

Species Status Assessment

Class: Lepidoptera
Family: Noctuidae
Scientific Name: *Catocala herodias gerhardi*
Common Name: Herodias/pine barrens underwing

Species synopsis:

The Herodias, or pine barrens underwing, (*Catocala herodias gerhardi*) is found mostly in four main areas: the Cape Cod region and adjacent islands of Massachusetts, the Long Island, New York pine barrens, the core of the New Jersey Pine Barrens in Ocean, Burlington, and extreme northern Atlantic Counties (one specimen from Cape May County), and in the mountains from eastern West Virginia to far western North Carolina. Isolated populations are known on two ridge tops in Berkshire County, Massachusetts and at least one such ridge top in the lower Hudson Valley, New York. The extent and continuity of the Appalachian range is unknown. There is a gap in the range across Pennsylvania, but the species could turn up in the shale barrens areas of south-central Pennsylvania and adjacent Maryland (NYNHP 2011).

In New York, this underwing was at least formerly widespread on Long Island and probably still occurs in most extensive pitch pine-scrub oak communities in Suffolk County. It has been documented in Orange County, although it probably does not occur on many sites on the mainland, but it could turn up in a few more nearby counties (NYNHP 2011).

I. Status

a. Current and Legal Protected Status

i. Federal Not Listed **Candidate?** No

ii. New York Special Concern; SGCN

b. Natural Heritage Program Rank

i. Global G3T3

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

Other Rank:

None

Status Discussion:

This species is probably still somewhat widespread on Long Island, but it is unknown how many populations remain there. At least one globally significant occurrence still remains. Similarly, it is possible that additional occurrences could be found in the southeastern mainland counties. There are possibly 5 to 20 populations left in New York, but only two or three of these have been recently documented (NYNHP 2011).

II. Abundance and Distribution Trends

a. North America

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Time frame considered: _____

b. Regional

i. Abundance

declining increasing stable unknown

ii. Distribution:

declining increasing stable unknown

Regional Unit Considered: Northeast

Time Frame Considered: _____

Moderate decline

c. Adjacent States and Provinces

CONNECTICUT Not Present _____ No data _____

i. Abundance

 X declining ___increasing ___stable ___unknown

ii. Distribution:

 X declining ___increasing ___stable ___unknown

Time frame considered: _____

Listing Status: _____ Endangered _____ SGCN? Yes

Moderate decline

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 ___increasing X stable ___unknown

ii. Distribution:

___ declining ___increasing X stable ___unknown

Time frame considered: _____

Listing Status: _____ Not Listed _____ SGCN? Yes

ONTARIO	Not Present <u> X </u>	No data _____
PENNSYLVANIA	Not Present <u> X </u>	No data _____
QUEBEC	Not Present <u> X </u>	No data _____
VERMONT	Not Present <u> X </u>	No data _____

d. NEW YORK **No data** _____

i. Abundance

_____ declining _____ increasing X stable _____ unknown

ii. Distribution:

_____ declining _____ increasing X stable _____ unknown

Time frame considered: _____

Monitoring in New York.

None

Trends Discussion:

Short-term trends indicate that the population is stable. Long-term trends indicate that the population has undergone a substantial to large decline of 50% to 90% (NYNHP 2011).

A North America/regional map is not available. Distribution data for U.S. states and Canadian provinces is known to be incomplete or has not been reviewed for this taxon.



Figure 1. Occurrence of the pine barrens underwing in New York (New York Nature Explorer 2009).

III. New York Rarity, if known:

Historic	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
prior to 1970	_____	_____	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	_____	_____

Details of historic occurrence:

No historic occurrence records available.

Current	<u># of Animals</u>	<u># of Locations</u>	<u>% of State</u>
	_____	<u>2 counties</u>	_____

Details of current occurrence:

Orange County — 1993

Suffolk County — 2007

It is uncertain how many occurrences are on Long Island and also difficult to define them there. This species has recently been collected on a ridge top pine barren in Orange County and probably will be found slightly more widely there. Any hill top with abundant scrub oak on a few hundred acres could potentially have this species, although most probably do not. Southeastern New York is somewhat peripheral to the main range and the species has never been collected in Pennsylvania or as far north as Albany. It has however turned up on a few similar sites in western New England. The New York Natural Heritage Program estimates 6-80 elemental occurrences (EOs) in New York.

