

Species Status Assessment

Common Name: Delicate emerald **Date Updated:** November 9, 2023

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

Class: Insecta

Family: Cordulidae

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

S. franklini is one of a number of primarily boreal emeralds, many of which are on the rear edge of their northern ranges and limited to the coldest regions of the state. It inhabits remnant boreal habitats such as big bog complexes in the northern Adirondacks. As with its preferred habitat, this species is a disjunct in NYS, and therefore at risk primarily owing to warming climates as its range retracts northward (Corser 2013).

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- stable

-Northeast Regional Rank (White et al.2015): R3

Status Discussion:

S. franklini was first discovered in the state in 1995 at Spring Pond Bog (Donnelly, 1999). This species was discovered at just a single locale in Franklin County during NYDDS (White *et al.* 2010). In NYS, this species (Fig. 3) has been documented in 6-8 sites (in four counties) in northern NY since 2005.

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown			Choose an item.
Northeastern US	Yes	Unknown	Declining	pre-post 2000	R3	Choose an item.

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
New York	Yes	Unknown	Increasing	Pre and post 2005	S1 ;SGCN	Yes
Connecticut	No	-	-			-
Massachusetts	No	-	-			-
New Jersey	No	-	-			-
Pennsylvania	No	-	-			-
Vermont	Yes	Unknown	Declining	1990s-2000s	S1	Yes
Ontario	Yes	Increasing	Increasing	pre-post 1983/84	S4	-
Quebec	Yes	Unknown	Unknown		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 (NYDDS) 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*):

White *et al.*, (2015) found declines in county-level distributions since 2000, but slight increases since 1970 throughout the entire Northeast. Many new town records were found in Maine during statewide surveys (Brunelle and DeMayanadier, 2005) and a few new town records were recently located in NH as well (Hunt, 2012). In NYS, this species (Fig. 3) has been documented in 6-8 sites (in four counties) in northern NY since 2005. Long-term information regarding population size is not available prior to the late 1990s (New York Natural Heritage Program 2023). Since observations are fairly recent, and the full extent and size of the populations have not been determined, long-term trends are unclear.

