Contents

Purple clematis – Clematis occidentalis

(Hornemann) A.P. de Candolle var. occidentalis

Current Status in PA Regulations: None

Coefficient of Conservatism: 10; rangewide 6-10, many on higher end

Proposal: PT or PE? Evaluate.

Proposed by: Jessica McPherson, WPC/PNHP

Proposal Summary

Clematis occidentalis was first assigned the rank PT in 2013. It had not been previously tracked, and there was not much data available. It has now been tracked for 13 years, and DCNR plans to regulation package. Our task is to evaluate whether PT or PE is a be

Habitat

- FNA: Calcareous cliffs, rock ledges, talus slopes, gravelly embankments, rocky woods, and clearings.
- FSUS: Rocky slopes over mafic rocks (greenstone, amphibolite)
- GoBotany: rich, rocky, deciduous forests, ledges, talus slopes and river banks, often on calcareous bedrock. Although it has a broad range, it is regarded as rare throughout much the east, and most populations are quite small.
- Michigan Flora: Rocky forests and thickets, on stream banks, and in burned or cleared areas. A handsome, very local, large-flowered plant.
- Pennsylvania: calcareous rocky slopes. Heavily browsed, limited to less-deer-accessible areas.

Identification

- Compared to other native species of *Clematis*, the leaves are succulent. With the texture and the leaf shape (irregularly toothed, 1-3 leaflets), it can be vegetatively identified. Useful when overbrowsed.
- Sepals (the showy part) 4, light purple, long and thin-textured, not recurved at all compared to *Clematis viorna,* which has sepals that are pale lavender to reddish purple, thick-textured, and recurved at the tips.

Taxonomy

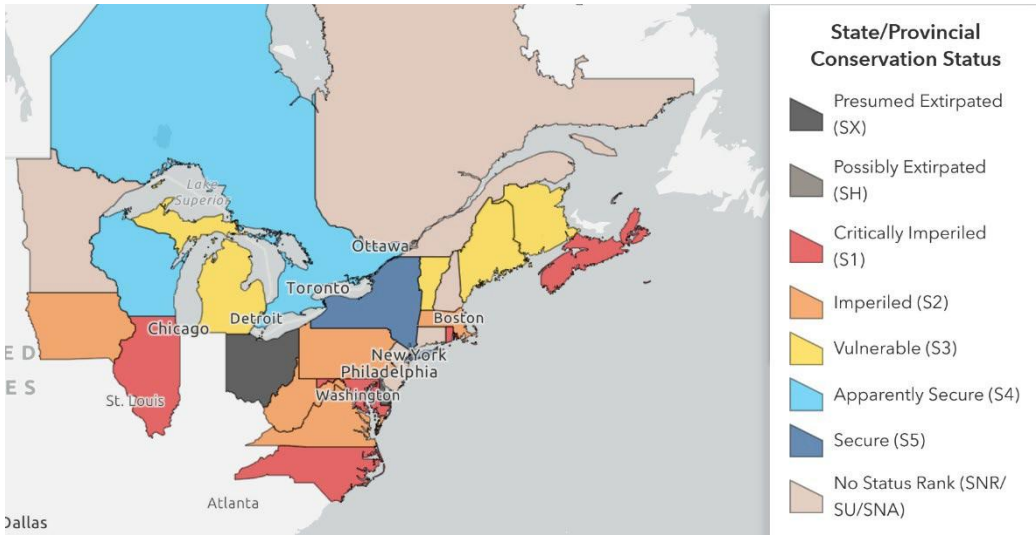
The species has a bimodal distribution, occurring in the eastern half of North America and the western mountains, with western material assigned to *var. grosserrata* and eastern material assigned to *var. occidentalis*. *Var. dissecta* occurs narrowly in the Pacific NW.

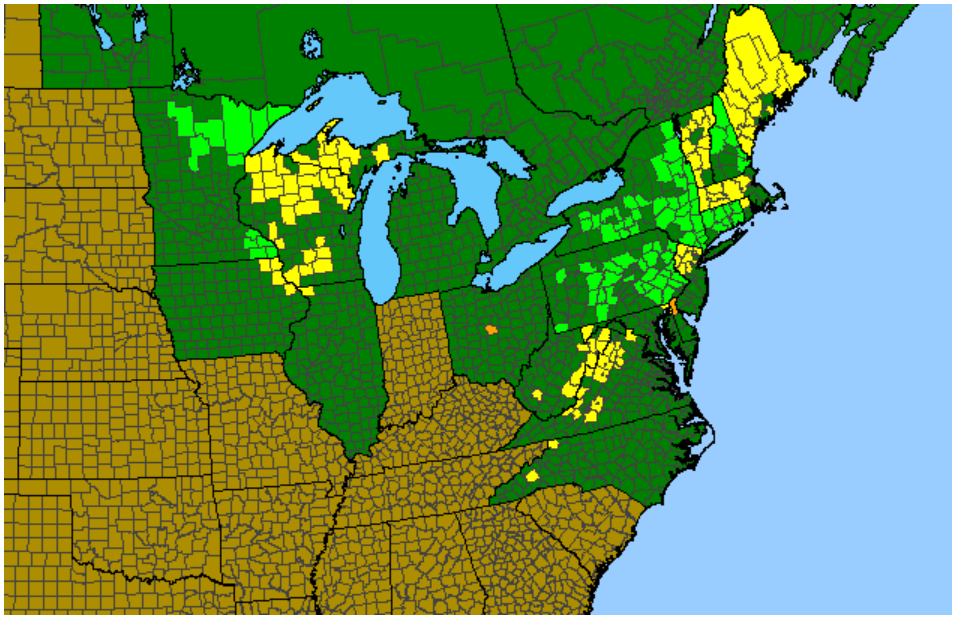
Ecology

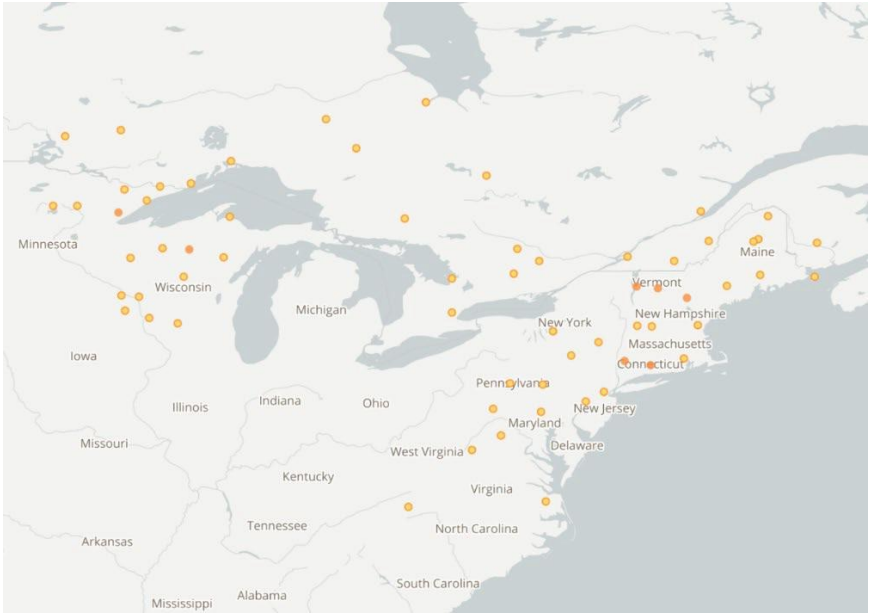
Appears to be a calciphile, limiting available habitat in PA. Sensitive to deer browse; overbrowsing is considered to be a factor in decline throughout the range. It clearly occupies conservative rocky habitats in many areas; in addition to these, Michigan Flora reports affiliation with burned or cleared areas. Not too surprising, given the behavior of other members of the genus.

Distribution and regional conservation statuses

Clematis occidentalis var. *occidentalis* is assigned a status of conservation concern in almost every state or province where it occurs. Its distribution in the eastern portion of the lower 48 states appears to be bimodal, but the midwestern and eastern portions are/were connected north of the Great Lakes in Canada.



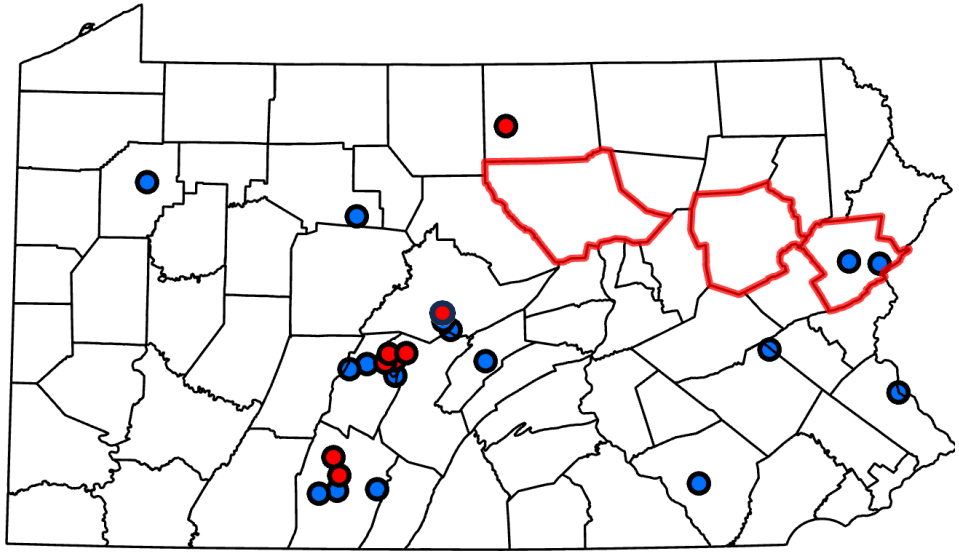




Extant Locations

Five known current locations in PNHP data

- Pine Creek Gorge – lots of habitat, only a few observations (2012, 2021). Hard to know what's going on up here without more intensive survey effort.
- Spring Creek Canyon: has been observed a few places on the gorge, numbers not currently known. A fair amount of habitat, but deer are an issue. I saw it in one location last season and there was one plant.
- Huntingdon County: "few plants" (habitat area is a fairly small cliff at that site)
- Birmingham: fewer than 20 individuals. Moderate sized habitat area, fairly large steep dolomite talus slope, but only thrives where brush prevent browse. Not that many plants in 2012, fewer than 20 now.
- Bedford County: 9-12 individuals. Also not a large area of habitat.



Red dots: extant locations
Red counties: each have 1 recent i-nat observation
Blue dots: historic locations

Observations 1978-1996

- Huntingdon County small steep slope. 1996.
- Bedford County small steep limestone slope. 1995.
- Monroe County – limestone slopes with new development around them; last observed 1982, searched for unsuccessfully in 2015.
- Blair County. 1982. Private property, no access to resurvey. Small habitat area in forest fragment.
- Blair County. 1987. Private property, no access to resurvey. Part of extensive ridgeline, although calcareous habitat is local.

Three iNaturalist records that appear to be correctly identified and unique from PNHP records. No population information.

- Monroe County: 2025. Our only known site that fits the "disturbed" profile – appears to be on a berm between a road and a lake.
- Lycoming County: Observed in 2021 and 2023 on the same ridge.
- Luzerne county: 2020. Great photo growing next to columbine on a vertical rock face, the kind of setting where it can actually produce flowers. (Rick Koval notes "very rare in Luzerne County"; saw only 2-3 plants. (lower right photo)

There could be a few more such populations out there in cool rocky habitats of NE and NC PA; but probably not a whole lot, as calcareous habitat is limited.

Historic Locations

- Most of the historics are mapped, blue dots above. There are more eastern specimens than dots; still looking into that.
- There is a lot of correspondence between the extant locations and the historic locations, indicating long-persisting populations and a high degree of conservatism. The label data, where present, uniformly indicates cliffs, talus slopes, and ledges; no disturbed sites.
- We reviewed the 17 historics in biotics for potential to still exist:
    - 4 good potential
    - 2 maybe
    - 3 slight chance
    - 4 most likely extirpated

Conservation Concerns

- Deer browse has been observed at every known site with recent observations, and is considered a concern across the range of the species.
- Declines have been observed across most of the range of the species.
- Climate change may also threaten PA populations, as we are in the southern portion of its range, and it clearly prefers habitats with cooler microclimates; north-facing slopes, cooler parts of the state.

Status Justification

We have a fairly small number of occurrences, 8-12 known extants (depending on whether you count those with older last observed dates). We estimate there may be 2-6 additional sites in the state. This number of populations is typical of the Pennsylvania Threatened status. However, we also have evidence of ongoing high threat from deer browse, observed decline at repeat measurement of sites, and very small populations sites at all 4 sites with counts (3-20 individuals). The statewide population count ranges from 46 (the number actually counted) to 850 (the sum of high end estimates at all known extant plus 5 potential additional sites). The biggest uncertainty comes from a lack of intensive survey effort at Pine Creek Gorge and Spring Creek Canyon, two large areas with somewhat extensive habitat. Individual observations have not seen many plants, but these have all been casual rather than intensive surveys for this species. The rank calculator indicates S1.

Literature Cited

- Kartesz, J.T. 2024. Synthesis of the North American Flora, Version 2.0. 6 September 2024
- Flora of North America species account for Clematis occidentalis var. occidentalis. https://floranorthamerica.org/Clematis_occidentalis_var._occidentalis accessed 3/4/2026
- Great Lakes States (and Massachusetts) botanists conference call, February 2026.
- GoBotany Species account for *Clematis occidentalis* https://gobotany.nativeplanttrust.org/species/clematis/occidentalis/ accessed 3/4/2026
- Reznicek, A.A., E.G. Voss, and B. S. Walters. 2011. “Michigan Flora Online.” University of Michigan.
- Weakley, A.S., and Southeastern Flora Team. 2026. Flora of the Southeastern United States. University of North Carolina Herbarium, North Carolina Botanical Garden. https://fsus.ncbg.unc.edu/

Yellow lady's slipper – Cypripedium parviflorum

(var. *pubescens* and var. *parviflorum)*

Current Status in PA Regulations: PV

Coefficient of Conservatism: 8-9 range wide

Proposal: PR or PT

Proposed by: Jessica McPherson, WPC/PNHP

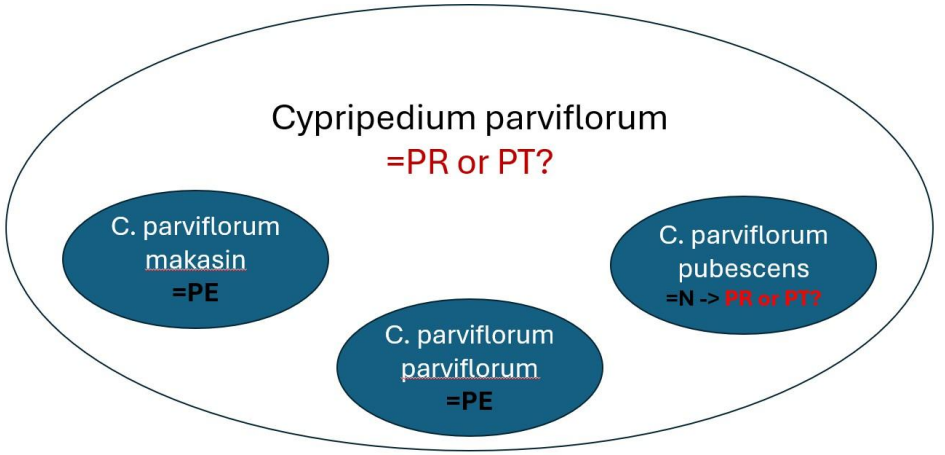
C. parviflorum var. parviflorum
Alan Cressler

C. parviflorum var. pubescens
Alan Cressler

Proposal Summary

Forest-growing yellow ladies slippers are uncommon, require specialized habitat, and face significant threats from deer browse, poaching, and invasive species. We would like to assign them a status of PR or PT. However, a proposal is complicated by taxonomic considerations.