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)

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

Abundance (within NY distribution)

- abundant
- common
- fairly common
- uncommon
- 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:

Species Demographics and Life History Discussion:

The eggs of the pine barrens underwing hatch near the time when the new growth of the host plant begins to expand. A date has not been described for New York but this is in April or early May in New Jersey. The larval and pupal stages both last approximately one month. Adults appear sometime in July in most places, and those from coastal Massachusetts are often fresh in late July (Schweitzer and Wagner 2011).

Adult moths fly in July and August. Eggs are laid on the stems of scrub oak (*Quercus ilicifolia*), where they overwinter until hatching in early spring. Larvae feed on the catkins and new leaves of scrub oak and pupate in June (Nelson 2007).

Adult, especially males, are highly attracted to black lights, but mostly after midnight. Few adults have been attracted to bait, and these are usually within two hours after sunset. Adults have rarely been found in the daytime, but they apparently rest on the ground under trailing pine branches or at the base of oak bushes (Schweitzer and Wagner 2011).

VI. Threats:

The threats are difficult to assess since some habitats are more management dependent than others. This species should do well with any reasonable fire management program as long as the entire habitat is not burned at once. However, wild fires that could consume the entire occupied habitat are a threat, especially on ridge tops and in small isolated habitats. Gypsy moth (*Lymantria dispar*) spraying could be a threat. It would be with chemical biocides and potentially would be with Bt (*Bacillus thuringiensis*- a bacterial biological control used on gypsy moth caterpillars). The closely related scarlet underwing (*Catocala coccinata*) is very sensitive to Bt, but many *Catocala* are not (Peacock et al. 1998). However, unusually early defoliation, before about 10 June, of scrub oaks on hilltops and ridges could itself annihilate a population (Schweitzer 2004).

Other threats include habitat loss, invasion by exotic plants, introduced generalist parasitoids, off-road vehicles, and light pollution (Nelson 2007).

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:

Substantial refugia are needed when fires burn the habitat, since survival in burned areas is minimal. Habitats supporting this species should be protected from gypsy moth spraying. However, if severe defoliation is likely before about 10 June, then starvation is a risk and it might be prudent to use Bt to reduce defoliation on a portion of the habitat. Starvation of the entire brood is possible if all of the scrub oak foliage is consumed during May. Such early defoliation is not common and is unlikely to occur widely on coastal barrens, but it can occur on outcrops and ridge tops. It is unlikely Bt would kill all of the larvae, but it seems likely it would kill a majority of them (New York Natural Heritage Program 2011).

It would be useful to know how sensitive larvae are to Bt and exactly when most of the larvae finish feeding, so that risks from starvation as compared to Bt applications could be better evaluated in severe gypsy moth outbreaks (New York Natural Heritage Program 2011).

Conservation actions following IUCN taxonomy are categorized in the table.

Conservation Actions	
Action Category	Action
Law and Policy	Policies and Regulations
Education and Awareness	Awareness & Communications
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 Protection	Site/Area Protection

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for other moths, and for Herodias underwing in particular.

Easement acquisition:

___ Where appropriate, acquire easements to promote moth protection and conservation.

Fact sheet:

___ Create fact sheets covering moths.

Habitat management:

___ Determine best management regime for moth species, including fire and other forms of management.

Habitat monitoring:

- ___ Develop standardized measures of habitat parameters for each species of listed moth.
- ___ Investigate threats to food and host plants.
- ___ Monitor land development projects.

Habitat research:

- ___ Examine role of light pollution as threat to moths.
- ___ Determine host/ food plant.

Life history research:

- ___ Investigate the metapopulation dynamics of those species which warrant it.
- ___ Examine role of introduced parasites and predators in threats to moths.

Other action:

- ___ Develop standard definition of what is needed for "viable" populations of moths.
- ___ Research the role of pesticide use in threats to moths.

Population monitoring:

- ___ Inventory of species within historical range.
- ___ Develop standardized survey protocols for moths.

Private fee acquisition:

- ___ Where appropriate, encourage/assist private entities to acquire land for moth protection and conservation.

State fee acquisition:

- ___ Where appropriate, acquire land essential to moth protection and conservation.

State land unit management plan:

- ___ Incorporate needs of moths into state land management plans.

VII. References

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