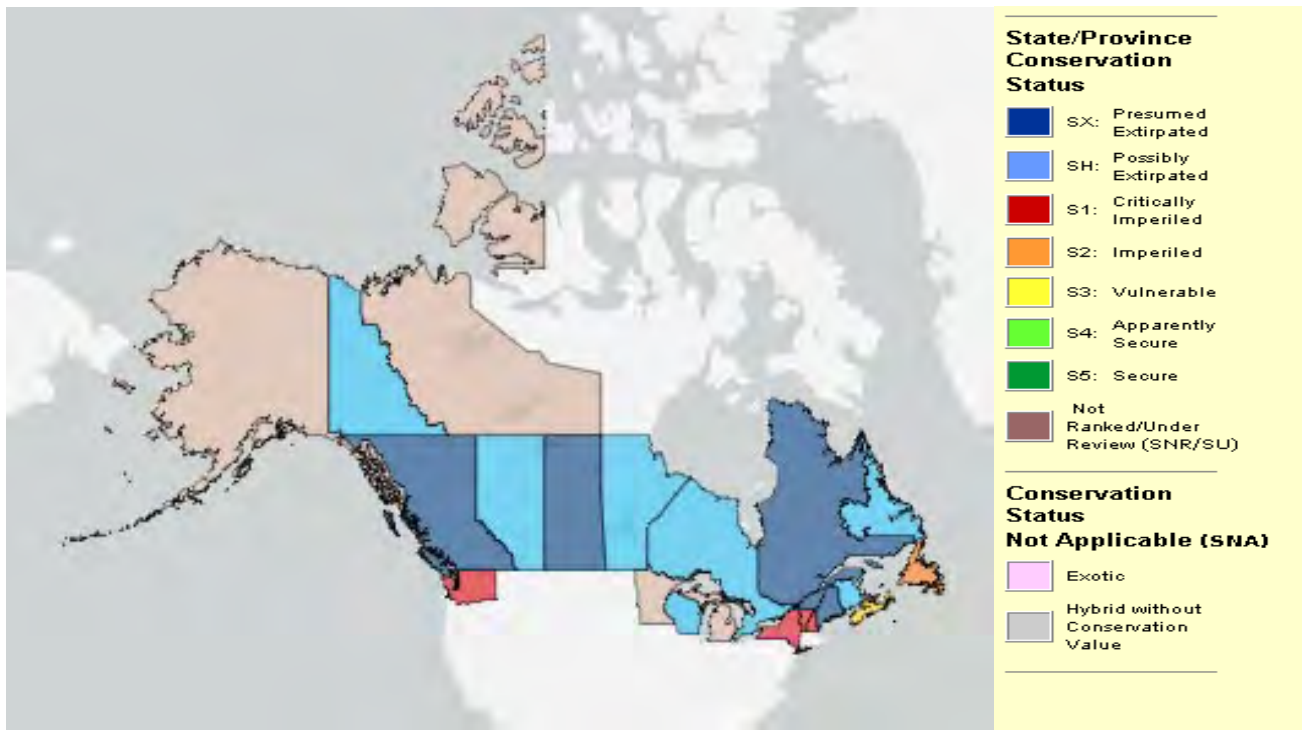


Figure 1. Conservation status of the delicate emerald in North America (NatureServe 2023).

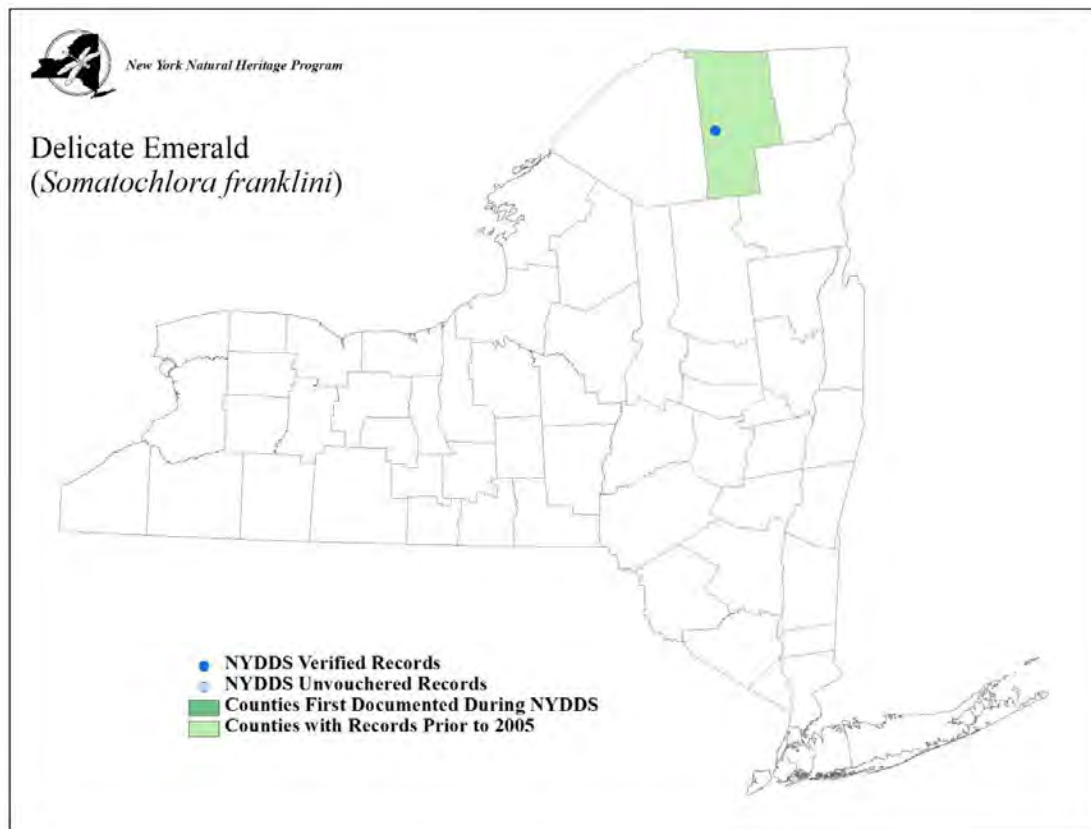


Figure 2. Occurrence record of the delicate emerald in New York during the NYDDS (White *et al.* 2010).

