Species Status Assessment

Common Name	prickly pear	**Date Updated:**	2024-01-12
Scientific Name	*Opuntia cespitosa*	**Updated By:**	Rachael A. Renzi
Family	Cactaceae		

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

Prickly pear is a perennial succulent in the cactus family. It was recently separated taxonomically from the eastern prickly pear, *Opuntia humifusa,* which also grows in New York (Majure et al. 2017; Werier et al. 2023). Though there was one historical specimen of *O. cespitosa* in New York, it wasn't until 2018 that extant populations were located (NYNHP 2023). In 2019, the status for *O. cespitosa* was changed from historical to state endangered. Now, there are eight known populations of the plant, growing mainly in Ulster County, but also in Suffolk and Richmond Counties (NYNHP 2023). It is generally rare throughout the northeast (NatureServe 2023). It can grow in a wide range of edaphic conditions, though it is limited to open, sunny, and usually rocky environments in New York (NYNHP 2023; Drezer 2020). Because of the recent revision and hence recent re-discovery of this plant, more research is needed before population trends can be established.

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**

ii. New York: Exploitably Vulnerable

b. Natural Heritage Program

i. Global: GNR

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

Other Ranks:

COSEWIC: Endangered/En voie de disparition
IUCN Red List: Not assessed by IUCN Red List

Status Discussion:

Opuntia cespitosa is Exploitably Vulnerable in New York (Ring 2023). It was officially updated from its historical ranking to Endangered in 2019. There are eight extant populations, all within

Ulster, Suffolk, and Richmond Counties (NYNHP 2023). There are no estimates for number of plants, but there are likely between 150-200 patches of plants total between the eight populations (NYNHP 2023). There is also one historic specimen from Orange County (Werier et al. 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	Yes	Unknown	Unknown	Unknown	SH	
Massachusetts	Yes	Unknown	Unknown	Unknown	SNR	
New Jersey	No	-	-	-		
Pennsylvania	Yes	Unknown	Unknown	Unknown	SNR	
Vermont	No	-	-	-		
Ontario	Yes	Unknown	Unknown	Unknown	S1	
Quebec	No	-	-	-		

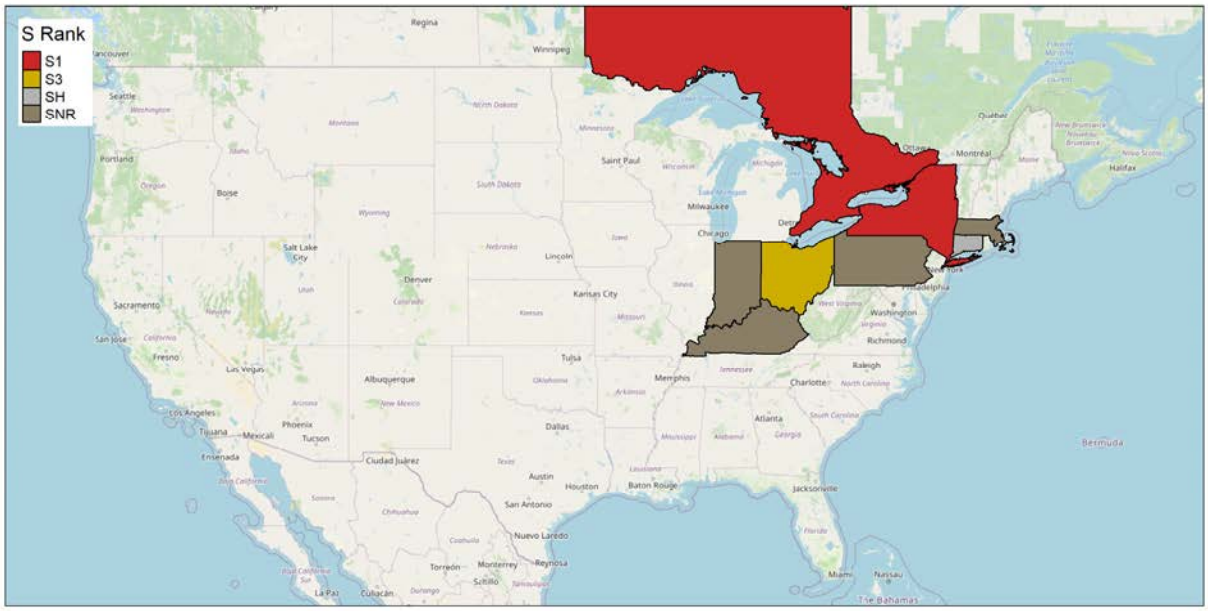

Figure 11. Opuntia cespitosa North American distribution.

