

# Species Status Assessment

**Common Name:** A mayfly

**Date Updated:** February 2025

**Scientific Name:** *Dannella provonshai* **Updated By:** Luke Myers and NYNHP

**Class:** Insecta

**Family:** Ephemerellidae

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

*Dannella provonshai* is a species of mayfly of which little is known in New York. It is known from one location (in 1923) in the SE Lake Ontario watershed (Cayuga County). Outside of New York, this uncommon species has been found in Alabama, Arkansas, Kentucky, and Tennessee (McCafferty 1977, Randolph and McCafferty 1998, McCafferty and Webb 2006, Parker et al. 2007). Merritt et al. (2008) report the habitat of this genus as depositional areas of streams and rivers, but specific requirements are not well understood (Myers et al. 2010).

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:** G3

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

### Other Ranks:

-New York 2025 SGCN status: Species of Greatest Conservation Need

-COSEWIC: Not listed

-IUCN Red List: Not listed

-Northeast Regional SGCN: Watchlist

### Status Discussion:

This species is rare but is not likely extirpated in New York (L. Myers, personal communication).

## II. Abundance and Distribution Trends

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

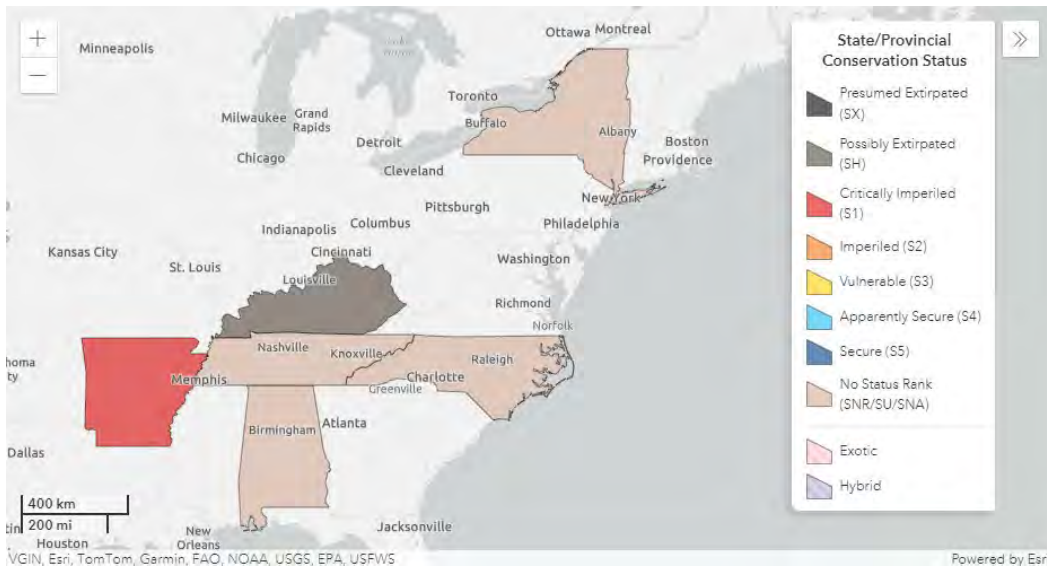
**SGCN?:** Yes; No; Unknown; (blank) or Choose an item

**Monitoring in New York** (*specify any monitoring activities or regular surveys that are conducted in New York*):

No monitoring activities or regular surveys are conducted for this species in New York.

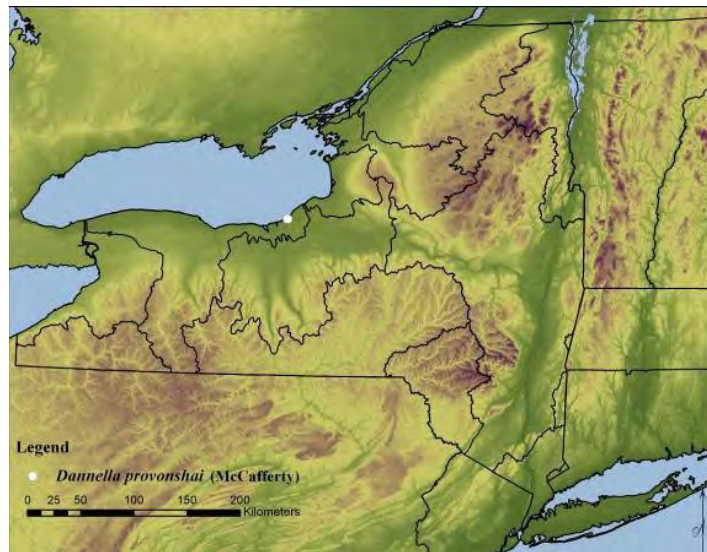
**Trends Discussion** (*insert map of North American/regional distribution and status*):

Trend information for this species is not available.