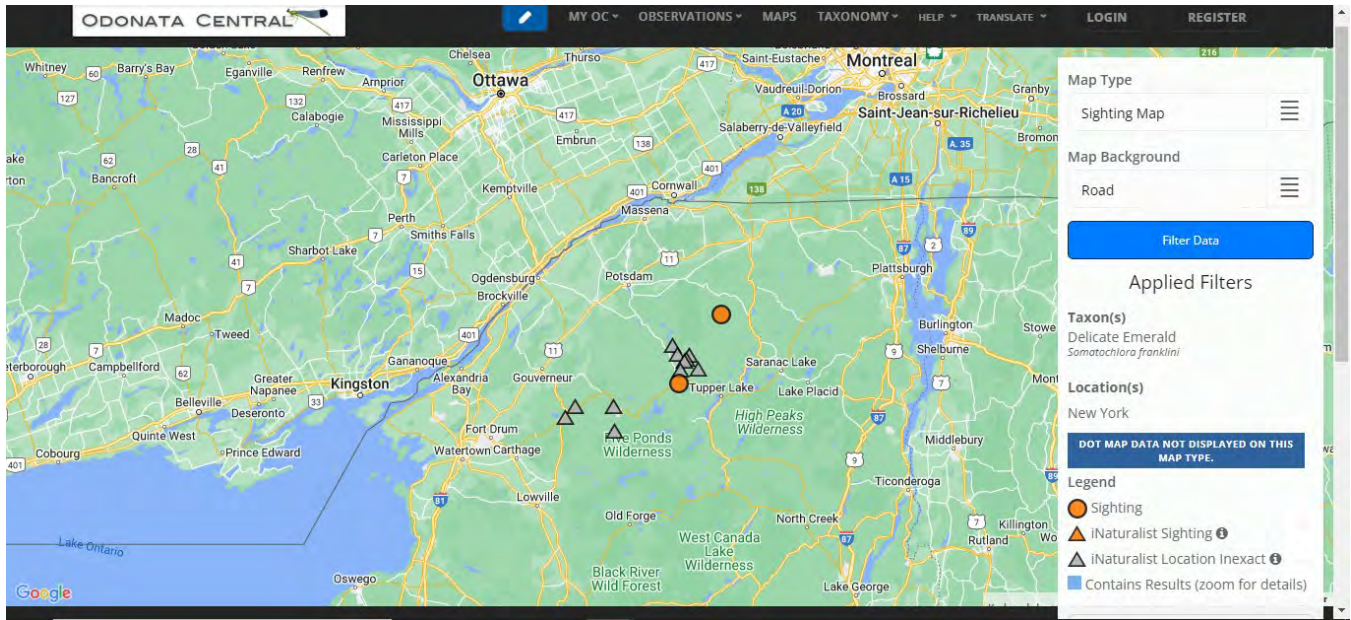


Figure 3. Distribution of the delicate emerald in New York (Abbott 2023).

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

Years	# of Records	# of Counties	% of State
Pre-2004	1	1	<1%
2005-2009	1	1	<1%
2010 - 2023	6-8	4	1-7%

Table 1. Records of delicate emerald in New York.

Details of historic and current occurrence:

A single locale was discovered in Franklin County in 1995 (Donnelly, 1999). In NYS, this species was known to occupy 1 site in Franklin County from 2008 (Fig.2). Recent surveys, 2010 to present, have also turned it up in 2 locations in Essex County, another location in Franklin County, at least one location in Lewis County, and at least one location in St. Lawrence County. (Fig. 3).

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. There are likely additional undocumented populations in northern NY and the % of the state can be estimated to be 1-7% 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%	Peripheral	Unknown

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 Peatland
2. Open Acidic 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” (Walker and Corbet 1975). This species is found in sedge and moss-filled fens, at the foot of hillsides below seepage or in wide-open meadows. It is not usually encountered near open water. Adult males fly through stretches of tall grasses, sedges, and shrubs. In New York, specific habitat characteristics include large bogs and boggy swales. “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):

Very little is known. *Somatochlora* nymphs take at least 4 years to develop. The flight season of adults in NYS is late May-August (White *et al.*, 2010, Abbott 2023).

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). Boreal odonate species on the rear edge of their often large ranges well into northern Canada are of special conservation concern in places like NYS where they are on their extreme southern range margin, owing especially to climate change (Corser *et al.*, 2014).

Threats to NY Populations	
1. Natural System Modifications	Dams & Water Management/Use (alteration of natural hydrology)
2. Natural System Modifications	Other Ecosystem Modifications (succession)
3. Climate Change & Severe Weather	Temperature Extremes
4. Biological Resource Use	Logging & Wood Harvesting (siltation)
5. 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:

Article 15 of Environmental Conservation Law provides protection of rivers, streams, lakes and ponds through the Protection of Waters permit program. This is not 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:

Any measures to reduce water contamination or hydrological alteration such as agricultural run-off, upland development, and damming that would affect flow of small forested streams should be considered when managing for this species (New York Natural Heritage Program 2023b). Monitoring some subset of sites in the face of climate change may shed light on whether this is a threat to the species or a possible factor involved. Conservation actions following IUCN taxonomy are categorized in the table.

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

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).

Other action:

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 2. Recommended conservation actions for delicate emerald

VII. References

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Date first prepared	October 29, 2013
First revision	February 11, 2014 (Samantha Hoff)
Latest revision	November 9, 2023 (Erin L. White)