Species Status Assessment

Common Name:	Canadian Sphinx Moth	**Date Updated:**	2024-11-15
Scientific Name:	*Sphinx canadensis*	**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):

Canadian sphinx moth (*Sphinx canadensis*) is a gray-brown or yellow-gray moth. The forewing has black streaks along the veins and a white line along the outer margin. There are black and white bands on the hindwing.

This a northern species that is found in eastern Canada from Newfoundland west to Manitoba and south into the northeastern United States as far south as northern Pennsylvania but not in New Jersey. West of the Appalachian Mountains, it occurs farther south into Kentucky, Missouri, and northern Alabama (NatureServe 2023). It is currently known from locations in northern New York in St Lawrence and Warren counties. Historical locations are more widespread in northern portion of the state which includes Lewis and Clinton counties and “Adirondacks”. In addition, there is one historical record from Erie County in western New York.

The only known foodplant is black ash (*Fraxinus nigra*) which occurs near the edges of wetlands. Reports of low-bush blueberry (*Vaccinium angustifolium*) being the likely foodplant for this species appear to be incorrect as it has never been successfully reared on blueberry nor found in nature on blueberry (Tuttle 2007) .Black ash populations are currently in decline, as are all ash species in North America, because of the invasive emerald ash borer (*Agrilus planipennis*). Recent trends are unknown, but it is assumed populations will decline as the emerald ash borer continues to spread and infect ash trees.

I. Status

a. Current legal protected Status

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

ii. New York: Not listed; SGCN Unprotected

b. Natural Heritage Program

i. Global: G4

ii. New York: S2 **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 [Defer to MAFWA]

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). It was never considered a common species (Tuttle 2007). It is considered imperiled (S2) in state by the New York Natural Heritage Program (2023). It is proposed to be a SGCN.

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 [Defer to MAFWA]
New York	Yes	Unknown	Unknown	Unknown	U, S2	Yes
Connecticut	Yes	Unknown	Unknown	Unknown	SNR	No
Massachusetts	Yes	Unknown	Unknown	Unknown	S2	No
New Jersey	No	-	-	-		
Pennsylvania	Yes	Unknown	Unknown	Unknown	SNR	No
Vermont	Yes	Unknown	Unknown	Unknown	SNR	No
Ontario	No	Unknown	Unknown	Unknown	S4	
Quebec	No	Unknown	Unknown	Unknown	S4	

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

S. canadensis occurs in the northern portion of New York. It's difficult to determine trends because this species is likely under surveyed, and little is known about its biology. It was never considered a common species (Tuttle 2007). Recent reports from iNaturalist (2024) indicate that populations still exist in the north country. It is also historically known from Erie County in western New York. The current status in that region is unknown. Emerald ash borer is having a significant impact on ash populations which will result in reductions or extinction of the species that rely on them.