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

Due to this plant's re-recognition as a distinct species, records have jumped from none to hundreds or thousands of plants in New York since 2017. Populations throughout the range of *Opuntia humifusa,* from which *O. cespitosa* was separated, are being revisited throughout its range. It is difficult to determine trends on such a short time scale, but it is expected that the populations will remain stable elsewhere (Wernerehl 2023). Historic records of *Opuntia cespitosa,* are also lacking, due to the difficulty in handling and preserving the fleshy spined plants (Tenaglia & MoBot 2023).

Details of historic and current occurrence

Opuntia cespitosa was officially updated from its historic ranking to endangered in 2019. There are eight extant populations, all within Ulster, Suffolk, and Richmond Counties (NYNHP 2023). Recent genetic work influenced a taxonomic revision re-recognizing this species (Majure et al. 2017). Since then, many states and provinces have had to revisit prickly-pear populations for a proper identification. While the range potentially expands past AR, KY, OH, PA, NY, CT and the Cape and Islands of Massachusetts, it is rare in northeastern states and Ontario (Wernerehl 2023; NatureServe 2023; NatureServe 2020).

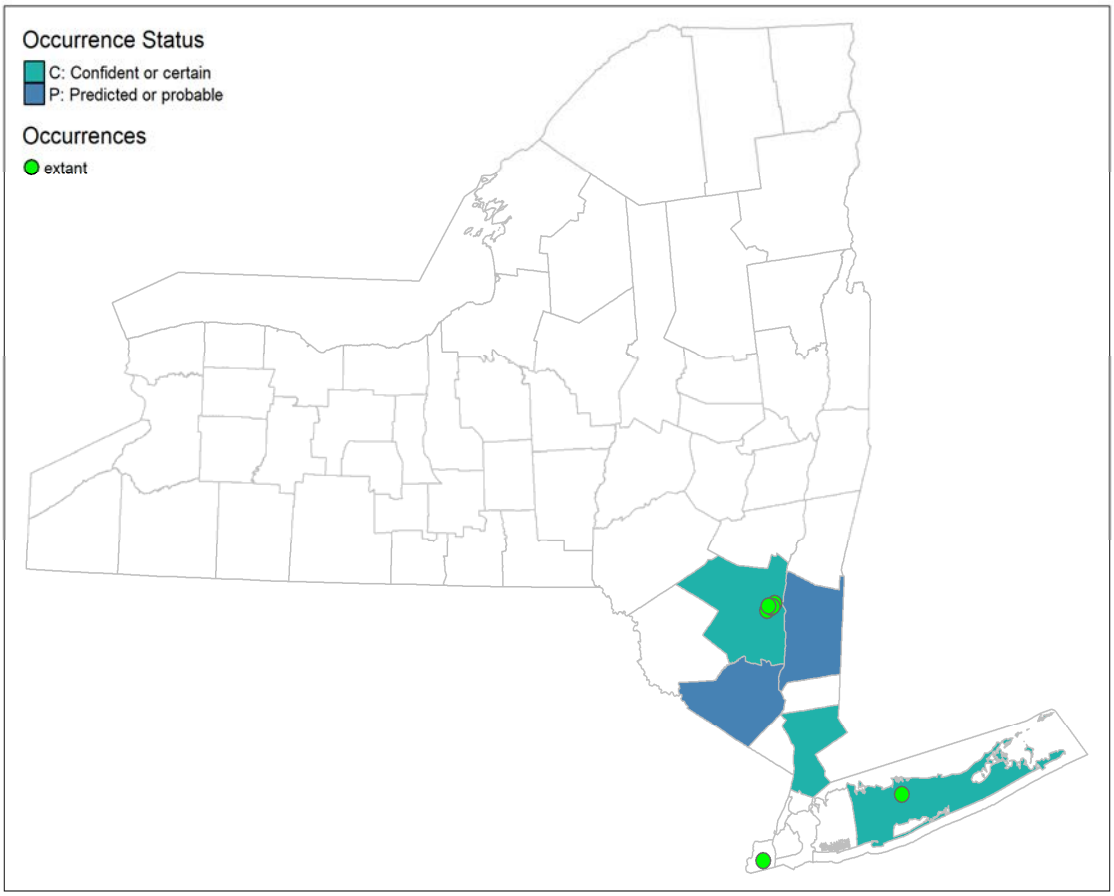

Figure 22. *NYS distribution for* Opuntia cespitosa

Table 1*. Number of records (element occurrences) of* Opuntia cespitosa *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	0	0	0.0
1995-2004	0	0	0.0
2005-2014	0	0	0.0
2015-2023	8	4	0.4

Monitoring in New York

There are eight known populations of *Opuntia cespitosa,* all of which were first seen in 2018 or later (NYNHP 2023). Though some of the populations were identified by trained New York Natural Heritage Staff, a few of the populations were first identified through a citizen science platform. Four of the populations are on land owned by private individuals, one population is on land owned by a corporation, one on land owned by New York City, and one on land owned by a local land trust (NYNHP 2023).

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

In New York, *Opuntia cespitosa* has been found growing on cliffs, exposed rock, in a powerline right-of-way, and along a road (NYNHP 2023).

Northeastern Habitat Classification Macrogroup: outcrop and summit scrub, cliff and talus, disturbed land pioneer / successional shrublands and grasslands ().

Pitch pine-oak-heath rocky summit, mowed roadside/pathway, unpaved road/path, cliff community, roadcut cliff/slope (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:

