Species Status Assessment

Common Name: Cobra clubtail **Date Updated:** January 8, 2024

Scientific Name: *Gomphurus vastus* **Updated By:** Erin L. White

Class: Insecta

Family: Gomphidae

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

Gomphus vastus changed to *Gomphurus vastus* since the last SWAP revision (Ware et al. 2017). From White et al 2010: "*Gomphus vastus* is widely distributed in the eastern half of the US, with a distributional center along the Ohio River in southern Indiana in the southern Great Lakes forest ecoregion. It ranges northwest to Lake Winnipeg in southern Manitoba, east to New Brunswick, and south to Florida and Texas. New York is near the northeastern range extent (Donnelly 2004b) where the species was known historically only from the Hudson and Chemung Rivers. During the NYDDS, a large population was rediscovered along the mid-Hudson River from around Albany north to Schuylerville and a short distance up the Mohawk River. The Susquehanna watershed population, known since 1940, is also apparently extant, as exuviae were found along the Susquehanna River near Appalachian in Tioga County in 2009. This species also may occur in the Delaware River, as exuviae have been collected on the New Jersey side (Bangma and Barlow 2010), as well as farther upriver on the Mohawk where an unverified adult was reported near Lock 12 in Montgomery County. A vague pre-NYDDS record from Orange County (Donnelly 2004a) may have come from the Wallkill River. The species might also be looked for along northern Lake Champlain and/or the St. Lawrence River since there are several records from the Ontario/Quebec border very close to New York. A cluster of records in northwestern Pennsylvania suggests that additional inventory in the Allegany watershed in southwestern New York is warranted. [*G. vastus*] inhabit large forested sandy-bottomed rivers with alternating stretches of sand and gravel and more rarely large wind-swept lakes."

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:** S1 **Tracked by NYNHP?:** Yes

Other Ranks:

-NYS 2025 SGCN Status: High Priority Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-Northeast Regional Rank (White et al.2015): R4, Shared Responsibility

Status Discussion:

White *et al.* (2010) calculated a revised draft S-rank of S1 (5 or fewer occurrences, or few remaining acres or miles of stream, or factors demonstrably making it especially vulnerable to extinction

rangewide or in New York State). Based on rarity, trend, and threat information, this species should move from an SPCN to an SGCN.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown	Last assessed for US 1985; Canada 2012		-
Northeastern US	Yes	Unknown	Declining	Pre and post 2000	R4	No
New York	Yes	Unknown	Unknown	Pre and post 2005	S1; HPSGCN	No
Connecticut	Yes	Unknown	Unknown		S2S3; SC	Yes
Massachusetts	Yes	Unknown	Unknown		S3; SC	Yes
New Jersey	Yes	Unknown	Unknown		S3	Yes
Pennsylvania	Yes	Unknown	Unknown		S4	No
Vermont	Yes	Unknown	Unknown		S1	Yes
Ontario	Yes	Unknown	Unknown		S2	-
Quebec	Yes	Stable	Stable		S4	-

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):*

The records obtained for this species during the New York Dragonfly and Damselfly Survey (2005-2009) might suggest a stable trend to a decline of 50%, but only two of the records indicate continued presence on historically occupied rivers. The lack of many records since 2010 are likely due to no concerted survey effort for the species and populations on the Hudson and Mohawk likely persist along with the Susquehanna watershed population. More effort should be made on the Wallkill River in Orange County.

