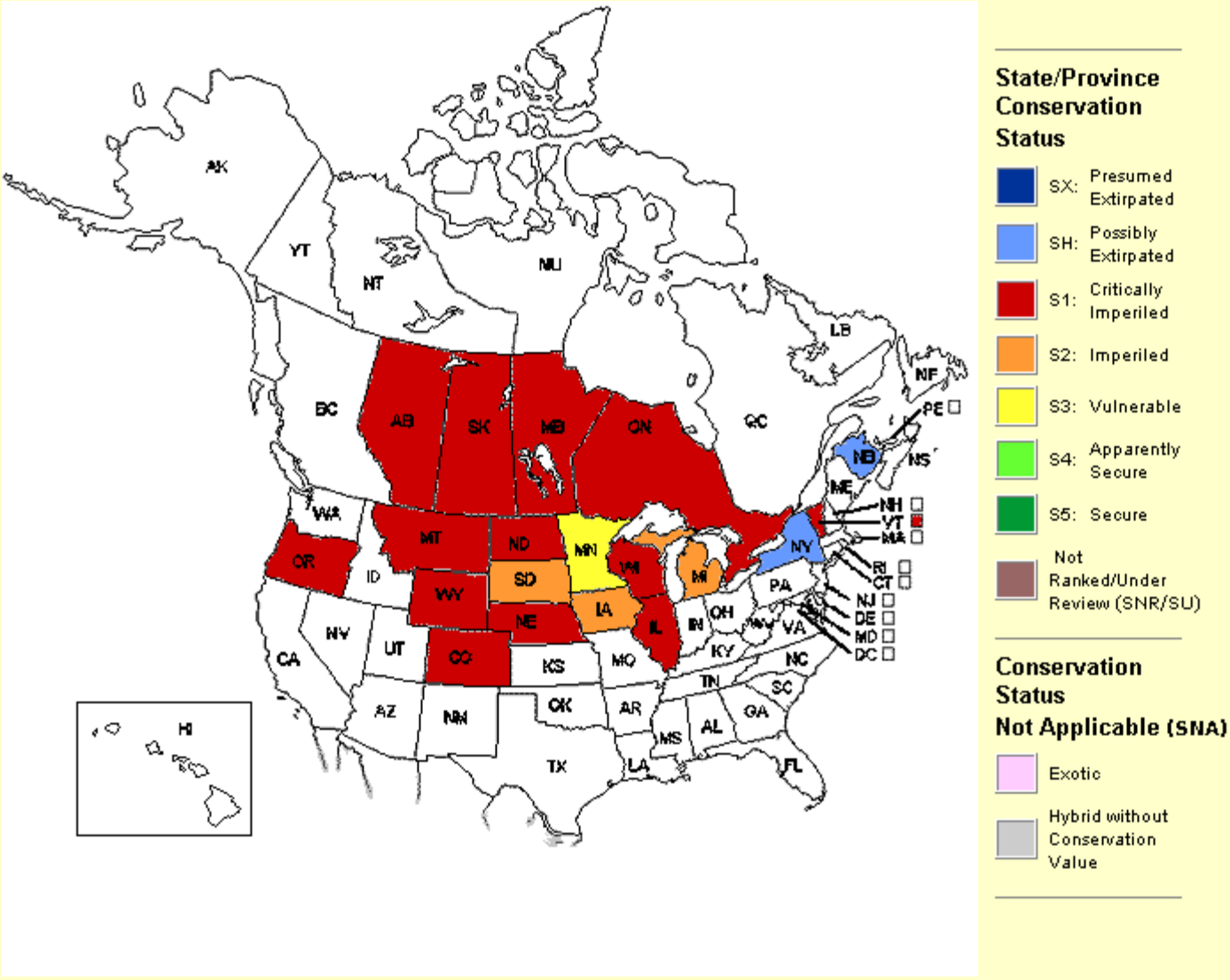
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: *Botrychium campestre* has a wide range with disjunct populations. It is most common in Minnesota, Iowa and Michigan, however ranges west to Washington and Oregon in the U.S. and northward in Alberta, Saskatchewan, Manitoba and Ontario in Canada (Kartesz 1999). It ranges as far south as northeastern Colorado. Despite this wide range, populations appear to be concentrated in the Great Lakes region with a few widely separated occurrences elsewhere. Populations east of the Great Lakes (historial occurrences in New York and New Brunswick) may need verification. The reported occurrence in Newfoundland has been revised to *B. ascendens*.

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	

United States	CO, IA, IL, MI, MN, MT, ND, NE, NY, OR, SD, VT, WI, WY
Canada	AB, MB, NB, ON, SK

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
CO	Yuma (08125)
IA	Black Hawk (19013), Butler (19023), Cerro Gordo (19033), Cherokee (19035), Clinton (19045), Delaware (19055), Dickinson (19059), Floyd (19067), Franklin (19069), Fremont (19071), Howard (19089), Jackson (19097), Jones (19105), Linn (19113), Monona (19133), O Brien (19141), Plymouth (19149), Pottawattamie (19155), Winneshiek (19191), Woodbury (19193)
IL	Kane (17089)
MI	Alger (26003), Benzie (26019), Chippewa (26033), Delta (26041), Leelanau (26089)
MN	Becker (27005), Beltrami (27007), Big Stone (27011), Carver (27019), Clay (27027), Crow Wing (27035), Douglas (27041), Houston (27055), Itasca (27061), Kandiyohi (27067), Kittson (27069), Lac Qui Parle (27073), Lincoln (27081), Marshall (27089), Murray (27101), Norman (27107), Olmsted (27109), Otter Tail (27111), Pipestone (27117), Polk (27119), Pope (27121), Roseau (27135), St. Louis (27137), Traverse (27155), Wabasha (27157), Winona (27169)
ND	McHenry (38049)*
NE	Brown (31017)
NY	Onondaga (36067)*
OR	Wallowa (41063)
SD	Brown (46013), Custer (46033), Gregory (46053), Pennington (46103)
VT	Bennington (50003)
WI	Dane (55025), Door (55029), Iowa (55049), Kenosha (55059), Sheboygan (55117)
WY	Crook (56011)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
02	Hudson-Hoosic (02020003)+
04	St. Louis (04010201)+, Betsy-Chocolay (04020201)+, Manitowoc-Sheboygan (04030101)+, Door-Kewaunee (04030102)+, Tacoosh-Whitefish (04030111)+, Pike-Root (04040002)+, Betsie-Platte (04060104)+, Carp-Pine (04070002)+, Oneida (04140202)+*
07	Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+, Crow (07010204)+, Upper Minnesota (07020001)+, Pomme De Terre (07020002)+, Lac Qui Parle (07020003)+, Hawk-Yellow Medicine (07020004)+, Chippewa (07020005)+, Lower Minnesota (07020012)+, Buffalo-Whitewater (07040003)+, Zumbro (07040004)+, La Crosse-Pine (07040006)+, Root (07040008)+, Upper Iowa (07060002)+, Turkey (07060004)+, Maquoketa (07060006)+, Upper Wapsipinicon (07080102)+, Shell Rock (07080202)+, West Fork Cedar (07080204)+, Middle Cedar (07080205)+, Pecatonica (07090003)+, Lower Fox (07120007)+
09	Lower Souris (09010003)+*, Willow (09010004)+*, Bois De Sioux (09020101)+, Otter Tail (09020103)+, Buffalo (09020106)+, Eastern Wild Rice (09020108)+, Thief (09020304)+, Clearwater (09020305)+, Snake (09020309)+, Lower Red (09020311)+, Two Rivers (09020312)+, Roseau (09020314)+
10	Beaver (10120107)+, Middle Cheyenne-Spring (10120109)+, Middle Cheyenne-Elk (10120111)+, Upper Belle Fourche (10120201)+*, Redwater (10120203)+, Fort Randall Reservoir (10140101)+,

	Middle Niobrara (10150004)+, Upper James (10160003)+, Upper Big Sioux (10170202)+, Lower Big Sioux (10170203)+, Rock (10170204)+, Blackbird-Soldier (10230001)+, Floyd (10230002)+, Little Sioux (10230003)+, Maple (10230005)+, Big Papillion-Mosquito (10230006)+, Boyer (10230007)+, Keg-Weeping Water (10240001)+, South Fork Republican (10250003)+
17	Wallowa (17060105)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History

Collapse

Basic Description: Prairie moonwort, prairie dunewort; Adder's-tongue family (Ophioglossaceae). A tiny, erect, perennial fern with one fleshy blade per plant. Small size from 5 to 10 cm tall. Earliest phenology of the Botrychiums. Underground gemmae or vegetative propagules on subterranean gametophytes. Obligately dependent on mycorrhizal fungi.
General Description: Prairie Dunewort is a small perennial fern with a single aboveground frond which stands 6-12 cm tall. The frond is divided into two segments, one sterile, one fertile, which share a common stalk; the common stalk is usually 5-10 cm long. The sterile segment is dull, whitish-green, fleshy, usually widest above the middle, and with usually less than six pairs of widely spaced upswept pinnae. The pinnae are linear to spatula shaped; the largest are often bifid at the tip, with the upper division being larger than the lower. The fertile segment is stubby, about as long as or somewhat longer than the sterile segment, and is branched with fleshy, somewhat flattened branches bearing grape-like clusters of sporangia which contain thousands of spores. Spores germinate underground and develop into minute, subterranean, non-photosynthetic gametophytes.
Diagnostic Characteristics: Most similar to BOTRYCHIUM MINGANENSE and B. LINEARE, which also have relatively narrow, widely spaced pinnae. Distinguished from B. MINGANENSE by having a sterile frond segment with smaller, narrower, more dissected, and usually fewer pinnae, a more fleshier axis, and smaller spores, which reflect a lower chromosome number. Distinguished from B. LINEARE by having a sterile frond segment with a fleshier, broader axis and usually somewhat wider pinnae, and by having a fleshier, shorter fertile frond segment.
Palustrine Habitat(s): Riparian
Terrestrial Habitat(s): Barrens, Forest Edge, Forest/Woodland, Grassland/herbaceous, Sand/dune, Savanna, Shrubland/chaparral, Woodland - Conifer, Woodland - Mixed
Habitat Comments: Occurs primarily on well-drained dry-to-mesic soils in sunlit, non-forested habitats at low elevations (ca. 300-1500m), although it may grow under shrubs in or at the margins of these habitats. Habitats include lightly vegetated Great Lakes sand dunes, often under shrubs of *Juniperus communis*; short- to mid-grass prairies and fields on limestone (often shallow-soil glades), glacial moraines, glacial till, and hills of glacial loess, either in the open prairie or under native shrubs such as *Cornus* around the margin; moist meadows in the valley zones of the Northwest; open-canopied *Juniperus virginiana-Populus deltoides* riparian forest, semi-shady mixed deciduous and *Pinus ponderosa* forest, and *Pinus ponderosa* savanna on sandy soils; grassy railroad sidings and ditches; and sparsely vegetated mineral soil. Within prairies and fields, appears to prefer dry, gravelly, exposed areas, such as north-facing hillsides. Less associated with disturbance than many moonwort species; does not need direct sunlight and can compete in somewhat dense prairie vegetation. However, habitats usually feature considerable open surface through which spores can access mineral soil. Associated species include *Schizachyrium scoparium*, *Astragalus crassicarpus*, and *Amorpha canescens*. 50 - 1500 m.

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Botrychium pallidum - W.H. Wagner
Pale Moonwort

Taxonomic Status: Accepted
Related ITIS Name(s): *Botrychium pallidum* W.H. Wagner (TSN 506848)
French Common Names: botryche pâle
Unique Identifier: ELEMENT_GLOBAL.2.154737
Element Code: PPOPH01130
Informal Taxonomy: Plants, Vascular - Ferns and relatives

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Filicinophyta	Ophioglossopsida	Ophioglossales	Ophioglossaceae	Botrychium

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G3
Global Status Last Reviewed: 18Jun2008
Global Status Last Changed: 26Oct2001
Rounded Global Status: G3 - Vulnerable
Reasons: This small, inconspicuous species has a broad but disjunct range including eastern Maine and eastern Quebec, the upper Midwest/Great Lakes region, the Black Hills (SD and WY), the Rocky Mountains (CO), northwestern Montana and adjacent Alberta, central Alberta, and Saskatchewan; also historically known from Manitoba. Nearly 100 occurrences have been documented, but the vast majority of these contain small numbers of aboveground plants; median occurrence size is 5-9 plants and the total population may not be more than about 2500 individuals. Additional occurrences are expected to be found with continued inventory; the species' range may be more continuous than our present knowledge indicates. The primary threat appears to be successional overgrowth of habitat; habitat encroachment due to development, agriculture, and recreation is also a concern.
Nation: United States
National Status: N3
Nation: Canada
National Status: N2 (17Sep2010)

U.S. & Canada State/Province Status	
United	Colorado (S2), Maine (S1), Michigan (S3), Minnesota (S1), Montana (S1S2), South Dakota (S2S3), Wisconsin

States	(S1), Wyoming (S1)
Canada	Alberta (S1), Manitoba (SH), Ontario (S1), Quebec (S1S2), Saskatchewan (S1)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: The range of *Botrychium pallidum* is broad but highly disjunct. It occurs in eastern Maine (Washington County) and eastern Quebec (e.g. Bic and Forillon Federal Park, Gaspé County), in the upper Midwest/Great Lakes region (from southeastern Michigan around the Lakes to the Upper Peninsula and southern Ontario, through northern Minnesota), in the Black Hills of South Dakota and Wyoming, throughout the Rocky Mountains in Colorado, in northwestern Montana and adjacent montane Alberta, as well as disjunctly in the dry mixedwood boreal forest of central Alberta, and in Saskatchewan. The sole known Manitoba occurrence is now considered historical (C. Foster pers. comm. 2008). A continuous range map was drawn following Johnston (2002) and Farrar (2005), for which the area was calculated to be approximately 1,850,000 km2 using GIS tools.

Area of Occupancy: 126-2,500 4-km2 grid cells
Area of Occupancy Comments: Using a 2 x 2 km grid, Area of Occupancy was calculated to be approximately 388 km2; this is likely a slight underestimate as Michigan and Saskatchewan occurrences are not individually mapped (these were estimated conservatively as one grid cell per county record).

Number of Occurrences: 21 - 300
Number of Occurrences Comments: Approximately 94 occurrences are currently believed extant, using conservative estimates for the number of occurrences in Michigan and Saskatchewan where they are not mapped individually. Of the 94 presumed extant occurrences, 44 are in Minnesota and 17 are in Colorado; all other jurisdictions have 6 or fewer. Notably, the 6 South Dakota occurrences were recently (2006) discovered in the Black Hills (identity confirmed by isozyme analysis, D. Farrar). Given the species' disjunct range and small, inconspicuous nature, it is highly likely that additional occurrences will be found with continued inventory effort (Chadde and Kudray 2001, Johnston 2002, Gilman 2004). Nevertheless, there may be fewer undiscovered occurrences for this species compared to some other *Botrychium*; Williston (2002) noted that "many new moonwort localities were documented during field survey... however, only two new locations were discovered among the rarest of these ferns (*B. campestre* in South Drywood Creek and *B. pallidum* in Elk Island National Park)...,which suggests that several species are truly rare and not merely overlooked." An additional 5 historical, 1 failed to find, and 2 unranked occurrences are also known.

Population Size Comments: Wagner is reported to have observed that where it occurred, this species was usually present in only small numbers but that occasional sizeable colonies were found (Mulligan 1999 cited in Chadde and Kudray 2001). This observation seems largely borne out by current occurrence data. A total of approximately 900-1550 aboveground plants have been counted at the various sites; extrapolating up to uncounted sites yields a total population estimate of 1500-2500+ aboveground plants rangewide. Most occurrences are quite small (median size of counted occurrences = 5-9 aboveground plants); the largest known occurrences include one with 100+ plants in Quebec, one with approx. 90 plants in South Dakota, the Maine occurrence with 60 plants, and five Minnesota occurrences with 40-60 plants each (one of these with approx. 400 plants one year). It has been noted that "plants are very small, very inconspicuous, and difficult to inventory at best" (Johnston 2002). For practical reasons, abundance is usually estimated by numbers of aboveground plants rather than by numbers of genetic individuals. However, counts of aboveground plants (mature sporophytes) are known to be an incomplete and inconsistent indicator of population size in *Botrychium*, because an unknown number of gametophytes, immature sporophytes, and dormant mature sporophytes exist underground. Studies on other *Botrychium* species have documented large annual fluctuations in the number of aboveground plants at a given site, without any apparent cause **(**Chadde and Kudray 2001).

Number of Occurrences with Good Viability/Integrity: Few (4-12) occurrences with good viability
Viability/Integrity Comments: Of 27 extant occurrences that have been ranked, one third (9 occurrences) have been assessed as having excellent or good viability. More than half of these (5) are newly-discovered South Dakota occurrences, with the others in Quebec, Colorado and Minnesota.

Environmental Specificity Comments: Habitat moisture balance appears to be important to moonworts and their supporting mycorrhizae (Chadde and Kudray 2001).

Overall Threat Impact: Medium
Overall Threat Impact Comments: The primary threat to *B. pallidum* appears to be loss of its open, grassy habitat to successional overgrowth, which is likely exacerbated by fire suppression. This species' preference for disturbed, open habitat may lead population viability to be dependent on a shifting mosaic of suitable sites opening for colonization, as occupied sites become overgrown and their generally small populations become vulnerable to local extinction (Chadde and Kudray 2001). Habitat encroachment due to development, agriculture, and recreation are also threats to *B. pallidum* and its habitat (USDA Forest Service 2000 cited in Chadde and Kudray 2001, Williston 2002). In Quebec, the species is locally threatened by riverine erosion in addition to canopy closure (J. Labrecque pers. comm. 2008). Prolonged drought can be a threat in some areas, as water relations are important to moonworts and their supporting mycorrhizae; moonworts are known not to appear above ground in hot dry years (Chadde and Kudray 2001, Johnston 2002). It is also possible though somewhat unlikely that exotic earthworms are a threat to *B. pallidum*; this threat is known to impact only *B. mormo* thus far, which occurs in the habitats most likely to be affected (i.e. those with a thick organic surface layer, in contrast to the open, disturbed habitats apparently preferred by *B. pallidum*) Chadde and Kudray 2001).

Intrinsic Vulnerability Comments: Vulnerable to increased shade. All *Botrychium* species are believed to be obligately dependent on mycorrhizal relationships in both the gametophyte and sporophyte generations (Chadde and Kudray 2001). This relationship is important to many aspects of *Botrychium* ecology; mycorrhizae appear to be a key determinant of *Botrychium* establishment, distribution, and abundance (Chadde and Kudray 2001). In *Botrychium*, spores persist in the soil for several years and, along with underground gametophytes and developing sporophytes, form a somewhat buffered population that can rebound from unfavorable years, as long as the sporophytes are not destroyed (Chadde and Kudray 2001).

