Species Status Assessment

Common Name:	Protuberance Miner Bee	**Date Updated:**	2024-05-24
Scientific Name:	*Andrena persimulata*	**Updated By:**	Erin L. White
Class:	Insecta		
Family:	Andrenidae		

Species Synopsis

Andrena persimulata is a mining bee in the Andrenidae family and has been documented from Alberta to New Brunswick in Canada and in the U.S. from California east to Maine (NatureServe 2024, DiscoverLife 2024).

Select food plants for *Andrena persimulata* include: Cornaceae: *Cornus* (Swida) L. (Fowler and Droege 2020). It is most likely to be found in Wet Meadows and Shrub Swamps, but has also been documented in some forested and open habitats with dogwood.

The species was ranked an S2 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. It has been documented since 2000 in three counties in NY, while previously known from 12 counties historically and has likely declined greater than 50% in the state.

I. Status

a. Current legal protected Status

i. Federal: Not Listed **Candidate:** No

ii. New York: Not Listed

b. Natural Heritage Program

i. Global: GNR

ii. New York: S2 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

New York 2025 SGCN status: Species of Greatest Conservation Need

COSEWIC: Not listed in Canada
IUCN Red List: Not assessed by IUCN Red List
Northeast Regional SGCN: Proposed Watchlist [Assessment Priority]

Status Discussion:

The species was ranked an S2 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. It has been documented since 2000 in three counties in NY, while previously known from 12 counties historically and has likely declined greater than 50% in the state.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		Proposed Watchlist [Assessment Priority]
New York	Yes	Unknown	Unknown	Pre and post 2000	S2	Yes
Connecticut	Historic	Unknown	Unknown	Unknown	SH	
Massachusetts	Yes	Unknown	Unknown	Unknown		Yes
New Jersey	No	-	-	-		No
Pennsylvania	No	-	-	-		No
Vermont	No	Unknown	Unknown	Unknown	S2	No
Ontario	No	Unknown	Unknown	Unknown	S3S4	
Quebec	No	Unknown	Unknown	Unknown	SNR	

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York

(specify any monitoring activities or regular surveys that are conducted in New York):
The Empire State Native Pollinator Survey (ESNPS) was conducted from 2017-2021, but there are no organized, regular monitoring or survey activities directed toward this species or to sites where they have been documented. Some regular monitoring may occur at protected sites that Heritage staff revisit if they occur on state properties, as part of OPRHP or State Lands inventory work.

Trends Discussion

(insert map of North American/regional distribution and status):

The species is historically (1999 and earlier) known from 12 counties in NY. It has been confirmed in three counties since 2000, suggesting a decline of at least 50% and possibly much greater.

