Species Status Assessment

Common Name:	a callirhoe bee	**Date Updated:**	2024-10-11
Scientific Name:	*Melissodes boltoniae*	**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):

Melissodes boltoniae ranges in the U.S. from Texas and Nebraska eastward to New York and Maryland (DiscoverLife 2024, NatureServe 2024).

The species was ranked an S1 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. The first known records in NY are from 2009 from two locations in Chemung County (White et al. 2022 from GBIF). The known range of this species has been expanded northward to New York (from PA and MD). This probably indicates a recent range expansion, but could also simply have been due to increased attention to pollinators in recent years.

The NY specimens were found in Oak forest/pine barrens habitat near pasture fields. Select food plants for *Melissodes boltoniae* include
Asteraceae: *Bidens*, *Chrysopsis*, *Cirsium*, *Coreopsis*, *Grindelia*, *Helianthus*, *Heterotheca*, *Ratibida*, *Rudbeckia*, *Solidago*, *Symphyotrichum*, *Vernonia*, and *Verbesina* (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: GNR

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: Not listed in Canada
-IUCN Red List: Not assessed by IUCN Red List
-Northeast Regional SGCN: Not listed

Status Discussion:

The species was ranked an S1 as part of the ESNPS (White et al. 2022) based on rarity, trend, and threat information. The first known records in NY are from 2009 from two locations in Chemung County (White et al. 2022 from GBIF). The known range of this species has been expanded northward to New York (from PA and MD). This probably indicates a recent range expansion, but could also simply have been due to increased attention to pollinators in recent years.

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		No
New York	Yes	Unknown	Unknown	Unknown		No
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	Unknown	Unknown	Unknown	SNR	No
Vermont	No	-	-	-		
Ontario	No	-	-	-		
Quebec	No	-	-	-		

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 first known records in NY are from 2009 from two locations in Chemung County (White et al. 2022 from GBIF). The known range of this species has been expanded northward to New York (from PA and MD). This probably indicates a recent range expansion, but could also simply have been due to increased attention to pollinators in recent years.

