

Species Status Assessment

Common Name: Macropis Cuckoo Bee **Date Updated:** 2024-10-08
Scientific Name: *Epeoloides pilosula* **Updated By:** Erin L. White
Class: Insecta
Family: Apidae

Species Synopsis

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

The Macropis Cuckoo Bee is known in Canada from Alberta east to Nova Scotia and in the U.S. from North Carolina northward to New York and Massachusetts and Wisconsin (NatureServe 2024).

The species was ranked an S1 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. It has been documented since 2000 in two counties in NY, while previously known from 7 counties historically and while always a rare specialist, it has suffered significant recent declines in the state.

This species is a cleptoparasitic bee requiring a suitable host (*Macropis*) as well as the host's foodplants (NatureServe 2024). *Macropis* bees specialize on gathering oils from native loosestrife (*Lysimachia*) to line their nests and feed their offspring and nest in wetland habitats near these plants (Wilson and Carril 2016). Select food plants for *Macropis patellata* include *Lysimachia* L. (Fowler and Droege 2020).

I. Status

a. Current legal protected Status

- i. **Federal:** Not Listed **Candidate:** No
ii. **New York:** Unprotected

b. Natural Heritage Program

- i. **Global:** G3
ii. **New York:** S1 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

New York 2025 SGCN status: High Priority Species of Greatest Conservation Need

COSEWIC: Endangered
 IUCN Red List: Not assessed by IUCN Red List
 Northeast Regional SGCN: RSGCN

Status Discussion:

The species was ranked an S1 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. It has been documented since 2000 in two counties in NY, while previously known from 7 counties historically and while always a rare specialist, it has suffered significant recent declines 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		Yes
New York	Yes	Unknown	Unknown	Unknown	S1	No
Connecticut	No	Unknown	Unknown	Unknown	S1	Yes
Massachusetts	No	Unknown	Unknown	Unknown	SH	Yes
New Jersey	No	Unknown	Unknown	Unknown	SNR	Yes
Pennsylvania	No	Unknown	Unknown	Unknown	SNR	
Vermont	No	-	-	-		
Ontario	No	Unknown	Unknown	Unknown	S1	
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 and *Macropis* surveys conducted by a Cornell, 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 seven counties in NY and has always been a rare bee in the state. It has been confirmed in two counties since 2000, suggesting a significant decline in NY.

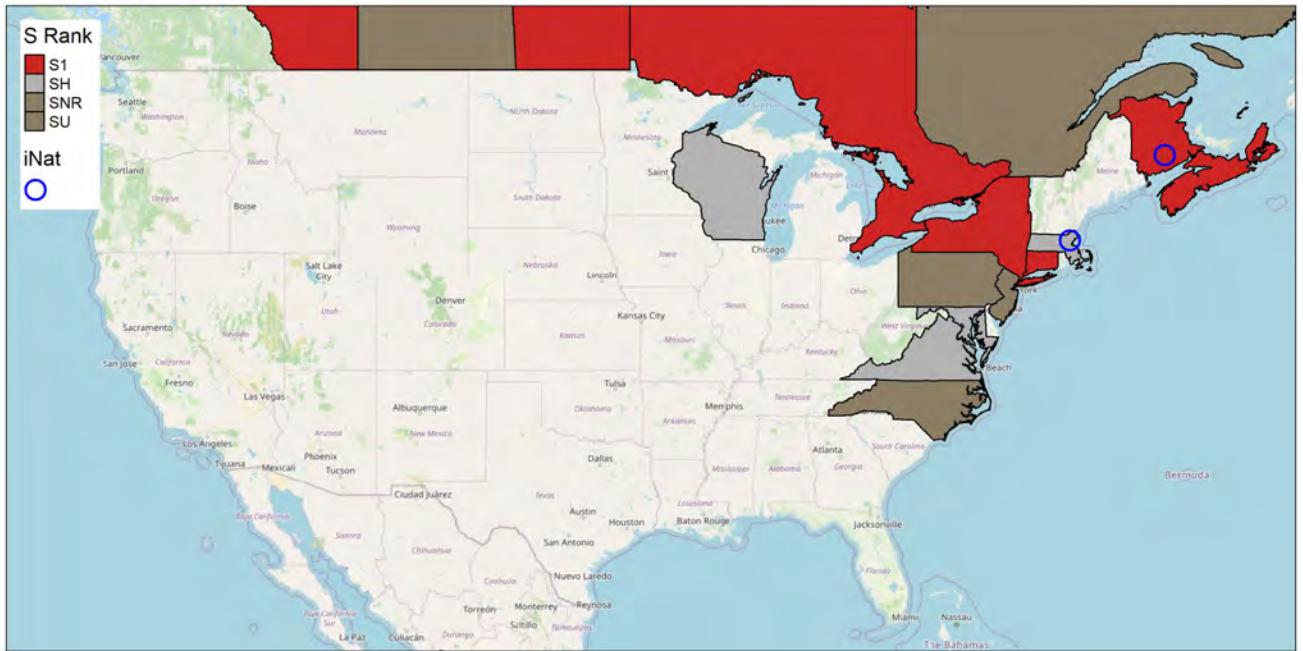


Figure 11. *Epeoloides pilosula* North American distribution. Points show research-grade iNaturalist observations.



Figure 2. *Epeoloides pilosula* regional distribution as reported by DiscoverLife (2024).

