

range, along with very limited and specialized habitat. As a plant at the southern limit of its range, it has likely always been rare in New York.

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	T	
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	-	-	-		
Vermont	Yes	Unknown	Unknown	Unknown	S1	
Ontario	Yes	Unknown	Unknown	Unknown	S4	
Quebec	No	-	-	-		

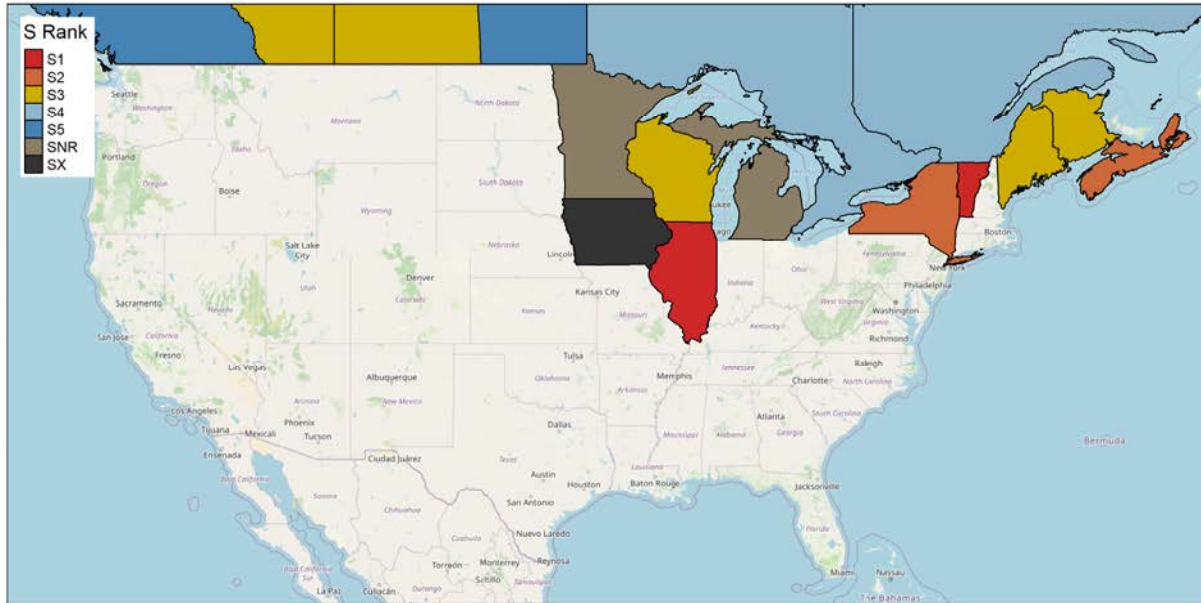


Figure 1. *Primula mistassinica* North American distribution.

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. Some populations report lower numbers than in the past, but the accuracy of surveys is unknown. This plant is difficult to survey and population counts from year-to-year are usually not recorded. Changes would be noted only if the area where the plants occur was drastically altered. This has not occurred in the recent past (NYNHP 2023, 2024).

The long term trends are stable. Over half of the 13 historical sites for this plant have been rediscovered and no sites have been considered extirpated. The habitat for this plant is not common but it is isolated and inaccessible enough that the plants are expected to remain here for many decades (NYNHP 2023, 2024).

Details of historic and current occurrence

There are tens of thousands of plants in NY. It is limited to central New York, ranging from the Tug Hill Region west to the Genesee River Gorge. This plant is usually associated with the spray zone of waterfalls and within seepage areas of cliffs made up of fossiliferous shale (NYNHP 2023).

This plant ranges from Labrador to Alaska, south to Maine, central New York, northern Illinois, Michigan, and Wisconsin. New York is near the southern limit of its range (NatureServe 2023).

