

Species Status Assessment

Common Name: Forcipate emerald **Date Updated:** December 15, 2023

Scientific Name: *Somatochlora forcipata* **Updated By:** Erin L. White

Class: Insecta

Family: Corduliidae

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

The center of distribution for the forcipate emerald (*Somatochlora forcipata*) lies in northcentral Ontario in the central Canadian Shield forest ecoregion and ranges northwestward to the Northwest Territories, south to northern Wisconsin and West Virginia, and northeastward to Newfoundland and Labrador (Donnelly 2004b). New York lies near the center of the range, but this species was not discovered in the state until 1980. During the 1990s, it was found in large bog complexes in Franklin County (Bloomindale Bog, Spring Pond Bog, Kildare Peatlands), and St. Lawrence County (Hitchins Pond Bog) as well as sites in Essex and Lewis County (Donnelly 1999, 2004a). Additional new bog sites in the Adirondacks were added during the New York State Dragonfly and Damselfly survey (NYDDS) in Hamilton and Franklin Counties and at least two of the known sites have been extant for 10-15 years. In 2007, the range was extended significantly southward in New York to the Rensselaer Plateau (White *et al.* 2010).

Throughout its range, this species inhabits small spring-fed boggy streams and it feeds in sunny glades and along roads, perching in trees 15-20' high (Walker & Corbet 1975). In New York, specific habitat characteristics include large bogs and boggy swales (White *et al.* 2010).

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: Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-Northeast Regional Rank (White *et al.* 2015): R3, significant responsibility

Status Discussion:

White *et al.* (2010) calculated a revised draft S-rank of S1S3 from S1. Based on observations since the NYDDS, the S rank should be refined and will likely become S2S3.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown	Last assessment US in 2004; Canada 2012		-
Northeastern US	Yes	Unknown	Declining	Pre and post-2000	R3; RSGCN	Yes
New York	Yes	Unknown	Unknown	Pre and post-2005	S1; SGCN	Yes
Connecticut	No	-	-			-
Massachusetts	Yes	-	-		S1; SC	Yes
New Jersey	Yes	-	-		S3	Yes
Pennsylvania	Yes	-	-		S2	Yes
Vermont	Yes	Unknown	Unknown		S2	Yes
Ontario	Yes	-	-		S4	-
Quebec	Yes	Stable	Stable		S5	-

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 although at least one of the known sites for the species has been visited by experienced surveyors a number of times since the initial discovery.

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

Records for this species are too few and infrequent to accurately assess population trends. The number of new records in 2005–2009 and more recently likely reflects heightened interest and survey effort during the New York Dragonfly and Damselfly Survey, rather than an increasing trend (Paul Novak, pers. comm.), though it seems to occur in more locations than other rare emeralds. The long-term trend appears unclear as recent records could reflect a recent range expansion, but more likely reflects an increase in survey efforts.