- *Cypripedium parviflorum* var. *makasin*, of fen habitats, has a PABS and legal status of PE.
- *Cypripedium parviflorum* is currently legally PV but not thought to have particularly high pressure from medicinal trade. A taxon cannot be ranked PV and PR, PT, or PE at the same time.
- *Cypripedium parviflorum* var. *parviflorum* has only one known extant occurrence in PA and has a PABS and legal status of PE.
- *Cypripedium parviflorum* var. *pubescens* has no legal or PABS status assigned at the variety level.
- *Cypripedium parviflorum* var. *parviflorum* and var. *pubescens* both occupy very similar calcareous forest habitats; they cannot be distinguished without flowers, and even then the characters intergrade. It is easily possible to identify the forest-growing yellow lady's slipper to species vegetatively, but not to variety.
    - *C. parviflorum* var. *pubescens* could be assigned PT or PR, but then populations not determined to variety would have no protection.
    - *C. parviflorum* could be assigned PT or PR at the species level. This would not affect var. *makasin* or var. *parviflorum,* as varietal status supercedes that of the species.



Identification

- Var. *pubescens*:
  - Pouch-like lip (2.0-) 3.0-5.8 cm long; sepals and lateral petals unmarked (greenish-yellow), or more often streaked, blotched, striped or reticulately marked with dark reddish brown or purple (but generally not extensively blotched) (FSUS)
  - 3-4 leaves (Flora of Missouri) *this character may not work in PA, one eastern population observed to have 6 leaves.
- Var. *parviflorum*:
  - Pouch-like lip 2.2-3.4 cm long; sepals and lateral petals usually densely and minutely spotted with dark reddish brown or purple, thus appearing uniformly dark (FSUS)
  - 4-6 leaves (Flora of Missouri)

Taxonomy

There is wide variation in the treatment of *Cypripedium parviflorum*. Some sources (FSUS, FNA, Flora of Missouri, Flora Novae Angliae) recognize varieties; others do not (Michigan flora). FSUS asserts that var. *makasin* might better be treated as a species; FNA includes discussion of difficulties with distinguishing var. *pubescens* and var. *makasin* in the northern and western portions of their ranges. GoBotany also reports this difficulty in northern regions. FNA writes "The southeastern var. *parviflorum* differs from var. *pubescens* primarily in flower size and color, and the two might be merely forms."

Habitat

- FSUS: var. *pubescens* - Rich mesic forests. Var. *parviflorum* - Mesic forests, seepy forests over amphibolite, other habitats.
- Michigan Flora (varieties not recognized): In a great diversity of habitats except the driest: moist forests (coniferous, mixed, deciduous), fens, meadows, borders of forests and clearings, often under cedar, and mostly in clearly calcareous soils.
- Pennsylvania: dry to mesic calcareous forests.

Extant Locations

The PNHP database has 19 extant locations of var. *pubescens* and 1 extant location of var. *parviflorum*. However, var. *pubescens* is tracked with Watch List status, so it does not receive the level of survey effort or data compilation given to PR, PT, or PE taxa.

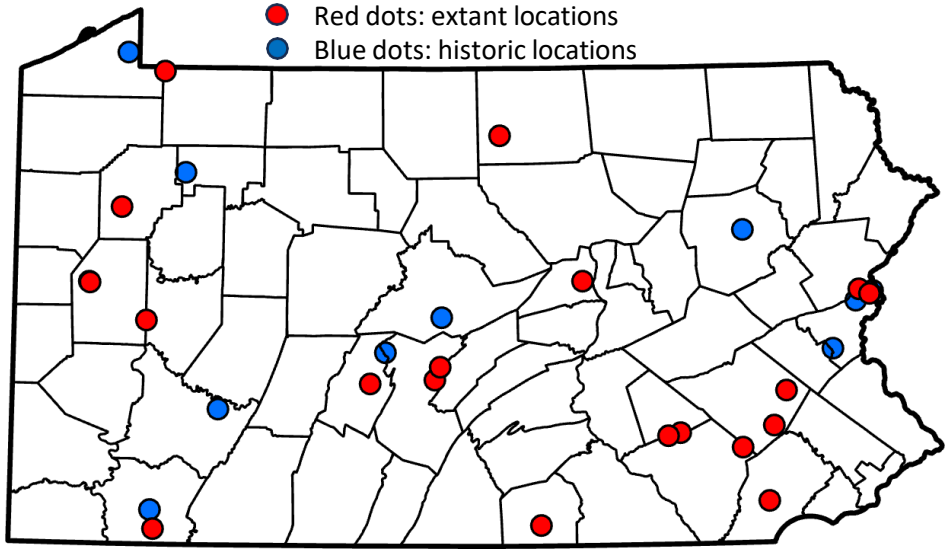
There are 197 observations of *Cypripedium parviflorum* sensu lato on iNaturalist, but this should be taken with many grains of salt:

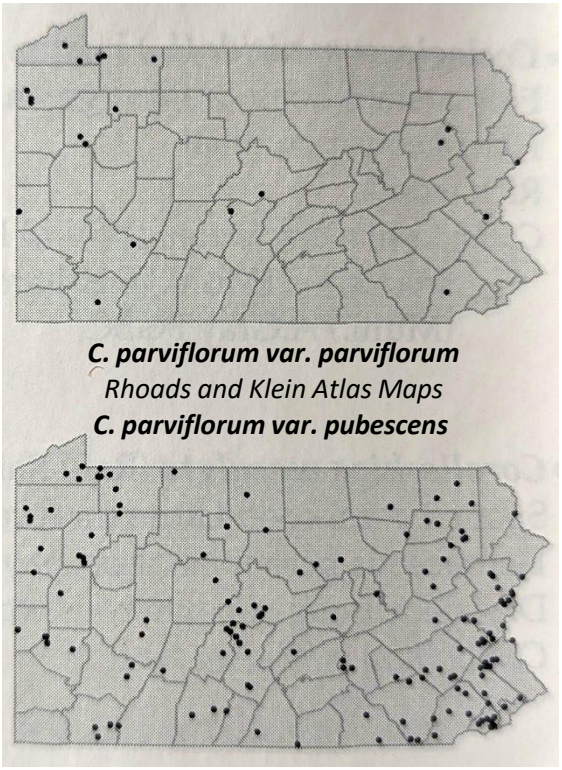
- It is highly likely that there are many repeat observations of the same site in this dataset.
- All are obscured, so unique sites cannot be assessed by looking at the map.
- The concentration of observations in areas like Allegheny County suggest that some observations are also likely yard plantings by orchid enthusiasts.
- Varietal summary: 3 are var. *makasin*, 1 is var. *parviflorum*, 19 are var. *pubescens*, the rest are not taken to variety.

Statewide number of plants (var. *pubescens* and var. *parviflorum* combined): 1628-1646 from known sites in biotics; 14 of 20 sites have population estimates. 4 sites with 100+ plants, remaining 10 sites have 50 or fewer plants; five of those have 10 or fewer. *Cypripedium parviflorum* var. *parviflorum* has one site, with 8-10 genets observed in 2012; in the above-listed numbers, all the rest is var. *pubescens*.

Historic Locations

The specimen records shows broad distribution with a fair number of dots indicating historic records (see PA Atlas maps). We don't have many in the PNHP database (3 historic locations of var. *pubescens* and 8 of var. *parviflorum*).



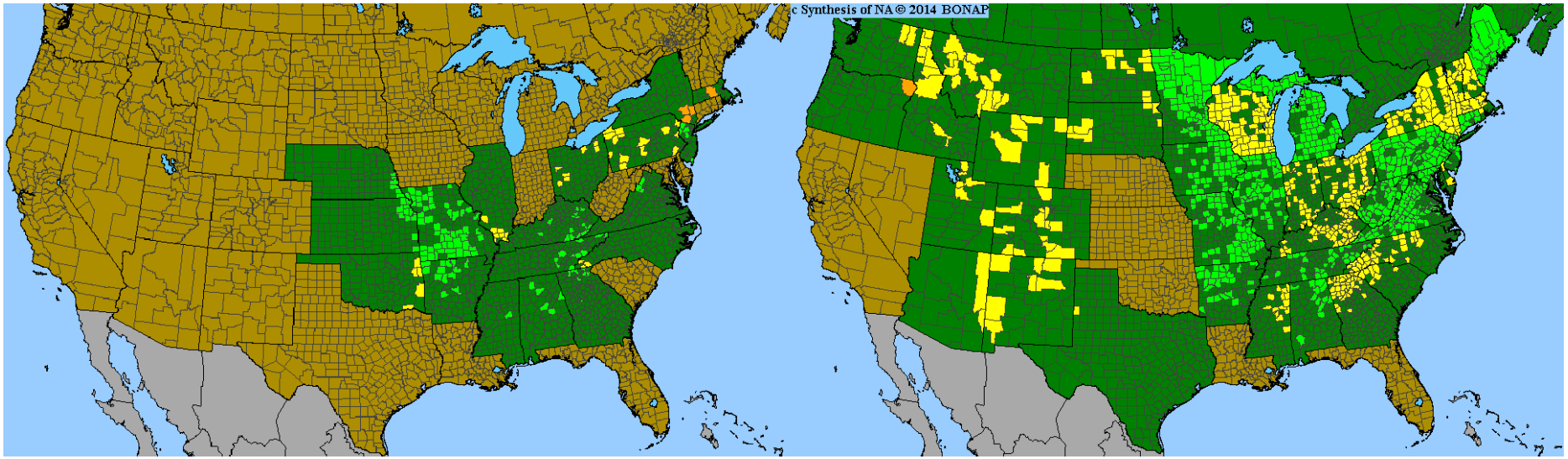


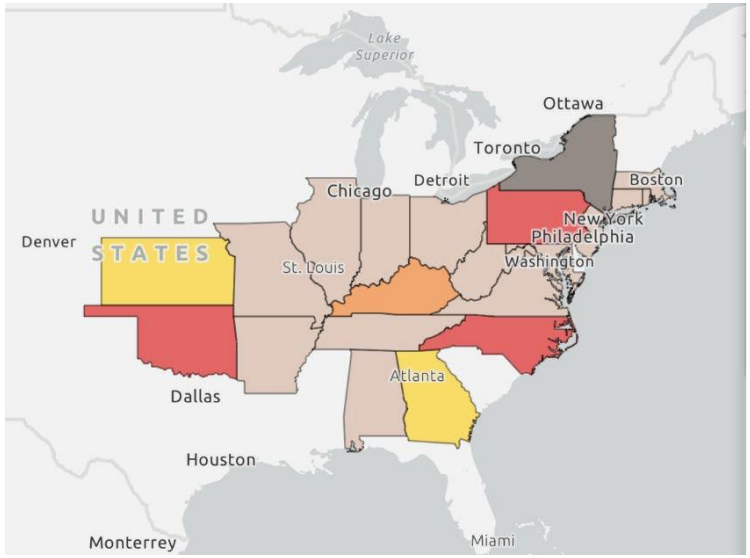
Distribution and regional conservation statuses

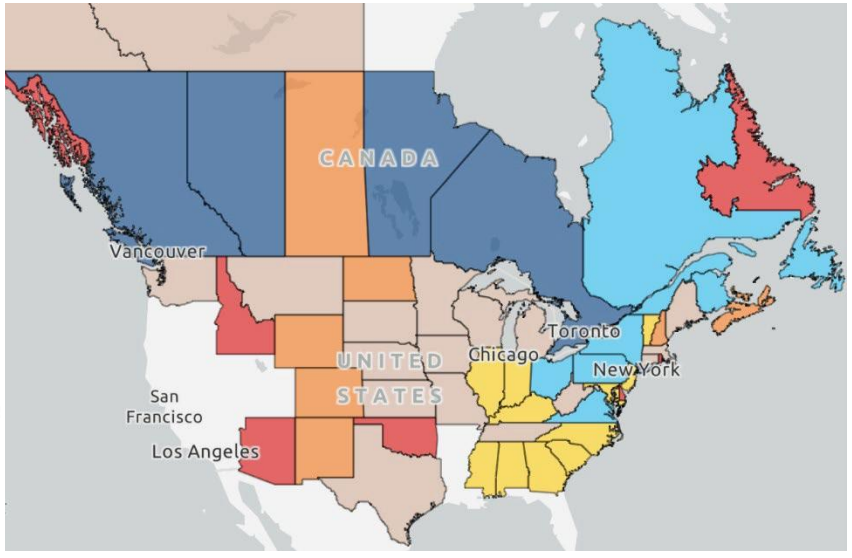
The BONAP maps and PA atlas maps suggest why the forest yellow ladies slippers have not previously been assigned a conservation status; var. pubescens appears very widely distributed, with many occurrences. However, we question whether the mapping still reflects the current data on the ground.

C. parviflorum var. parviflorum

C. parviflorum var. pubescens







Conservation Concerns

- Yellow ladies' slipper is highly impacted by deer browse.
- It is also highly susceptible to poaching because of its showy flowers and widespread interest in orchids, both for personal use and sale of plants.
- Its habitat, calcareous forests, is highly vulnerable to invasion by non-native species.
- Broad decline has been reported for the orchid family.

Status Justification

Despite being historically more abundant, these taxa have experienced a decline due to decades of overbrowsing, degradation and conversion of calcareous forest habitats, and poaching. Today there is a moderately low number of extant populations known in Pennsylvania. The forest varieties are also limited to a specialized habitat that is highly under threat (calcareous forests), and face very high threat from poaching and deer browse. These factors combine to merit a conservation status of Pennsylvania Rare or Pennsylvania Threatened.

Literature Cited

- Flora of North America species account for Cypripedium parviflorum. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242101551 accessed 3/6/2026
- GoBotany Species account for *Cypripedium parviflorum* https://gobotany.nativeplanttrust.org/species/cypripedium/parviflorum/ accessed 3/6/2026
- Kartesz, J.T. 2024. Synthesis of the North American Flora, Version 2.0. 6 September 2024
- Weakley, A.S., and Southeastern Flora Team. 2026. Flora of the Southeastern United States. University of North Carolina Herbarium, North Carolina Botanical Garden. https://fsus.ncbg.unc.edu/.

