

# Species Status Assessment

<b>Common Name</b>	snowbed willow	<b>Date Updated:</b>	2024-03-07
<b>Scientific Name</b>	<i>Salix herbacea</i>	<b>Updated By:</b>	Rachael A. Renzi
<b>Family</b>	Salicaceae		

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

Snowbed willow is a perennial subshrub in the willow family. It is one of 25 species in the genus *Salix* in NY, but one of the 19 considered native to the state (Werier et al. 2023). *S. herbacea* occurs in subarctic and subalpine Europe and America (IPNI 2024). It is limited to the northeastern limits of North America (NatureServe 2023). In NY, there are only two small populations, both within the alpine zone, growing in protected microhabitats in mosses over wet soils (NYNHP 2023, 2024; Werier et al. 2023). For about two decades from 1980 to 1998, it was thought that *Salix cordata* was extirpated from NY (NYNHP 2023). Elsewhere, the overall health of *S. herbacea* populations, including the plants' ability to reproduce, were shown to be negatively affected by early snowmelt. More research and surveys are needed to adequately track the population trends of *Salix herbacea* in NY, especially with climate change affecting precipitation and snowmelt.

## I. Status

### a. Current legal protected Status

<b>i. Federal:</b>		<b>Candidate:</b>	
<b>ii. New York:</b>	<u>Endangered</u>		

### b. Natural Heritage Program

<b>i. Global:</b>	<u>G5</u>		
<b>ii. New York:</b>	<u>S1</u>	<b>Tracked by NYNHP?</b>	On Active Tracking List

### Other Ranks:

COSEWIC: Not listed in Canada

IUCN Red List: Not assessed by IUCN Red List

### Status Discussion:

*Salix herbacea* is Endangered in New York (Ring 2023). There are only two known populations of *Salix herbacea* in NY; both populations have between one and ten genetically distinct colonies (NYNHP 2023).

### 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	No	-	-	-		
Ontario	No	-	-	-		
Quebec	No	-	-	-		

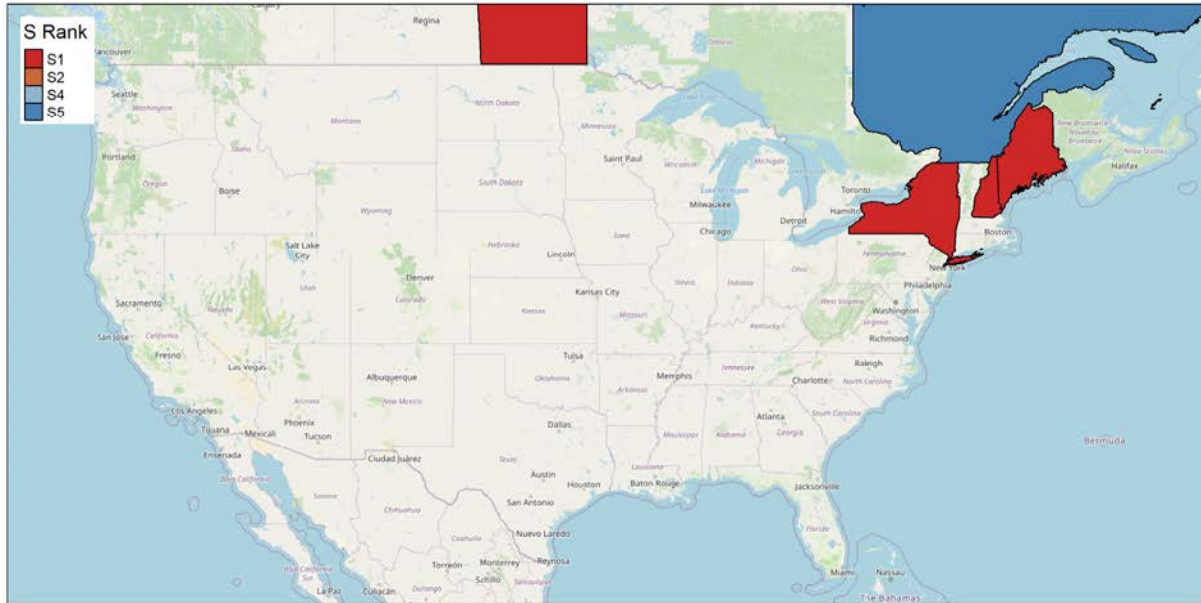


Figure 1: *Salix herbacea* North American distribution.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	≥100km