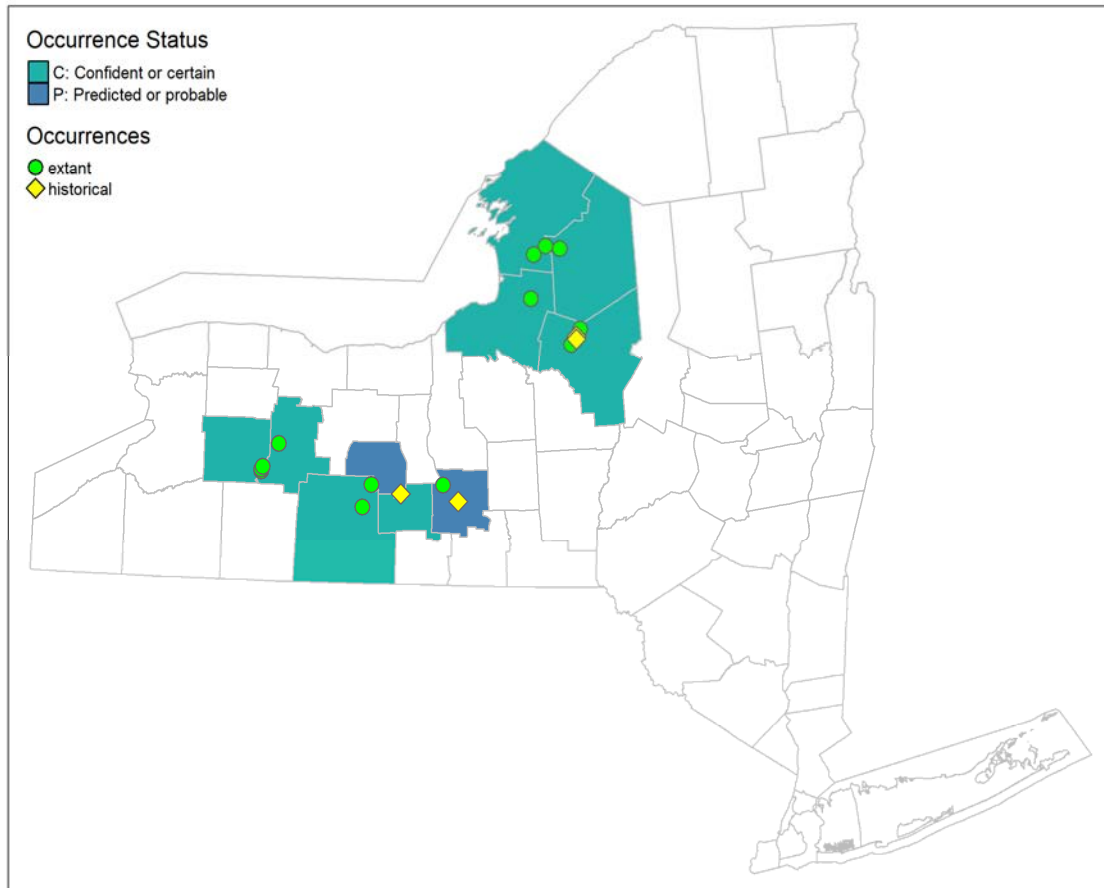


Figure 2: NYS distribution for *Primula mistassinica*.

Table 1. Number of records (element occurrences) of *Primula mistassinica* 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	15	13	1.3
1995-2004	6	6	0.6
2005-2014	6	6	0.6
2015-2023	3	3	0.3

Monitoring in New York

Except for one population, all occurrences have been visited more than once, and as many as nine times over 110 years. Four populations are on state park land, which are surveyed on a 10-year cycle. Three other populations are on state forests and are monitored on a 5-year cycle. The remaining four extant populations are not subject to regular monitoring but were last visited in 2007, 1999, and two in 1993.

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 Ecological Communities: Cliff community, Shale cliff and talus community, Calcareous cliff community (Edinger et al. 2014).

Habitat or Community Type Trend in New York

Declining:	Stable:	Increasing:	Unknown: ✓
Time Frame of Decline/Increase:			
Habitat Specialist	Yes: ✓	No:	

Habitat Discussion:

Primula mistassinica grows in seepage areas on open limy-shale cliffs or in the mists of a nearby waterfall. These sites have been lumped under the cliff community designation, but they may be best described as vertical marly fens. The sites are usually surrounded by birch, hemlock, and maple (NYNHP 2023, 2024). It grows on cool calcareous perennially seepy north facing cliffs in relatively small isolated disjunct populations. Often, it is growing with *Pinguicula vulgaris* and *Saxifraga aizoides* (Werier et al. 2023; NYNHP 2023). It is abundant in damp calcareous meadows and interdunal flats along the Great Lakes, and inland local to marly bogs (fens), on calcareous banks and sandstone cliffs, and in other cool damp places often with *Pinguicula vulgaris*. Associated species in Michigan include *Carex crawei*, *Carex garberi*, *Eleocharis pauciflora*, *Parnassia parviflora*, *Rhynchospora capillacea*, and *Selaginella selaginoides* (Voss 1996). In North America, it is found on calcareous or argillaceous rocks, cliffs, meadows, and gravelly shores (Gleason & Cronquist 1991; Fernald 1950).

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):

Primula mistassinica is a perennial forb. It is heterostylous (style lengths and position differ between plants), which promotes outcrossing (de Vos et al. 2014; Guggisberb et al. 2006). Crosses between two different morphs enabled a higher seed set than in intramorph or self-crosses (Larson & Barrett 1998). The plants flower from May through July, and the fruits remain into October (NYNHP 2023, 2024). Pollinators are suspected to be syrphid flies and small bees, which are generalist pollinators, enabling successful pollination even in isolated communities (Larson & Barrett 1998). Seeds are likely dispersed by water (Larson & Barrett 1998). Research is needed on the germination rate and seed banking ability of *Primula mistassinica*.

Table 2. Phenology of *Primula mistassinica* in New York State (NYNHP 2023).

Phenology	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Flowering												
Fruiting												
Vegetative												

VI. Threats

Historically there have been few threats to these plants since the sites are inaccessible and generally not open to disturbance. Changes in the amount of groundwater available to the sites could affect the areas where this plant is found, thereby also impacting the plants. The invasive plant (*Tussilago farfara*) is present at two sites where it is invading the cliff faces, *Reynoutria* sp. is also present in near one of these sites and could pose an imminent threat (NYNHP 2023).

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. Monitoring and control of the newly invading plants (*Tussilago farfara* and *Reynoutria* sp.) is needed at two sites to prevent loss of habitat to shading and competition. The other extant sites should be monitored for the introduction of these or other invasive plant species.

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 *Primula mistassinica*.

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

Conservation Actions	
Action Category	Action
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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