American dragonhead – Dracocephalum parviflorum

Photo: Paul Marcum

Current Status in PA Regulations: TU
Coefficient of Conservatism: 2-9 across range
Proposal: delist, not native to PA
Proposed by: Jessica McPherson, WPC/PNHP

Proposal Summary

This species was assigned to TU status in 1995 in order to further investigate the nativity of the few specimens recorded from the state. Evidence suggests they are not natively occurring, and if they were, it wouldn't need our help.

Habitat

- FSUS: Cultivated ground, disturbed areas.
- GoBotany: Anthropogenic (human-disturbed or -maintained habitats), meadows and fields, woodlands

Pennsylvania specimens

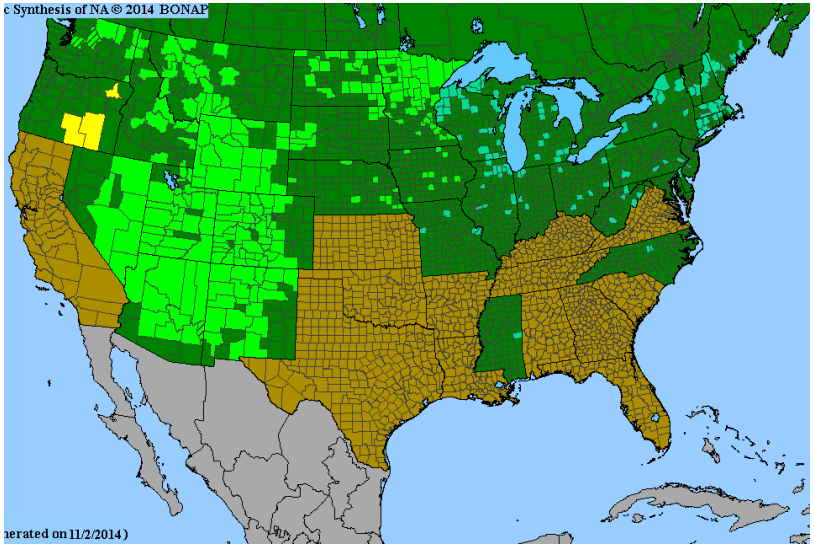
ID	CatalogNumber	RecordedBy	Year	Habitat	County	Locality
12250164	CM077445	Wuslich, J.	1953	between bricks under chicken house	Westmoreland	Export
12289866	CM169257	Miller, J.	1915		Erie	Car Works Yard
15817052	MCA0021154	Harold W. Pretz	1925	cinder	Lehigh	along Lehigh River; along tracks of L.V. Railroad about 1 mile NNW of Cementon station
16710126	PH00366964	Joseph R. Mumbauer	1936	yards	Montgomery	Pennsburg
16710127	PH00366965	Edwin T. Moul	1945	Along road	Lebanon	2.5 mi. NW of Myerstown
21313099	PAC0031587	Kenneth B. Hoover	1950	roadside near railroad	Cumberland	1/2 mile NE of Williams Grove
30639406	SHIP	R.L. Schaeffer, Jr.	1984	ballast	Lehigh	Allentown, from Center Square, 2 mi NE
15817843	MCA0021735	R. L. Schaeffer, Jr.	1978	ballast	Northampton	Bethlehem
15817844	MCA0021736	R. L. Schaeffer, Jr.	1976	ballast	Lehigh	West Bethlehem

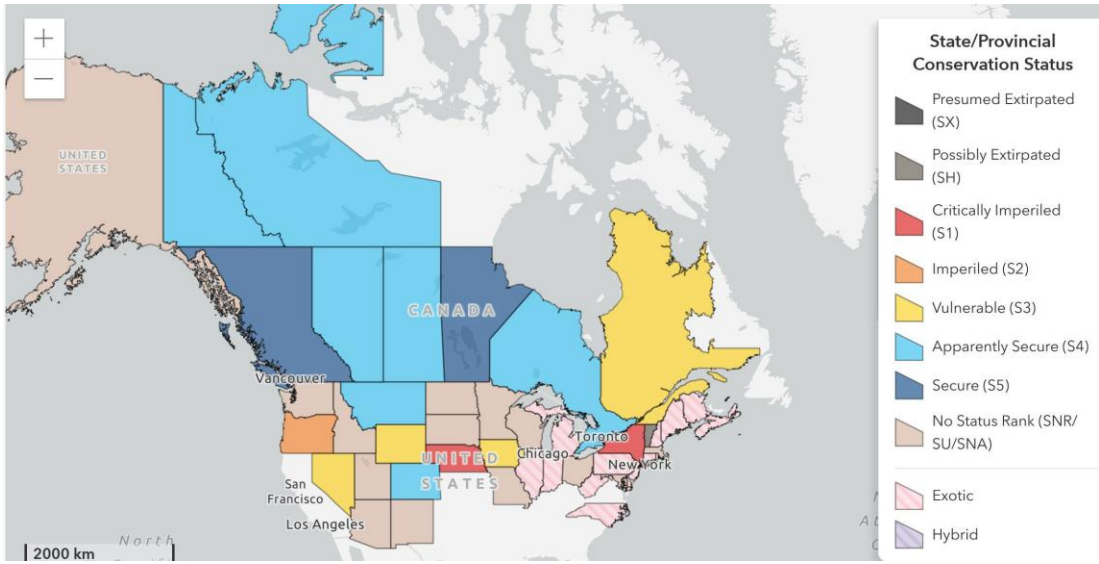
Native Status

All recorded specimens appear to be from highly disturbed, anthropogenic habitats, in developed parts of the state, and in transportation corridors or facilities. This is evidence that the species' presence here is adventive.

Distribution and regional conservation statuses

Occurrences in the eastern half of the United States are broadly considered adventive, although GoBotany does note someone thinks it's native in one Vermont site. It appears to be globally secure, with a large range and few states assigning conservation status in the main portion of the range.





Cyan-colored counties indicate adventive records

Bright-green counties indicate native presence.

Extant Locations

There are no recent specimens, no iNaturalist records in PA, and no other known records of presence in the state.

Historic Locations

Nine specimens, 1915-1976. Habitats are all highly anthropogenic ("ballast", "car works yard", "along road", "yards", "roadside near railroad", and….."Between bricks under chicken house."

Conservation Concerns

Pennsylvania is very far outside of the native range of this species. It also appears to be adept at utilizing anthropogenic habitats, and therefore would likely not need conservation help even if it were natively occurring.

Status Justification

This species should be removed from the classification of TU and assigned no conservation status in Pennsylvania, because the available evidence is overwhelmingly in favor of it occurring here only adventively, not natively. It is considered adventive in almost all of the eastern half of United States, and all Pennsylvania records are from highly disturbed sites associated with transport corridors or facilities.

Literature Cited

- Kartesz, J.T. 2024. Synthesis of the North American Flora, Version 2.0. 6 September 2024
- Weakley, A.S., and Southeastern Flora Team. 2026. Flora of the Southeastern United States. University of North Carolina Herbarium, North Carolina Botanical Garden. https://fsus.ncbg.unc.edu/.

Appalachian bluet – Houstonia serpyllifolia Michaux.

Current Status in PA Regulations: N

Coefficient of Conservatism: 10 in PA, 8-10 across range

Current PABS status: PE

Proposal: PT

Proposed by: Jessica McPherson, WPC/PNHP

Photo: Jessica McPherson

Proposal Summary

Although this species has a limited number of populations in Pennsylvania, available data and ecological factors better support the status of Pennsylvania Threatened than Pennsylvania Endangered. It is at the northern edge of its range and could be favored by rising temperatures; although it often occupies high quality habitats, it also has some tolerance of disturbances and does not appear to be browse-sensitive; and a few new populations have been found recently.

Habitat

- FSUS: Streambanks, grassy balds, moist forests, seepy rock outcrops, spray cliffs, and moist disturbed areas.

- Pennsylvania: mostly on rocky, mossy banks of high-gradient streams; also path edges, river scour, floodplain, and "culvert area."

Identification

- This species is clearly mat-forming, with trailing stems, leaves distributed along them, rooting at nodes. *Houstonia caerulea* leaves are in basal rosettes, and if stolons are present, they are less than 3 cm long. *H. serpyllifolia* leaves tend to be smaller, rounder, with distinct petioles; *H. caerulea* leaves are a bit larger and tend to taper to petioles. Hybrids do occur; if growth form and leaf shape seem ambiguous, it is likely hybrid material.
- FSUS says *H. serpyllifolia* typically has flowers with a brighter blue color than *H. caerulea* (paler blue). They also fade over time though.

Taxonomy

Ed Terrell's monograph on *Houstonia* explains that *Houstonia caerulea* and *Houstonia serpyllifolia* are generally distinct; but, intergrading hybrid swarms have been known from a few places (Terrell 1996). *Houstonia serpyllifolia* is polyploid, while *Houstonia caerulea* can be diploid or polyploid. Some populations may be able to hybridize while others are isolated by ploidy level. Genetic analysis confirms that these two species are closely related and show markers of hybridization (Church and Taylor 2005). Terrell did visit some Pennsylvania populations and said we have both hybrids and non-hybridizing *H. serpyllifolia*. Further field experience suggests we have some sites where there is no introgression, and other places where hybridization occurs. Apparently *H. caerulea* × *H. serpyllifolia* has reduced seed set.

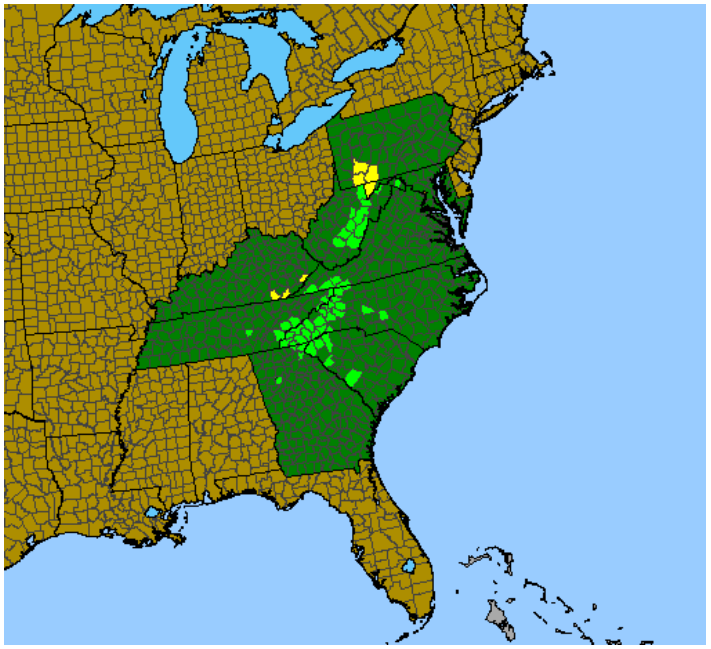
Ecology

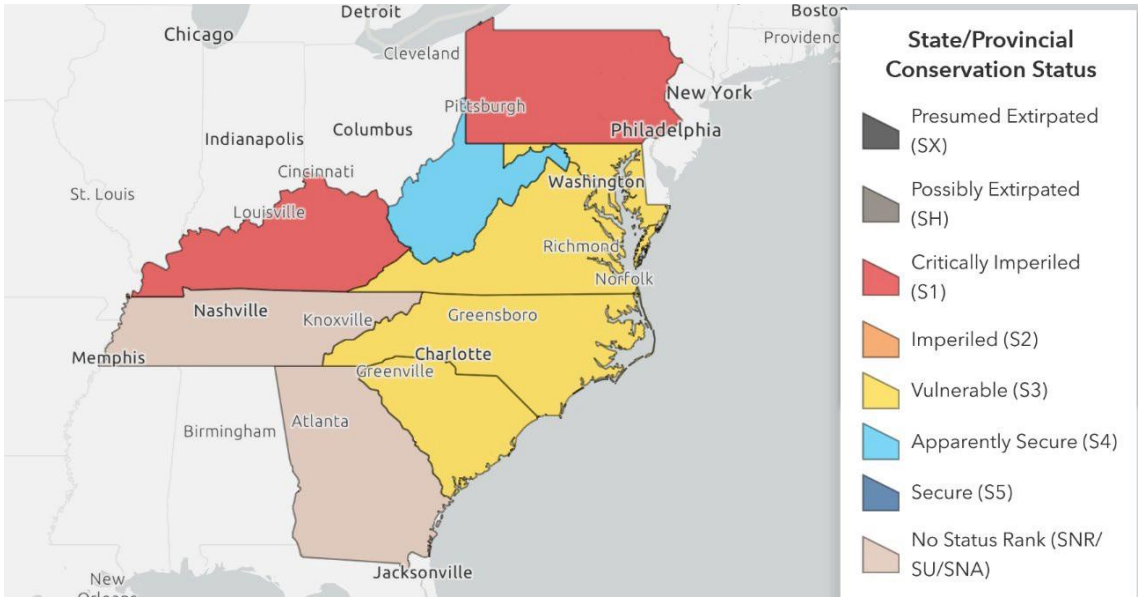
We initially believed that *Houstonia serpyllifolia* was an extremely conservative species confined to high quality habitat on mossy banks of high-gradient streams, while *Houstonia caerulea* commonly shows up on trails, mowed areas, and a variety of low-competition disturbed sites. Further experience adds some caveats:

- In the mountains of North Carolina, I observed *Houstonia serpyllifolia* growing freely on the dry-mesic edges of forested trails. Ironically, there was a high gradient stream, but its banks didn't have any *H. serpyllifolia*. FSUS habitat description includes both high quality and moderately disturbed habitat, suggesting this is not an aberration.
- One of our relatively good quality populations of *Houstonia serpyllifolia* occurs along a high gradient streambank that is extensively fished. When I first observed it in 2001, I worried that the foot traffic might erode the plants, and should potentially be rerouted away from the occupied area. In 2021, I returned to see the population still in good condition, and particularly utilizing the edges of footpaths. Similarly to *H. caerulea*, this very diminutive species appears to benefit from the low-competition zones and/or bare soil conditions on the periphery of moderately used trails.
- Review of the habitats of our sites shows a few with less than pristine habitat: "culvert area", "EO on shaded and moist trailsite" (hybrid individuals noted at this site), "verge of small foot trail".
- It is difficult to tease apart the influence of hybridization and the true ecological range of *H. serpyllifolia*, as some, but not all, of the sites where plants occupy a broader range of habitats include reports of hybrid individuals present. However, the species are very recently diverged and share great morphological similarity, so it is hard to believe they would have sharp differences in their ecology.

Distribution and regional conservation statuses

Houstonia serpyllifolia is assigned a status of conservation concern in all states where it occurs except Tennessee and Georgia; its global rank is G4.





