Species Status Assessment

Common Name: Inland Barrens Buckmoth **Date Updated:** 13 March 2025

Scientific Name: *Hemileuca maia maia* **Updated By:** DEC Wildlife Diversity

Class: Insecta

Family: Saturniidae

Species Synopsis:

DEC is not aware of any additional data or new information on population trends or threats to this species since the last SWAP revision in 2015.

The buck moth, *Hemileuca maia* (Drury), is a member of Saturniidae, the giant silkworm family, and is in the subfamily Hemileucinae, the buck and day moths. Populations on Long Island and coastal southeastern New England are considered a separate subspecies. For New York, this means *Hemileuca maia maia* refers only to the more normal mainland populations, which are known from Glens Falls and Albany southward to the Shawangunk Ridge in Orange County. Maculation of larvae and almost all adults, and morphological characters of these mainland New York populations, appear to fall within the variation of more variable southern populations which NatureServe and most literature consider typical H. maia maia, although New York and other far northern populations do differ in their close association with scrub oak. The Albany area population has probably been isolated a long time and has, or had, a very rare form in which the white forewing band is completely missing. Apparently, such a form is not known from any other eastern United States population of any species of this genus (New York Natural Heritage Program 2011).

Only three occurrences have recently been documented and one of these has not been verified as extant since 1985. However, the recent discovery in the Shawangunks and the rediscovery on the Kittatinny Ridge in nearby New Jersey indicates there is the potential for a few more occurrences of this subspecies in this region of New York. The Long Island populations are considered phenotypically distinct and the coastal and inland species were combined for assessment purposes (expert meeting). There has been a substantial to large decline (approximately 50%-90%), based on a loss of the original habitat (New York Natural Heritage Program 2011).

I. Status

a. Current legal protected Status

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

ii. **New York:** Special concern; SGCN

b. Natural Heritage Program

i. **Global:** T5

ii. **New York:** S1S2 **Tracked by NYNHP?:**

Other Ranks:
NYS 2025 SGCN Status: Species of Greatest Conservation Need

Status Discussion:

Both the species and the subspecies are widespread, though they may be rare in some parts of the range, including in New York. Abundance and density can vary greatly between populations, and annual fluctuations can be substantial (NatureServe 2012).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable			(blank)
Northeastern US	Yes	Stable	Stable			No
New York	Yes	Unknown	Unknown		Special concern	Yes
Connecticut	No data	Unknown	Unknown		Threatened	Yes
Massachusetts	Yes	Unknown	Unknown		Special Concern	Yes
New Jersey	Yes	Increasing	Increasing			No
Pennsylvania	No data	(blank)	(blank)			No
Vermont	No data	(blank)	(blank)			No
Ontario	No	N/A	N/A			No
Quebec	No	N/A	N/A			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
None