**Figure 1.** Conservation status of *Dannella provonshai* in North America (NatureServe 2023)

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



**Figure 3.** Distribution of *Dannella provonshai* (McCafferty) in New York (Meyers et al. 2010)

Years	# of Records	# of Distinct Waterbodies/Locations	% of State
Pre-2000	_____	1	0-5%
2000- 2023	_____	_____	_____

**Table 1.** Records of *Dannella provonshai* in New York.

**Details of historic and current occurrence:**

There is one historical record of occurrence from Cayuga County (Jacobus and Mccafferty 2001a). There are no current occurrence records for this species in New York. Rarity in New York is unknown due to lack of occurrence records.

**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
26-50%	Disjunct	

*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

**Habitat or Community Type Trend in New York**

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

Habitat is unknown for this species.

**V. Species Demographic, and Life History:**

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/Catadromous?
Unknown	-	-	-	-	-

*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):*

Information regarding life history for this species is unknown.

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

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent	Severity	Immediacy	Trend	Certainty
4. Transportation & Service Corridors	4.1 Roads & Railroads	4.1.1 Roads (runoff)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.1 Roads & Railroads	4.1.3 Bridges (construction/maintenance)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.3 Logging & Wood Harvesting	-	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	7.2.1 Water level management using dams (altered hydrology, sedimentation)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.1 Domestic & Urban Wastewater	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.3 Agricultural & Forestry Effluents	9.3.1 Nutrient loads (run off, algal blooms)	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.6 Excess Energy	9.6.1 Light pollution	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	-	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.4 Changes in Precipitation & Hydrological Regimes	11.4.2 Droughts	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

**Table 1.** Threats to *Dannella provonshai*.

Any activity which might lead to water contamination, siltation, warming of waterways, or the alteration of natural hydrology could directly and indirectly impact riparian habitats and *Dannella provonshai* populations. Such threats might include roadway and agricultural runoff, industrial pollution, dams, bridge construction and maintenance, logging activities, and development near riparian habitats (NYS DEC 2005). In addition, siltation decreases the amount of sunlight that reaches aquatic plants (EPA 2005) and lowers the quality of habitats needed for a variety of aquatic species (NYS DEC 2005). Point source pollution, such as effluents from municipal and industrial facilities, contribute to the degradation and pollution of aquatic habitats (EPA 2022, NYS DEC 2005, Mahar and Landry 2013, Strayer et al. 2004).

Altering natural waterflow can degrade habitat and restrict species movement. Dams directly restrict or impede species movement, alter the flow of water, change the water temperature, and contribute to sedimentation (NYS DEC 2005, Zaidel et al. 2021). Groundwater removal from tapping springs can impact water sources for spring and seep species (pers. comm. Luke Myers).

Light pollution is a known threat to aquatic invertebrates as artificial light at night has been shown to alter the behavior, movements and habitat choice of these animals (Ganguly and Candolin 2023).

While modern day agricultural and silvicultural practices are an important aspect of the New York State economy, it is important to consider the effects on ecosystems and species. As these practices move closer to rivers, the natural riparian buffers are often removed. Riparian buffers maintain stream temperature and slow or prevent runoff of sediments from upland soil disturbances. Furthermore, they slow or reduce runoff from farm fields and pastures, such as contaminants from pesticides, fertilizers, manure, and sludge, into waterways (EPA 2005, NYS DEC 2005, Souza et al. 2020). Excessive fertilizer use can lead to algal blooms that can be deadly to aquatic life and overgrazing of livestock in fields could introduce pathogens, oxygen-demanding organics and solids, and invasive species to aquatic ecosystems (EPA 2005).

Approximately 10% of introduced, non-native species could have an impact on the health of ecosystems (McCormick et al. 2009). Invasive plants tend to outcompete native plants and can change natural processes (NYS DEC 2005). There is an increased risk of runoff and erosion when these plants are along streams and rivers. Aquatic invasive plants and animals can alter the water chemistry, change the nutrient regime, or decrease the dissolved oxygen levels. Introduced fish can alter trophic relationships resulting in a change in native fish populations and decreased water quality (McCormick et al. 2009).

