4/17/2021

2021 Rare Plant Forum

Status Change Proposals

Contributors: Jessica McPherson, Steve Grund, Scott Schuette, Bonnie Isaac, Joe Isaac, Loree Speedy, Jack Holt, Janet Ebert

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Short's Sedge – *Carex shortiana* Dewey

Current Status in PA Regulations: N
Current PABS Status: PR
Proposed Status: Delist
Coefficient of Conservatism: 8 (probably not?)
Proposed by: Loree Speedy, Civil and Environmental Consultants, Inc.

Proposal Summary
TU/Proposed Rare to Delist. It is very likely that the number of sites would exceed 50, or even 100, if all available field and early-successional habitat was searched in Washington County and adjacent counties in the southwestern region, as well as all available habitat in Franklin, Cumberland, and adjacent counties in the south-central region. *C. shortiana* is too common in Pennsylvania. Its ability to persist, and perhaps thrive, in disturbed conditions and its perennial, tufted habit would enable long-term survival in the region.

Global Distribution and Regional Conservation Statuses
C. shortiana can be found in the interior of the eastern United States from Pennsylvania south to Arkansas. Habitats range from woods at the base of slopes to wet open ground and bottomlands, often in calcareous soils (Flora of North America, 2003). The species is common and widespread in Ohio (Braun, 1967). West Virginia's Atlas of Native and Naturalised Flora (2006) shows ten counties with documented occurrences (four since 1977). Weakley et al. (2013) report it as infrequent in Virginia's mountains and piedmont.

Pennsylvania Distribution
C. shortiana is currently known from forty-four extant sites across the southern portion of Pennsylvania, in thirteen counties. Occurrences are centered in south western PA and in south-central PA. There is one documented occurrence in Northampton County in southeastern PA.

Many occurrences have been recently documented in Washington County; eighteen occurrences have been documented, from 2012 through 2019, in ruderal, early-successional or open wetland or field habitat.

Fifteen historics, documented by historic collections from 1891 to 1947, are known from six counties. A number of sites in Allegheny County were not relocated during targeted field surveys in 2014, but two historics were relocated in parks in south-flowing tributaries of the Allegheny River near Fox Chapel.

Habitat:
In Pennsylvania, it is reported from calcareous wet meadows and swamps and rich woods (Rhoads and Block, 2007). A great majority of the extant sites are found in open or partially shaded areas with disturbance or undergoing succession. Habitats include: along trails, floodplains of streams and creeks; weedy, moist

abandoned fields and pastures, active pastures and hayfields, utility and sanitary rights of way, roadside ditches, dirt roads, jeep trails, access roads, abandoned railroad grade

Conservation Concerns
The species' wetland habitat is subject to regulation, and avoided for the most part. Although it is unclear whether the species would rebound from any permitted temporary wetland impacts that allow timber matting, fragmentation and disturbance from energy infrastructure development may create additional habitat. Land conversion from past agricultural use is a long-term threat.

A major threat to *C. shortiana* is urbanization and intense suburban development. Intense urban development in the Pittsburgh area has likely destroyed or greatly curtailed several populations. A few sites are persisting in mowed parks in Allegheny County and fragmented riparian habitats in Cumberland County.

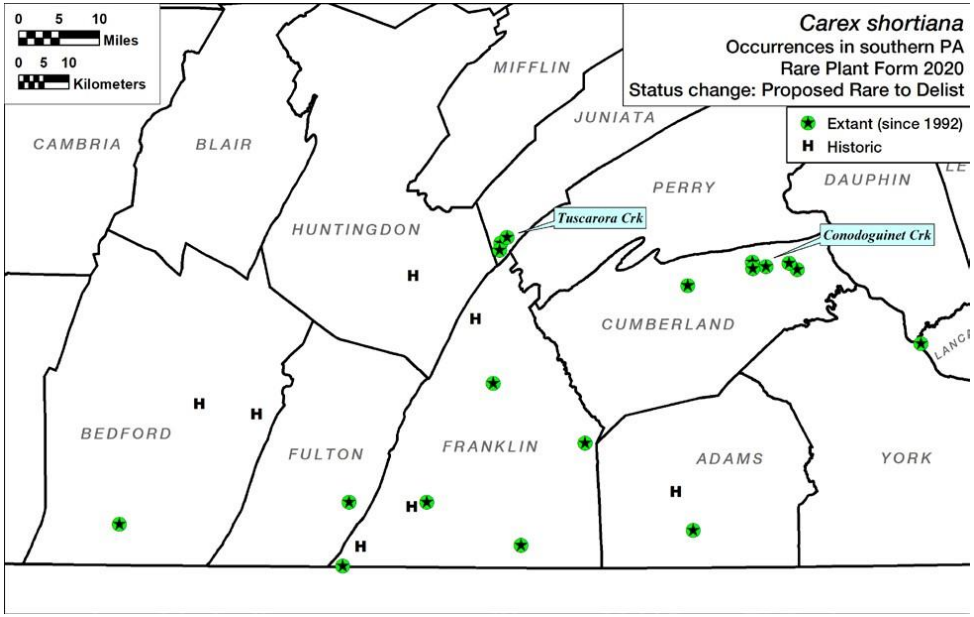
Status Justification
Many occurrences are prevalent in agricultural areas (the species is said to prefer rich, limy soils) and it appears that the populations will maintain themselves in this habitat. In active pastures, there is often no evidence of grazing. Although floras and literature report that *C. shortiana* favors calcareous substrates, it is clear that it does not occur in a specialized limestone habitat in Pennsylvania. Nor is it a species of the interior forest. *Carex shortiana* appears to be an adaptable, weedy species with a low degree of fidelity to a natural habitat, and may actually thrive in highly disturbed conditions. This tufted perennial appears to compete with invasive species in nutrient-rich habitats. It often exhibits fruiting culms and produces abundant fruits (achenes).

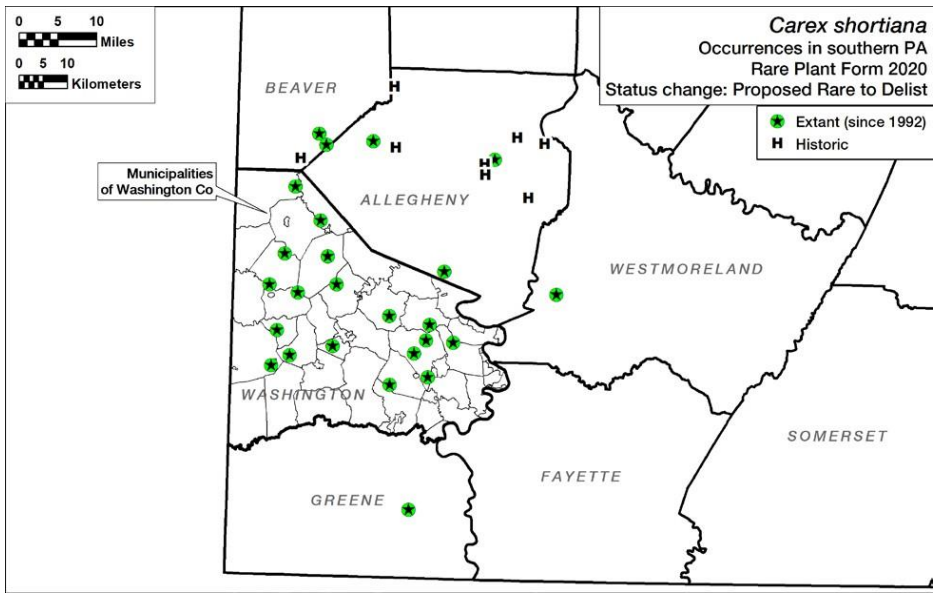
Representative associates, often weedy, include:

Sedges: *Carex granularis, C. vulpinoidea, C. frankii, C. lurida, C. stipata*
Grasses: *Poa trivialis, Phalaris arundinacea, Glyceria striata, Agrostis stolonifera, Leersia oryzoides*
Herbs: *Ranunculus repens, Verbesina alternifolia, Allium vineale*

With its unique inflorescence of densely packed, lenticular and olive to chocolate-colored fruits, Carex shortiana is relatively easy to distinguish from the myriad of sedges we encounter (i.e., easy to learn!). However, once its perigynia drop in mid-summer, it will be difficult to accurately identify. It is quite possible that many environmental surveyors/wetland delineators encounter this in its unidentifiable state while surveying in open field habitats.

Identification:
Carex shortiana is a tufted perennial grass-like plant that can reach from 8 to 35 inches in height. The flowers are held in densely packed, cylindrical spikes that become dark brown as they mature. It is notable among sedges for having chocolate-colored brown fruits and lateral spikes with female flowers at the top and scattered male flowers below.





References

- Braun, Emma Lucy. The Monocotyledoneae; cat-tails to orchids. Vol. 1. Ohio State University Press, 1967.
- Flora of North America Editorial Committee, ed. Flora of North America: Volume 23: Magnoliophyta: Commelinidae (in Part): Cyperaceae. Vol. 23. Oxford University Press, 2003.
- Harmon, Paul J., Donna Ford-Werntz, and William N. Grafton. "Checklist and atlas of the vascular flora of West Virginia." (2006).
- NatureServe. March 2014. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. (Accessed 12 January 2015).
- Pennsylvania Natural Heritage Program. 2007.
- Rhoads, A.F. and T.A. Block. 2000. The Plants of Pennsylvania: An Illustrated Manual. University of Pennsylvania Press, Philadelphia.
- Weakley, Alan S., et al. Flora of Virginia. Botanical Research Institute of Texas Press, 2013.

Checkered Rattlesnake plantain - *Goodyera tesselata* Lodd.

Current Status in PA Regulations: PE Current PABS
Status: PE
Proposed Status: PT if not PR
Coefficient of Conservatism: PA 10 (but it shouldn't be)
Proposed by: Bonnie & Joe Isaac, Carnegie Museum of Natural History

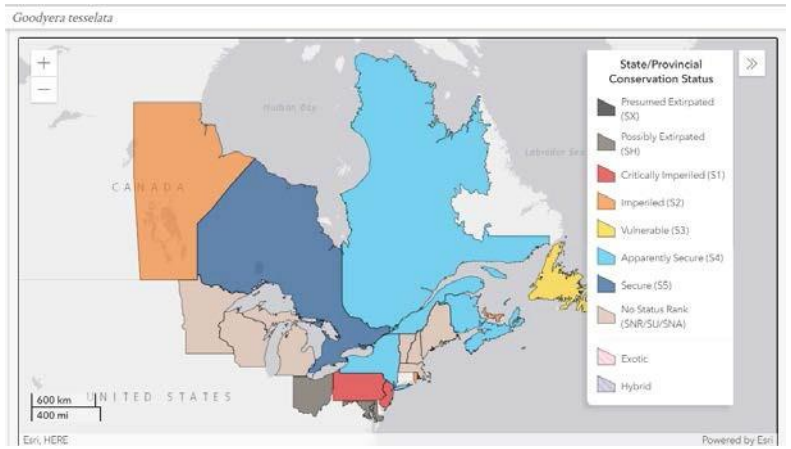
Proposal Summary

Several (at least 5) new sites for the taxon have been found in the last couple years. Some of which are very sizeable populations. We visited many of the historic sites in the last 2 years and found the plant at most of them. Herbarium records online now show a few more sites that we were not aware of when we were trying to locate the historic sites. The data for them was not supplied to us by PNHP.

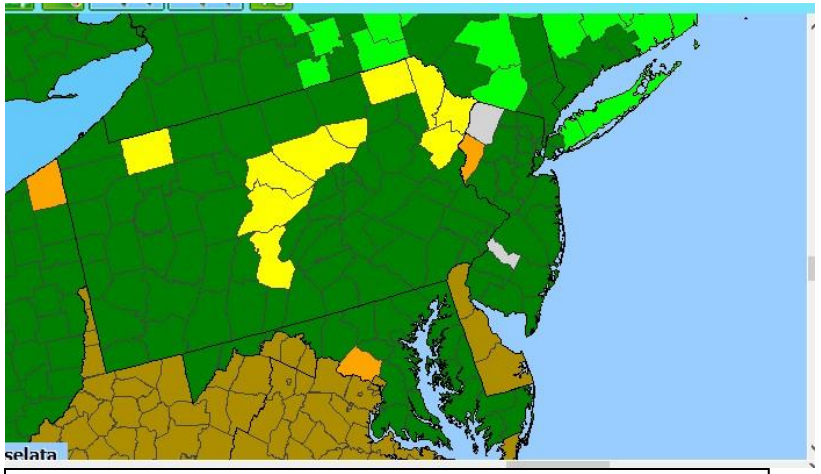
Habitat

More common in dry or moist, upland, coniferous or mixed woods, less frequent in white-cedar swamps, margins of spruce-tamarack bogs. FNA

Global distribution and regional conservation statuses



Pennsylvania Distribution:



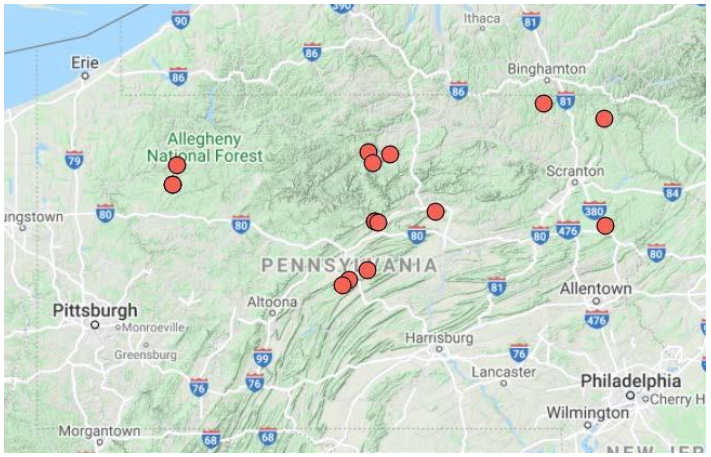
We can now add Clarion, Forest & Tioga Counties. (Not sure what the Warren County record is from We Rhoads & Klein)

Extant sites: 11

Historic sites: 22 specimen-based on herbarium records (does not include Delaware Water Gap sites, there are no specimens from the National Park) at least 18 different sites in total.

Conservation Concerns - none really, it grows on old un-reclaimed strip mine spoils, under laurel thickets and in pine plantations.

Status Justification known populations range from 1 to several hundred (possibly thousands) individuals. Many of the large populations are on protectable public land. We did not find the boundaries of several of the populations. Potential habitat is extensive in some of these areas.



Identification

Lip is not scrotiform, leaf blades uniformly with pale green on lateral veins, sepals 3-6 mm. Rostellar beak equal to or longer than body of stigma. (FNA)

Plus 3 Delaware Water Gap locations without vouchers

Blooms about 2 weeks earlier than *Goodyera pubescens*. (personal observation)

Literature Cited

Kallunki, J.A. *Goodyera*. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico [Online]. 21+ vols. New York and Oxford. Vol. 26. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101642. Accessed [26 March 2021].

Kartesz, J.T. 2020. Floristic Synthesis of North America, Version 1.0.7354.12214. Biota of North America Program (BONAP). (in press)

Mid-Atlantic Herbaria. 2021. https://midatlanticherbaria.org/portal/ Accessed [26 March 2021]

NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/. (Accessed: March 26, 2021).

Northern adders-tongue - *Ophioglossum pusillum* Raf.

