Species Status Assessment

Common Name	purple mountain saxifrage	**Date Updated:**	2024-03-24
Scientific Name	*Saxifraga oppositifolia ssp. oppositifolia*	**Updated By:**	Elizabeth Spencer
Family	Saxifragaceae		

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

Purple mountain saxifrage (*Saxifraga oppositifolia* ssp*. oppositifolia*) is a perennial herb in the Saxifrage Family (Saxifragaceae). The plant is circumboreal generally, occurring in North America, Europe, and Asia.primarily in montane, boreal, alpine and arctic settings (NatureServe 2023). Within eastern North America, it may be found south to Vermont, northern New York, northern New Brunswick, and Nova Scotia (Natureserve 2023). There are 3 species of *Saxifraga* in New York, all of which are native (Werier et al. 2023). *Saxifraga* has received some different taxonomic treatments, but no major disagreements linger. It has a global distribution spanning North America, Europe, and Asia in montane, or arctic areas. Authors recognize approximately 390 species globally, 25 of which occur in North America (FNA 2009).

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**

ii. New York: Endangered

b. Natural Heritage Program

i. Global: G5T5

ii. New York: S1 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

Saxifraga oppositifolia ssp. oppositifolia is Endangered in New York (Ring 2023). There is only one verified occurrence of purple mountain saxifrage. The only site known is in the Adirondack Mountains where it is extant in a wet area of a single calcareous cliff of boreal character. No new occurrences have been found since the only known site was first documented in 1990.

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	S1	
Quebec	No	-	-	-		

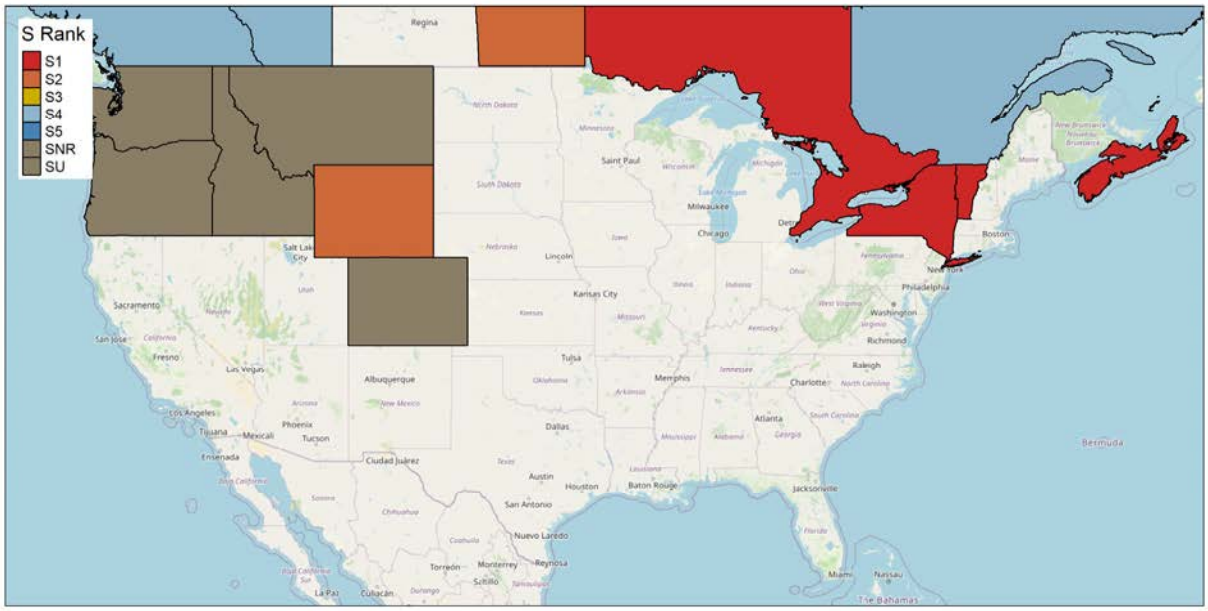

Figure 1: Saxifraga oppositifolia ssp. oppositifolia North American distribution.