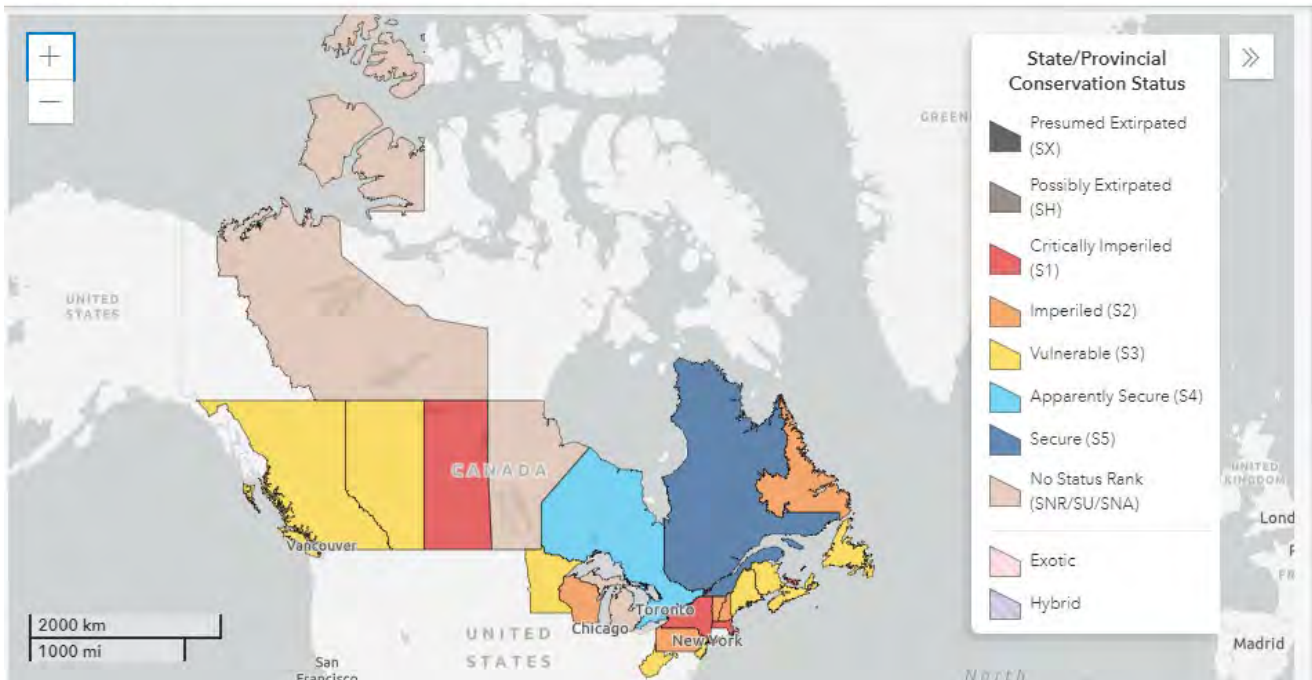


Figure 1. Conservation status of the Forcinate Emerald in North America (NatureServe 2023).

