Species Status Assessment

Common Name: Rapids clubtail **Date Updated:** April 2025

Scientific Name: *Phanogomphus quadricolor* **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 rapids clubtail (*Gomphus quadricolor*) is a globally rare to uncommon dragonfly found throughout eastern North America, in a range extending from Maine to Minnesota, including southern Ontario. Western Ohio in the southern Great Lakes forest ecoregion forms the center of distribution. New York falls within the northeastern range extent, with populations extending to the northern New Hampshire/Maine border (Donnelly 2004), although discovery in Maine was not until a recent atlas (Brunelle and deMaynadier 2005). In New York, the species is confined to the eastern part of the state, and occurs in the northeast Lake Ontario/St. Lawrence, Champlain, and Upper Hudson watersheds. Widely scattered populations occur in nine counties, from Rondout Creek in central Ulster County, northwestward to the Indian and Oswegatchie Rivers, and eastward to the upper Hudson River and the Poultney and Mettawee Rivers along the Vermont border (White *et al.* 2010).

Gomphus quadricolor inhabits rapid flowing streams with projecting rocks and a substrate consisting of boulder, rock, gravel, and sand (Walker 1958, Cuthrell 2000). It may also be found in or near slow-flowing, small streams and swiftly-flowing large rivers (Nikula *et al.* 2003).

There are five extant and two historical locations where this species is known to occur in New York State, with no population estimates determined. There are two locations in the state where exuviae have been found, but no adult sightings were confirmed (New York Natural Heritage Program 2011).

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:** Not listed

b. Natural Heritage Program

i. **Global:** G3G4

ii. **New York:** S3 **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 S3 from S1S2.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN ?
North America	Yes	Unknown	Unknown	US: 1998 CA: 2012		-
Northeastern US	Yes	Unknown	Stable	1998		-
New York	Yes	Unknown	Stable	2005-2009		-
Connecticut	Yes	Unknown	Unknown		T	Yes
Massachusetts	Yes	Unknown	Unknown		T	Yes
New Jersey	Yes	Unknown	Unknown		SC	Yes
Pennsylvania	Yes	Unknown	Unknown		Immediate Concern	Yes
Vermont	Yes	Unknown	Unknown			Yes
Ontario	Yes	Declining	Declining		E	-
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):*

The New York State Dragonfly and Damselfly Survey (NYSDDS) was conducted from 2005-2009.

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

There has been no estimate of population size for this species based on statewide occurrences. These occurrences have been reported from the late 1990s to present, and information prior to this time frame is limited. There are two known historical occurrences of *G. quadricolor* in New York State, in Broome and Tompkins counties. Five extant occurrences have been located in Warren, Saratoga, Orange, Ulster, St. Lawrence, Sullivan, and Broome counties. There is no existing information regarding the current existence of populations at these locations; therefore long-term trends are unclear (New York Natural Heritage Program 2011).

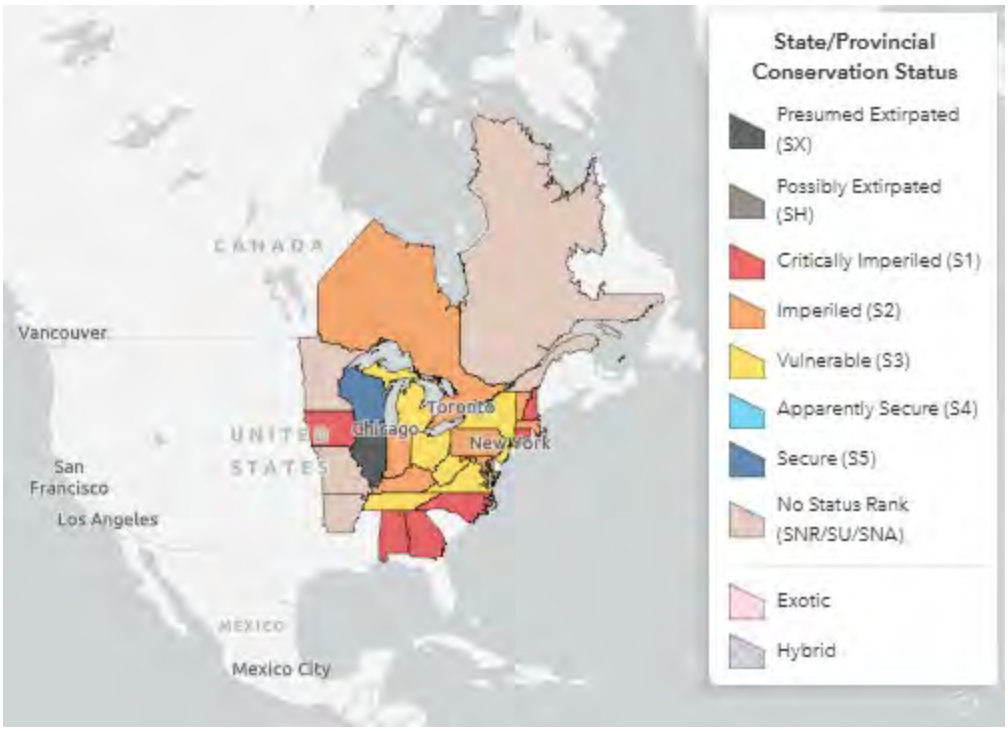

Figure 1. Conservation status of *Phanogomphus quadricolor* in North America (NatureServe 2025).