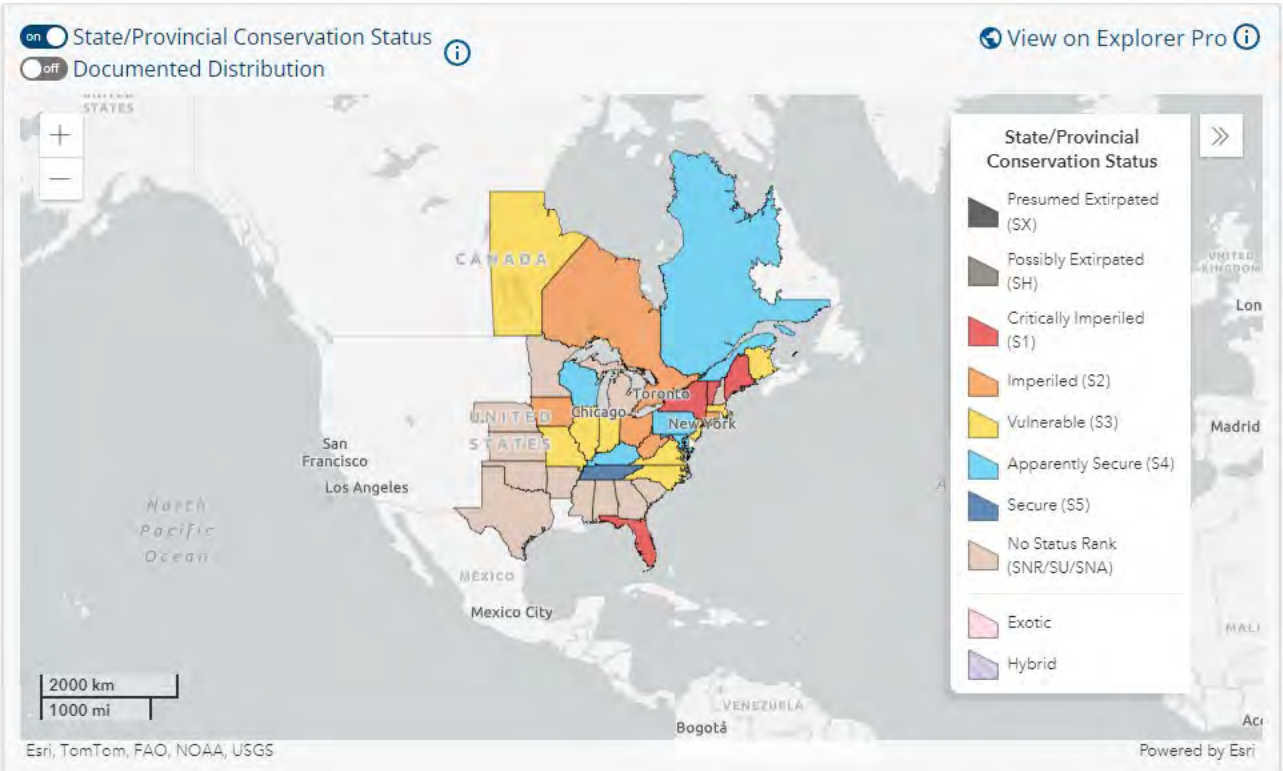

Figure 1. Conservation status of the Cobra Clubtail in North America (NatureServe 2024).