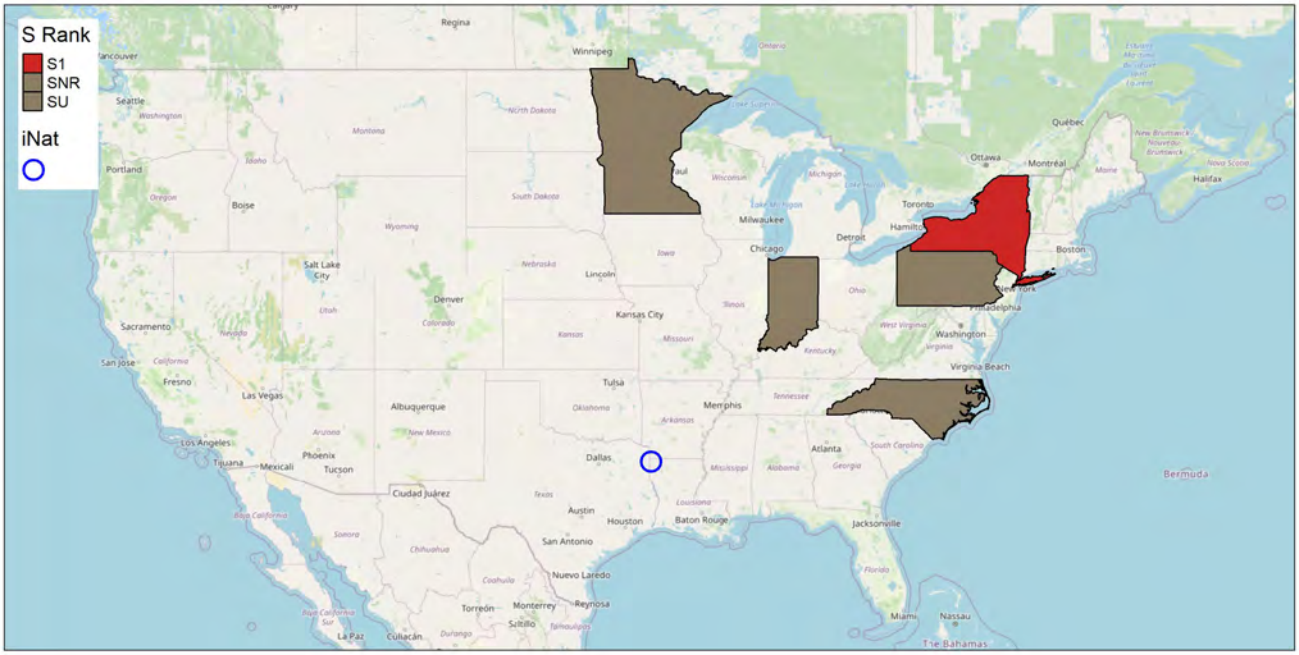

Figure 1: *Melissodes boltoniae* North American distribution. Points show research-grade iNaturalist observations.

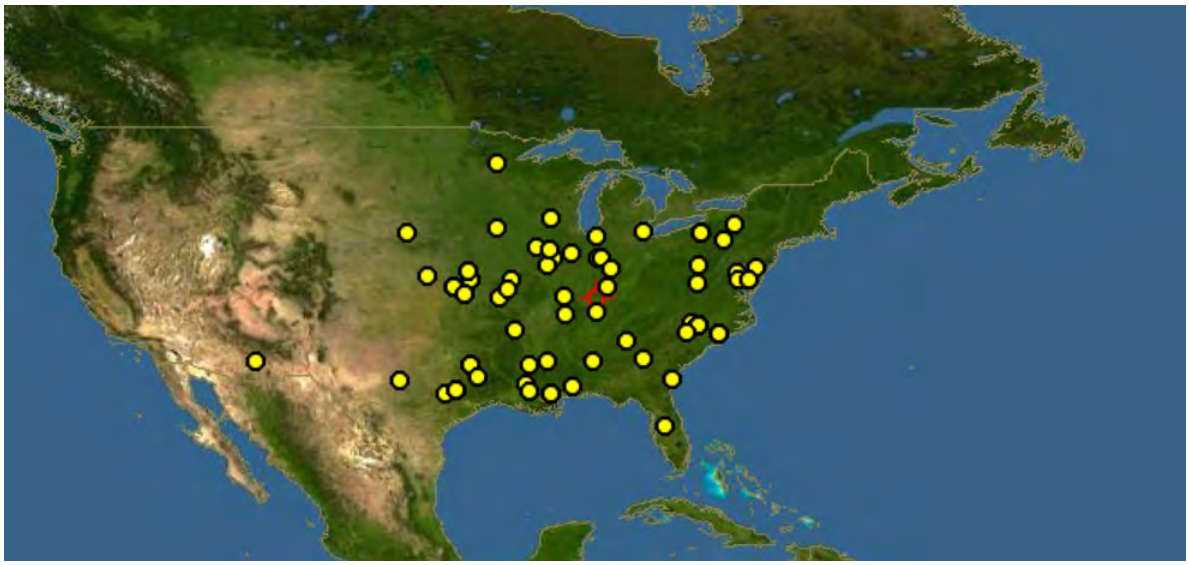

Figure 2: *Melissodes boltoniae* distribution as reported by Discover Life (2024).