Current Status in PA Regulations: N Current PABS
Status: N
Proposed Status: PE
Coefficient of Conservatism: PA 9
Proposed by: Bonnie & Joe Isaac, Carnegie Museum of Natural History

Proposal Summary
We have searched many of the historic localities to no avail.

Habitat
Ophioglossum pusillum tends to prefer open mesic sites. McMaster (1994) suggested that *1. pusillum* " ... is an early-successional species that frequently occurs in small, isolated habitat patches subject to rapid succession."–

Identification:

KEY TO *OPHIOGLOSSUM* IN PENNSYLVANIA

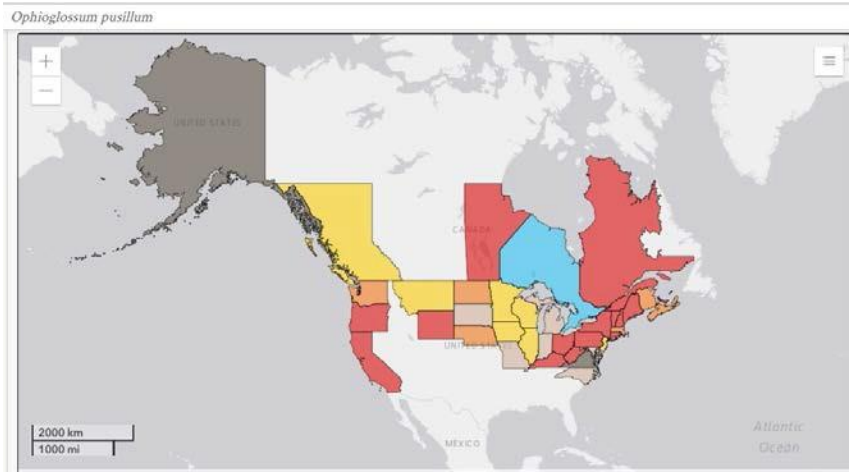
A Blade with apiculate apex, veins forming larger heavier areoles enclosing smaller areoles. Plants from thinly vegetated limestone habitats
. . . . . ***Ophioglossum engelmanii*** Prantl

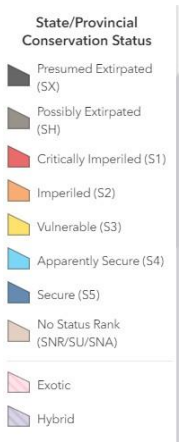
A Blade rounded at apex, veins forming areoles that enclose free included veinlets, not forming small areoles enclosed by larger areoles. Plants from non-calcareous sites . B

B Frond widest near base and tapering abruptly to the stipe; dark colored leathery persistent sheath present at base of stipe; sporangia oblong and closely crowded. Plants from humus-rich woodland areas . . . . . ***Ophioglossum vulgatum*** Linnaeus

B Frond widest near middle, gradually tapering to the base; sheath at base of stipe if present, membranous and papery; sporangia globular and more widely spaced. Plants from moist midly acid open areas and meadows
. . . . . ***Ophioglossum pusillum*** Rafinesque

Global distribution and regional conservation statuses





Pennsylvania Distribution:

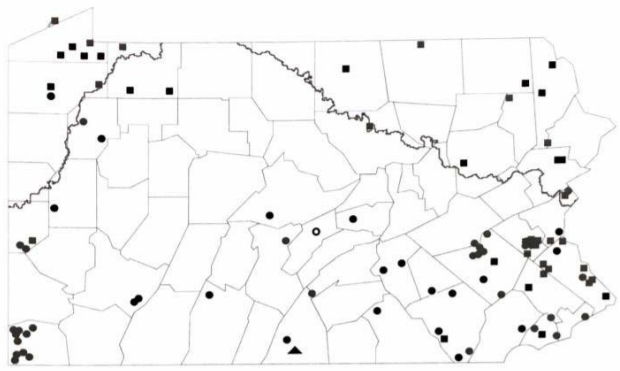


Figure 1. Localities of *Ophioglossum* specimens examined from Pennsylvania. ▲ = *O. engelmanii* ■ = *O. pusillum* ◆ = *O. vulgatum* ◇ = *O. vulgatum* without precise locality information. The thick line is the maximum southern advance of the most recent (Wisconsinan)

Extant sites: 1 or 2 known (one is currently under water at Presque Isle).

Historic sites: 34 specimen-based on herbarium records, possibly as many as 12-14 different sites. Some of these records could be misidentified. Many do not have complete plants to see all characters necessary for an accurate identification. Many are also old with vague locality data.

Conservation Concerns Status

Justification

We searched many of the historic sites to no avail. No sites were rediscovered. Only known sites are in Warren County at Tamarack Swamp and at Presque Isle which is currently submerged due to high lake levels.

Literature Cited

Isaac, B.L., C.F. Chuey & J.A. Isaac. 2004. The Genus *Ophioglossum* in Pennsylvania. Bartonia 62:45-54.

MCMASTER, R. T. 1994. Ecology, reproductive biology and population genetics of *Ophioglossum vulgatum* (Ophioglossaceae) in Massachusetts. Rhodora 96: 259-286.

NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/. (Accessed: March 26, 2021).

Creeping snowberry –*Gautheria hispidula* (L.) Muhl ex Bigelow

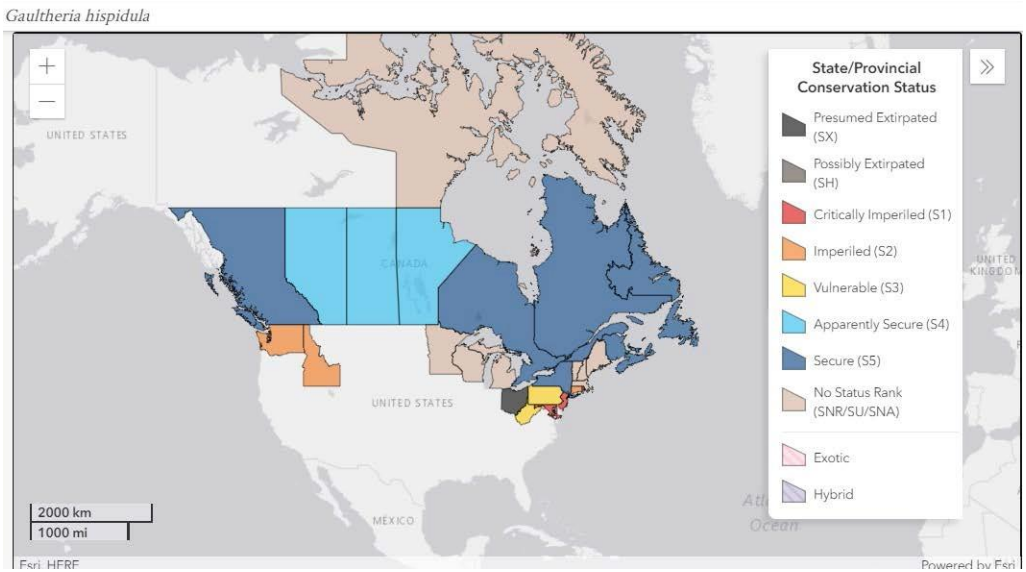
Current Status in PA Regulations: PR
Current PABS Status: PR
Proposed Status: DL
Coefficient of Conservatism
Coefficient of Conservatism: 10
Proposed by: Bonnie & Joe Isaac, Carnegie Museum of Natural History

Proposal Summary
This species is proposed to be delisted because there several large populations known. We believe more will be found as habitat is extensive. The species is globally secure, and Pennsylvania is near the southern edge of its range.

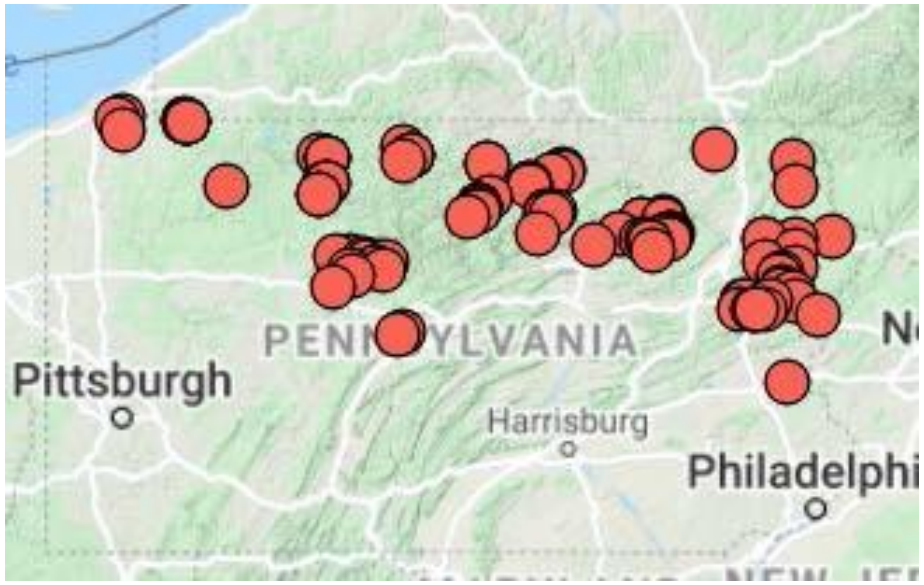
Habitat Sphagnum bogs, fens and mossy, coniferous woodland forests, and swamps, often on moss-covered or rotting logs (FNA)

Identification: creeping, mat-forming, stoloniferous; roots adventitious or fibrous. (FNA). Not readily mistaken for any other taxa.

Global distribution and regional conservation statuses



Pennsylvania Distribution:



Extant sites: 39 + known.

More populations are likely to be found.

Historic sites: 128 specimen-based on herbarium records in Mid-Atlantic Herbaria portal, 47 were collected since 2000. We did not collect it in several sites we visited in the last 2 years. There are at least 39 different sites documented via herbarium specimens in the last 30 years. There are potentially more on iNaturalist.

Conservation Concerns – No.

Status Justification – This taxon is widespread in the state and grows in many self-protecting areas. Several new populations have been found in recent years and some are quite extensive.

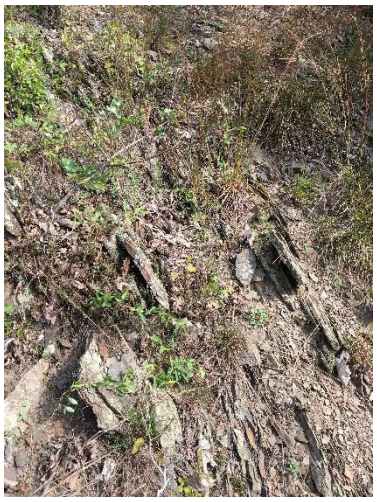
Literature Cited

Trock, D.K. *Gaultheria*. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico [Online]. 21+ vols. New York and Oxford. Vol. 8. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250065699. Accessed [26 March 2021].

Mid-Atlantic Herbaria. 2021. https://midatlanticherbaria.org/portal/ Accessed [26 March 2021]

NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/. (Accessed: March 26, 2021).

Eastern milkpea–*Galactia regularis* (L.) Britton, Sterns & Poggenb.



Current Status in PA Regulations: PX
Current PABS Status: PX
Proposed Status: PE
Coefficient of Conservatism: PA ? DE 4, WV 7, OH 9
Proposed by: Bonnie & Joe Isaac, Carnegie Museum of Natural History

There were 6 specimens identified as *Galactia regularis* from Pennsylvania collected between the years 1862 & 1867. We now know that *Galactia regularis* was mistakenly called *Galactia volubilis* so we can add the 16 historic specimens that were previously believed to be *G. volubilis* giving us a total of 22 historic specimens. These were collected between 1862 and 1941.

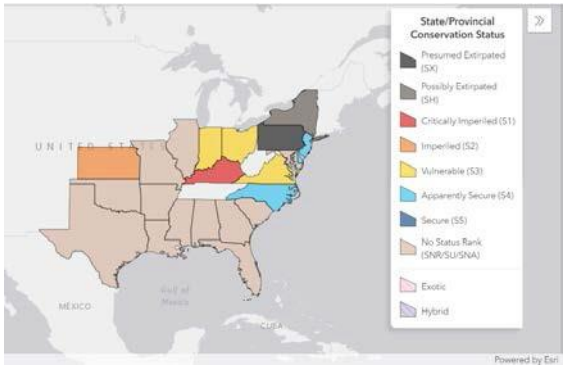
Proposal Summary
This species is proposed as Pennsylvania Endangered because a population has been discovered in Fulton County. When a Pennsylvania Extirpated species if found it automatically becomes Pennsylvania Endangered. The species is globally secure and at its northern range edge in Pennsylvania.

Habitat

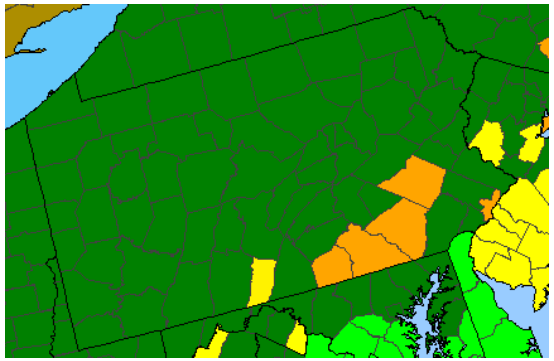
- PA Flora: "in dry sandy soil."
- Nesom (2015) - Oak and pine-oak woods, woodland borders, fence rows, low fields, pond and stream margins, ditches, roadbanks, open disturbed sites.

Identification: Perennial herbs, from an elongate woody taproot. Stems climbing-twining, herbaceous, moderately to densely hirsute to hirsute-villous with spreading-deflexed hairs. Leaflets 3, blades elliptic to broadly elliptic, oblong-elliptic, or lanceolate-elliptic, (10–)14–40(–50) x (5–)10–21(–25) mm, herbaceous, sparsely strigose abaxially and often glaucous, minutely and sparsely short-strigose adaxially, veins not raised, apices obtuse to rounded or shallowly retuse. Inflorescence axis 10–70(– 150) mm, flowers solitary and axillary or 2–7(–9) in a reduced pseudoraceme on the distal 1/2–3/4 of the axis, often fasciculate on the raceme. Calyces 4–6 mm, hirsute-villous. Corollas 7–10 mm, pink to rose, light violet, pink-purple, rose-purple. Fruits 20–50 x 3–5 mm, straight, vestiture. Seeds 5–9.

Global distribution and regional conservation statuses



Pennsylvania Distribution:



Galactia from Mid-Atlantic Herbaria

Extant sites: 1 known.

Historic sites: 22 specimen-based on herbarium specimens, possibly as many as 7 different sites, could be as few as 4. Most area really old with vague locality data.

Conservation Concerns Unknown

Status Justification

This species, had not been seen in Pennsylvania since 1941. It is alive and well in Fulton County. PX automatically becomes PE when found.

Literature Cited

Kartesz, J.T. 2020. Floristic Synthesis of North America, Version 1.0.7354.12214. Biota of North America Program (BONAP). (in press)

NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/. (Accessed: March 26, 2021).