Short-term Trend: Relatively stable (=10% change)
Short-term Trend Comments: Appears relatively stable in many parts of the range, e.g. Quebec (J. Labrecque pers. comm. 2008). Johnston (2002) also notes that the disturbed habitats seemingly favored by this species are themselves relatively stable on the landscape, in that sites disturbed by human activities are roughly balancing sites lost through increases in forest cover through protection from fire. However, it is important to note that habitat created by anthropogenic disturbance has not yet been proven to support viable *Botrychium* populations in the long-term.

Long-term Trend: Unknown
Long-term Trend Comments: Just 5 occurrences are currently believed to be historical (with 1 additional failed to find). However, this species was only described in 1990, and more information is required to understand the total numbers of historical/extirpated vs. still extant occurrences rangewide.

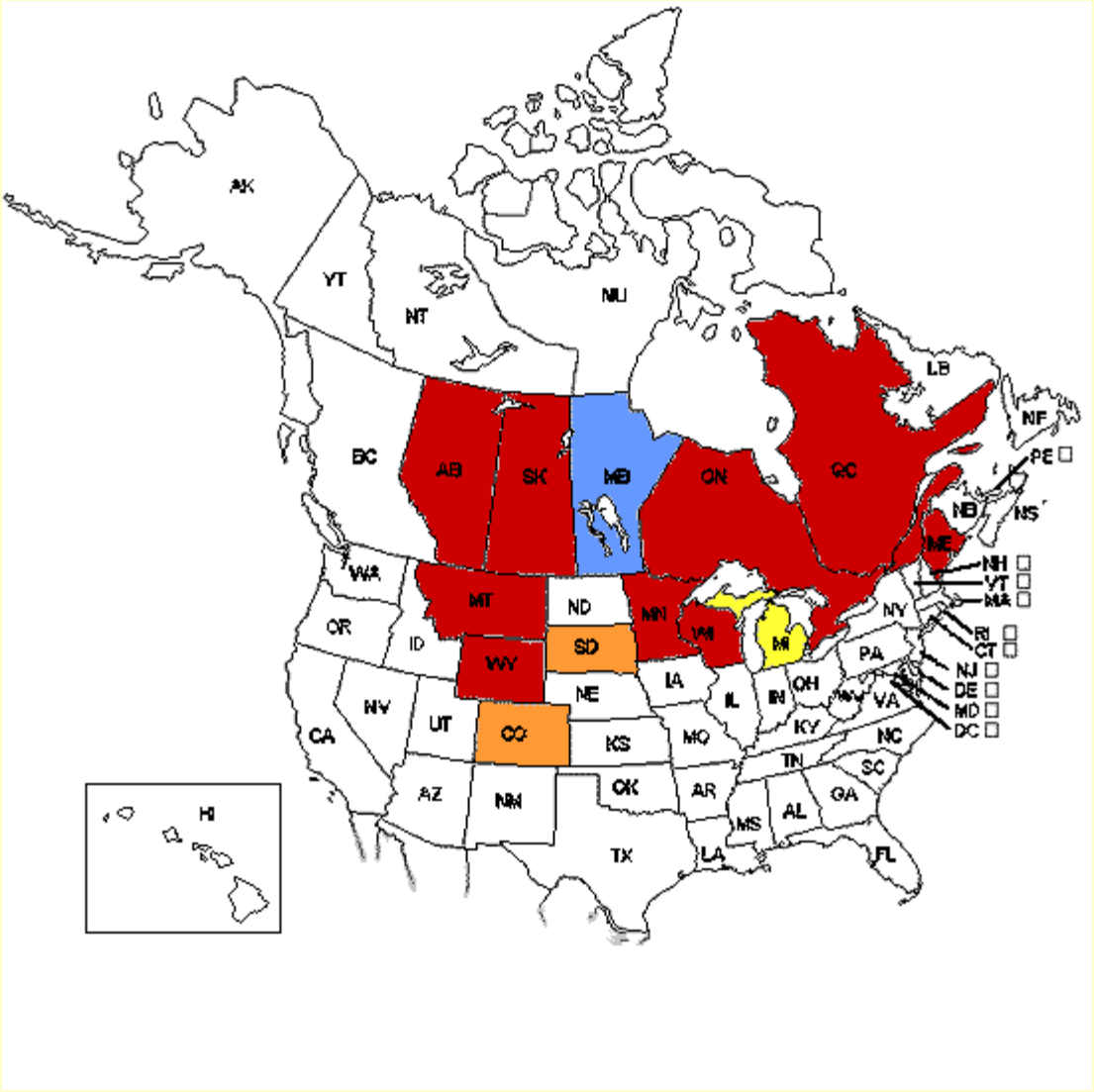
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: The range of *Botrychium pallidum* is broad but highly disjunct. It occurs in eastern Maine (Washington County) and eastern Quebec (e.g. Bic and Forillon Federal Park, Gaspé County), in the upper Midwest/Great Lakes region (from southeastern Michigan around the Lakes to the Upper Peninsula and southern Ontario, through northern Minnesota), in the Black Hills of South Dakota and Wyoming, throughout the Rocky Mountains in Colorado, in northwestern Montana and adjacent montane Alberta, as well as disjunctly in the dry mixedwood boreal forest of central Alberta, and in Saskatchewan. The sole known Manitoba occurrence is now considered historical (C. Foster pers. comm. 2008). A continuous range map was drawn following Johnston (2002) and Farrar (2005), for which the area was calculated to be approximately 1,850,000 km2 using GIS tools.

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	CO, ME, MI, MN, MT, SD, WI, WY
Canada	AB, MB, ON, QC, SK

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
CO	Boulder (08013), Clear Creek (08019), Conejos (08021), Eagle (08037), Gunnison (08051)*, Hinsdale (08053), Huerfano (08055), Jackson (08057), Lake (08065), Larimer (08069), Park (08093), San Juan (08111), San Miguel (08113), Summit (08117), Teller (08119)*
MN	Aitkin (27001), Becker (27005), Beltrami (27007), Cass (27021), Cook (27031), Crow Wing (27035), Itasca (27061), Koochiching (27071), Lake (27075), Lake of the Woods (27077), Polk (27119), Roseau (27135), St. Louis (27137)
SD	Custer (46033), Lawrence (46081), Pennington (46103)
WI	Bayfield (55007)
WY	Crook (56011)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Beartrap-Nemadji (04010301)+, Lake Superior (04020300)+
07	Mississippi Headwaters (07010101)+, Leech Lake (07010102)+, Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+, Pine (07010105)+, Snake (07030004)+
09	Otter Tail (09020103)+, Clearwater (09020305)+, Roseau (09020314)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Little Fork (09030005)+, Big Fork (09030006)+, Rapid (09030007)+, Lower Rainy (09030008)+, Lake of the Woods (09030009)+
10	Middle Cheyenne-Spring (10120109)+, Rapid (10120110)+, Upper Belle Fourche (10120201)+, Redwater (10120203)+, North Platte Headwaters (10180001)+, South Platte Headwaters (10190001)+, Upper South Platte (10190002)+, Clear (10190004)+, St. Vrain (10190005)+, Cache La Poudre (10190007)+
11	Arkansas Headwaters (11020001)+, Fountain (11020003)+*, Huerfano (11020006)+
13	Alamosa-Trinchera (13010002)+
14	Blue (14010002)+, Eagle (14010003)+, Roaring Fork (14010004)+*, Upper Gunnison (14020002)+, San Miguel (14030003)+, Animas (14080104)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History

Collapse

Basic Description: A small (10-15 cm) perennial fern that produces a leaf (trophophore) with a waxy-appearing, pale-green to whitish blade that is dissected, more-or-less folded longitudinally, and up to 4 cm long. A longer, spore-bearing spike (sporophore) arises from the common stalk; this portion is typically 2-4 times the length of the sterile leaf. Leaves appear late spring-early summer. Gametophytes are subterranean and mycorrhizal.

General Description: A small perennial fern with a single aboveground frond less than 15 cm tall, with a waxy, pale whitish green color, and divided into two segments that share a common stalk. The sterile segment is once pinnatifid and has up to 5 pairs of fanshaped pinnae, 2-3 mm long, with concave sides. Each of the pinnae tends to form two lobes, the upper one cleft and larger than the lower. The sterile segment is shaped like a trough along the central axis. The fertile segment is longer than the sterile segment, branched, and bears grape-like sporangia. Leaves appear in late spring to early summer. Spores germinate underground and develop into subterranean gametophytes.

Technical Description: Trophophore stalk 2 - 8 mm, 0 - 1/5 length of trophophore rachis. Trophophore blade more or less longitudinally folded and trough-like when alive, narrowly oblong, 1-pinnate, up to 4 x 1 cm; blade glaucous, pale green to whitish, herbaceous. The pinnae approximate, ascending, up to 5 pairs, small (2-3 mm) flabellate; distance between 1st and 2nd pinnae not or slightly more than between 2nd and 3rd pairs; basal pinna pair approximately equal in size and cutting to adjacent pair, fan-shaped, strongly asymmetric, lobed to divided to tip; basal or both sides of pinnae deeply concave, broadly attached, the larger ones ascending and strongly asymmetrical, often split into 2 unequal lobes, the upper one cleft and larger than the lower, apex rounded, venation like ribs of fan, midrib absent; outer margins entire to irregularly crenulate-denticulate. Sporophores 1-2-pinnate, 1.5-4 times length of trophophore, lower sporophore pinnae with a large or small branch. Spore diameter 23-28 µm; 2*n* = 90 (Wagner and Wagner 1990, Flora of North America 1993).

Diagnostic Characteristics: Most easily confused with *B. minganense*, especially small, sun-grown *B. minganense* plants. Can be distinguished from *B. minganense* by (1) its pale green to silvery gray-green or whitish color (although this character may not persist in collected plants), (2) its smaller size, including pinnae only 2-3 mm long compared to the 4-6 mm in *B. minganense*, (3) its pinna sides concave throughout and most strongly so near their juncture with the outer margin, giving the pinna a mushroom shape, compared to of *B. minganense* pinnae which are concave near the rachis but are more or less straight along the pinna blade, (4) its folded trophophore blade compared to the flat trophophore blade of *B. minganense*, and (5) its often unevenly divided outer pinna margins and basal sporophore branches, with the upper lobe longer and broader than the lower lobe; outer pinna margins of *B. minganense* are entire, or if lobed, symmetrically so, and the basal branches of the sporophore are symmetrically branched. Can be distinguished from *B. gallicomontanum* by its longer trophophore and sporophore stalks; in *B. gallicomontanum*, the sporophore stalk is typically less than half the length of the trophophore. Also,

the pinnae lobes of *B. gallicomontanum* are more spreading and linear than those of *B. pallidum*. Can be distinguished from *B. ascendens* by its distinctive pinnae folding and outer margins as well; pinna of *B. ascendens* are wedge-shaped with little curvature in the side margins and outer margins are dentate or cleft symmetrically into spreading lobes. Spores of *B. pallidum* are much smaller than those of *B. minganense*, *B. gallicomontanum*, or *B. ascendens*. *B. pallidum* is also one of only four moonwort species that commonly produce dense clusters of minute, spheric gemmae at the root bases (Flora of North America 1993, Chadde and Kudray 2001, Farrar 2005).

Palustrine Habitat(s): Riparian, TEMPORARY POOL

Terrestrial Habitat(s): Forest - Conifer, Forest - Hardwood, Forest Edge, Forest/Woodland, Grassland/herbaceous, Old field, Sand/dune, Woodland - Conifer

Habitat Comments: Habitat preferences appear to be somewhat general. Most often found in open habitats of sparse to dense herbaceous vegetation, such as grasslands (e.g. fescue grasslands in valleys). open meadows and fields. sand dunes, sand hills, sandy ridges, oak barrens, open exposed hillsides, and clifftops. Occasionally found in partial shade of open-canopy forests (or in disturbed sites of more closed-canopy forests), including mixed hardwood forest, maple/basswood forest, subalpine fir-Engelmann spruce forest, and red and jack pine communities. Many areas where found have been affected by disturbance; sites kept open due to regular disturbance regimes (e.g. fire, cattle grazing, persistent native ungulate browsing) appear particularly suitable. Disturbed habitats where found include burned or cleared areas, roadsides, grassy ditches, old logging landings and roads, vacant lots, old mining sites, and old fields. Also occasionally known from wetlands, including ephemeral ponds, streamside areas, and high-elevation subalpine forest wetlands. Often associated with other moonworts (*Botrychium* sp.) such as *B. simplex*, *B. matricariifolium*, *B. hesperium*, *B. paradoxum*, *B. gallicomontanum*, *B. minganense*, *B. adnatum*, *B. pedunculosum*, *B. ascendens*, *B. lanceolatum*, *B. lunaria*, *B. crenulatum*, *B. spathulatum*, and/or *B. michiganense*, and/or with Virginia strawberry (*Fragaria virginiana*). 0 - 3230 m.

Economic Attributes Not yet assessed

Management Summary Expand

Population/Occurrence Delineation Expand

Population/Occurrence Viability Expand

U.S. Invasive Species Impact Rank (I-Rank) Not yet assessed

Authors/Contributors Expand

References Expand

Use Guidelines & Citation Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Botrychium rugulosum - W.H. Wagner
Rugulose Grapefern

Other English Common Names: St. Lawrence Grapefern, St. Lawrence Moonwort, Ternate Grapefern
Other Common Names: ternate grapefern
Synonym(s): *Botrychium ternatum* auct. non (Thunb.) Sw.
Taxonomic Status: Accepted
Related ITIS Name(s): *Botrychium rugulosum* W.H. Wagner (TSN 501029)
French Common Names: botryche du St. Laurent, botryche à limbe rugueux
Unique Identifier: ELEMENT_GLOBAL.2.145294
Element Code: PPOPH010P0
Informal Taxonomy: Plants, Vascular - Ferns and relatives

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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Filicinophyta	Ophioglossopsida	Ophioglossales	Ophioglossaceae	Botrychium

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G3
Global Status Last Reviewed: 01Nov2011
Global Status Last Changed: 17Jul1989
Rounded Global Status: G3 - Vulnerable
Reasons: *Botrychium rugulosum* occurs in a narrow east-west band along the St. Lawrence Seaway and Great Lakes regions. The number of existing locations and number of individuals is relatively small, however more potential habitat needs to be surveyed. The species has specific requirements for growth.
Nation: United States
National Status: N3
Nation: Canada
National Status: N2N3 (07Aug2011)

U.S. & Canada State/Province Status	
United States	Connecticut (SU), Michigan (S3), Minnesota (S2), New York (S1), Vermont (S1), Wisconsin (S2)

Canada	New Brunswick (S1), Ontario (S2), Quebec (S2)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: This grapefern is limited to a narrow east-west band along the St. Lawrence Seaway and Great Lakes regions. Its range extends from New Brunswick, southern Quebec and southern Ontario through northern Vermont, northern New York, much of Michigan, northern Wisconsin, and northeastern Minnesota. Reports from Connecticut and Prince Edward Island are likely false reports.

Number of Occurrences: 21 - 300
Number of Occurrences Comments: There are 127 known occurrences of *Botrychium rugulosum*, however only 63 or about 50% are known to be extant. Twenty-one or 16.5% are considered historical and one occurrence is extirpated. Other reported occurrences need to be checked, as well as other suitable locations for this species.

Population Size Comments: Populations numbers range from one to 300 individuals. The vast majority of population counts (84%) are under 50 individuals and 69% of occurrences list under 20 individuals per population. Numbers of individuals are difficult to determine as the species may be sporadic in appearance, may not appear each year, may take many years of growth before appearing as a frond, and may occur as a metapopulation.

Number of Occurrences with Good Viability/Integrity: Few (4-12) occurrences with good viability
Viability/Integrity Comments: Very few occurrences have been considered as having excellent to good viability for this species.

Environmental Specificity: Narrow. Specialist or community with key requirements common.

Overall Threat Impact Comments: The largest populations of *B. rugulosum* occur in the sandy lakes area of north-central Wisconsin and Traverse County, Michigan (Wagner pers. comm.). These sites are threatened by potential development of lakeshore lots. An excellent quality population occurring in Monroe County, Michigan was destroyed by a housing development in the recent past (Wagner pers. comm.).

Excessive over-grazing of pasture land is another threat to existing populations, particularly in New York and Vermont. Destruction of existing populations and germination sites can easily occur under such conditions. Even at sites where adequate grazing pressure retains or even enhances existing populations of *B. rugulosum*, germination sites for spores may be destroyed or negatively affected. Population within such habitats should be closely monitored and grazing management plans worked out with the private landowners.

Other threats include succession to closed-canopy forest; over-collecting of specimens as some populations are very small in size and no gemmae have been detected on *B. rugulosum* to allow for vegetative reproduction; and loss or destruction of habitat such as logging, road construction, passage of all-terrain vehicles or removal of sand from sandy habitats.

Intrinsic Vulnerability Comments: The life history of Botrychiums is complex requiring an obligate relationship with mycorrhizal fungi in both the gametophyte and sporophyte generations. Many *Botrychium* species have underground gemmae which allows vegetative reproduction, however no gemmae have been determined yet with *B. rugulosum*, indicating the primary mode of reproduction is only through spores. Other specific requirements include: gametophyte growth may require many years before producing an emergent frond; and dependency on suitable conditions for mycorrhizal health such as soil moisture (Chadde & Kudray 2001).

Short-term Trend: Unknown
Short-term Trend Comments: Twenty-one occurrences or 16.5% are historical and one occurrence is extirpated. However the species is sporadic in appearance plus may take many years before appearing as a frond. A estimated decline of 30-50% has been estimated for occurrences in Quebec (CDPNQ 2008). Population trends in other areas of its range are unknown.

Long-term Trend: Unknown

Long-term Trend Comments: This species is dependent on (VAM) mycorrhizae, hence populations can appear or disappear due to its obligate relationships with the fungi. Changes in soil moisture with changes in climate, particularly drought, will affect mycorrhizal health and consequently the establishment and survival of *Botrychium*.