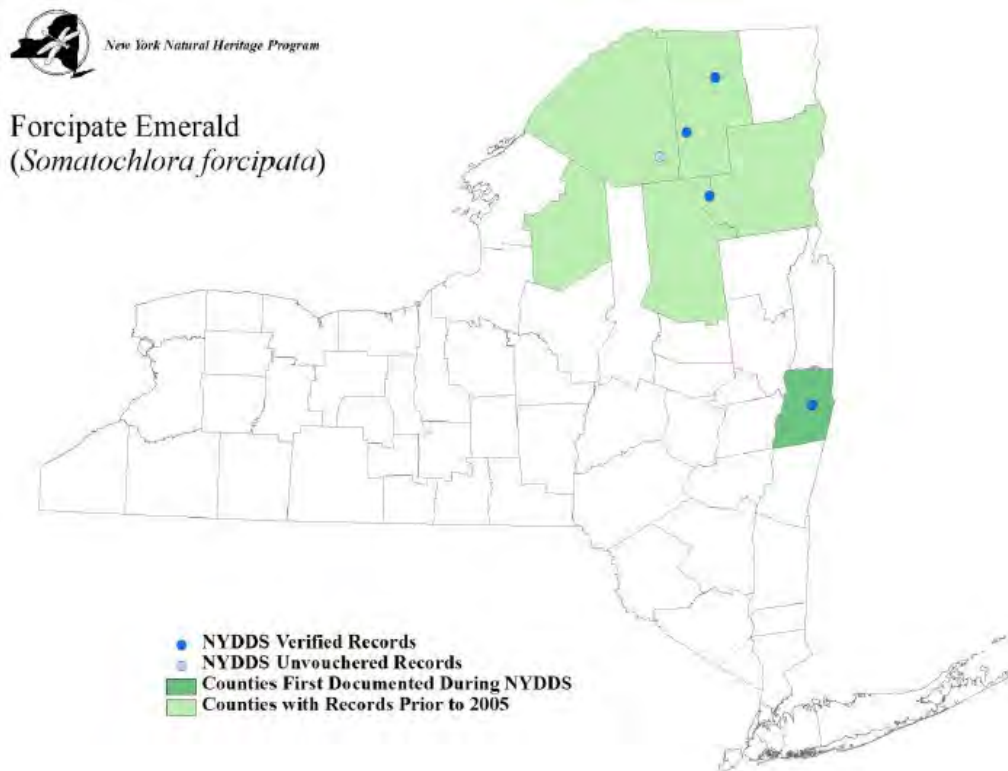


Figure 2. Occurrence record of the forcipate emerald in New York during the NYDDS (White *et al.* 2010).

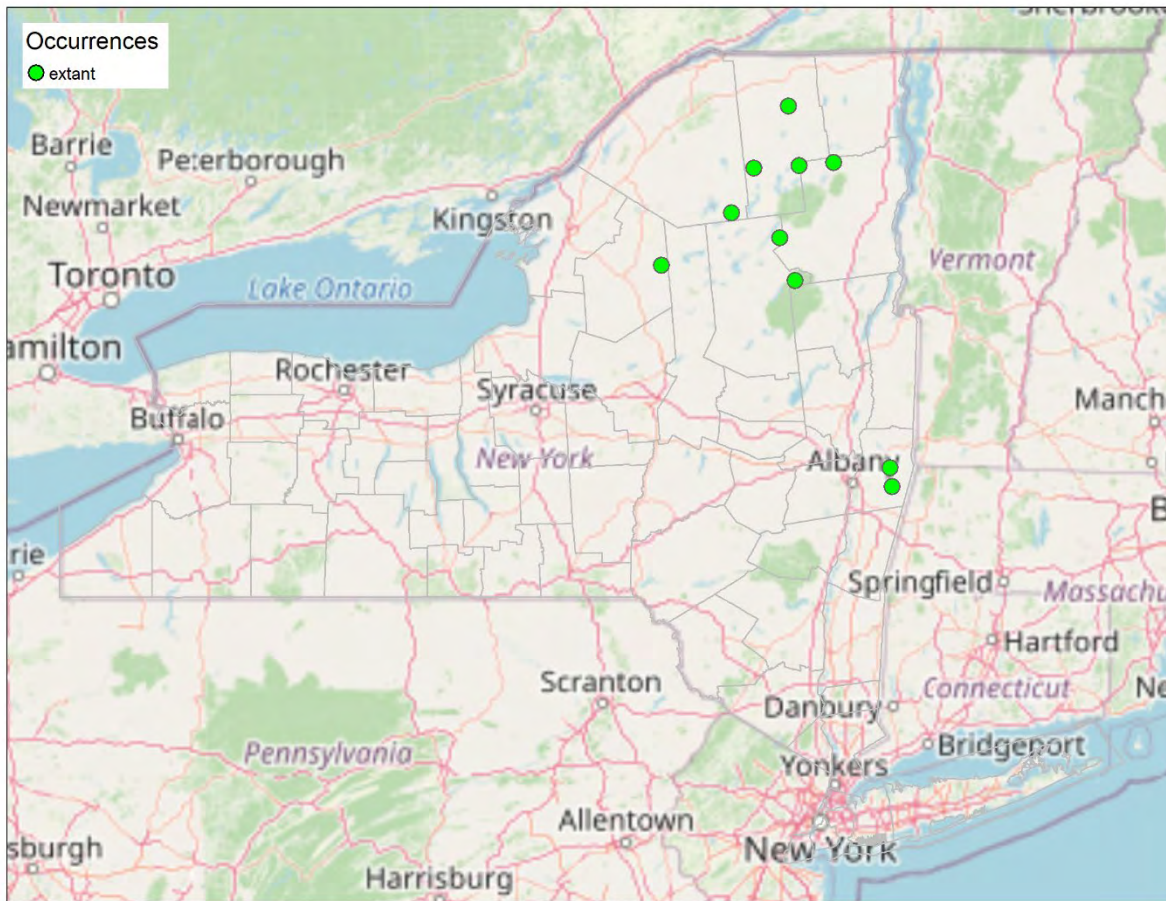


Figure 3. NYNHP element occurrence records for the forcipate emerald in New York (NYNHP 2023a).