Opuntia cespitosa has been found to grow in a wide range of conditions, from low-ph subtrates to high-calcium sites (Drezer 2020). It occupies sandy fields and plains, open oak forests, stabilized open dunes, and sometimes disturbed ground as along roadsides (Reznicek 2011). In New York, the plants have been found growing on cliffs, on exposed rock, and in a powerline right-of-way (NYNHP 2023). In Ontario, it grows in sunny, dry, sandy openings, such as in dunes or hillsides (MECP 2022). Its choice in soils is generally poor, which may have benefits of reduced competition (Chiarot 1992).

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):*

Opuntia cespitosa flowers from June through July. It can reproduce both by vegetative fragmentation and seed (Chiarot 1992). The flowers are visited by long-toungued and short-tongued bees but is likely only pollinated by larger bees (Mitchell 1960,1962; Kevan & Aiello 2002). Seeds are found to be dispersed by white-tailed deer, turkeys, rabbits, and possibly other small mammals (Huynh 2023, Kevan et al. 2004, Lovett-Doust & Levi 2003). Drezer (2020) found a correlation between mowed patches of *Opuntia cespitosa* and larger patch sizes, suggesting the importance of locally facilitated vegetative reproduction.

***Table 2**. Phenology of* Opuntia cesptiosa *in New York State (NYNHP 2023).*

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

VI. Threats

In New York, some populations may experience disturbance from collection of plants by the public (NYNHP 2023). Under climate change scenarios, some populations in Massachusetts and Ontario are likely to be washed away or isolated from animal dispersers by 2300 (Wernerel 2023, Huynh 2023, Tewksbury et al. 2002).

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:

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* Opuntia cespitosa*.*

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:

New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry. 2023. Element Occurrence and Element Dataset. Albany, New York. [Exported 12/14/2023].

NatureServe. 2023. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. [Accessed 12/14/2023].

Werier, David, Kyle Webster, Troy Weldy, Andrew Nelson, Richard Mitchell, and Robert Ingalls. 2023 New York Flora Atlas. [S. M. Landry and K. N. Campbell (original application

development), USF Water Institute. University of South Florida]. New York Flora Association, Albany, New York. [Accessed 11/21/2023].