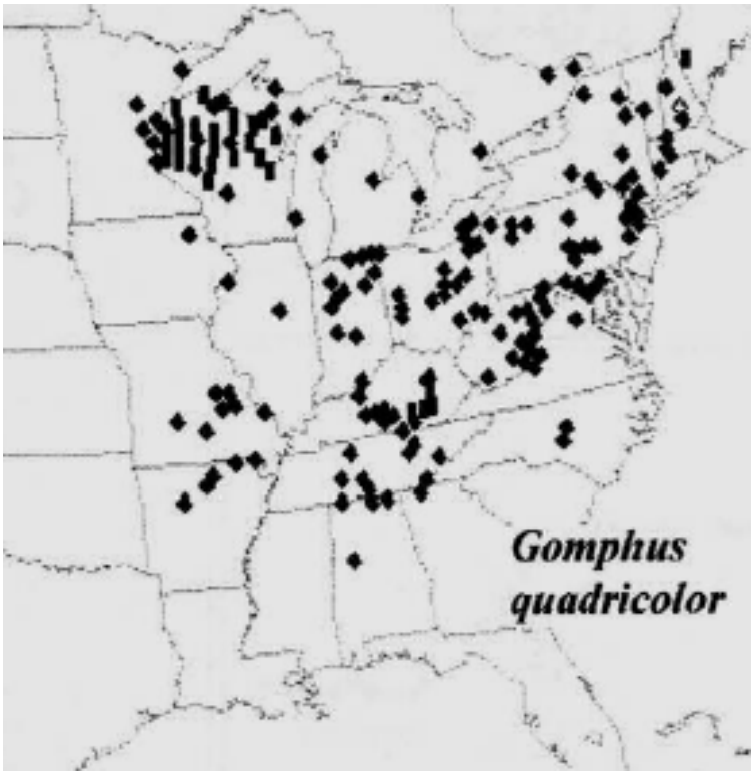

Figure 2. Distribution of rapids clubtail in the United States (Donnelly 2004).

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

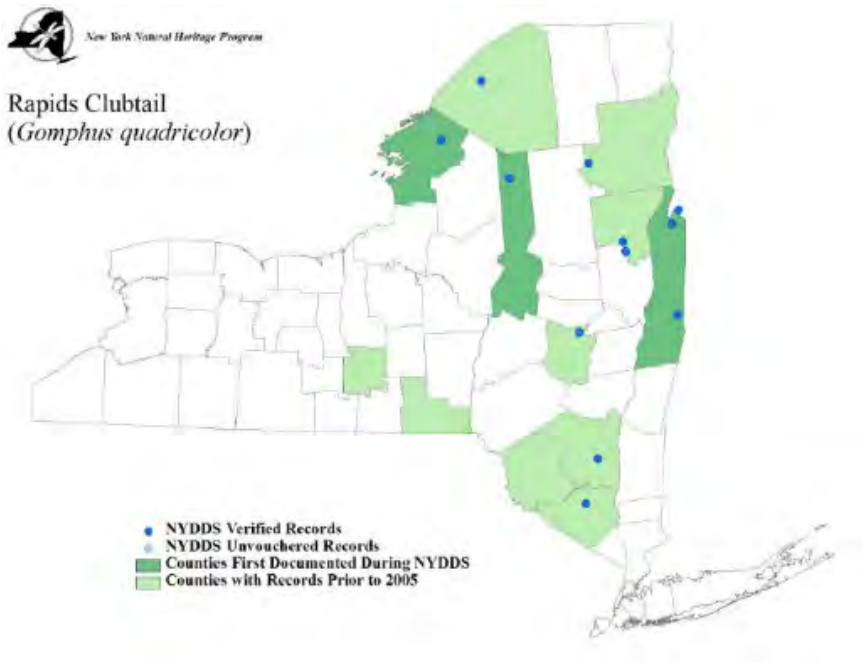

Figure 3. Occurrence records of rapids clubtail in New York (White *et al.* 2010).

Details of historic and current occurrence:

No historic occurrence information available.

From The New York Dragonfly and Damselfly Survey 2005-2009. Number of occurrences obtained from map by White *et al.* 2010.

FromNew York Nature Explorer:

Orange County – 1993 – Recently confirmed**;** Sullivan County – 1993 – Recently confirmed**;** Broome County – 1996 – Recently confirmed**;** Saratoga County – 1997 – Recently confirmed**;** Warren County – 1997 – Recently confirmed**;** Herkimer County – 2005 – Recently confirmed**;** Essex County – 2006 – Recently confirmed**;** St. Lawrence County – 2007 – Recently confirmed**;** Ulter County – 2009 – Recently confirmed

G. quadricolor has been confirmed in locations from 10 counties. While no population estimates have been made, they are known to occur in large, shallow, swift-flowing rivers throughout the state including the Upper Delaware River and the Upper Hudson River. More inventories are needed to determine the full extent of its statewide range (Holst 2005).

