Species Status Assessment

Common Name: Midland clubtail **Date Updated:** March 2025

Scientific Name: *Gomphurus fraternus* **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 distributional center for the midland clubtail (*Gomphus fraternus*) is in western lower Michigan in the Southern Great Lakes Forest ecoregion, and extends northwest to Manitoba and northeast to Maine and south to Texas (Donnelly 2004). Despite the extirpation of a large population along the Lake Erie shoreline in southern Ohio prior to 1960 (Catling 2001), and the decline of a formally abundant population along the Niagara River (Van Duzee 1897), the species seems to be expanding its range eastward. New state records have recently been reported in Connecticut (Wagner *et al.* 1995), Vermont (White *et al.* 2012), Delaware (Heckscher and White 2005), and New Jersey (Bangma and Barlow 2010).

There are distinct morphological differences between eastern U.S. populations and those in the central U.S. (Casting and Hughes 2008). Potentially different habitat preferences in western and eastern New York raise further question of species status because of the disjunct distribution in the far eastern (upper Hudson and Lake Champlain watersheds) and western (Lake Erie and Allegany watersheds) parts of the state, which suggests post-glacial colonization via separate pathways (Beatty and Beatty 1968).

Throughout its range, *G. fraternus* inhabits medium to large, moderately to rapidly flowing rivers and streams with sandy and muddy substrates. It is also found in and around large lakes with emergent vegetation (Nikula *et al.* 2003). In New York, two distinct habitat types are occupied in different areas of the state. In the east (as well as in Connecticut and Massachusetts), the species occurs primarily on large rivers and in river-sized portions of lakes, with high wave action and windswept shores where larvae burrow shallowly in fine sand and nutrient-rich, alkaline mud and clay substrates (Wagner *et al.* 1995, Massachusetts NHESP 2003). In contrast, large numbers of larvae along the Ottawa River in Quebec emerged from heavily impacted areas with stone walls along the shoreline and some aquatic plants, debris, and sand/mud substrates (Hutchinson & Menard 1999). The adults perch on the ground on fine-sediment beaches and in shoreline trees, and fly out over the water. Less is known about their habitat requirements in western New York, but the species was found on smaller, well vegetated streams containing cobble bars, rather than on sandy beaches along large rivers.

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: G5

ii. New York: S3 **Tracked by NYNHP?:** Yes

Other Ranks:

-NYS 2025 SGCN: SGCN

-IUCN Red List: Least Concern

-Northeast Regional SGCN: Watchlist

Status Discussion:

White *et al.* (2010) calculated a revised draft S-rank of S3 (either uncommon or local, typically with 21 to 100 occurrences, limited acreage, or miles of stream in New York state) from S1S3.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown			-
Northeastern US	Yes	Unknown	Unknown			-
New York	Yes	Unknown	Unknown	2005-2009		Yes
Connecticut	Yes	Unknown	Unknown			Yes
Massachusetts	Yes	Unknown	Unknown		E	Yes
New Jersey	Yes	Unknown	Unknown			-
Pennsylvania	Yes	Unknown	Unknown		SC	Yes
Vermont	No	-	-			-
Ontario	Yes	Unknown	Unknown			-
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.

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

No estimation of population size for this species has been made based on observations from the late 1990s at sites in Orange and Oneida counties (New York Natural Heritage Program 2007). General reports of observations made prior to this include locations in three additional counties, but information prior to the late 1990s is limited (Donnelly 2004). Therefore, any new location information on *G. fraternus* in New York may reflect heightened interest in surveying for this species rather than a population increase or a range expansion (White *et al.* 2010). Since observations are fairly recent, and the full extent and size of the populations have not been determined, long-term trends are unclear.