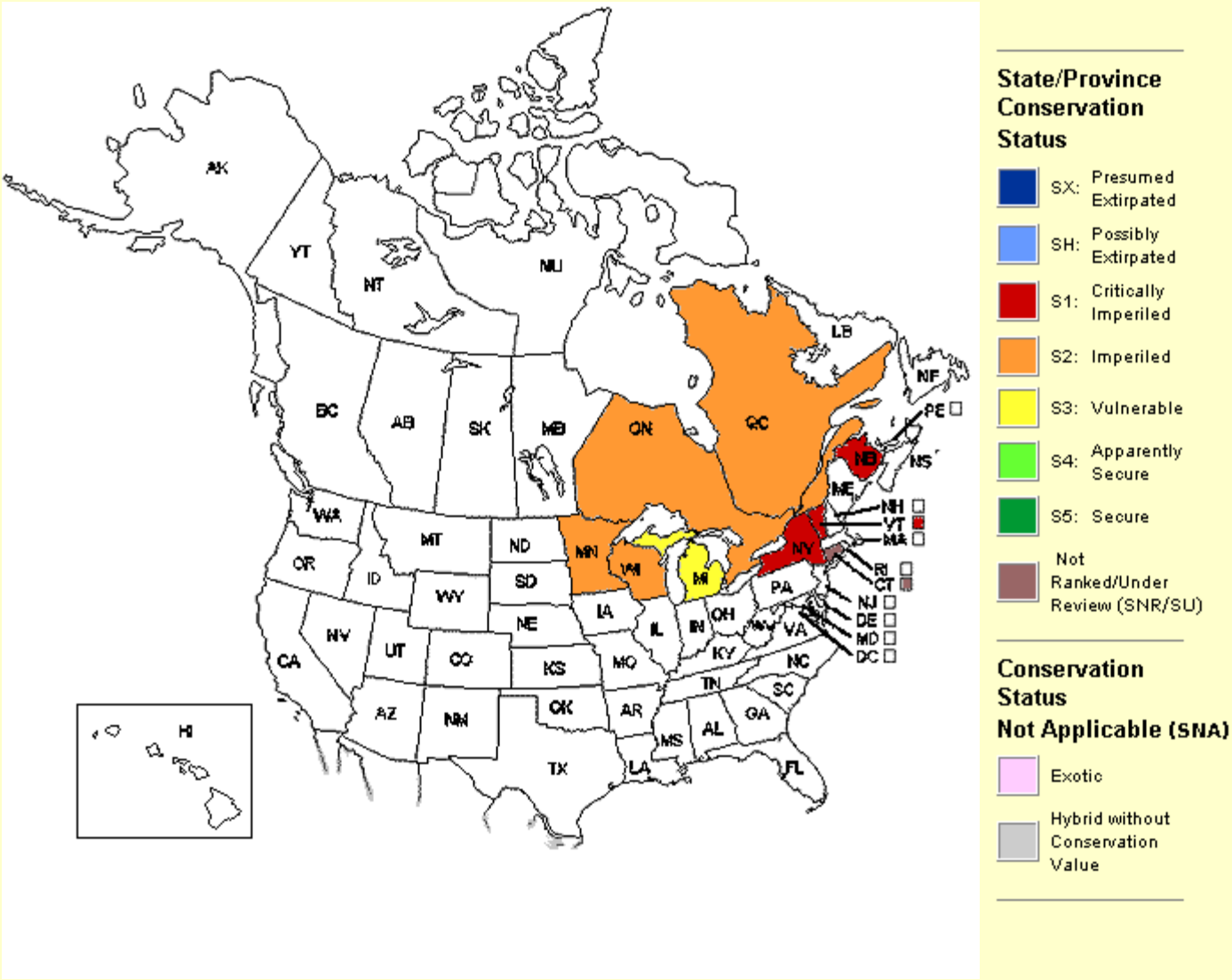
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: This grapefern is limited to a narrow east-west band along the St. Lawrence Seaway and Great Lakes regions. Its range extends from New Brunswick, southern Quebec and southern Ontario through northern Vermont, northern New York, much of Michigan, northern Wisconsin, and northeastern Minnesota. Reports from Connecticut and Prince Edward Island are likely false reports.

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	CT, MI, MN, NY, VT, WI
Canada	NB, ON, QC

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
MN	Aitkin (27001), Anoka (27003), Beltrami (27007), Carlton (27017), Cass (27021), Cook (27031), Crow Wing (27035), Itasca (27061), Koochiching (27071), Lake (27075), Lake of the Woods (27077), Mille Lacs (27095), Pine (27115), Roseau (27135), Sherburne (27141), St. Louis (27137), Todd (27153), Washington (27163)
NY	Hamilton (36041), Onondaga (36067)*, St. Lawrence (36089)
VT	Addison (50001)*, Chittenden (50007), Rutland (50021)*
WI	Ashland (55003), Bayfield (55007), Door (55029)*, Douglas (55031)*, Forest (55041), Juneau (55057)*, Marinette (55075), Vilas (55125)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
02	Upper Hudson (02020001)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+, Bad-Montreal (04010302)+, Lake Superior (04020300)+, Door-Kewaunee (04030102)+*, Peshtigo (04030105)+, Menominee (04030108)+, Seneca (04140201)+*, Oswego (04140203)+*, Raquette (04150305)+, St. Regis (04150306)+*, Otter Creek (04150402)+*, Winooski River (04150403)+, Lamoille River (04150405)+, Lake Champlain (04150408)+
07	Mississippi Headwaters (07010101)+, Leech Lake (07010102)+, Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+, Pine (07010105)+, Long Prairie (07010108)+, Clearwater-Elk (07010203)+, Twin Cities (07010206)+, Rum (07010207)+, Upper St. Croix (07030001)+, Kettle (07030003)+, Lower St. Croix (07030005)+, Upper Chippewa (07050001)+, Upper Wisconsin (07070001)+, Castle Rock (07070003)+*
09	Roseau (09020314)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Little Fork (09030005)+, Big Fork (09030006)+, Rapid (09030007)+, Lower Rainy (09030008)+, Lake of the Woods (09030009)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History

Collapse

General Description: Rugulose grape fern is a perennial, wintergreen fern. The common leaf stem of the fertile and sterile segments is up to 6 inches long while the leaf stem of the more erect fertile segment can be up to 9 inches long. This spore-bearing portion of the leaf can be up to 5 1/2 inches long. The leaf stem of the sterile leaf can be up to 3 inches long. The sterile leaf blade appears in the middle of May, is green, and grows up to 6 inches long and 10 inches wide. It is divided into two or three broadly triangular leaflets (pinnae). The terminal pinna blade is egg shaped to triangular in outline and the same size as the lateral pinnae. The pinnae are again divided into pinnules which are divided into segments. The terminal pinna are divided into progressively smaller segments up to the tips. The ultimate segments of the pinnules are angular trowel shaped to spoon shaped. The edges have somewhat rounded, wide teeth The upper surface of the leaf is convex and wrinkled when alive. The leaves remain green throughout the winter where they are exposed.
Technical Description: *Botrychium rugulosum*, according to Wagner and Wagner (1982), is a distinct species. The combination of its geographical range, periodicity, blade cutting, segment shapes, laminar contours and marginal teeth set it apart from all other species within the subgenus *Sceptridium*. The characters used to define the *B. rugulosum* are constant over the entire range of the species. Wagner and Wagner (1982), in describing *B. rugulosum*, stated:

"In habit resembling *B. dissectum* and *B. multifidum* with which it usually grows, its fronds emerging from the ground before the former and after the latter. Sterile blades deltoid, the stalk more or less the same length as the blade (shorter in sun forms, longer in shade forms), the stalk and blade together of mature, fertile plants averaging 8-16 cm (3 cm in sun to 30 in shade), the blade itself averaging 4-8 (2-16) cm long. Sterile blades 3-(2-4) -pinnate, divided to the pinna tips with regular reduction in

symmetry. Lateral and basal pinnae ovate-deltoid, the pinnules rhomboidal, ovate, or oblong, usually strongly angled, 0.2-0.5 cm wide, the laminar surface in the living state convex above and more or less coarsely rugulose. Pinnule margins with nearly regular, somewhat rounded, wide teeth (except in rare subentire forms). Lateral veins mainly somewhat spreading rather than nearly parallel. Chromosomes n = 45."

Diagnostic Characteristics: *Botrychium rugulosum* closely resembles its Asiatic counterpart, *B. ternatum*, to such an extent that they were considered the same species until 1982, when Wagner and Wagner (1982) determined that true *B. ternatum* did not occur in North America. North American specimens, long attributed to *B. ternatum*, differed from their Asiatic counterparts in a number of characters.

Botrychium rugulosum is closely related to two more common species in the genera that usually occur along with it, *B. multifidum* and *B. dissectum* (Wagner and Wagner 1982). In the southern part of its range, *B. dissectum* is its common associate, while in the northern areas, *B. multifidum* is a common associate. *Botrychium oneidense* is sometimes associated with *B. rugulosum* as well. For a key to identify individuals within the Botrychium subgenus Sceptridium (which includes *B. oneidense*, *B. multifidum* and *B. rugulosum* and both forms of *B. dissectum*) see Wagner and Wagner (1982).

Duration: PERENNIAL, WINTERGREEN

Reproduction Comments: Underground gemmae, allowing for vegetative reproduction, have been reported on many species of Botrychium, however no reports of gemmae production are known with *B. rugulosum*. This indicates that the primary mode of reproduction is sexually through spores (Chadde & Kudray 2001). Spores are dispersed by wind, generally very short distances (Chadde & Kudray 2001).

Ecology Comments: Leaf development in Botrychium is extremely slow, taking 3-4 months from the time of appearance of young fronds above ground in May or June to the maturation of the frond and sporangia in September and October (Wagner and Wagner 1982). However the amount of time for *B. rugulosum* to develop its aboveground fertile frond is unknown. Some Botrychiums, such as *B. simplex*, can be one year, whereas *B. lunaria* can take as much as seven years to produce an emergent frond (Chadde & Kudray 2001).

Leaves stay green through most of the winter. In the range of *B. rugulosum*, there exists a seasonal sequence in leaf development among several species of Botrychium. Seasonal development is in the order: (1) *B. multifidum*, (2) *B. oneidense*, (3) *B. rugulosum* and (4) *B. dissectum* (Wagner 1961). During June or July, for example, new leaves of *B. rugulosum* average 1.3-1.8 times as developed with respect to those of *B. dissectum*. Leaves of *B. multifidum* are 2-4 times more developed than those of *B. rugulosum* at the same time of year (Wagner and Wagner 1982).

Botrychium mycorrhizae, present in the gametophyte and sporophyte, have been described as the vesicular-arbuscular (VAM) type. The mycotrophic condition is important to the ecology of Botrychium species in several ways. Nutrition supplied through a fungal symbiont may allow the ferns to withstand repeated herbivory, prolonged dormancy, or growth in dense shade (Chadde & Kudray 2001).

Palustrine Habitat(s): HERBACEOUS WETLAND

Terrestrial Habitat(s): Forest - Hardwood, Forest Edge, Forest/Woodland, Grassland/herbaceous, Old field, Suburban/orchard, Woodland - Hardwood

Habitat Comments: In the southern parts of its range, this species is often found in low, swampy areas within habitats subject to past grazing, clearing, or cultivation, or within habitats under active grazing regimes. In other areas, habitats include second-growth forests, old apple orchards, brushy old fields, field/forest edges, actively pastured open fields and meadows, other grassy places, roadsides, and trailsides.

Substratum is typically composed of sand or silt with which is mixed varying amounts of black organic matter. Soil pH ranges from circumneutral to acidic. Southern sites are typically richer than those farther north. It occurs within the elevational range of 200 - 1000 m. In the southern portion of its range, associates include *Acer rubrum*, *Cornus drummondii*, *C. racemosa*, *C. stolonifera*, *Corylus americanus*, *Populus tremuloides*, *Sassafras albidum*, *Ulmus americana*, *Vitis riparia* and species of *Anemone*, *Aster*, *Desmodium*, *Equisetum*, *Fragaria*, *Solidago*, and *Viola*. In northern localities, common associates include *Pinus* spp., *Polytrichium* spp., *Gaultheria procumbens*, *Rubus hispidus*, *Acer rubrum*, *Betula papyrifera*, *Hamamelis virginiana*, *Populus tremuloides*, *Prunus serotina*, *Salix* spp., *Spiraea alba* and *Vaccinium angustifolium*. Additional associates include species within the genera *Antennaria*, *Fragaria*, *Hieracium*, *Lycopodium*, *Osmunda*, *Pteridium* and *Solidago*. Associates at actively grazed sites include *Dennstaedtia punctilobula*, *Pteridium aquilinum*, *Rubus idaeus*, *Comptonia peregrina*, *Spiraea alba*, *S. tomentosa*, *Juniperus virginiana* and species of *Achillea*, *Antennaria*, *Danthonia*, *Fragaria*, *Gnaphalium*, *Hieracium*, *Lycopodium*, *Panicum*, *Plantago*, *Poa*, *Polygonum*, *Polytrichum*, *Prunell*a, *Rumex*, and *Viola* (Wagner and Wagner 1982).

Economic Attributes	Not yet assessed
Management Summary	Expand
Population/Occurrence Delineation	Not yet assessed
Population/Occurrence Viability	Expand
U.S. Invasive Species Impact Rank (I-Rank)	Not yet assessed
Authors/Contributors	Expand
References	Expand
Use Guidelines & Citation	Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Botrychium simplex - E. Hitchc.
Least Grapefern
Other English Common Names: Least Moonwort, Little Grapefern
Other Common Names: little grapefern
Taxonomic Status: Accepted
Related ITIS Name(s): *Botrychium simplex* E. Hitchc. (TSN 17190)
French Common Names: botryche simple
Unique Identifier: ELEMENT_GLOBAL.2.157068
Element Code: PPOPH010E0
Informal Taxonomy: Plants, Vascular - Ferns and relatives

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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Filicinophyta	Ophioglossopsida	Ophioglossales	Ophioglossaceae	Botrychium

Check this box to expand all report sections: ☐

Concept Reference
Expand

Conservation Status
Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 01Nov2011
Global Status Last Changed: 16Jul1984
Rounded Global Status: G5 - Secure
Reasons: Botrychium simplex is widespread, occurring in high elevations from California to North Carolina north to Alaska and Newfoundland. It is not abundant in many states and/or provinces in its range.
Nation: United States
National Status: N5
Nation: Canada
National Status: N4 (28Jan2014)

U.S. & Canada State/Province Status

United States	California (SNR), Colorado (S2), Connecticut (SH), Delaware (SNR), District of Columbia (SNR), Idaho (S2), Illinois (S1), Indiana (S1), Iowa (S1), Maine (SNR), Maryland (SH), Massachusetts (S1S2), Michigan (SNR), Minnesota (S3), Mississippi (SNR), Montana (S2), Nevada (SNR), New Hampshire (SNR), New Jersey (SNR), New York (S4S5), North Carolina (S1), North Dakota (SU), Ohio (S1), Oregon (S4), Pennsylvania (S3S5), Rhode Island (S1), South Dakota (S3), Tennessee (S1), Utah (S1), Vermont (S3?), Virginia (S1), Washington (S3), West Virginia (SNR), Wyoming (S2)
Canada	Alberta (S2), British Columbia (SNR), Manitoba (S1), New Brunswick (S3), Newfoundland Island (S2), Northwest Territories (SU), Nova Scotia (S2S3), Ontario (S4?), Prince Edward Island (S1), Quebec (S3S4), Saskatchewan (S1)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: High elevations from southern California to North Carolina and northward to Alaska and Newfoundland; also widespread in the Old World. In Idaho, known from Boundary, Clearwater, and Custer Counties (Idaho Native Plant Society, 1993). In British Columbia, only known from Vancouver Island (Douglas, 1989).

Number of Occurrences:
Number of Occurrences Comments: In Idaho, known from three occurrences (Idaho Native Plant Society, 1993).

Population Size Comments: Rare in North Carolina and Virginia (Weakley, 1997). Rare in British Columbia (Douglas, 1989).

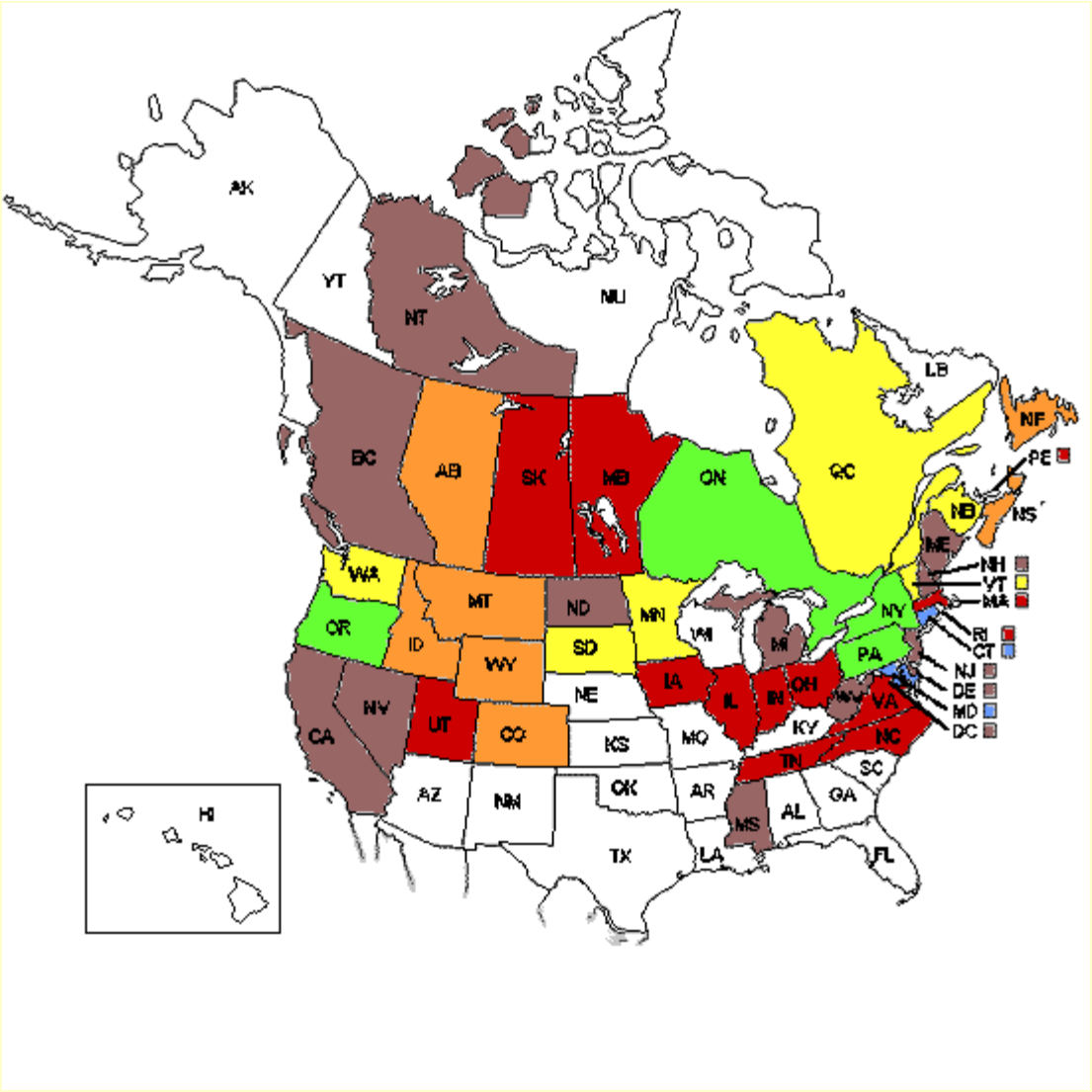
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: High elevations from southern California to North Carolina and northward to Alaska and Newfoundland; also widespread in the Old World. In Idaho, known from Boundary, Clearwater, and Custer Counties (Idaho Native Plant Society, 1993). In British Columbia, only known from Vancouver Island (Douglas, 1989).