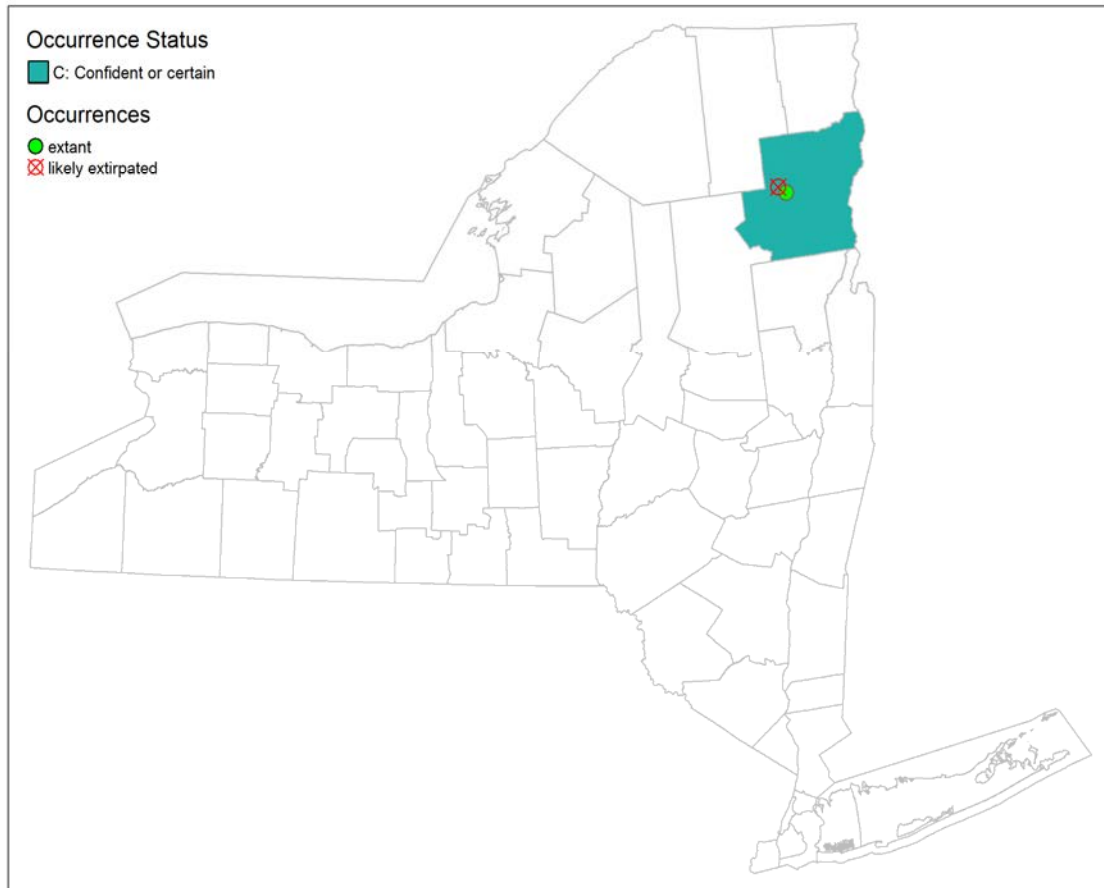
### III. NY Rarity and Trends

#### Trends Discussion

Only two populations have been known from New York (NYNHP 2023, 2024). For about two decades from 1980 to 1998, it was thought that *Salix herbacea* was extirpated from NY (NYNHP 2023). It was discovered to grow on Mount Marcy in 1998, and recently rediscovered on Algonquin Peak in 2023 (NYNHP 2024). Consistent surveys are needed to determine short term trends, especially since one of the two known populations became extirpated (and re-found) for unknown reasons (NYNHP 2023, 2024). Both extant populations are very small. Therefore, this species may be in jeopardy of becoming extirpated from the state again. Precise, consistent, and regularly collected data on the size of the extant populations are needed. Surveys to search for a new population on Mount Haystack have been recommended (Ed Ketchledge, personal communication; NYNHP 2024)