Extant Locations

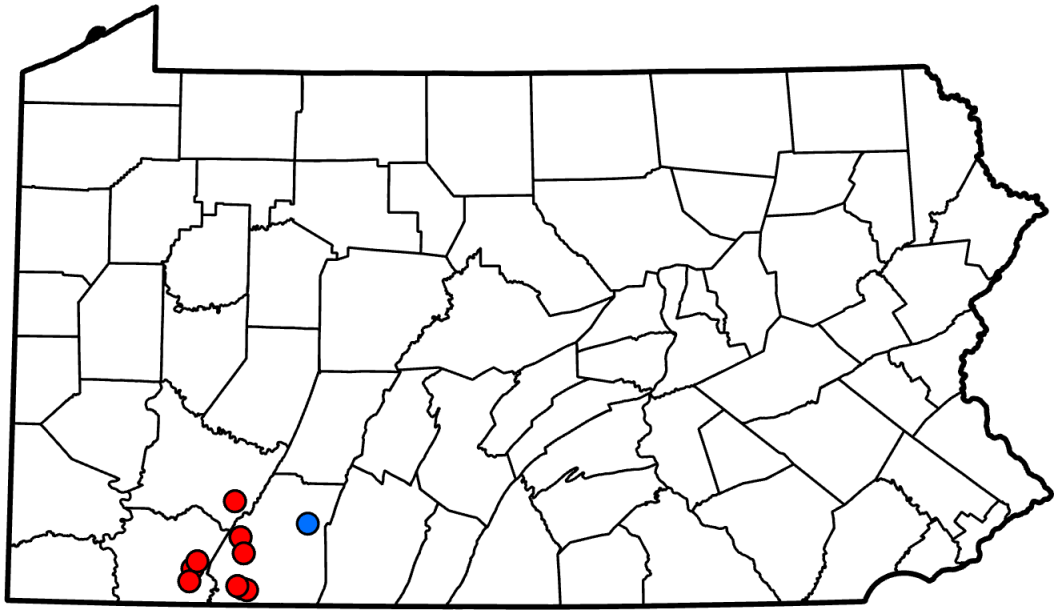
There are 9 extant locations. Three are ranked as having high viability, while the other 6 do not have sufficient information recorded to assess viability. Hybridization is noted at two sites. Several new populations have been documented since the species was first assigned a status of PE.

Population numbers are very difficult to assess because the species is mat-forming.

- Four sites report 10-100 m of area occupied
- 1 site reports 5-10 m area occupied
- 2 sites report 1 m area occupied
- Two sites do not have population areas recorded.

Historic Locations

There is only one historic location known for the species. Notably, one site was rediscovered in 2003 from an 1898 collection.



- Red dots = extant
- Blue dots = historic

Conservation Concerns

- While the species appears to benefit from low to moderate level foot traffic, and to be able to utilize sites with low levels of disturbance, it will not likely tolerate true habitat conversion and high levels of disturbance.
- Invasive species are a threat to this species because of its extremely low stature. *Microstegium vimineum* invades all the habitats utilized by this species.
- Climate change may have a mixed impact on this species. Pennsylvania is at the northern tip of its global range, and a warming climate may expand the usable climatic zone within the state. However, increased flashiness and intensity of stream flooding could result in scouring this species from its streambank habitats
- Hybridization could potentially be increased by climate change if ecological distinctions become less distinct; however, it often seems that hybridization is controlled by ploidy levels, and where both species are present with breeding compatible ploidy, they already interbreed. Terrell states that the species are often separated by elevation; in Pennsylvania, the habitats are likely ecologically compressed because we are further north in the range, and both *H. caerulea* and *H. serpyllifolia* occur in the Allegheny Mountains.

Status Justification

Pennsylvania Threatened is the appropriate status for this species because it has a relatively low number of populations and individuals in the state, but both exceed the typical ranges for Pennsylvania Endangered. Additionally, the species is fairly conservative, but can tolerate and even benefit from some disturbance. It does not currently appear to be experiencing decline, and may even potentially expand as climate change progresses. However, invasive species are still fairly low at most known sites; future threat is likely. The NatureServe rank calculator indicates S2/PT.

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Houstonia caerulea: leaves in basal rosettes, tend to be narrower, more tapered along petiole. If stolons present, they are short.

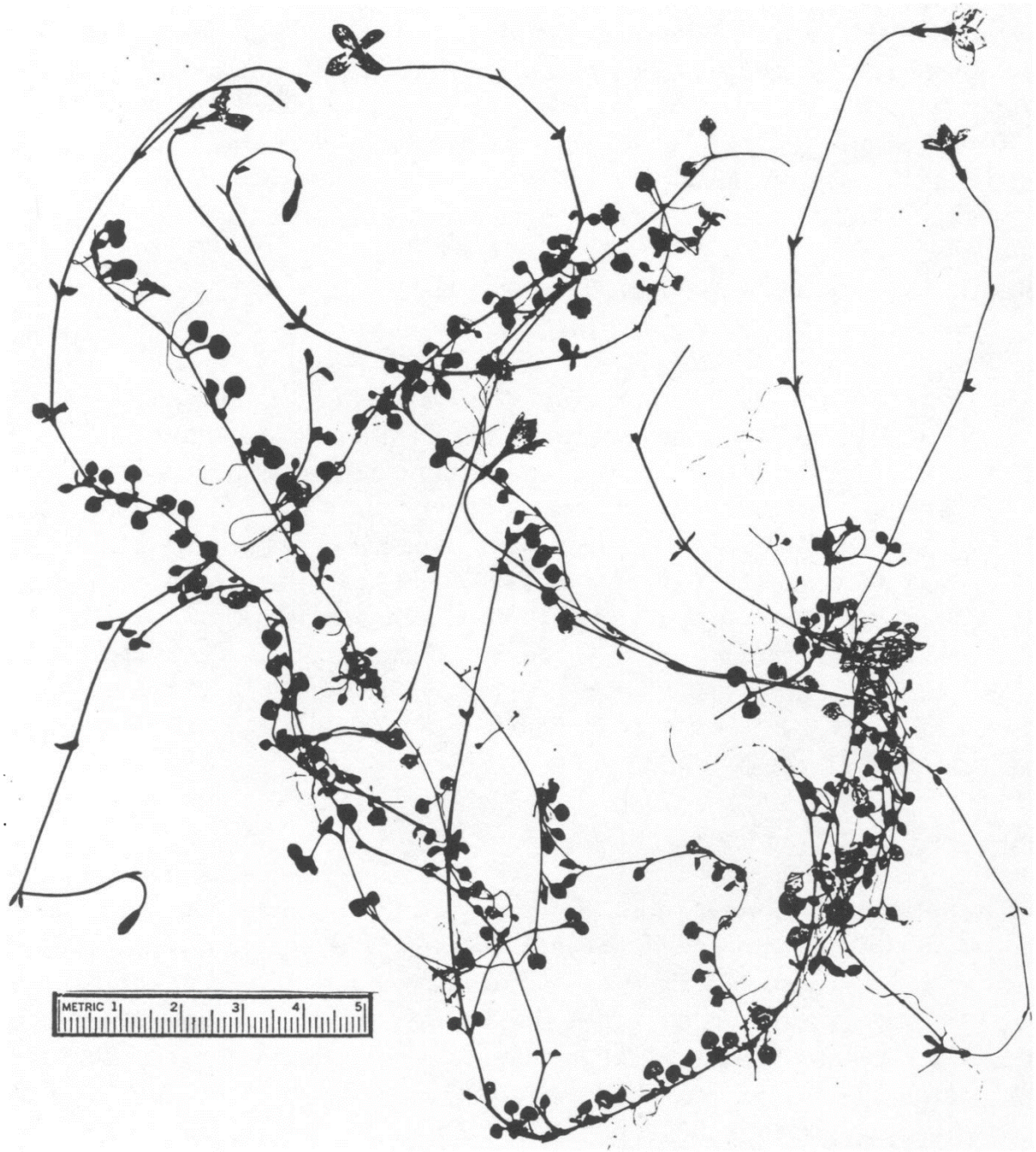


FIG. 8. Silhouette of *Houstonia serpyllifolia* (*Terrell 3991*). Note the prostrate habit and very small leaves.

From Terrell 1996. Note that leaves are mostly not clustered into rosettes. Also tend to be very spatulate.

Potential hybrids. Note intermediate leaf shape and growth form. Rosettes present, but sprawly and semi-mat forming. Plants mostly separate discretely when investigated.

Photos J. McPherson, Laurel Highlands Hiking Trail above Rock Springs Run.

Nits and lice – Hypericum drummondii

(Grev. & Hook.) Torr. & A. Gray

Current Status in PA Regulations: none
Coefficient of Conservatism: 6 for PA, 4-6 throughout range
Proposal: delist, mobile species with anthropogenic habitat use
Proposed by: Jessica McPherson, WPC/PNHP

Photo: Christopher Warneke, i-naturalist.

Proposal Summary

This species is primarily midwestern and southern in its range. There are only 2 recent observations in PA, both from 2012: one on a dirt farm road in Washington County, and one in a ROW in Armstrong County. It is known to be a highly mobile species that can utilize anthropogenic habitats, and it has a large global range in which it is considered secure. For these reasons we feel it does not need conservation status in Pennsylvania.

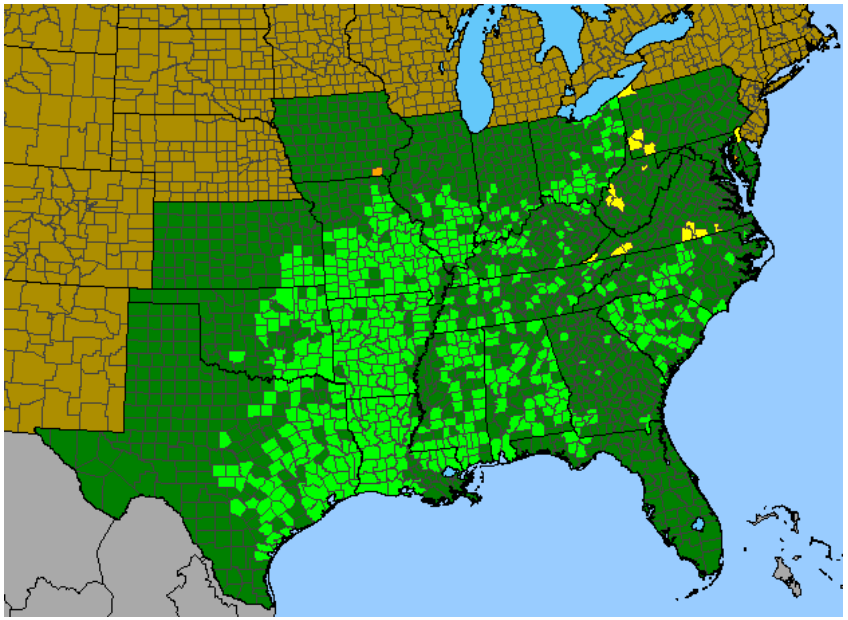
Habitat

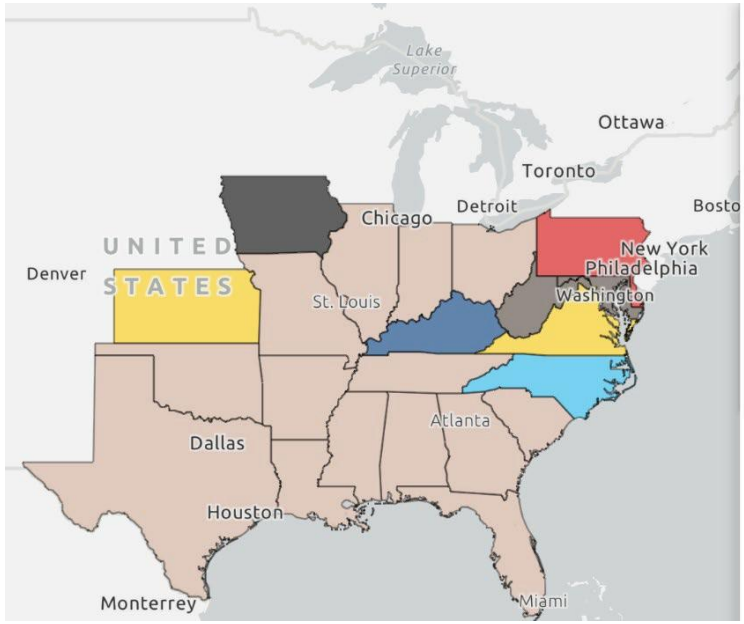
- FNA: Dry, sandy or clay soil in open woods, old fields, waste or rocky places
- FSUS: Dry woodlands, woodland borders, fields
- Plants of Louisiana: Dry woods, fields, and roadsides, in sandy or gravelly soils in fallow fields, open scrub oak and cedar-oak flatwoods, forest edges, prairies, and weedy pastures.
- Pennsylvania specimens: the only habitat data recorded for historics is: “Presque Isle” (Shafer, 1900, Erie), “Dry slopes” (Jennings, 1927, Washington), and “neglected stony field on upper side” (Jennings, 1927, Washington). The two 2012 observations were a dirt farm road in Washington County, and a gas ROW in Armstrong County.

Identification

This is one of two PA *Hypericum* species that are annual herbs with compound branching in the inflorescence. This species has linear subulate leaves, but they are identifiably leaves; the other, *Hypericum gentianoides*, has scale-like leaves and tends to be much branchier.

Distribution and regional conservation statuses





Historic locations / Native Status

With 6 historic collections in Erie, Armstrong, Washington, and Allegheny Counties, dated 1880-1927, historic nativity does not seem to be in doubt.

Extant locations

Two known locations documented in 2012. No records in iNaturalist in Pennsylvania.

Status Justification

Hypericum drummondii is globally secure across a broad range. It is a mobile species able to utilize anthropogenic habitats in addition to natural dry ruderal habitats. The only recent observations of the species in Pennsylvania were in anthropogenic habitats. For these reasons, assignment of conservation status in Pennsylvania does not seem needed.

Blue dots = extant
Red dots = historic

Literature Cited

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Red wood lettuce – Lactuca hirsuta Muhl.