Nesom, G.L. 2015. Taxonomy of Galactia (Fabaceae) in the USA. Phytoneuron 2015-42: 1–54. Published 15 Jul 2015. ISSN 2153 733X

Downy milkpea–*Galactia volubilis* (L.) Britton

Current Status in PA Regulations: PX

Current PABS Status: PX

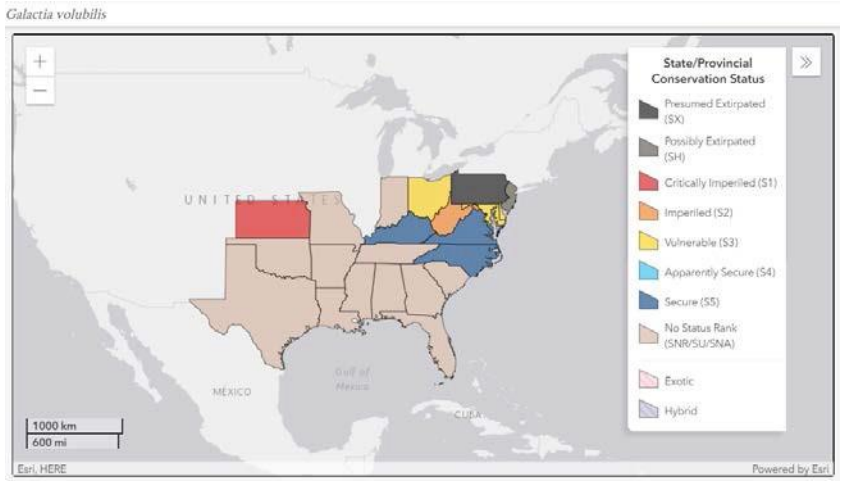
Proposed Status: DL

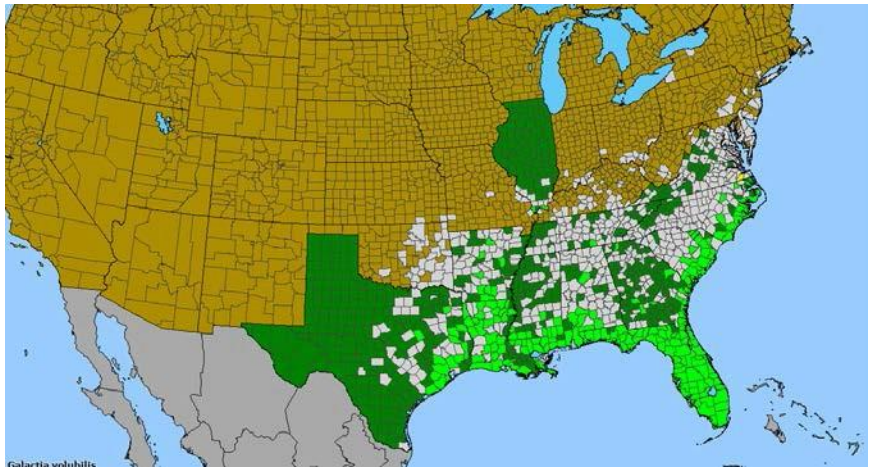
Coefficient of Conservatism: NA

Proposed by: Bonnie & Joe Isaac, Carnegie Museum of Natural History

Proposal Summary

This species is proposed to be delisted because the taxonomy of this group was traditionally confused. Nesom (2015) We now know that what we were calling *Galactia volubilis* is *Galactia regularis*.





Habitat

PA Flora: "in dry thickets and edges."

Identification:

20. Leaflets mostly elliptic to broadly elliptic, (5–)10–21(–25) mm wide; stems moderately to densely hirsute to hirsute-villous with spreading-deflexed hairs; corollas 7–10 mm ..... 13. **Galactia regularis**
20. Leaflets mostly oblong to lanceolate-oblong, 5–15(–17) mm wide; stems moderately to sparsely strigose with tightly to loosely appressed, retrorse hairs, sometime glabrate; corollas 9–14 mm 14. **Galactia volubilis**

The distinction between *Galactia volubilis* and *G. regularis* is subtle but examination of hundreds of collections provides a basis for considering them separate entities. The two appear to be mostly distinct in their area of sympatry (*G. regularis* has a much wider geographic range), but intermediates are encountered. Flowering times coincide and there is overlap in habitat, allowing opportunities for hybridization, but the relative stability of the two forms suggests that some kind of reproductive isolation is in effect, perhaps post-zygotic.

The most prominent distinction between the two species is in leaflet shape, which usually provides evidence for a reasonable 'first sort' to species. Figures 7a, b, and c show a range of variation within each species, summarized in key couplet 20. Additionally, the leaves of *Galactia volubilis* tend to be thinner and glaucous on the abaxial surface.

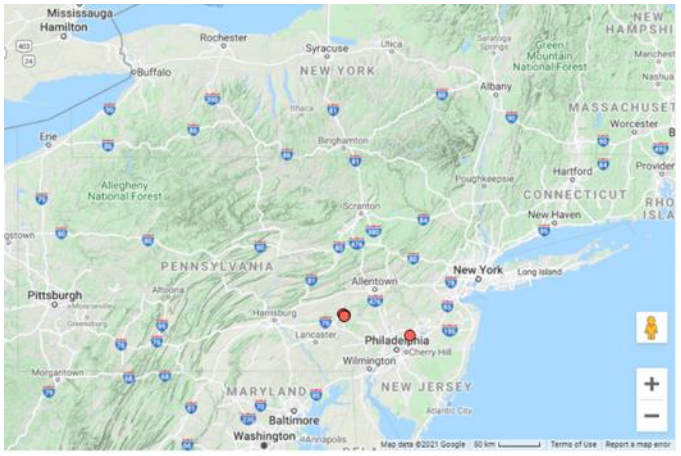
Duncan (1979) recognized that the types of *Galactia regularis* and *G. glabella* were different species. *Galactia regularis* is the name of the species identified for nearly 100 years as *G. volubilis*, while *G. glabella* refers to the narrower-leaflet, larger-flowered, twining plants but is a synonym of *G. volubilis*. Usage of the name *G. volubilis* took a sudden turn when Duncan (as followed here) concluded that it applied to the narrower-leaflet species (here including *G. macreei* and *G. glabella*).

Figure 4. Lectotype (Reveal & Jarvis 2009) of *Hedysarum volubile* L. Plate 143, in Dillenius, Hort. Eltham. 1: 173, t. 143, fig. 170. 1732. Leaflet shape of the illustrated plants is unequivocally that of *Galactia volubilis* as treated here (see Figs. 7a, b, c), but the stem vestiture is more like that of *G. regularis*.


Figure 3. Lectotype of *Dolichos regularis* L.

Pennsylvania Distribution: NONE

Status Justification: This species does not exist in Pennsylvania and never did.



Galactia volubilis from Mid-Atlantic Herbaria

Application of the names *Galactia volubilis*, *G. regularis*, *G. macreei*, and *G. glabella* has been controversial and inconsistent but typifications outlined in the present study strongly constrain the taxonomy. Duncan's assessment (1979) of the two twining species was mostly correct. *Galactia regularis* refers to the species widespread in the eastern USA, with leaflets mostly elliptic to broadly elliptic, relatively small flowers, and twining stems hirsute-villous with deflexed hairs. *Galactia volubilis* (with *G. glabella* and *G. macreei* as synonyms) is the species with characteristically narrowly oblong leaflets, slightly larger flowers, and twining, sparsely antrorsely strigose to glabrate stems (see Figs. 7a, b, and c for leaflet variability in *G. regularis* and *G. volubilis*) — it is distributed mostly on the coastal plain from North Carolina to Georgia and Floirda, then westward to Arkansas, Louisiana, and Texas. *Galactia brachypoda* (= *G. glabella* sensu Duncan 1979) is the species with relatively larger flowers and procumbent, short-strigose stems — it is a coastal plain species from Maryland and Virginia to Alabama.

Usage of the names

Since the two Linnaean names were brought into use in *Galactia* (*G. regularis* in 1888, *G. volubilis* 1894), use of *G. volubilis* has been used in most instances to identify the species of twining plants with small flowers and deflexed-hirsute-villous stems. In making the combination for *G. regularis*, Britton et al. placed *G. glabella* (apparently in the sense of *G. brachypoda* here) in its synonymy; six years later he brought in *G. volubilis* (in the sense of *G. regularis* here).

Literature Cited

Kartesz, J.T. 2020. Floristic Synthesis of North America, Version 1.0.7354.12214. Biota of North America Program (BONAP). (in press)

NatureServe. 2021. NatureServe Explorer [web application]. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org/. (Accessed: March 26, 2021).

Nesom, G.L. 2015. Taxonomy of Galactia (Fabaceae) in the USA. Phytoneuron 2015-42: 1–54. Published 15 Jul 2015. ISSN 2153 733X.

Crawford's sedge – *Carex crawfordii* Fernald.

Current Status in PA Regulations: TU
Current PABS Status: PE
Proposed Status: WL
Coefficient of Conservatism: 9 (Pennsylvania), 4 (Michigan)
Proposed by: J. McPherson, PNHP/WPC

Proposal Summary

This species is proposed for the Watch List. Although only a single location is known for the state, WL seems more appropriate than PE because nativity cannot be conclusively resolved, and it is extremely successional in nature, making environmental review a poor tool for its conservation.

Nativity concerns:

We have two main sources of information about nativity of the single known location: the specimen label, and Rob Naczi's published assessment of its nativity.

Specimen label (1996 Naczi collection): "Weedy, moist area at edge of woods of RR yard"

Excerpt from Naczi, R. F., & Thieret, J. W. (1996). Additions to the flora of Bradford County, Pennsylvania. *Bartonia*, (59), 81-85.

> "Like *C. texensis, C. crawfordii* is native in the eastern United States, but further north (mostly north of Pennsylvania). Though we collected it with several introduced species in a disturbed area at the edge of a railroad yard, it is likely native to Pennsylvania. Evidence for this contention includes (1) the frequent occurrence of native populations of *C. crawfordii* in disturbed areas (A.A. Reznicek pers. comm.), (2) its occurrence in three counties of nearby New Jersey, all farther south than our locality (Hough 1983), and (3) its occurrence in Tioga County, New York, which borders Bradford County on the north (New York Flora Association 1990)."

Habitat

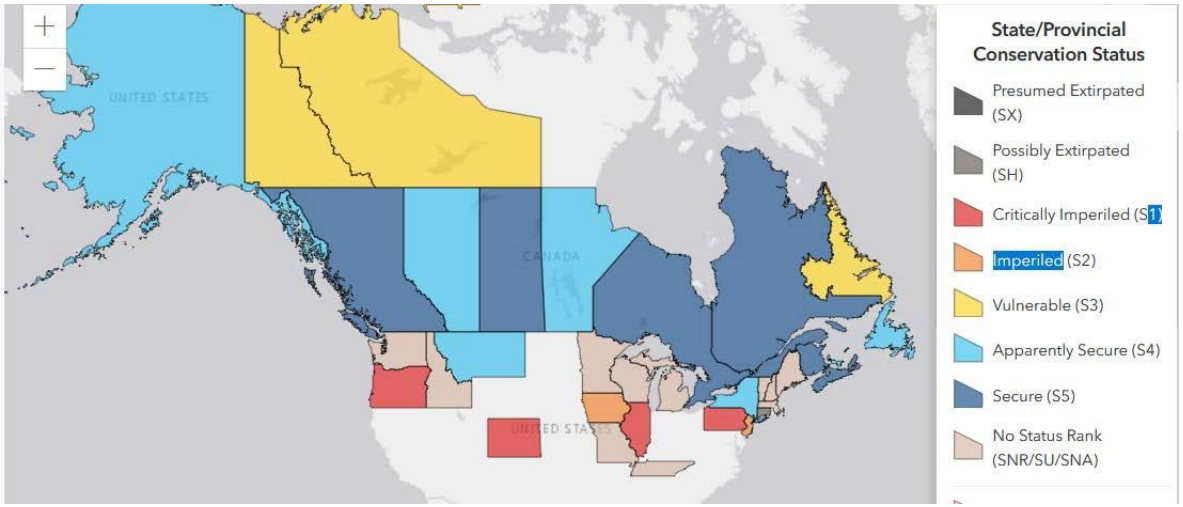
- Michigan flora: "Usually on wet sandy shores or in meadows, ditches, and marshy ground, occasionally in forests, especially in clearings and along roads; and on dry sandy ridges (especially near Lake Superior). Apparently always in acidic soils." CoC = 4.
- New York Flora Atlas: "Most common in the northern parts of New York. Gravel and sand mines, roadsides, opening and clearings in forests, and thickets. Mostly in dry to mesic sandy or coarse soils."
- Comments from recent correspondence with Rob Naczi (in response to Steve proposing the idea of putting it on the Watch List rather than into the regs as Pennsylvania Endangered):

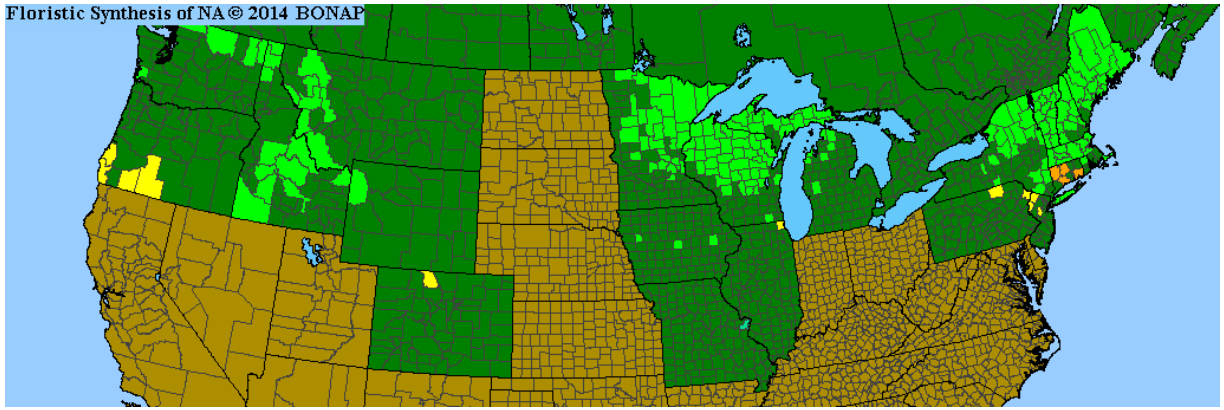
  "Carex crawfordii is by nature an r-selected species (relatively short life cycle, occupies disturbed habitats, populations fluctuate in size and locality, etc.). Consequentially, this species often behaves as a weed. Again, this is the nature of the species, including in the core of its geographic range.

So, determining the native/introduced status of peripheral populations of this and similar species is difficult. I like to be cautious in such situations, but your approach is reasonable, especially your willingness to reinstate consideration for protection. So, I do support your decision."

Global distribution and regional conservation statuses

A primarily northern species, whose southern range extent in Eastern North America is Bradford Co, PA; some northern counties in New Jersey; and Long Island, NY. It is ranked S2 in New Jersey, S4 in New York, and not present in any other adjacent states. In the main portion of its rank it is generally considered secure, unranked (which often means it is secure enough no one has bothered assigning a rank), or S4 in some cases. However, it is likely underdocumented, as it is inconspicuous and part of a very difficult genus of sedges that many botanical workers do not even attempt to ID. It is only reliably identifiable with mature fruits, a somewhat narrow portion of the growing season.





Pennsylvania Distribution:

Extant sites: 1 known, Bradford County. No population estimate recorded.

Historic sites: None.

Conservation Concerns

- Preference for open wooded habitat or disturbed areas, which can close in due to succession. As *Carex crawfordii* was last documented at the single known site in 1996, it is a legitimate question whether it even still persists at this time.
- Major disturbances or development at the single known site, adjacent to a RR yard. As a disturbance-adapted taxon some level of disturbance would likely benefit the species, but total conversion of habitat could eliminate it.