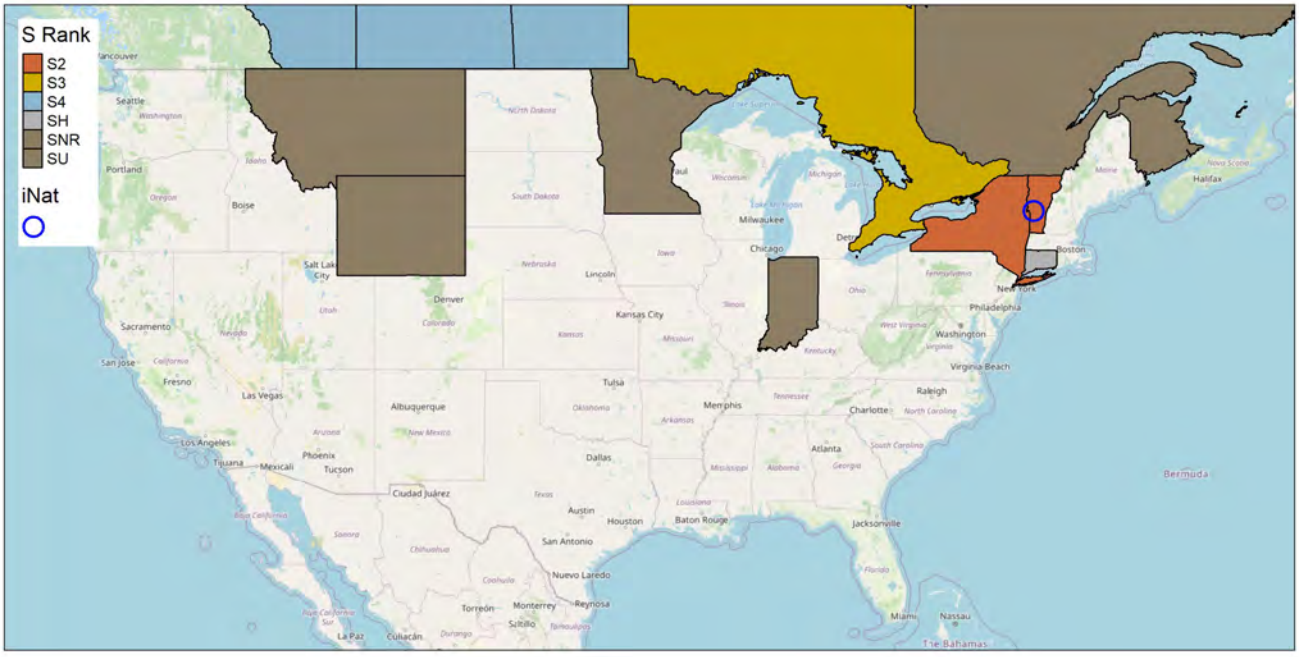

Figure 1. *Andrena persimulata* North American distribution. Points show research-grade iNaturalist observations.

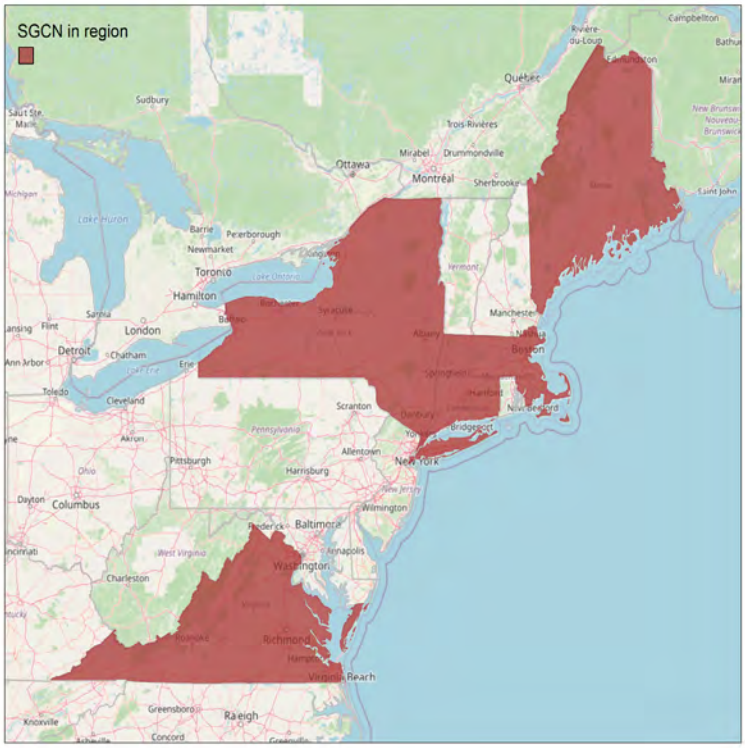

Figure 2. Andrena persimulata regional distribution as reported at https://northeastwildlifediversity.org/rsgcn .

Figure 3. *Andrena persimulata* distribution (DiscoverLife 2024).

