Species Status Assessment

Common Name	butterwort	**Date Updated:**	2024-02-06
Scientific Name	*Pinguicula vulgaris*	**Updated By:**	Rachael A. Renzi
Family	Lentibulariaceae		

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

Butterwort (*Pinguicula vulgaris*) is in the bladderwort family. This greasy, insectivorous plant is the only species of its genus in New York (Werier et al. 2023). It is also the only insectivorous plant that does not grow in a marsh, bog, or swamp (NYNHP 2024). It's habitat, however, can be described as a vertical fen, as it grows in open, seepy, limestone and shale cliffs, often in the mists of a waterfall (NYNHP 2023, 2024). It is a circumboreal species, and NY is at the southern extent of its North American range (NYNHP 2024; NatureServe 2023). It is restricted to six populations in central and western NY, with less than 10,000 plants total in the state (NYNHP 2023, 2024). There are few threats to the plants, as they grow on inaccessible cliffs, but this also makes the plants difficult to survey. Many population censuses before 1990 did not count plants or provided only an estimate of the number of individuals (NYNHP 2023). Thus, short-term trends are difficult to determine. Over the long-term, only one population seems to have lost all its *Pinguicula* (NYNHP 2023). However, over half of the historical sites for this plant have been rediscovered, suggesting stable, though infrequent, populations (NYNHP 2023). Visits to the remaining historical populations are needed to determine their size and status.

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**

ii. New York: Threatened

b. Natural Heritage Program

i. Global: G5

ii. New York: S1S2 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Least Concern

Status Discussion:

Pinguicula vulgaris is Threatened in New York (Ring 2023). There are six known populations and six additional historical populations (NYNHP 2023). As a plant at the southern limit of its range, it has likely been rare in NY well before it was collected in the 1800s (NYNHP 2023, 2024; NatureServe 2023). This plant has a limited range, and an even greater limited habitat. Most of the populations are on well-protected cliffs, which may be subject to natural or artificial sloughing (NYNHP 2023, 2024).

II. Abundance and Distribution

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	E	
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	-	-	-		
Vermont	Yes	Unknown	Unknown	Unknown	S1	
Ontario	Yes	Unknown	Unknown	Unknown	S5	
Quebec	No	-	-	-		

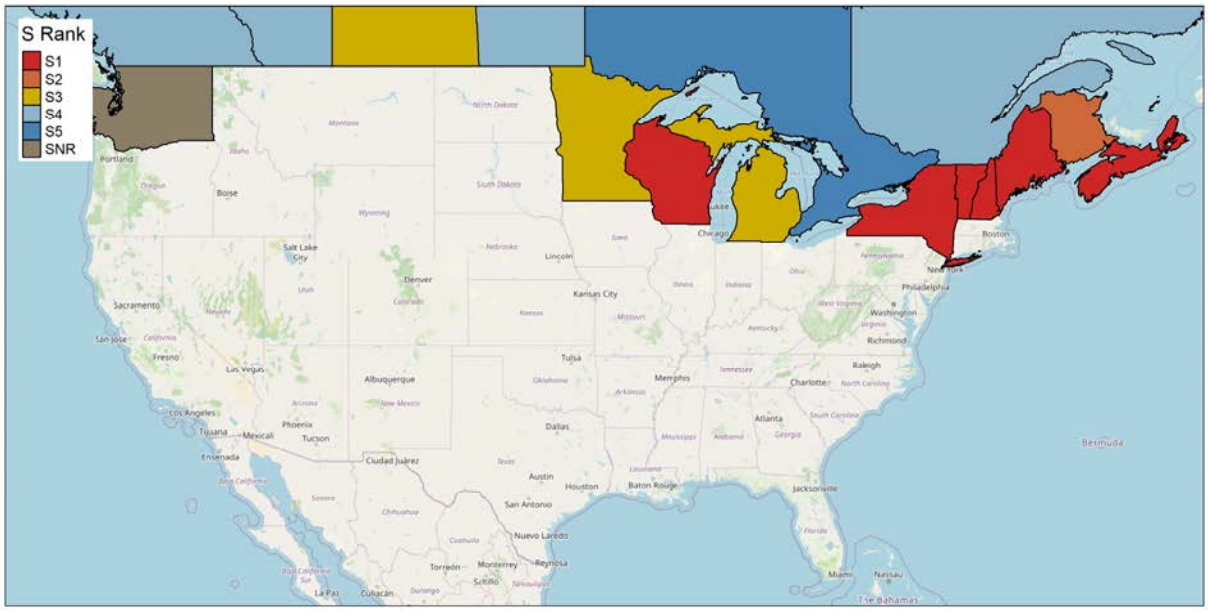


Figure 1. Pinguicula vulgaris North American distribution.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	Unknown

III. NY Rarity and Trends

Trends Discussion

The short-term trend of this plant seems to be stable. Over half of the historical sites for this plant have been rediscovered (NYNHP 2023, 2024). There is, however, one population where no plants have been observed since 1991 (NYNHP 2023, 2024). The population has been visited four times in hopes of finding the plants, but none were seen (NYNHP 2023, 2024). At another locatioThe habitat for this plant is not common but it is isolated and inaccessible enough that the plants are expected to remain for many decades (NYNHP 2023, 2024). It is likely that the plant has been rare in NY, perhaps since the last ice age, given that it occurs at the southern extent of its range here. The long-term trend is likely stable but given that this cliff-dwelling plant is difficult to survey, surveys of *Pinguicula vulgaris* before 1990 either estimated the number of plants or did not count (NYNHP 2023, 2024).