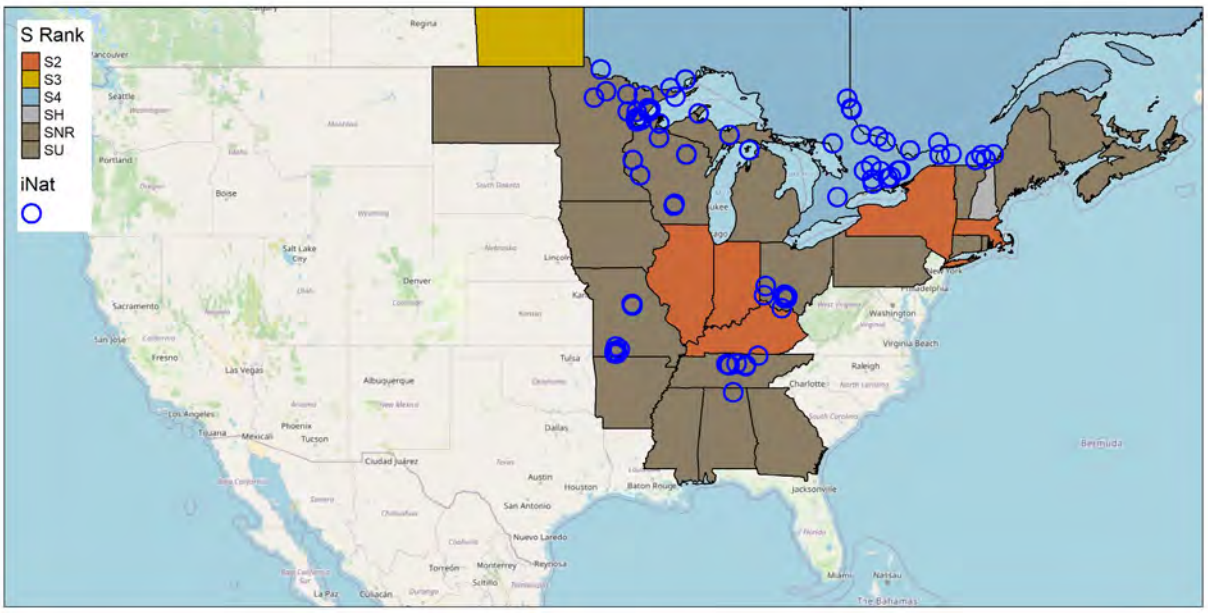

Figure 1. *Sphinx canadensis* North American distribution. Points show research-grade iNaturalist observations.

Figure 2. *Sphinx canadensis* regional distribution as reported at https://northeastwildlifediversity.org/rsgcn .

III. New York Rarity

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

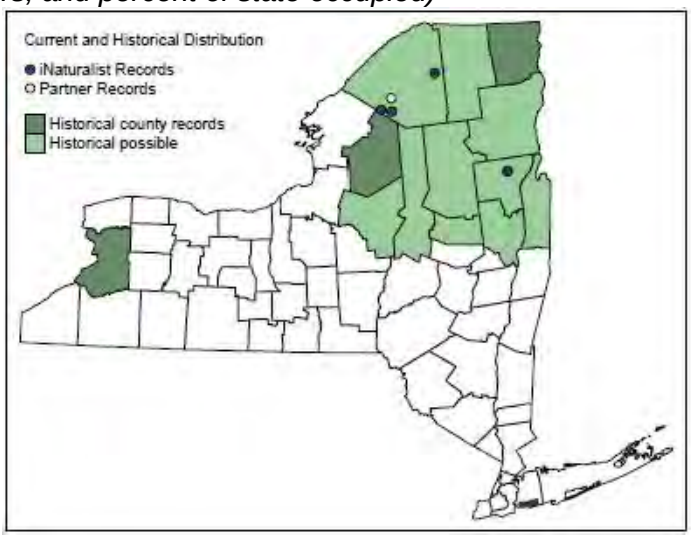

Figure 3. NYS distribution for *Sphinx canadensis* based on Empire State Native Pollinator Survey (White et al. 2022).

Years	Observations	# of Counties	% of counties in State
Pre-2000	5	4	6.4
2000-2023	6	2	3.2

Table 1. Number of observations of *Sphinx canadensis* 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%	Peripheral	135 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):

Northern Swamp, Central Hardwood Swamp

Habitat or Community Type Trend in New York

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

Sphinx canadensis is found in habitats with black ash (*Fraxinus nigra*) which includes swamps, rich, wet forests, and edges of streams (Werier et al. 2024). Larvae have not been found on black ash in open areas (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):

There is one brood from May to September in the northeast. There are two broods (May-June; August-September) in Arkansas. Caterpillars pupate in underground tunnels (Lotts and Naberhaus 2024).

VI. Threats

The primary threat to *Sphinx canadensis* is the loss of its larval foodplant, black ash (*Fraxinus nigra*) 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 causing loss of larval foodplant)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 2. Threats to *Sphinx canadensis*.

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 Canadian 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 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). Another option is to treat target trees with insecticides to reduce the impact on native invertebrates by leaving refugia (i.e., untreated trees). “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).

It has also been noted that Franck’s sphinx larvae have been documented on privet, an invasive species and possibly some other introduced shrubs. However, Wagner (2007) believes that survival of mostly ash-dependent species on secondary hosts is unlikely a viable long-term solution.

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
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.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

Table 3. Recommended conservation actions for *Sphinx canadensis*.

VII. References

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