

Species Status Assessment

Common Name: Black-headed Bee Fly **Date Updated:** 2024-10-14
Scientific Name: *Bombylius atriceps* **Updated By:** jpv
Class: Insecta
Family: Bombyliidae

Species Synopsis

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

Bombylius atriceps is a species of bee flies in the family Bombyliidae. There is little published information on this species. Bee-flies are a large genus that derive their name due to similarity of appearance to true bees. It was detected during the Empire State Pollinator Survey (White et al. 2022) in northern New York, with historic records from southern New York. It appears to have been more widespread in the past (Johnson 1907).

I. Status

a. Current legal protected Status

i. Federal: **Candidate:**
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:

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		
New York	Yes	Unknown	Unknown	Unknown	U	
Connecticut	No	-	-	-		
Massachusetts	No	-	-	-		
New Jersey	No	-	-	-		
Pennsylvania	No	-	-	-		
Vermont	No	-	-	-		
Ontario	No	Unknown	Unknown	Unknown	SU	
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):

Trends remain unclear due to the small number of known specimens.

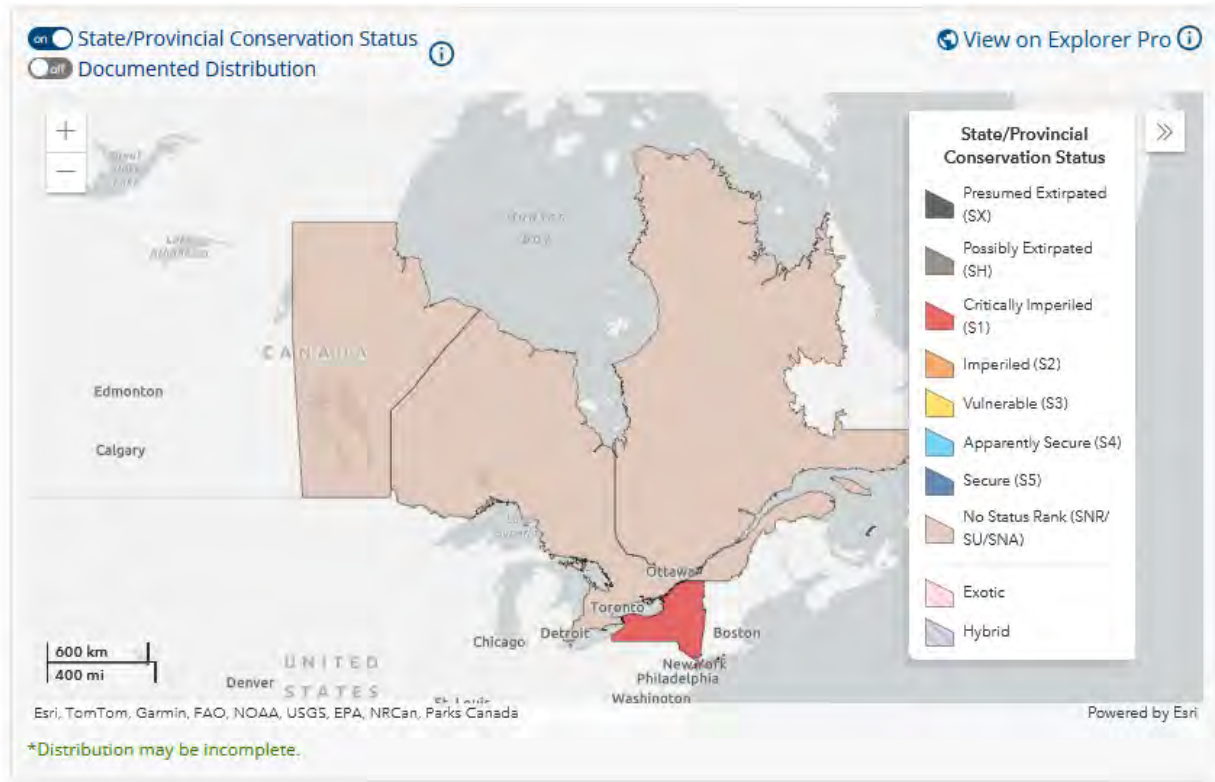


Figure 1. Distribution and NatureServe status of *Bombylius atriceps*. Map from NatureServe.

III. New York Rarity

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

The following maps are from the Empire State Pollinator Survey (White et al. 2022). These maps provide information about *Bombylius atriceps* in New York State. The Empire State Native Pollinator Survey was a four-year effort to determine the current distribution and conservation status of selected pollinators in New York. Data were collected from field surveys and compiled from partners.