III. New York Rarity

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

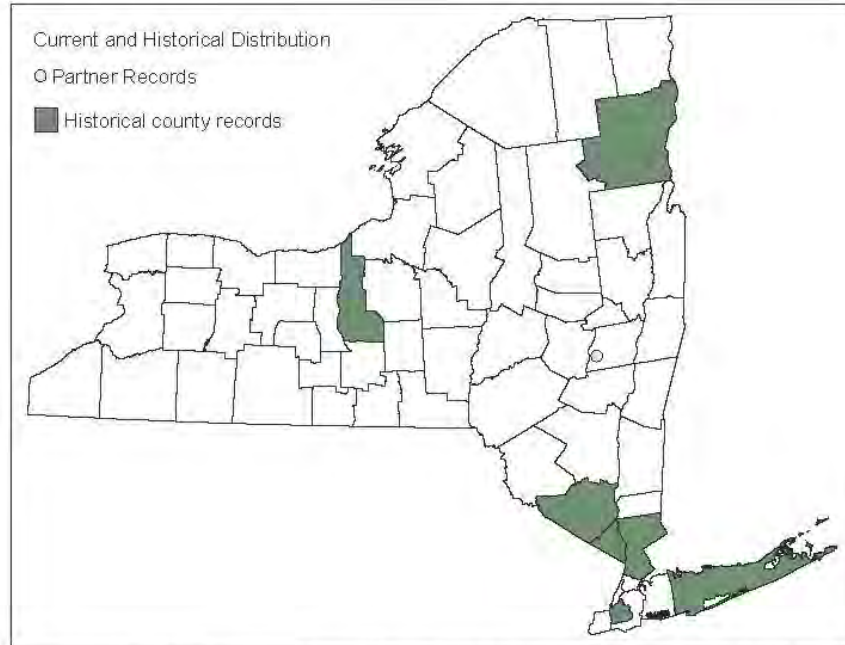


Figure 1: Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties.

Figure 33. NYS distribution for *Epeoloides pilosula* based on ESNPS data (White et al. 2022).

Years	Observations	# of Counties	% of counties in State
Pre-2000	10	7	11.3
2000-2023	2	2	3.2

Table 1. Number of observations of *Epeoloides pilosula* 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:

The species has been observed at a known *Macropis nuda* site in Albany County in 2014 (White et al. 2022) and one new site documented by Molly Jacobson in Putnam County in 2023 where *Macropis ciliata* is also known (iNaturalist 2023).

Historically, 1999 and earlier, the species is known from seven counties including Cayuga, Essex, Kings, Orange, Rockland, Suffolk, Westchester Counties.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	core	~800 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):

Known occurrences are near (below), but could be expected at a variety of wetland habitats with native *Lysimachia*:

Mixed Hardwood Swamp

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; Unknown; (blank) or Choose an item

Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

This species is a cleptoparasitic bee requiring a suitable host (*Macropis*) as well as the host's foodplants (NatureServe 2024). *Macropis* bees specialize on gathering oils from native loosestrife (*Lysimachia*) to line their nests and feed their offspring and nest in wetland habitats near these plants (Wilson and Carril 2016). Select food plants for *Macropis patellata* include *Lysimachia* L. (Fowler and Droege 2020).

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):

Recent observations in NY have occurred in June and July (White et al. 2022, iNaturalist 2024).

VI. Threats

Threats facing *Epeoloides pilosula* 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.

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.

Table 2. Threats to *Epeoloides pilosula*

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:

The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. The Adirondack Park Agency has the authority to regulate smaller wetlands within the Adirondack Park.

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 *Epeoloides pilosula* 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 *Epeoloides pilosula*. 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 *Macropis* hosts include *Lysimachia* L. (Fowler and Droege 2020).

"In the northeast, there are just four species in the genus *Macropis*, three of which reside in New York, and all are loosestrife (*Lysimachia* spp.) pollen specialists. Management practices should protect intact wetlands and habitat. Most habitat restoration efforts benefit generalist bees; while creating pollinator habitat is beneficial, it is not advantageous to many specialist bees like [*Macropis*] because pollen of other species is not nutritionally suitable for their offspring (Fowler 2016a, 2016b). Invasive species control in wetlands may be necessary to ensure suitable habitat for [*Macropis*]. Additional planning and specific permits are likely needed to proceed with invasive species removal and management. Prioritizing the use of native plants and avoiding the use of introduced plants will benefit this species. Including native loosestrifes, like Fringed Loosestrife (*L. ciliata*), in wetland restoration plantings will provide forage for [*Macropis*] and other wetland specialists (Fowler 2016a, 2016b). Fringed Loosestrife seeds and transplants are commercially available (van Dyke et al. 2020). This herbaceous plant grows in shrublands, woods, and along streambanks throughout New York and blooms between June through September (van Dyke et al. 2020). Including additional floral resources will also benefit [*Macropis*] populations. Even though it is a pollen specialist, both males and females' nectar on a variety of plants. ..Potentially of highest importance when managing for [*Macropis*] is to avoid

land management that may reduce nesting habitat for this species. While plants in the *Lysimachia* genus appear to be stable and can adapt to altered environments, suitable nesting sites for [*Macropis*] continue to be destroyed (Simpson and Neff 1983). Therefore, protecting against the reduction or removal of riparian habitats from erosion (e.g., recreational use) or compaction (e.g., development) will benefit this species (Buckner and Danforth 2022).” (New York Natural Heritage Program 2024).

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.2.0.0.0 Direct Species Management	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.6.0.0.0 Design and Plan Conservation	Site/area protection
C.6 Design and Plan Conservation	C.6.0.0.0 Design and Plan Conservation	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.7.0.0.0 Legislative and regulatory framework or tools	Policies and regulations
C.9 Education and Training	C.9.0.0.0 Education and Training	Training

Table 3. Recommended conservation actions for *Epeoloides pilosula*.

VII. References

This SSA drew heavily from these resources:

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