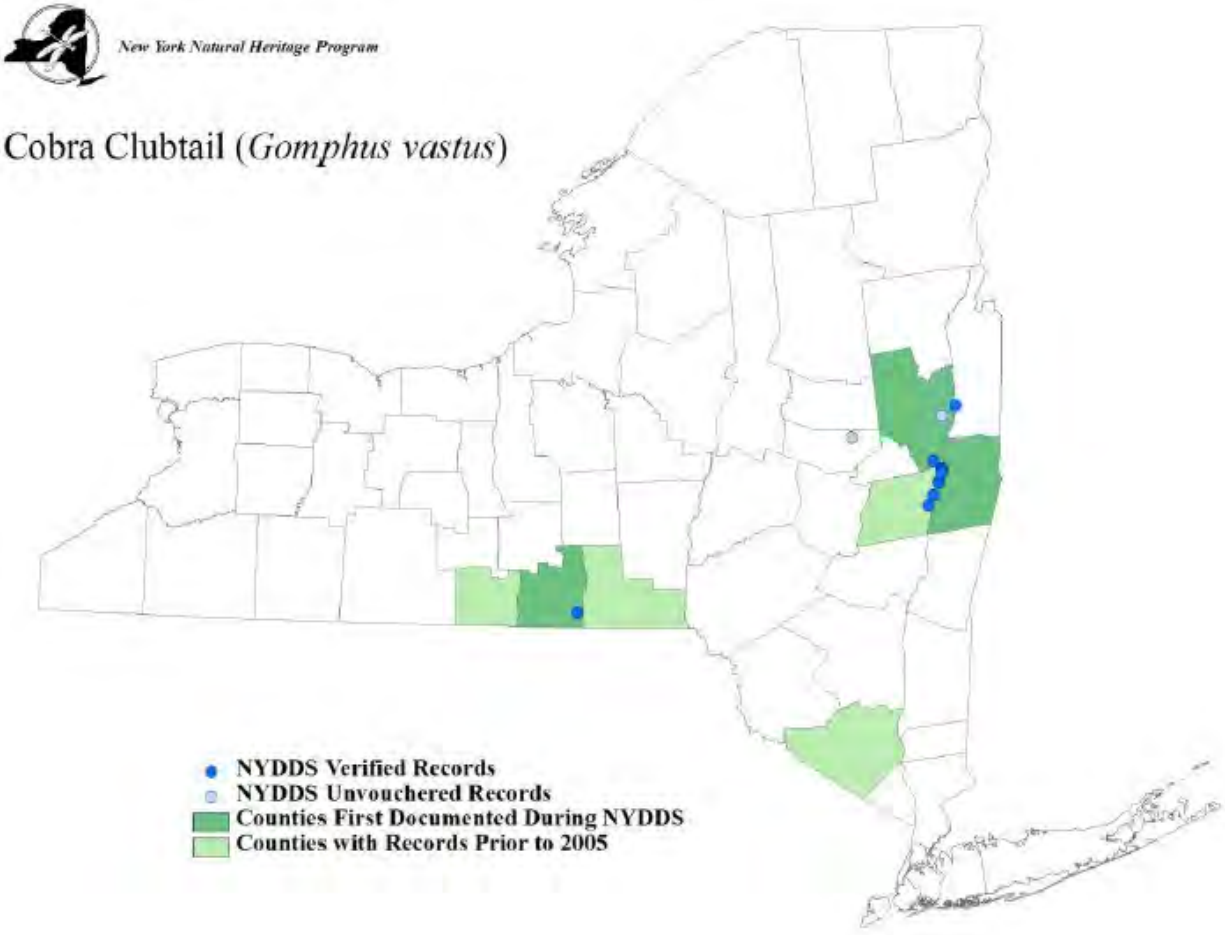

Figure 2. Occurrence record of the Cobra Clubtail in New York during the NYDDS (White *et al.* 2010).

