Species Status Assessment

Common Name: Ash Sphinx **Date Updated:** 2024-11-22

Scientific Name: *Manduca jasminearum* **Updated By:** Hollie Shaw

Class: Insecta

Family: Sphingidae

Species Synopsis

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

*Manduca j*asminearum is a large gray to grayish-brown moth that is found in woodlands with ash (*Fraxinus spp*). The green caterpillar has a “horn” at the end of the abdomen (Lotts and Naberhaus 2024).

It is found from Massachusetts south along the Appalachian Mountains to northern Florida, west to Texas and north to Missouri (NatureServe 2024).

S. jasminearum is found in woodlands with ash trees (*Fraxinus spp.*), the larval foodplant. It is most often collected for heavily wooded areas and its range may have been reduced by human activities (Tuttle 2007). This species is considered at risk because of its reliance on ash trees (*Fraxinus spp.*) that are currently suffering population declines due to the invasive emerald ash borer (*Agrilus planipennis*) (NatureServe 2024, Wagner 2007). Current trends are unknown.

I. Status

a. Current legal protected Status

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

ii. **New York:** Not listed; HPSGCN

b. Natural Heritage Program

i. **Global:** G3?

ii. **New York:** S1 **Tracked by NYNHP?:** On Active Tracking List

Other Ranks:

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

Status Discussion:

This species is considered at risk because of its reliance on ash trees (*Fraxinus spp.*) that are currently suffering population declines due to the invasive emerald ash borer (*Agrilus planipennis*) (NatureServe 2024, Wagner 2007). Current trends are unknown, but declines are

expected. It is considered critically imperiled (S1) in state by the New York Natural Heritage Program (2023). It is proposed to be a HPSGCN.

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		Watchlist [Assessment Priority]
New York	Yes	Unknown	Unknown	Unknown	U	proposed
Connecticut	Maybe	Unknown	Unknown	Unknown	SH	Yes
Massachusetts	Yes	Unknown	Unknown	Unknown	SNR	No
New Jersey	Yes	Unknown	Unknown	Unknown	SU	No
Pennsylvania	Yes	Unknown	Unknown	Unknown	S1	No
Vermont	No	-	-	-		
Ontario	No	Unknown	Unknown	Unknown	SNR	N/A
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

Current trends are unknown. Historically, the range was likely reduced by human activities (Tuttle 2007). It is assumed that populations and distribution will decline due to emerald ash borer effects on ash trees.

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

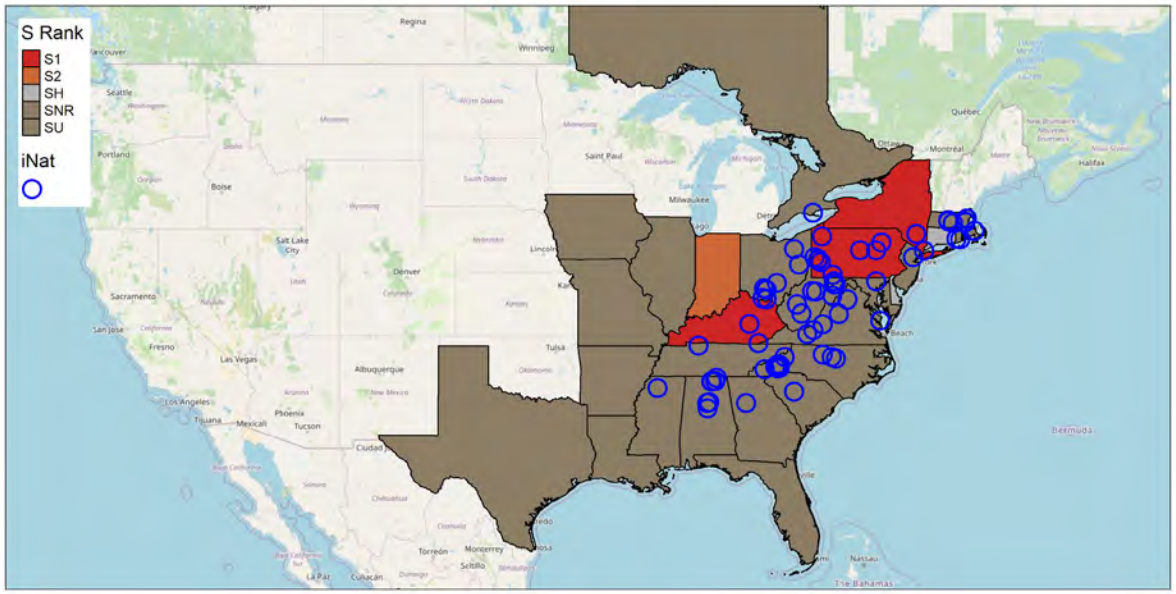

Figure 1. Manduca jasminearum North American distribution. Points show research-grade iNaturalist observations.

Figure 2. Manduca jasminearum regional distribution as reported at https://northeastwildlifediversity.org/rsgcn .

