

Species Status Assessment

Common Name: Gray petaltail

Date Updated: March 2025

Scientific Name: *Tachopteryx thoreyi*
Section

Minor Edits By: NYSDEC Wildlife

Class: Insecta

Family: Petaluridae

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

The gray petaltail (*Tachopteryx thoreyi*) is principally a southern species, with a range that extends from northern Florida west to eastern Texas and Oklahoma, and north to southern Illinois, southern Michigan, New York and southern New England (Dunkle 2000, Glotzhober and McShaffrey 2002). Overall, the statewide range for this species is quite broad, with nearly all records coming from counties across the southern portion of the state including the lower Hudson Valley, the southern Finger Lakes, and the Lake Erie portion of the Great Lakes drainage. There is a reliable site record from one location on the Tug Hill in 1990 that may represent a disjunct portion of the species range in New York, as well as unvouchered records from St. Lawrence county in 2007 and 2008. Despite this broad distribution in New York, *T. thoreyi* has very specialized habitat requirements leading to an especially localized distribution. It is known from just over a dozen sites in New York, with apparent population clusters in the Finger Lakes region and in Letchworth State Park. The general habitat of *T. thoreyi* is usually described as hillside seeps and fens located in areas of deciduous forest (Dunkle 2000, Nikula *et al.* 2003). In New York, all known populations are found at rocky gorges and glens, with groundwater-fed, hillside seepages feeding into small streams (White *et al.* 2010, New York Natural Heritage Program 2012).

DEC is not aware of any additional data or new information on population trends or threats to this species since the last SWAP revision in 2015 to indicate a need for change in SGCN status.

I. Status

a. Current legal protected Status

i. **Federal:** Not listed _____ **Candidate:** No _____

ii. **New York:** Special Concern _____

b. Natural Heritage Program

i. **Global:** G4 _____

ii. **New York:** S2 _____ **Tracked by NYNHP?:** Yes _____

Other Ranks:

-NYS 2025 SGCN Status: HPSGCN

-IUCN Red List: Least Concern

-Northeast Regional SGCN: Watchlist

Status Discussion:

Several sites have been known for decades, indicating that the species is viable and presumably stable over the long-term. Suburban and other development has been taking place in the lower Hudson Valley portion of the species range for decades and it is possible that some sites, including two represented by historical records, have been lost (New York Natural Heritage Program 2011). Information on populations sizes and populations trends at specific sites is not available.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown	1988-2012		Choose an item.
Northeastern US	Yes	Unknown	Stable	1988-2011		Choose an item.
New York	Yes	Unknown	Declining	2005-2009		Yes
Connecticut	No	Choose an item.	Choose an item.			Choose an item.
Massachusetts	No data	Choose an item.	Choose an item.			Choose an item.
New Jersey	No data	Unknown	Stable		E	Choose an item.
Pennsylvania	No data	Unknown	Stable			Choose an item.
Vermont	No	Choose an item.	Choose an item.			Choose an item.
Ontario	No	Choose an item.	Choose an item.			Choose an item.
Quebec	No	Choose an item.	Choose an item.			Choose an item.

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*):

The New York State Dragonfly and Damselfly Survey (NYSDDS) was conducted from 2005-2009 but there are no organized, regular monitoring or survey activities directed toward this species or to sites where it has been documented.

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

There is no information on population trends for *T. thoreyi* at known locations, although several sites have been known for decades, indicating that they are viable and presumably stable. There is also the possibility that some sites have been lost in recent years due to new suburban and other development in at least the rapidly growing lower Hudson Valley portion of the species range (New York Natural Heritage Program 2011).