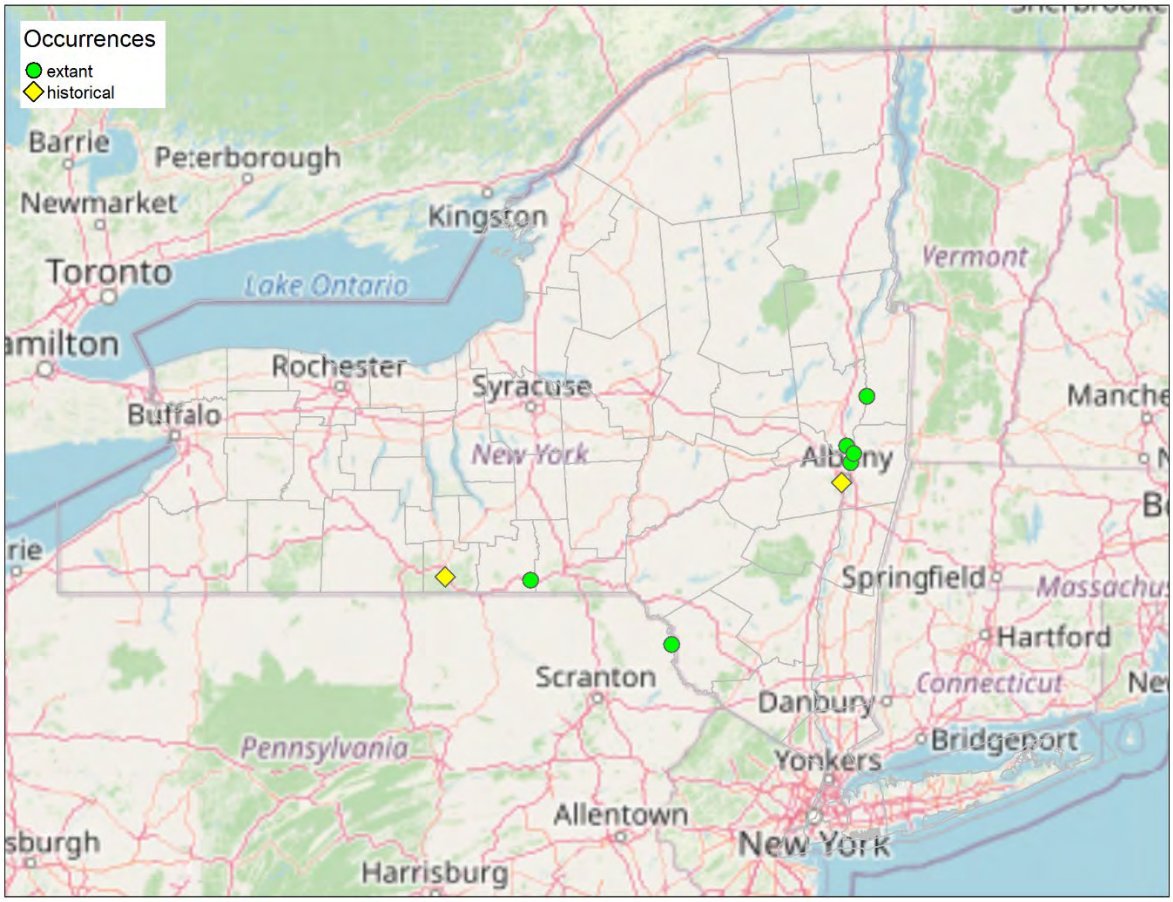

Figure 3. NYNHP element occurrence records for the Cobra Clubtail in NY (NYNHP 2024).