Status Justification

We propose assigning Watch List status to *Carex crawfordii* at this time, to demonstrate continued interest in any further reports of the species in Pennsylvania, and maintain data on the currently known location in the Biotics database, without it affecting environmental review. It does not seem to make sense to assign a legal status of PE to a taxon that is questionably native, with no particular hope of resolving that question, and which also tends to occupy early-successional or somewhat disturbed habitats, and to be ephemeral on the landscape; these factors combine such that environmental review is a poor tool to conserve it, and it does not meet the bar for assigning PE at this time. If more populations are found, especially in cases where nativity can be more conclusively established, we are happy to revisit the status.

Identification: Ovales group of *Carex*; key from Michigan flora

2. Pistillate scales (or most of them) both shorter and narrower than beaks of perigynia, so the mature perigynia are largely exposed apically; anthers various.
    6. Pistillate scales in the middle or lower portions of the spikes acuminate with a subulate tip or awned.
        7. Perigynia 2.6–4 times as long as wide, the bodies lanceolate; 0.9–2 mm wide.
            8. Perigynia 0.9–1.2 mm wide; achenes 0.6–0.8 mm wide; inflorescences dense, lowest inflorescence internodes 2–3 (–5) mm long. *Carex crawfordii*, in part.

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Naczi, R. F., & Thieret, J. W. (1996). Additions to the flora of Bradford County, Pennsylvania. *Bartonia*, (59), 81-85.

Weldy, Troy, David Werier, and Andrew Nelson. 2021 New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York

Missouri gooseberry – *Ribes missouriense* Nutt.

Current Status in PA Regulations: PE
Current PABS Status:
Proposed Status: none
Coefficient of Conservatism: none assigned
Proposed by: Steve Grund / J. McPherson, PNHP/WPC

Proposal Summary
This species is proposed to be delisted from PE to no status, because the balance of evidence suggests it is not native in Pennsylvania, and furthermore it does not appear to occupy particularly conservative habitat, so even if there is a chance it were native, it doesn't seem to need environmental-review based conservation measures to ensure its future viability.

Nativity concerns:

There is some ambiguity regarding the eastern limit of the native range, but most sources judge it to be non-native east of Ohio.

- Flora of North America states: "The eastern North American populations in Connecticut, Maryland, New Jersey, Pennsylvania, Virginia, and West Virginia are probably escapes from cultivation."
- Michigan Flora on line states: "presumably not native quite this far east and first collected in Van Buren County in 1906" (1906 is late for a first collection in SW Michigan).
- Kartesz has it mapped as non-native in all states east of Ohio.
- In Pennsylvania, the earliest specimen listed in Symbiota was collected in 1965 by Wherry in Cumberland County (although, there are 4 records in Symbiota representing 3 unique sites in Adams, Cumberland, and Franklin Counties; there are 4 dots in the Rhoads and Klein atlas, in Adams, Cumberland, Chester and Union Counties; the Academy lists many Ribes as fully digitized, but doesn't list any Ribes missouriense. Per Tim Block, the Chester Co specimens were redetermined to R. rotundifolia.)(Rhoads and Klein 1993)
- Flora of Virginia calls it a waif. (Weakley, Ludwig, and Townsend 2012)
- Maryland – Chris Frye looked at the single specimen from a single specimen and thinks it is A) probably *Ribes rotundifolium*, B) not extant (now a College Park subdivision), and C) so far out of range it's likely introduced even if it is *Ribes missouriense*.
- West Virginia – listed as S1 per NatureServe; Jim Vanderhoorst expressed doubts about the identity of some of their specimens, but thinks at least one is correctly identified; did not weigh in on nativity.
- New Jersey: S3 in NJ. Kathleen Walz says it is native there.
- New York: Although NatureServe lists no status in NY, the New York Flora Atlas says "Not Native, Not Naturalized, SNA (State Rank)."
- Flora Novae-Angliae: lists as non-native. (Within the range of the flora, GoBotany shows it present only in Fairfield County, Connecticut).

My best guess from the overall distribution is that it is probably native in western Ohio and maybe western WV, but likely introduced further east in those states.

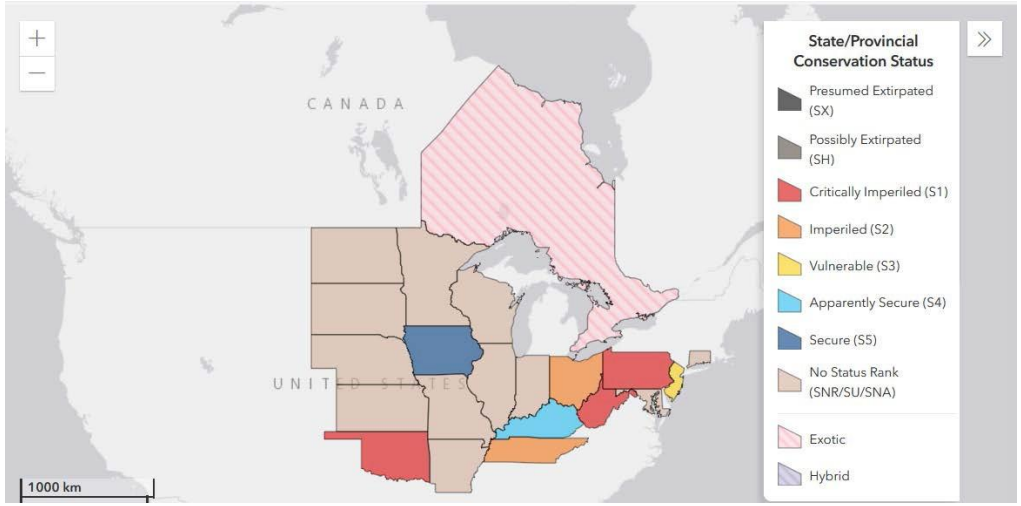
My feeling is that this is one where we might want to err on the side of not providing protection even if there is a small chance that it might be native this far east, unless anyone is finding it in high-quality habitats. The Front Royal habitat might or might not fit that description.

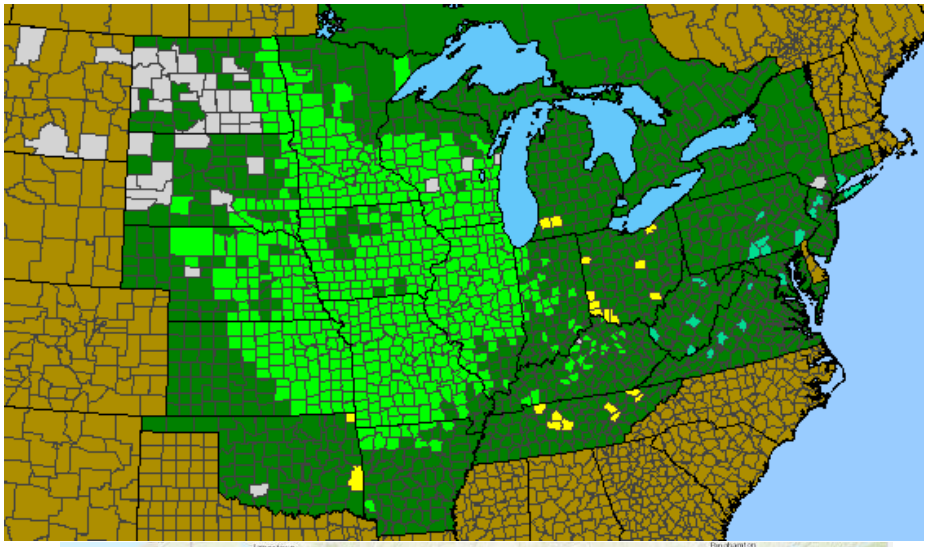
Additional comments from Johnny Townsend (Flora of VA co-author): "We consider it introduced in the 5 counties where we have it including Warren County, which contains Front Royal. I was not aware that the Harvard specimen might be the whole reason for the Warren Co. dot, so I will ask my colleagues at the atlas about the thought process there. It may just be that nobody here thinks a native occurrence is possible in VA, even the older ones."

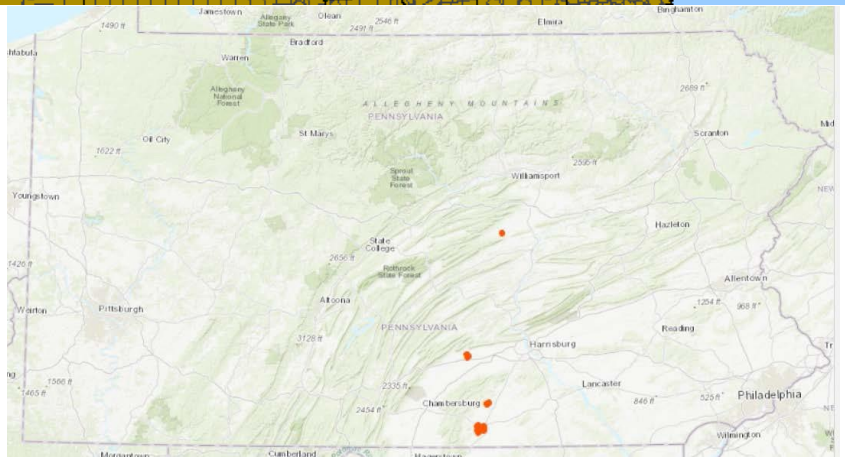
Habitat

Flora of North America: "Upland woods, thickets, prairie ravines, pastures…. In the Midwest, *Ribes missouriense* often is an indicator of woodlands that have experienced grazing pressure (G. Yatskievych, pers. comm.)"

Global distribution and regional conservation statuses







Pennsylvania Distribution:

Extant sites: 11; 6 are at Gettysburg Battlefield.

Historic sites: None.

Conservation Concerns

In the unlikely event that the species is native to Pennsylvania, it also appears to be secure within the state due to the large number of populations at Gettysburg Battlefield. Six of the eleven known sites are at Gettysburg Battlefield, in habitats such as open fields and campgrounds, with hundreds of individuals across the park. Park management is likely to maintain this habitat for the foreseeable future, so the population here is judged to be secure.

Status Justification

Ribes missouriense should be assigned a PABS status of non-native and no legal status, because it is generally regarded as non-native in the scattered eastern portion of its range.

Identification (per Michigan Flora): **"**This species generally has stouter and longer nodal prickles than the common *R. cynosbati,* but vigorous sprouts of *R. cynosbati* can rarely have nodal prickles as large as *R. missouriense*."

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Walz, Kathleen. Personal communication, 4/5/2021.

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Weakley, Alan S., J. Christopher Ludwig, and John F. Townsend. 2012. "Flora of Virginia." Edited by Bland Crowder. *Foundation of the Flora of Virginia Project Inc., Richmond. Fort Worth: Botanical Research Institute of Texas Press.*

Harbinger of Spring – *Erigenia bulbosa* (Michx.) Nutt.

Current Status in PA Regulations: PT
Current PABS Status: PR
Proposed Status: PR
Current S-rank: S4
Calculated S-rank: S3
Assigned S-rank: S3
Coefficient of Conservatism: 6
Proposed by: S. Schuette, PNHP/WPC

Proposal Summary

This species is proposed as Pennsylvania Rare. The current S4 rank was given without having run through the rank calculator, but actually comes out as an S3 when all available population information is taken into account. There are a moderate number of populations (42) and numerous individuals (10,000-30,000) currently known. The numbers currently known are consistent with Pennsylvania Rare., but we believe more will be found as habitat is only moderately specialized and fairly abundant. Furthermore, the species is globally secure and nearly at its northern and eastern range edge in Pennsylvania.

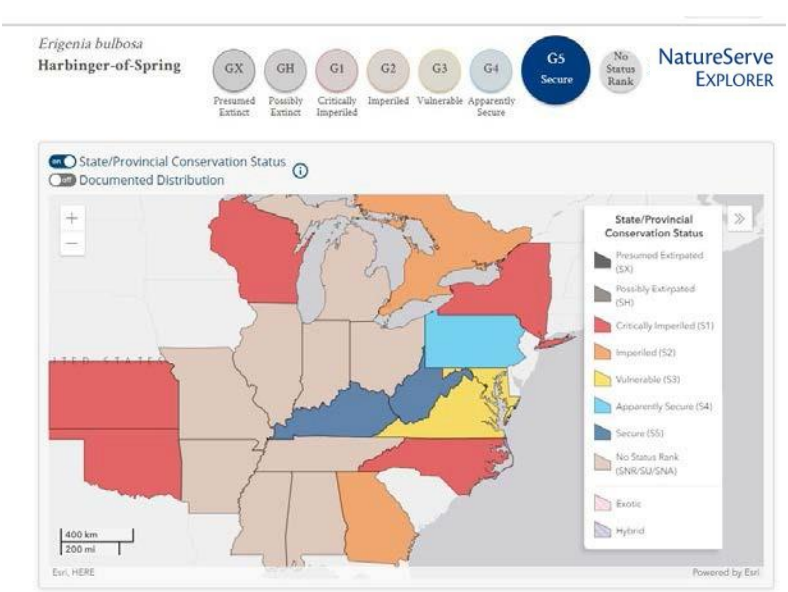
Habitat

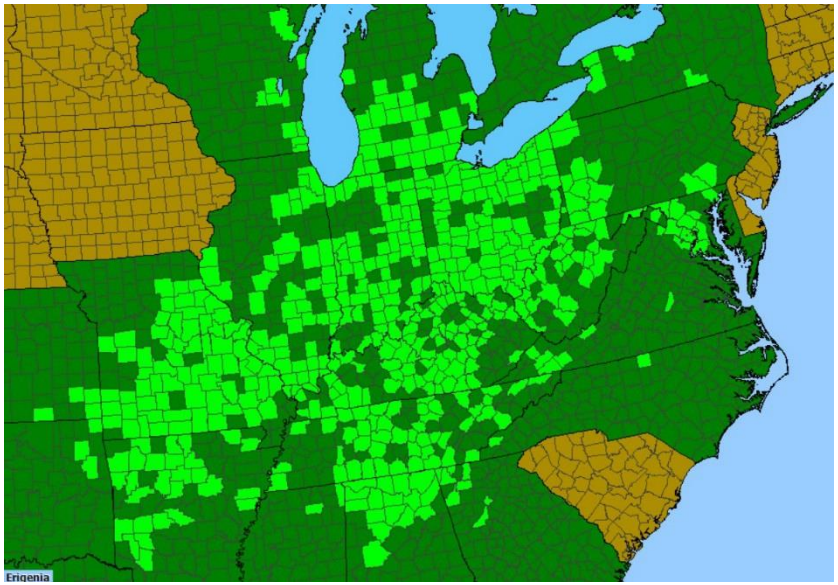
- PA Flora: "Seeps and spring heads on wooded slopes."
- Flora of Virginia: "Rich soils of well-drained floodplain forest and mesic slope forests at low elevations"
- Site descriptions often reference rich floodplain forests, lower mesic hardwood forest slopes, rich forested hardwood slopes; Variable forests types; mesic, to oak-mixed hardwood, to sugar maple, beech, tuliptree.

Identification: floodplain to lower mesic slopes; ternately compound leaves; distinctive white flower with dark maroon anthers that bloom from March to April.

