

Ontario Species at Risk Evaluation Report for
Skillet Clubtail
Gomphe ventru
(*Gomphurus ventricosus*)

Committee on the Status of Species at Risk in Ontario
(COSSARO)

Assessed by COSSARO as Threatened

November 2022

Final

Executive summary

Skillet Clubtail is a dragonfly with a body length of just under 5 cm long. It is dark brown and black, with conspicuous yellow markings on the dorsal abdomen, greenish-yellow markings on the thorax, dark green eyes, and clear wings. It is characterized by a flat, pan-like expansion at the end of its otherwise slim abdomen.

This dragonfly is rarely observed and only in small numbers at known sites. They spend up to two years as aquatic larvae and adults spend much of their time away from the river where they hatched.

Skillet Clubtail is known from two sites in Ontario along the Ottawa River (1924) and Saugeen River (2012). Despite extensive searches along the Ottawa River there have been no subsequent records.

Evidence of Skillet Clubtail was reported on the Minnesota side of the Rainy River adjacent to northwestern Ontario in 1998 but the species has not been recorded on the Canadian side of the river despite targeted surveys in 2021. The exuviae (skin left when larva turn into adults) collected in Minnesota have now been confirmed to be the closely related Midland Clubtail. Rainy River is not treated as a location in Ontario in this assessment.

This species' range extends from New Brunswick south to Tennessee and west to northern Minnesota. In Canada it occurs in 13 widely separated subpopulations in southern Ontario, southern Québec, New Brunswick with additional historical subpopulations in Nova Scotia.

This species appears to be naturally rare throughout much of its range. Possible threats are water quality degradation and invasive species.

Skillet Clubtail is assessed as Threatened in Ontario based on meeting criterion D1 + D2 because of its very small population and range. There is uncertainty as to the risk category for this species. While it currently meets the criteria for Endangered, there is a reasonable possibility that additional locations remain undocumented, and it is Special Concern. This possibility is, in part, based on the recent COSEWIC reassessment from Endangered to Special Concern that resulted from the discovery of additional locations.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Skillet Clubtail is a distinct species and there are no proposed subspecies.

1.1.2. Designatable units

Skillet Clubtail has one designatable unit within Canada. No subspecies are recognized.

1.1.3. Native status

Skillet Clubtail is native to Ontario and was first collected in 1924.

1.1.4. Occurrence

Although extremely rare, Skillet Clubtail is assumed to be extant in Ontario. It was last observed in 2012.

1.2. Eligibility results

Skillet Clubtail (*Gomphurus ventricosus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G3* (NatureServe 2022) *Note: Global status last reviewed in 2002 and needs review. Likely G4 given subnational status in Wisconsin.
- IUCN: Least Concern (2014)
- NRANK Canada: N2
- COSEWIC: Special Concern (May 2022)
- SARA: Endangered (Schedule 1)
- ESA 2007: None (assessed as data deficient by COSSARO in 2011)
- SRANK: S1 (ranked in 2021)

2.2. Distribution in Ontario

Skillet Clubtail was originally ranked in Ontario as SH (historical) because it was only known from a single specimen collected at "Ottawa" (presumably from the Ottawa

River, but it could have been the Rideau River) in 1924. In 2012 a single individual was caught, photographed and released on the Saugeen River (COSEWIC 2022).

This changed the provincial status to S1. Reports from the U.S. side of the Rainy River have not been confirmed and appear to have been misidentifications (C. Jones pers. comm).

2.3. Distribution, status and the broader biologically relevant geographic range outside Ontario

This species' range extends from New Brunswick south to Tennessee and west to northern Minnesota. Although NatureServe has ranked the species at Vulnerable (G3), this rank is outdated and the more recent IUCN Red List status of Least Concern with a stable population is considered for this assessment. Skillet Clubtail is extirpated from Nova Scotia and Pennsylvania and appears vulnerable to local extinction.

The broader biologically relevant range includes the Mixedwood Plains ecozone (8.1). Skillet Clubtail is of conservation concern in other jurisdictions within this range including Michigan, the most proximate part of the broader biologically relevant range. It is also critically imperiled in New York and Quebec, the two jurisdictions closest to the historical Ontario location from the Ottawa River.

Skillet Clubtail is more common in northcentral Wisconsin and adjacent Minnesota. If the species is determined to occur in northwestern Ontario, then the broader biologically relevant range will need to be reassessed.

