

## Species Status Assessment

**Class:** Lepidoptera  
**Family:** Saturniidae  
**Scientific Name:** *Hemileuca maia maia*  
**Common Name:** Barrens buckmoth (Inland & Coastal combined)

### Species synopsis:

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 and Legal Protected Status

- i. **Federal**      Not listed      **Candidate?**      No
- ii. **New York**      Special Concern; SGCN



**c. Adjacent States and Provinces**

**CONNECTICUT**                      **Not Present** \_\_\_\_\_                      **No data**   X  

**i. Abundance**

\_\_\_\_\_ **declining**    \_\_\_\_\_ **increasing**                      \_\_\_\_\_ **stable**                        X   **unknown**

**ii. Distribution:**

\_\_\_\_\_ **declining**    \_\_\_\_\_ **increasing**                      \_\_\_\_\_ **stable**                        X   **unknown**

Time frame considered: \_\_\_\_\_

Listing Status: \_\_\_\_\_   Threatened   \_\_\_\_\_                      SGCN?   Yes  

**MASSACHUSETTS**                      **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

\_\_\_\_\_ **declining**    \_\_\_\_\_ **increasing**                        X   **stable**                      \_\_\_\_\_ **unknown**

**ii. Distribution:**

\_\_\_\_\_ **declining**    \_\_\_\_\_ **increasing**                        X   **stable**                      \_\_\_\_\_ **unknown**

Time frame considered: \_\_\_\_\_

Listing Status: \_\_\_\_\_   Special Concern   \_\_\_\_\_                      SGCN?   Yes  

**NEW JERSEY**    **Not Present** \_\_\_\_\_                      **No data** \_\_\_\_\_

**i. Abundance**

\_\_\_\_\_ **declining**      X   **increasing**                      \_\_\_\_\_ **stable**                      \_\_\_\_\_ **unknown**

**ii. Distribution:**

\_\_\_\_\_ **declining**      X   **increasing**                      \_\_\_\_\_ **stable**                      \_\_\_\_\_ **unknown**

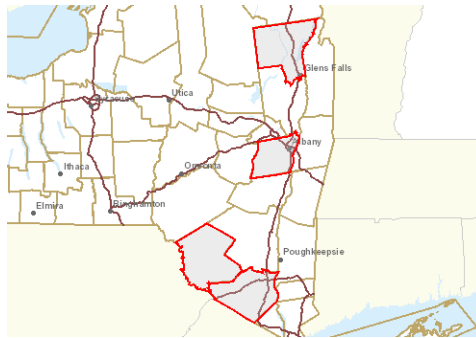
Time frame considered: \_\_\_\_\_

Listing Status: \_\_\_\_\_   Not listed   \_\_\_\_\_                      SGCN?   No  

**ONTARIO**    **Not Present**   X                        **No data** \_\_\_\_\_

**PENNSYLVANIA**    **Not Present**   X                        **No data** \_\_\_\_\_





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

**III. New York Rarity, if known:**

<b>Historic</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
<b>prior to 1970</b>	_____	_____	_____
<b>prior to 1980</b>	_____	_____	_____
<b>prior to 1990</b>	_____	<u>1 county</u>	<u>&lt;1</u>

**Details of historic occurrence:**

An undated historical record was confirmed for Orange County.

<b>Current</b>	<b><u># of Animals</u></b>	<b><u># of Locations</u></b>	<b><u>% of State</u></b>
	_____	<u>3 counties</u>	<u>10</u>

**Details of current occurrence:**

Albany County – 1985; Orange County – 2004; Sullivan County – 2007

**New York’s Contribution to Species North American Range:**

<b>Distribution</b> (percent of NY where species occurs)	<b>Abundance</b> (within NY distribution)
___ 0-5%	<u>X</u> abundant
<u>X</u> 6-10%	___ common
___ 11-25%	___ fairly common
___ 26-50%	___ uncommon
___ >50%	___ rare

**NY's Contribution to North American range**

- 0-5%
- 6-10%
- 11-25%
- 26-50%
- >50%

**Classification of New York Range**

- Core
- Peripheral
- Disjunct

**Distance to core population:**

\_\_\_\_\_



**V. New York Species Demographics and Life History**

- Breeder in New York**
- Summer Resident**
- Winter Resident**
- Anadromous**
- Non-breeder in New York**
- Summer Resident**
- Winter Resident**
- Catadromous**
- Migratory only**
- Unknown**

**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:

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).

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

**No**       **Unknown**

**Yes**

**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 should benefit this buckmoth. Information on the exact habitat requirement of southeastern New York populations is needed (New York Natural Heritage Program 2011).

Conservation actions following IUCN taxonomy are categorized in the table below.

<b>Conservation Actions</b>	
<b>Action Category</b>	<b>Action</b>
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Invasive/Problematic Species Control
Land/Water Management	Habitat and Natural Process Restoration
Education and Awareness	Training
Education and Awareness	Awareness & Communications
Law and Policy	Policies and Regulations

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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