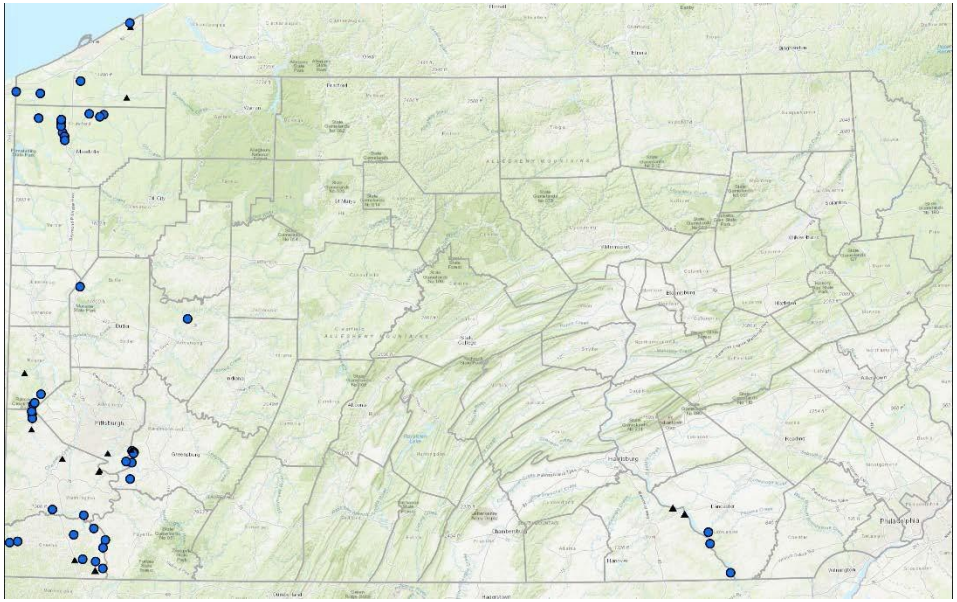
Global distribution and regional conservation statuses

A species of the Midwest in the Interior River Valleys and Hills, Ozark Plateau, Eastern Corn Belt Plains, Interior Plateau, Erie Drift Plain, and Western Allegheny Plateau ; ranked S1 in New York, S3 in Maryland and Virgnia, S4 in West Virginia, and otherwise either secure or unranked (NatureServe 2021) .





Pennsylvania Distribution:



Extant sites: 42 known, with almost all in the in the west and southwest region. Population estimates were recorded for most sites (39 of 42), and vary widely in number, estimates range from <10 - >10,000 plants, but average ~200- 600 individuals. Total number of individuals at known extant sites is 10,000- 30,000.

More populations are likely to be found, as the habitat is only moderately specialized and not particularly rare, but because of partial ER consideration new populations aren't reported and entered into Biotics from the western part of the state.

Historic sites: 10 specimen-based historic occurrences in Biotics, and 3

populations presumed destroyed due to logging and other development activity.

Conservation Concerns

- Rich, well-drained soils found in floodplains and mesic forests that are often logged or converted for other land uses such as agriculture, livestock grazing.
- Long period from germination to reproduction. Plants are vegetative for 6-7 years before producing flowers (Buddell and Thieret, 1985). Develop bulbs after year 2, which only produce a single stem. Older bulbs produce up to nine stems.
- Very limited dispersal
- Low genetic diversity, high levels of inbreeding (McDonnell et al. 2021)
- Invasive species problematic in rich floodplains and mesic forests; this species is diminutive and easily outcompeted.
- Valuable food source for early emerging bees and flies (Dailey and Scott 2006)

Status Justification

This species has a moderate number of populations and many individuals known in Pennsylvania. The numbers of populations and individuals currently known is in the range usually considered for Pennsylvania Rare. It is likely more populations will found, but won't exceed the numbers needed to push this to watchlist status (S4). Currently the eastern populations are considered in Environmental Review and given protection, but western populations are not considered for surveys and protection due to the numbers and sizes. However, it's likely that all populations are genetically isolated and have low genetic diversity with high levels of inbreeding. The habitats are potentially under threat from changes in land use and can have a high number of invasive species that out-compete Erigenia. For these reasons, it is recommended that a status of Pennsylvania Rare is warranted and that Environmental Review conservation measures be applied evenly to all populations.

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Weakley, Alan S., J Christopher Ludwig, John F Townsend, Bland Crowder. 2012. Flora of Virginia. Fort Worth, Texas. Botanical Research Institute of Texas Press.

Bear's foot – *Smallanthus uvedalia* (L.) Mack.

Current Status in PA Regulations: N
Current PABS Status:
Proposed Status: DL to Watchlist (WL)
Current S-rank: S3
Calculated S-rank: S4
Assigned S-rank: S4
Coefficient of Conservatism: 4
Proposed by: S. Schuette, PNHP/WPC

Proposal Summary
This species is proposed to Delist. This species has shown affinity to newly available disturbed habitats along rights of way and other anthropogenic habitats. Nearly all of the occurrences are in Greene County and associated with pipeline and powerline rights of way. There are a moderate number of extant populations (41) and individuals (2,500-5,000) currently known for the state. The numbers currently known are consistent with Pennsylvania Rare, but we believe more will be found as anthropogenic habitat is abundant. Furthermore, the species is presumed globally secure and nearly at its northern and eastern range edge in Pennsylvania.

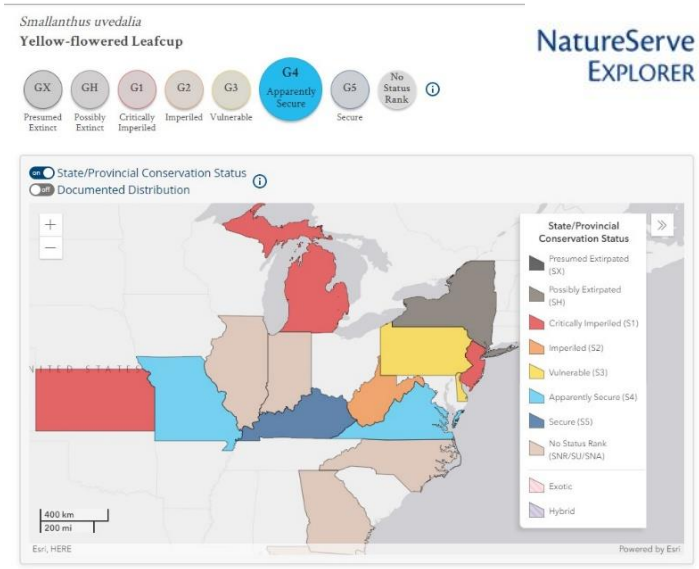
Habitat

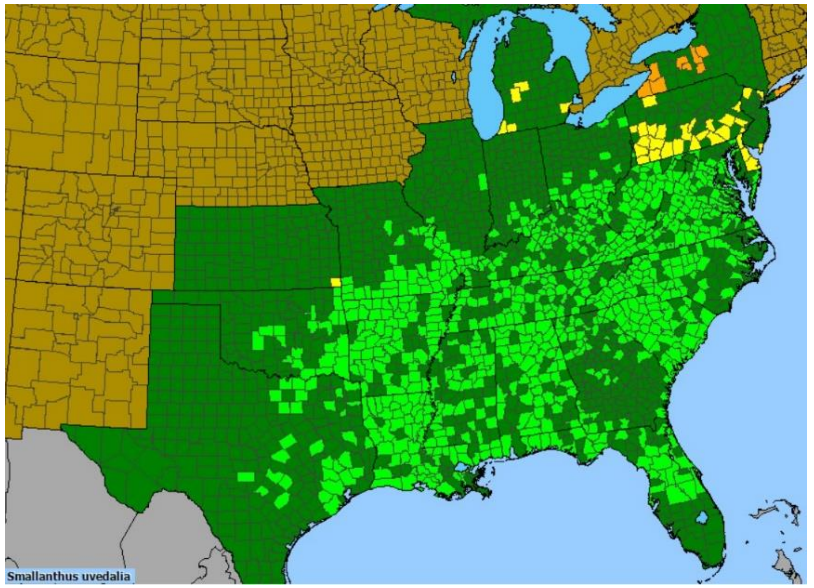
- PA Flora: "ravines, thickets, and river or stream banks"
- Flora of Virginia: "Floodplain forests, mesic upland forests, dry calcareous forests and woodlands, moist clearings, and old fields"
- Site descriptions often reference roadsides, rights of way, pastures, open thickets, and disturbed forests and woodlands

Identification: leaves ovate or deltoid-ovate, palmately lobes; ray florets yellow; achenes impressed striate

Global distribution and regional conservation statuses

A species of the Southeast and Mid-Atlantic regions ranked S1 in New Jersey, S2 in Maryland and West Virginia, S4 in Virginia, but otherwise unranked (NatureServe 2021) .

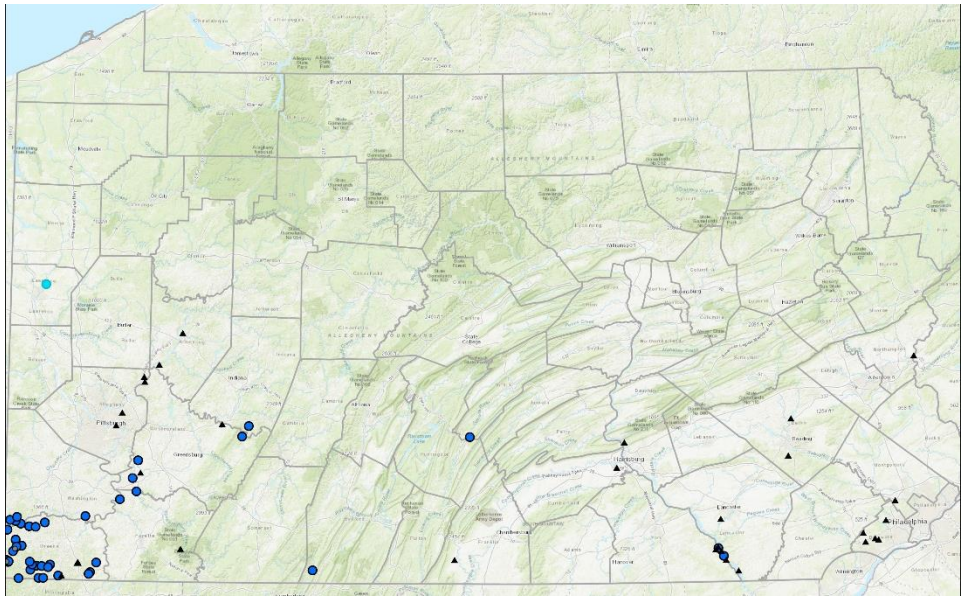




Pennsylvania Distribution:

Extant sites: 41 known, with almost all in the in the southwest and south-central regions. Population estimates were recorded for most sites (33 of 41), and vary widely in number, estimates range from <10 - ~1000 plants, but average ~50-150 individuals. Total number of individuals at known extant sites is 2,500-5,000.

More populations are likely to be found, as early successional, anthropogenic habitat is increasingly more common. rare, but because of partial ER consideration new populations aren't reported and entered into Biotics from the western part of the state.



Historic sites: 30 specimen-based historic occurrences in Biotics, 2 populations transplanted to avoid extirpation due to pipeline right of way construction, and 1 population presumed extirpated.

Conservation Concerns

- Very few natural occurrences are small and widely scattered in mesic, low forested slopes with closed canopy where it was once more open and floodplain edges that may succeed to closed canopy forests.
- Right of way and roadside maintenance that employs herbicide will impact populations.

Status Justification

This species has a moderate number of populations and individuals known in Pennsylvania. The numbers of populations and individuals currently known is in the range usually considered for Pennsylvania Rare, but there are few threats to the species. It is likely more populations will be found in disturbed anthropogenic habitats, but less likely in natural floodplain edge habitats. The so watchlist status (S4) is warranted to keep track of new occurrences in natural habitats.

Literature Cited

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Weakley, Alan S., J Christopher Ludwig, John F Townsend, Bland Crowder. 2012. Flora of Virginia. Fort Worth, Texas. Botanical Research Institute of Texas Press.

Wild Senna – *Senna marilandica* (L.) Link

Current Status in PA Regulations: TU
Current PABS Status: PR
Proposed Status: DL to Watchlist (WL)
Current S-rank: S3
Calculated S-rank: S4
Assigned S-rank: S4
Coefficient of Conservatism: 4
Proposed by: S. Schuette, PNHP/WPC

Proposal Summary

This species is proposed to Delist from Tentatively Undetermined. This species has shown affinity to newly available disturbed habitats along rights of way and other anthropogenic habitats. Nearly all of the occurrences are in Greene County and associated with pipeline and powerline rights of way. There are a moderate number of populations (29) and individuals (1,500-1,700) currently known for the state. The numbers currently known are consistent with Pennsylvania Rare, but we believe more will be found as anthropogenic habitat is abundant. Furthermore, the species is globally secure and nearly at its northern and eastern range edge in Pennsylvania.

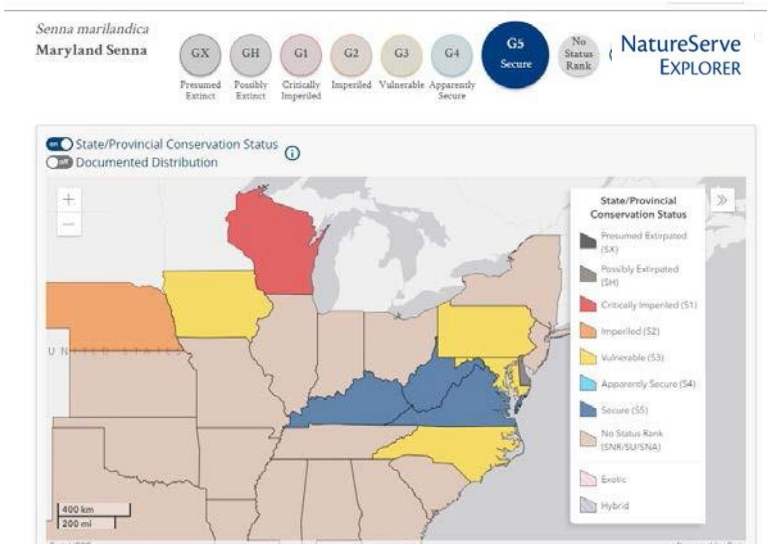
Habitat

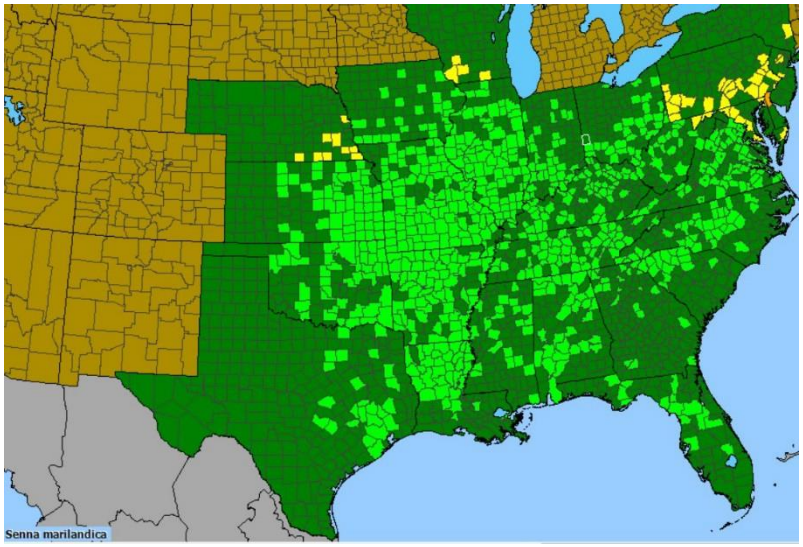
- PA Flora: “Dry roadsides and thickets”
- Flora of Virginia: “Dry rocky woodlands, barrens, clearings, and bluffs; occasionally in more mesic habitats”
- Site descriptions often reference old fields, rights of way, pastures, xeric wooded hilltop, floodplain forest