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status

Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	CA, CO, CT, DC, DE, IA, ID, IL, IN, MA, MD, ME, MI, MN, MS, MT, NC, ND, NH, NJ, NV, NY, OH, OR, PA, RI, SD, TN, UT, VA, VT, WA, WV, WY
Canada	AB, BC, MB, NB, NF, NS, NT, ON, PE, QC, SK

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
CO	Boulder (08013), Chaffee (08015), Conejos (08021), Eagle (08037), El Paso (08041)*, Grand (08049)*, Hinsdale (08053), Lake (08065), Park (08093), Summit (08117), Teller (08119)*
IA	Black Hawk (19013), Linn (19113)*, Marshall (19127)
ID	Boise (16015), Bonner (16017), Boundary (16021), Custer (16037), Idaho (16049), Latah (16057), Shoshone (16079), Valley (16085)
IL	Cook (17031)*, Lee (17103)*, Winnebago (17201)*
IN	De Kalb (18033), Lake (18089), Tippecanoe (18157)
MA	Essex (25009), Franklin (25011)*, Hampden (25013)*, Hampshire (25015)*

MN	Aitkin (27001), Anoka (27003), Beltrami (27007), Carlton (27017), Cass (27021), Chisago (27025), Clay (27027), Clearwater (27029)*, Cook (27031), Crow Wing (27035), Hubbard (27057), Itasca (27061), Kanabec (27065), Kittson (27069), Koochiching (27071), Lake (27075), Lake of the Woods (27077), Marshall (27089), Mille Lacs (27095), Norman (27107), Pine (27115), Pope (27121), Roseau (27135), Sherburne (27141), St. Louis (27137), Washington (27163)
ND	Ransom (38073)
OH	Highland (39071)*, Lucas (39095)
OR	Baker (41001), Crook (41013), Deschutes (41017), Harney (41025), Jefferson (41031), Lake (41037), Linn (41043), Marion (41047), Wallowa (41063)
RI	Kent (44003)*, Providence (44007)
SD	Brown (46013), Custer (46033), Lawrence (46081)*, Marshall (46091), Meade (46093), Pennington (46103)
TN	Carter (47019)
WY	Big Horn (56003), Crook (56011), Fremont (56013), Johnson (56019), Lincoln (56023), Park (56029), Sheridan (56033), Teton (56039)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed

Watershed Region	Watershed Name (Watershed Code)
01	Deerfield (01080203)+*, Lower Connecticut (01080205)+*, Blackstone (01090003)+*, Narragansett (01090004)+, Pawcatuck-Wood (01090005)+*
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+, Lake Superior (04020300)+, Little Calumet-Galien (04040001)+, St. Joseph (04100003)+, Lower Maumee (04100009)+
05	Lower Scioto (05060002)+*, Ohio Brush-Whiteoak (05090201)+*, Middle Wabash-Little Vermilion (05120108)+
06	Nolichucky (06010108)+
07	Mississippi Headwaters (07010101)+, Leech Lake (07010102)+, Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+, Clearwater-Elk (07010203)+, Twin Cities (07010206)+*, Rum (07010207)+, Chippewa (07020005)+, Upper St. Croix (07030001)+, Kettle (07030003)+, Snake (07030004)+, Lower St. Croix (07030005)+, Upper Wapsipinicon (07080102)+*, Middle Cedar (07080205)+, Upper Iowa (07080207)+, Middle Iowa (07080208)+, Sugar (07090004)+*, Lower Rock (07090005)+*, Green (07090007)+*, Chicago (07120003)+*
09	Otter Tail (09020103)+, Buffalo (09020106)+, Eastern Wild Rice (09020108)+, Lower Sheyenne (09020204)+, Thief (09020304)+, Snake (09020309)+, Lower Red (09020311)+, Two Rivers (09020312)+, Roseau (09020314)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Little Fork (09030005)+, Big Fork (09030006)+, Rapid (09030007)+, Lower Rainy (09030008)+, Lake of the Woods (09030009)+
10	Madison (10020007)+, Yellowstone Headwaters (10070001)+, Clarks Fork Yellowstone (10070006)+, Upper Wind (10080001)+, Greybull (10080009)+, Big Horn Lake (10080010)+, Upper Tongue (10090101)+, Middle Fork Powder (10090201)+, Crazy Woman (10090205)+, Beaver (10120107)+, Middle Cheyenne-Spring (10120109)+, Middle Cheyenne-Elk (10120111)+*, Upper Belle Fourche (10120201)+, Lower Belle Fourche (10120202)+, Redwater (10120203)+, Upper James (10160003)+, South Platte Headwaters (10190001)+, St. Vrain (10190005)+
11	Arkansas Headwaters (11020001)+, Upper Arkansas (11020002)+*, Fountain (11020003)+*
13	Rio Grande headwaters (13010001)+
14	Colorado headwaters (14010001)+*, Blue (14010002)+, Eagle (14010003)+, Upper San Juan (14080101)+
17	Lower Kootenai (17010104)+, Moyie (17010105)+, Pend Oreille Lake (17010214)+, Priest (17010215)+, St. Joe (17010304)+, Greys-Hobock (17040103)+, Upper Henrys (17040202)+, Lower Henrys (17040203)+, South Fork Payette (17050120)+, North Fork Payette (17050123)+, Brownlee Reservoir (17050201)+, Imnaha (17060102)+, Wallowa (17060105)+, Upper Salmon (17060201)+, Upper Middle Fork Salmon (17060205)+, Middle Salmon-Chamberlain (17060207)+, South Fork Salmon (17060208)+, Lower Salmon (17060209)+, South Fork

	Clearwater (17060305)+, Upper Deschutes (17070301)+, Little Deschutes (17070302)+, Lower Crooked (17070305)+, Lower Deschutes (17070306)+, Trout (17070307)+, Mckenzie (17090004)+, Clackamas (17090011)+, Donner Und Blitzen (17120003)+, Summer Lake (17120005)+, Alvord Lake (17120009)+
18	Sprague (18010202)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Collapse

Technical Description: Trophophore stalk 0--3 cm, 0--1.5 times length of trophophore rachis; blade dull to bright green to whitish green, linear to ovate-oblong to oblong to fully triangular with pinnae arranged ternately, simple to 2(--3)-pinnate, to 7 × 0.2 cm, fleshy to thin, papery or herbaceous. Pinnae or well-developed lobes to 7 pairs, spreading to ascending, approximate to widely separated, distance between 1st and 2d pinnae frequently greater than between 2d and 3d pairs, basal pinna pair commonly much larger and more complex than adjacent pair, cuneate to fan-shaped, strongly asymmetric, undivided to divided to tip, basiscopic margins ± perpendicular to rachis, acroscopic margins strongly ascending, basal pinnae often divided into 2 unequal parts, margins usually entire or shallowly sinuate, apex rounded, undivided and boat-shaped to strongly divided and plane, venation pinnate or like ribs of fan, with midrib. Sporophores mainly 1-pinnate, 1--8 times length of trophophores (Flora of North America Editorial Committee, eds. 1993).

Habitat Comments: A wide variety of habits including meadows, barrens and woods, usually in subacid soils (Idaho Native Plant Society, 1993). Dry fields, marshes, bogs, swamps, roadside ditches (Flora of North America Editorial Committee, eds. 1993).

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Caltha natans - Pallas ex Georgi
Floating Marsh-marigold

Other Common Names: floating marsh marigold
Taxonomic Status: Accepted
Related ITIS Name(s): *Caltha natans* Pallas ex Georgi (TSN 18456)
Unique Identifier: ELEMENT_GLOBAL.2.149804
Element Code: PDRAN06020
Informal Taxonomy: Plants, Vascular - Flowering Plants - Buttercup Family

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Dicotyledoneae	Ranunculales	Ranunculaceae	Caltha

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 08Sep2002
Global Status Last Changed: 08Sep2002
Rounded Global Status: G5 - Secure
Reasons: Range includes much of northern part of northern hemisphere. Common.
Nation: United States
National Status: NNR
Nation: Canada
National Status: N5 (01Jun2011)

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Minnesota (S1), Wisconsin (S1)
Canada	Alberta (S5), British Columbia (S4), Manitoba (S3), Northwest Territories (SNR), Nunavut (SNR), Ontario (S2), Saskatchewan (S4?), Yukon Territory (S2)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: Alaska and northcentral North America, as well as Eurasia.

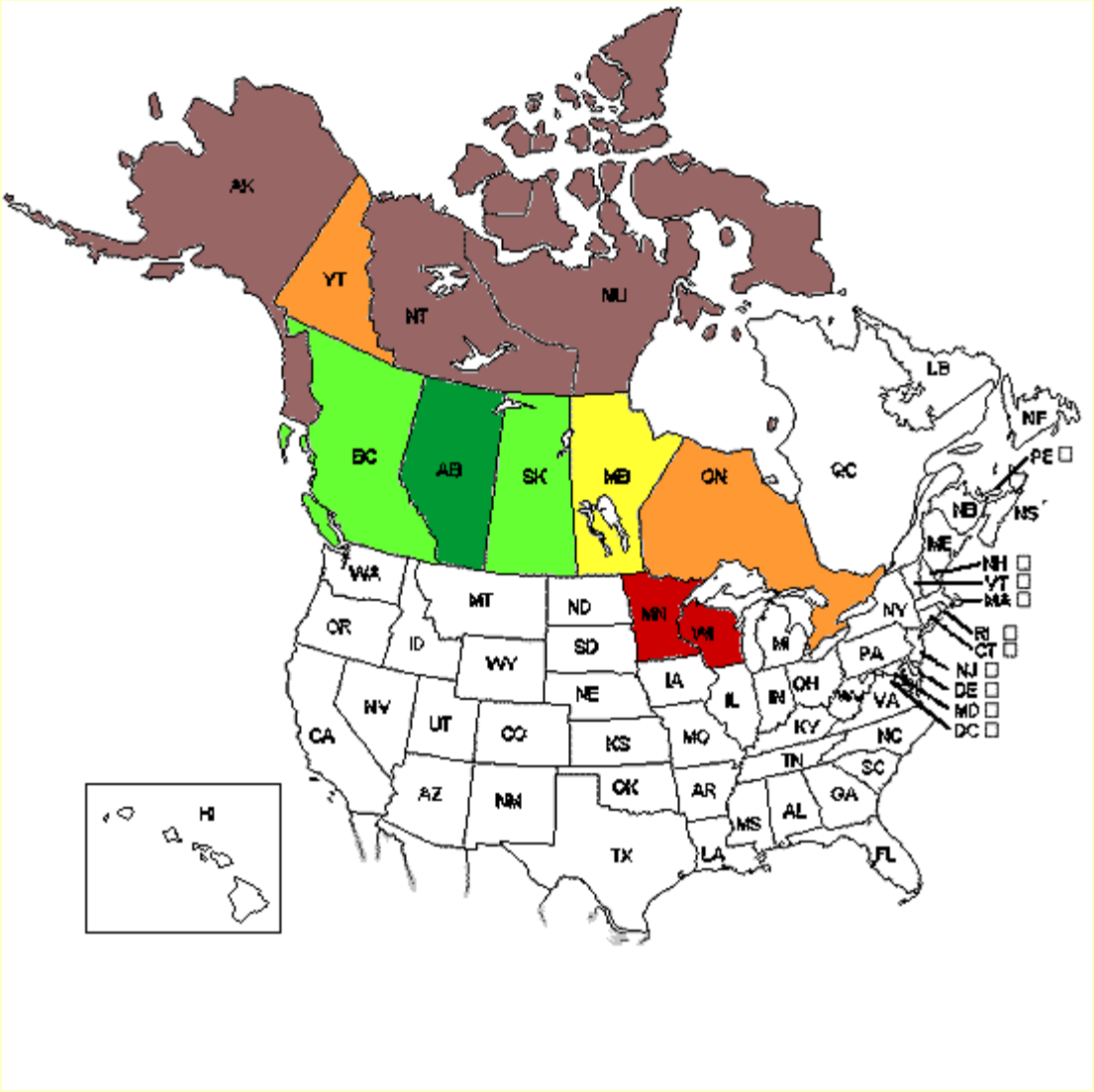
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: Alaska and northcentral North America, as well as Eurasia.

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	AK, MN, WI
Canada	AB, BC, MB, NT, NU, ON, SK, YT

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
MN	St. Louis (27137)

WI	Douglas (55031)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
04	St. Louis (04010201)+, Beartrap-Nemadji (04010301)+
09	Vermilion (09030002)+, Rainy Lake (09030003)+, Little Fork (09030005)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Collapse

Habitat Comments: Ponds, moist mud.

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

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Carex ormostachya - Wieg.

Necklace Spike Sedge

Other Common Names: necklace spike sedge
Synonym(s): *Carex laxiflora* var. *ormostachya* (Wieg.) Gleason
Taxonomic Status: Accepted
Related ITIS Name(s): *Carex ormostachya* Wieg. (TSN 39733)
Unique Identifier: ELEMENT_GLOBAL.2.146440
Element Code: PMCYP039U0
Informal Taxonomy: Plants, Vascular - Flowering Plants - Sedge Family

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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Cyperales	Cyperaceae	Carex

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G4
Global Status Last Reviewed: 05Apr1985
Global Status Last Changed: 05Apr1985
Rounded Global Status: G4 - Apparently Secure
Nation: United States
National Status: NNR
Nation: Canada
National Status: NNR

U.S. & Canada State/Province Status	
United States	Connecticut (SNR), Maine (SNR), Massachusetts (SNR), Michigan (SNR), Minnesota (SNR), New Hampshire (SNR), New York (S4), Ohio (SNR), Pennsylvania (S2), Vermont (SNR), Virginia (S1), West Virginia (S1), Wisconsin (SNR)
Canada	New Brunswick (S3), Nova Scotia (S1), Ontario (S4), Quebec (S3S4)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

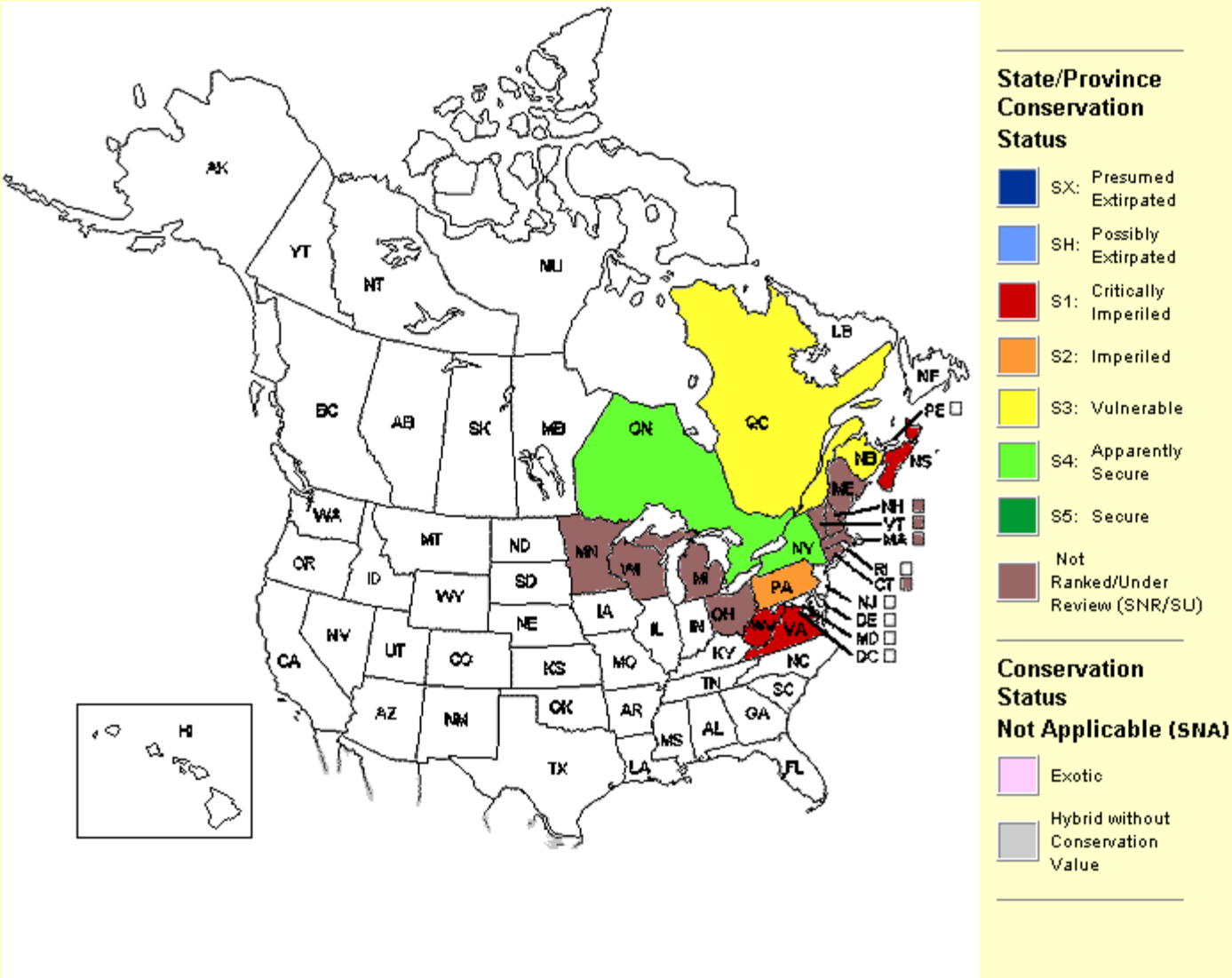
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	CT, MA, ME, MI, MN, NH, NY, OH, PA, VA, VT, WI, WV
Canada	NB, NS, ON, QC

Range Map
No map available.