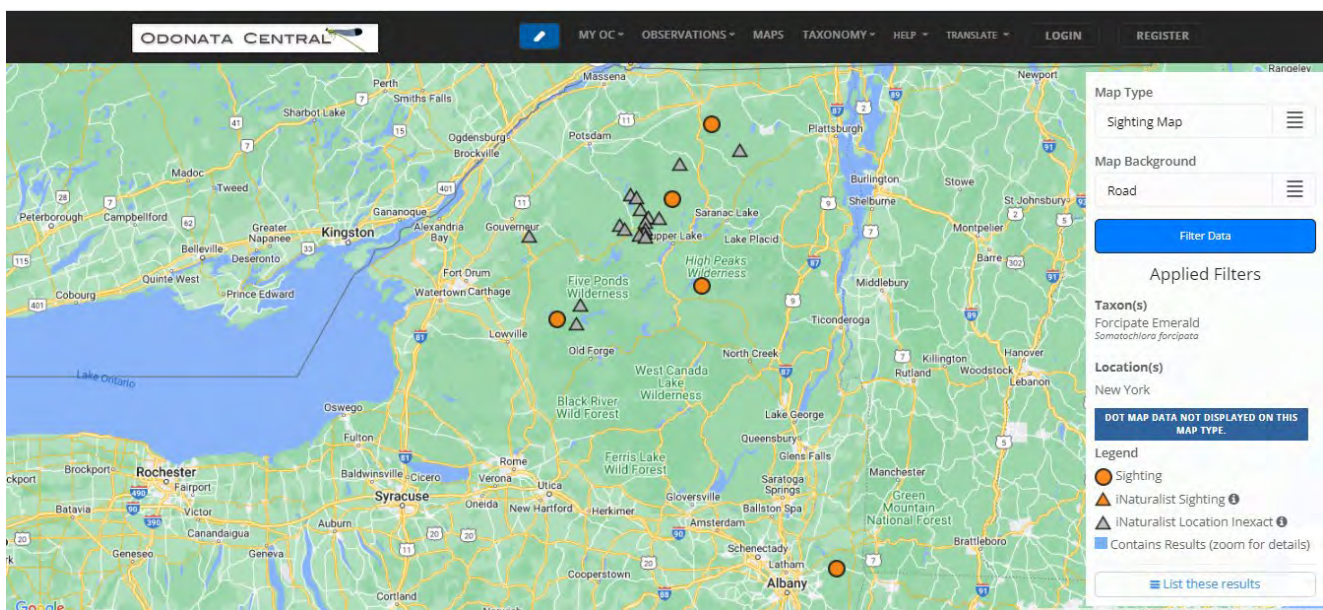


Figure 4. Distribution of the Forcipate Emerald in New York (Abbott 2023).

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

Forcipate Emeralds are not easy to observe due to their elusive behavior of perching in trees up to 20 feet above ground (Paulson 2011). A recent increase in records could reflect a recent range expansion, but more likely reflects an increase in survey efforts in the north country by an active volunteer.

Years	# of Records	# of Counties	% of State
Pre-2004	5	5	1-7%
2005-2009	3	3	1-5%
2010-2023	10	6	1-10%

Table 1. Records of forcipate emerald in New York.

Details of historic and current occurrence:

One location in Hamilton County, documented in 1980 is the only “historical” location for this species in New York (Donnelly 1999).

