Species Status Assessment

Common Name:	Pink Star Moth	**Date Updated:**	2024-03-14
Scientific Name:	*Derrima stellata*	**Updated By:**	Ashley Ballou
Class:	Insecta		
Family:	Noctuidae		

Species Synopsis

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

The Pink Star Moth is known in New York only from Long Island, where it has been confirmed from four locations since 2007. The population trends are unknown, but the short-term trend appears to be stable, although this moth is uncommon to rare in the northern part of its range and has not been found in large numbers during surveys. More information is needed on its life history, habitat requirements, and populations. Based on rarity, trend, and threat information, it is recommended that this species move to an SGCN.

I. Status

a. Current legal protected Status

i. Federal: Unprotected **Candidate:**

ii. New York: Unprotected; HPSGCN

b. Natural Heritage Program

i. Global: G4

ii. New York: S1 **Tracked by NYNHP?** On Active Tracking List

Other Ranks:

COSEWIC: Not listed in Canada
IUCN Red List: Not assessed by IUCN Red List
Northeast Regional SGCN: Not listed

Status Discussion:

Pink star moth has been found at four locations in New York on Long Island since 2007. At one site they were found in both 2007 and 2012, with no recent surveys conducted. At the other site, there were 5 moths found in 2012 and 21 captured in 2021. Forbes (1954) and Covell (1984)

consider this species rare in the northern part of its range. This species has a limited distribution in New York and is uncommon to rare in its habitat (McGuinness 2022). Based on rarity, trend, and threat information, it is recommended that this species move to an SGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status or S-Rank	SGCN?
North America	Yes	Unknown	Unknown	Unknown		
Northeastern US	Yes	Unknown	Unknown	Unknown		
New York	Yes	Unknown	Unknown	Unknown	S1	
Connecticut	Yes	Unknown	Unknown	Unknown	SU	Yes
Massachusetts	Yes	Unknown	Unknown	Unknown	S3	
New Jersey	Yes	Unknown	Unknown	Unknown		
Pennsylvania	No	-	-	-		
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):

Trends Discussion

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

NY Heritage short term trends: The short-term trends are unknown, but the populations appear to be relatively stable at their two most surveyed locations.

NY Heritage long term trends: The long-term trends are unknown except that Covell (1984) stated that this species is rare in the northern portion of its range.

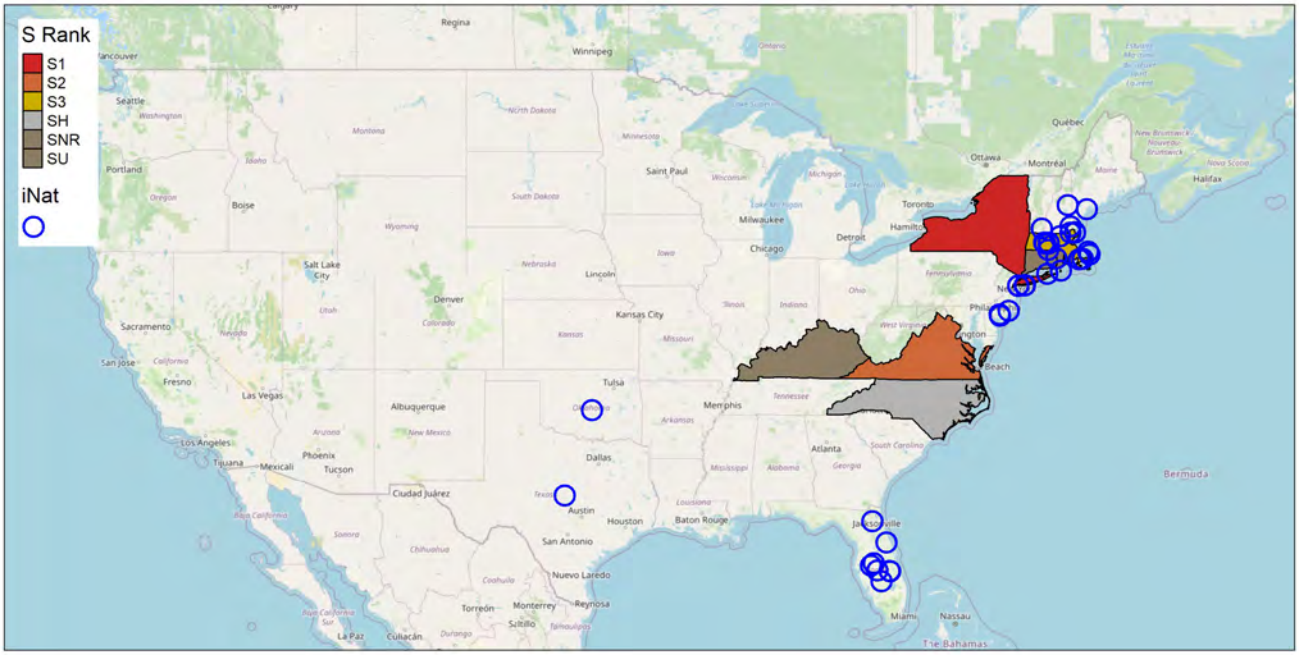

Figure 1. *Derrima stellata* North American distribution. Points show research-grade iNaturalist observations.