U.S. Distribution by County	
State	County Name (FIPS Code)

MN	Carlton (27017), Cook (27031), Itasca (27061), Lake (27075), Pine (27115), St. Louis (27137)
PA	Bedford (42009)*, Blair (42013)*, Cameron (42023)*, Centre (42027)*, Clinton (42035)*, Columbia (42037)*, Fulton (42057), Lackawanna (42069)*, Lycoming (42081)*, McKean (42083)*, Monroe (42089)*, Pike (42103)*, Tioga (42117)*, Wayne (42127)*
VA	Augusta (51015)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed

Watershed Region	Watershed Name (Watershed Code)
02	Upper Delaware (02040101)+*, Middle Delaware-Mongaup-Brodhead (02040104)+*, Lehigh (02040106)+*, Tioga (02050104)+*, Upper Susquehanna-Lackawanna (02050107)+*, Sinnemahoning (02050202)+*, Middle West Branch Susquehanna (02050203)+*, Bald Eagle (02050204)+*, Lower West Branch Susquehanna (02050206)+*, Upper Juniata (02050302)+*, Raystown (02050303)+*, Conococheague-Opequon (02070004)+, South Fork Shenandoah (02070005)+, Maury (02080202)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+
05	Upper Allegheny (05010001)+*
07	Mississippi Headwaters (07010101)+, Kettle (07030003)+
09	Rainy Headwaters (09030001)+*, Vermilion (09030002)+, Little Fork (09030005)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History Not yet assessed

Economic Attributes Not yet assessed

Management Summary Not yet assessed

Population/Occurrence Delineation Not yet assessed

Population/Occurrence Viability Expand

U.S. Invasive Species Impact Rank (I-Rank) Not yet assessed

Authors/Contributors Expand

References Expand

Use Guidelines & Citation Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Eleocharis nitida - Fern.
Slender Spikerush
Other English Common Names: Quill Spikerush
Other Common Names: quill spikerush
Taxonomic Status: Accepted
Related ITIS Name(s): *Eleocharis nitida* Fern. (TSN 40060)
Unique Identifier: ELEMENT_GLOBAL.2.133188
Element Code: PMCYP09180
Informal Taxonomy: Plants, Vascular - Flowering Plants - Sedge Family

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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Cyperales	Cyperaceae	Eleocharis

Check this box to expand all report sections: ☐

Concept Reference
Expand

Conservation Status
Collapse

NatureServe Status

Global Status: G4
Global Status Last Reviewed: 04Jan2007
Global Status Last Changed: 04Jan2007
Rounded Global Status: G4 - Apparently Secure
Reasons: A small inconspicuous sedge that is found from BC to NF and is probably more considerably overlooked than rare. About a dozen new sites have been found recently in northwestern ON and the habitat where it is found (roadside ditches, seepages on eroding slopes and trail edges) suggests that it is probably more widespread.
Nation: United States
National Status: N2
Nation: Canada
National Status: N3N4 (02Feb1995)

U.S. & Canada State/Province Status	
United States	Alaska (S1), Maine (SU), Michigan (S1), Minnesota (S2), New Hampshire (SH), Vermont (SH), Wisconsin (S2)
Canada	Alberta (SNR), British Columbia (S1), Newfoundland Island (S1), Nova Scotia (S3), Ontario (S2S3), Prince Edward Island (S1), Quebec (S2S3), Saskatchewan (S2)

Other Statuses

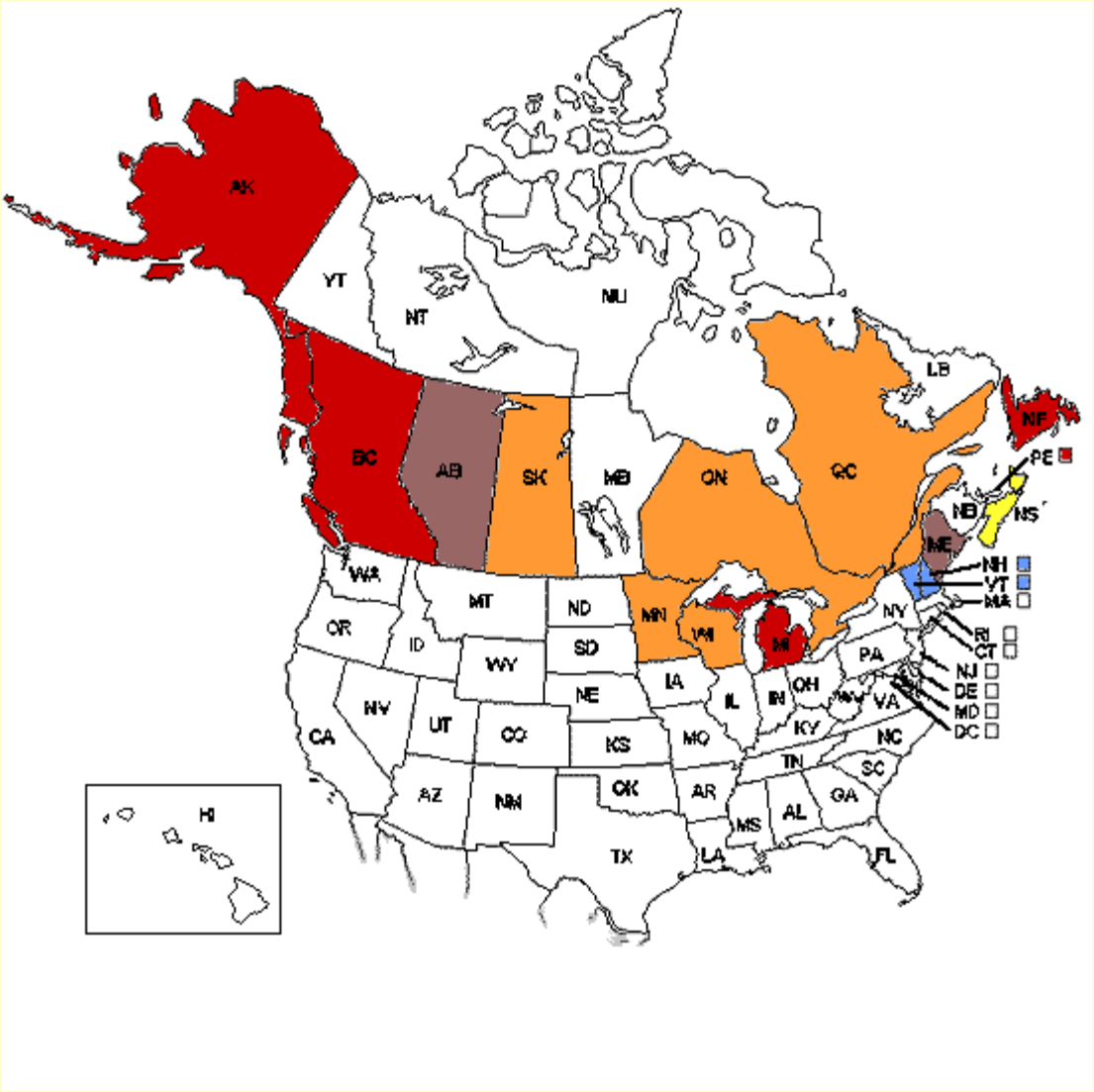
NatureServe Global Conservation Status Factors

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	AK, ME, MI, MN, NH, VT, WI
Canada	AB, BC, NF, NS, ON, PE, QC, SK

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
AK	Aleutians East (02013)*, Kodiak Island (02150)*
MI	Schoolcraft (26153)

MN	Cook (27031), Lake (27075), St. Louis (27137)
NH	Coos (33007)*
VT	Caledonia (50005)*, Orleans (50019)*
WI	Douglas (55031)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
01	Upper Androscoggin (01040001)+*, Upper Connecticut (01080101)+*, Passumpsic (01080102)+*
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+, Lake Superior (04020300)+, Manistique (04060106)+
09	Rainy Headwaters (09030001)+
19	Kodiak-Afognak Islands (19020701)+*, Cold Bay (19030101)+*

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History Collapse

Habitat Comments: Peaty or sandy places (Hulten, 1968); wet soil and shallow water (Coffin and Pfannmuller, 1988).

Economic Attributes Not yet assessed

Management Summary Not yet assessed

Population/Occurrence Delineation Not yet assessed

Population/Occurrence Viability Expand

U.S. Invasive Species Impact Rank (I-Rank) Not yet assessed

Authors/Contributors Expand

References Expand

Use Guidelines & Citation Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

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Juncus stygius ssp. *americanus* - (Buch.) Hulten

Moor Rush

Other English Common Names: American Moor Rush
Synonym(s): *Juncus stygius* var. *americanus* Buch.
Taxonomic Status: Accepted
Related ITIS Name(s): *Juncus stygius* ssp. *americanus* (Buch.) Hultén (TSN 524199)
French Common Names: jonc des tourbières
Unique Identifier: ELEMENT_GLOBAL.2.155149
Element Code: PMJUN012N1
Informal Taxonomy: Plants, Vascular - Flowering Plants - Rush Family

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Juncales	Juncaceae	Juncus

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5T5
Global Status Last Reviewed: 01Aug1985
Global Status Last Changed: 01Aug1985
Rounded Global Status: T5 - Secure
Nation: United States
National Status: NNR
Nation: Canada
National Status: N4 (01Feb2013)

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Maine (S2), Michigan (SNR), Minnesota (S3), New Hampshire (S1), New York (SH), Wisconsin (SNR)
Canada	Alberta (S2), British Columbia (SNR), Labrador (SNR), Manitoba (S1?), New Brunswick (S1), Newfoundland Island (S3S4), Northwest Territories (SNR), Nova Scotia (S1S2), Nunavut (SNR), Ontario (S4), Quebec (S3S4), Saskatchewan (S1S2), Yukon Territory (S2)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

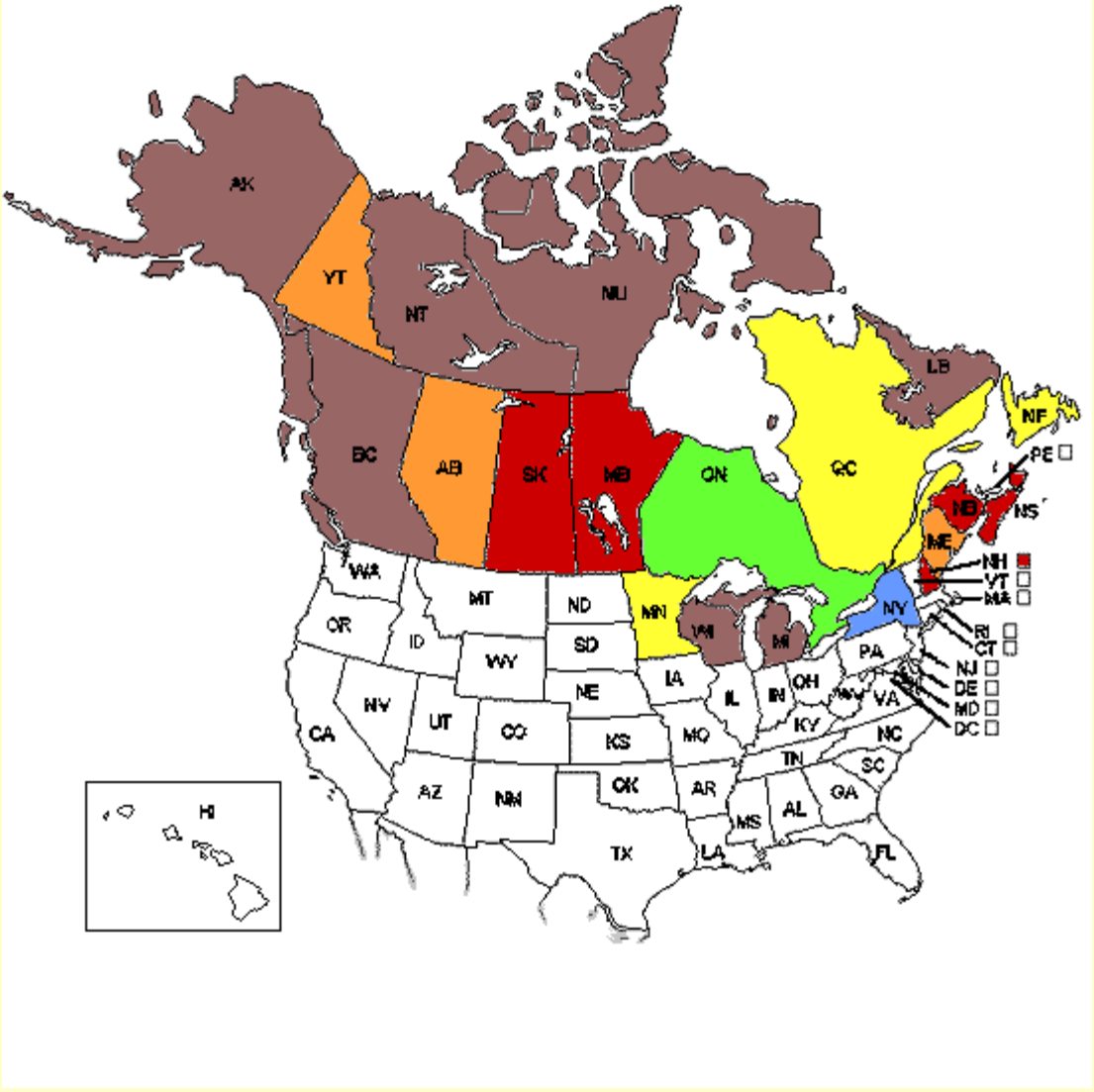
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	AK, ME, MI, MN, NH, NY, WI
Canada	AB, BC, LB, MB, NB, NF, NS, NT, NU, ON, QC, SK, YT

Range Map
No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
ME	Aroostook (23003), Penobscot (23019), Piscataquis (23021), Somerset (23025)
MN	Aitkin (27001)*, Beltrami (27007), Carlton (27017), Cook (27031), Itasca (27061)*, Koochiching (27071), Lake (27075), St. Louis (27137)
NH	Coos (33007)
NY	Herkimer (36043)*

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
01	Upper St. John (01010001)+, Fish (01010003)+, Aroostook (01010004)+, West Branch Penobscot (01020001)+, East Branch Penobscot (01020002)+, Mattawamkeag (01020003)+, Upper Kennebec (01030001)+, Upper Androscoggin (01040001)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+*, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+*, Lake Superior (04020300)+*, Black (04150101)+*
07	Prairie-Willow (07010103)+*, Kettle (07030003)+
09	Red Lakes (09020302)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Rainy Lake (09030003)+*, Little Fork (09030005)+, Big Fork (09030006)+, Rapid (09030007)+, Lower Rainy (09030008)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History	Not yet assessed
Economic Attributes	Not yet assessed
Management Summary	Not yet assessed
Population/Occurrence Delineation	Not yet assessed
Population/Occurrence Viability	Expand
U.S. Invasive Species Impact Rank (I-Rank)	Not yet assessed
Authors/Contributors	Expand
References	Expand
Use Guidelines & Citation	Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Platanthera clavellata - (Michx.) Luer
Small Green Woodland Orchid

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Other English Common Names: Small Green Wood Orchid
Other Common Names: small green wood orchid
Synonym(s): *Habenaria clavellata* (Michx.) Spreng.
Taxonomic Status: Accepted
Related ITIS Name(s): *Platanthera clavellata* (Michx.) Luer (TSN 43423)
Unique Identifier: ELEMENT_GLOBAL.2.156984
Element Code: PMORC1Y050
Informal Taxonomy: Plants, Vascular - Flowering Plants - Orchid Family

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Orchidales	Orchidaceae	Platanthera

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 01Mar1995
Global Status Last Changed: 30Oct1995
Rounded Global Status: G5 - Secure
Reasons: Platanthera clavellata is abundant over a broad geographic range. Although it is declining in some areas due to habitat destruction, this species colonizes disturbed areas in the northern part of its range. (Even weedy in some areas.)
Nation: United States
National Status: N5
Nation: Canada
National Status: NNR

U.S. & Canada State/Province Status	
United States	Alabama (SNR), Arkansas (SU), Connecticut (SNR), Delaware (S5), District of Columbia (SNR), Florida (S1), Georgia (S5), Illinois (S1), Indiana (S3), Iowa (S1), Kentucky (S4), Louisiana (SNR), Maine (SNR), Maryland (SNR), Massachusetts (SNR), Michigan (SNR), Minnesota (S3), Mississippi (SNR), Missouri (S2), New Hampshire (SNR), New Jersey (S4), New York (S4), North Carolina (S4), North Dakota (SH), Ohio (S4), Oklahoma (S1S2), Pennsylvania (SNR), Rhode Island (S2), South Carolina (SNR), Tennessee (S4?), Texas (SNR), Vermont (SNR), Virginia (S5), West Virginia (S4), Wisconsin (SNR)

Canada	New Brunswick (S4), Newfoundland Island (S5), Nova Scotia (S5), Ontario (S4S5), Prince Edward Island (S3), Quebec (S4S5)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: Platanthera clavellata occurs from Newfoundland west to Ontario and Minnesota and south to Florida and Texas.

Number of Occurrences: 81 to >300
Number of Occurrences Comments: Not tracked in much of the central part of its range because it is very common. Rare in Illinois, Indiana, Iowa, and Missouri.

Overall Threat Impact Comments: The greatest threat to P. clavellata is the destruction of wetland habitat through drainage, channelization, logging, and gravel-mining. Also threatening to this species are deer browse, cattle grazing, herbicide runoff from nearby fields or powerline corridors, and invasion of habitats by exotic shrubs (e.g. Japanese honeysuckle and Smilax sp.).

Intrinsic Vulnerability Comments: Susceptible to changes in wetland habitat. In the northern part of its range, however, P. clavellata thrives in the disturbed soils of ditches and abandoned quarries.

Short-term Trend: Relatively stable (=10% change)
Short-term Trend Comments: Populations may be decreasing slightly in some areas because of habitat disturbance.

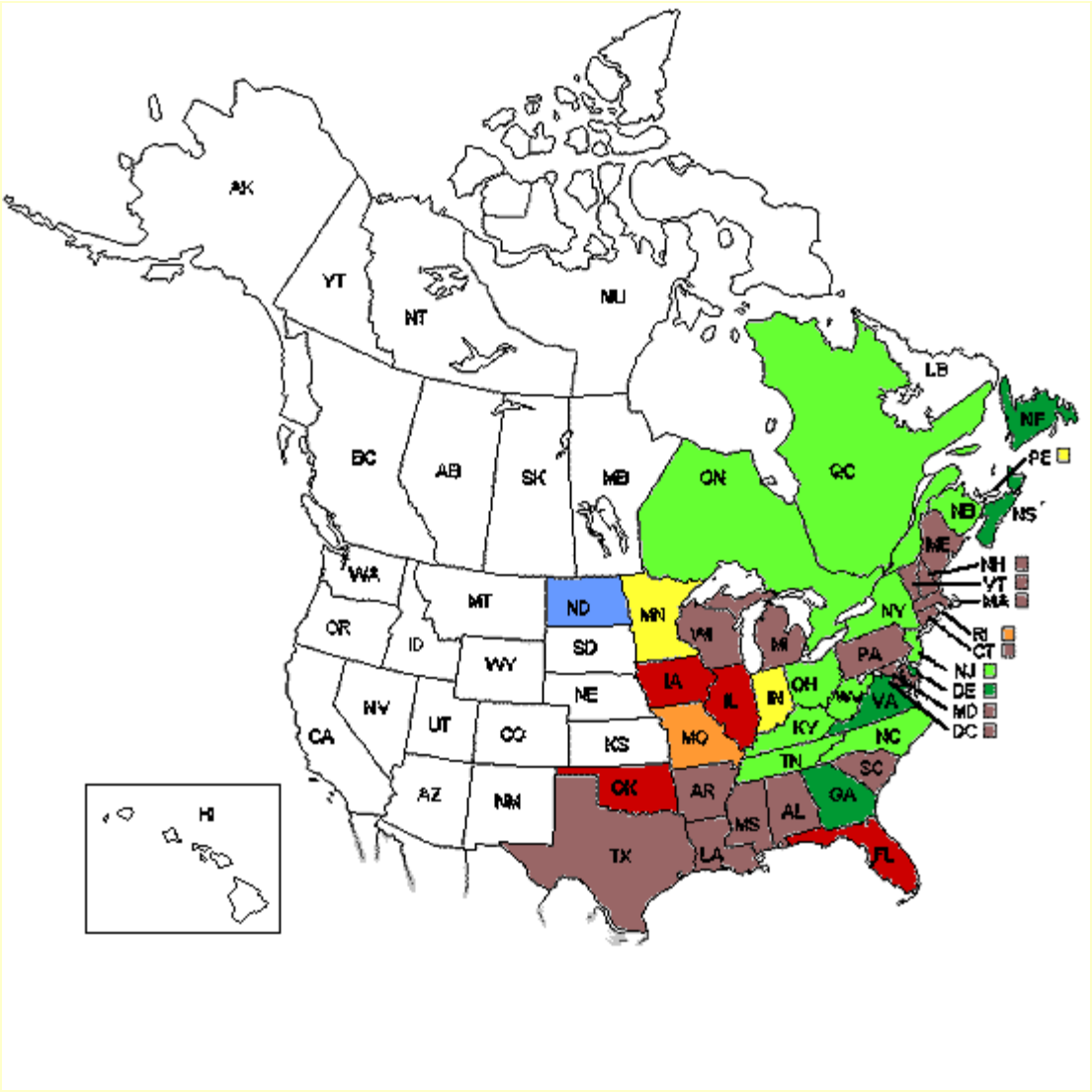
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: Platanthera clavellata occurs from Newfoundland west to Ontario and Minnesota and south to Florida and Texas.

