Species Status Assessment

Common Name: Extra-striped snaketail **Date Updated:** April 2025

Scientific Name: *Ophiogomphus anomalus* **Minor Edits By:** NYSDEC Wildlife Section

Class: Insecta

Family: Gomphidae

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

The extra-striped snaketail (*Ophiogomphus anomalus*) is uncommon throughout its fairly small, northern range in northern North America (Lee 2007). It has a total known range from New Brunswick, Quebec, Ontario, Maine, New York, New Jersey, Pennsylvania, Michigan, Wisconsin, and Minnesota (Nature Serve 2012, Donnelly 1994).

Prior to 1993, this species was known in New York from a single specimen collected in 1951 at Port Jervis, which is located at the junction of the Delaware and Neversink Rivers, in Orange County (Soltesz 1994, White *et al.* 2010).

O. anomalus was a possible candidate for federal listing in the early 1990s, at which time the New York Natural Heritage Program began survey efforts for this species. These surveys located additional occurrences on the upper Hudson River, Moose River (Oneida County), Raquette River, St. Regis River, and West Branch St. Regis River, bringing the total number of rivers for New York to six (Dunkle 2000, Mead 2003, Lee 2007). The species was eventually confirmed from nine counties in the eastern portion of the state in the 1990s to present in larger rivers of the Adirondacks and Catskills (Donnelly 2004, New York Natural Heritage Program 2011). It is not known to occur in western New York and has possibly declined from the Delaware River (White *et al.* 2010, Expert meeting).

O. anomalus inhabits clear, rapid and cold, medium to large rivers with high dissolved oxygen content and high water quality (Dunkle 2000, Mead 2003, Lee 2007).

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:** S2S3 **Tracked by NYNHP?:** Yes

Other Ranks:

-NYS 2025 SGCN Status: SGCN

-IUCN Red List: Least Concern

-Northeast Regional SGCN: RSGCN

Status Discussion:
White *et al.* (2010) calculated a revised draft S-rank of S2S3 from S1.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Stable	Stable			-
Northeastern US	Yes	Unknown	Declining			-
New York	Yes	Unknown	Unknown	1951-1990		Yes
Connecticut	No	-	-			-
Massachusetts	No	-	-			-
New Jersey	Yes	Unknown	Unknown			Yes
Pennsylvania	No data	-	-			-
Vermont	No	-	-			-
Ontario	No data	-	-			-
Quebec	No data	-	-			-

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 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. The upper Hudson River just north of Lake Luzerne has often been visited to determine whether the species emergence has begun and it would be reasonable to standardize a monitoring protocol based on visits to this and other sites.

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

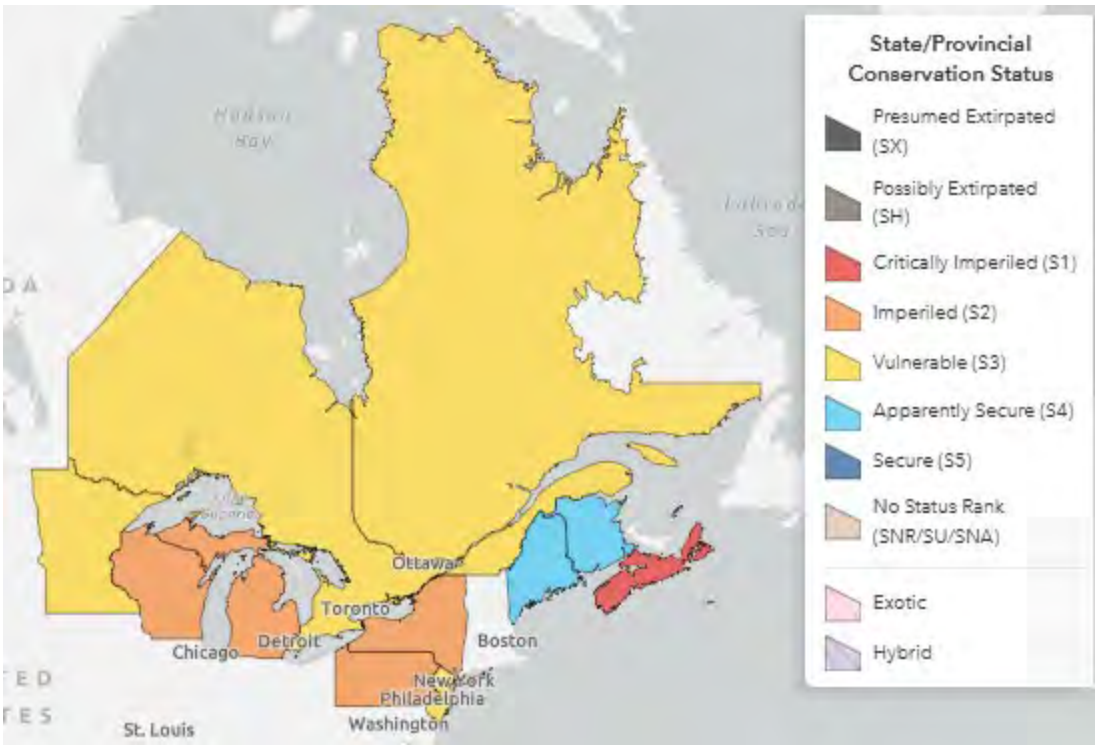

Figure 1. Conservation status of *Ophiogomphus anomalus* in North America (NatureServe 2025).