Trends Discussion

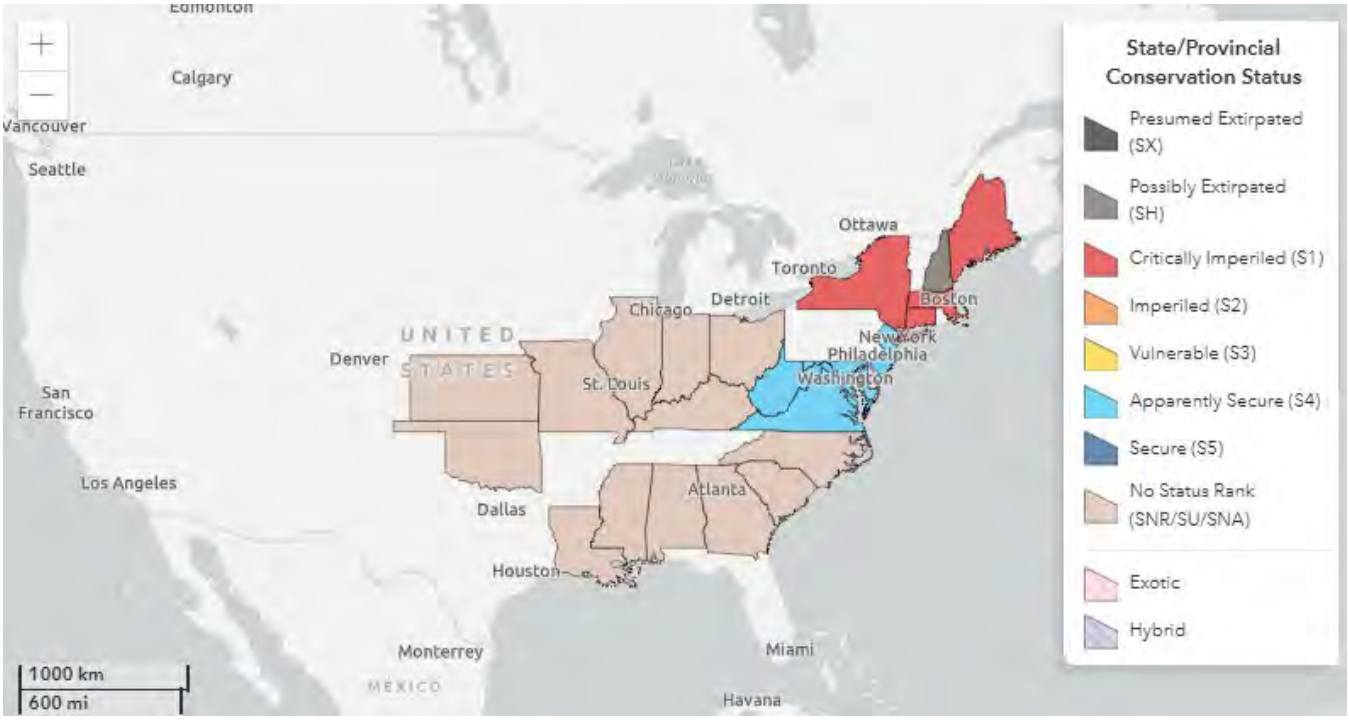

Figure 1. *Hemileuca maia maia* conservation status in North America (NatureServe 2025).

III. New York Rarity

The species is demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery (Butterflies and Moths 2012).

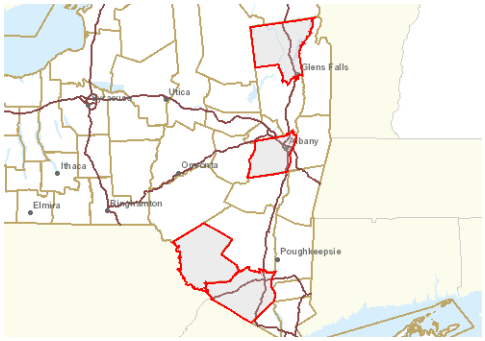

Figure 2. Distribution of the inland barrens buck moth in New York (New York Nature Explorer 2009).

Years	# of Records	# of Distinct Waterbodies/Locations	% of State
Pre-2000	2	2	1%
2000- 2023	>5	5	5%

Table 1. Records of *Hemileuca maia maia* in New York.

Details of historic and current occurrence:

Albany County – 1985; Orange County – 2004; Sullivan County – 2007; Albany County 2002 to 2024; Sullivan County 2021

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	

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

a. Oak-pine forest

b. Pine barrens

Habitat or Community Type Trend in New York

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

Habitat Discussion:

The Albany Pine Bush and Glens Falls populations are on remnants of once extensive sand plain pine barrens which is typical for the species at this latitude. Such populations occur in scrub oak areas with almost no tree cover or a sparse pitch pine canopy. Recent photographs of larva from the Shawangunk Ridge in southeastern New York indicates that some scrub oak habitats in this region support populations as they do in adjacent northern New Jersey. The northern New Jersey population is found in scrub oak areas, but in general, the habitats for these ridge top occurrences are not well understood and it possible they could occur in other dry scrubby situations (New York Natural Heritage Program 2011).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	(blank)	No	Yes	Yes	(blank)

Species Demographics and Life History Discussion

A single generation of buck moths occurs each year. The adult buck moths have a flight period that occurs between October and November. The adults are active during the day and are very quick fliers, and can be found flying most commonly between noon and 14:00 in oak forests during sunny weather (Covell 1984). After mating, the female oviposits in a ring around a branch of the host plant. The eggs overwinter on the host plant. The larvae hatch in the spring when new plant growth appears (Ferguson 1971). Like other members of their subfamily, buck moth larvae are gregarious for their first three larval instars (Wagner 2005). After the third instar, the larvae separate from each other and wander onto other plants where they feed until ready to pupate. The caterpillars pupate in debris that is either near or on the ground, and if they spin a cocoon, it is not very large (Ferguson 1971). Buck moths may not emerge from their pupae for up to two years. The larvae of the buck moth feed on oaks, Quercus spp., and when it is present they preferentially feed on the scrub oak, Quercus ilicifolia (Covell 1984, Wagner 2005). Smith (1974) successfully reared the larvae on willow, Salix spp. The adults do not feed.