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	~960 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. Riverine, coldwater stream, mud 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:

G. quadricolor requires the natural, unpolluted, unaltered habitat of a medium to large, swift-flowing river: clear cool water, wooded shorelines, gravel and cobble riffles and projecting boulders interspersed with muddy pools (Cuthrell 2000). Each of these components is critical to the survival of the species. Adult males use rocks and other projections in the rapids as perches from which they make short territorial, mating and foraging flights over the riffle. Adult females live in both deciduous or mixed mature shoreline forest stands (Hamill 2000), sheltering among leaves and branches, up to 800 meters inland from the river (Walker 1958). Eggs are laid in the water over the rapids where they drift downstream to quiet pools. Nymphs spend most of their time buried in the muddy bottom. Newly-emerged adults disperse inland to the safety of the forest to avoid predation until the exoskeleton has hardened and they can fly strongly (Massachusetts Division of Fisheries and Wildlife 2008). A suitable river with rapids and good water quality is not sufficient for the species if the shoreline forest is not protected. Evidence suggests that long-term assured shoreline protection is necessary to ensure the continued existence of the shoreline forest needed by the *G. quadricolor*.

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):*

Adult males perch on exposed rocks in the rapids (Hamill 2010) or on sunny bare patches that are away from the shore. Adult females inhabit shoreline forests, moving to the rapids when ready to mate (Walker 1958, COSEWIC 2008). Eggs are laid over the rapids and the nymphs live in quiet, muddy, downstream pools (Hamill 2010).

Based on records from the NYDDS, most productive habitat in New York included medium-sized to large creeks and rivers with relatively clean water, as well as reaches of riffles or runs (White *et al.* 2011). Walker (1932) found exuviae only below rapids along a quiet part of the river.

In New York, emergence occurs toward the end of May into early June and adults are observed throughout the month of June (White *et al.* 2011). Limiting factors include low population numbers, limited distribution and apparent sensitivity to specific habitat features (Hamill 2010).

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

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.
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	9.1.1 Domestic wastewater (poor water quality)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	9.1.2 Runoff (salt 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)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to *Phanogomphus quadricolor*

Threats to survival and recovery include dam construction, shoreline alteration, pollution, removal of shoreline forests, exotic predatory species, roadkill and climate change. The primary threat is alteration of river habitat.

Any activity which might lead to water contamination or the alteration of natural hydrology could impact *G. quadricolor* populations (New York Natural Heritage Program 2011). Such threats might include agricultural run-off, heavy siltation, flow manipulation of streams and rivers, residential development, and recreational boating (Cuthrell 2000).

Characteristics of *G. quadricolor* make natural recovery by dispersal unlikely. Although capable of strong flight, *G. quadricolor* lives in relatively stable habitats where the requirement for dispersal is low. Their flight behavior of remaining close to the river surface or in forest cover makes them less capable of passive dispersal by wind compared to some other odonates which habitually swarm above the canopy (COSEWIC 2008).

The restricted distribution and apparent small population sizes of *G. quadricolor* make this species vulnerable to local extirpation due to isolated weather-related events or human-caused incidents. These factors could also result in limited genetic variability, leading to less resilient populations. Although the preferred riffle/rapid habitat may be locally distributed on river systems, odonate surveys indicate that a number of other rivers in appear to provide suitable habitat. However, as the species has so far not been found in these rivers, there is an apparent but unknown sensitivity to specific habitat features (Hamill 2010).

The species has not been assessed at this time, but is has been identified by The New York Natural Heritage Program, the NYS Department of Environmental Conservation, and the Nature Conservancy as a second-priority species recommended for assessment of vulnerability to predicted climate change (Schlesinger *et al.* 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:

Article 15 of Environmental Conservation Law provides protection of rivers, streams, lakes and ponds through the Protection of Waters Program.

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

Further research is needed to define the distribution and population size of *G. quadricolor*. In addition, research is required to understand the habitat requirements and threats to this species, and to create appropriate management guidelines for its persistence in known locations (New York Natural Heritage Program 2011). Knowledge gaps include a lack of understanding of the reasons for its limited distribution and for its habitat sensitivity (Hamill 2010).

Inventory should be performed in the Susquehanna and Delaware watersheds where the species was historically known. Due to the presence of multiple records in adjacent Pennsylvania, inventory is also warranted in extreme southwestern New York (Donnelly 2004).

Any efforts to reduce agricultural run-off, habitat alteration (including development and clear cutting) and contamination of streams and rivers should be considered when managing for this species (Cuthrell 2000).

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 *Phanogomphus quadricolor.*

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of rivers and streams, and for rapids clubtail 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

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