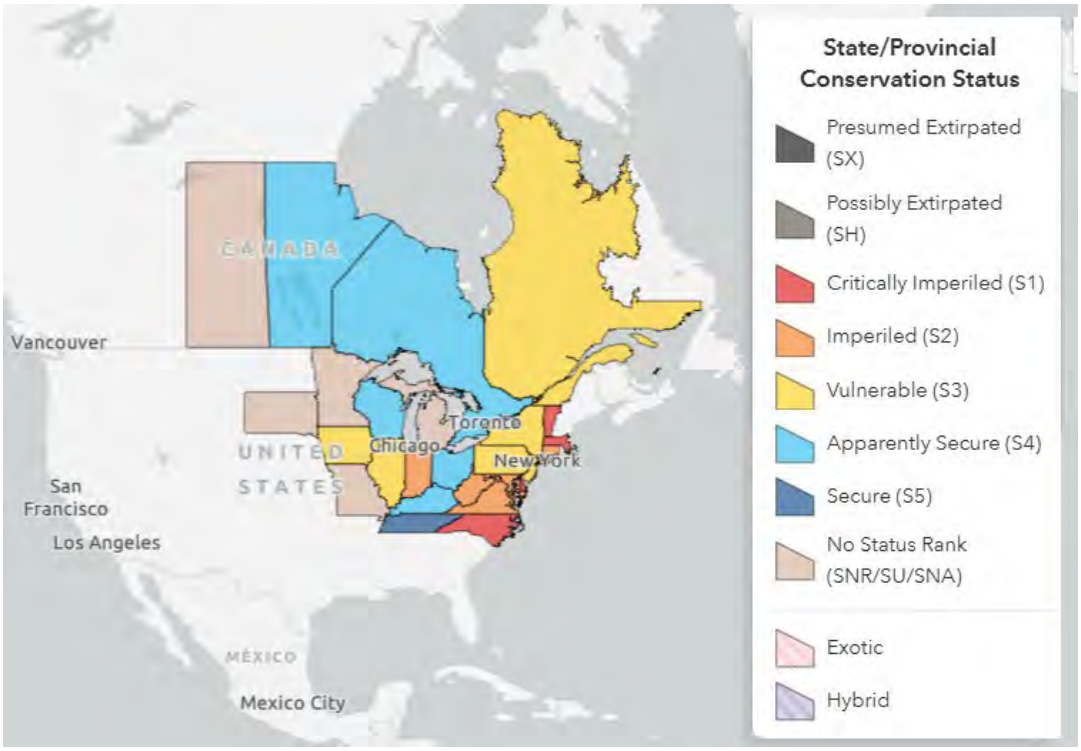

Figure 1. Conservation status of *Gomphurus fraternus* in North America (NatureServe 2025).

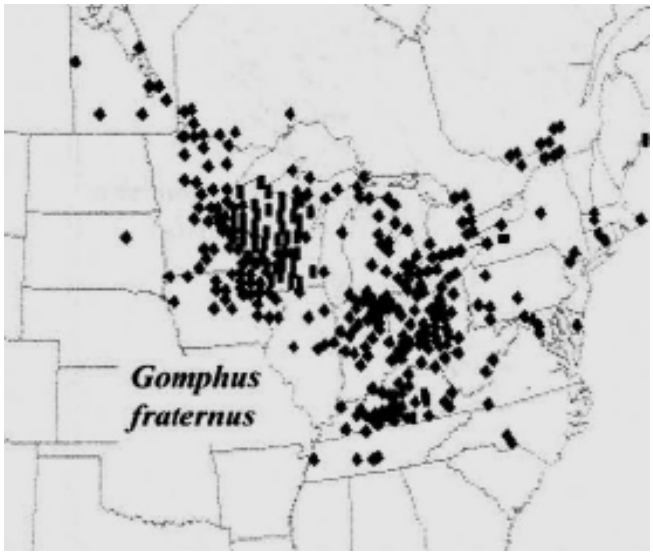

Figure 2. Distribution of midland clubtail in the United States (Donnelly 2004).

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

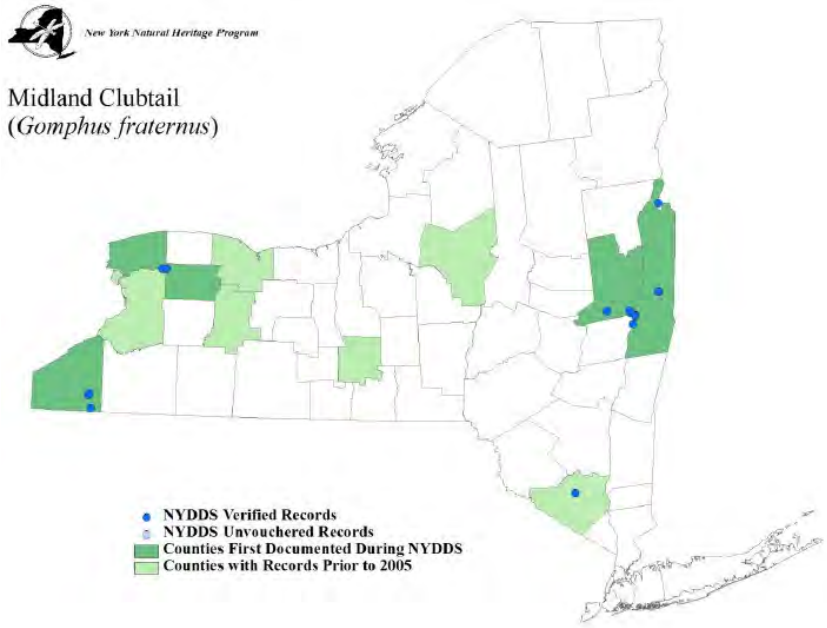

Figure 3. Occurrence records of midland clubtail in New York (White *et al.* 2010).