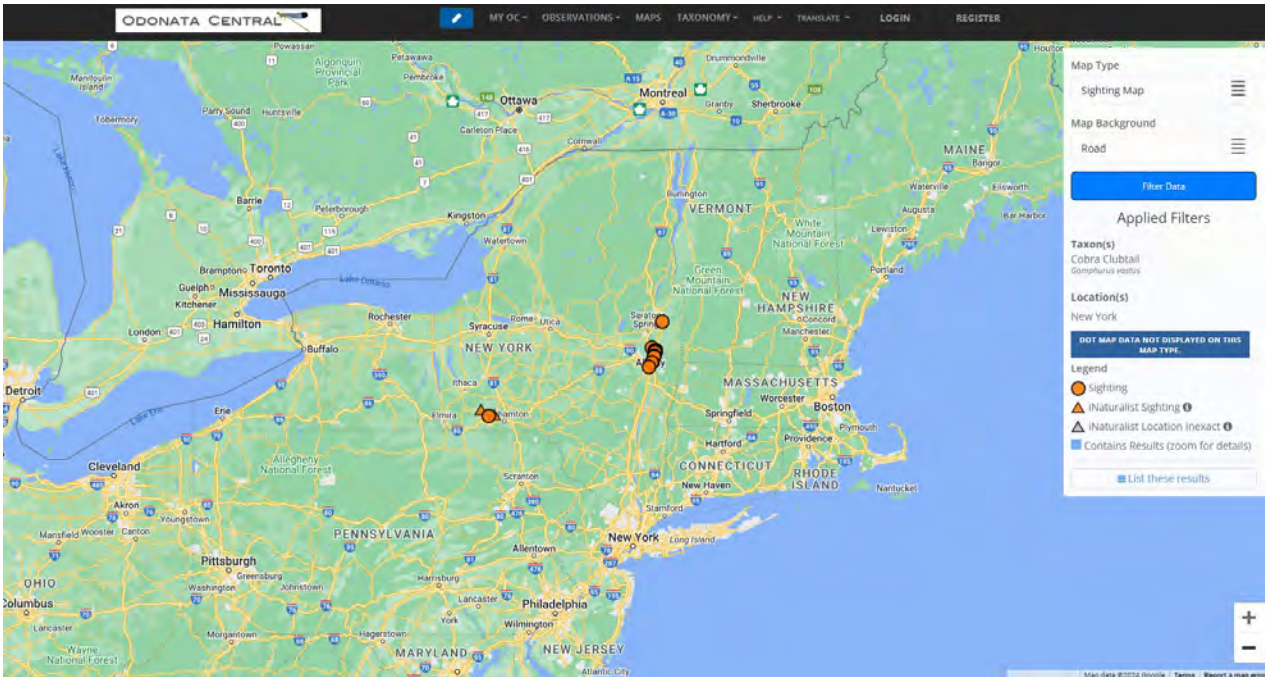

Figure 4. Distribution of the Cobra Clubtail in NY (Abbott 2024).

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

While the number of locations, or populations, for this species in New York appears to be limited, the Hudson River population (or populations) cover a linear extent of over 30 miles. Less information is available for the Mohawk and Susquehanna Rivers, and there may be other populations in the state that have not yet been documented. Adults are especially difficult to capture.

Years	# of Records	# of Counties	% of State
Pre-2004	4	4	1-6.5%
2005-2009	6	3	1-5%
2010-2023	2	2	1-5%

Table 1. Records of cobra clubtail in New York.

Details of historic and current occurrence:

There are four historical records for this species: one from Bethlehem (aka Kenwood), Albany County in 1876, one from Elmira, Chemung County in 1940, one from Broome County and one from Orange County (Donnelly 2004).

Recent records obtained during the New York Dragonfly and Damselfly Survey (2005-2009), include a number of locations on the Hudson River, both north and south of the Troy dam from around Albany north to Schuylerville, Saratoga County; the Mohwak River close to its confluence with the Hudson, along with an unverified adult record from the Mohawk in Montgomery County; Susquehanna River near Appalachin, Tioga County (White *et al.* 2010). One record from Tioga County in 2018, close to the 2009 sighting, and one record from Broome County on the Choconut in 2017 reconfirm them in the Susquehanna watershed in recent years. Depending upon whether one considers locations north and south of the Troy dam and areas on the Mohawk River as separate occurrences, there are between four and seven documented, extant populations for this species in New York. The populations on the Hudson and Mohawk Rivers are likely still extant though no known survey efforts have taken place since 2010.

If it occurs in 4/62 counties, that is very roughly about 6.5% of the state, though the occupied area of those counties is rather small, so a range is estimated.

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 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. Size/Waterbody Type: Medium-Large River

b. Geology: Moderately Buffered

c. Temperature: Transitional Warm

d. Gradient: Low to Very Low

Habitat or Community Type Trend in New York

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

From White et al. 2010: "*G. vastus* inhabits large forested sandy-bottomed rivers with alternating stretches of sand and gravel and more rarely, large wind-swept lakes. Along the Ottawa River in Quebec, large numbers of larvae emerged from heavily impacted areas with stone walls along the shoreline and some aquatic plants, debris, and sand/mud substrates (Hutchinson and Ménard 1999). Some stretches of the Hudson River in New York where this species occurs have been similarly impacted. Adults are believed to take refuge high up in large trees along the shoreline or in nearby uplands since they are seldom observed after emergence. During breeding mature males can be seen resting on sandy stretches of shoreline, or perched in overhanging vegetation (Massachusetts NHESP 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):*

From White et al. 2010: “The great majority of *G. vastus* records during the NYDDS were of exuviae; however, a few adults were collected. All of the encounters were primarily during the month of June, with one collection of an adult on 10 July. This corresponds well with the flight season in Wisconsin (Wisconsin Odonata Survey 2009) and New Jersey (Bangma and Barlow 2010); however, in Massachusetts (Massachusetts NHESP 2003) and Ohio (The Ohio Odonata Society 2000), it is seen through July and into August.”

