Species Status Assessment

Common Name: Doll's Dagger Moth **Date Updated:** 2/21/2025

Scientific Name: *Acronicta dolli* **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):*

Acronicta dolli is very localized at the northern extent of its range which includes New York. It has been found at two locations near Westhampton on Long Island in 2008 and 2009 (H. McGuinness, personal communication, February 18, 2025) and one additional location on Long Island (iNaturalist 2025). There are three distinct areas in the United States. New York is part of the Appalachian area which extends from southeastern New York, northwest New Jersey, and Pennsylvania to northern Georgia. The Great Lakes region extends from Michigan to Minnesota. The third distinct area is the New Jersey Pine Barrens (NatureServe 2025a). *A. dolli* has not been found in Canada or Ohio, Indiana, or Illinois in the United States (Schweitzer et al. 2018).

Recent observations have been reported from Long Island which recently changed the New York Natural Heritage rank from SH (historical) to S1 (critically imperiled). It has not been reported since 2009. It should be noted that it can be difficult to find adults which are typically found at times when temperatures are abnormally warm in the spring (iNaturalist 2025). It's more common to find larvae about a month after leaf out (NatureServe 2025a).

This species has been found open oak woodland and pine barrens habitat, often with a blueberry understory. Food plants are likely oaks and various heaths (*Vaccinium* spp.), such as blueberry and cranberry. *Prunus maritima* (beach plum) has also been reported as a food plant (Schweitzer et al 2018).

I. Status

a. Current legal protected Status

i. **Federal:** not protected **Candidate:** No

ii. **New York:** not protected

b. Natural Heritage Program

i. **Global:** G3G4

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

Other Ranks:

-New York State 2025 SGCN Status: HPSGCN

-IUCN Red List: Not listed

-Northeast Regional SGCN: RSGCN

Status Discussion:

Recent observations have been reported from Long Island which changed the New York Natural Heritage rank from SH (historical) to S1 (critically imperiled) (New York Natural Heritage Program

2025). It has been found at two locations in Westhampton (Long Island) in 2008 and 2009 (H. McGuinness, personal communication, February 18, 2025) and one other area on Long Island (iNaturalist 2025). It has not been reported since 2009 (iNaturalist 2025). It has been nominated to be considered HPSGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	-	-			-
Northeastern US	Yes	-	-			RSGCN
New York	Yes	Unknown	Stable		Not listed	Yes
Connecticut	No	-	-			-
Massachusetts	No	-	-			-
New Jersey	Yes	-	-			Yes
Pennsylvania	Yes	-	-			Yes
Vermont	No	-	-			-
Ontario	No	-	-			-
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):*

There are no known regular monitoring activities or regular surveys in New York other than project-specific surveys that include lepidopteran surveys by New York Natural Heritage Program.

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

Trends in New York are currently unknown. It was rediscovered on Long Island in 2008. There are two or three known locations in a relatively restricted area of the state. Range wide, there are a low number of recently reported locations (iNaturalist 2025). However, NatureServe (2025b) indicates that populations still exist elsewhere within its range.