Table 1. Condition of the Species in Adjacent Jurisdictions and Broader Biologically Relevant Geographic Range

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
Quebec	Yes	S1	
Manitoba	No	n/a	
Michigan	Yes	SNR Included on 'Regional Species of Greatest Conservation Need in the Midwest region'	(Michigan Odonata Survey 2022)
Minnesota	No	SNR	
Nunavut	No	n/a	
New York	No	S1	Two historical records are known from Herkimer and Orange counties. The full extent and size of the populations have not been determined and the species may

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
			have historically been present in medium to large rivers throughout eastern New York; thus, long-term trends are unclear.
Ohio	No	S2	
Pennsylvania	No	SH	
Wisconsin	No	S4	

2.4. Ontario conservation responsibility

Based on our current knowledge of this species, Ontario includes less than 1% of the global range and population.

2.5. Direct threats

Threats for this species in Canada were assessed by COSEWIC (March 2021). Four threats were assessed as low impact: housing & urban areas, roads & railroads, recreational activities, and agricultural & forestry effluents.

The threats to the known Ontario location are unknown. Watershed report cards for the extant location in the Saugeen watershed indicate good surface water quality, fair to excellent forest condition, and good to excellent wetland condition.

2.6. Specialized life history or habitat use characteristics

Although the habitat requirements of Skillet Clubtail are poorly understood, there do not appear to be any specialized life history or habitat use characteristics that increase its vulnerability to extinction.

Larval habitat typically consists of slow-running rivers with a mix of silt, cobble, and bedrock substrate. The rivers that Skillet Clubtail inhabit flow through a combination of forested and agricultural land. Waters range from clear to relatively turbid. Larvae sometimes inhabit lakes with sand substrate but have not been found in this habitat in Canada. Adults appears to primarily live in forests and open habitats. Adults are rarely observed but most records are within three kilometers of the river. Most adults are observed when they return to the river to mate (COSEWIC 2010).

2.7. Existing Conservation and Recovery Actions

A Recovery Strategy for the Skillet Clubtail was prepared in 2021, when the species was still assessed as Endangered by COSEWIC. Rainy River and the Saugeen River in Ontario were identified as high priority areas for additional surveys. No critical habitat was identified in Ontario.

3. Ontario status assessment

3.1. Application of endangered/threatened status in Ontario

3.1.1. Criterion A – Decline in total number of mature individuals

Does not apply. There is no evidence for an observed, estimated, or inferred decline in the last 10 years. Based on the known threats there is also no projected decline.

3.1.2. Criterion B – Small distribution range and decline or fluctuation

Does not apply. Meets Endangered for B1 and B2 + a, but there is no decline or fluctuation.

3.1.3. Criterion C – Small and declining number of mature individuals

Does not apply. Meets Endangered (<2500 mature individuals), but there is no decline or fluctuation.

3.1.4. Criterion D – Very small or restricted total population

Threatened. D1 + D2

Meets D1: The population is under 1000 mature individuals.

Meets D2: The Index of Area of Occupancy (<20km²) and number of locations (less than or equal to 5 locations) are below the threshold for Threatened.

It may also meet criteria D1 for Endangered. Although the population size is unknown, this species is extant in Ontario. Based on current knowledge, the population is very small and likely under 250 mature individuals.

3.1.5. Criterion E – Quantitative analysis

Does not apply.

3.2. Application of Special Concern in Ontario

Does not apply. While there is a reasonable likelihood that additional locations of this species will be documented (particularly in northwestern Ontario) it is extremely rare and restricted based on our current knowledge.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Does not apply. The global status of this species needs to be reviewed, and Ontario has

only a very small proportion of the global range and population of this species.

3.3.2. Status modification based on level of risk in broader biologically relevant geographic range

Skillet Clubtail has been assessed on the IUCN Red List as Least Concern. This species is, however, rare over much of its range, including jurisdictions adjacent to Ontario that are included in its biologically relevant range. Therefore, consideration of biologically relevant range does not modify its status in Ontario.

3.3.3. Rescue Effect

Skillet Clubtail is non-migratory, but there is little other information on its dispersal. Adults likely disperse approximately three km from larval habitat (COSEWIC 2022).

Rescue seems unlikely in southern Ontario given its distribution in Michigan, but very probable if this species is confirmed in northwestern Ontario, given the proximity and continuous available habitat.

3.4. Other status categories

3.4.1. Data deficient

Not applicable. This can only be applied if the plausible status ranges from Not at Risk to Endangered. This species is assessed as Special Concern nationally and it is clearly rare in Ontario and qualified for Endangered or Threatened based on our current knowledge.

3.4.2. Extinct or extirpated

Not applicable.

3.4.3. Not at risk

Not applicable.

4. Summary of Ontario status

Skillet Clubtail (*Gomphurus ventricosus*) is classified as Threatened in Ontario based on meeting criterion D1 + D2. There is uncertainty as to the risk category for this species. While it currently meets the criteria for Endangered, there is a reasonable possibility that additional locations remain undocumented, and it is Special Concern. This possibility is,

in part, based on the recent COSEWIC reassessment from Endangered to Special Concern that resulted from the discovery of additional locations.