III. New York Rarity

(provide map, numbers, and percent of state occupied)

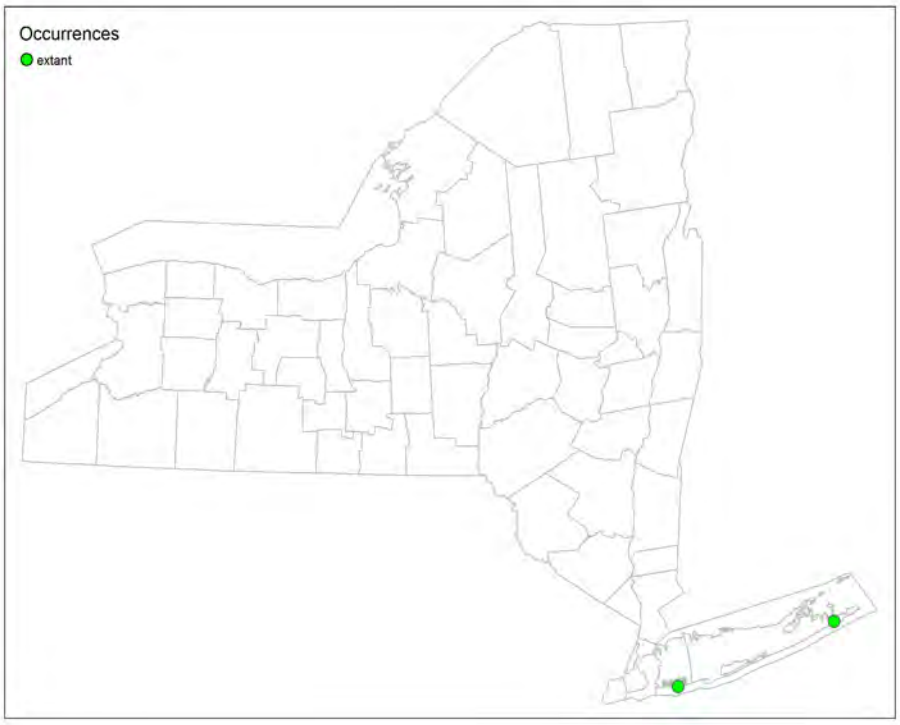

Figure 2. NYS distribution for *Derrima stellata* based on element occurrence data.

Years	Locations	# of Counties	% of counties in State
Pre-2000	unknown	unknown	0.0
2000-2023	4	2	3.2

Table 1. Number of observations of *Derrima stellata* grouped by the dates known to be extant (repeat observations (element occurrences) include the years spanning first observation to last observation) and the number and percent of total of counties these observations fall within for New York State.

Details of historic and current occurrence:

Little is known about historical locations except that Forbes (1954) and Covell (1984) consider this species rare in the northern part of its range. Pink star moth has been found at four locations in New York on Long Island since 2007. At one site they were found in both 2007 and 2012, with no recent surveys conducted. At the other site, there were five moths found in 2012 and 21 captured in 2021. This species has been found in Suffolk County on Long Island.

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%		

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):

NY Natural Heritage Communities: Maritime dunes, Maritime heathland, Sea level fen

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/ Increase
Unknown	Unknown	Unknown	Unknown

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

Habitat Discussion:

The precise habitat requirements in New York are unknown. This species was captured between either maritime dunes and maritime heathland or a sea level fen and maritime heathland, as well as within dune swales.

V. Species Demographics and Life History

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

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):

Covell (1984) states that there are two broods each year: April to May and July to August.

VI. Threats

This species is attracted to artificial lighting. Artificial lighting can: increase predation risk, disrupt behaviors such as feeding, flight, and reproduction, and interfere with dispersal between habitat patches. In addition, many individuals die near the light source. It is not known if the impact of artificial lighting is severe, but the impact is likely greater for small, isolated populations (Schweitzer et al. 2011). Potential threats include insecticide use. The use of insecticides and biocontrols can also eliminate or greatly impact many non-target species populations.

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.3 Herbicides & pesticides	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 *Derrima stellata*

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:

Minimizing lighting to maintain dark sky conditions would also 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. 2011). 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. A biocontrol alternative is Bacillus thuringiensis (Btk) for some target species, such as spongy moth. However, sensitivity to Btk varies among native species and this option should be fully researched for treatment timing and regimes and weighed with other options to have the least impact on native lepidopteran populations (Schweitzer et al. 2011).

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

Action Category	Action	Description
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.9.0.0.0 Education and training	Training

Table 3. Recommended conservation actions for *Derrima stellata*.

VII. References

This SSA drew heavily from these resources:
New York Natural Heritage Program, State University of New York College of Environmental Science and Forestry. 2023. Element Occurrence and Element Dataset. Albany, New York. [Exported 12/14/2023].

NatureServe. 2023. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. http://www.natureserve.org/explorer. [Accessed 12/14/2023].

Additional references:

Covell, Charles V. 1984. A field guide to the moths of eastern North America. Houghton Mifflin Company, Boston.

Forbes, William T. M. 1954. Lepidoptera of New York and neighboring states part III. Cornell University Experiment Station Memoir 329.

McGuinness, Hugh. 2022. Moth Inventory of Jones Beach State Park, Nassau County, New York, June 2021 to May 2022

Schweitzer, D.F., M.C. Minno, and D.L. Wagner. 2011. Rare, Declining, and Poorly Known Butterflies and Moths (Lepidoptera) of Forests and Woodlands in the Eastern United States. USFS Technology Transter Bulletin, FHTET-2009-02.

Schweitzer, Dale F. 1998. Rare, potentially rare, and historic macrolepidoptera for Long Island, New York: A suggested inventory list.

Originally prepared by	Ashley Ballou
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