



two (White et al. 2022). In addition to its rarity, *M. ciliata* is considered to have a declining long-term trend and threat impacts to this species are high (White et al. 2022).

## II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown		Not listed	Choose an item.
Northeastern US	Yes	Declining	Declining		RSGCN	Yes
New York	Yes	Declining	Declining	Pre-2000 vs 2000-2022	S1	No
Connecticut	Yes	Declining	Declining		S2; SAPS	No
Massachusetts	Yes	Unknown	Unknown		SNR	Yes
New Jersey	Yes	Unknown	Unknown		SNR	Yes
Pennsylvania	Yes	Unknown	Unknown		SNR	No
Vermont	No data	Unknown	Unknown			No
Ontario	No data	Unknown	Unknown			No
Quebec	Yes	Unknown	Unknown		SNR	No

References used in table: North America (NatureServe 2025), Northeastern U.S. (Northeast Fish and Wildlife Diversity 2024), State/Province Ranks (NatureServe 2025, state SWAPs)

**Monitoring in New York** (*specify any monitoring activities or regular surveys that are conducted in New York*):

The Empire State Native Pollinator Survey was a multi-year pollinator survey effort conducted from 2017-2021. The oil bees, species in the genus *Macropis*, were one of the focal groups targeted by this survey. The statewide effort resulted in up-to-date information on the occurrence of native bees across the state (White et al. 2022). However, no continued organized, regular monitoring or survey activities are directed toward this species.

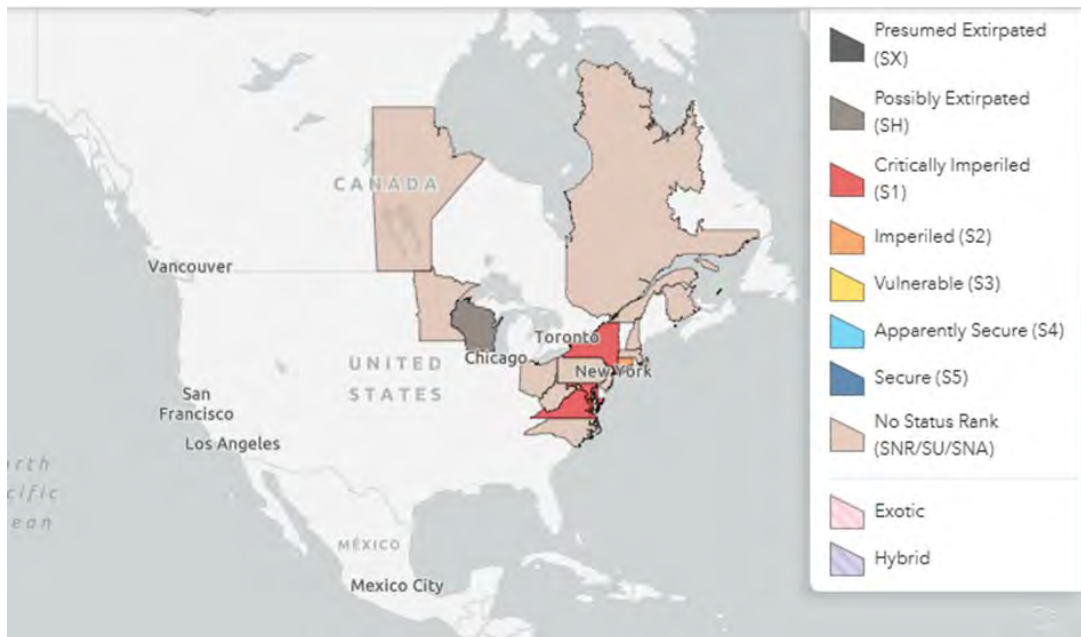
**Trends Discussion** (*insert map of North American/regional distribution and status*):

The range for *M. ciliata* includes Connecticut, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, and West Virginia in the U.S. and Manitoba, New Brunswick, and Quebec provinces in Canada (Michez and Patiny 2005, NatureServe 2025). This species is Possibly Extirpated (SH) from Wisconsin (NatureServe 2025).

*M. ciliata* appears to be declining in the Northeast (van Dyke et al. 2020). Efforts to survey native bee communities have failed to find rare species, such as the closely related *M. nuda*, in areas that were previously occupied (Evans et al. 2022) and *M. ciliata* may be experiencing similar trends. There are historical (1999 and earlier) records from six counties; however, recent efforts (2000 and later) were only able to confirm *M. ciliata* in two counties, one that was historically known and one not previously known (White et al. 2022). Even with the new county observation, the currently known distribution in New York is approximately one-third of what it was historically.