Climate change is another threat that is likely to have lasting effects on riverine systems. Irregular weather patterns can cause extreme drought, flooding, and temperature fluctuations. Heat waves are expected to be more intense (Frankson et al. 2022). The Northeast Region of the United States is expected to experience an increase in precipitation, more frequent storms, and higher than normal temperatures (EPA 2016, EPA 2022). Precipitation is expected to increase 10% to 15% in southern New York and 15 to 20% in northern New York by 2050 (Frankson et al. 2022). Extreme flooding can cause widespread erosion and runoff with added risk of contamination if flooding occurs at remediation sites, industrial sites, or wastewater treatment facilities (EPA 2016, EPA 2022). Temperature increases can significantly alter ecosystems. As water temperatures rise, the amount of dissolved oxygen decreases and evaporation increases, potentially lowering lake and stream levels (EPA 2022). Any combination of these events could change species distributions (EPA 2022) and those that cannot adapt or migrate may be extirpated from some areas (NYS DEC 2005).

**Are there regulatory mechanisms that protect the species or its habitat in New York?**

Yes: ü

No: \_\_\_\_\_

Unknown: \_\_\_\_\_

**If yes, describe mechanism and whether adequate to protect species/habitat:**

The Protection of Waters Program provides protection for rivers, streams, lakes, and ponds under Article 15 of the NYS Conservation Law.

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

Stoneflies, mayflies, and caddisflies are difficult to fully document, and thus abundance and distribution remain largely uncertain despite the confirmed occurrences that exist. The recent surveys done by Myers et al. (2010) of the Upper Hudson, Lake Champlain, and NE Lake Ontario watersheds provided a wealth of new information on mayflies, but surveys should be done throughout the rest of the state to get a more complete understanding of abundance and distribution.

Action Category	Action	Description
A.1 Direct Habitat Management	A.1.1.1.2 Manual removal	Manually remove invasive plants
A.1 Direct Habitat Management	A.1.2.4.1 Plant for erosion management	Implement and maintain riparian buffers to reduce sedimentation and runoff
A.1 Direct Habitat Management	A.1.3.0.0 Mitigate human environmental impact	Implement temporary runoff reduction measures
A.1 Direct Habitat Management	A.1.3.1.0 Manage Access	Implement boat washing stations to reduce transport of invasives between waterbodies
A.1 Direct Habitat Management	A.1.3.3.0 Remove and improve anthropogenic infrastructure	Remove barriers to natural flow in waterways where feasible
A.1 Direct Habitat Management	A.1.3.3.0 Remove and improve anthropogenic infrastructure	Remove and improve industrial/municipal infrastructure to be more flood resilient
A.1 Direct Habitat Management	A.1.3.3.2 Culverts	Install culverts to reduce runoff and erosion severity
B.3 Outreach	B.3.1.0.0 Outreach, communication, and distribution	Educate anglers about the risks of releasing unused baitfish

Action Category	Action	Description
B.5 Economic and Other Incentives	B.5.0.0.0 Economic and other incentives	Use incentives to encourage sustainable or alternative farming practices
C.7 Legislative and Regulatory Framework or Tools	C.7.2.0.0 Create or amend policies, guidelines, or best practices	Consider baitfish bans in locations with vulnerable species
C.7 Legislative and Regulatory Framework or Tools	C.7.2.2.0 Create or amend best practices or guidelines	Use Best Management Practices when crossing streams, consider water flow when constructing in or around stream.

**Table 3.** Recommended conservation actions for *Dannella provonshai*.

## VII. References

- Bode, R.W., M.A. Novak, L.E. Abele, D.L. Heitzman, and A.J. Smith. 2004. 30 year trends in water quality of rivers and streams in New York State.
- Jacobus, L. M. and W. P. McCafferty. 2001. The mayfly fauna of New York State (Insecta: Ephemeroptera). *Journal of the New York Entomological Society* 109: 47-80.
- Merritt, R. W., K. W. Cummins, and M. B. Berg (Editors). 2008. *An Introduction to the Aquatic Insects of North America*, Fourth Edition. Kendall Hunt Publishing Company, Dubuque, Iowa. 1158 pp.
- McCafferty, W. P. 1977. Biosystematics of *Dannella* and related subgenera of *Ephemerella* (Ephemeroptera: Ephemerellidae). *Annals of the American Entomological Society* 70: 881-889.
- McCafferty, W.P. and J.M. Webb. 2006. Insecta, Ephemeroptera: range extensions and new Alabama state records. *Check List*, 2(1): 6-7.
- Myers L.W., T.B. Mihuc and B.C. Kondratieff. 2010. Mayflies (Ephemeroptera), Stoneflies (Plecoptera), and Caddisflies (Trichoptera) of the Upper Hudson, Lake Champlain, and Northeastern Lake Ontario Watersheds: A baseline inventory with management considerations for SGCN and other rare and possibly imperiled species. Final Report to the New York State Department of Environmental Conservation.
- NatureServe. 2023. NatureServe Explorer. Page last published 12/1/2023.  
[https://explorer.natureserve.org/Taxon/ELEMENT\\_GLOBAL.2.117492/Dannella\\_provonshai](https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.117492/Dannella_provonshai)  
 Accessed December 21, 2023.
- New York State Department of Environmental Conservation (NYSDEC). 2005. *New York State Comprehensive Wildlife Conservation Strategy*. Albany, NY.  
[https://extapps.dec.ny.gov/docs/wildlife\\_pdf/cwcs2005.pdf](https://extapps.dec.ny.gov/docs/wildlife_pdf/cwcs2005.pdf)
- Parker, C. R., O. S. Flint Jr., L. M. Jacobus, B. C. Kondratieff and J. C. Morse. 2007. Ephemeroptera, Plecoptera, Megaloptera, and Trichoptera of Great Smoky Mountain National Park. *Southeastern Naturalist Special Issue 1*: 159-174.
- Randolph, R. P. and W. P. McCafferty. 1998. Diversity and distribution of the mayflies (Ephemeroptera) of Illinois, Indiana, Kentucky, Michigan, Ohio, and Wisconsin. *Ohio Biological Survey Bulletin, New Series* 13: 1-188.