Identification: legume 8-11mm wide, with segments much shorter than broad, glabrous; petiolar gland usually broadest at or below middle

Global distribution and regional conservation statuses

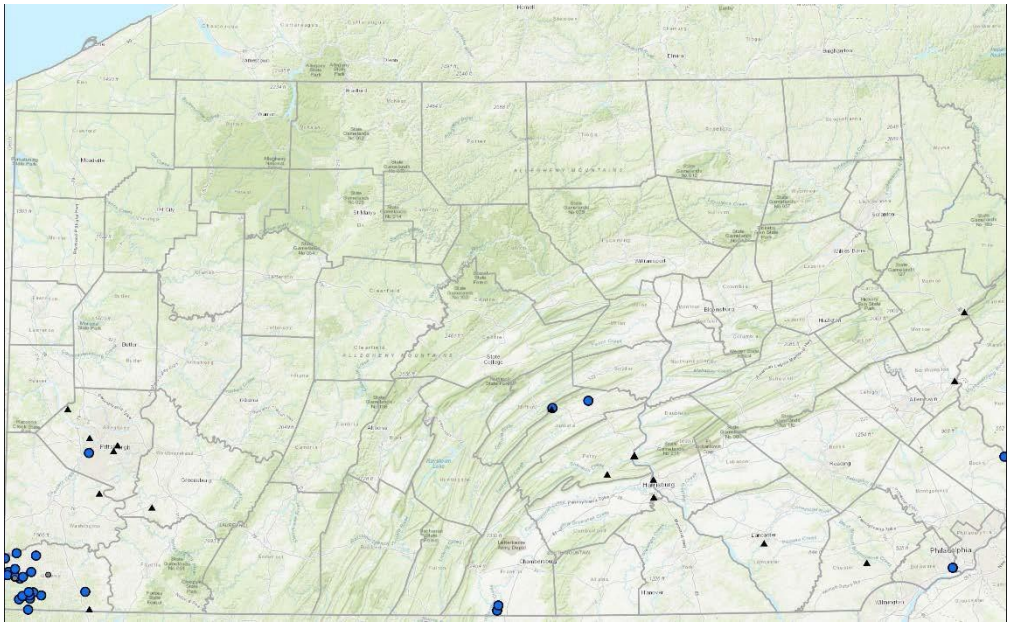
A species of the Midwest in the Interior River Valleys and Hills, Ozark Plateau, Eastern Corn Belt Plains, Interior Plateau, and





Western Allegheny Plateau; ranked S3 in Maryland, S4 in West Virginia and Virginia otherwise unranked (NatureServe 2021) .

Pennsylvania Distribution:



Extant sites: 29 known, with almost all in the in the southwest and south- central regions. Population estimates were recorded for most sites (18 of 29), and vary widely in number, estimates range from <10 - >500 plants, but average ~50-150 individuals. Total number of individuals at known extant sites is 1,500-1,700.

More populations are likely to be found, as early successional, anthropogenic habitat is increasingly more common. rare, but because of partial ER consideration new populations aren't reported and entered into Biotics from the western part of the state.

Historic sites: 16 specimen-based historic occurrences in Biotics, and 3 populations presumed destroyed due to pipeline right of way construction.

Conservation Concerns

- Natural occurrences are small and widely scattered in xeric forest and floodplain edges that may succeed to closed canopy forests.
- Right of way maintenance that employs herbicide will impact those populations.

Status Justification

This species has a moderate number of populations and individuals known in Pennsylvania. The numbers of populations and individuals currently known is in the range usually considered for Pennsylvania Rare, but there are few threats to the species. It is likely more populations will be found in disturbed anthropogenic habitats, but less likely in natural floodplain edge habitats. The so watchlist status (S4) is warranted to keep track of new occurrences in natural habitats.

Literature Cited

Kartesz, J.T. 2020. Floristic Synthesis of North America, Version 1.0. Biota of North America Program (BONAP).

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Weakley, Alan S., J Christopher Ludwig, John F Townsend, Bland Crowder. 2012. Flora of Virginia. Fort Worth, Texas. Botanical Research Institute of Texas Press

Stone's violet – *Viola stoneana* House

Current Status in PA Regulations: N
Previous PABS Status: N
Recommended PABS Status: PT
Coefficient of Conservatism: NA
Proposed by: Steve Grund, Janet Ebert, and Jack Holt

Proposal Summary

We are proposing that *Viola stoneana* be recommended to DCNR for listing as Pennsylvania Threatened because of the relatively low number of known localities, small population size, and a very limited range within the state. Not only is the range very limited, but it is limited to the most urbanized part of the state.

Background

Stone's violet was described in 1905 by renowned violet researcher Homer House from specimens collected in Chester County, Pennsylvania. Because the variability within the species of lobed stemless blue violets of eastern North America obscures the boundaries between those species, they have long been treated in a very broad concept of *Viola palmata*. Harvey Ballard has studied this group for years and is recognizing a number of species based on habitat as well as morphology, including seed surface coloration patterns, a useful but previously neglected character.

Habitat

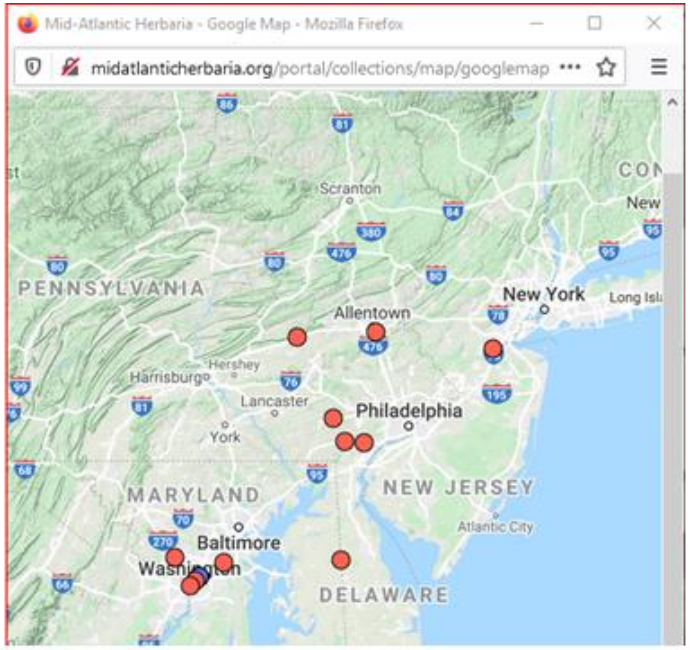
- Moist loam of rich mesic forest slopes and bases of slopes (Ballard 2019)
- Tolerant of edges, but also found in successional forests, often with *Liriodendron* (Ebert & Holt, pers. comm.)

Identification: Stemless blue violet with lobed leaves. First leaves (often absent after spring) unlobed (vs all leaves lobed in other lobed, stemless blue spp. except *palmata*), subsequent leaves increasingly divided, ultimately with 7 – 9 segments and **divided nearly or quite into leaflets**. Lower leaf surface glabrous or sparsely hirsute (vs densely in V. palmata). Description is taken from Ballard (2019), which also includes other more technical characters.

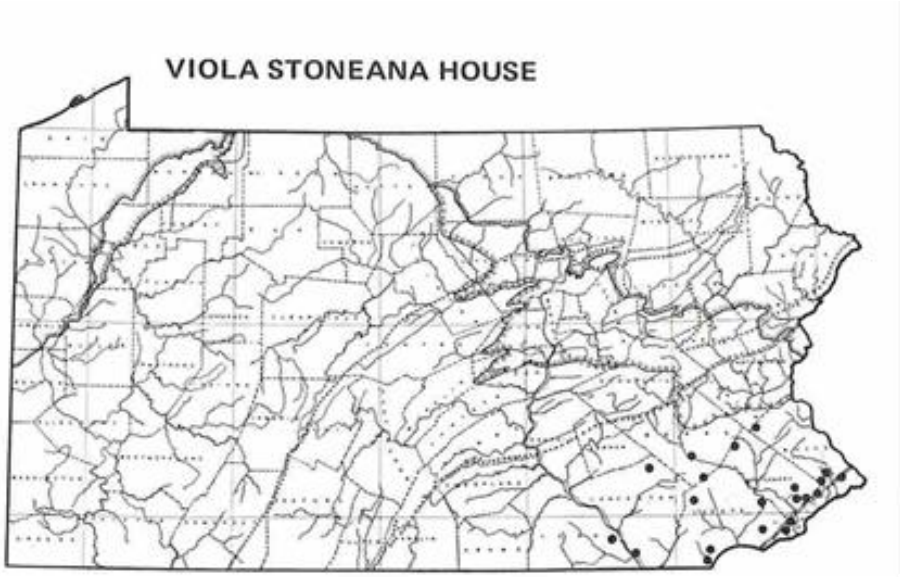
Holotype of *Viola stoneana* House (US)

Global distribution and regional conservation statuses

Largely restricted to the mid-Atlantic from southeastern Pennsylvania and northern New Jersey to the District of Columbia and adjacent Virginia and Maryland, as well as Delaware (infrequent in Newcastle and Cecil Counties (Tatnall 1946); but Ballard (2019) reports having also seen specimens from east-central North Carolina and central Virginia. Because this species has only recently been resurrected, the global conservation status and the statuses in other states have not yet been evaluated. What we do know is that much of the known range of the species is in or adjacent to the Philadelphia to DC portion of the mid- Atlantic metropolis. This species will likely end up with a G-rank of 2 or 3, depending on how much turns up outside of the densely populated areas near the Atlantic.



Locations of geo-referenced specimens at SEINet identified as *Viola stoneana*.



Pennsylvania Distribution of Viola stoneana (Wherry et al 1979)

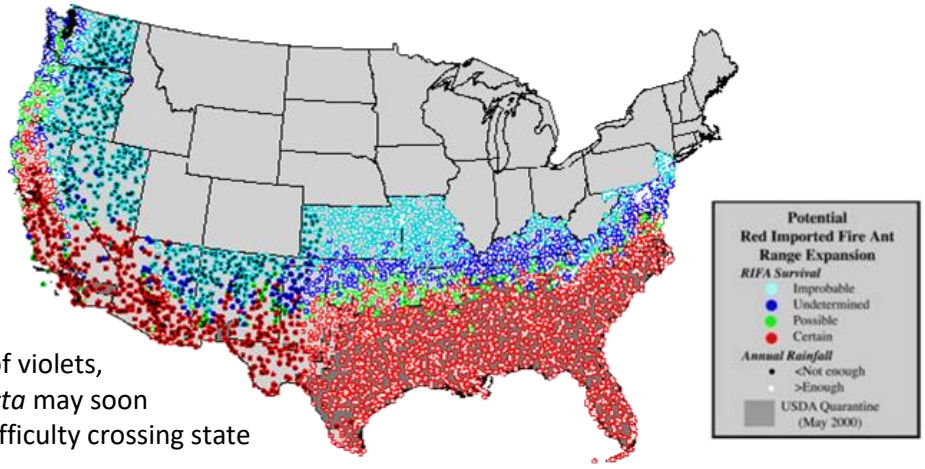
Pennsylvania Distribution and Abundance

Extant sites: Janet Ebert and Jack Holt report having seen this species at 35–40 sites over the past 20 years, all in or within a stone's throw of Chester. These are small colonies, 25 plants representing a large population, and rarely have they seen more than 100.

Historic sites: From a cursory examination of specimen scans from PH, CM, NY, and US, we estimate that about 35–40 sites are represented by historic specimens, mostly in Chester, Delaware, Montgomery, and Berks Counties; additional records are from adjacent counties (one from Franklin).

Conservation Concerns

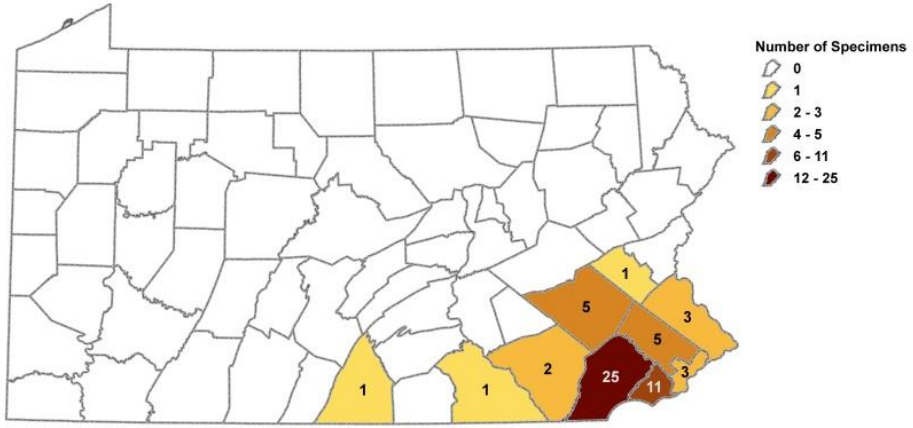
Invasive species have displaced the native flora in the range of Stone's violet at a highly disproportionate level compared to the state as a whole. The situation is exasperated by the preference of the species for rich sites. *Microstegium vimineum* and *Persicaria longiseta* have been noted by Holt and Ebert as significant threats. Similarly, habitat conversion is a significant ongoing threat in this geographic area. Most violets have ant-dispersed seeds (Ballard 2019). We found little information on ant conservation specific to Pennsylvania. Ants that have been introduced to the fauna of Ohio are closely associated with buildings (Ivanov 2016), but *Solenopsis invicta* (red imported fire ant) tends to consume entire seeds of violets, rather than just the elaiosomes as native ants do (Zettler et al 2001). *Solenopsis invicta* may soon occupy the entire states of Maryland and New Jersey, but apparently has extreme difficulty crossing state lines (USDA).



Potential United States Range Expansion of the Invasive Fire Ant (USDA)

Status Justification

Viola stoneana is very local in Pennsylvania, and restricted to the highly urbanized southeast corner of the state. Populations might number more than 50, but they are small, and the species is under considerable threat from development and invasive species. The rank of S2S3 calculated by the NatureServe Rank Calculator was adjusted to S2 after considering the low potential for a rescue effect should the species become extirpated in Pennsylvania (Faber-Langendoen et al 2012).



Literature Cited

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USDA. Potential United States Range Expansion of the Invasive Fire Ant. https://www.ars.usda.gov/southeast-area/gainesville-fl/center-for-medical-agricultural- and-veterinary-entomology/imported-fire-ant-and-household-insects-research/docs/potential-united-states-range-expansion-of-the-invasive-fire-ant/ Map reproduced (without explanation that only specific states were included in the model) from Korzukhin, M.D., S.D. Porter, L.C. Thompson, and S. Wiley. 2001. Modeling temperature-dependent range limits for the fire ant *Solenopsis invicta* (Hymenoptera: Formicidae) in the United States. Environ. Entomol. 30 (4): 645–655.

Wherry, E.T., J.M. Fogg, Jr., and H.A. Wahl. 1979. Atlas of the Flora of Pennsylvania. The Morris Arboretum of the University of Pennsylvania. Philadelphia, PA.