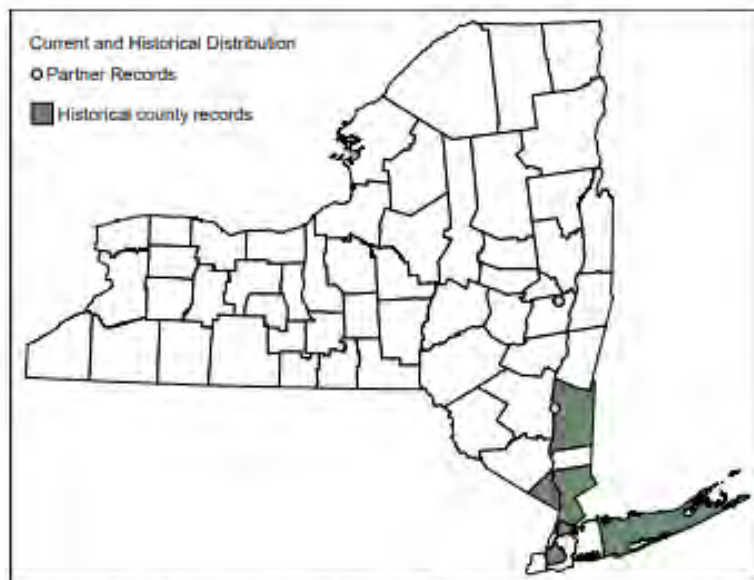
Buckner and Danforth (2022) developed habitat suitability prediction models for 2050 and 2090 and found that suitable habitat for another *Macropis* species, *M. nuda*, will be lost in the northeast under multiple climate change scenarios. *Macropis nuda* and *M. ciliata* are closely related and utilize the same host plant, Fringed Loosestrife (*Lysimachia ciliata*). Based on these models and a shared host plant

between species in the genus *Marcropis*, *M. ciliata* may also be impacted by the effects of climate change and experience a northward shift and loss in suitable habitat. Management and protection of suitable habitat in the projected suitable habitat range will be imperative to support this species in the face of climate change. Short-term trends are currently unknown for *M. ciliata*.



**Figure 1.** *Macropis ciliata* distribution and status (NatureServe 2025)

### 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 2.** Records of *Macropis ciliata* in New York. Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties (Source: White *et al.* 2022).

Years	# of Records	# of Counties	% of State
Pre-2000	83	6	10%
2000-2021	3	2	3%

**Table 1.** Records of *Macropis ciliata* in New York.

**Details of historic and current occurrence:**

*M. ciliata* is currently extant in two counties in New York. The Empire State Native Pollinator Survey effort (2017-2020) detected *M. ciliata* in Albany and Dutchess counties based on partner data (White et al. 2022). It was historically (1999 and earlier) known from six counties in New York (Dutchess, Rockland, Suffolk, Bronx, Westchester, and Kings counties) but was not observed in 5 of those 6 counties during the recent multi-year survey effort (White et al. 2022). When looking at county level occurrences, this species appears to no longer be present in southeastern New York and Long Island likely due to a loss in habitat and development.

**New York’s Contribution to Species North American Range:**

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

The northeast is responsible for 50-75% of *M. ciliata*’s range (Northeast Fish and Wildlife Diversity Technical Committee 2024).

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

Associated with wetlands and early successional habitats, grasslands, shrublands (Fowler 2016, Wagner et al. 2019).

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

Habitat Specialist?	Indicator Species?	Pollinator?	Habitat/ Community Trend	Time frame of Decline/ Increase
Yes	No	Yes	Unknown	Unknown

**Habitat Discussion:**

*M. ciliata* has been documented visiting *Lysimachia ciliata*, and *L. quadrifolia* (Michez and Patiny 2005). In New York, *M. ciliata* could potentially occur where its host plant, Fringed Loosestrife, is found in shrublands, woods, wetlands, and along streambanks and other waterways (Fowler et al. 2016, van Dyke et al. 2020). Intact wetland habitat where native loosestrifes occur is critical foraging habitat for this species. However, it may be found in other early successional habitats. *M.*

*ciliata* has been observed in powerline corridors in New Hampshire and Pennsylvania during a recent survey of native bees (Wagner et al. 2019, Russo et al. 2021).