Details of historic and current occurrence

Pinguicula vulgaris populations are isolated, very local, and disjunct, although some populations are quite large (Werier et al. 2023). This plant is restricted to central and western NY, associated with the spray zone of waterfalls and within seepage areas of cliffs made up of fossilliferous shale (NYNHP 2023, 2024). There are an estimated 8,000 – 9,000 plants in NY; three populations have thousands of plants, and three have less than 100 plants (NYNHP 2023). In North America, this circumboreal species ranges from Labrador to Alaska, south to northern New England, New York, Michigan, Minnesota, and Oregon, and NY is at the southern limit of its range (NYNHP 2024; NatureServe 2023).

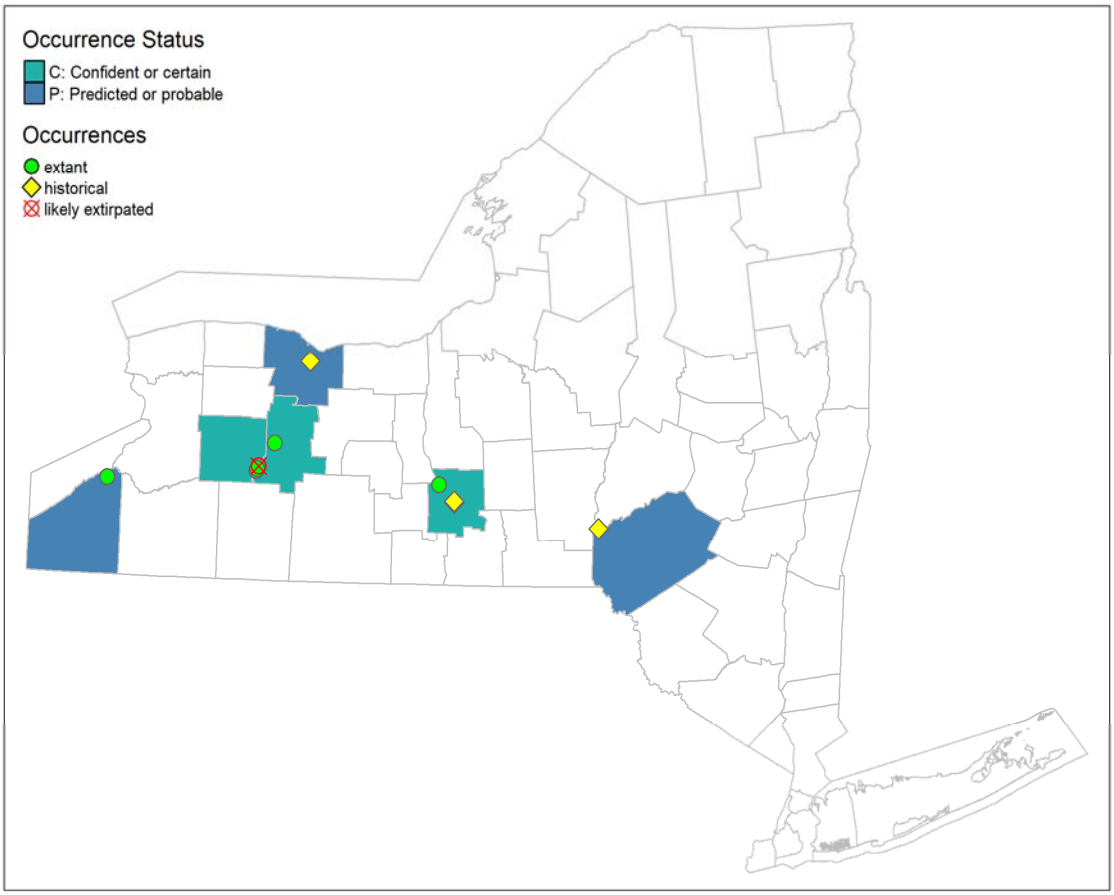


Figure 2. *NYS distribution for* Pinguicula vulgaris.

Table 1. *Number of records (element occurrences) of* Pinguicula vulgaris *grouped by the dates known to be extant (the years spanning first observation to last observation) and the number and percent of total of USGS 7.5 minute map quadrangles these observations fall within for New York State.*

Years	# of Records	# of distinct quads	% of quads in State
Pre-1995	8	9	0.9
1995-2004	2	2	0.2
2005-2014	2	2	0.2
2015-2023	0	0	0.0

Monitoring in New York:

Most population have at least three visits over the last 80 years (NYNHP 2023). Four of the populations are on state park lands, which are surveyed on a ten-year cycle (NYNHP 2023).