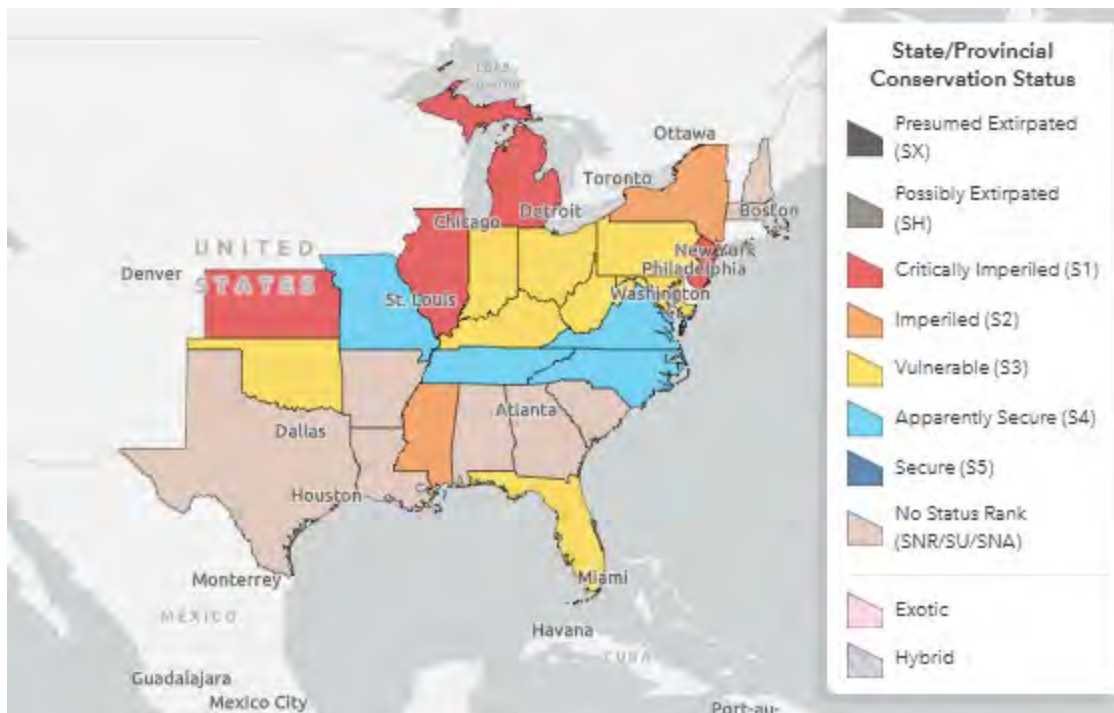


Figure 1. Conservation status of *Tachopteryx thoreyi* in North America (NatureServe 2025).

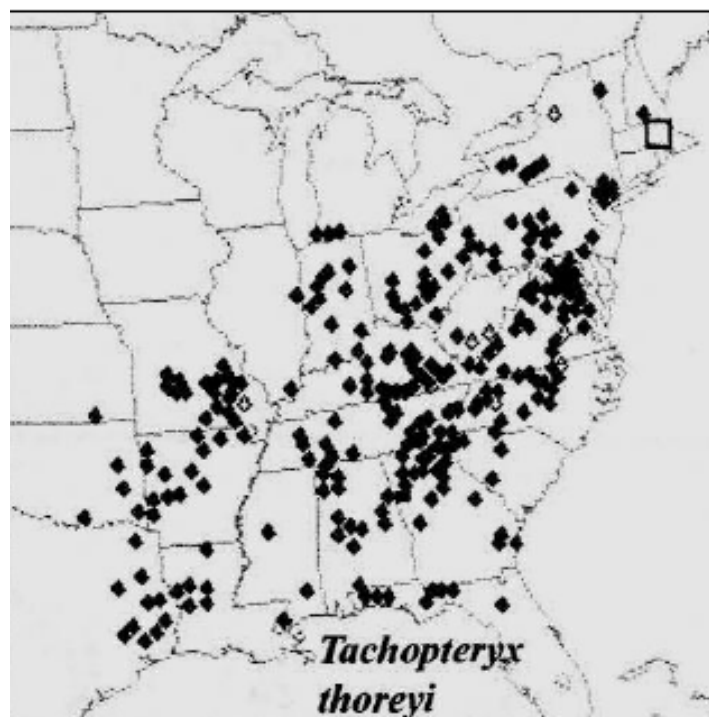


Figure 2. Distribution of the gray petaltail in the United States (Donnelly 2004).