*Macropis ciliata* is a pollen and oil specialist (i.e., monolege) of loosestrifes (Myrsinaceae: *Lysimachia*) (Fowler 2016). Fringed Loosestrife (*Lysimachia ciliata*) produces copious amounts of pollen and secretes floral oils instead of nectar. While *Macropis* species are limited to *Lysimachia* sp., they will visit various floral resources for nectar (Wood et al. 2019). For example, another *Macropis* species has been observed collecting nectar from two different flower species before provisioning nests with the oil and pollen of Fringed Loosestrife (*L. ciliata*) (Cane et al. 1983). Additional floral preferences of *M. ciliata* include Smooth Sumac (*Rhus glabra*), Garden Angelica (*Archangelica hirsute*), Dogbane (*Apocynum* sp.), Hydrangeas (*Hydrangea* sp.), New Jersey Tea (*Ceanothus americanus*), and Bluets (*Houstonia* sp.) (Michez and Patiny 2005).

*M. ciliata* is a ground nesting bee. Bees in this genus have shallow nests, located on sloping ground, and are typically aggregated (Cane et al. 1983, Rozen and Jacobson 1980). Closely related *M. nuda* nest sites have been observed in sandy-loam soil in partially shaded areas; however, nest sites, in particular preferred soil types, appear to be variable (Cane et al. 1983).

## V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/Catadromous?
Yes			Yes	Yes	

**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):

The *Macropis* genus is comprised of three subgenera (*Macropis*, *Sinomacropis*, and *Paramacropis*) and *M. ciliata* is in the *Macropis* subgenus (Michez and Patiny 2005). *M. ciliata* is a small dark bee approximately 7 mm in length (Michener 1938, Michez and Patiny 2005). Males have yellow coloration on their face (i.e., clypeus); whereas females have a dark face and have dense hair on their legs (i.e., scopae) (Michez and Patiny 2005). The light-colored hairs (i.e., scopae) present under the females' abdomens and on legs are specially adapted to hold loosestrife pollen and oil (Cane 1983).

The oil bees *Macropis ciliata*, *M. nuda*, and *M. patellata* specialize in collecting oil from native loosestrife (*Lysimachia*). Females collect pollen and oil by patting the underside of their abdomens (i.e., metasoma) on loosestrife flowers (Portman et al. 2019). They use the oils to waterproof nest cell walls and for larval nutrition. Females provision their nests with an oil-pollen loaf and lay their eggs on top of it within the cell (Rozen and Jacobson 1980). Their cells are lined with a greenish-yellow waxy waterproofing material (Cane et al. 1983, Rozen and Jacobson 1980). After the egg hatches, the larvae consume their provisions in just a few weeks and spin a cocoon to pupate and overwinter in.

In the Northeast, adult specialist bees are inactive in the winter months and typically overwinter in nests as pre-pupae. In New York, *M. ciliata* is generally active from June through August and is most common July (White et al. 2022).

This oil-collecting bee can be challenging to identify in the field and may require the help of an expert. Specific identifying characteristics and a key can be found in the 2005 paper "World

revision of the oil-collecting bee genus *Macropis* Panzer 1809 (Hymenoptera: Apoidea: Melittidae) with a description of a new species from Laos” by Michez and Patiny.

## **VI. Threats** (from NY 2015 SWAP or newly described):

In the northeast, anthropogenic threats causing habitat loss, degradation, or phenologic mismatch threaten specialist bees and their associations (Fowler 2016, Fowler and Droege 2020). For *M. ciliata* threats include climate change, invasive species and pathogens, habitat degradation, residential and commercial development (Northeast Fish and Wildlife Diversity Technical Committee 2024). Following Best Management Practices (BMPs) when managing early successional habitats, like powerline right-of-way, will likely benefit *M. ciliata* and other native bees that utilize this type of habitat (Wagner et al. 2019, Russo et al. 2021).

Land use change has likely resulted in the loss of *M. ciliata* nesting sites. Bartomeus et al. (2013) found that native bee species richness has declined over a 140-year period and relative abundance has significantly declined for some species, including *M. ciliata*, likely due to their specialized diet and short activity period. Additionally, climate change related habitat loss and shifting niches may have a negative impact on *M. ciliata* populations by reducing the amount of suitable habitat available. Kammerer et al. (2020) found that solitary bees are more sensitive to drought and warmer winters associated with climate change.