Environmental Protection Agency (EPA). 2005. Protecting water quality from agricultural runoff. [https://www.epa.gov/sites/default/files/2015-09/documents/ag\\_runoff\\_fact\\_sheet.pdf](https://www.epa.gov/sites/default/files/2015-09/documents/ag_runoff_fact_sheet.pdf). Accessed on July 3, 2023.

Environmental Protection Agency (EPA). 2016. Adapting to climate change northeast. [https://www.epa.gov/sites/default/files/2016-07/documents/northeast\\_fact\\_sheet.pdf](https://www.epa.gov/sites/default/files/2016-07/documents/northeast_fact_sheet.pdf). Accessed on August 10, 2023.

Environmental Protection Agency. 2022. Region 2 climate adaptation implementation plan. <https://www.epa.gov/system/files/documents/2022-10/bh508-R02%20Climate%20Adaptation%20Implementation%20Plan%209.19.2022%20HQ%20OP%20Copy.pdf>

Frankson, R., Kunkel, K.E., Champion, S.M., Stewart, B.C., Sweet, W, DeGaetano, A.T., & Spaccio, J. (2022). New York State Climate Summary 2022. National Oceanic and Atmospheric Administration National Centers for Environmental Information. <https://statesummaries.ncics.org/chapter/ny/>

Ganguly, A. and U. Candolin. 2023. Impact of light pollution on aquatic invertebrates: Behavioral responses and ecological consequences. *Behavioral Ecology and Sociobiology* 77: 104. <https://doi.org/10.1007/s00265-023-03381-z>

Hughes, Robert M., and Robert L. Vadas Jr. 2021. Agricultural Effects on Streams and Rivers: A Western USA Focus. *Water* 13, no. 14: 1901. <https://doi.org/10.3390/w13141901>

Mahar, Amy and Jenny Landry. 2013. New York State Department of Environmental Conservation species status assessment for *Lasmigona subviridis* (Green Floater).

McCormick, Frank H., Glen C. Contreras, and Sherri L. Johnson. 2009. "Effects of nonindigenous invasive species on water quality and quantity." *A dynamic invasive species research vision: opportunities and priorities* 29 (2009): 111-120.

New York State Comptroller. 2023. New York's local governments adapting to climate change: challenges, solutions, and costs. <https://www.osc.state.ny.us/files/local-government/publications/pdf/climate-change-2023.pdf>

New York State Department of Environmental Conservation. 2005. A strategy for conserving New York's fish and wildlife resources. Final submission draft.

Souza, Francine N., Rodolfo Mariano, Tassio Moreira, and Sofia Campiolo. 2020. Influence of the landscape in different scales on the EPT community (Ephemeroptera, Plecoptera and Trichoptera) in the Atlantic Forest region. *Environmental monitoring and assessment* 129: 391-391.

Strayer, David L., J.A. Dowling, W.R. Haag, T.L. King, J.B. Layzer, T.J. Newton and S.J. Nichols. 2004. Changing perspectives on Pearly Mussels, North America's most Imperiled Animals. *BioScience* 54:429-439.

Watershed Agricultural Council Forestry Program. 2018. New York State forestry voluntary best management practices for water quality. <http://nysbmpguidelines.com/>. Accessed on June 20, 2023.

Zaidel, Peter A., A. H. Roy, K. M. Houle, B. Lambert, B. H. Letcher, K. H. Nislow, C. Smith. 2021. Impacts of small dams on stream temperature. *Ecological indicators* 120:6-11.

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