Current Status in PA Regulations: N
Current Rank: S3, under review
Coefficient of Conservatism: 5 (PA), 5 (NY), 9 (NJ), 4 (MO)
Proposal:

L. hirsuta: S1S2, PE or PT?

var. *hirsuta*: SH

var. *sanguinea*: S1S2

(Assign legal status only at the species level)

Proposed by: Claire Ciafré, WPC/PNHP

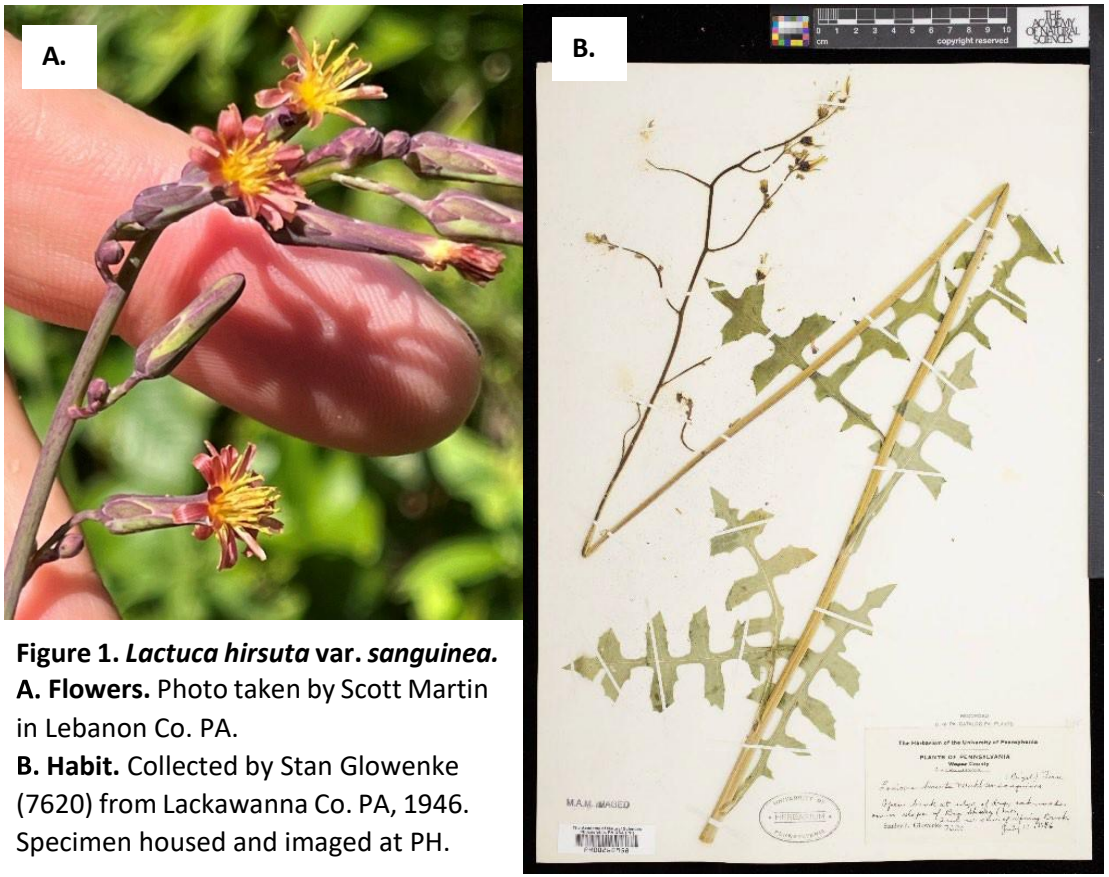

Figure 1. *Lactuca hirsuta* var. *sanguinea*.
A. Flowers. Photo taken by Scott Martin in Lebanon Co. PA.
B. Habit. Collected by Stan Glowenke (7620) from Lackawanna Co. PA, 1946. Specimen housed and imaged at PH.

Proposal Summary

Lactuca hirsuta is proposed as S1S2, and we are unsure whether PE or PT is more appropriate. It is at high risk of succession as well as competition with nonnative species, and populations tend to be small (1-40). While there are 39 documented populations in Pennsylvania, only 16 of these are known to be extant and few have good viability. Two varieties are known from the state, with *L. hirsuta* var. *sanguinea* being significantly more common and also proposed as S1S2. There are very few collections of *L. hirsuta* var. *hirsuta* from the state and it was last documented in 1955, so it is proposed as SH.

Habitat

- FNA: Openings in woods.
- FSUS: Dry, sandy or rocky woodlands, forest edges.
- GoBotany: Dry fields, roadsides, forest edges and clearings, woodlands.
- Michigan Flora: Dry ± open ground, including oak-pine savanna on old dunes, clearings among jack pines, sandy bluffs and banks, prairie-like areas.
- Pennsylvania specimens: Woodlands and cut-over woods, outcrops, thickets, brushy alluvial bottoms.

Ecology

Lactuca hirsuta is an annual or biennial that grows in disturbed portions of otherwise high-quality woodland and barren habitats. It often benefits from or requires moderate levels of litter/soil disturbance such as fire, logging, flooding, or scraping; many of its populations are along road banks or in rights-of-way. However, it is also known from self-maintaining, competition-limited habitats such as outcrops and may be associated with shale barrens. It is typically found in openings or edges of otherwise wooded settings, but is occasionally found in larger, sunnier openings; for example, it has been documented from open grasslands and heathlands on Nantucket Island (Ballou et al. 2023). It is unclear whether it is associated with a specific bedrock geology, but may prefer circumneutral habitats.

Identification

Lactuca hirsuta is most similar to *L. canadensis,* and they are best distinguished by the length of the involucre, achene, and pappus: all are larger in *L. hirsuta,* but are difficult to estimate without a ruler. Characteristics of the leaf lobes also appear to be reasonably reliable, including on the basal rosettes, with the lower leaves of *L. hirsuta* having blocky lobes which are widest above the base and blunt at the tip. *Lactuca canadensis* lobes are typically widest at the base and taper to a pointed tip. Differences in inflorescence shape and density have also been suggested between the two species, with *L. hirsuta* having spreading branches with scattered flowers, and *L. canadensis* having ascending inflorescence branches with dense flowers (Weakley and the Southeastern Flora Team 2026). One source also suggests that *L. hirsuta* has leaves which diminish in size distally while those of *L. canadensis* are nearly uniform in size throughout the plant, but this has not been tested extensively in the east (Thomas 2009). Some resources have used hairiness to distinguish the two species, particularly the villosity of the midrib (Fernald 1938), and a blog by a midwestern botanist even goes so far as to suggest that distinguishing the two species is “easily done since *L. hirsuta*, as the name implies, is hirsute and *L. canadensis* is glabrous” (Thomas 2009). However, this character does not appear to be consistent across its range, particularly in New England and Canada where *L. hirsuta* more often has glabrous stems and leaf surfaces. In fact, this variation in hairiness serves as the basis of the varieties of *L. hirsuta* discussed below (Fernald 1938, Ballou et al. 2023). Furthermore, other *Lactuca* species can have hairs; *L. canadensis* often has a line of hairs on the lower midrib, and *L. biennis* can have a hairy stem and sometimes hairy leaf surfaces.

Figure 2. *Lactuca hirsuta* var. *hirsuta*.
Photo taken by Claire Ciafré in Crawford Co. MO

Taxonomy

There are two varieties of *L. hirsuta* which are present in Pennsylvania: *L. hirsuta* var. *hirsuta* and *L. hirsuta* var. *sanguinea*. The latter was originally described as a species in Florula Bostoniensis (Bigelow 1824), and was later described as a variety by Fernald, who distinguished it from the typical variety by having nearly glabrous leaves and stems; fully glabrous individuals were called *L. hirsuta* f. *calvifolia* (Fernald 1938). *Lactuca sanguinea* was recently resurrected on the basis of having crimson corollas and predominantly glabrous, dark purple-red involucre, stems, and leaves, the latter typically glaucous underneath (Ballou et al. 2023). The authors did not address how glabrous individuals lacking such coloration should be treated, nor do they specify the taxon’s range other than by citing

specimens from MA, CT, NH, and QC. *Lactuca hirsuta* var. *hirsuta* is hairy, particularly on the upper surfaces of the leaves and on the stem, particularly lower on the plant (Figure 2).

The two varieties appear to be readily distinguishable in most cases, including in Pennsylvania. However, the color and hair characteristics distinguishing them likely occur on a spectrum. For example, iNaturalist observations of *L. hirsuta* var. *sanguinea* show individuals which range from deep purple to only faintly purple-tinged or glaucous, and sometimes with hairs present on the midrib; additionally, *L. hirsuta* var. *hirsuta* has been demonstrated to have great variation in hairiness. It therefore seems to best to recognize the two taxa as varieties rather than as species, particularly until a larger, range-wide study is conducted.

Global distribution and regional conservation statuses

Lactuca hirsuta is known from Ontario and Prince Edward Island south to Texas and Georgia. The species is tracked throughout much of its range, particularly in in the mid-Atlantic region and to the north (Figure 3):

SX: District of Columbia
SH: Connecticut, Prince Edward Island
S1: New York, Maryland, Illinois
S2 or S2?: Wisconsin, Ohio, West Virginia, South Carolina, Indiana
S2S3: Massachusetts, Nova Scotia
S3 or S3?: Quebec, North Carolina
S3S4: Virginia

New Jersey does not have a rank for the species, but it tracks one of its varieties (*L. hirsuta* var. *sanguinea*) as S2. *Lactuca hirsuta* has never been reported from Delaware.

Fernald considered *L. hirsuta* var. *sanguinea* to occur from "Prince Edward Island to western New York (presumably beyond), south to Virginia and less commonly to Louisiana and Texas." His range for *L. hirsuta* var. *hirsuta* is more restricted, occurring from "Pennsylvania to Virginia and Louisiana" (Fernald 1938). It has also been reported as far west as Missouri, though the varieties are not currently recognized in the state (Yatskievych 2006). Most states don't track the varieties, but *L. hirsuta* var. *sanguinea* is tracked in New Jersey (S2), Indiana (S2?) and Virginia (S3S4). *Lactuca hirsuta* var. *hirsuta* is not tracked in any state.

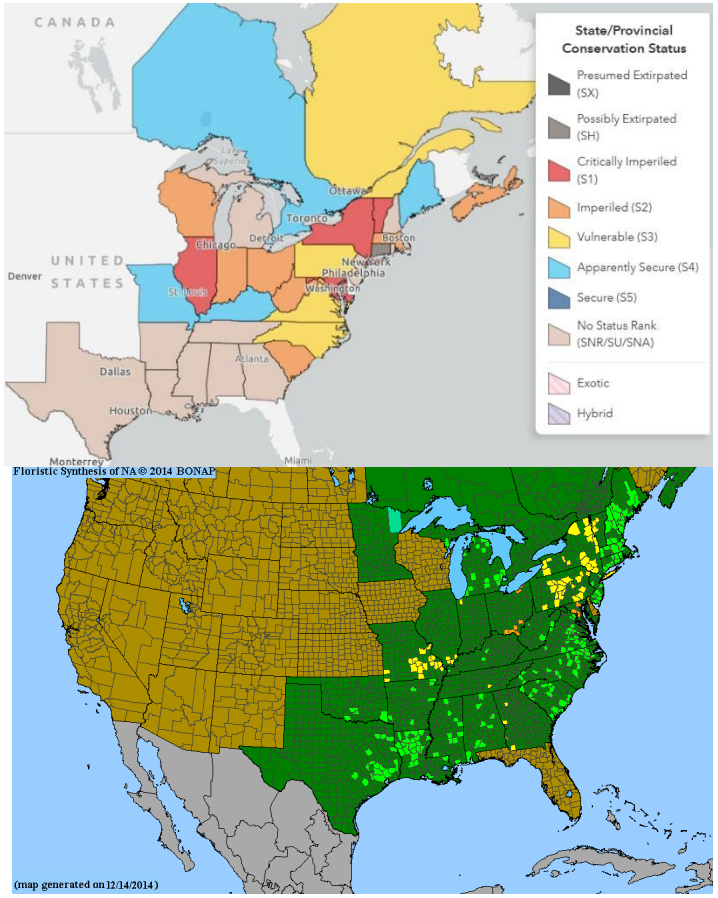

Figure 3. Ranks and distribution of *Lactuca hirsuta*. NatureServe 2026 and BONAP 2015.

Pennsylvania distribution

Within Pennsylvania, *L. hirsuta* var. *sanguinea* has been documented from at least 9 counties (Figure 4). *Lactuca hirsuta* var. *hirsuta,* which is likely at or near the northern edge of its range in the state (Fernald 1938), has been documented from 4 counties.

Extant Locations

There are 16 extant populations: 13 are in the PNHP database, and 3 iNaturalist observations which appear to have been correctly identified and represent new populations. Other iNaturalist observations may be correctly determined, but lack detail needed to confirm the species with certainty. Populations range from 1-40 individuals documented, with an average of 13.6 individuals/population. Of the 16 extant populations, five were identifiable as *L. hirsuta* var. *sanguinea.* One specimen seems to be intermediate, as it has purple coloration but is sparsely hairy on the lower stem and on the lower leaves. Specimens and images of the remaining 10 populations could not be readily examined, but most appear to correspond with points for *L. hirsuta* var. *sanguinea* in the PA Flora Atlas (Figure 4).

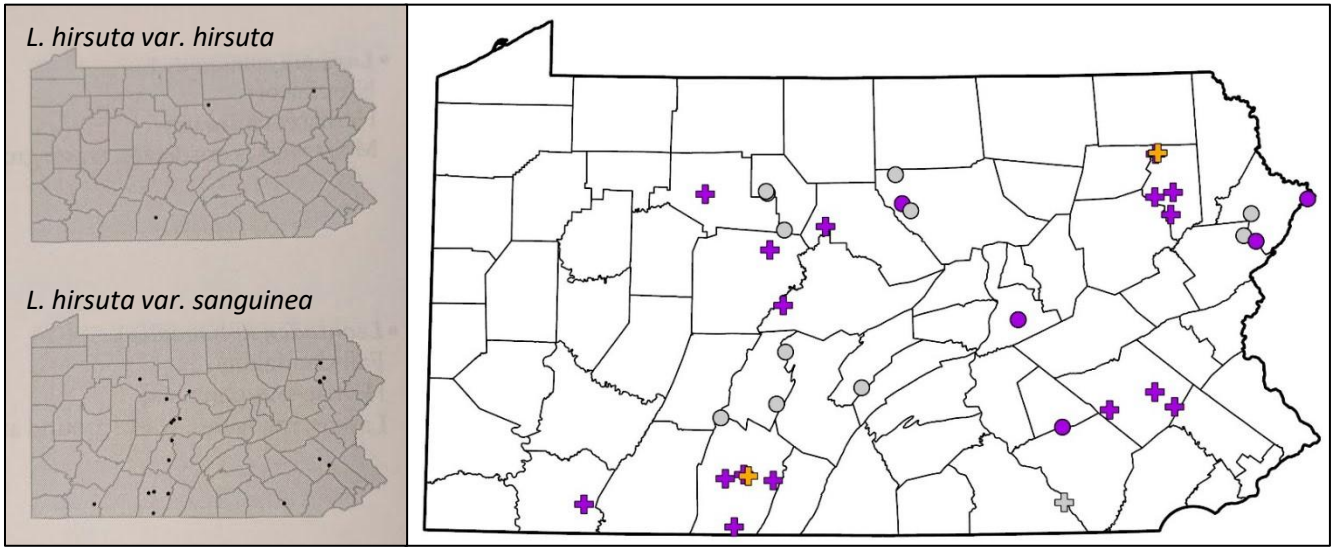

Figure 4. Pennsylvania records of *Lactuca hirsuta.* Records of each variety from the PA Flora Atlas (left; Rhoads and Klein 1993) and from a recent review of digitized specimens and EO data (right) are shown. On the right, historic populations are symbolized by crosses, and extant populations are symbolized by circles. The colors correspond to varieties: *L. hirsuta* var. *hirsuta* is orange, *L. hirsuta* var. *sanguinea* is purple, and populations without a variety ID are grey.

