Species Status Assessment

Common Name: Barrens dagger moth **Date Updated:** 18 December 2023

Scientific Name: *Acronicta albarufa* **Updated By:** Hollie Shaw

Class: Insecta
Family: Noctuidae

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

The barrens dagger moth is a noctuid moth with a very fragmented range and is considered locally rare, especially in the east (Schweitzer et al. 2018, NatureServe 2023). The range includes southern Ontario and southern Manitoba in Canada and New York, New Jersey, Massachusetts, Connecticut (extirpated), New Hampshire, Pennsylvania (extirpated), North Carolina, Virginia, Georgia, Kentucky, Ohio (extirpated), Colorado (historical), Oklahoma, New Mexico, and the Ozarks of Missouri, Arkansas, and Oklahoma in the United States (Meyer 2008, Schweitzer et al. 2018, NatureServe 2023). There are reports from West Virginia, but specimens were not observed (Schweitzer et al. 2018). Collections since the 1990s are from Massachusetts, Virginia, New York (Long Island), and southern New Jersey. It is assumed that the population still exists in the Ozarks (Schweiter et al. 2018). In New York, this species has been documented at two sites. It was found at a site in the Albany Pine Bush (Albany Co) where it was last observed in 1983. There is an extant population on Long Island in pitch pine-oak habitat that was discovered in 1999 (NYNHP 2023a).

I. Status

a. Current legal protected Status

i. **Federal:** not listed **Candidate:** not listed

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

b. Natural Heritage Program

i. **Global:** G3G4

ii. **New York:** S1 **Tracked by NYNHP?:** Yes

Other Ranks:
-IUCN Red List: not listed

-Northeast Regional SGCN: watch list (assessment priority)

Status Discussion:

This species was listed as a candidate under review for listing as an endangered or threatened species in 1994 but currently is not listed (NatureServe 2023). Very few populations are known; the closest to New York are the Grand Bend-Port Franks region of Ontario, Canada, southeastern Massachusetts, and southern New Jersey with several extant occurrences in each (NatureServe 2023).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Declining	Declining	40 years	Not Listed	No
Northeastern US	Yes	Declining	Declining	unknown	Watch List (RSGCN)	No
New York	Yes	Declining	Declining	1983-2005	Not Listed	Yes
Connecticut	No	Extirpated	Extirpated	40 years	Extirpated	Yes
Massachusetts	Yes	Declining	Declining	40 years	Threatened	Yes
New Jersey	Yes	Unknown	Unknown	40 years	Not Listed	No
Pennsylvania	No	Extirpated	Extirpated	40 years	Extirpated	No
Vermont	No	-	-			-
Ontario	Yes	Declining	Declining	40 years	Not Listed	-
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):*

Regular monitoring does not occur. There have been intermittent surveys in pine barrens habitats on Long Island with the last known survey in 2013. There were surveys in the Albany Pine Bush area from 2014 to 2016 (NYNHP 2023a). However, it is not known if the surveys were at the known barrens dagger moth locations or if the timing was correct.

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

This species is rare or extirpated outside of Missouri, where it is still widespread in the Ozarks (NatureServe 2023). East of the Ozarks the barrens dagger moth is extremely localized. It is absent from vast areas within its range and extirpated in several states including Pennsylvania, Ohio, and Connecticut. New Jersey and Massachusetts have three known occurrences each and are the apparent the strongholds outside of the Ozarks (Nelson 2007, NatureServe 2023). Populations in New England may be experiencing a decline; however, the lack of specimens makes it difficult to determine why (Meyer 2008, NatureServe 2023).