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

III. NY Rarity and Trends

Trends Discussion

The lone of population of *Saxifraga oppositifolia* ssp*. oppositifolia* is small, and has only been known since 1990. It is in the Hudson River Gorge which features a unique combination of geologic and climatic settings within the Adirondacks.

Details of historic and current occurrence

No historical records of *Saxifraga oppositifolia* ssp*. oppositifolia* exist for New York state. There is only one extant occurrence, located in the central Adirondacks within a protected natural area. The closest population is over 100 miles away in northern Vermont (GBIF Secretriat 2024).

The New York population was first documented in 1990. As a result of its relatively recent discovery, no long-term trend has been assessed. The short-term trend for this population appears stable with the population estimates falling with a consistent range (several hundred plants with a maximum of 500) during the three surveys in 1990, 2008 and 2020. The plants are situated in a location where they can only be assessed semi-remotely using binoculars or a spotting scope, so precise counts have not been possible to date (NYNHP 2023). When not in flower, individuals could be overlooked when surveyed at a distance.

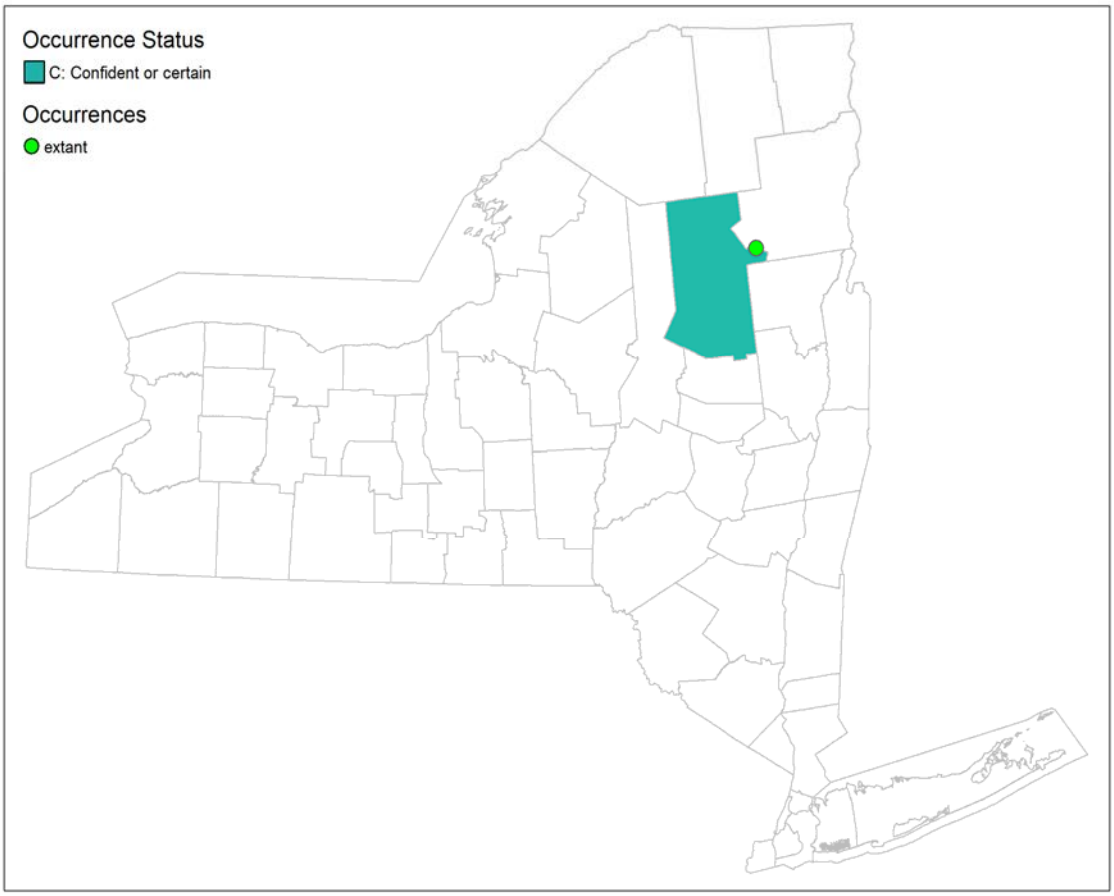

Figure 2: *NYS distribution for* Saxifraga oppositifolia *ssp*. oppositifolia.