The IUCN guidance for species that are clearly at risk, but with uncertainty as to the specific risk category is to select the most plausible category based on risk tolerance (this includes precautionary and evidentiary 'attitude') (IUCN Standards and Petitions Subcommittee 2019). In this case, based on current records in Ontario and its range and abundance in the broader biologically relevant range, there is a high certainty Skillet Clubtail is at risk. A status of Threatened represents the mid-category between the plausible level of risk for this species.

This status of this species is consistent with the definition of threatened under the Endangered Species Act, 2007.

The change in status of this species from the 2011 assessment is considered a non-genuine change based on the discovery of a new location.

5. Information sources

COSEWIC. (2022). IN PRESS. COSEWIC assessment and status report on the Skillet Clubtail *Gomphurus ventricosus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 47 pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>).

Environment and Climate Change Canada. (2021). Recovery Strategy for the Skillet Clubtail (*Gomphurus ventricosus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. vii + 29 pp.

IUCN Standards and Petitions Subcommittee. (2019). Guidelines for using the IUCN Red List categories and criteria. Gland: IUCN. p. 113

Michigan Odonata Survey. (2022). <https://www.michodonata.org/>

¹ A change in the classification of a species during reassessment by COSSARO may be for genuine or non-genuine reasons. Genuine reasons may include a reduction in threats to a species such that status of the species has improved, or the continuation of threats to the species such that the status of the species has further deteriorated. Non-genuine reasons may include new information on population size or threats that was not available during a previous assessment, the use of previous COSSARO criteria that may have yielded a different result or, taxonomic revisions that result in changes in range, population sizes or designatable units.

Appendix 1: Technical summary for Ontario

Species: Skillet Clubtail (*Gomphurus ventricosus*)

Demographic information

Demographic attribute	Value
Generation time. Based on average age of breeding adult: age at first breeding = X year; average life span = Y years.	> 2 years (larvae live in aquatic habitats for approximately two years; and after emerging, adults live approximately two months)
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Unknown
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	Unknown
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over any 10 years, or 3 generations, over a time period including both the past and the future.	Unknown
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Unknown b. Unknown c. Unknown
Are there extreme fluctuations in number of mature individuals?	No

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	0 km ²
Index of area of occupancy (IAO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	4 km ²
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy in habitat patches that are:	a. Unknown b. Yes

Extent and occupancy attributes	Value
(a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	
Number of locations. <i>See Definitions and Abbreviations on COSEWIC and IUCN websites for more information on the term "location". Use plausible range to reflect uncertainty if appropriate.</i>	1
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	1
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Yes
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Yes
Is there an observed, inferred, or projected continuing decline in number of locations?	Yes
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Unknown
Are there extreme fluctuations in number of populations?	No
Are there extreme fluctuations in number of locations?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

Number of mature individuals in each sub-population or total population (if known)

Sub-population (or total population)	Number of mature individuals
<i>Insert additional rows as necessary. If total population, do not use table format.</i>	<i>Unknown</i>

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown.

Threats

Threats for this species in Canada were assessed by COSEWIC (March 2021). Four threats were assessed as low impact: housing & urban areas, roads & railroads, recreational activities, and agricultural & forestry effluents.

Rescue effect

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Yes
Status of outside population(s) most likely to provide immigrants to Ontario	S1 or SH
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Yes
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Yes
Are conditions deteriorating in Ontario?	Unknown
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	Unknown
Is rescue from outside populations likely?	Possibly

Sensitive species

Not data sensitive.

Acronyms

COSEWIC: Committee on the Status of Endangered Wildlife in Canada
 COSSARO: Committee on the Status of Species at Risk in Ontario
 ESA: Endangered Species Act
 EO: Element occurrence (as defined by NHIC)
 EOO: extent of occurrence
 GRANK: global conservation status assessments
 IAO: index of area of occupancy
 IUCN: International Union for Conservation of Nature and Natural Resources
 MNRF: Ministry of Natural Resources and Forestry
 NHIC: Natural Heritage Information Centre
 NNR: Unranked
 NRANK: National conservation status assessment
 SARA: Species at Risk Act
 SNR: unranked
 SRANK: subnational conservation status assessment
 S1: Critically Imperiled
 S2: Imperiled
 S3: Vulnerable

Template last updated: Oct. 14, 2021.
Previous version: Oct 14, 2020.

S4: Apparently Secure

S5: Secure

IUCN: International Union for Conservation of Nature and Natural Resources

CDSEPO: Le Comité de détermination du statut des espèces en péril en Ontario