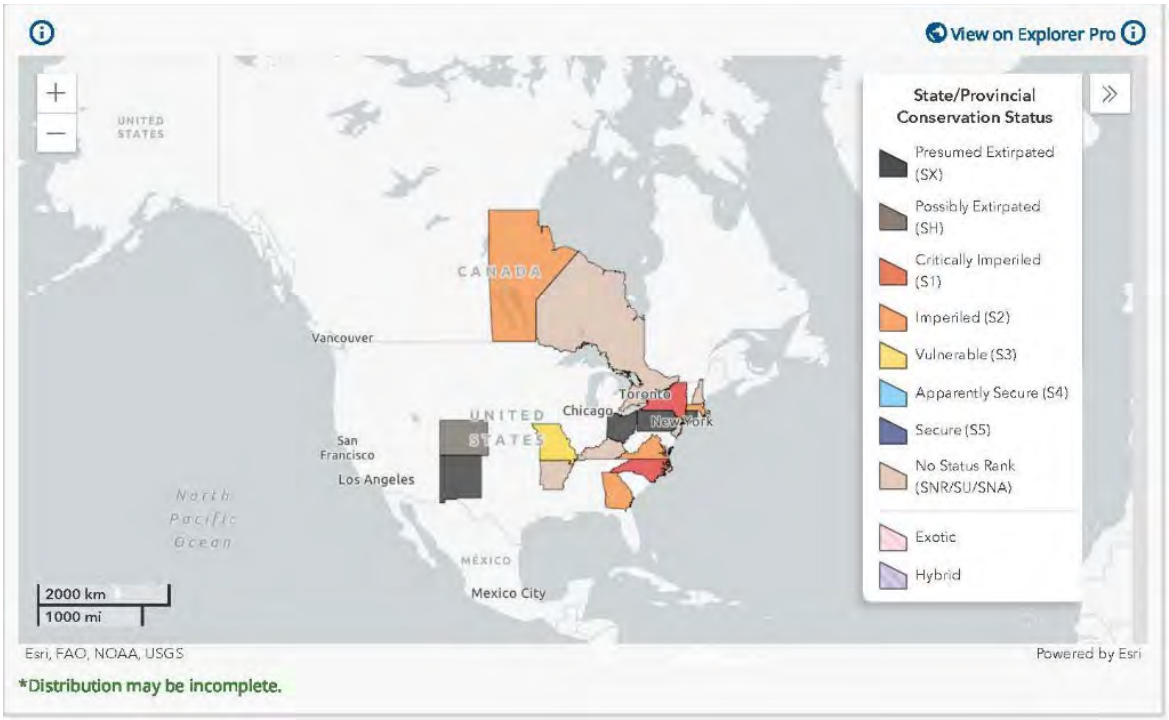

Figure 1. *Acronicta albarufa* distribution and status
(Distribution may not be complete. Source: NatureServe 2023)

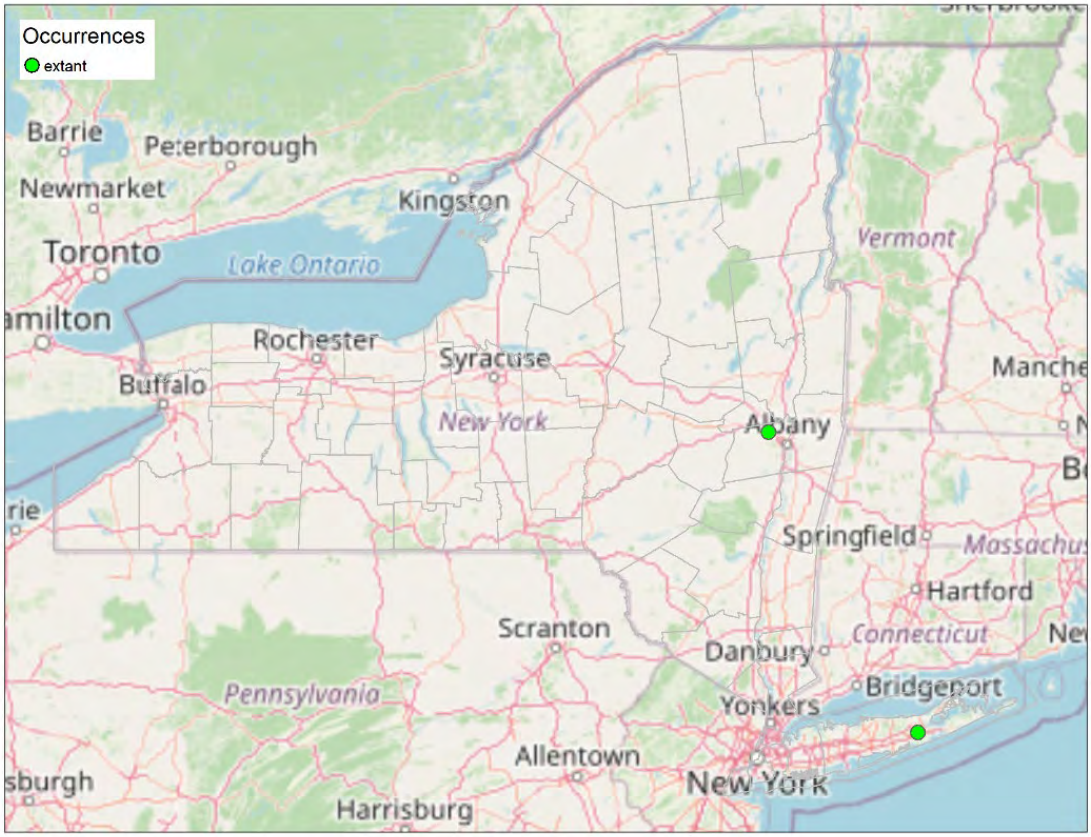

Figure 2. *Acronicta albarufa* distribution (NYNHP 2023a)

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

Years	# of Records	# of Locations	% of State
Pre-2000	2	2	<1
2000- 2023	1	1	<1

Table 1. Records of *Acronicta albarufa* in New York.