Zettler, J.A.; Spira, P. Timothy, and C.R., Allen. 2001. Ant–seed mutualisms: can red imported fire ants sour the relationship? Nebraska Cooperative Fish & Wildlife Research Unit -- Staff Publications. 3. https://digitalcommons.unl.edu/ncfwrustaff/3

Tidal spikerush – *Eleocharis aestuum* Hines & A. Haines

Current Status in PA Regulations: N
Current PABS Status: N
Proposed Status: PE Coefficient of Conservatism: 10 Global Conservation Rank: G3
Proposed by: S. Grund, PNHP/WPC

Proposal Summary

This species was published in 2001, with one of the paratypes coming from Pennsylvania (Haines 2001), but was not included in the second edition of the Flora of Pennsylvania (Rhoads & Block 2008), and has not previously been considered for regulatory status in Pennsylvania. Specimens of this species have mostly been identified as E. diandra or E. obtusa var. peasei, which may well turn out to be a synonym of E. aestuum (Rob Naczi, pers comm). Eleocharis diandra does not range as far south as Pennsylvania (R. Naczi, pers comm; Kartesz (2003) cites CM for his inclusion of the species in Bedford County, but we cannot find the specimen and Kartesz has not responded to a request for clarification). E. obtusa var. peasei is Pennsylvania Endangered, with only six known occurrences, only two of which have high viability estimates (both B, no A-ranked occurrences). It is thus clear that this taxon, whether or not it includes E. obtusa var. peasei, is deserving of a status of PE.

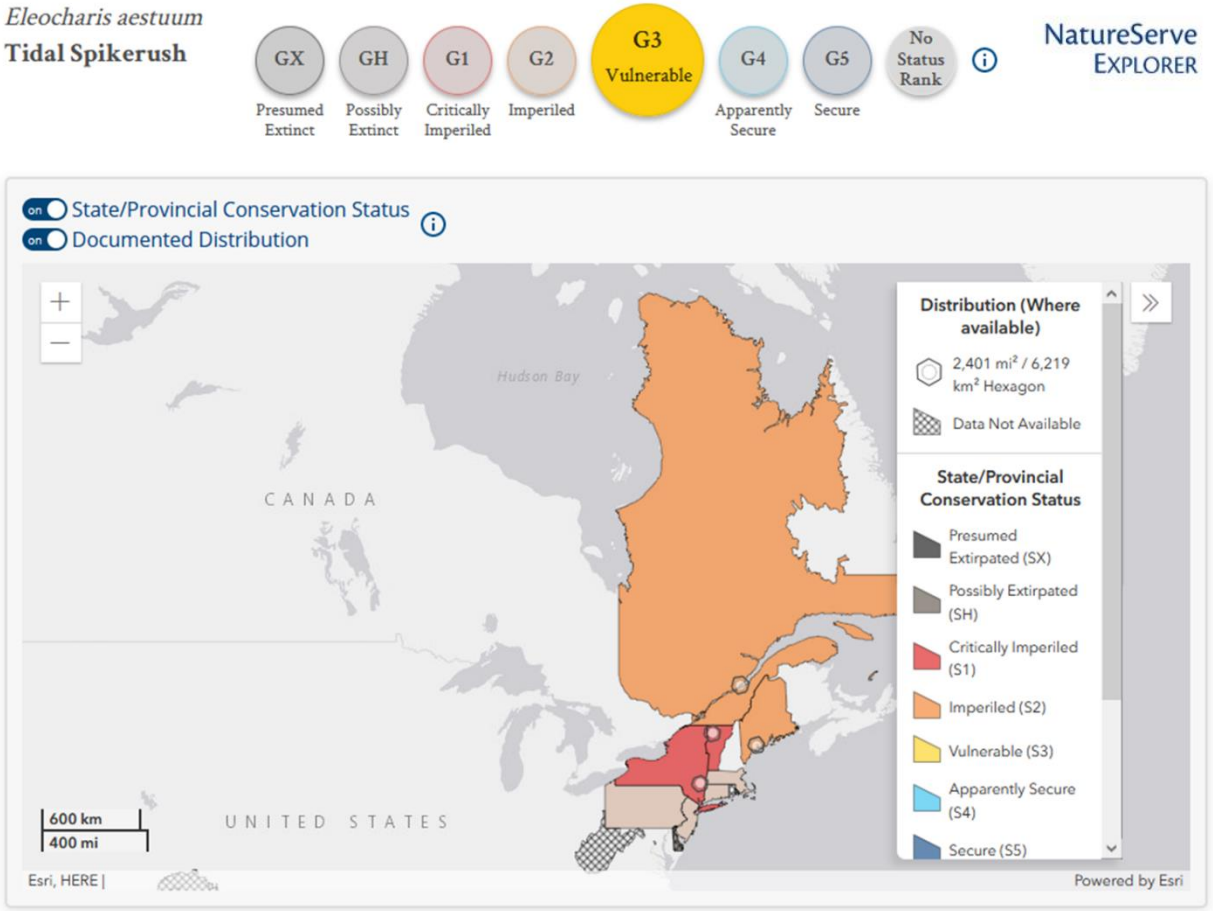
Habitat

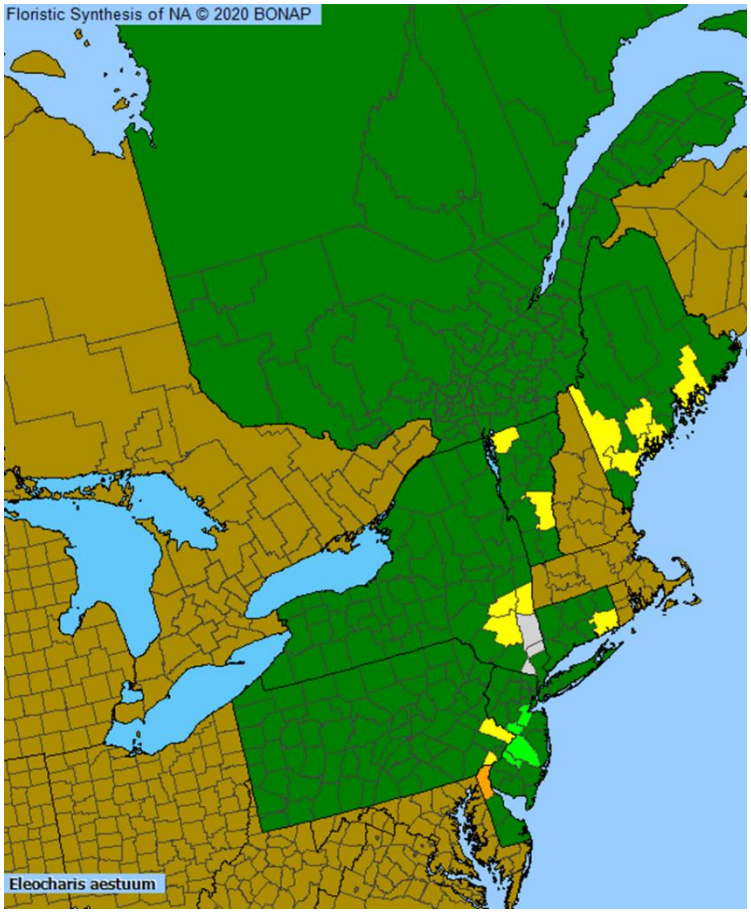
River shores and lake borders, particularly in high pH bedrock regions, and in fresh water tidal zones of rivers (Haines 2003).

Identification: Distinguished from E. obtusa by the narrower tubercles, $\leq$ 0.5 mm. Distinguished from E. ovata (excluding var. peasei) by its fewer (0—4) perianth bristles, which are rudimentary or at least not exceeding the achene, and lower tubercle height, $\leq$ 0.3 mm (Smith et al 1993). E. ovata var. peasei also has reduced or absent perianth bristles, but has three stamens vs two for E. aestuum (Haines 2003). Perhaps E. aestuum can have either 2 or 3 stamens, and includes E. ovata var. peasei (Naczi, pers comm).

Global distribution and regional conservation statuses

Maine and along the St. Lawrence in Quebec south to the Hudson in New York, Massachusetts, eastern Pennsylvania and New Jersey. Possibly disjunct in northern Minnesota (Haines 2003; Smith et al 1993).





Pennsylvania Distribution:

Extant sites: 6 known extant element occurrences for Eleocharis obtusa var. peasei. These are likely all E. aestuum even if the former taxon is maintained (Naczi, pers comm, citing Schuyler). They are all on or near the Delaware River in Bucks and Delaware Counties.

Historic sites: We know of no historic specimens not included in the extant occurrences.

Conservation Concerns

- Shipping on the Delaware has a profound negative impact on mud flats.

- The area from which this species is known in Pennsylvania is highly developed, including extensive industrial and residential areas covering over 90% of the area (my rough guess). Isolated small patches of mud flat habitat still exists.
- Invasive species.

Status Justification

A small number of populations and individuals are known for this species in Pennsylvania, and it has almost certainly experienced significant decline in the past, and will decline further in the future without active management, which may not be practical.

Literature Cited

Haines, A. 2001. *Eleocharis aestuum* (Cyperaceae), a new tidal river shore spikesedge of the eastern United States. Novon 11(1): 45—49.

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Rhoads, A.F. and Block, T.A., 2007. *The plants of Pennsylvania: an illustrated manual*. University of Pennsylvania Press.

Smith, S.F., J.J. Bruhl, M. Socorro González-Elizondo, and F.J. Menapace. Eleocharis. in Flora of North America Editorial Committee, E. ed., 1993. *Flora of North America: Volume 23: Magnoliophyta: Commelinidae (in Part): Cyperaceae* (Vol. 23). Oxford University Press on Demand.

Bog groundsel–*Packera crawfordii* (Britt.) A.M. Mahoney & R.R. Kowal

Current Status in PA Regulations: N

Current PABS Status: N

Proposed Status: PX

Coefficient of Conservatism: Not assigned. Appears to be dependent on an unusual habitat, but tolerance to (or even dependence on) disturbance is unknown.

Proposed by: S. Grund, PNHP/WPC

Proposal Summary

This species has been included in *Packera paupurcula* by most recent authors, though it was recognized in Fernald (as *Senecio crawfordii*). It is a highly specialized taxon. The range is not tiny, but even though the taxon has been ignored in recent years, the apparently sporadic distribution might not be far off the mark, as the habitat is itself rare.

Habitat

It is not known to grow in soil per se but is rooted in water held in a matrix of sand (as in the sandy crevices between cobbles and small meadows, and wet pine savannas), Sphagnum (as in sphagnum bogs), or clay, as in swamp floodplains with a gley substrate (Kowal & Mahoney 2016).

Identification

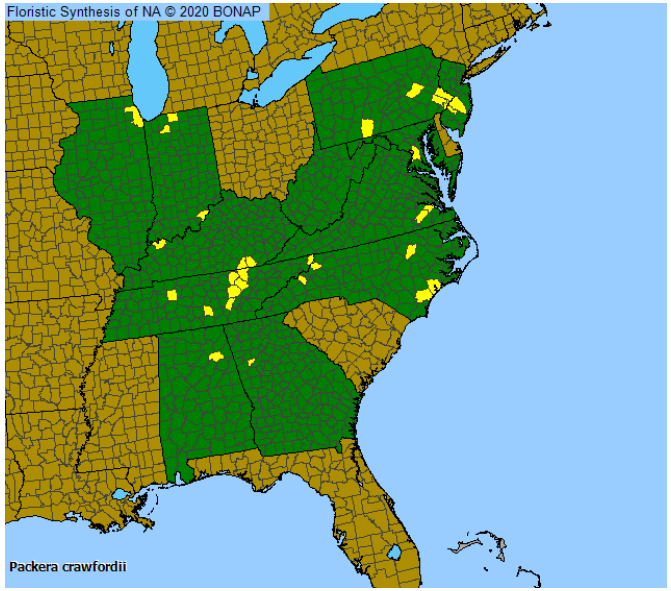
Long basal petioles, upper leaves +/- clasping and rapidly reduced above, moderate number of heads (<30 vs 30—100 for *P. anonyma*), and saturated substrate. Below is the final couplet from the key in Kowal & Mahoney. The other species of the complex in our area are not likely to be encountered in wetlands.

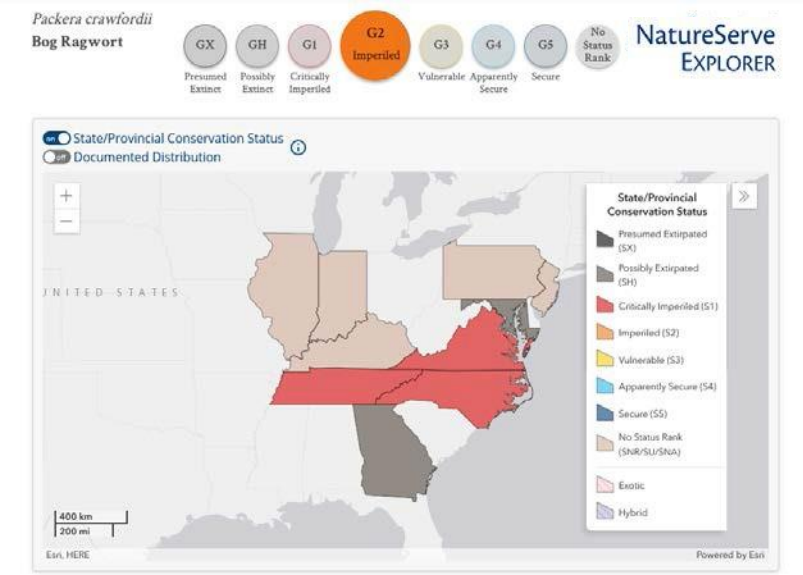
Petioles of basal leaves 0.5–1.4(–2) times as long as the blades; blades 0.5–2(–6) cm wide, narrowly elliptic, lanceolate, or oblanceolate, bases tapering; blades glabrous or pubescent abaxially; cauline leaves not- to scarcely-clasping; substrates mesic or saturated, but then with moving water (e.g., stream and lake sides); Midwest, especially around the Great Lakes to New York, Pennsylvania, New Jersey, and sporadically southwards ***P. paupercula* var. *paupercula***

Petioles of basal leaves (0.5–)1.7–5 times as long as the blades; blades 0.4–6 cm wide, narrowly to moderately elliptic or ovate, bases cuneate or frequently subtruncate and then abruptly cuneate; blades glabrous or rarely sparsely hairy abaxially, especially along midrib; cauline leaves commonly clasping; substrates (sand, Sphagnum, or clay) always completely saturated; Midwest from northern Illinois to Indiana south to Kentucky and Tennessee; East from Maryland, New Jersey and southeastern Pennsylvania south to northern Georgia ***P. crawfordii***

Global distribution and regional conservation statuses

Sporadically distributed from the south end of Lake Michigan south to NE Alabama, east to North Carolina and north to NJ and Pennsylvania. Not common anywhere. Ranked S1 or SH in states who have ranked it, and this will likely be the case for the states that have not yet ranked it.





Pennsylvania Distribution:

Not recently documented. Kowal & Mahoney cite 18 specimens from Schuylkill, Bucks, and Philadelphia Counties, representing about 5 localities. Most are from the type locality. There are a few more at CM, also topotypes. Kartesz cites CM for Bedford County, but Bonnie and I have not successfully determined on what (if any) specimen that is based. The Schuylkill County specimen at PH (also not found online) was collected in 1834. The specimens from the type locality date from between 1894 and 1902, and the most recent specimen we know of is from 1927. The Bucks County collection may all be from the same site.

Conservation Concerns

- Disturbance regime unknown. May have some disturbance requirements, but not at the level seen in wetlands on the PA side of the Delaware River.
- Probably never common anywhere; entire species vulnerable to genetic bottleneck effect (inbreeding depression).
- Invasive species; probably vulnerable, but unclear which species would be the greatest threat.