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	AL, AR, CT, DC, DE, FL, GA, IA, IL, IN, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NH, NJ, NY, OH, OK, PA, RI, SC, TN, TX, VA, VT, WI, WV
Canada	NB, NF, NS, ON, PE, QC

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
FL	Calhoun (12013)*, Gadsden (12039), Liberty (12077), Okaloosa (12091), Santa Rosa (12113), Wakulla (12129)
IA	Fayette (19065)*, Linn (19113), Muscatine (19139)*
IL	Cook (17031), Iroquois (17075)*, Lake (17097), Lee (17103)*, Pope (17151)
MN	Aitkin (27001), Anoka (27003)*, Carlton (27017)*, Carver (27019)*, Chisago (27025)*, Clearwater (27029), Cook (27031), Crow Wing (27035)*, Dakota (27037)*, Goodhue (27049)*, Hennepin (27053)*, Itasca (27061), Koochiching (27071)*, Lake (27075), Mille Lacs (27095)*, Ramsey (27123)*, Scott (27139)*, Sherburne (27141)*, St. Louis (27137), Washington (27163)*, Wright (27171)*
MO	Barry (29009), Bollinger (29017), Butler (29023), Carter (29035), Dunklin (29069)*, Iron (29093),

	Madison (29123), Ripley (29181), St. Francois (29187), Stoddard (29207), Wayne (29223)
OH	Ashtabula (39007), Athens (39009), Champaign (39021), Gallia (39053)*, Geauga (39055), Hocking (39073), Jackson (39079), Lucas (39095), Pike (39131), Portage (39133), Scioto (39145), Stark (39151), Summit (39153), Vinton (39163), Washington (39167), Wayne (39169)
OK	Bryan (40013)*, Choctaw (40023), McCurtain (40089)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed

Watershed Region	Watershed Name (Watershed Code)
03	Apalachee Bay-St. Marks (03120001)+, Apalachicola (03130011)+, Blackwater (03140104)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+*, Lake Superior (04020300)+*, Pike-Root (04040002)+, Lower Maumee (04100009)+, Cuyahoga (04110002)+, Ashtabula-Chagrin (04110003)+, Grand (04110004)+
05	Mahoning (05030103)+, Little Muskingum-Middle Island (05030201)+, Hocking (05030204)+, Tuscarawas (05040001)+, Mohican (05040002)+, Lower Scioto (05060002)+, Upper Great Miami (05080001)+, Raccoon-Symmes (05090101)+, Little Scioto-Tygarts (05090103)+*, Ohio Brush-Whiteoak (05090201)+, Lower Ohio-Bay (05140203)+
07	Mississippi Headwaters (07010101)+, Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+*, Crow (07010204)+*, South Fork Crow (07010205)+*, Twin Cities (07010206)+*, Rum (07010207)+*, Lower Minnesota (07020012)+*, Lower St. Croix (07030005)+*, Zumbro (07040004)+*, Turkey (07060004)+*, Copperas-Duck (07080101)+*, Middle Cedar (07080205)+, Lower Cedar (07080206)+*, Green (07090007)+*, Iroquois (07120002)+*, Chicago (07120003)+, Upper Mississippi-Cape Girardeau (07140105)+, Whitewater (07140107)+
08	Lower St. Francis (08020203)+, Little River Ditches (08020204)+
09	Eastern Wild Rice (09020108)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Rainy Lake (09030003)+*, Little Fork (09030005)+, Big Fork (09030006)+
11	Beaver Reservoir (11010001)+, Upper Black (11010007)+, Current (11010008)+, Bois D'arc-Island (11140101)+*, Muddy Boggy (11140103)+*, Clear Boggy (11140104)+*, Kiamichi (11140105)+, Pecan-Waterhole (11140106)+*, Upper Little (11140107)+, Mountain Fork (11140108)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Collapse

Basic Description: Small green wood orchid, Club-spur orchid; Orchidaceae. A small, herbaceous, perennial plant (monocot) with 3-15 yellow-green (or whitish-green in shade) flowers at the top of and angled from an erect stem.
Habitat Comments: The natural habitat of Platanthera clavellata includes the following: seepages, springs (usually wooded); shrub borders of acid bogs; swamp woods; creek floodplains; occasionally open fens; and in the northern or mountainous part of its range, seepage slopes or sunlit stream beds. This species may also thrive in disturbed sites, such as abandoned quarries, roadbanks, ditches, and sandy-acid mine tailings (Case pers. comm. 1995, Sheviak pers. comm. 1995).

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Pyrola minor - L.
Lesser Wintergreen
Other English Common Names: Snowline Wintergreen
Other Common Names: snowline wintergreen
Taxonomic Status: Accepted
Related ITIS Name(s): *Pyrola minor* L. (TSN 23760)
Unique Identifier: ELEMENT_GLOBAL.2.148612
Element Code: PDPYR04060
Informal Taxonomy: Plants, Vascular - Flowering Plants - Other flowering plants

View image report from CalPhoto

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Dicotyledoneae	Ericales	Pyrolaceae	Pyrola

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 29Aug1984
Global Status Last Changed: 29Aug1984
Rounded Global Status: G5 - Secure
Nation: United States
National Status: NNR
Nation: Canada
National Status: NNR

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Arizona (SNR), California (SNR), Colorado (SNR), Idaho (SNR), Maine (S2), Michigan (SNR), Minnesota (S3), Montana (S3S4), Nevada (SNR), New Hampshire (SNR), New Mexico (S4), New York (S1), Oregon (SNR), Utah (SNR), Vermont (S1), Washington (SNR), Wisconsin (S1), Wyoming (S3)
Canada	Alberta (S4), British Columbia (S4), Labrador (S4), Manitoba (S3S4), New Brunswick (S3), Newfoundland Island (S3S4), Northwest Territories (SNR), Nova Scotia (S2), Nunavut (SNR), Ontario (S4), Prince Edward Island (SH),

	Quebec (S4S5), Saskatchewan (S5), Yukon Territory (S4)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

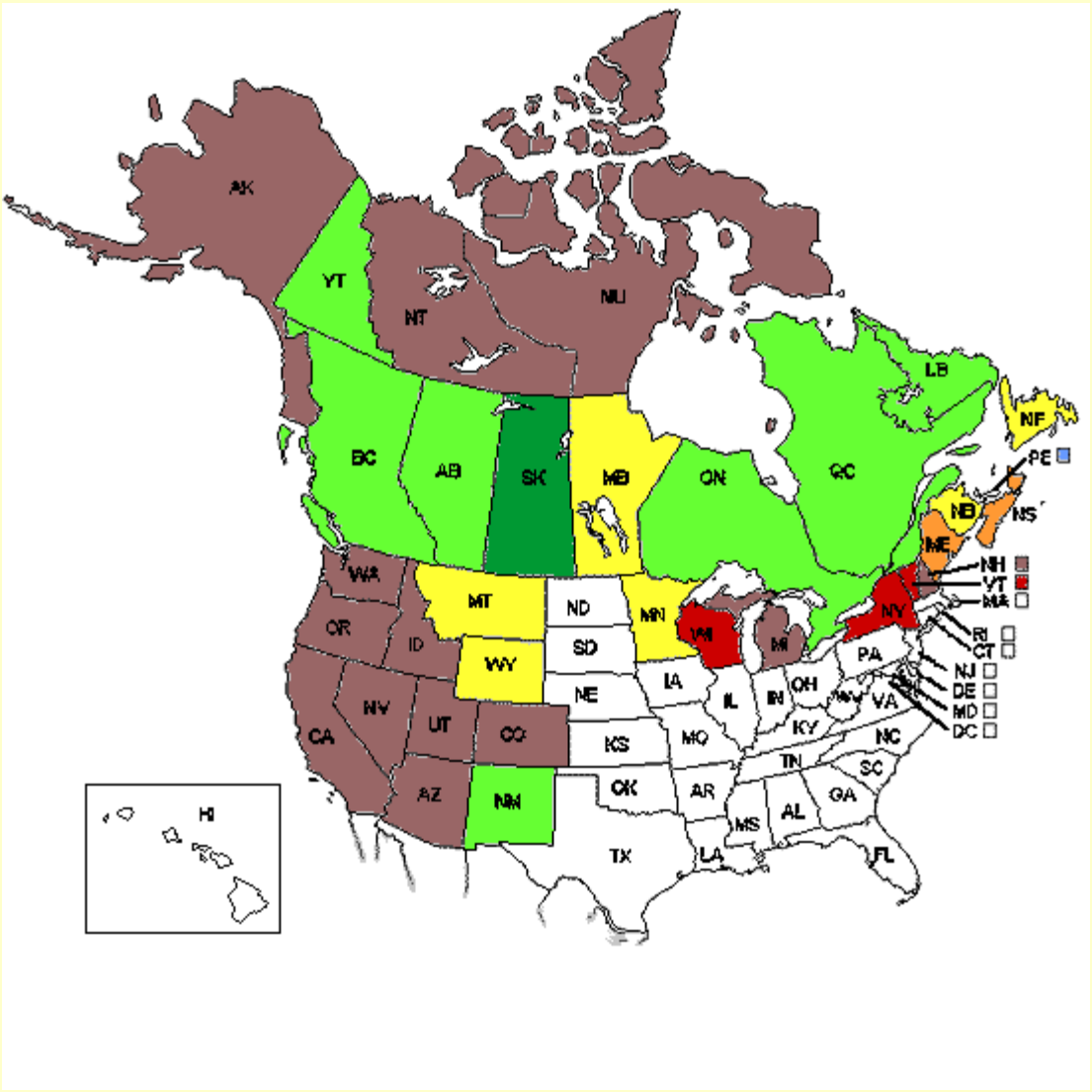
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	AK, AZ, CA, CO, ID, ME, MI, MN, MT, NH, NM, NV, NY, OR, UT, VT, WA, WI, WY
Canada	AB, BC, LB, MB, NB, NF, NS, NT, NU, ON, PE, QC, SK, YT

Range Map
No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
ME	Aroostook (23003), Franklin (23007), Oxford (23017), Penobscot (23019)*, Piscataquis (23021), Somerset (23025)
MN	Carlton (27017), Cook (27031), Lake (27075), St. Louis (27137)
NY	Essex (36031)
VT	Chittenden (50007), Lamoille (50015)*, Rutland (50021)
WI	Bayfield (55007), Douglas (55031)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
01	Allagash (01010002)+, Aroostook (01010004)+*, West Branch Penobscot (01020001)+, Upper Kennebec (01030001)+, Dead (01030002)+, Lower Kennebec (01030003)+, Lower Androscoggin (01040002)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Beartrap-Nemadji (04010301)+, Bad-Montreal (04010302)+, Lake Superior (04020300)+, Otter Creek (04150402)+, Winooski River (04150403)+, Lamoille River (04150405)+*, Saranac River (04150406)+
07	Kettle (07030003)+
09	Rainy Headwaters (09030001)+, Vermilion (09030002)+*, Little Fork (09030005)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Not yet assessed

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

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Ranunculus lapponicus - L.

Lapland Buttercup

Taxonomic Status: Accepted
Related ITIS Name(s): *Ranunculus lapponicus* L. (TSN 18620)
Unique Identifier: ELEMENT_GLOBAL.2.159849
Element Code: PDRAN0L1G0
Informal Taxonomy: Plants, Vascular - Flowering Plants - Buttercup Family

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Dicotyledoneae	Ranunculales	Ranunculaceae	Ranunculus

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 29Aug1984
Global Status Last Changed: 29Aug1984
Rounded Global Status: G5 - Secure
Nation: United States
National Status: NNR
Nation: Canada
National Status: NNR

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Maine (S2), Michigan (S1S2), Minnesota (S3), Wisconsin (S1)
Canada	Alberta (S4), British Columbia (S5), Labrador (S2S3), Manitoba (S5), New Brunswick (S1), Newfoundland Island (SH), Northwest Territories (SNR), Nunavut (SNR), Ontario (S5), Quebec (S3S4), Saskatchewan (S5?), Yukon Territory (S4)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

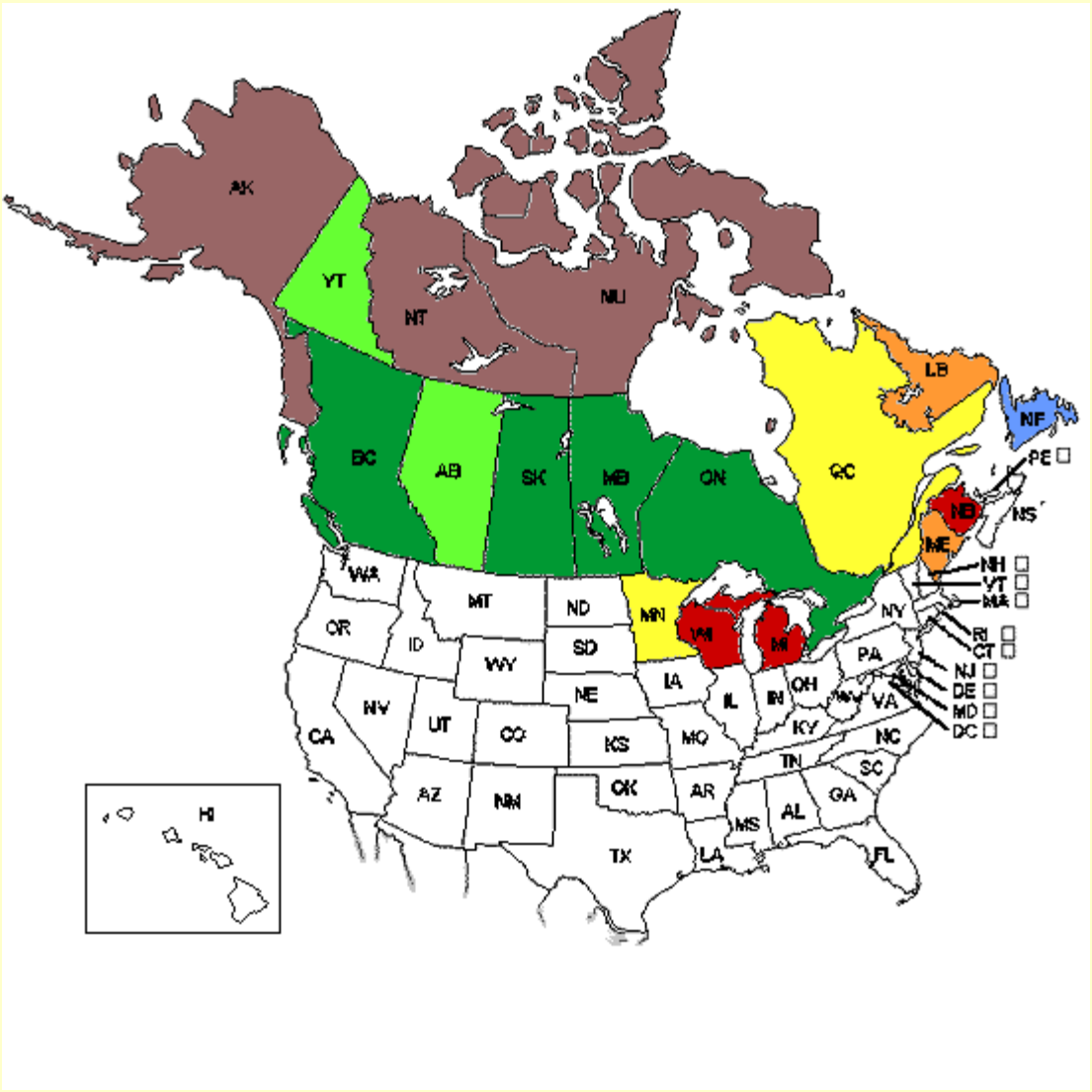
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	AK, ME, MI, MN, WI
Canada	AB, BC, LB, MB, NB, NF, NT, NU, ON, QC, SK, YT

Range Map
No map available.