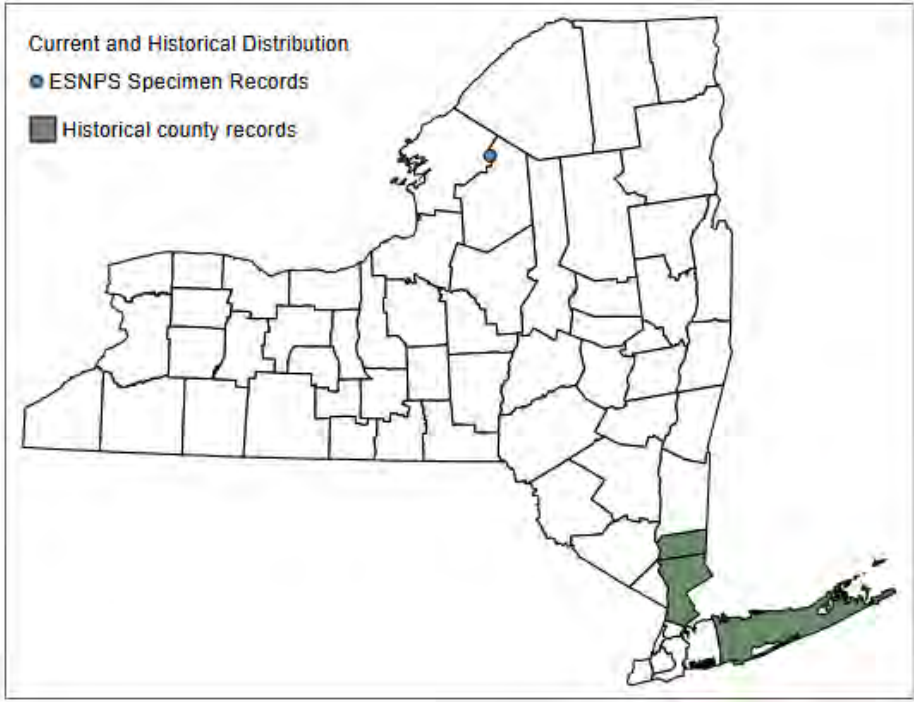


Figure 2. Observations from 2000 to present depicted as dots; those from 1999 and earlier as shaded counties.

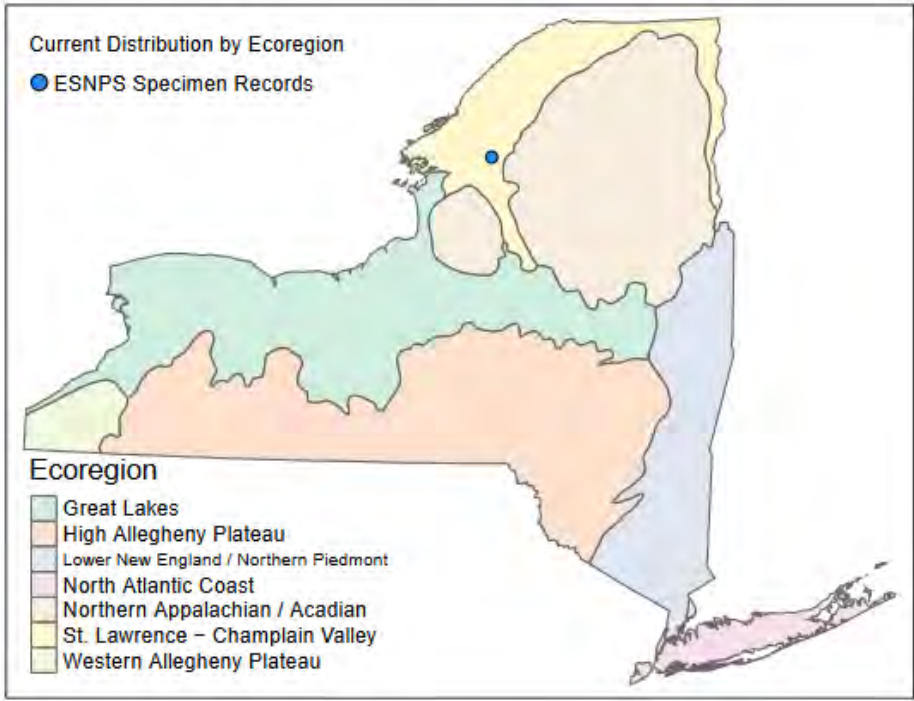


Figure 3. Current distribution (2000 to present) depicted as dots, overlaying Ecoregions.