#### Details of historic and current occurrence

In NY, this species is currently only known from Mount Marcy and Algonquin Peak in the Adirondacks (NYNHP 2023). Before 1998, only one population of *Salix cordata* was known to have existed in the state (NYNHP 2023). This population was considered extirpated, as searches of the area found no plants (NYNHP 2023). However, a new population was discovered in 1998, bringing the plant's ranking to endangered (NYNHP 2023). More recently, plants near the original site were discovered, doubling the state's number of plants from between one to ten to an estimate between two and twenty (NYNHP 2023).



**Figure 2:** NYS distribution for *Salix herbacea*, showing extirpated status for the recently re-found population on Algonquin Peak.

**Table 1.** Number of records (element occurrences) of *Salix herbacea* 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	0	0	0.0
2015-2023	0	0	0.0

### Monitoring in New York

Both populations occur in the High Peaks Wilderness of the Adirondack Park (NYNHP 2023). The plants were last seen in 2002 at one location, and in 2023 at the other (NYNHP 2023).

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

Northeastern Habitat Classification Macrogroup: Alpine.

NY Ecological Community: Open alpine community (Edinger et al. 2014, NYNHP 2024).

#### **Habitat or Community Type Trend in New York**

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

#### **Habitat Discussion:**

In New York, *Salix herbacea* is restricted to the alpine zone of only two of the highest mountains in the Adirondacks, in protected microhabitats in mosses over wet soils (Werier et al. 2023). In this area it occurs in a seep at the base of a cliff and in an alpine meadow (NYNHP 2023). The plant is said to inhabit Arctic regions south to mossy alpine areas on granitic, siliceous, or schistose mountains (Fernald 1950). Argus (2005) states that the snowbed willow grows in “snow beds and other places with good snow protection, well-drained river banks, streams and ponds, sandy beaches, boulder ridges, steep bouldery slopes, sphagnum hummocks, or in marshes; on organic sand and sandy-gravel derived from granite, gneiss, schist, shale, arkose sandstone, or dolomitic limestone substrates, usually on non-calcareous substrates but can grow in places exposed to sea-spray.”

#### **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):

*Salix herbacea* is a perennial shrub. It occurs in rhizomatous colonies with trunks and main branches growing underground; only the upper branchlets peek above the ground, or more often, above a layer of mosses (Argus 2005; Fernald 1950). It is thought that *Salix herbacea* is a poor competitor, given its choice of harsh habitat conditions (Wijk 1986). The snowbed willow is one of the earliest ectomycorrhizal plants to colonize primary successional sites, such as in glacial forefronts in the Alps (Mühlmann & Peintner 2008). This makes the open, yet sometimes extreme, alpine environments atop the Adirondack High Peaks a suitable habitat for the plant. Here, the populations may be long-lived. At higher altitudes of the Northern Apennines in Italy, it is estimated that genets of *S. herbacea* began to grow 2000 – 7000 years ago; it is unknown how long the plants in the Adirondacks have persisted (Centenaro et al. 2023).

Seeds of *S. herbacea* overwinter before germinating in the spring (Sedlacek et al. 2014). As a plant adapted to long, cold winters, seeds from areas with earlier snowmelt do not germinate as well as those from late-exposed snowbeds (Sedlacek et al. 2014). While, after germination, individual growth is generally higher for plants from lower altitudes (areas with earlier snowmelt and a longer growing season) (Sedlacek et al. 2014; Wheeler et al. 2016), maximum biomass (overall growth rather than individual shoots) occurs in areas with longer snowpack (Wijk 1986). In addition, earlier snowmelt negatively influences the amount of flowers formed from fruiting stems, as well as increases the likelihood of herbivory and fungal damage (Wheeler et al. 2016). Sedlacek et al. (2015) found similar results but concluded that *S. herbacea* can respond to differences in snowmelt by plastic changes in phenology and leaf size. However, plasticity can



Conservation Actions	
Action Category	Action
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

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