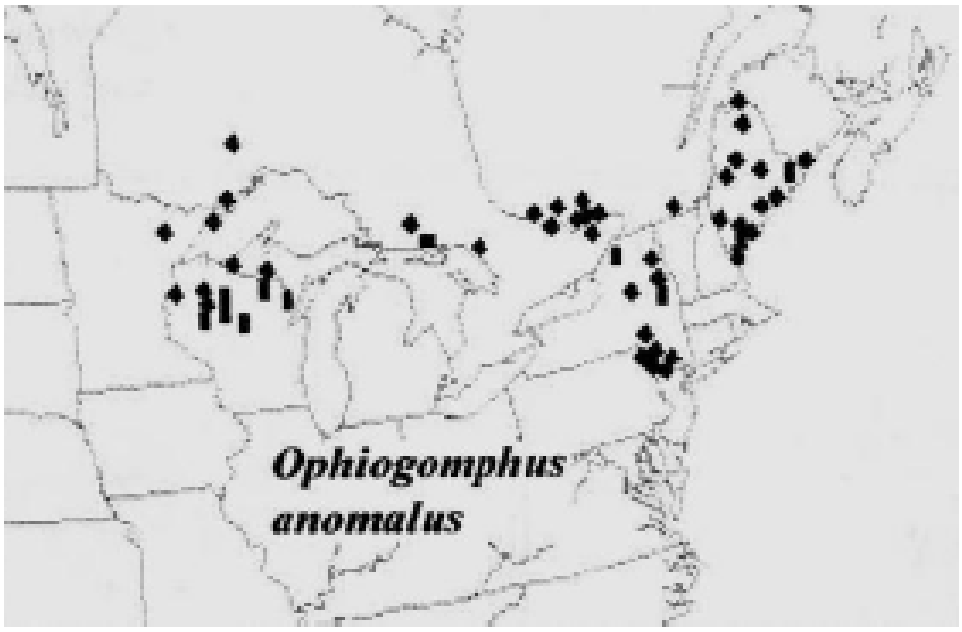

Figure 2. Distribution of extra-striped snaketail in the United States (Donnelly 2004).