Details of historic and current occurrence:

Records prior to 1970 include Niagara River and Buffalo, both Erie County, and probably both representing a single occurrence; Mendon Ponds County Park, Monroe County; and Tompkins County, location unknown (Donnelly 1999).

Locations discovered a few years before the New York Dragonfly and Damselfly Survey (2005-2009) include Rome Sand Plains, Oneida County and Wallkill River, Orange County (Donnelly 1999). During the NYDDS *Gomphus fraternus* was documented on eight separate waters spanning seven new counties including; Hoosick River (Buskirk), and Champlain Canal (Chubbs Dock) , Washington County; Cassadaga Creek, Chadokin River Millrace, and Conewango Creek, Chautauqua County; Hudson River, Troy area, Rensselaer County; Mohawk River, several localities, Saratoga and Schenectady Counties; and Tonawanda Creek, Genesee and Niagara Counties.

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	~700 mi to stable

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

b. Headwater Creek, Low-Moderate Gradient

c. Small river, Low gradient

d. Small River, Low-Moderate Gradient

e. Medium River, Low Gradient

f. Medium River, Low-Moderate Gradient

Habitat or Community Type Trend in New York

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

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. fraternus inhabits medium to large, moderately to rapidly flowing rivers and streams with sandy and muddy substrates. It is also found in and around large lakes with emergent vegetation (Nikula *et al.* 2003). In the east (as well as in Connecticut and Massachusetts), the species occurs primarily on large rivers and in river-sized portions of lakes, with high wave action and windswept shores where larvae burrow shallowly in fine sand and nutrient-rich, alkaline mud and clay substrates (Wagner *et al.* 1995, Massachusetts NHESP 2003). In contrast, large numbers of larvae along the Ottawa River in Quebec emerged from heavily impacted areas with stone walls along the shoreline and some aquatic plants, debris, and sand/mud substrates (Hutchinson and Menard 1999). The adults perch on the ground on fine-sediment beaches and in shoreline trees, and fly out over the water. In western New York, the species is found on smaller, well vegetated streams containing cobble bars, rather than on sandy beaches along large rivers. In eastern New York,the Mohawk River and Hudson River locations more closely match locations in Connecticut and Massachusetts in being larger, deeper rivers.

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):*

G. fraternus has two main life stages, aquatic nymph and flying adult. The nymphs spend at least a year but potentially more, maturing and undergoing several molts. They burrow shallowly into the substrate and are voracious predators, feeding on a variety of aquatic life. When they are ready to emerge as adults, the nymphs crawl out onto exposed rocks, emergent vegetation, partially submerged logs, or the steeper sections of river banks. Eclosion generally takes place in the very early morning, presumably to reduce exposure to predation. The recorded flight season extends from late May into mid-July (Massachusetts NHESP). In New York, during the NYDDS records were obtained from early May through the end of June with an apparent peak in early June (White *et al*. 2010).

When mature, males return to the water, spending most of their time near the shoreline and periodically flying over the water, presumably in search of females. Females generally appear at water only when they are ready to mate and lay eggs. The duration of mating in *G. fraternus* has not been recorded, but in similar-sized Odonates can range from minutes to over an hour. Females seem to prefer the more turbulent areas of rivers and lakes for oviposition. It is not known how long the eggs of this species take to develop (Massachusetts NHESP).

Within catchments there are likely no significant barriers to movement of sexually mature adults between microhabitats, with even extensive sections of inappropriate waterway or major obstructions to flow being readily traversed by adults within the flight season. Dams large enough to cause extensive pooling may serve as separation barriers (NatureServe 2012).

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

Any activity which might lead to water contamination or the alteration of natural hydrology could impact *G. fraternus* populations (Novak 2006). Such threats might include roadway and agricultural run-off, industrial pollution, the building of dams, recreational boating, and development near their habitats (Massachusetts Natural Heritage Endangered Species Program 2003,Novak 2006). Nevertheless, many of the New York locations for this species are on creeks or rivers with a muddy substrate suggesting it may be more tolerant of siltation or related impacts than some other river dragonfly species.

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	(changes in hydrology)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
7. Natural System Modifications	7.3 Other Ecosystem Modifications	(stream Channelization in response to severe weather events)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	(runoff/siltation)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.5 Storms & Severe Weather	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to *Gomphurus fraternus.*

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:

Article 15 of Environmental Conservation Law provides some 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:

As with many species, management actions that may benefit *G. fraternus* are not known but, actions which protect water quality and flow would be high priority. Any efforts to reduce roadway and agricultural run-off, industrial pollution, flow manipulation, development of upland stream borders, and contamination of fast-flowing streams should be considered when managing for this species (Massachusetts Natural Heritage Endangered Species Program 2003). Preservation of remaining uplands bordering *G. fraternus* river habitat should also be a top priority (Massachusetts NHESP 2012).

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 *Gomphurus fraternus.*

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