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

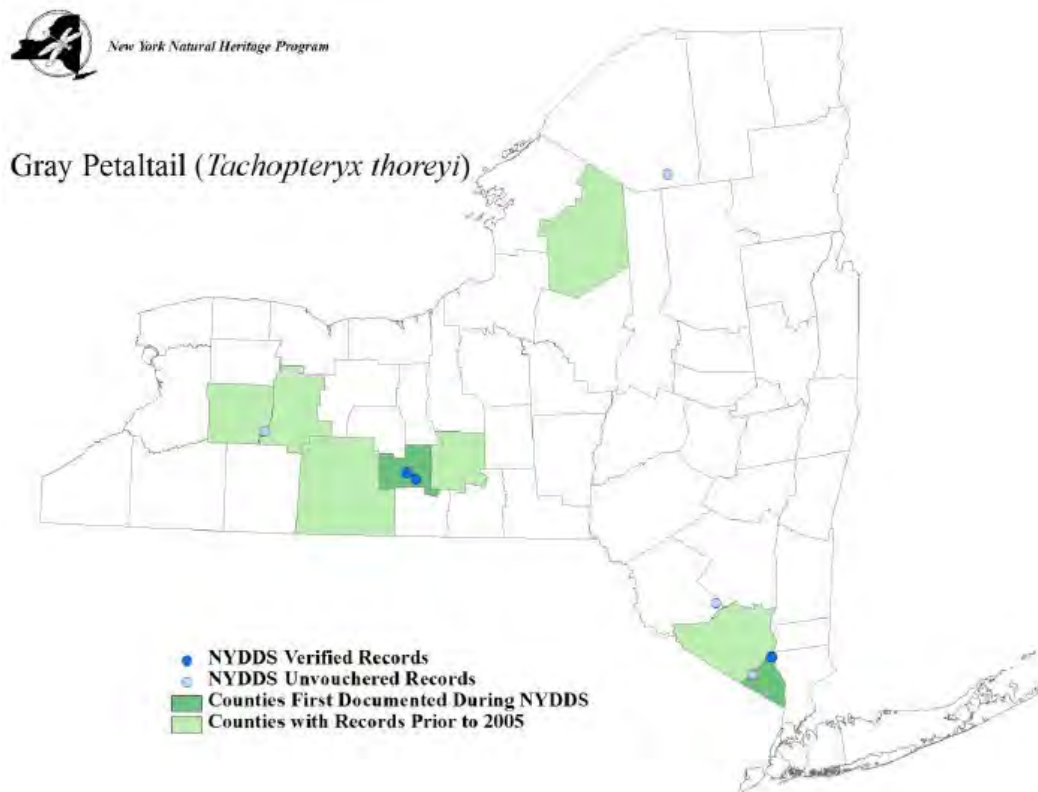


Figure 3. Occurrence records of the gray petaltail in New York (White *et al.* 2010).

Details of historic and current occurrence:

The NYNHP Element Occurrence Database (2012) lists three historical occurrences for this species at West Point, Ramapo and Six Mile Creek in Ithaca, while Donnelly (1992) lists five others including, Coy Glen in Ithaca, McLean, Portage, Watkins Glen, and Ft. Montgomery, all but one of these initially reported by Needham (1928).

The statewide range for this species is quite broad, with records coming from counties across the southern portion of the state including the Lower Hudson Valley, the southern portion of the Finger Lakes and the Lake Erie portion of the Great Lakes drainage. Letchworth State Park and the Ithaca are locations with multiple records some of which have been known since at least 1928. Overall there are as many as 11 well verified locations recorded since 1990 with two additional unverified site records from additional counties (St. Lawrence and Sullivan) reported during the NYDDS (White *et al.* 2010, New York Natural Heritage Program 2013) The fairly recent (1990) and reliable site record from one location on Tug Hill may represent a disjunct portion of the range for this primarily southern species (New York Natural Heritage Program 2012).

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	~1000 miles

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. Headwater Creek, Low Gradient, mud bottom
- b. Headwater Creek, Low-Moderate Gradient, mud bottom
- c. Headwater Creek, Low Gradient, sand and gravel bottom
- d. Headwater Creek, Low-Moderate Gradient, sand and gravel bottom

Habitat or Community Type Trend in New York

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

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:

The general habitat of the *T. thoreyi* is usually described as hillside seeps and fens located in areas of deciduous forest (Dunkle 2000, Nikula *et al.* 2003). In New York, all known populations are found at rocky gorges and glens, with groundwater fed, hillside seepages feeding into small streams (New York Natural Heritage Program 2011). Larvae inhabit the seepage areas. The adults perch vertically on tree trunks, stumps, or exposed branches in sunny spots within the seepage areas and adjacent woods, defending territories and searching for mating opportunities. At most New York sites, petaltails are often observed as they fly up and down the streams to forage (New York Natural Heritage Program 2011).

V. Species Demographic, and Life History:

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

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):

Donnelly (1999) shows previously recorded New York *T. thoreyi* dates from 7 June – 15 July. An examination of 37 records, including observations and museum specimens, in the database of the NYNHP prior to the NYDDS, shows 38% of the records from 1-15 June, 35% of the records from 16-30 June, 21% of the records from 1-15 July, and just 5% of the records from 16-30 July. The NYDDS records documented by photographs, or based on observations from sites also documented by photographs or in close proximity to other known sites, show a noticeably different percentage with 33% from 16-30 June and 66% from 1-15 July. The difference in the number of early June records based upon these two sources may reflect the timing of targeted search efforts for *T. thoreyi* at various New York State Parks from 1998-2004, as part of a multi-year Biodiversity Inventory Project (Evans and VanLuven 2005). Early June likely represents the beginning of the flight period in New York, a time when the petaltails may be most closely tied to the seep/spring habitat for mating, whereas late June and early July probably represents the peak of the flight period (White *et al.* 2010).