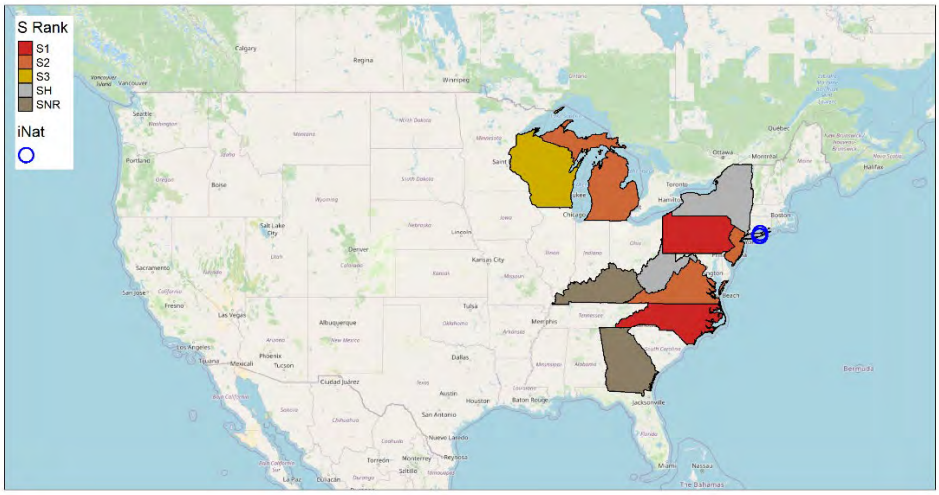

Figure 1. *Acronicta dolli* distribution status in North America (NatureServe 2025b) with research grade observations in New York (iNaturalist 2025). (Note: New York rank was changed from SH to S1.)

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

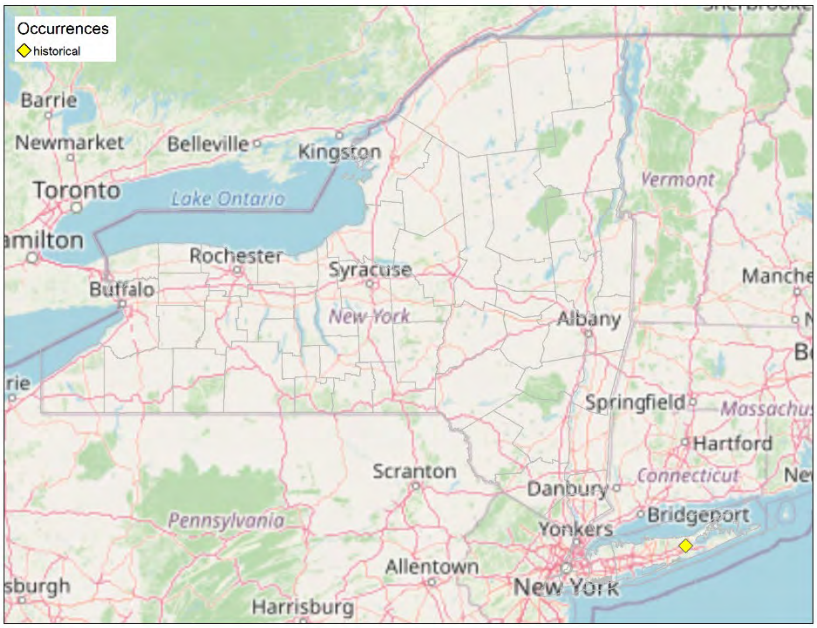

Figure 3. Records of *Acronicta dolli* in New York (New York Natural Heritage Program 2025).

Years	# of Records	# Counties	% of State
Pre-2000	1	1	<1%
2000- 2023	2 or 3	1	<1%

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

Details of historic and current occurrence:

New York Natural Heritage Program (2025) has a 1931 record from Riverhead on Long Island. It was found in 2008 and 2009 at two locations in Westhampton on Long Island (H. McGuinness, personal communication, February 18, 2025). No other reports are known.

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	

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):*

a. Pine Barrens

b. Coastal Coniferous Barrens

Habitat or Community Type Trend in New York

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

Column options
Habitat Specialist, Indicator Species and Pollinator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

A. dolli is typically found in open oak woodlands and pine barrens often with a blueberry understory. They have been reported in bog habitats as well (Schweitzer et al. 2018, NatureServe 2025a). NatureServe (2025a) also described the habitat as "somewhat scrubby oak-heath" in some areas. Oaks and heaths (e.g. blueberry and cranberry) have been reported as food plants. Beach plum may also be a food plant (Schweitzer et al. 2018).