Table 1*. Number of records (element occurrences) of* Saxifraga oppositifolia *ssp*. oppositifolia *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	1	1	0.1
1995-2004	1	1	0.1
2005-2014	1	1	0.1
2015-2023	1	1	0.1

Monitoring in New York

No regular monitoring program is currently in place in New York. The known extant population was last surveyed in 2020.

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

Northeastern Terrestrial Habitat Macrogroup*:* Cliff and Talus

NY Natural 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:

In New York, purple mountain saxifrage has only been observed in a wet north facing area of calcareous cliffs and ledges in a gorge on the upper Hudson River. The plants were growing with other northern calciphic species (New York Natural Heritage Program 2020, Werier et al 2023.) Boreal and subalpine cliffs in regions of high-pH bedrock (Native Plant Trust 2020). Arctic and alpine tundra, mountain ledges, rock crevices, calcareous gravel, raised beach ridges (FNA 1993).

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):*

Purple mountain saxifrage is a perennial forb/herb. Studies in Europe have shown this subspecies to be primarily cross-pollinated (Gugerli 1997). The flowers exhibit strong protogynous development, with the carpels maturing before the stamens. This along with the simultaneous flowering on individual genetic clones to great reduces the incidence of self-fertilization but does not eliminate it. Purple mountain saxifrage flowers during early spring before most other species when pollinator activity is limited, after its flower buds overwinter tucked within the plants' persistent foliage (Gugerli, Felix.1997 and Panchen and Root 2015). Although it flowers very early, it is believed to be typically insect pollinated. Small flies in the Chironomidae (Midge) family were observed visiting *Saxifraga oppositifolia* in arctic habitats during the spring and are considered likely pollinators (Kevan 1972, Elvan et al. 2020).

Individual plants are reported to live more than two years (Native Plant Trust 2024). No studies specifically address purple mountain saxifrage's persistence in the seedbank, but an unpublished study from the Alps demonstrated that viable seeds of another cliff dwelling species in New York, *Saxifraga aizoides,* persist in the soil for at least five years (Raffl et al. 2007). The seeds lack specific structural features to facilitate their dispersal, but Elvan et al. 2020 report that the top opening of the ripe capsules does require at least minimum wind speeds for the seeds to exit and colonize sites farther removed from the parent. They also noted that localized vegetative reproduction can occur as branches of the mat forming plant break off and reroot.

Table 2. *Phenology of* Saxifraga oppositifolia *ssp*. oppositifolia *New York State (NYNHP 2023).*

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

VI. Threats

This is a plant of northern, cool climates and habitats which may be vulnerable to loss or contraction in New York as the climate warms. In a 20 year study of the temporal response of flowering onset with warming, purple mountain saxifrage, unlike other cooccurring species, did not flower or fruit earlier with warming (Panchen and Root Gorelick 2015). As a pollen limited species (Stenström, Mikael, and Ulf Molau.1992) the increased competition for insect pollination may decrease its sexual reproductive success and fecundity. Loss of habitat via natural erosion or damage from catastrophic storms could also impact the single known population due to its setting (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:

Manage visitation to ensure that visitors to the site do not climb on or access the specific areas where the plants occur. Monitoring the occupied site for the introduction and spread of invasive plants and control of any species that occupy similar habitats to eliminate competition and maintain habitat quality.

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* Saxifraga oppositifolia ssp. oppositifolia.

Conservation Actions	
Action Category	**Action**
Land/water protection	1.1. Site/area protection
Land/water protection	1.2. Resource & habitat protection

Conservation Actions	
Action Category	**Action**
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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