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

Major threats include habitat loss and fragmentation. Other possible threats include exotic parasitoids, habitat management issues, and gypsy moth (Lymantria dispar) caterpillar spraying. Larvae of this subspecies are documented to be highly sensitive to Bt (Bacillus thuringiensis - a bacterial biological control used on gypsy moth caterpillars) (Peacock et al. 1998). The larvae appear to be able to survive even severe defoliation, however. Based on observations by Dale Schweitzer in New Jersey, late instars are very tolerant of starvation and can usually find an alternate food plant while the oaks re-foliate and manage to survive but subsequently pupate later than normal. In such situations they will eat black huckleberry and dangleberry, which even gypsy moth larvae accept sparingly (New York Natural Heritage Program 2011).

The inland barrens buck moth was classified as “moderately vulnerable” to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program. Its abundance and/or range extent within geographical area assessed likely to decrease by 2050 (Schlesinger et al. 2011).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	-	Unknown	Unknown	Unknown	Unknown	Unknown
7. Natural System Modifications	7.3 Other Ecosystem Modifications	7.3.2 Vegetation succession	Unknown	Unknown	Unknown	Unknown	Unknown

Table 2. Threats to *Hemileuca maia maia*

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: _____ **No:** ✓ **Unknown:** _____

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

At the Albany Pine Bush, increased prescribed burning appears to benefit this buckmoth. Information on the exact habitat requirement of southeastern New York populations is needed (New York Natural Heritage Program 2011).

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.0.0.0 Direct habitat management	Site/Area management
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.7 Legislative and Regulatory Framework or Tools	C.7 Legislative and Regulatory Framework or Tools	C.7.1.3.0 Create, amend, or influence regulation
C.7 Legislative and Regulatory Framework or Tools	C.7 Legislative and Regulatory Framework or Tools	C.7.2.1.0 Create or amend policies

Table 2. Recommended conservation actions for *Hemileuca maia maia*.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for the barrens buck moth.

Curriculum development:

____ Develop and disseminate curricula to educate the public about management of "fire communities" and the protection and conservation needs of barrens buckmoth and other pine-barrens species.

Easement acquisition:

____ Where appropriate, state or local municipalities or NGOs acquire easements to protect and manage buckmoth habitat.

Fact sheet:

____ Update the barrens buckmoth fact sheet on paper and on webpage.

Habitat management:

____ Manage habitat via burning, cutting, mowing or other methods to stimulate scrub oak production in appropriate areas.

Habitat monitoring:

____ Develop standardized protocols for measuring and evaluating the quality of barrens buckmoth habitat.

____ Monitor habitat to determine suitability for buckmoth.

Habitat research:

____ Conduct research to determine optimal habitat parameters for buckmoth.

Other action:

____ Evaluate threats to barrens buckmoth and rank according to severity at all sites in New York.

____ Work with researchers to determine if the Long Island populations are different from inland populations. If so, develop appropriate management and protection strategies to ensure long-term viability of both groups.

____ Work with researchers and experts on barrens buckmoth to define parameters of "viable" barrens buckmoth populations.

____ Develop an outreach program to encourage local municipalities to include conservation of buckmoth habitat during local planning and project review

Population monitoring:

____ Develop standardized survey protocol for barrens buckmoth.

____ Survey populations to understand population status, trends and distribution.

Private fee acquisition:

____ Encourage private NGOs to acquire land to protect and manage buckmoth habitat.

State fee acquisition:

____ State acquire land to protect and manage buckmoth habitat.

State land unit management plan:

____ Incorporate buck moth management into appropriate state land area management plans.

VII. References

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Originally prepared by	Jenny Murtaugh
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