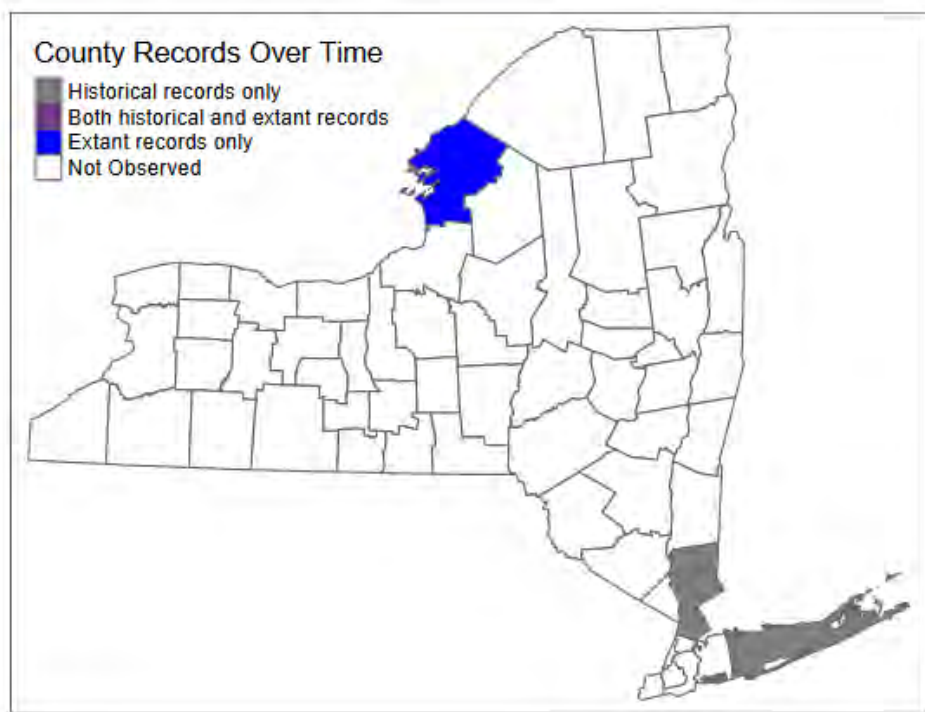


Figure 4. County differences between historical and current sampling. Gray-Historical records only, Blue-Extant, Purple-Both historical and extant.

Years	Observations	# of Counties	% of counties in State
Pre-2000	3	3	4.8
2000-2023	1	1	1.6

Table 1. Number of observations of *Bombylius atriceps* 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:

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

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):

Habitat or Community Type Trend in New York

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

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):

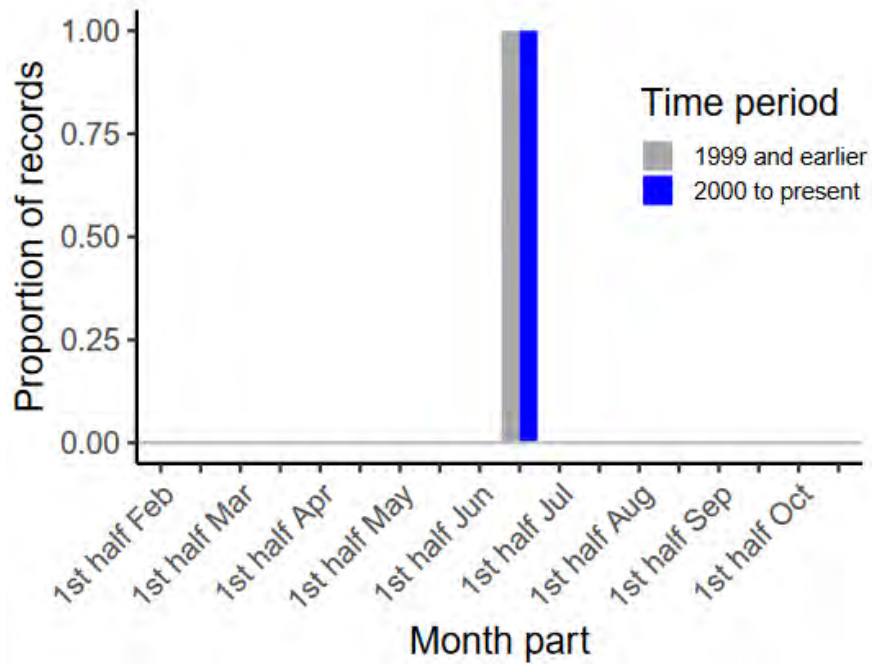


Figure 5. Phenology barplot depicting time of year records were observed: the proportion of observations, by half-month, for historical (1999 and earlier) and ex-tant (2000 to present) records.