Historic Locations

There are 23 historic populations; 22 of these are in the PNHP database, but an additional specimen (Elk County, 1868) was found that is lacking locality data. Of the examined historic specimens, 16 are identifiable as *L. hirsuta* var. *sanguinea,* and 3 are *L. hirusta* var. *hirsuta.* One of the known historic locations of *L. hirsuta* is likely at or near a very well-botanized site in Bedford County (limestone cliffs at Lutzville) but has not been found. Its locality in Lackawanna County may still exist, where it was previously known from a "bramble thicket in [a] hemlock wooded slope," however numerous homes have been built in the area. The specimen documenting the variety's occurrence in Elk County has no further locality information given for the species. The occurrence mapped by the PA Flora Atlas from Lycoming County could not be found, and does not appear to correspond with other records or digitized specimens from the county.

Four specimens could not be confidently identified as *L. hirsuta*; one was very depauperate, two are likely misidentifications, and one did not have a digitized image. Additional specimens from York Furnace (Alexander MacElwee 1117; York County 1899) and Tannersville (Britton sn.; Monroe 1901) are digitized but appear to have been misidentified; they are not included in PNHP data.

Conservation Concerns

This species appears to require a certain level of disturbance because of its need for exposed soil and increased light to germinate and reproduce. Historically it may have been more widespread when fires occurred more frequently throughout the state. It currently persists in some naturally-maintained openings in woodlands and on a floodplain, but more than half of the extant populations occur along roadsides and rights-of-way embedded within woodlands. These populations benefit from and rely on continued maintenance of such habitats, but such maintenance could be very harmful to the species depending on the timing and/or type of management (e.g. mowing during the species' reproductive period, or indiscriminate use of broad-spectrum herbicide). Invasive plant species are also more common in these habitats and can readily outcompete *L. hirsuta* and degrade its habitat. Deer herbivory has also been documented at two populations, and may occur at others. While overpopulation of deer is well-documented throughout the state, it is unclear how much impact they have on this species as individuals seem to be capable of forming new flower stalks following deer browse.

Status Justification

A rank of S1S2 was suggested by the rank calculator and appears to be reasonable based primarily on the small population sizes (1-40 individuals), the threats this species faces, and its requirement for moderate levels of disturbance to persist. There are additionally few extant populations (16) and even fewer with good viability. While there are numerous (23) historic occurrences, the possibility for these to be rediscovered was accounted for in the rank calculator. The vast majority of extant and historic populations are identifiable as *L. hirsuta* var. *sanguinea,* and so its rank should also be S1S2. There are just 3-4 documented occurrences of *L. hirsuta* var. *hirsuta,* and it was last seen in 1955, and so a rank of SH is appropriate. It is unclear whether a status of PE or PT would be more appropriate for *L. hirsuta* (sensu lato) given the threats this species faces and its habitat requirements.

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American gromwell – Lithospermum latifolium

Michaux.

Current Status in PA Regulations: PE

Coefficient of Conservatism: PA 8, 7-10 throughout range, mostly 8+

Proposal: WL or PR?

Proposed by: Jessica McPherson, WPC/PNHP

Photo: etantrah, I-naturalist

Photo: Richard & Lisa Ware

Proposal Summary

In the process of reviewing the delisting decision made by the VPTC in 2005, we ran a rank calculator with current data, and queried heritage programs in other states within the range about its status and conservatism. The numbers are on the margin of delisting and PR/S3, especially considering that many populations are small. Reports from other states show that it is conservative and not particularly abundant throughout its range. In fact, it seems to be doing better in the small part of the range that we have than it is in many more central parts of its range. We wish to reconsider the status with current information before putting the decision through the regulation process.

Habitat

- FSUS: Dry to moist woodlands over calcareous rocks.
- New York Flora Atlas: Bottomland forests and rich deciduous forests in mesic to dry-mesic often calcareous soils.
- Pennsylvania: Calcareous woodlands and dry-mesic forests

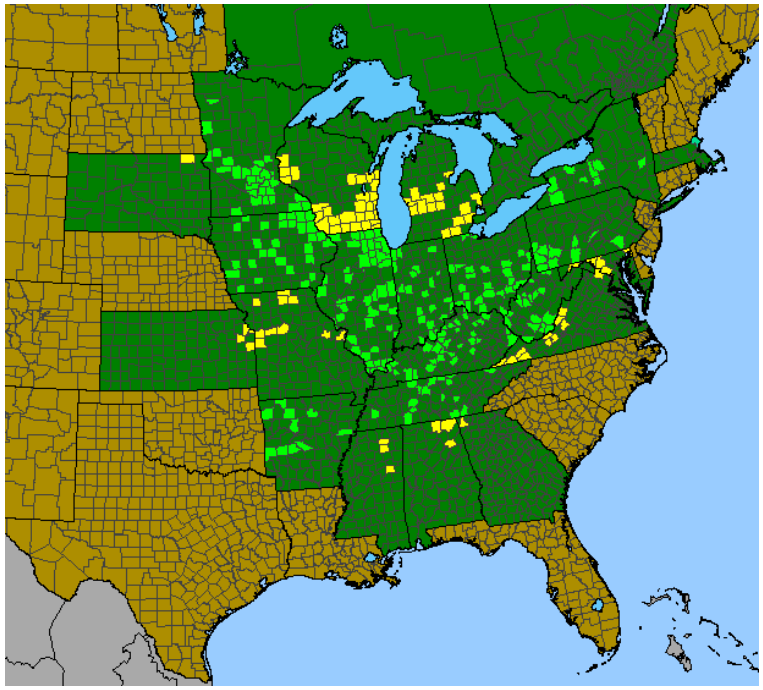
Identification

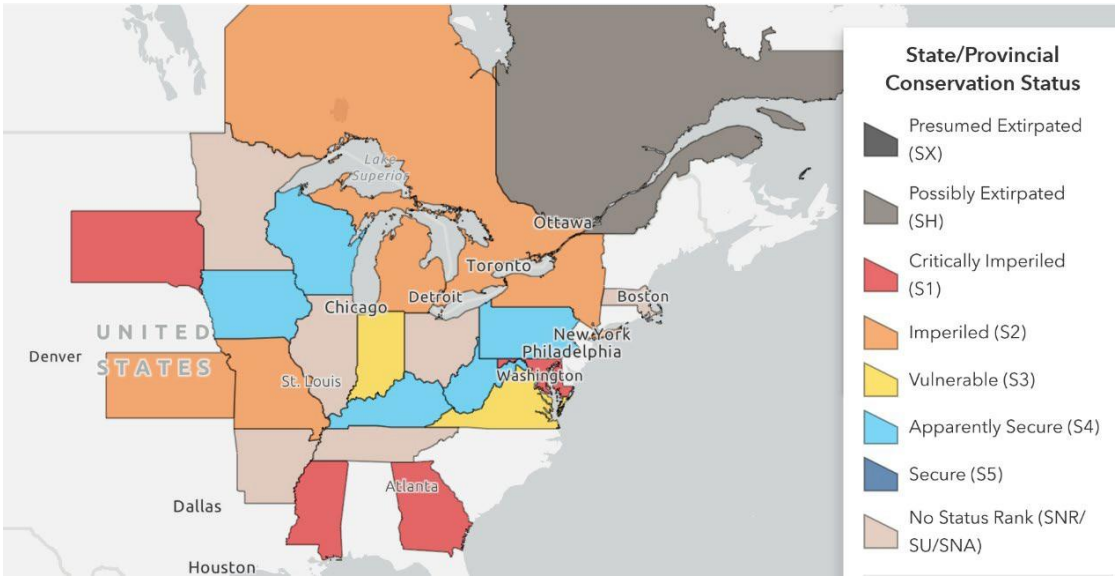
Borage family member with light yellow flowers; each flower is replaced by a hard white nutlet.

Distribution and regional conservation statuses

Lithospermum latifolium has a broad range across the Midwest and Great Lakes states. However, in most states where it occurs, it is assigned a status of conservation concern. It is uniformly described as occurring mainly in highly conservative habitats and scattered, small populations, although some states say they also have some roadside occurrences. (See end of document for detailed accounts)

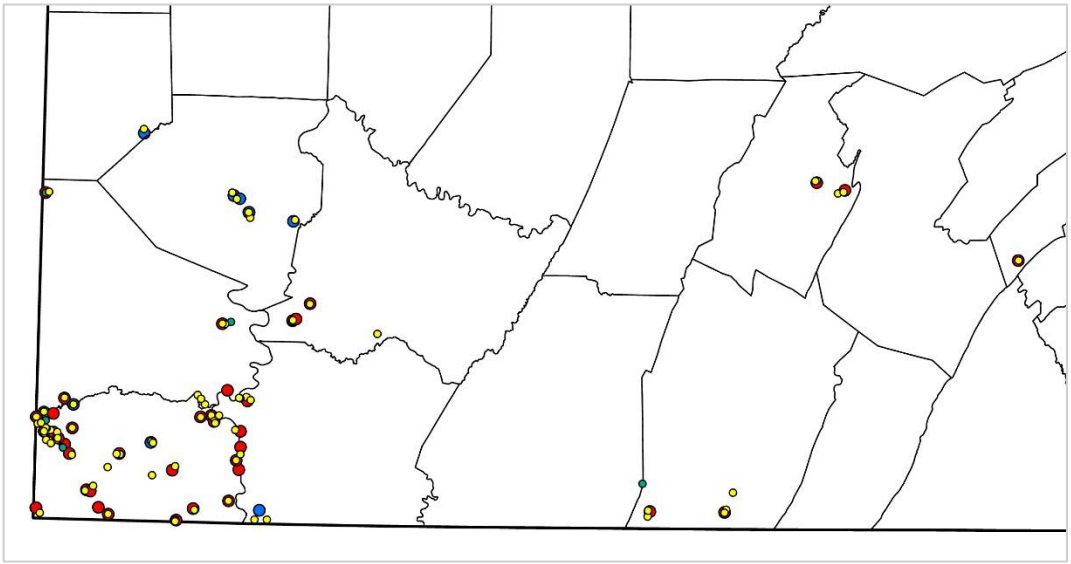
Several state botanists provided ranks in addition to what is mapped below: Ohio = S4; Illinois = S3 to S4; Minnesota = S3





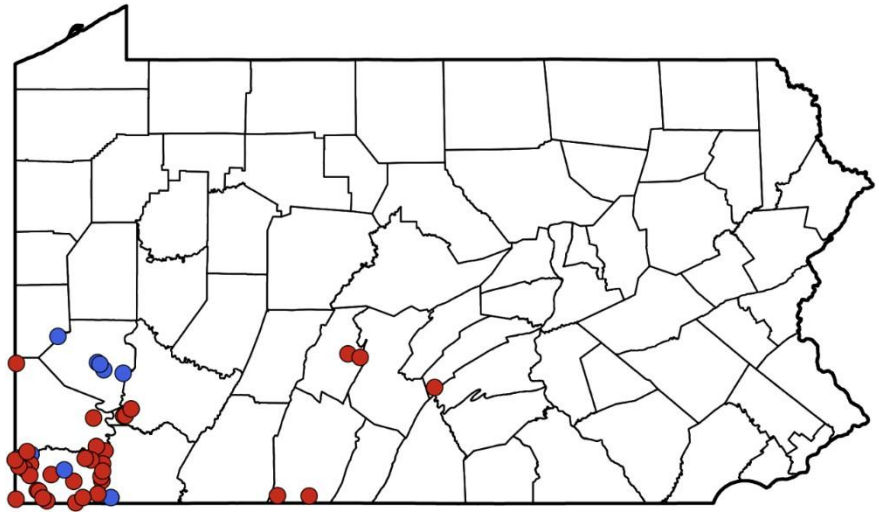
Extant Locations

- 57 known extant locations (superimposed specimens, iNaturalist data, and PNHP data; if within 1 km, considered the same). 18 are outside of Greene County.
- There is a lot of overlap in the different sources. The mapped data also show heavy concentration along our rivers, which is mainly where limestone woodland habitats occur in SW PA.
- Since delisting in 2009, about 6 new populations have been found; 1 in Somerset Co., 1 in Washington Co., 1 in Westmoreland Co., and 3 in Greene County. It is specific to rich forests, and although there is a lot of that kind of habitat in Greene County, it's not everywhere, and it is somewhat conservative. Maybe another 5-15 populations?
- We estimate 57-78 populations in the state; 1/3 to ½ are ranked as having good viability.



Blue dots = extant Yellow dots = specimens
Red dots = historic Green dots = inaturalist observations

- Sites all seem to indicate rich mesic forest and calcareous woodlands. Reading site comments, maybe 1/4-1/3 are somewhat degraded already from invasives and/or mining. Comments from other states reinforce this is a conservative species and these are likely legacy rather than opportunistic populations, with future viability uncertain. `
- Total individuals in state estimated at 6,000-20,000. Of 38 sites with EORs (others are specimen-based or from iNaturalist, since we stopped tracking it in 2009), half have good populations, a fifth have fair and a quarter have poor numbers. (Most have good population counts: 16 with 100+ plants, 7 with 50-100, 9 with 1-49; 6 with no data provided.) It's been interesting in comments from other states that small populations are the norm in a lot of the range; that's my personal experience too, but we also have records of populations with a few hundred plants (and even one that claims "thousands."). Maybe Greene County, which has a lot of calcareous geology and a lot of rich forest (even though it's horribly fragmented), is actually kind of a sweet spot in the larger range. Most of the nice populations are in limestone woodlands and mesic forest and haven't been visited in 20 years, though, so it's also possible our data just haven't kept up with decline.



Red dots: extant locations
Blue dots: historic locations

Historic Locations

There are not many historic locations in play for this species. Those that do not also have an extant record associated with them are in Allegheny County and unlikely to persist (plus one Greene County historic).

Conservation Concerns

Main threats are invasive species, pipeline development/ROW development, and gas development; possibly also succession of woodlands. Limestone woodlands are a highly endangered habitat.

Estimated 15-30% loss puts future population at 42 (if there are no more than we already know about, and 30% is lost) - 68 (if there are 78 out there and 15% are

lost). Overall, this is borderline for delisting; the numbers are on the high side but not ridiculously so, and within Greene County the density is high; but it is a good indicator of rich forest. If you were to try to target sites to conserve within Greene County, you'd probably use this as a first-cut indicator to pick them out. It is range-edge here, but somewhat uncommon most places it lives. In this borderline case, it has also been useful to get a sense of how other programs are ranking the species. Ohio and West Virginia both rank it as S4; however, other states with similar numbers to us rank it S3. Once again, the geographic concentration becomes an issue; we appear to have a similar density to Ohio and West Virginia, but only in a small portion of the state.

Status Justification

What will we decide???

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Range-wide comments on status of *Lithospermum latifolium*

1/17/2025

Ontario

We track it in Ontario, it is currently ranked S2S3. We're at the northern limit of its range here (obviously) where its mostly confined to rich floodplain woods and slopes along some of our larger rivers. Some of the larger populations have 1000s of plants but most of our records don't have details on numbers of individuals. Threats are mainly related to invasive species.

Sam Brinker

Massachusetts

We don't have it here in Massachusetts, (BONAP to the contrary in one county in MA but that is in error). But I well recall seeing it in SW Wisconsin in the Driftless area in high quality oak woods/savannas or edges of same, usually on limestone.

