

# Species Status Assessment

**Common Name:** Regal moth

**Date Updated:** 21 October 2024

**Scientific Name:** *Citheronia regalis*

**Updated By:** Annie Stupik

**Class:** Insecta

**Family:** Saturniidae

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

The regal moth, also known as the royal walnut moth or hickory horned devil, is found in the eastern United States from Massachusetts to Missouri and southward to Texas and central Florida (Covell 1984, Tuskes et al. 1996). It occupies deciduous forests, including forested wetlands (Wagner 2005).

This species is common in the southern United States and becomes sporadically distributed or extirpated north and east of southern New Jersey (NatureServe 2013). It has been extirpated in Massachusetts and reaches the northern extent of the distribution on Long Island, New York. It was believed extirpated from New York in the 1950s but has been recorded sporadically in Long Island from 2000 to 2024 (GBIF 2024). The range is thought to be expanding on Long Island (H. McGuinness, personal communication). Since 2019, there are several records of this species occurring in northern Pennsylvania within 10 km of the New York border (GBIF 2024). Thus, the species may persist in the mid-Hudson region of New York.

Short term trends for this species are relatively stable; long term trends indicate declines and extirpations across the northern part of its range (NatureServe2024). The species is likely affected by spongy moth (*Lymantria dispar dispar*) control efforts as well as non-native parasitoid species in New York (Wagner 2012; Schweitzer 2018; NatureServe 2024).

## I. Status

### a. Current legal protected Status

i. **Federal:** Not listed \_\_\_\_\_ **Candidate:** No \_\_\_\_\_

ii. **New York:** Not listed; HPSGCN \_\_\_\_\_

### b. Natural Heritage Program

i. **Global:** G5 \_\_\_\_\_

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

### Other Ranks:

-IUCN Red List:

-Northeast Regional SGCN:

### Status Discussion:

This species is doing well in the southern portion of its range but is extirpated or declining in the northeastern United States (NatureServe 2024).

## II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable			(blank)
Northeastern US	Yes	Declining	Declining			No
New York	Yes	Unknown	Stable			Yes
Connecticut	Unknown	Extirpated	Extirpated		Special concern (extirpated)	No
Massachusetts	No	Extirpated	Extirpated			No
New Jersey	Yes	Increasing	Increasing			No
Pennsylvania	Yes	Increasing	Increasing			No
Vermont	No	(blank)	(blank)			(blank)
Ontario	No	(blank)	(blank)			(blank)
Quebec	No	(blank)	(blank)			(blank)

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

No monitoring is currently being conducted for this species.

### Trends Discussion

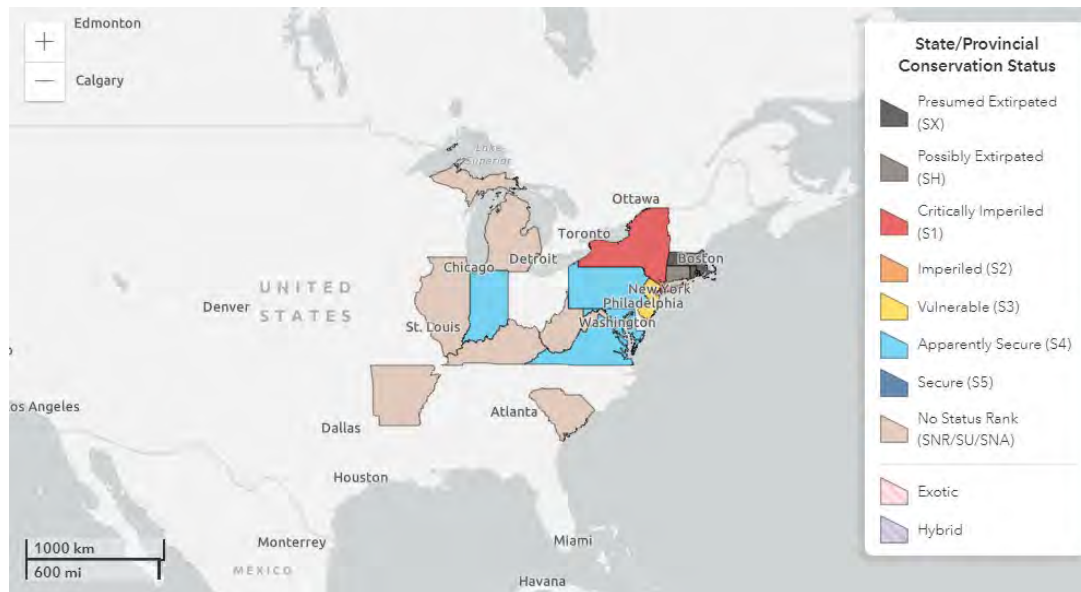


Figure 1. *Citheronia regalis* distribution/status in the US (NatureServe 2024).