Invasive plant species likely threaten *M. ciliata* populations. This specialist bee will nectar on flowering species other than native loosestrifes but may avoid non-native plants. Invasive plants can also displace natives and create monocultures reducing the floral resources available, as seen by purple loosestrife (*Lythrum salicaria*) invasions (Buckner and Danforth 2022). The loss of native loosestrife populations will likely result in the loss of *Macropis* populations (van Dyke et al. 2020).

Pesticides, in particular neonicotinoids, present threats to native bee communities (Main et al. 2020). Herbicides and fungicides appear to have a negative impact on bee fitness (Cullen et al. 2019). Pesticide exposure can result in direct mortality or cause sub-lethal effects that reduce a bee's ability to forage or learn and may decrease overall fitness (Schuhmann et al. 2022).

Threat Level 1	Threat Level 2	Threat Level 3	Scope	Severity*	Irreversibility	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	-	W	L	H	Choose an item.	Choose an item.
3. Energy Production & Mining	3.2 Mining & Quarrying	-	R	L	M	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads	-	W	L	H	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.2 Terrestrial plants	P	M	H	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	-	P	M	H	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides	R	L	H	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	(warmer winters result in fewer bees)	W	L	H	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).	R	L	H	Choose an item.	Choose an item.

**Table 2.** Threats to *Macropis ciliata*.

**SCOPE:** Spatial proportion of the distribution that is expected to be affected in the next 10 years (**narrow**= 1-10%; **restricted**=11-30%; **widespread**=31-70%; **pervasive**= 71-100%).

**SEVERITY:** The degree of population reduction in the next 10 years that can be reasonably expected from the threat given the current circumstances and trends (**low**=degrade/reduce population by 1-10%; **medium**=d/r population by 11-30%; **high**=d/r population by 30-70%; **very high**=d/r population by 71-100%).

**IRREVERSIBILITY:** The degree to which the effects can be reduced and the species restored (**low**=easily reversed, at a low cost, and/or within 0-5 years; **medium**=can be reversed with a reasonable commitment of resources and/or within 6-20 years; **high**=can technically be reversed, but not practicably affordable and/or it would take 21-100 years; **very high**=cannot be reversed and species not likely to be restore and/or it would take >100 years).

**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:**

Governor Kathy Hochul signed into law Legislation S.1856-A/A.7640, the Birds and Bees Protection Act. This law prohibits the use of certain neonicotinoid pesticide treated corn, soybean, or wheat seeds and neonicotinoid pesticides for outdoor ornamental plants and turfs. Reducing the amount of neonicotinoids used in the landscape in New York will likely benefit *M. ciliata*.

**Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:**

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 (Fowler and Droege 2020). Management practices should protect intact wetlands and other early successional habitats. Most habitat restoration efforts benefit generalist bees; while creating pollinator habitat is beneficial, it is not advantageous to many specialist bees like *M. ciliata* because pollen of other species is not nutritionally suitable for their offspring (Fowler 2016).

Invasive species control in wetlands may be necessary to ensure suitable habitat for *M. ciliata*. 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 *M. ciliata* and other wetland specialists (Fowler 2016). 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 *M. ciliata* 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 *M. ciliata* 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 *M. ciliata* 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 *Macropis* species (Buckner and Danforth 2022).

Additional research on habitat requirements, threats, implications of climate change, and the effects of pesticide use is needed for *M. ciliata*. Research focused dispersal abilities is especially relevant to better understand if this poor disperser can keep up with potential range shifts in response to climate change. Identifying what types of specific management strategies benefit *M. ciliata* populations will also be important because populations may respond differently depending on the type of management.

Additional targeted efforts for bees of the family Melittidae are needed. Few records for *Macropis* were obtained during our effort and additional targeted efforts in wetlands with known locations of native *Lysimachia* species in June-July may be productive for these rare bees. Predictive distribution models developed by Buckner and Danforth (2022) should be consulted for *M. ciliata* and other *Macropis* species surveys (White et al. 2022).

Action Category	Action	Description
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications
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.7.0.0.0 Legislative and regulatory framework or tools	Policies and regulations

**Table 3.** Recommended conservation actions for *Macropis ciliata*.

## VII. References

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## **Version history:**

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**Date prepared:** 2/12/2025