T. thoreyi is the only northeastern dragonfly species whose larvae may not be truly aquatic. The larvae live in the mud and vegetation of mucky, mossy, spring seeps which often contain very little standing water. Dunkle (1981) studied a population of *T. thoreyi* in Florida throughout the flight season of 1978 at a site similar in description to sites in New York, (*i.e.* hillside seeps in deciduous forest, although presence of a stream fed by the seeps is not mentioned). Adults were captured and individually marked. The minimum population based on individuals marked included 128 males and 46 females. If these numbers hold true for sites in New York, it would indicate that at least some populations may be larger than one would guess from a few initial surveys of short duration. Marked males moved distances from 0- 1.1 km. The average distance traveled by males between sightings was 0.28 km. One male, classified as mature when first marked, survived for at least 35 more days and was probably 7 weeks old when it was last seen.

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

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
3. Energy Production & Mining	3.1 Oil & Gas Drilling	Choose an item. (hydraulic fracturing issues)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.3 Logging & Wood Harvesting	Choose an item. (siltation of streams)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.2 Dams & Water Management/Use	Choose an item. (alteration of hydrology)	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 (hemlock wooly adelgid)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.3 Changes in Temperature Regimes	Choose an item. (temperature extremes)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.4 Changes in Precipitation & Hydrological Regimes	11.4.2 Droughts	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to *Tachopteryx thoreyi*.

Since seepage areas are the key larval habitat for this species, any activities that alter the quality or quantity of groundwater seepage in an occupied area would pose a threat to *T. thoreyi*. The most important likely negative impacts would come from changes in natural hydrology through the building of dams, increases in sediment load of the seepage (such as might occur should extensive logging take place in or adjacent to the seepage), changes in dissolved oxygen content, direct effects of pesticides, and chemical contamination by runoff or agricultural discharge (Novak 2006). Direct, intentional killing by people is a possible threat to this species. In at least one state park, petaltails squashed by park visitors have been observed. Petaltails are not wary and occasionally land on people whose first reaction is probably to swat the insect (New York Natural Heritage Program 2011).

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

Yes: X No: Unknown:

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

The Freshwater Wetlands Act provides protection for wetlands greater than 12.4 acres in size under Article 24 of the NYS Conservation Law. The Adirondack Park Agency (APA) has the authority to regulate smaller wetlands within the Adirondack Park. The APA could be important should the St. Lawrence County observation be confirmed.

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

Consideration should be given to providing information to the public at state parks where *T. thoreyi* occurs. The tame and harmless nature of the insects could be stressed in order to reduce the likelihood of the dragonflies being killed by startled hikers. For example, a photograph and brief information sheets could be provided at kiosks located near the entrances to trails during the late May-July flight period (New York Natural Heritage Program 2011). This action has already been completed at one or more State Parks in the Finger Lakes region.

Action Category	Action	Description
B.3 Outreach	B.3.1.4.0 Public outreach and information	Awareness & Communications
C.7 Legislative and Regulatory Framework or Tools	C.7.1.3.0 Create, amend, or influence regulation	
C.7 Legislative and Regulatory Framework or Tools	C.7.2.1.0 Create or amend policies	

Action Category	Action	Description
C.9 Education and Training	C.9.2.0.0 Training and individual skill development	Training

Table 2. Recommended conservation actions for *Tachopteryx thoreyi*

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of seeps and rivulets, and for gray petaltail in particular.

Habitat monitoring:

_____ Support and encourage habitat monitoring efforts that would complete the baseline assessment of habitat quality and threats.

Habitat research:

_____ Support and encourage research projects that will help define preferred habitat in order to guide future monitoring, restoration and habitat protection efforts.

New regulation:

_____ Recommendations for official state endangered, threatened, and special concern listing are an anticipated result of the statewide inventory. The gray petaltail is currently listed as Special Concern. It is possible that a change in this species listing status may be warranted following additional surveys or that one of the other two species may be recommended for listing and officially adding these species to the list would constitute a concrete action.

Population monitoring:

_____ Conduct surveys to obtain repeatable, relative abundance estimates for these species at known sites and newly discovered sites where access permission to conduct surveys is obtained (as indicated in the State Wildlife Grant Odonate Inventory Project).

Statewide baseline survey:

_____ All of these species are known from fewer than 15 locations in the state, but new populations undoubtedly remain to be discovered. A currently approved, but not yet begun State Wildlife Grant Statewide Odonate Inventory Project will utilize volunteers, Natural Heritage Program and other staff to conduct surveys for these species at potential sites throughout the state.

VII. References

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