III. New York Rarity

(provide map, numbers, and percent of state occupied)

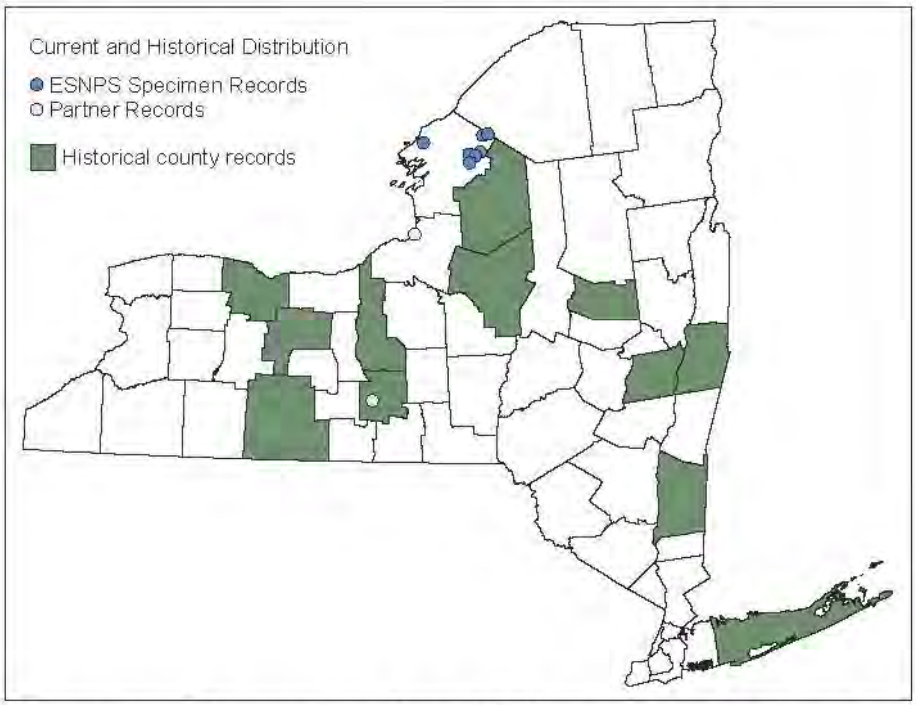

Figure 1: Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties.

Figure 4. NYS distribution for Andrena persimulata based on element occurrence data.

Years	Observations	# of Counties	% of counties in State
Pre-2000	215	12	19.4
2000-2023	13	3	4.8

Table 1. Number of observations of *Andrena persimulata* grouped by the dates known to be extant (repeat observations (element occurrences) include the years spanning first observation to last observation) and the number and percent of total of counties these observations fall within for New York State.

Details of historic and current occurrence:

There were nine specimens collected from six locations on Fort Drum Military Installation as part of a DOD funded pollinator survey performed by NYNHP in 2021 and one at French Creek Clayton, Jefferson County in 2018 as part of the ESNPS. In addition, there is an AMNH specimen from Oswego County in 2000 and two specimens from 2012 in Tompkins County.

Historically (1999 and earlier), the species is known from 4 locations in Albany County, 1 in Cayuga County, 1 in Dutchess, 1 in Fulton, 2 in Lewis, 1 in Monroe, 1 in Oneida, 1 in Ontario, 3 in Rensselaer, 1 in Steuben, 1 in Suffolk, and nine locations in Tompkins County (including 1 where reconfirmed in 2012). Multiple specimens were collected at some sites, hence the obs numbers for pre-2000 above.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	~1000 mi

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%' 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type

(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):

Shrublands, Wet Meadow/Shrub Swamp, Mixed Northern Hardwoods, Floodplain Forest/Freshwater Marsh, Old Field/Managed Grasslands

NatureServe broad habitat types: Subterrestrial

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/ Increase
Yes	Unknown	Unknown	Unknown

Column options
Habitat Specialist and Indicator Species: Yes; No; Unkown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing: Unkown; (blank) or Choose an item

Habitat Discussion:

Select food plants for *Andrena persimulata* include: Cornaceae: *Cornus* (Swida) L. (Fowler and Droege 2020). There were several selections captured above from recent observations with the Northeast Terrestrial Habitat Classification, but Wet Meadow/Shrub Swamp is probably most likely to contain *Cornus* species.

V. Species Demographics and Life History

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	Yes	No	Yes	Yes	No

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion

(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):

Andrena persimulata has been observed in May-July (Fowler and Droege 2020).