Details of historic and current occurrence:

There are two known locations in New York: the Albany Pine Bush where this species was last observed in 1983 and Long Island in pine barrens habitat in 1999. The Albany record is now considered historical. This species was not found during moth surveys in the Albany Pine Bush from 2014 to 2016 or on Long Island during surveys in the general area in 2005, 2006, 2008 and 2013 (NYNHP 2023a).

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	1900 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):*

1. Coastal Coniferous Barrens
2. Mixed Northern Hardwoods

Habitat or Community Type Trend in New York

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

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:

In New York, barrens dagger moths are found in pitch pine-scrub oak habitats. Most habitats from Massachusetts to North Carolina are also dry sandy pine-oak scrub (Wagner et al. 2003, NYNHP 2023b). The larval host trees are all oak species. Bear oak (*Quercus ilicifolia*) is the most common host in New York, Massachusetts, and parts of New Jersey. Larva have also been found on post oak (*Q. stellata*) and dwarf chinkapin oak (*Q. prinoides*) in New Jersey. Other oak species are also

hosts. It is likely that there are unknown specific habitat needs, since most of this habitat type in the range is unoccupied (Shuey et al. 1987, Meyer 2008, NYNHP 2023b). In Ontario, the habitat is oak woodland or possibly degraded oak savanna (Nelson 2007, NYNHP 2023b). The barrens dagger moth apparently requires large areas of suitable habitat, as populations in the east are seldom found in remnants smaller than 1,000 acres, and occupied areas are generally 2 to 10 times that size (NYNHP 2023b).

V. Species Demographic, and Life History:

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Yes	-	-	Yes	Yes	-

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):*

The adults likely present in New York from approximately mid-June to at least mid-July and probably into early August. The egg stage is only about six days and the larvae mature in about 29 to 35 days (Dale Schweitzer pers. comm), so the larvae would be present from about late June through August or into September. There probably is not a second brood in New York. Adult eclosion (emerging from the pupal case) is quite staggered and the pupae are present almost the entire year. Larvae feed on oaks (NYNHP 2023b).

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

The decline of this species in the northeast suggests unknown threats and the causes of decline regionally are also unknown. Known threats include development and fire suppression, although the threat of development for the remaining habitat on Long Island may be low. Fire could also pose a threat to isolated populations if an extensive fire burned a large area of habitat at one time. On a local scale, severe defoliation of oaks by spongy moth (*Lymantria dispar*) outbreaks could cause large scale starvation of barrens dagger moth larvae. Efforts to suppress spongy moths, such as the use of Bt (*Bacillus thuringiensis* - a bacterial biological control used on spongy moth caterpillars), are likely beneficial to this species. The timing of spraying should negate harm to this species, as the residue would be gone prior to the appearance of the first eggs or larvae. It is possible that introduced parasitoids such as *Compsilura* have impacted this species and a few others in the genus, such as *Acronicta subachrea*, that have largely disappeared in the Northeast. However, several very similar species remain widespread and common (NYNHP 2023b).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
1. Residential and Commercial	1.1 Housing & Urban Areas	(Habitat Loss)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.1 Fire & Fire Suppression	7.1.2 Suppression in the fire regime	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (parasitoid flies)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (gypsy moth outbreaks)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 2. Threats to *Acronicta albarufa*.

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

Yes: ü **No: _____** **Unknown: _____**

If yes, describe mechanism and whether adequate to protect species/habitat:

Both known locations are on protected lands.

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

Burning is needed to maintain the habitat for this species, but it should be done in patches and in no case should the entire occupied habitat be burned during any season. It is likely that eggs, larvae, and possibly pupae are susceptible to fire (Schweitzer et al. 2018). Burning should be minimized between 1 June and 1 October (NYNHP 2023b).
Better information on the impacts of spongy moth outbreaks and introduced parasitoids on this species is needed. A clearer understanding of essential habitat parameters is essential. Research to determine if more frequent fires improve habitat quality is also needed (NYNHP 2023b).

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
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.7 Legislative and Regulatory Framework or Tools	C.7.0.0.0 Legislative and Regulatory Framework or Tools	Policies and Regulations

Table 3. Recommended conservation actions for *Acronicta albarufa*.

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

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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Originally prepared by	Jim Katz
Date first prepared	March 11, 2013
First revision	February 4, 2014 (Samantha Hoff)
Latest revision	December 18, 2023 (Hollie Shaw)