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)

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 known brood per year. Adults are typically found April to early May in most of its range. Adults may be found in late March southward (Schweitzer et al. 2018). These observations typically occur just before and while the oak buds start to open (NatureServe 2025a). The egg stage is probably about two weeks and larvae mature in early to mid-June (NatureServe 2025a).

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

A. dolli is susceptible to spongy moth (*Lymantria dispar*) spraying, especially Dimilin. It is uncertain if they would survive BTK applications. It is possible that later instars may survive, but survival of early instars is unlikely. Extreme spongy moth infestations may significantly reduce larval food sources for this species. Every life stage is susceptible to fire. There is no underground stage (pupae are found in the leaf litter). The species often occurs in habitats that historically included natural fires that are now anthropogenically managed. Populations may be negatively impacted by large or complete burns or frequent rotational burning (NatureServe 2025a). Light pollution may affect this species (Schweitzer et al. 2018).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
7. Natural System Modifications	7.1 Fire & Fire Suppression	7.1.1 Increase 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 (spongy moth)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides (spongy moth spraying)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.6 Excess Energy	9.6.1 Light pollution	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 2. Threats to *Acronicta dolli*

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:

A reliable survey technique should be developed for this species. More information is needed about its life history. Adults are difficult to find and are easily overlooked. Typically, they are only captured on excessively warm spring nights. Adults have been captured at black lights on very warm night (rare in the spring) in good habitat with minimal moonlight. Mercury vapor lights may be more successful on more typical spring nights. Larvae can be “beaten” off food plants during the day or night (NatureServe 2025a).

The best management strategy for this species is the management of the natural community, or habitat, where this species occurs. If populations occur in pine barrens habitats, maintaining the full suite of plant and animal species requires frequent (every few decades) disturbance to maintain open-canopy, shrub-dominated communities and to prevent succession to a closed-canopy hardwood forest (Jordan et al. 2003). Researchers have determined that "an active fire management program utilizing prescribed fire with appropriate mechanical treatments" is the preferred method (Jordan et al. 2003). Researchers have also determined that the size, type, intensity, and timing of fires (pyrodiversity) needs to be evaluated for each site to maximize benefits to the natural community and the species it supports (Jordan et al. 2003). The entire occupied habitat for a population should not be burned in a single year. For example, in places where prescribed burning is used, refugia (unburned areas) are needed for many species to ensure that any life stage can survive a fire.

In addition, minimizing lighting to maintain dark sky conditions would be beneficial. When lighting is necessary, it's best to use lights that emit red or yellow light because insects are generally not attracted to those colors. However, many sodium lights, which emit yellow light, are so bright that they do attract some insects. The best lighting appears to be low pressure sodium lights which have little effect on flying insects (Schweitzer et al. 2018).

Insecticide use should be avoided when possible if rare species are present. When insecticide use cannot be avoided, careful planning along with consistent rare species monitoring, can result in successful eradication of the target species without eliminating rare species. Attempt to control spongy moth populations to avoid extreme oak defoliation. A biocontrol alternative is *Bacillus thuringiensis* (Btk) for some target species, such as spongy moths. Sensitivity varies between species, and it appears that most species are not sensitive to Btk approximately two weeks post-application. More data are needed to determine if this is true for *A. dolli*. There are two other spongy moth biocontrols that appear to be very effective at eliminating or slowing the spread of spongy moths with little effect on non-target species: Gypchek (Reardon et al. 2016) and *Entomophaga maimaiga* (a fungus). *E. maimaiga* was introduced in 1910 and 1911 and was rediscovered in 1989 in the northeast it can be highly variable (Shelton 2025).

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.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.7 Legislative and Regulatory Framework or Tools	C.7.0.0.0 Legislative and Regulatory Framework or Tools	Policies and Regulations
C.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

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

VII. References

iNaturalist.org. 2025. *Acronicta dolli* records in North America. California Academy of Sciences, San Francisco, CA. http://www.inaturalist.org. Accessed February 19, 2025.

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