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

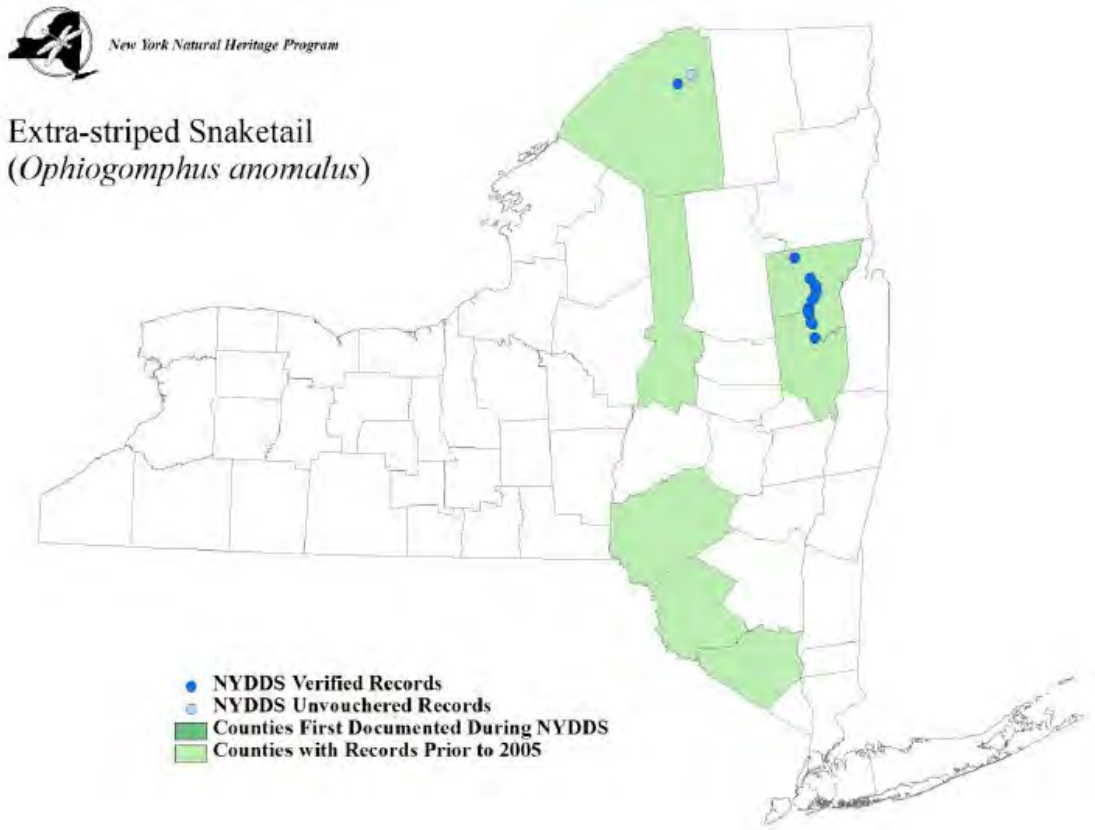

Figure 3. Occurrence records of extra-striped snaketail in New York (White *et al.* 2010).

Details of historic and current occurrence:

Prior to 1993, this species was known in New York from a single specimen collected in 1951 at Port Jervis, which is located at the junction of the Delaware and Neversink Rivers, in Orange County.

Following its re-discovery on the Delaware River in 1993 and then discovery on the upper Hudson River in 1995, additional surveys documented this species on the Moose River (Oneida County), Raquette River, St. Regis River, and West Branch St. Regis River, all in St. Lawrence County, bringing the total number of rivers for New York to six (Dunkle 2000, New York Natural Heritage Program 2012). The upper Hudson River could possibly be considered as multiple populations (occurrences).

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%	Core	~500 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. Small River, Low-Moderate Gradient, Low Buffered, Acidic, Cold

b. Medium River, Low-Moderate Gradient, Low Buffered, Acidic, Cold

c. Large/Great River, Low-Moderate Gradient, Low Buffered, Acidic, Cold

Habitat or Community Type Trend in New York

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

O. anomalus inhabits clear, rapid and cold, medium to large rivers with high dissolved oxygen content and high water quality (Dunkle 2000, Mead 2003, Lee 2007). Individuals can often be found perched on bushes near the tree line, bordering riffle areas of rivers (Dunkle 2000) and are known to spend much of their time aloft and perched high in the treetops (Mead 2003).

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 flight season for extra-striped snaketails in the north central states extends from mid May into early August (Mead 2003). This corresponds quite well with the records documented during the Maine Dragonfly and Damselfly Survey which shows the earliest date as 25 May, and the latest date as 26 July, but with nearly 75% of all records from the three middle weeks of June (Brunelle and deMaynadier 2005).

Adult *O. anomalus* spend most of their time in treetops away from water, but they can occasionally be found in bushes near riffle areas of rivers (Dunkle 2000), especially shortly after emergence. Larvae are aquatic and burrow in the sandy substrate of rivers (Mead 2003).

Despite finding extremely high larval densities (20/square meter) in June at the Artoostook River in Maine, Gibbs *et al.* (2004) never observed any winged adults of this species during July and August, suggesting either 1) highly cryptic terrestrial behavior, 2) extremely high mortality rates, or 3) habitat segregation.

A study of co-occurring Snaketail species in Maine (Bradeen 1996) and collection of exuviae in New York and elsewhere, indicate Extra-striped snaketails emerge en masse in early summer as do the other species of snaketails, with this species among the earliest to emerge (White *et al*. 2010). During a 1997 study on the upper Hudson River in New York, no exuviae were found during surveys on June 3 and June 6, with the first exuviae encountered on June 9 and large numbers encountered on June 10 (Novak 1998).

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

O. anomalus larvae require high water quality with high dissolved oxygen content and substrates that have little sedimentation (Lee 2007). Due to the fact that these are intolerant organisms, Ophiogomphids are important components of macroinvertebrate indices to rate water quality in New York. Thus, any activity which might lead to water contamination or the alteration of natural hydrology could impact *O. anomalus* populations (Holst 2005). Such threats might include agricultural run-off and other pollutants, dams, shoreline modifications, increases in the sediment load of rivers, and changes in the dissolved oxygen content (Holst 2005, Lee 2007). Maintaining a forested buffer around the river would be beneficial to adult snaketail populations (Lee 2007). On the Upper Delaware River, the hydrological flow has been altered by two large water supply reservoirs on each of the two branches upstream from Hancock and hydroelectric plants have been built on two major tributaries. The reservoirs act as sediment traps resulting in coarsening of the river bed downstream leading to a lack of finer sediments probably required by nymphs. High flow releases in late summer which are contrary to the natural flow regime may also have a detrimental effect on the larvae (Soltesz 1994).