U.S. Distribution by County	
State	County Name (FIPS Code)

ME	Aroostook (23003)
MI	Chippewa (26033), Delta (26041), Mackinac (26097)
MN	Aitkin (27001)*, Beltrami (27007), Carlton (27017)*, Cass (27021), Cook (27031), Crow Wing (27035)*, Itasca (27061), Kanabec (27065)*, Koochiching (27071)*, Lake (27075), Lake of the Woods (27077), Mille Lacs (27095)*, Pine (27115)*, Roseau (27135), St. Louis (27137)
WI	Douglas (55031)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed

Watershed Region	Watershed Name (Watershed Code)
01	Upper St. John (01010001)+, Fish (01010003)+, Aroostook (01010004)+
04	Baptism-Brule (04010101)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+, Lake Superior (04020300)+, Fishdam-Sturgeon (04030112)+, St. Marys (04070001)+, Carp-Pine (04070002)+
07	Mississippi Headwaters (07010101)+, Leech Lake (07010102)+, Prairie-Willow (07010103)+, Elk-Nokasippi (07010104)+*, Pine (07010105)+*, Rum (07010207)+*, Upper St. Croix (07030001)+, Kettle (07030003)+*, Snake (07030004)+*
09	Red Lakes (09020302)+, Roseau (09020314)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Little Fork (09030005)+, Big Fork (09030006)+, Rapid (09030007)+, Lake of the Woods (09030009)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History Not yet assessed

Economic Attributes Not yet assessed

Management Summary Not yet assessed

Population/Occurrence Delineation Not yet assessed

Population/Occurrence Viability Expand

U.S. Invasive Species Impact Rank (I-Rank) Not yet assessed

Authors/Contributors Expand

References Expand

Use Guidelines & Citation Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Saxifraga paniculata - P. Mill.
White Mountain Saxifrage
Other Common Names: White Mountain saxifrage
Taxonomic Status: Accepted
Related ITIS Name(s): *Saxifraga paniculata* P. Mill. (TSN 505029)
Unique Identifier: ELEMENT_GLOBAL.2.132806
Element Code: PDSAX0U1C0
Informal Taxonomy: Plants, Vascular - Flowering Plants - Saxifrage Family

View image report from CalPhoto

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Dicotyledoneae	Rosales	Saxifragaceae	Saxifraga

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 06Sep1984
Global Status Last Changed: 06Sep1984
Rounded Global Status: G5 - Secure
Nation: United States
National Status: N2
Nation: Canada
National Status: N4N5 (02Oct2000)

U.S. & Canada State/Province Status	
United States	Maine (S1), Michigan (S1), Minnesota (S2), New Hampshire (SNR), New York (S1), Vermont (S1)
Canada	Labrador (S3S4), Manitoba (SNR), New Brunswick (S1), Newfoundland Island (S3S4), Northwest Territories (SNR), Nova Scotia (S2), Nunavut (SNR), Ontario (S4), Quebec (S4S5)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

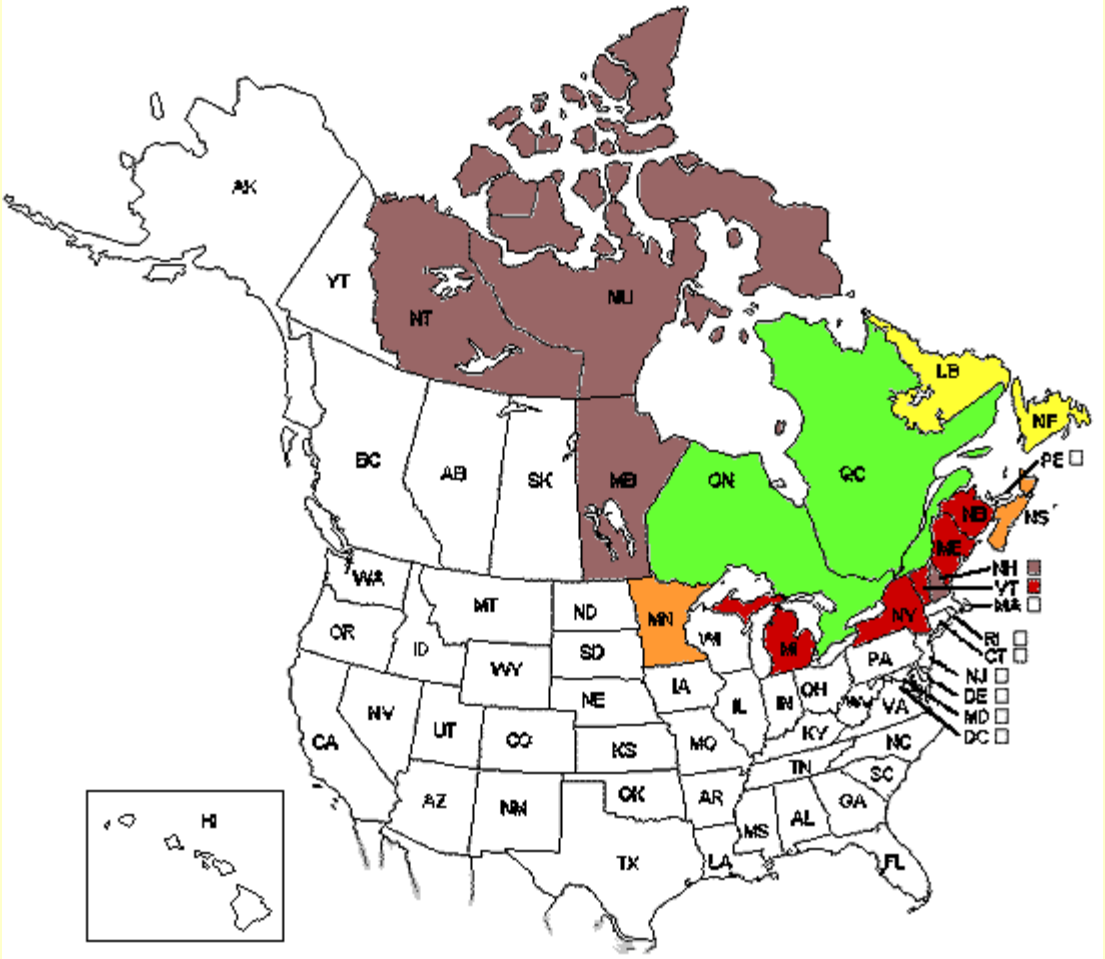
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	ME, MI, MN, NH, NY, VT
Canada	LB, MB, NB, NF, NS, NT, NU, ON, QC

Range Map
No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
ME	Oxford (23017), Piscataquis (23021)*
MI	Keweenaw (26083)
MN	Cook (27031), Lake (27075)
NH	Coos (33007), Grafton (33009)
NY	Essex (36031)
VT	Chittenden (50007), Lamoille (50015), Orleans (50019), Windsor (50027)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
01	West Branch Penobscot (01020001)+*, Upper Androscoggin (01040001)+, Saco (01060002)+, White (01080105)+
02	Upper Hudson (02020001)+
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, Lake Superior (04020300)+, Winooski River (04150403)+, Ausable River (04150404)+*, Lamoille River (04150405)+, Missiquoi River (04150407)+, Lake Champlain (04150408)+*, St. Francois River (04150500)+
09	Rainy Headwaters (09030001)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Not yet assessed

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Sparganium glomeratum - Laestad. ex Beurling
Northern Bur-reed

Other English Common Names: clustered burreed
Taxonomic Status: Accepted
Related ITIS Name(s): *Sparganium glomeratum* (Laestad.) L. Neum. (TSN 42322)
French Common Names: rubanier aggloméré
Unique Identifier: ELEMENT_GLOBAL.2.128205
Element Code: PMSPA01070
Informal Taxonomy: Plants, Vascular - Flowering Plants - Other flowering plants

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Typhales	Sparganiaceae	Sparganium

Check this box to expand all report sections: ☐

Concept Reference

Expand

Conservation Status

Collapse

NatureServe Status

Global Status: G4?
Global Status Last Reviewed: 29Jan1997
Global Status Last Changed: 29Jan1997
Rounded Global Status: G4 - Apparently Secure
Reasons: Sparganium glomeratum is primarily a Eurasian species known from only a few North American localities (in Canada, Minnesota, and Wisconsin). In Europe and Asia, it is reported from Scandinavia (Norway, Sweden, and Finland), Russia (Ural Mountains and taiga habitats), Tibet (China), and central and northern Japan. S. glomeratum apparently has a spotty distribution worldwide and is locally rare, but it appears to occur in at least a few dozen localities. It is also difficult to identify and may therefore be underdocumented. Rangewide information on abundance, habitat limitations, or threats to this species is not available.
Nation: United States
National Status: N3
Nation: Canada
National Status: N2 (18Sep2010)

U.S. & Canada State/Province Status	
United States	Minnesota (S3), Wisconsin (S2)

Canada	Alberta (S1), Labrador (S1), Manitoba (S1?), Ontario (SH), Quebec (SH), Saskatchewan (S1), Yukon Territory (SU)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: S. glomeratum is interruptedly circumboreal. In North America it occurs in Minnesota, Wisconsin, Labrador, Quebec, Ontario, Alberta, British Columbia, and the Yukon. In Europe it extends from Scandinavia east to Kamchatka and into China, northern Japan, and Tibet.

Number of Occurrences: 21 to >300
Number of Occurrences Comments: Occurs at 1 or 2 sites in Alberta, British Columbia, Quebec, and Wisconsin. Occurs at 22 sites in Minnesota, mainly around Duluth. Numbers of EOs are unknown for the other continents in the range of this species. The number of EOs in North America may be underestimated because Sparganium glomeratum can be difficult to identify.

Population Size Comments: The global abundance of S. glomeratum is unknown. Although it is a circumboreal species, it occurs sparsely in most known locations. Because it is difficult to identify, it may have been overlooked in many areas (Sather pers. comm. 1995).

Overall Threat Impact Comments: The principal threat to this species is the destruction of its wetland habitats through drainage or development.

Intrinsic Vulnerability Comments: Generally susceptible to loss of habitat. In some cases, however, Sparganium glomeratum can persist in drainage ditches.

Short-term Trend: Relatively stable to decline of 30%
Short-term Trend Comments: Stable while development projects are on hold.

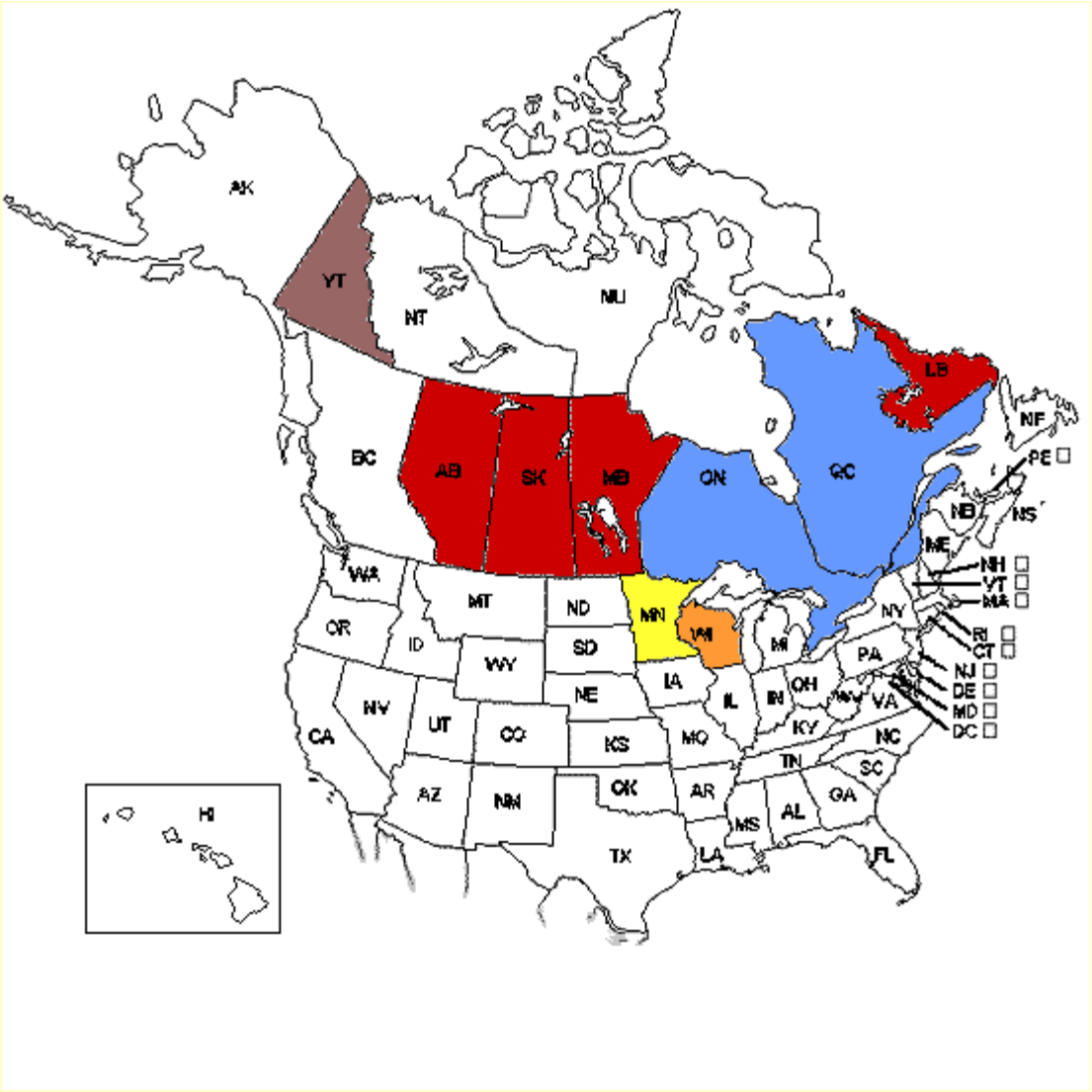
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: S. glomeratum is interruptedly circumboreal. In North America it occurs in Minnesota, Wisconsin, Labrador, Quebec, Ontario, Alberta, British Columbia, and the Yukon. In Europe it extends from Scandinavia east to Kamchatka and into China, northern Japan, and Tibet.

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	MN, WI
Canada	AB, LB, MB, ON, QC, SK, YT

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
MN	Becker (27005), Beltrami (27007), Carlton (27017), Cass (27021), Clearwater (27029), Cook (27031), Hubbard (27057), Itasca (27061), Koochiching (27071), Lake (27075), St. Louis (27137), Todd (27153)
WI	Bayfield (55007), Douglas (55031), Washburn (55129)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**

04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+, Bad-Montreal (04010302)+, Lake Superior (04020300)+
07	Mississippi Headwaters (07010101)+, Leech Lake (07010102)+, Prairie-Willow (07010103)+, Crow Wing (07010106)+, Long Prairie (07010108)+, Upper St. Croix (07030001)+, Namekagon (07030002)+, Kettle (07030003)+
09	Otter Tail (09020103)+, Eastern Wild Rice (09020108)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Little Fork (09030005)+, Big Fork (09030006)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History — Collapse

Basic Description: Northern bur-reed, clustered bur-reed; Bur-reed family (Sparganiaceae). A perennial, herbaceous, rhizomatous, aquatic plant (monocot) with floating or erect stems 20-60 cm tall.
Habitat Comments: Sparganium glomeratum appears to occur in organic soils in shallow water, although very little is currently known about its habitat requirements (Walton pers. comm. 1995). It occurs in a variety of habitat types, including black ash, willow, and conifer swamps, streams, bog margins, forest hollows, and drainage ditches.

Economic Attributes — Not yet assessed

Management Summary — Not yet assessed

Population/Occurrence Delineation — Not yet assessed

Population/Occurrence Viability — Expand

U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed

Authors/Contributors — Expand

References — Expand

Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

Torreyochloa pallida - (Torr.) Church
Pale Manna Grass
Other English Common Names: Pale False Mannagrass
Other Common Names: pale false mannagrass
Synonym(s): *Glyceria pallida* (Torr.) Trin. ;*Puccinellia pallida* (Torr.) Clausen
Taxonomic Status: Accepted
Related ITIS Name(s): *Torreyochloa pallida* (Torr.) G.L. Church (TSN 505539)
Unique Identifier: ELEMENT_GLOBAL.2.157102
Element Code: PMPOA61030
Informal Taxonomy: Plants, Vascular - Flowering Plants - Grass Family

Google
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Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Anthophyta	Monocotyledoneae	Cyperales	Poaceae	Torreyochloa

Check this box to expand all report sections: ☐

Concept Reference
Expand

Conservation Status
Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 02Mar2005
Global Status Last Changed: 02Mar2005
Rounded Global Status: G5 - Secure
Reasons: Widespread in the United States and Canada.
Nation: United States
National Status: N5?
Nation: Canada
National Status: NNR

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Arizona (SNR), California (SNR), Colorado (SNR), Connecticut (SNR), Delaware (SNR), Florida (SNR), Georgia (SH), Idaho (SNR), Illinois (S1), Indiana (SNR), Kentucky (SH), Maine (SNR), Maryland (S3), Massachusetts (SNR), Michigan (SNR), Minnesota (S3), Missouri (SNR), Montana (SNR), Nevada (SNR), New Hampshire (SNR), New Jersey (SNR), New Mexico (SNR), New York (SNR), North Carolina (S1), Ohio (SNR), Oregon (SNR), Pennsylvania (SNR), Rhode Island (SNR), South Carolina (S1), South Dakota (SNR), Tennessee (S1), Utah (SNR), Vermont (SNR), Virginia (S4), Washington (SNR), West Virginia (S2), Wisconsin (SNR), Wyoming (S3)

Canada	Alberta (SNR), British Columbia (S1), Labrador (SNR), Manitoba (S2), New Brunswick (S5), Newfoundland Island (SNR), Nova Scotia (S4S5), Nunavut (SNR), Ontario (S4), Prince Edward Island (S4), Quebec (SNR), Saskatchewan (S2), Yukon Territory (SNR)

Other Statuses

NatureServe Global Conservation Status Factors

Range Extent Comments: Range for the species as a whole: Newfoundland to Alaska, south in the east to Georgia and Missouri, in the west to New Mexico and California. Variety pallida: Nova Scotia west to Ontario and Minnesota, south to North Carolina, northwestern South Carolina, northern Georgia, Tennessee, Kentucky, and southeast Missouri. Variety fernaldii: Newfoundland to British Columbia, south to Minnesota, Michigan, West Virginia, Delaware; also Wyoming. Variety pauciflora: Alaska to South Dakota, south to California and New Mexico. Sometimes considered to be conspecific with the east Asian T. natans [V.. Komarov] Church and T. viridis [A. Hitchc.] Church (Davis 1991).

Population Size Comments: Uncommon in many parts of its range.

Overall Threat Impact Comments: Highly threatened by land-use conversion, habitat fragmentation, sedimentation, and to a lesser extent by forest management practices (Southern Appalachian Species Viability Project 2002).