VI. Threats

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas		Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3. Energy Production & Mining	3.2 Mining & Quarrying		Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads		Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.2 Terrestrial plants	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens		Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.3 Changes in Temperature Regimes	11.3.3 Gradual temperature change (warmer winters result in fewer bees)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.4 Changes in Precipitation & Hydrological Regimes	11.4.2 Droughts (solitary bees more sensitive to drought)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Threats facing Andrena persimulata and other ground-nesting bees include habitat loss and degradation, invasive plants and pathogens, pesticides, and climate change (White et al. 2022). Kammerer et al. (2020) found that warmer winters will result in fewer bees and solitary bees are more sensitive to drought conditions, which are predicted in the Northeast as a result of climate change.

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:

Any efforts to protect wild bee populations from pathogen exposure would benefit this species. Suggested actions would include using mesh to prevent escape of bees from commercial breeding greenhouses, proper disposal of commercial bees, sanitation in greenhouses, and development of molecular screening. Tight restrictions on importing bees and elimination of parasites from commercial populations has been suggested as ideal (Meeus et al. 2011, Schweitzer et al. 2012). Limiting exposure of Protuberance Miner Bee to insecticides would also benefit them. Suggested actions include avoidance of application to flowers that bees are attracted to and application of solutions or soluble powders (rather than dusts or wettable powders) to the ground in calm wind and warmer temperatures during periods of dewless nights to minimize the impact to resident native bee populations (Schweitzer et al. 2012). Organic farming has also been suggested to benefit native bees. Ensuring habitat resources for foraging, nesting, and overwintering will also benefit Andrena persimulata. These habitats should be within close proximity to each other and without road or railroads between them, which have been suggested as potential barriers to dispersal. Suggested actions for habitat management should include ensuring nectar availability throughout the spring and summer by improving flower abundance and species richness and species with overlapping blooms. Select food plants for Andrena persimulata include Cornus (Swida) L. (Fowler and Droege 2020). If mowing of fields occurs, summer is the best time and mower blades should be raised to avoid ground nests. Staggering cutting times in different field areas will ensure nectaring sources are always available. Increasing available nesting habitat may be accomplished by reducing tillage in fields or leaving unplowed strips vegetated, or even providing artificial nesting boxes. Managing for rodents and ground-nesting birds should also benefit native ground-nesting bees (Schweitzer et al. 2012).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct Habitat Management	Site/Area management
A.2 Direct Species Management	A.1.1.0.0 Manage plants, animals, fungi, or bacteria	Invasive/problematic species control
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness and communications
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Site/area protection
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	Resource & habitat protection
C.6 Design and Plan Conservation	C.6.5.1.3 Develop a conservation, management, or restoration plan for protected private lands	Habitat & natural process restoration
C.7 Legislative and Regulatory Framework or Tools	C.7.1.3.0 Create, amend, or influence regulation	
C.7 Legislative and Regulatory Framework or Tools	C.7.2.1.0 Create or amend policies	
C.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

Table 3. Recommended conservation actions for *Andrena persimulata.*

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].

Additional references:

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Fowler, J. and S. Droege. 2020. Pollen specialist bees of the eastern United States. Available at: https://jarrodfowler.com/specialist_bees.html [Accessed May 14, 2024].

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Meeus, I., M. J. F. Brown, D. C. De Graaf, and G. Smagghe. 2011. Effects of invasive parasites on bumble bee declines. Conservation Biology 25(4):662–671.

Northeast Fish and Wildlife Diversity. 2024. Regional Species of Greatest Conservation Need (2024). https://northeastwildlifediversity.org/rsgcn. Accessed May 14, 2024.

Schweitzer, D.F., N.A. Capuano, B.E. Young and S.R. Colla. 2012. Conservation and management of North American bumble bees. NatureServe, Arlington, Virginia, and USDA Forest Service, Washington, D.C. 17 pp.

White, Erin L., Matthew D. Schlesinger, and Timothy G. Howard. 2022. The Empire State Native Pollinator Survey (2017-2021). New York Natural Heritage Program. Albany, NY.

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