VI. Threats

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
5. Biological Resource Use	5.3 Logging & Wood Harvesting	Choose an item.	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.
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.

Table 2. Threats to *Bombylius atriceps*.

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:

General management actions to support insect pollinator populations, from the Empire State Pollinator Survey (White et al. 2022):

Reduce the use of pesticides and herbicides. *Pesticides and other chemical poisons have known negative effects on nontarget species like native pollinators. A recent report on the costs and benefits of pesticides containing neonicotinoids in New York State (Grout et al. 2020) constitutes the most complete review of studies to date. While neonicotinoids do not always appear to affect bees, the precautionary principle suggests that their use should be avoided when possible for the conservation of native species.*

Control invasive species. *Although some invasive plants provide nectar sources for pollinators, our native pollinators have co-evolved with native plants over thousands of years and many will not forage on invasives. Invasive plants can also outcompete native plants and create a monoculture. These monocultures provide a short-lived pulse of floral resources whereas many pollinators require nectar sources throughout the spring, summer, and into the fall. Most of the species using invasives are habitat generalists and tend to be more widespread.*

Reimagine mowing and burning regimes. *Roadside mowing can be curtailed to a great degree and timed for seasons with lower pollinator activity (e.g., late fall). Additionally, staggering mowing to maintain floral resources year-round will benefit pollinators. Raising the mower bed or otherwise allowing vegetation to remain higher will protect nesting habitat for ground-nesters. If using fire to maintain open habitat, it is generally beneficial to leave some areas unburned during prescribed burns, to provide refugia for species. This is especially important for early life stages of moths and ground-nesting bees.*

Convert lawns and other biological deserts into pollinator habitat. *This is one strategy, along with provision of nest sites, that could be pursued in developed areas or natural habitats surrounded by development.*

Retain coarse woody material – snags and logs – in forested ecosystems. *Many pollinating flies and beetles are saproxylic, meaning they rely on dead wood, particularly in the larval stage. Further, some bees are cavity nesters and need the softer tissue of dead wood to bore into (both standing old trees and coarse woody debris on the ground). Saproxylic insects are of conservation concern in parts of Europe where forests are highly managed and dead wood is lacking. This material will benefit some rare natives such as leafcutter bees as well. Many remaining late-successional (old-growth) forests outside the Adirondacks and Catskills exist in*

small patches; maintaining large forest blocks, increasing the size and number of patches of late-successional forests within these forest blocks, and improving connections among these patches will benefit dependent species.

Maintain spring ephemeral understory and improve habitat nearby. In deciduous forest habitats with native pollinators, maintain a native spring ephemeral plant understory to provide early season resources to these forest dwellers. In addition, maintaining and improving native floral resource availability in adjacent habitats throughout the season (spring-late summer) will benefit these pollinators. Overbrowsing by deer in some parts of New York has degraded the forest understory, which now consists only of invasive herbaceous plants and shrubs, which have limited value for pollinators.

Maintain hydrology and natural vegetation regimes of wetlands. For pollinators requiring wetland habitat, maintain the natural hydrological regime of the wetland to favor natural structure and native floral resources. A large, forested buffer should be maintained surrounding the wetland and invasive plants should be controlled (see Control Invasive Species).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct habitat management	Site/Area management
A.1 Direct Habitat 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 & Communications
C.6 Design and Plan Conservation	C.6.5.0.0 Conservation planning	-Site/Area protection -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	Policies and regulations
C.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

Table 3. Recommended conservation actions for *Bombylius atriceps*.

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].

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

Additional references:

Evenhuis, N.L., and D.J. Greathead. 2003. World catalog of bee flies (Diptera: Bombyliidae) web site. Revised from Evenhuis, N.L. and D.J. Greathead. 1999. World catalog of bee flies (Diptera: Bombyliidae). Backhuys Publishers, Leiden. xviii + 756 p. Online. Available: <http://hbs.bishopmuseum.org/bombcat/>.

Grout, T. A. K., J. K. Kapuvvari, and S. H. McArt. 2020. Neonicotinoid Insecticides in New York State. Economic benefits and risk to pollinators. Cornell University, Ithaca, NY

Johnson, C. W. 1907. A review of the species of the genus *Bombylius* of the eastern United States. Psyche: A Journal of Entomology. 95-100.

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