Additional references:

Chiarot R. 1992. Eastern Prickly Pear Cactus monitoring report 1992 at Point Pelee National Park. Located at Point Pelee National Park, Leamington, ON, Canada. p. 42.

Drezner, T. D. 2020. A Study of Substrate Variability and the Distribution of *Opuntia cespitosa* (Cactaceae) from Southern Ohio to Central Alabama, USA. *Journal of the Arizona-Nevada Academy of Science*, *49*(1), 22–28. https://www.jstor.org/stable/26983732

Huynh, Mandy. 2023. Tracking the dispersal of the endangered Eastern Prickly Pear Cactus (*Opuntia cespitosa*) by animal vectors in Canada. York University, Toronto, Ontario. https://yorkspace.library.yorku.ca/server/api/core/bitstreams/f12d6fce-1db4-4910-a02c-d5c840183198/content

Kevan, P.G. and R. Aiello. 2002. Pollination & seed set mechanisms of *Opuntia humifusa*, in Point Pelee National Park. Unpublished report. 10 pp.

Kevan PG, Boone JW, Aiello R, Taki H. 2004. Field and seed dispersal biology of Eastern Prickly Pear Cactus, *Opuntia humifusa*, in Point Pelee National Park: report for field seasons 2001, 2002 & 2003. Located at Point Pelee National Park, Leamington, ON, Canada.

Lovett-Doust L. & Levi A. 2003. Seed germination, seedling survival and preliminary survey of the seed bank of *Opuntia humifusa*, eastern prickly pear at Point Pelee National Park. Located at Point Pelee National Park, Leamington, ON, Canada.

Majure LC, Judd WS, Soltis PS, Soltis DE (2017) Taxonomic revision of the *Opuntia humifusa* complex (Opuntieae: Cactaceae) of the eastern United States. Phytotaxa 290:1–65. https://doi.org/10.11646/phytotaxa.290.1.1

Missouri Botanic Garden. 2023. *Opuntia cespitosa* Raf. Eastern Prickly Pear. https://www.missouriplants.com/Opuntia_cespitosa_page.html [Accessed 3/15/2024].

Ministry of the Environment, Conservation and Parks. 2022. Eastern Prickly-Pear Cactus. King's Printer for Ontario. https://www.ontario.ca/page/eastern-prickly-pear-cactus [Accessed 1/12/2024].

Mitchell, T. B. 1960. Bees of the Eastern United States. Vol. I. The North Carolina Agricultural Experiment Station, Raleigh, North Carolina. 538 pp.

Mitchell, T. B. 1962. Bees of the Eastern United States. Vol. II. The North Carolina Agricultural Experiment Station, Raleigh, North Carolina. 557 pp.

NatureServe Canada, 2020. Ecosystem-based Automated Range (EBAR) for Opuntia cespitosa, Version 1.0, Expert Reviewed (National) (Canadian Scope). Ottawa, Canada. https://gis.natureserve.ca/download/EBAR982564N.pdf. [Accessed 1/12/2024].

Reznicek, A.A., E.G. Voss, & B.S. Walters. 2011. *Opuntia cespitosa.* Michigan Flora Online. University of Michigan. https://lsa-miflora-p.lsait.lsa.umich.edu/#/record/691 [Accessed 1/11/2024].

Ring, Richard M. 2023. New York Rare Plant Status Lists. New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry, Albany, NY. December 2023. 108 pp.

Tewksbury JJ, Levey DJ, Haddad NM, Sargent S, Orrock JL, Weldon A, Danielson BJ, Brinkerhoff J, Damschen EI, Townsend P. 2002. Corridors affect plants, animals, and their interactions in fragmented landscapes. Proc Natl Acad Sci USA. 99(22):12923- 12926.

Wernerehl, Robert. 2023. Species Listing Proposal Form: *Opuntia cespitosa.* Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road, Westborough, MA. https://www.mass.gov/doc/prickly-pear-cactus/download [Accessed 1/12/2024]