“The nymphs, like those of all dragonflies, are aquatic. They spend at least a year maturing, while undergoing several molts during this period. When ready to emerge, the nymphs crawl out onto exposed rocks, emergent vegetation, partially submerged logs, or the steeper sections of river banks, and undergo transformation to adults. They then fly off to seek refuge in the vegetation of adjacent uplands. Here they spend several days or more feeding and maturing, before returning to their breeding habitats” (Massachusetts NHESP 2008).

“When mature, the males return to the water where they can be found resting on sandy stretches of shoreline, or perched on overhanging vegetation. Females generally appear at water only for a brief period when they are ready to mate and lay eggs” (Massachusetts NHESP 2008).

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

Little published information is available citing specific cases of negative impacts to the various species of river dwelling odonates, but any activities which degrade the sensitive hydrology of these habitats would threaten populations of these species. The most important likely negative impacts would come from changes in the natural hydrology such as the building of dams, increases in the sediment load of the river (such as might result should logging occur down to the river edge), changes in dissolved oxygen content, direct effects of pesticides, and chemical contamination by runoff of agricultural or other discharge (Novak 2006). It should be noted that in New York, this species occurs immediately downstream of the dam at Troy and here and in other locations, it occurs in stretches of rivers that are fairly heavily impacted in some respects, suggesting that this species may be less sensitive to some types of disturbances than some other species of river dragonflies. In New Hampshire, this species regularly occurs in areas impacted by dams and/or adjacent to degraded shorelines (P. Hunt, personal communication).

The cobra clubtail was classified as “not vulnerable/presumed stable” (PS) to predicted climate change in an assessment of vulnerability conducted by the New York Natural Heritage Program. Available evidence does not suggest that abundance and/or range extent within the geographical area assessed with change (increase/decrease) substantially by 2050. Actual range boundaries may change (Schlesinger et al. 2011).

Threats to NY Populations	
Threat Category	**Threat**
1. Residential & Commercial Development	Housing & Urban Areas (habitat loss)
2. Pollution	Agricultural & Forestry Effluents (runoff, siltation)
3. Climate Change & Severe Weather	Storms & Flooding

4. Natural System Modifications	Other Ecosystem Modifications (stream channelization in response to severe weather events)
5. Pollution	Household Sewage & Urban Waste Water (poor water quality)

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 permit program. However, this protection may not be adequate to protect the habitat/species, at least in some locations.

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

Further inventory for this species in New York State is needed. Focus areas should include the Delaware River, as exuviae have been collected on the New Jersey side (Bangma and Barlow 2010), farther upriver on the Mohawk where an unverified adult was reported near Lock 12 in Montgomery County, and along northern Lake Champlain and/or the St. Lawrence River since there are several records from the Ontario/Quebec border very close to New York. A cluster of records in northwestern Pennsylvania suggests that additional inventory in the Allegany watershed in southwestern New York is warranted (White *et al.* 2010).

The species occurrence on some fairly heavily impacted river stretches suggest that this species may be less vulnerable to at least some types of disturbances than some other river dragonflies. Additional information on threats, especially to the larvae, is needed.

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2006) includes recommendations for the following actions for odonates of rivers and streams, and for cobra 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.

Conservation Actions	
Action Category	**Action**
1. Land/Water Protection	Resource and habitat protection
2. Land/Water Protection	Site/area protection
3. Land/water management	Site/area management
4. Land/water management	Habitat & natural process restoration
5. Land/water management	Invasives/problematic species control
3. Education and Awareness	Awareness & Communications
3. Education and Awareness	Training
4. Law and Policy	Policies and Regulations

Table 3. Recommended conservation actions for cobra clubtail

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