III. New York Rarity

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

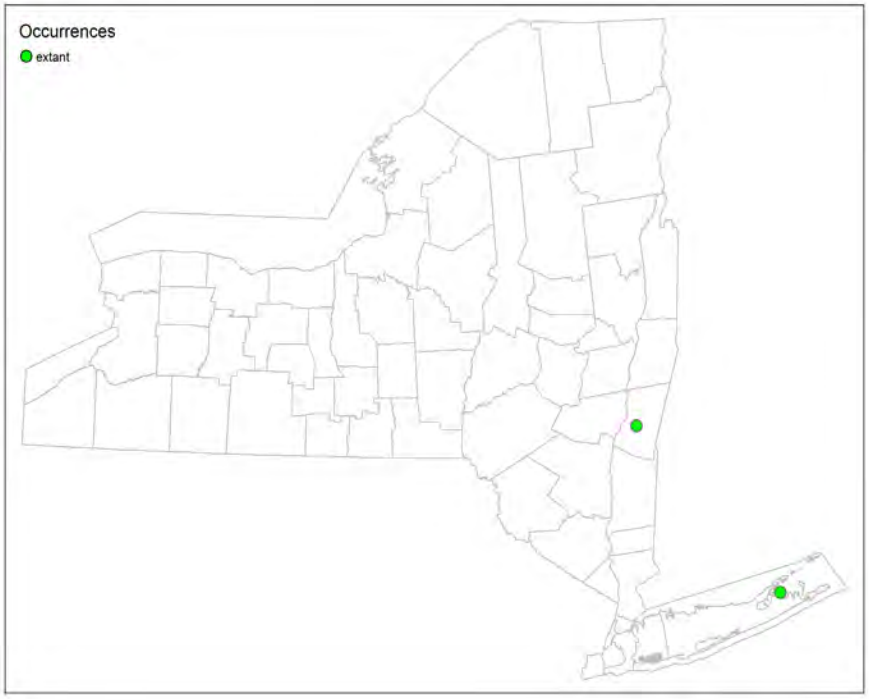

Figure 3. NYS distribution for Manduca jasminearum based on element occurrence data.

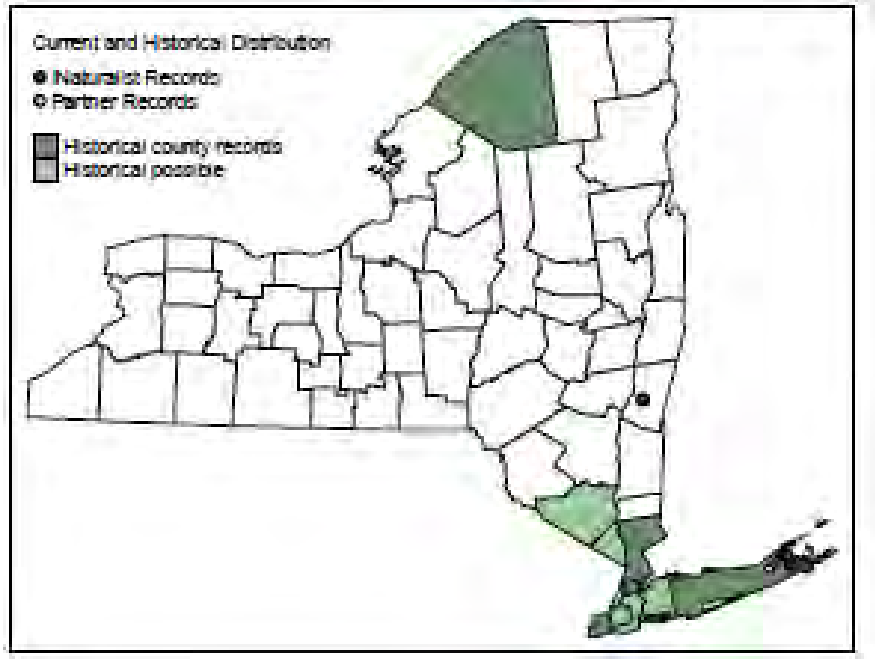

Figure 4. NYS distribution for Manduca jasminearum based on Empire State Native Pollinator Survey (White et al. 2022).

Table 1. Number of observations of *Manduca jasminearum* 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.

Years	Observations	# of Counties	% of counties in State
Pre-2000	14	5	8.1
2000-2023	6	2	3.2

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%	Peripheral	1000 km

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):

NatureServe broad habitat types: Forest/Woodland (with Ash trees)

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:

This species can be found in deciduous forests and woodlands with presence of ash trees in the genus *Fraxinus,* its larval host plant. Typically, it is collected from large, wooded tracts (Tuttle 2007).