III. New York Rarity

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

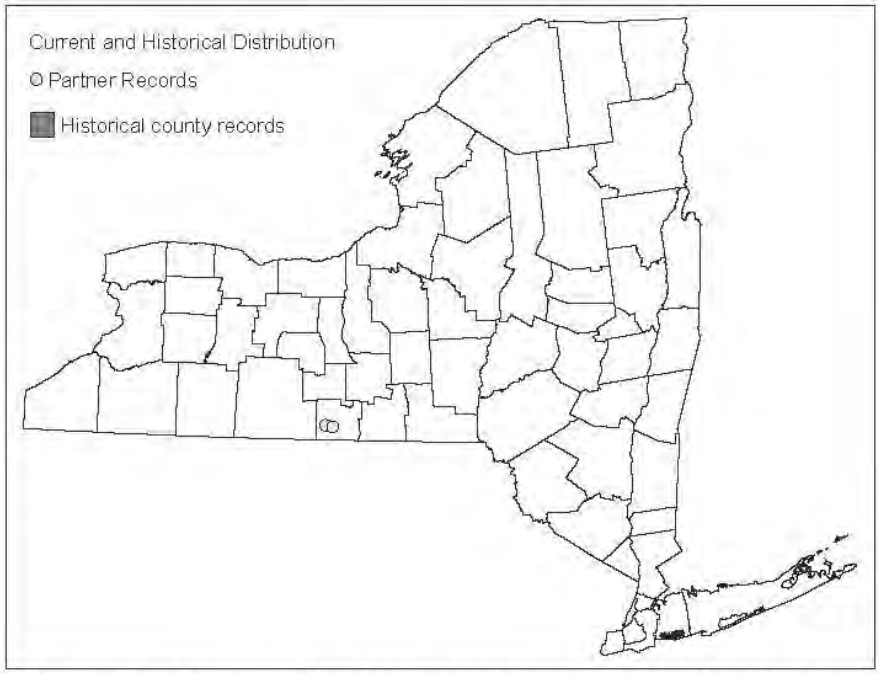

Figure 1: Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties.

Figure 3: NYS distribution for *Melissodes boltoniae* based on ESNPS data (White et al. 2022).

Years	Observations	# of Counties	% of counties in State
Pre-2000	0	0	0.0
2000-2023	3	1	1.6

Table 1. Number of observations of *Melissodes boltoniae* 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 first known records in NY are from 2009 from two locations in Chemung County (White et al. 2022 from GBIF). The specimens were reviewed and confirmed by a bee expert.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Peripheral	~700 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):

Oak Forest/Pine Barrens

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:

The NY specimens were found in Oak forest/pine barrens habitat near pasture fields. Select food plants for *Melissodes boltoniae* include
Asteraceae: *Bidens*, *Chrysopsis*, *Cirsium*, *Coreopsis*, *Grindelia*, *Helianthus*, *Heterotheca*, *Ratibida*, *Rudbeckia*, *Solidago*, *Symphyotrichum*, *Vernonia*, and *Verbesina* (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):

The NY records are from late July. It is known throughout its range to fly July-November (Fowler and Droege 2020).

VI. Threats

Threats facing *Melissodes boltoniae* 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 *Melissodes boltoniae.*

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 *Melissodes boltoniae* 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 *Melissodes boltoniae*. 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 *Melissodes boltoniae* include
Asteraceae: *Bidens*, *Chrysopsis*, *Cirsium*, *Coreopsis*, *Grindelia*, *Helianthus*, *Heterotheca*, *Ratibida*, *Rudbeckia*, *Solidago*, *Symphyotrichum*, *Vernonia*, and *Verbesina* (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

Action Category	Action	Description
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 *Melissodes boltoniae*.

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:

DiscoverLife. 2024. Online. Available at: http://www.discoverlife.org/ [Accessed October 11 2024].

Fowler, J. and S. Droege. 2020. Pollen specialist bees of the eastern United States. Available at: https://jarrodfowler.com/specialist_bees.html [Accessed October 11, 2024].

Gawler, S.C. 2008. Northeastern Terrestrial Wildlife Habitat Classification. NatureServe, Boston, MA.

Kammerer, M., Goslee, S.C., Douglas, M.R., Tooker, J.F. and Grozinger, C.M., 2021. Wild bees as winners and losers: Relative impacts of landscape composition, quality, and climate. *Global change biology*, *27*(6), pp.1250-1265.

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 October 11, 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.

Originally prepared by	Erin L. White
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