### III. New York Rarity

The regal moth is common in the southern parts of its range (Hall 2012). In the northeast, populations have declined or have been extirpated after spongy moth spraying and the outbreak of a parasitoid fly, *Compsilura concinnata*, which was released to control spongy moths (*Lymantria dispar*) (NatureServe 2013).

Years	# of Records	# of Distinct Waterbodies/Locations	% of State
Pre-2000	11	_____	_____
2000- 2023	_____	_____	_____

Table 1. Records of historic records of *Citheronia regal* in New York.

#### Details of historic and current occurrence:

This species was historically reported from Brockport, Monroe County; Utica, Oneida County; Poughkeepsie, Dutchess County; Albany, Albany County; Lansingburg, Rensselaer County; Oak Hill, Green County; Clearmont, Columbia County; New Windsor, Orange County; Peekskill, Westchester County; South Nyack, Rockland County; Staten Island and Long Island (Forbes 1920).

#### 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. Mixed Northern Hardwoods

#### Habitat or Community Type Trend in New York

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

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:**

Exact habitat preferences for regal moths are unknown. However, the polyphagous larvae feed on a wide variety of deciduous trees and shrubs including black walnut (*Juglans nigra*), butternut (*Juglans cinerea*), hickories and pecan (*Carya* spp.), persimmon (*Dospyros virginiana*), sweetgum (*Liquidambar styraciflus*), sumac (*Rhus* spp.), ash (*Fraxinus* spp.), blackgum (*Nyssa sylvatica*), willow (*Salix* spp.), lilac (*Syringia vulgaris*) and cotton (*Gosypium* spp.) (Villard 1969, Ferguson 1971, Worth et al. 1979).

**V. Species Demographic, and Life History:**

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

The regal moth is a summer species, emerging from late June through early August. Adults emerge in late evening and remain quiescent until the following evening. Males are active at dusk and are strong fliers. Females call from 2300-0200 and mated pairs remain coupled through the following day. Males fly several miles in search a female (Dellinger and Day 2012). Egg laying begins at dusk. Larvae feed on a large variety of host plants including hickories, pecan, butternut, and black walnut (Tuskes et al. 1996). Ova are laid singly or in groups of two or three on the surfaces of leaves. Eggs develop rapidly and larva hatch in 6-10 days. Larvae are solitary feeders. The larval stage lasts around 35 days. Larvae then descend from the trees and search for loose soil to overwinter as a pupa (Tuskes et al. 1996).

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

The regal moth is parasitized by at least 6 species of tachinid flies and one species of braconid wasp (Tuskes et al. 1996). This greatest threat to this species is *Compsilura concinnata*, a nonnative parasitoid fly, which has impeded the recovery of this species by parasitizing it during the pupae stage. Introduced parasitoid flies have been known to negatively affect native Lepidoptera (Boettner et al. 2000). The historic use of DDT spraying against spongy moth had caused significant declines in the northeastern U.S., but is thought to be abated (Schweitzer 2004). Additional threats thought to affect male regal moths is artificial lighting. Male regal moths are readily attracted to lights (NatureServe 2013).

<b>Threat Level 1</b>	<b>Threat Level 2</b>	<b>Threat Level 3</b>	<b>Spatial Extent</b>	<b>Severity</b>	<b>Immediacy</b>	<b>Trend</b>	<b>Certainty</b>
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.1 Terrestrial animals (parasitism by <i>Compsilura concinnata</i> )	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	(parasitism by tachinid flies and braconid wasp)	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 (DDT 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 *Citheronia regalis*.

**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:**

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 *Citheronia regalis*.

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