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

Northeastern Habitat Classification Macrogroup: Cliff and Talus.

NY Natural Heritage Communities: Cliff community, Shale cliff and talus community, Calcareous cliff community (Edinger et al. 2014, NYNHP 2023).

Habitat or Community Type Trend in New York:

Declining:	**Stable:**	**Increasing:**	**Unknown:** ✓

Time Frame of Decline/Increase:

Habitat Specialist	**Yes:** ✓	**No:**

Habitat Discussion:

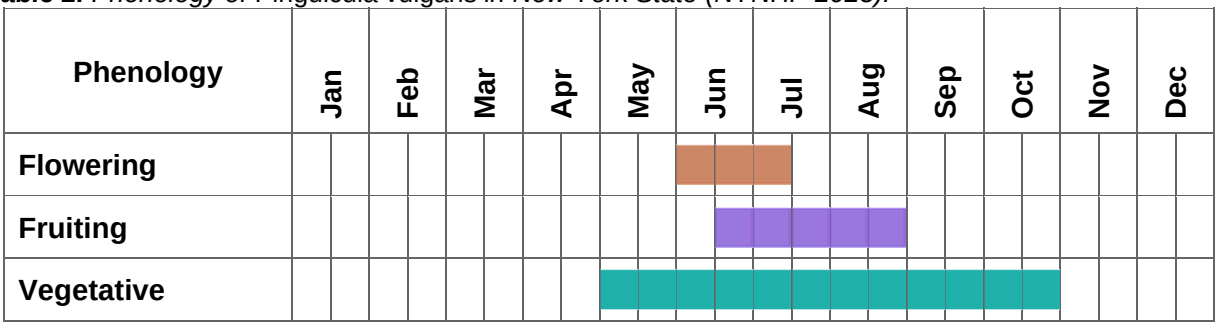
Pinguicula vulgaris grows in the mists of a waterfall or in seepage areas on open limey-shale cliffs (NYNHP 2023, 2024). These sites have been lumped under the cliff community designation, but they may be best described as vertical marly fens (NYNHP 2023, 2024; Edinger et al. 2014). The sites are usually surrounded by birch, hemlock, and maple (NYNHP 2023, 2024). Throughout North America, *Pinguicula vulgaris* is a distinct calciphile, growing on alkaline rocks and sands (as on interdunal flats and hollows), marly flats, and occasionally in marly fens, bogs, moist rock outcrops, and wet meadows inlad; it frequently grows with *Primula mistassinica* (Voss 1996; Gleason & Cronquist 1991; Fernald 1950).

NY Flora Atlas habitat description: *Pinguicula vulgaris* is restricted to cool, seepy, often north facing calcareous cliffs and ledges, and sometimes found growing with *Saxifraga aizoide*s and *Primula mistassinica* (Werier et al. 2023).

V. Species Demographics and Life History *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

Pinguicula vulgaris is an insectivorous perennial herb/forb (NYNHP 2024). It flowers in June and July, and sets seed in July and August (NYNHP 2024). It is pollinated by bees and flies (Lustofin et al. 2020). While some *Pinguicula* species have edible trichomes that may lure bees and flies for pollination, *P. vulgaris* is not one of them, as it lacks starchy trichomes (Lustofin et al. 2020). Instead, *Piguicula vulgaris* only butters up its insect prey for digestion. Enzymes in the mucilage secreted on the leaf surface digest insects, likely to provide *P. vulgaris* a set of nutrients that may not be readily available in its soil substrate (Karlsson & Carlsson 1984). In the winter, the leaves die back to a bulb-like bud, or hibernacula, that is ringed by smaller daughter buds (NYNHP 2024). These buds can germinate in the spring (NYNHP 2024).

Table 2. *Phenology of* Pinguicula vulgaris *in New York State (NYNHP 2023).*



VI. Threats

There are few threats to these plants since the sites are inaccessible and not open to disturbance. So far, no exotic invasive plants have been seen affecting these sites (NYNHP 2023, 2024). Changes in the amount of groundwater available to the sites could affect them in the future.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: **No:** ✓ **Unknown:**

If yes, describe mechanism and whether adequate to protect species/habitat:

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Sites should be monitored for changes in groundwater availability and for any new invasive plants that might be affecting them.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection) - https://www.iucnredlist.org/resources/conservation-actions-classification-scheme

Table 3*. Recommended conservation actions for* Pinguicula vulgaris*.*

Conservation Actions	
Action Category	**Action**
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection
Land/water management	2.1. Site/area management
Land/water management	2.2. Invasive/problematic species control
Land/water management	2.3. Habitat & natural process restoration

VII. References

This SSA drew heavily from these resources:

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