Robert Wernerehl, Botanist

New York

This is ranked S2 in New York, I guess because there are about 15 historical records spread fairly widely across the state. There are just three extant

records. One of these hasn't been seen (by us) since 1996, and Kyle Webster in our office found the other two last summer. Adding Kyle here in case he can add some habitat info or other insights – I've never seen the species.

Rich Ring, Chief Botanist

The habitat here seems to be similar to what others are mentioning – rich forests associated with creeks and rivers. It looks like our historical records are from habitats such as those too. In one population I saw this year it seemed to be hanging on despite being in one of the most extensive Brachypodium sylvaticum populations I've ever seen! Who knows how much longer it will persist though.

I would guess with some survey effort tin NY we could turn up a few more populations, but given the historical records seem to be concentrated around a few calcareous areas with deep alluvial soils, and that most of those habitats have been converted to ag or otherwise developed, and that we are near the northern/eastern edge of range, S2 would seem like a good rank for NY.

We have one recent observation (2014) from Brome County so if there are rich bottom land forests on the PA side there it could be worth checking.

Kyle Webster, State Parks Botanist

West Virginia

Lithospermum latifolium seems to be reasonably well-distributed throughout West Virginia, although conservative and restricted to higher-quality calcareous forests and woodlands and typically in association with a well-developed herbaceous flora. I think S4 is an appropriate rank for the state. It's possible that it would be S3 if we ran it through a rank calculator, but I don't think so- too broadly distributed, many populations seem secure, and I can't think of too many obvious threats to the species.

John Burkhart, Natural Heritage Botanist

Ohio

My thoughts more or less echo John's for Ohio. It's not overly uncommon to see it in the southern and southeastern regions, especially in higher quality areas with a nice spring flora. It definitely seems to like rural roadsides in the SE region where invasives and overly aggressive mowing aren't (yet) an issue. I recall regularly coming across it in Athens and Washington counties when I was based down there from 2014-2017.

I've never really dabbled in doing S-ranks myself but my guess once again echoes John in that it's not common/widespread enough to be S5 here but S3 seems too conservative so S4 is a good fit. It's definitely one of those species I don't keep a conscious track of but I do smile when I see and think "oh, nice, I don't see that too much!" when I do encounter it outside a known spot.

Andrew Lane Gibson, Assistant Botanist

Following up what Andrew provided for Ohio, Cooperrider (1995) reports it from central Ohio to the Ohio river and northwest Ohio where there is exposed limestone. Populations are typically small, 11 to 50 individuals in open woods and edges with limestone/dolostone close to the surface. It is most common in western Ohio. It is declining in western Ohio due to bush honeysuckle infestations. We have not ran this species through the S-rank calculator yet and I agree with Andrew that it likely would be a S4.

Rick Gardner, Chief Botanist

Indiana

We are pretty much in the middle of its range in Indiana. There are collections distributed nearly throughout the entire state (though scattered), with a number of newer collections (which isn't always the case in Indiana; there is a noticeable gap in collections of all plants between Deam and the 1990s/2000s). It seems to be most frequent in the Highland Rim natural region in southern Indiana in calcareous forests, though I come across it infrequently in decent to good quality mesic upland forests throughout southern and central Indiana, and occasionally up towards the northeastern part of the state. Like Rick says, it always occurs in small populations. As far as how conservative it is, Rothrock assigned it a C-value of 7 for Indiana (he defines C-values of 7-8 as "Species found in high-quality remnant plant communities but appear to endure, from time to time, some disturbance." In Flora of the Chicago Region, it has a C-value of 10. Wilhelm and Rericha state that it is much less common now than historically in the Chicago region (I would assume due to development), where it grows in rich mesic woods. In general it is much less frequent in the Chicago region counties of Indiana than in the rest of the state (and although how common something is shouldn't be a part of its C-value, I think that does play a part in some Chicago region C-values). An Indiana SRank hadn't been calculated for this species yet, so I ran it through the rank calculator and it came out as S3S4, which seems pretty appropriate and somewhat in line with what others are saying here. The greatest threats seem to be invasives and potentially development.

It doesn't really sound like an S4 for Pennsylvania based on what you're saying, Jessica, but maybe it shouldn't be state-listed, either.

Scott Namestnik, Botanist

Illinois

In Illinois, *Lithospermum latifolium* is scattered throughout the state but generally uncommon. Most Illinois records are from northeastern Illinois and far southern Illinois in the Shawnee National Forest. As Scott mentioned the recent Flora of the Chicago Region (Wilhelm and Rericha 2017) gives the species a C-value of 10. This is up from C=9 in the 1994 Plants of the Chicago Region (Swink and Wilhelm 1994). The statewide conservatism score is a 9 (Taft et al 1997). As others have indicated this species is most often in good quality plant communities although I have seen it along trails and roads in southern Illinois.

We have not calculated an S-rank for this species, but I suspect it would be S3 to S4 for Illinois.

Pau Marcum, associate scientist, botany

Michigan

Other's comments seem to match what we have in Michigan, which is the northern range edge, especially Sam's description of habitat for Ontario. Pretty consistently associated with rivers. Both in mesic bottoms of floodplains, and on sandier directly adjacent slopes. Restricted to (portions of) a handful of large river systems in the southern half of the lower peninsula, but also absent from others that also support calcareous substrates, altogether a pretty spotty/aggregated distribution. We have 25 EOs, track it as special concern (watch list) and currently have it as S2 but it could be S3. I've seen both small (5-50 individuals) and large (ca. 500) populations.

Tyler Bassett, conservation associate - botanist

Wisconsin

I agree with Andrew's comment, "It's definitely one of those species I don't keep a conscious track of but I do smile when I see and think "oh, nice, I don't see that too much!" when I do encounter it outside a known spot."

It used to be listed as special concern here but was ranked S4 and delisted right before I was hired. Looking at the S rank calculator from that review, it looks like it probably would be an S3 if it were ranked now (long term trends were not ranked correctly in my opinion), but it is very widespread and there are probably over 80 populations in the state. That said, it does seem to be limited to higher quality spots.

Kevin Doyle, Botanist

Minnesota

In Minnesota, on the northwest edge of the range, it is most concentrated in the east central and southeastern portion of the state, with a few scattered populations in forests toward the northwest. My experience with the species is similar to what others previously noted (usually small populations in higher quality forests). We recently ran this species through the rank calculator, and it came out as an S3. Others from Minnesota, please chime in if you have any additional or different notes that may be helpful.

Derek Anderson

Rock goldenrod – *Solidago rupestris* Raf.

Current Status in PA Regulations: N
Current PABS Status: PX
G Rank: G4
Coefficient of Conservatism: 10
Proposal: PE
Proposed by: Rachel Goad, WPC/PNHP, Steve Grund, WPC/PNHP retired

Proposal Summary

This taxon was approved by PABS as PX in 2024, as determined by historical specimens verified by John Semple. An iNaturalist record from 2019 provided some hope that plants might still occur in the state, but plants were not confirmed extant until July 2025. PNHP has also been watching for it in the Youghiogheny Gorge because the habitat is suitable and there is a very old specimen from one of the headwater tributaries to the Youghiogheny (or perhaps the Cheat) in West Virginia. Occurrences have not yet been relocated there or elsewhere. We propose a status of Pennsylvania Endangered as it has now been confirmed extant, but it remains very rare in the state.

Habitat

- Flora of North America: semi-arid to mesic conditions, on dry prairies or in grassy woods. (Semple and Cook 2006).
- FSUS: Crevices in rocky, flood-scoured riversides (Weakley and Southeastern Flora Team 2023).
- Flora of Virginia: Rocky or sandy, periodically flood-scoured riverside woodlands, cliffs, outcrops, and prairies; occurs on both acidic and calcareous rocks (Weakley et al 2012).
- Pennsylvania specimens determined by Dr. John Semple
    - NY 2371412: A.A. Heller, 1889, Columbia Co. On the Susquehanna, near Berwick.
    - F 170227: J.K. Small, 1890, Lancaster Co. Near the mouth of the Tucquan.
    - NY 2371410: G. V. Nash, 1904, Lancaster Co., The vicinity of McCall's Ferry. On rocks in river.
    - PH00251368: J. J. Carter, 1904: Lancaster Co., Fites Eddy. Island.
    - PH00251370: J. J. Carter, 1915: Lancaster Co., Haines. River shore.

Figure 1. *Solidago rupestris*
Photo by Rachel Goad

In some parts of its range – particularly western Maryland, Kentucky, and Tennessee, the species appears to have less fidelity to riverscour habitat and may be found in more broadly defined calcareous riparian areas that experience flooding. In Kentucky and Tennessee, the species may be considered riparian woodland and thicket species, and has been under-collected (Brock, personal communication). In Maryland, the species has been found in a meadow along a boggy headwater stream, and has been considered likely under collected (Frye, personal communication). In Virginia's Potomac watershed, the species occurs in classic rocky riverscour habitat a few feet or meters above the most active part of the channel (Fleming, personal communication).

Identification

Solidago rupestris is one of a manageable number of goldenrods in Pennsylvania with three-nerved leaves. The following draws heavily from papers written by John Semple. The presence of hairs on the upper stems, which are not glaucous, should readily distinguish this species from *S. gigantea* (Figure 2A). *Solidago altissima* is consistently pubescent to the base of the stem, while *S. rupestris* is glabrous at the base- but look carefully as in the fall as sometimes *S. altissima* loses much of this stem pubescence. Distinguishing this species from *S. canadensis* can be more challenging, but leaf dimensions are helpful, with S. rupestris having narrower, less toothy leaves (Figure 2C). This goldenrod also tends to bloom earlier than its three-nerved congeners, producing flowers from July - September.

There may be exceptions to any character in the keys, so it is important to read the entire couplets and to examine multiple plants in a population if possible, and multiple heads on a plant if, for instance, assessing the number of ray flowers. Occasional specimens may not be placeable, but overlap in characters implies a less distinctive species than is actually the case. In general, *S. rupestris* is a shorter, less hairy plant with fewer rays, and less toothy, narrower leaves than *S. canadensis* (Figure 2). It is also more restricted to high-quality stream borders and less tolerant of anthropogenic disturbance.

A. **Involucre height <3mm; puberulent hairs on upper stems**

B. **Inflorescence and upper stem habit**

C. **Midstem leave 8-12x as long as wide, remotely serrulate**

Figure 2. Photos of Pensylvania *Solidago rupestris* plants showing diagnostic characters. Photographs by R. Goad

Ecology

Solidago rupestris shares ecologically relevant traits with other members of the genus: perennial, and insect pollinated. Edaphic adaptation seems to be the primary ecological specialty of this species within the genus, thriving in rocky or sandy soils that are regularly inundated, including but not limited to riverscour as defined by Estes *et al.* (2023).

Distribution and regional conservation statuses

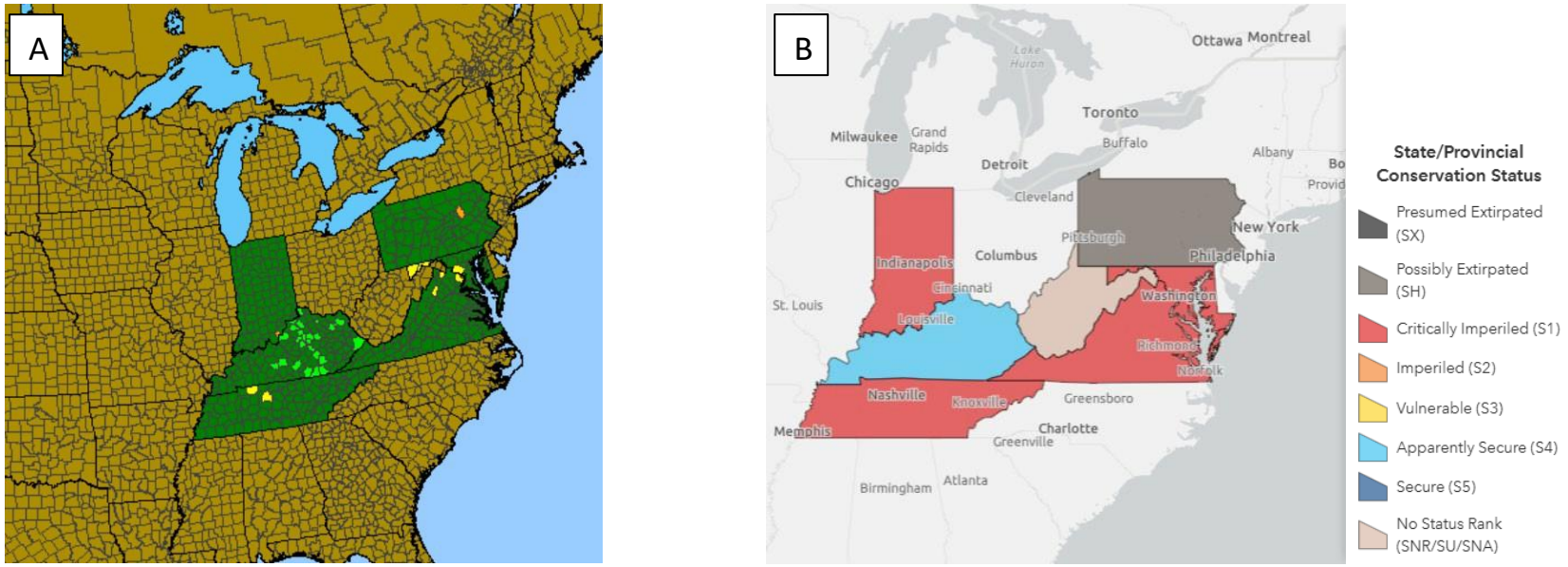

Figure 3. Distribution and conservation status of *Solidago rupestris*. A. County distribution of *Solidago rupestris* (Kartesz 2015). Extant and historic PA records are missing from this map. B. Subnational ranks for *Solidago rupestris*, which is ranked G4 (NatureServe 2026)

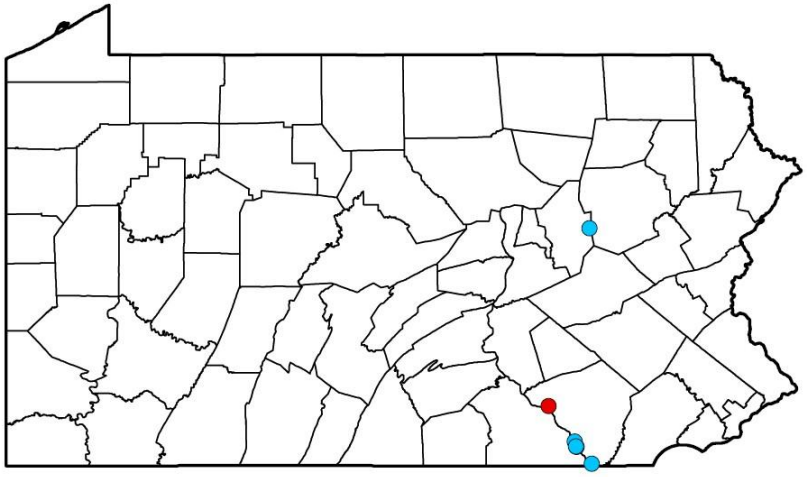

Figure 4: Distribution of *Solidago rupestris* records within Pennsylvania. Red dot = extant; Blue dots = historic

Extant Locations

A single extant location is known near Marietta, PA in a floodplain forest park. Plants occupy a canopy gap, where they grow in alluvial sand with pH of 7, just upslope of the most active floodplain. Associates include *Solidago gigantea, Verbesina alternifolia, Lysimachia ciliata, Toxicodendron radicans, Elymus, Fraxinus pennsylvanica, Broussonettia papyrifera*. Similar habitat in the area was heavily impacted by Japanese knotweed (*Reynoutria japonica*), and it is likely that other such circumneutral floodplain sites are heavily threatened by this and other fast-growing invasive species.