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):

VI. Threats

The primary threat to *Manduca jasminearum* is the loss of its larval foodplant, ash trees (*Fraxinus spp*.) due to the invasive emerald ash borer (*Agrilus planipennis*). This invasive species was discovered in New York in 2009 and continues to spread. The mortality rate of trees over 1-inch dbh (diameter of breast height) is close to 100% (Wagner 2007, Woods 2017). Signs of infestation can go unnoticed for approximately four years when the EAB population is already established (McCullough and Mercader 2012).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (emerald ash borer infestation of larval foodplant; ash trees)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 2. Threats to *Manduca jasminearum.*

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:

Survey efforts to determine the full range of ash sphinx in New York is recommended. Monitor ash tree health for emerald ash borer (EAB), especially at locations occupied by rare invertebrates. Insecticide treatments have been effective at slowing the spread of EAB, but they are likely fatal to most invertebrates. However, imidacloprid generally has little effect on caterpillars (Hahn et al. 2011). Biocontrol agents can also be useful. Native woodpeckers are known to feed on EAB larvae and can be the first indication of infected trees. Some native parasitoid wasps have used EAB as a host. The impact from both has not been significant enough to prevent the death of ash trees that have been infected (Michigan State University 2024). Four species of Asian parasitoid wasps have been introduced that specifically target EAB (Michigan State University 2024; Woods 2017). However, it is thought that these biocontrol methods will not stop the first wave of EAB infections and may not be as helpful to prevent extinction of ash-dependent invertebrates (Woods 2017). McCullough and Mercader (2012) suggested that some cost-effective strategies to slow the spread of EAB include sanitation cuts to remove diseased and dead trees, using emamectin benzoate to treat about 20% of the trees, and introduce approved insects that parasitize EAB. “Trap” trees have been used in some areas with some success. One method is to girdle some trees in the spring. Egg-laying female EAB are attracted to stressed ash trees. The trees are destroyed before the EAB are allowed to mature (McCullough et al. 2009; Selvaggio 2022). “Lethal trap” trees are created by treating girdled trees with insecticides after EAB eggs are laid. Sometimes trees near the girdled tree are also treated with insecticide (Selvaggio 2022).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct Habitat Management	Site Management
A.2 Direct Species Management	A.2.0.0.0 Direct Species Management	Invasive/problematic species control

Action Category	Action	Description
B.3 Outreach	B.3.0.0.0 Outreach	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 *Manduca jasminearum*.

VII. References

This SSA drew heavily from these resources:

Hahn, Jeffrey, Daniel A. Herms, and Deborah G. McCullough. 2011. Frequently asked questions regarding potential side effects of systemic insecticides used to control emerald ash borer. https://www.emeraldashborer.info/documents/Potential_Side_Effects_of_EAB_Insecticides_FAQ.pdf. Accessed on November 6, 2024.

iNaturalist.org. 2024. *Sphinx franckii* records in North America. California Academy of Sciences, San Francisco, CA. http://www.inaturalist.org. Accessed November 8, 2024.

Lotts, Kelly and Thomas Naberhaus, coordinators. 2024. Butterflies and Moths of North America. http://www.butterfliesandmoths.org/ (Version 10/29/2024).

McCullough, Deborah G. and Rodrigo J. Mercader. 2011. Evaluation of potential strategies to SLow Ash Mortality (SLAM) caused by emerald ash borer (*Agrilus planipennis*): SLAM in an urban forest, International Journal of Pest Management, 58:1, 9-23

McCullough, Deborah G., Nathan W. Siegert, and John Bedford. 2009. Slowing ash mortality: a potential strategy to slam emerald ash borer in outlier sites. U.S. Department of Agriculture. https://research.fs.usda.gov/treesearch/34396

Michigan State University. 2024. Emerald Ash Borer Network: Biocontrol. EAB Network - Biological Control. https://www.emeraldashborer.info/biological-control. Accessed on November 6, 2024.

NatureServe. 2024. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. [Accessed 11/21/2024].

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].

Northeastern Association of Fish and Wildlife Agencies. 2023. Regional species of greatest conservation needs. https://northeastwildlifediversity.org/rsgcn

Selvaggio, Sharon. 2022. “Trap Trees” offer a promising approach to slow the spread of invasive emerald ash borers. The Xerces Society blog. https://www.xerces.org/blog/trap-trees-offer-promising-approach-to-slow-spread-of-invasive-emerald-ash-borers (Accessed 11/20/2024).

Tuttle, J. P. 2007. The hawk moths of North America: A natural history study of the Sphingidae of the United States and Canada. The Wedge Entomological Research Foundation, Washington, D. C. 253 pp. +23 plates.

Wagner, David L. 2007. Emerald ash borer threatens ash-feeding lepidoptera. News of the Lepidoperists’ Society, 49(1) pgs 10-12.

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.

Woods, Peter. 2017. “Ash Mortality: The Bigger Picture,” Pennsylvania Natural Heritage Program Wild Heritage News (summer 2017). https://www.naturalheritage.state.pa.us/docs/2017%20Q2%20PNHP%20newsletter.pdf. Accessed on November 6, 2024.

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