During the 1990s, *Somatochlora forcipata* was discovered in large bog complexes in Franklin County (Bloomindale Bog, Spring Pond Bog, Kildare peatlands), and St. Lawrence County (Hitchins Pond Bog) as well as sites in Essex and Lewis County (Donnelly 1999, 2004a). Additional new bog sites in the Adirondacks were added during the NYDDS in Hamilton (2 sites) and Franklin (1 site) Counties and at least four of the known sites have been extant for 10-15 years. In 2007, the range was extended significantly southward in New York to the Rensselaer Plateau when an adult was captured at the Dyken Pond Educational Center (NYNHP 2023a). Since the NYDDS, they have been documented at 2 sites in St. Lawrence County, 3 sites in Franklin County, 1 site in Hamilton County, 1 site in Essex County, 1 site in Lewis County, and one additional site in Rensselaer County (Seven Hills Fen). It is extant (since 2005) in 4 locations in Franklin Cty, 2 locations in St. Lawrence Cty, 1-2 locations in Hamilton Cty, 1 location in Essex Cty, 1 location in Lewis Cty, and 2 locations in Rensselaer Cty (NYNHP 2023, iNaturalist 2023).

If it occurs in 6/62 counties, that is very roughly about 10 % of the state, though the occupied area of those counties is rather small. There are likely additional undocumented populations in northern NY and the % of the state can be estimated to be 1-10% currently.

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 mi

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):

1. Boreal Forested Peatlands
2. Open Acidic Peatlands
3. Open Alkaline Peatlands

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/Community Trend	Time frame of Decline/Increase
Yes	Yes	Declining	Declining long-term, stable short-term

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:

“Throughout its range, this species inhabits small spring-fed boggy streams and it feeds in sunny glades and along roads, perching in trees 15-20’ high” (Walker and Corbet 1975). In New York, specific habitat characteristics include large bogs and boggy swales. One site was described as follows: “the boggy swale has a lush growth of *Carex*, blue flag, and sphagnum. Water flows slowly through the swale and pools are present in some areas; the water was several inches deep in July. The swale is connected to a large poor fen/spruce tamarack bog complex” (White *et al.* 2010). “Boreal *Somatochlora* nymphs take at least 4 years to develop and they occupy shallow water meadows, sedge-filled pools, and sedge-filled shallows of small ponds. During this time, they are drought resistant and can survive dry conditions for up to 4-9 months through certain physiological adaptations and by actively burrowing in mud and seeking out sheltered locations in moss, cracks in mud, crevices in rotting logs, and sedge root clumps” (Wiley and Eiler 1972).

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):

Donnelly (1999) reported the flight season in New York as 23 June to 11 July. This is significantly shorter than reported in Maine (Brunelle and deMaynadier 2005) and Massachusetts (Nikula *et al.* 2003) which runs from the end of May to early-September, which is also similar to the flight season reported by Walker and Corbet (1975), who stated that July was the peak flight season. Phenology data both from NY Natural Heritage database records, as well as the newer NYDDS sightings, supports Donnelly's (1999) description of a more protracted three week flight season in New York, from 23 June to 15 July (White *et al.* 2010).

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

Little published information is available citing specific cases of negative impacts to bog/fen odonates, but any activities which degrade the sensitive hydrology of these habitats would threaten populations of these species. Examples include peat mining, ditching, filling, eutrophication and changes in dissolved oxygen content, direct effects of pesticides (e.g. for mosquito control or from agricultural runoff), and increases in the sediment load of the wetland (such as might result should logging occur down to the wetland edge). Natural succession could also threaten some sites as shallow pools fill in with vegetation over time (Novak 2006).

The forcipate emerald 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. Climate Change & Severe Weather	Habitat Shifting & Alteration
2. Climate Change & Severe Weather	Temperature Extremes
3. Pollution	Industrial & Military Effluents (acid rain, mercury)
4. Climate Change & Severe Weather	Droughts

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:

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 has the authority to regulate smaller wetlands within the Adirondack Park.

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

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for odonates of bogs, fens, and ponds, and for the forcipate emerald 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 specific 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).

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 forcipate emerald

VII. References

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