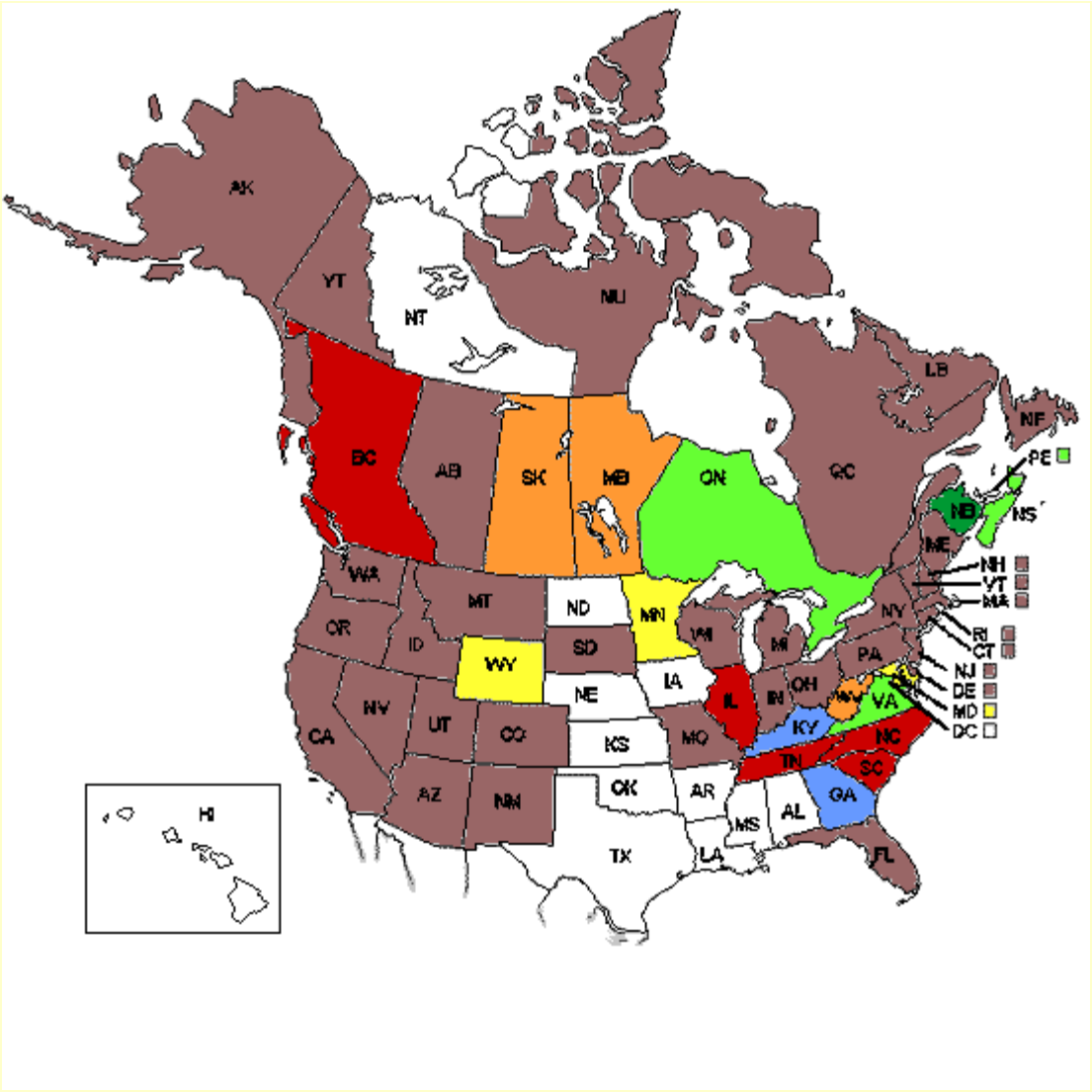
Other NatureServe Conservation Status Information

Distribution

Collapse

Global Range: Range for the species as a whole: Newfoundland to Alaska, south in the east to Georgia and Missouri, in the west to New Mexico and California. Variety pallida: Nova Scotia west to Ontario and Minnesota, south to North Carolina, northwestern South Carolina, northern Georgia, Tennessee, Kentucky, and southeast Missouri. Variety fernaldii: Newfoundland to British Columbia, south to Minnesota, Michigan, West Virginia, Delaware; also Wyoming. Variety pauciflora: Alaska to South Dakota, south to California and New Mexico. Sometimes considered to be conspecific with the east Asian T. natans [V.. Komarov] Church and T. viridis [A. Hitchc.] Church (Davis 1991).

U.S. States and Canadian Provinces



State/Province Conservation Status

- SX: Presumed Extirpated
- SH: Possibly Extirpated
- S1: Critically Imperiled
- S2: Imperiled
- S3: Vulnerable
- S4: Apparently Secure
- S5: Secure
- Not Ranked/Under Review (SNR/SU)

Conservation Status Not Applicable (SNA)

- Exotic
- Hybrid without Conservation Value

U.S. & Canada State/Province Distribution	
United States	AK, AZ, CA, CO, CT, DE, FL, GA, ID, IL, IN, KY, MA, MD, ME, MI, MN, MO, MT, NC, NH, NJ, NM, NV, NY, OH, OR, PA, RI, SC, SD, TN, UT, VA, VT, WA, WI, WV, WY
Canada	AB, BC, LB, MB, NB, NF, NS, NU, ON, PE, QC, SK, YT

Range Map

No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
GA	Bartow (13015)*
IL	Jackson (17077)*, Union (17181)
KY	Ballard (21007)*, Livingston (21139)*, McCracken (21145)*
MD	Anne Arundel (24003)*, Caroline (24011), Dorchester (24019), Garrett (24023), Montgomery (24031)*, Prince Georges (24033), Somerset (24039), St. Marys (24037), Washington (24043), Worcester (24047)
MN	Aitkin (27001), Beltrami (27007), Carlton (27017), Cass (27021), Clearwater (27029)*, Cook (27031), Hubbard (27057)*, Itasca (27061), Koochiching (27071)*, Lake (27075), Otter Tail (27111), Pine (27115), St. Louis (27137)
MO	Bollinger (29017), Butler (29023)*, Cape Girardeau (29031)*, Franklin (29071)*, Howell (29091),

	Jefferson (29099)*, Mississippi (29133)*, New Madrid (29143)*, Phelps (29161)*, Reynolds (29179), Ripley (29181)*, Scott (29201)*, Shannon (29203), St. Charles (29183)*, St. Louis (29189)*, St. Louis (city) (29510)*, Stoddard (29207), Wayne (29223)
NC	Currituck (37053), Gates (37073), Harnett (37085)
NJ	Sussex (34037)
SC	York (45091)
TN	Robertson (47147), White (47185)
VT	Addison (50001), Bennington (50003)
WV	Preston (54077), Randolph (54083), Tucker (54093)
WY	Teton (56039)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed

Watershed Region	Watershed Name (Watershed Code)
01	White (01080105)+
02	Hudson-Hoosic (02020003)+, Rondout (02020007)+, Severn (02060004)+*, Choptank (02060005)+, Patuxent (02060006)+*, North Branch Potomac (02070002)+*, Conococheague-Opequon (02070004)+, Middle Potomac-Anacostia-Occoquan (02070010)+*, Lower Potomac (02070011)+, Western Lower Delmarva (02080109)+, Pokomoke-Western Lower Delmarva (02080111)+
03	Ghowan (03010203)+, Albemarle (03010205)+, Upper Cape Fear (03030004)+, Upper Broad (03050105)+, Coosawattee (03150102)+*, Oostanaula (03150103)+*, Etowah (03150104)+*
04	Baptism-Brule (04010101)+, Beaver-Lester (04010102)+, St. Louis (04010201)+, Cloquet (04010202)+, Beartrap-Nemadji (04010301)+*, Lake Superior (04020300)+*, Otter Creek (04150402)+
05	Cheat (05020004)+, Youghiogheny (05020006)+, Caney (05130108)+, Red (05130206)+, Lower Ohio (05140206)+*
06	Lower Tennessee (06040006)+*
07	Mississippi Headwaters (07010101)+, Prairie-Willow (07010103)+, Upper St. Croix (07030001)+, Kettle (07030003)+, Peruque-Piasa (07110009)+*, Cahokia-Joachim (07140101)+*, Meramec (07140102)+*, Big (07140104)+*, Upper Mississippi-Cape Girardeau (07140105)+, Big Muddy (07140106)+*, Whitewater (07140107)+*
08	New Madrid-St. Johns (08020201)+*, Upper St. Francis (08020202)+, Lower St. Francis (08020203)+, Little River Ditches (08020204)+
09	Otter Tail (09020103)+, Red Lakes (09020302)+, Rainy Headwaters (09030001)+, Vermilion (09030002)+, Rainy Lake (09030003)+*, Little Fork (09030005)+*, Big Fork (09030006)+
10	Lower Gasconade (10290203)+*, Lower Missouri (10300200)+*
11	Upper Black (11010007)+, Current (11010008)+, Spring (11010010)+, Eleven Point (11010011)+
17	Snake headwaters (17040101)+

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History

Collapse

Basic Description: Pale green, slender, wetland grass.
General Description: Pale green, slender, wetland grass.
Technical Description: Culms slender and flaccid, usually more or less decumbent and creeping at base, 3-10 dm tall. Leaf-blades soft, 3-8 mm wide. Panicle with relatively few branches, eventually diffuse, 5-15 cm long. Spikelets narrowly ovate, 4-7 mm long, 4-6-flowered; glumes broadly rounded at the scarious tip; lemmas ovate, sharply nerved, finely pubescent or scaberulous, erose at the rounded apex; palea 4-5 times as long as wide. Var. fernaldii Hitchc.: culms usually very slender and weak, with leaf-blades seldom more than 5 mm wide and small panicles; first glume 0.9-1.7 mm long; second glume 1.1-2.1

mm long, lemmas 2-2.9 mm long; anthers broadly oblong, 0.3-0.5 mm long. Var. pallida: culms stouter, with leaf-blades to 8 mm wide and usually larger panicles; spikelets similar but slightly larger; first glume 1.3-2.1 mm long; second glume 1.6-2.4 mm long; lemmas 2.6-3.2 mm long; anthers linear, 1-1.6 mm long. (Gleason 1952) Var. pauciflora (J. Presl.) J.I. Davis: culms 50 to 120 cm tall; sheaths open, smooth or scaberulous, sometimes inflated in floating plants; blades thin, flat, lax, scaberulous, mostly 10 to 15 cm long, 5 to 15 mm wide; panicle open or rather dense, nodding, 10 to 20 cm long, the branches ascending or spreading, rather flexuous, the spikelets crowded on the upper half, the lowermost usually 2 to 4; spikelets mostly 5- or 6-flowered, 4 to 5 mm long, often purplish; glumes broadly ovate or oval, about 1 and 1.5 mm long, the margins erose-scarious, the second 3-nerved; lemmas oblong, 2 to 2.5 mm long, with 5 prominent nerves and an outer short faint pair near the margins, scaberulous on the nerves and somewhat so between them, the tip rounded, scarious, somewhat erose (Hitchcock 1951); often from subterranean stems (Hulten 1968).

Diagnostic Characteristics: Genus distinguished from Glyceria as follows: basic chromosome number of 7 (vs. 10); lemma 5-nerved (vs. 7-nerved); upper glume 3-nerved (vs. 1-nerved); leaf sheaths open (vs. closed, rupturing later); rhizomes lacking [but present in the western var. pauciflora] (vs. rhizomes present). Genus distinguished from Puccinellia as follows: chromosomes much larger in Torreyochloa than in Puccinellia; nerves of lemma raised, equally prominent, more or less equally spaced (vs. not prominent or not equally so, and not equaly spaced in Puccinellia). (Dore and McNeill 1980). Over most of the continent, this is the only species in the genus. In the west, var. pauciflora may be distinguished from T. erecta as follows: inflorescence ovate to elliptic or obovate in outline (vs. linear to narrowly ellipitic), 1-6 x width (vs. 5-15 x width), 1-12 cm wide (vs. less than 1cm wide); leaf blade 3.5-17.5 mm wide (vs. 3.5-7 mm wide) (Hickman 1993). Panicles of T. pallida tend to be lax and open; those of T. erecta are narrow with ascending branches (Hitchcock 1951). T. californica, maintained as a separate species by Kartesz, is sometimes considered to be part of T. pallida as well: it is found at higher elevations and is generally smaller, with compact, ovate to obovate panicles, ca. 6-10 mm long and ca. 2-3 times as long as wide, and leaves to 5 mm wide (Davis 1991, Munz 1959).

Duration: PERENNIAL

Palustrine Habitat(s): Bog/fen, FORESTED WETLAND, HERBACEOUS WETLAND, Riparian, TEMPORARY POOL

Habitat Comments: Bogs, marshy shores of ponds, lakes, streams, swamps, pools, sloughs, cattail marshes, temporary pools, shallow cold water of shaded stream & pond sides, wet hollows in woods (Godfrey and Wooten 1981, Deam 1940, Hough 1983, Roland & Smith 1983, Radford et al. 1968, Voss 1985, Cronquist 1977, Hulten 1968).

Economic Attributes — Not yet assessed
Management Summary — Not yet assessed
Population/Occurrence Delineation — Not yet assessed
Population/Occurrence Viability — Expand
U.S. Invasive Species Impact Rank (I-Rank) — Not yet assessed
Authors/Contributors — Expand
References — Expand
Use Guidelines & Citation — Expand

Version 7.1 (2 February 2009)
Data last updated: March 2014

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Woodsia scopulina - D.C. Eat.
Rocky Mountain Woodsia
Other English Common Names: mountain woodsia
Other Common Names: Rocky Mountain woodsia
Taxonomic Status: Accepted
Related ITIS Name(s): *Woodsia scopulina* D.C. Eat. (TSN 17747)
French Common Names: woodsie des rochers
Unique Identifier: ELEMENT_GLOBAL.2.141972
Element Code: PPDRY0U0B0
Informal Taxonomy: Plants, Vascular - Ferns and relatives

View image report from CalPhoto

Kingdom	Phylum	Class	Order	Family	Genus
Plantae	Filicinophyta	Filicopsida	Filicales	Dryopteridaceae	Woodsia

Check this box to expand all report sections: ☐

Concept Reference
Expand

Conservation Status
Collapse

NatureServe Status

Global Status: G5
Global Status Last Reviewed: 01Nov2011
Global Status Last Changed: 08Apr1986
Rounded Global Status: G5 - Secure
Nation: United States
National Status: NNR
Nation: Canada
National Status: N4 (09Feb2011)

U.S. & Canada State/Province Status	
United States	Alaska (SNR), Arizona (SNR), Arkansas (SNR), California (SNR), Colorado (SNR), Idaho (SNR), Minnesota (S2), Montana (S4), Nevada (SNR), New Mexico (SNR), North Carolina (SNR), Oregon (SNR), South Dakota (SNR), Utah (SNR), Washington (SNR), West Virginia (SNR), Wisconsin (SNR), Wyoming (S3S4)
Canada	Alberta (S3), British Columbia (S4), Ontario (S3), Quebec (S1), Saskatchewan (S1), Yukon Territory (S2S3)

Other Statuses

NatureServe Global Conservation Status Factors

Area of Occupancy:
Area of Occupancy Comments:

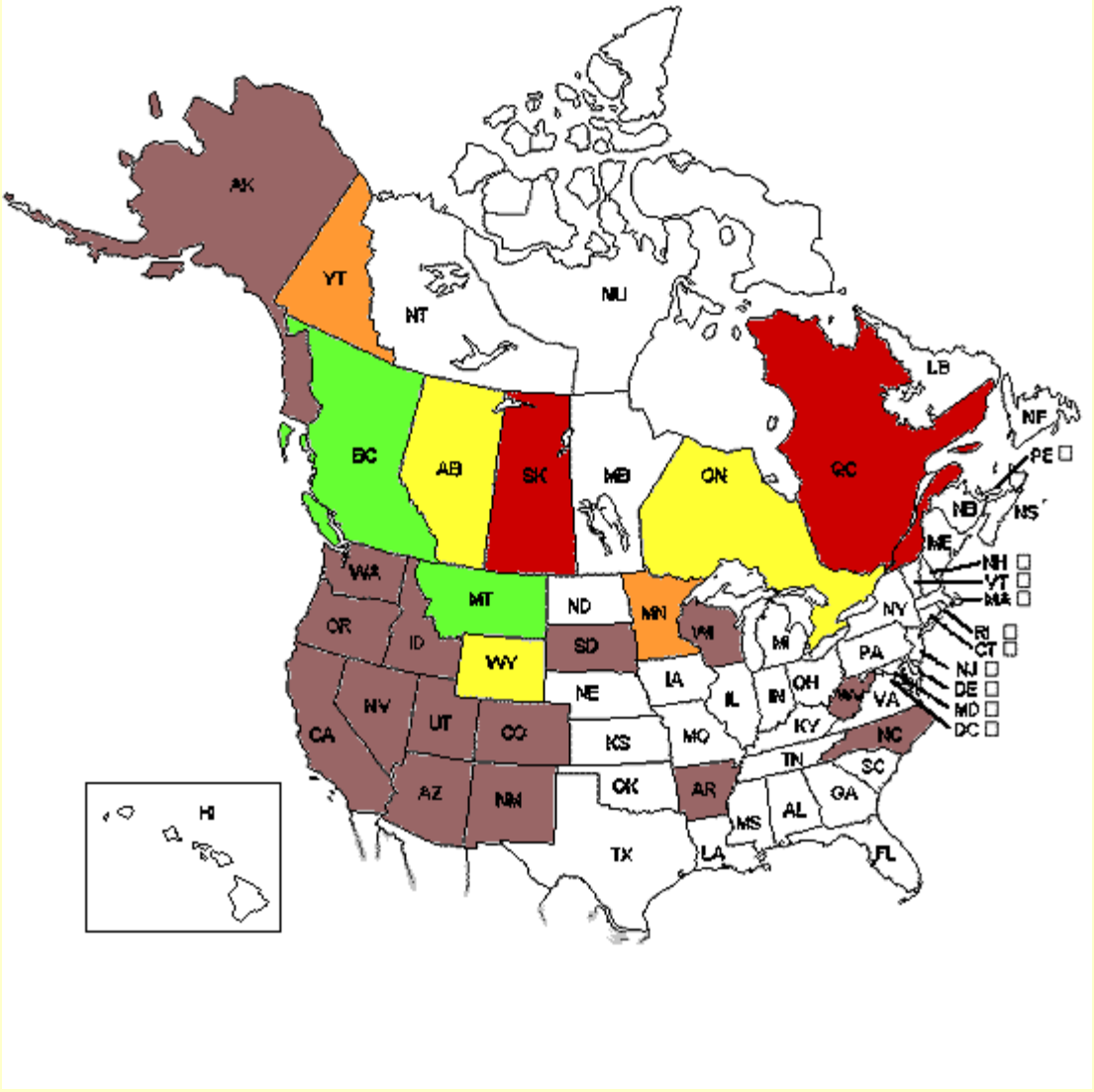
Viability/Integrity Comments:

Other NatureServe Conservation Status Information

Distribution

Collapse

U.S. States and Canadian Provinces



U.S. & Canada State/Province Distribution	
United States	AK, AR, AZ, CA, CO, ID, MN, MT, NC, NM, NV, OR, SD, UT, WA, WI, WV, WY
Canada	AB, BC, ON, QC, SK, YT

Range Map
No map available.

U.S. Distribution by County	
State	**County Name (FIPS Code)**
MN	Cook (27031)

* Extirpated/possibly extirpated

U.S. Distribution by Watershed	
Watershed Region	**Watershed Name (Watershed Code)**
04	Baptism-Brule (04010101)+, Lake Superior (04020300)+*

+ Natural heritage record(s) exist for this watershed
* Extirpated/possibly extirpated

Ecology & Life History	Not yet assessed
Economic Attributes	Not yet assessed
Management Summary	Not yet assessed
Population/Occurrence Delineation	Not yet assessed
Population/Occurrence Viability	Expand
U.S. Invasive Species Impact Rank (I-Rank)	Not yet assessed
Authors/Contributors	Expand
References	Expand
Use Guidelines & Citation	Expand

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