Historic Locations

Historic locations are known along the Susquehanna River in Lancaster County and Columbia County. The Lancaster County locations are well and regularly botanized (though as a goldenrod, this species may be overlooked). The Columbia County location should be evaluated and visited.

Status Justification

Solidago rupestris has now been confirmed extant in PA, and it appears to be very rare in the state. A status of PA-Endangered is now appropriate.

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October Ladies'-Tresses – *Spiranthes ovalis* Lindl.

Current Status in PA Regulations: PE

Current PABS Status: PE

Coefficient of Conservatism: 4 (4-9 range-wide)

Proposal: PA-Rare, S2S3

Proposed by: Rachel Goad, WPC/PNHP; Greg Funka, Carnegie Museum of Natural History volunteer

Figure 1. *Spiranthes ovalis* var. *erostellata*
Photo by Greg Funka

Proposal Summary

Currently listed as Pennsylvania Endangered, this orchid has expanded in range from one to at least 18 sites across the state since 1960. Individual occurrences tend to be small, but the expansion in number of occurrences and range has been steady in PA and elsewhere in the northern extent of this orchid's range. Habitat is broad, including degraded and higher quality sites. Individual occurrences tend to have few individuals and may be ephemeral. It seems more appropriately ranked as PA-Rare.

Habitat

- FNA: Moist, rich woodlands, thickets, old fields, second-growth woodlands, wooded hillsides
- FSUS: Swamp forests, bottomland forests, hammocks, ravine forests
- Michigan Flora: Moist fields, moist to dry shrub thickets, open forests, and prairie-like habitats
- Plants of Pennsylvania: damp, humus-rich forests
- Pennsylvania specimens
    - PAC0011835: D.L. Emory, 1960, Franklin Co., 5 miles south of Mercersburg
    - CM491359: JS Shriver, 1996, Huntingdon Co., Murphy Hollow
    - CM491359: JS Shriver, 1996, Blair Co., E side of Lower Clover Creek Road
    - CM504305: J. Isaac, 2003, Greene Co., Monongahela Township
    - CM514061: BL Isaac, 2005, Greene Co., Dunkard Township

Identification

This late-flowering (Aug – Nov) orchid has small flowers (sepals = 3.5 - 5mm long), cupped lateral sepals, and a white lip. The lip lacks papillae on its upper surface. At least one expanded cauline leaf is present at flowering. Compared to *S. tuberosa*, flowers gape from beyond the middle (rather than at the middle) and tend to be slightly larger. *Spiranthes tuberosa* also completes its flowering by September. *Spiranthes casei* also has its lateral sepals cupped, but its flowers are larger (sepals = 5.2 - 8mm), its lip more yellowish in color, and habitat is restricted to dry, sandy soils.

Taxonomy

Spiranthes ovalis was described by Lindley in 1840, and referred to as “a very distinct and apparently rare plant”. Its varieties wouldn’t be recognized for another century and a half. Catling (1983) documented the presence of a self-pollinating variety with smaller flowers that is more widely distributed than the typical variety, which he called *Spiranthes ovalis* var. *erostellata*.

Ecology

Range-wide, this taxon tends to be found in shaded, moist habitats. Northern Illinois occurrences were found in previously pastured woodlands and hedgerows (Catchpole 2012). In Ohio, it has been found in moist, early successional woods (Bennett and Course 1996). In Wisconsin, plants were found along a trail under a canopy of bur oaks, elms and invasive shrubs over dolomite bedrock (Carter and Pace 2013). In New York, it was found on dry, calcareous clayey dredge spoil, with low-growing herbaceous plants and a few scattered woody plants (Daniel and Johnson 2017).

Distribution and regional conservation statuses

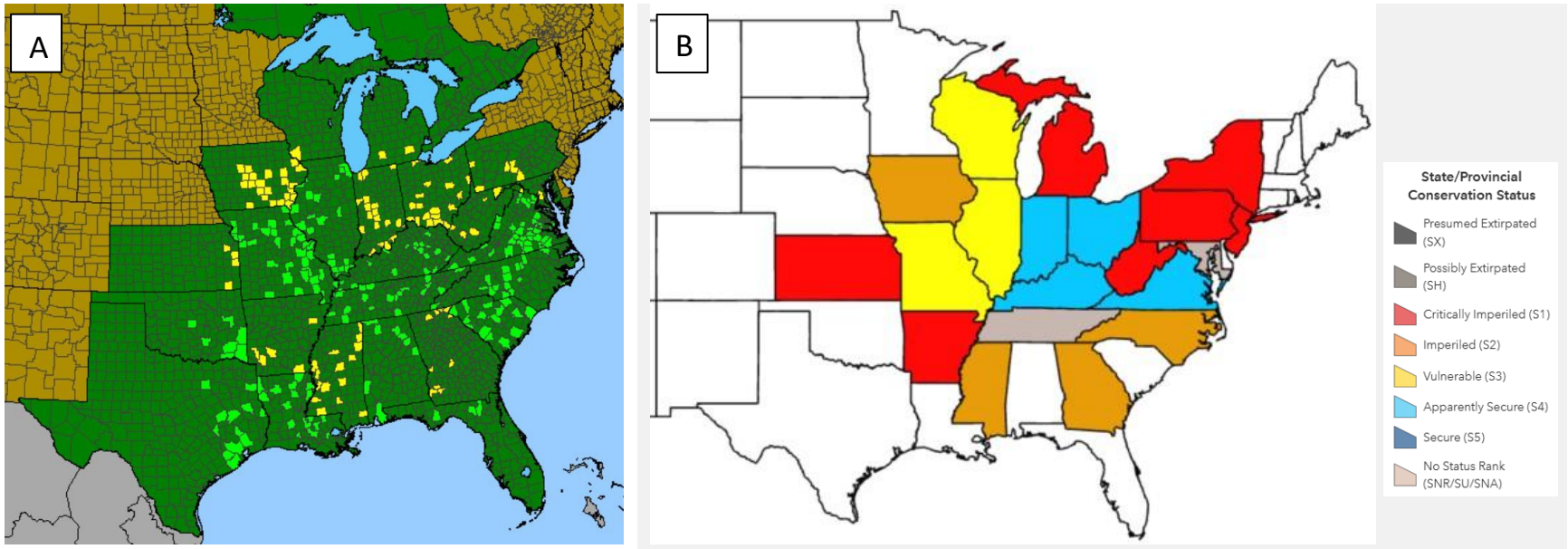

Figure 2. Distribution and conservation status of *Spiranthes ovalis* var. *erostellata*. A. County distribution of *Spiranthes ovalis* var. *erostellata* (Kartesz 2015). Many recent records, including state records for NJ and NY are not represented. B. Subnational ranks for *Spiranthes ovalis* var. *erostellata*. Map adapted from NatureServe Conservation Explorer (2026)

This orchid has been given higher S-ranks at the edges of its range, though some of these edge states with newly reported occurrences are adjusting to continued expansion within their borders. For instance, in Wisconsin the taxon was reported in 2014 (Carter and Pace 2013), but after a decade of new

occurrences being reported, the state has recently updated its S-rank from S1 to S3 (Doyle, personal communication). It is not listed in WI. Additionally, it was first reported in NY in 2015 (Daniel and Johnson 2017) and listed as S1, PE. While still ranked as S1, the orchid is 'unprotected' in New York as of 2024.

Range expansion has been noted as possibly occurring in IL, OH, MI, and Ontario (Bennett and Course 1996; Catchpole 2012; Carter and Pace 2013; University of Michigan Herbarium 2026; P. Catling and Kostiuk 2020).

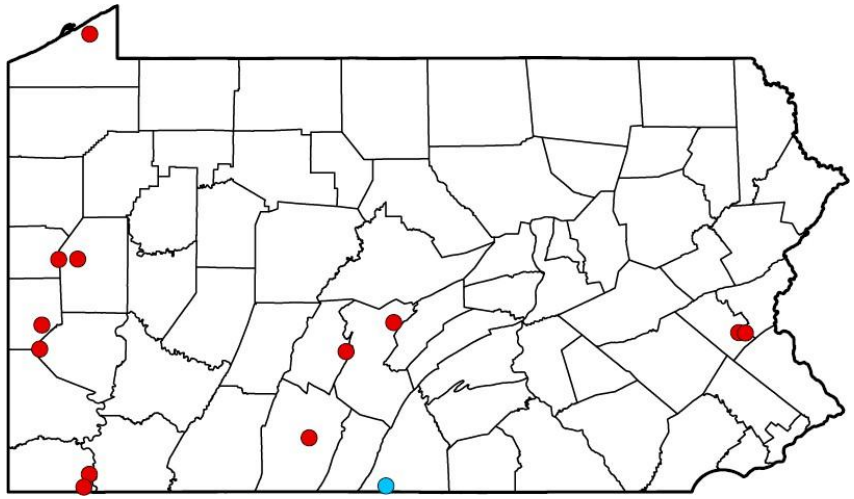

Figure 3: Distribution of *Spiranthes ovalis* var. *erostellata* records within Pennsylvania. Red dot = extant; Blue dots = historic

Extant Locations

Spiranthes ovalis var. *erostellata* has been found in a variety of habitats in Pennsylvania, including high quality natural communities, and more heavily degraded locations. An example of the former is the occurrence at a limestone clifftop forest that supports other rare species, including the globally rare *Paxistima canbyi* and *Arabis patens*. Examples of more degraded conditions where plants have been found include: a mown field at a sports complex, a backyard, a highly polluted mine tailings site, and a rocky-disturbed area along I-90. Other sites include more moderately disturbed natural areas, like a 'damp, disturbed rocky woods with lots of alien plants in the understory'.

Some of these locations, though recent and considered extant, may be ephemeral, as not all of them have been revisited. Six have occurred for at least two and up to 21 years. For the remaining 12 occurrences, we have only data from a single year with no other data. Four of these have been re-visited and not found (the southern Franklin County occurrence, the Youthtowne Sports Complex occurrence, a backyard in Aliquippa, and an occurrence in Butler County along Old 528).

Historic Locations

The southern Franklin County occurrence, last observed in 1960, was not found during a directed search in 1993. The site was found to be a small successional meadow with the natural community grading from well-drained - mesic to slightly hydric. Vegetation at the site includes *Solidago nemoralis, Eupatorium altissimum*, and *Vernonia noveboracensis*. *Pinus sylvestris* occurs at the north side of the community along a wooden rail fence that bounds a residential lawn. Land surrounding the site includes agricultural fields and pastures, farmsteads, and private residences with lawns.

Conservation Concerns

Many occurrences are found growing with non-native or invasive species, but the degree to which the orchid is able to persist under these conditions is not known. *Spiranthes ovalis* var. *erostellata* is tolerant of some shade, having a heliophyly rating of 4 (Weakley and Southeastern Flora Team 2025).

Browse from deer or other small mammals threatens reproduction. This species blooms late in the year when there may be little other green forage available. Other *Spiranthes* species are browsed, suggesting that this species too may be palatable. Similarly, mowing likely impacts populations along roads or in lawns, at least in the year they are mown.

Development may threaten some occurrences, though newly reported occurrences have been found associated with development, indicating some capacity for this taxon to adapt to a developed landscape.

Factor Groups with Wei	Minimum factors categ	individual factor weight				
			Species or Ecosystem Scientific Name		Spiranthes ovalis	
			Type (enter "infraspecies" for a T-Rank)		Species	
			Spatial Pattern (for ecosystems only)			
			Optional Information: Element ID		15472	global, national, or subnational
			Elcode			
			Common Name		October Ladies'-tresses	
			Classification		Vascular Plant	
			Nation or Subnation (for N- or S-Ranks)			**COMMENTS (Place cursor in cell to see full text.)**
Rarity weight: 0.7	**Range/Distr.**	1	**Range Extent**	F	F = 20,000-200,000 sq km (~8,000-80,000 sq mi)	52,244 km2 is current range, including all locations in
		2	**Area of Occupancy:**	D	FILL OUT ONLY 1 OF FOLLOWING 3 FIELDS	7 (in Biotics) + 6 (mapped from iNat) + 4 (unmapped but verified via iNat) + 1 (relayed to Greg via Shriver)= 18 grid cells
			Direct estimate (ecosystems) *OR*			
			4 km² grid cells (species) *OR*	D	D = 6-25 4-km2 grid cells	
			1 km² grid cells (linear species)			
	Abund./Cond.	1	**Number of Occurrences**	BC	BC = 6 - 80	18 documented occurrences
		2	**Population Size***	BC	BC = 50 - 1000 individuals	51-100 plants known from 18 occurrences. There are
		2	**Good Viability/Ecological Integrity:**	BC	FILL OUT ONLY 1 OF FOLLOWING 2 FIELDS	18 occurrences (not all in Biotics), with one of these ranked F. 1-4 with estimated good viability (at least 10 plants found or persisting for 20 years)
			Number of Occurrences *OR*	BC	BC = Very few to few (1-12) occurrences with good viability	
			Percent of Area Occupied			
	X	1	Environmental Specificity (opt.)			
Threats 0.3		1	**Assigned Overall Threat Impact**	BC	BC = High - Medium	
			Calculated Overall Threat Impact (FYI)			
	X	1	Intrinsic Vulnerability (opt.)			
Trends		2	**Short-term Trend**	I	I = Increase of >25%	Only 1 EO was known from PA in 1960, but since that
		1	**Long-term Trend**			
			Minimum factors requirement met?	TRUE		
			Calculated Rank	S2S3	Always review the calculated rank.	
			Assigned Rank**	S2S3	**Calculated rank was verified; do not fill out the 'Rank Adjustment Reasons' field.**	

Save Data to Calculator Table | Clear Form

Figure 4. Rank Calculator factors and results for *Spiranthes ovalis* (var. *erostellata*) in Pennsylvania.

Status Justification

This orchid has expanded in range since its first documented occurrence in the state in 1960 (1 occurrence ->18 occurrences). It appears to be able to distribute itself to a wide variety of habitats and may be overlooked due to its late bloom time. Threats to this species are somewhat uncertain due to lack of documented impacts. S2S3 seems appropriate given the number of locations, range extent, threat level, and short-term increasing trend. This range rank aligns with conservation statuses of PT and PR; the increasing trend of this species and range of habitats where it has been found suggest that PR is a more appropriate status. Relatively small population sizes and apparent ephemerality of these populations suggest that keeping this taxon listed as PR is appropriate.

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