Status Justification

This species has been collected at only 3 to 5 sites in Pennsylvania, most recently 94 years ago. It should be sought, but modifications to wetlands in the area this species was known to inhabit in the past suggests a likelihood that it is no longer extant in Pennsylvania.

Literature Cited:

Kowal, R.R. and A.M. Mahoney. 2016. Comments on the status of *Packera crawfordii* (Asteraceae, Senecioneae), a neglected species of the southeastern United States. Brittonia 68(1): 74—82.

Kartesz, J.T. 2003. A Synonymized Checklist and Atlas with Biological Attributes for the Vascular Flora of the United States, Canada, and Greenland. Second Edition. In: Kartesz, J.T. Synthesis of the North American Flora, Version 2.0. Dataset of 30 October 2020.

NatureServe. 2021. NatureServe Explorer [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org. (Accessed: 31 March 2021).

Specimen with well- developed cauline leaves

Isolectotype

Type (lectotype)

Appalachian groundsel–*Packera paupercula* var. *appalachiana* A.M. Mahoney

Current Status in PA Regulations: N
Current PABS Status: N
Proposed Status: PE
Coefficient of Conservatism: 9 (as Packera plattensis)
Proposed by: S. Grund, PNHP/WPC

Associated Proposal, *Packera plattensis* PE to N

Proposal Summary
Individuals of this taxon from eastern states, including a specimen from Bedford County in Pennsylvania, with persistent floccose pubescence were usually identified as *Packera plattensis* until recently. *P. plattensis* as currently circumscribed is not known from further east than Indiana. Some specimens of *P. paupercula* from Franklin and Adams Counties also turn out to be this taxon. It is a southern to mid-Appalachian endemic that reaches its northern limit in southern Pennsylvania. The report of *Packera plattensis* was based solely on the Bedford County specimen.

Habitat
Glades, cliffs, barrens, over mafic, or calcareous rocks (Weakley 2020). The specimens at CM with habitat data are from a xeric hardwood-confer forest, with *Senecia* (*Packera*) *antennariifolius* listed as an associate (Walck 445, 12 June 1990, CM), and "Abandoned field" (Berkheimer 7243, 30 May 1946, CM).

Identification

Packera paupercula var. *appalachiana* grows in drier habitat than the nomenclaturally typical variety. The basal leaves are longer and narrower, more abruptly narrowed at the base, and usually hairier.

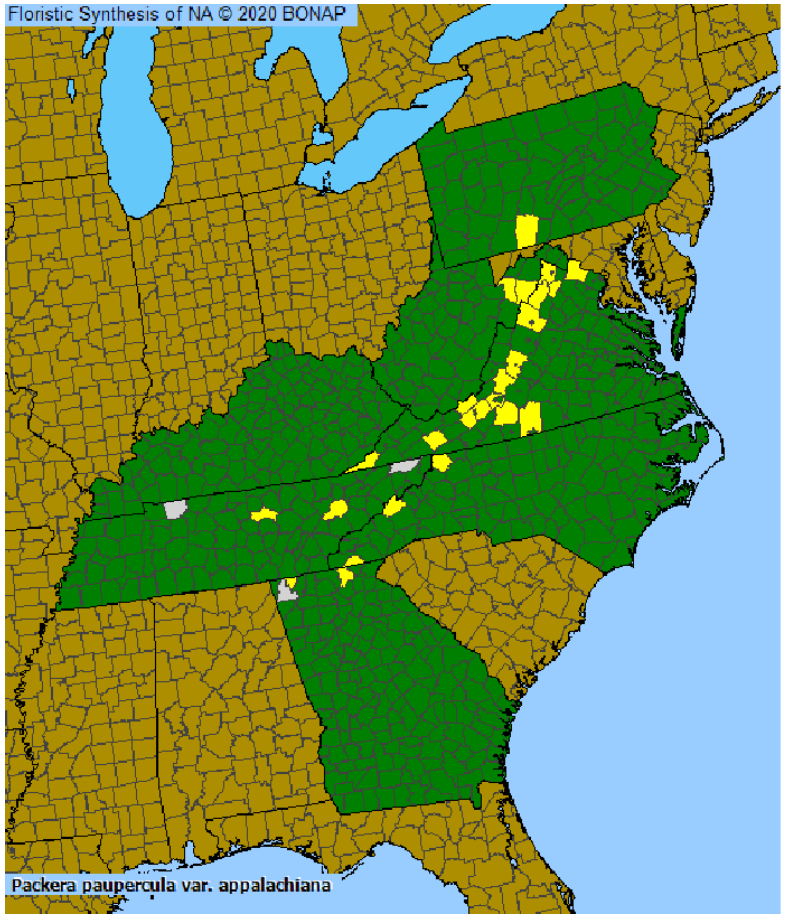
From Mahoney and Kowal 2008 (distributional data removed)

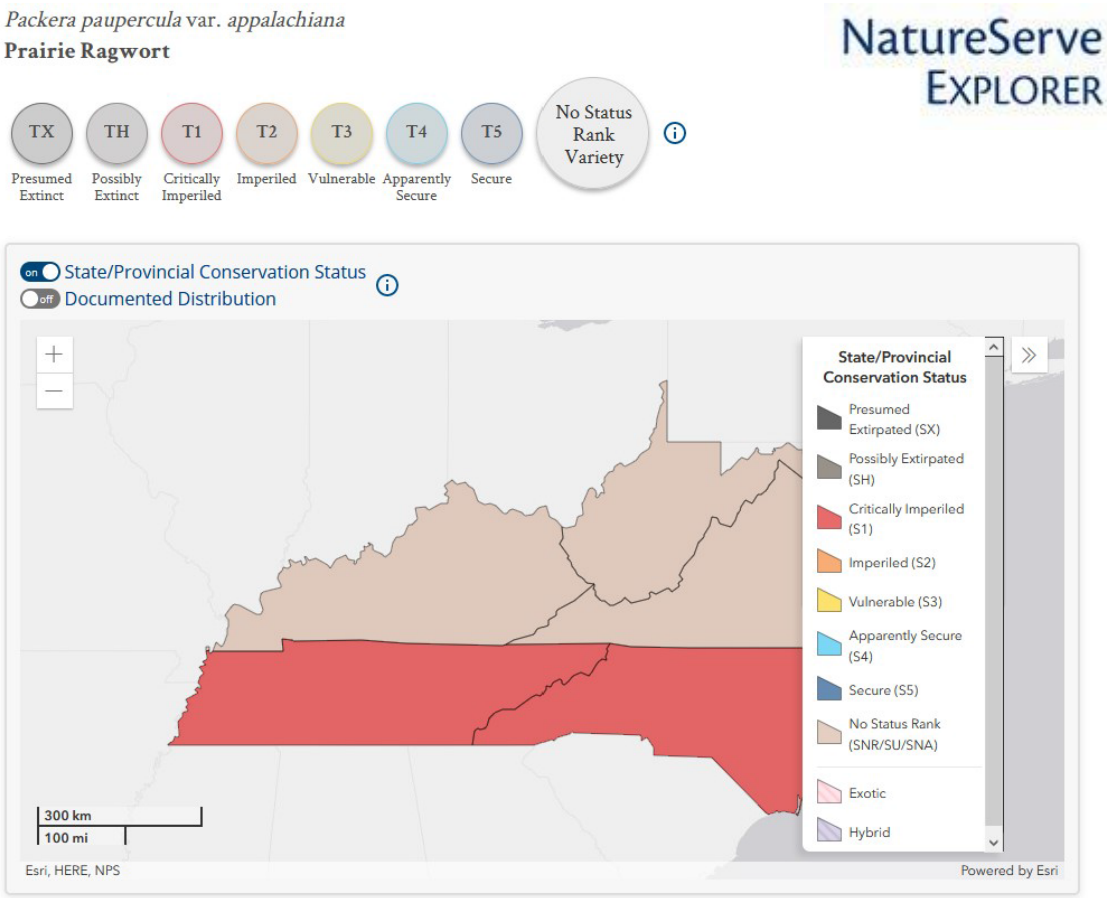
Blades of rosette leaves ovate, broadly elliptic, to elliptic-oblong to obovate to nearly round, usually persistently tomentose abaxially (sometimes glabrate), bases truncate to acute, rarely subcordate, apices usually rounded; dry, rocky to gravelly soils; wooded bluffs, road cuts **P. paupercula var. appalachiana**

Blades of rosette leaves narrowly lanceolate, elliptic or oblanceolate, glabrous to glabrate abaxially (sometimes persistently tomentose), bases attenuate to acute (sometimes obtuse to truncate), apices acute to rounded; dry to wet soils; mesic to wet habitats, esp. shores and fens **P. paupercula var. paupercula**

Global distribution and regional conservation statuses

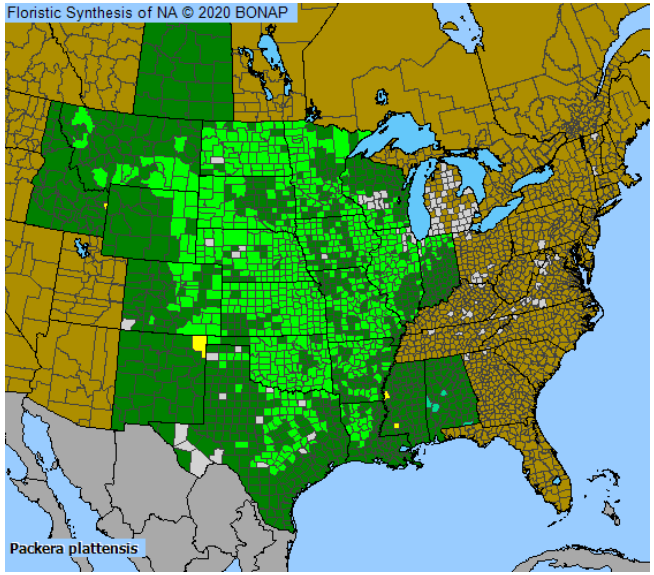
Packera paupercula var. *appalachiana* has a classic distribution for a southern to mid-Appalachian endemic. It has been assigned a conservation status rank of S1 in the two states that have ranked it. It has not yet been assigned a global conservation rank.





Pennsylvania Distribution:

Three specimens are known from Pennsylvania; one each from Bedford, Franklin, and Adams Counties. PH specimens have not yet been scanned, but were examined for Mahoney and Kowal (2008), who listed no specimens from Pennsylvania.



Conservation Concerns

This species appears to be somewhat tolerant of disturbance, and can survive at least for a while in old fields. It is probably restricted to shale substrate in Pennsylvania. The primary concern in our area is that this is a relatively narrow endemic at the northern end of its range. The species is nowhere common, and has been collected only three times, in 1946, 1951, and 1990.

Status Justification

This is a southern to mid-Appalachian endemic at the northern edge of its range in southern Pennsylvania. It has not yet been assigned a global rank by NatureServe, but is clearly in the G2 to G3 range (G5T2T3 as a variety of *Packera paupercula*). *P. plattensis* should be removed from the regulations as we now know it to be a false report for Pennsylvania.

Literature Cited:

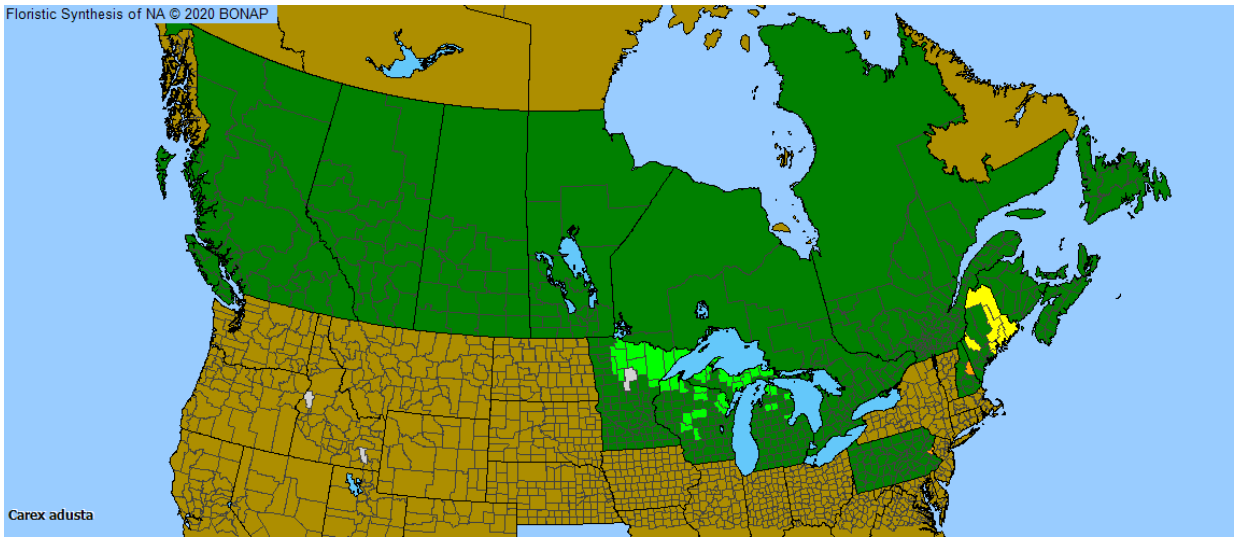
Mahoney, A.M. and Kowal, R.R., 2008. Three new varieties of *Packera paupercula* (Asteraceae, Senecioneae) in midwestern and southeastern North America. *Novon: A Journal for Botanical Nomenclature*, *18*(2), pp.220-228.

Kartesz, J.T. 2003. A Synonymized Checklist and Atlas with Biological Attributes for the Vascular Flora of the United States, Canada, and Greenland. Second Edition. In: Kartesz, J.T. Synthesis of the North American Flora, Version 2.0. Dataset of 30 October 2020.

NatureServe. 2021. NatureServe Explorer [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available https://explorer.natureserve.org. (Accessed: 31 March 2021).

Lesser brown sedge–*Carex adusta* Boott

Current Status in PA Regulations: PX
Current PABS Status: PX
Proposed Status: N
Coefficient of Conservatism: NA
Proposed by: S. Grund, PNHP/WPC



Proposal Summary
This species was included in the flora of Pennsylvania based on specimens that have all been determined to represent other species.

Habitat
Dry, acidic, sandy soils of open woods and clearings, moist shores (Ball & Reznicek 1993)

Identification This is one of the species in Section Ovales with pistillate scales as long or longer than the perigynia they subtend. With *Carex adusta*, the scales are also nearly as wide as the perigynia, thus the perigynia are almost completely covered by the scales (Ball & Reznicek 1993). Based on former identifications of specimens, the concept apparently once included *C. argyrantha*, which has more narrow scales. I have examined all the Pennsylvania specimens at CM and at other herbaria that are accessible via SeinNet, and either annotated them as *C. argyrantha*, or noted in the record that the scales were too narrow for *C. adusta*, although I was unable to determine from the scans what species was actually applicable.

Status Justification
This species would be significantly disjunct if it was native in Pennsylvania, as can be seen from the BONAP map. None of the specimens on which reports from Pennsylvania are based are actually this species. It should therefore be removed from the Pennsylvania regulations.

Literature Cited
Ball, P.W. and A.A. Reznicek. 1993. Carex in Flora of North America Editorial Committee, E. ed., 1993. *Flora of North America: Volume 23: Magnoliophyta: Commelinidae (in Part): Cyperaceae*.