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.
5. Biological Resource Use	5.3 Logging & Wood Harvesting	(siltation)	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	(alteration of natural hydrology)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	(salt runoff from roads)	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 (runoff, pesticides)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to *ophiogomphus anomalus*

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:

Article 15 of Environmental Conservation Law provides some protection of rivers, streams, lakes and ponds through the Protection of Waters permit program. However, this protection may not be adequate to protect the habitat/species.

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

Specific management/conservation actions have not been identified for this species.

Further searching and larval sampling may be necessary before specific stewardship needs at a location can be identified. However, any measures to reduce water contamination or hydrological alteration such as agricultural run-off, shoreline development, and damming that would affect river flow should be considered when managing for this species (New York Natural Heritage Program 2011).

Further research is needed to define the distribution, life history, population size, and population trend of *O. anomalus*. In addition, research is required to understand the habitat requirements and threats to this species, and to create appropriate conservation guidelines for its persistence in known locations (Lee 2007).

Action Category	Action	Description
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	

Table 2. Recommended conservation actions for *Ophiogomphus anomalus*.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of rivers and streams, and for extra-striped snaketail 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. It is expected that at least a few species will be recommended for listing and officially adding these species to the list would constitute a concrete action. Four of the species are currently listed as Special Concern, but it is possible a change in their listing status may be warranted following additional surveys.

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:

____ Most of these species are known from fewer than 10 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

Brunelle, P.-M. and P. G. deMaynadier. 2005. The Maine damselfly and dragonfly survey. A final report. A report prepared for Maine Department of Inland Fisheries and Wildlife (MDIFW).

Donnelly, T. W. 2004. Distribution of North American Odonata. Part I: Aeshnidae, Petaluridae, Gomphidae, Cordulegastridae. Bulletin of American Odonatology 7:61-90.

Dulvy, N.K. 2003. *Dipturus laevis*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2. <www.iucnredlist.org>. Accessed 6 February 2013.

Dunkle, S. W. 2000. Dragonflies through binoculars. A field guide to dragonflies of North America. Oxford University Press, New York, New York. 266 pp.

Gibbs, E., B. Bradeen, and D. Boland. 2004. Spatial and temporal segregation among six species of coexisting Ophiogomphus (Odonata: Gomphidae) in the Aroostook River, Maine. Northeastern Naturalist 11(3):295-312.

Lee, Y. 2007. Special animal abstract for Ophiogomphus anomalus (extra-striped snaketail).Michigan Natural Features Inventory. Lansing, MI. <http://web4.msue.msu.edu/mnfi/abstracts/zoology/Ophiogomphus_anomalus.pdf>. Accessed 26 September 2012.

Mead, K. 2003. Dragonflies of the north woods. A comprehensive field reference to all 102 species of north woods dragonflies. Kollath+Stensaas Publishing, Duluth, MN.

NatureServe. 2011. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer>. Accessed 26 September 2012.

New York Natural Heritage Program. 2011. Online Conservation Guide for *Ophiogomphus anomalus*. < http://www.acris.nynhp.org/guide.php?id=8201>. Accessed 26 September 2012.

New York Natural Heritage Program. 2012. Element Occurrence Database. Albany, NY.

Novak. P. 1998. Large river Odonate surveys: Surveys for the Extra-striped snaketail (*Ophiogomphus anomalus*) and the pygmy snaketail (*Ophiogomphus howei*) in New York State, 1997. A report prepared for New York State Department of Environmental Conservation, Endangered Species Unit.

Soltesz, Ken. 1992. Proposed Heritage ranks for New York State odonata. Unpublished report for New York Natural Heritage Program.

Soltesz, K. 1995a. A preliminary survey of the dragonfly *Ophiogomphus howei* on the Susquehanna River in New York. A report prepared for New York Natural Heritage Program. Albany, NY.

Soltesz, K. 1995b. *Ophiogomphus anomalus* on the Delaware River. Results of 1994 field research. A report prepared for New York Natural Heritage Program. Albany, NY.

Soltesz, K. 1996. Dragonfly studies on the Delaware and Susquehanna Rivers: Results of 1996 field research. Unpublished reprot submitted to the New York Natural Heritage Program, November 19, 1996. 5 pp.

White, E. L., J. D. Corser, and M. D. Schlesinger. 2010. The New York dragonfly and damselfly survey 2005-2009: Distribution and status of the odonates of New York. New York Natural Heritage Program, Albany, New York.

NatureServe. 2025. NatureServe Explorer. Page last published 2/28/25. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.118008/Ophiogomphus_anomalus. Accessed April 1, 2025.

Murtaugh, Jenny. 2012. *Ophiogomphus anomalus* Status Assessment for the 2015 New York State Wildlife Action Plan. NYSDEC. Albany, New York.

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