

Ontario Species at Risk Evaluation Report for
Pugnose Minnow
Petit bec
(Opsopoeodus emiliae)

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

Assessed by COSSARO as Endangered

January 2026

Final

Executive summary

Pugnose Minnow (*Opsopoeodus emiliae*) is a small freshwater fish in the family Leuciscidae, native to North America and occurring in Canada only in southwestern Ontario. The species is recognized as a valid taxonomic entity, with no subspecies or designatable units identified in Ontario. Its biology is characterized by a short lifespan (approximately 1.2 years), limited dispersal ability, and use of warm, slow-moving streams with silt, sand, or clay substrates. Although historically associated with clear waters, Ontario records demonstrate that the species also occupies more turbid environments, though it is unclear whether these represent optimal habitat conditions.

In Ontario, Pugnose Minnow historically occurred at 11 localities across Ontario, including the Detroit River, Lake St. Clair, Sydenham River, and Thames River watersheds. Since 2010, the species has not been detected at most historical locations despite repeated targeted sampling. All Ontario records from the past decade originate from the Canard River, where detections occurred intermittently between 2013 and 2021. Recent targeted surveys in 2023 and 2024 failed to detect the species at this remaining location, suggesting a continuing decline in distribution and possible reduction in abundance. The currently known Ontario range is highly restricted, with an extent of occurrence of 2.64 km² and an index of area of occupancy of 12 km², representing a single location.

Although Pugnose Minnow is globally secure (G5), its condition at the northern edge of its range is poor. Within the broader biologically relevant geographic range, defined as the Great Lakes basin and adjacent jurisdictions with potential for hydrologic connectivity, nearby populations are ranked as critically imperiled (S1) in Michigan and Ohio. These neighbouring populations are few, localized, and unlikely to provide substantial rescue potential to Ontario, given limited dispersal capability and declining habitat quality.

The primary threats to the species in Ontario include habitat degradation from increased turbidity, sedimentation, and elevated nutrient inputs associated with agricultural runoff and watershed modification. Additional threats include contaminants and toxic substances, climate-related hydrologic changes, and possible impacts from invasive species. These threats operate at the watershed scale and affect all known element occurrences. COSEWIC threat assessment describes the overall threat impact as High-Low for Canadian populations.

Pugnose Minnow was previously classified as Threatened by COSSARO and is listed as such on the Species at Risk in Ontario List. Available evidence indicates continuing declines in distribution, number of locations, habitat quality, and presumed number of mature individuals. Given the extremely small and contracting Ontario distribution, single remaining location, absence of recent detections at historically occupied sites, and ongoing threats across its range, Pugnose Minnow meets the criteria for Endangered under criterion B1ab(i,ii,iii,iv,v) and B2ab(i,ii,iii,iv,v) (restricted distribution with continuing decline). No status modifiers are applied.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Pugnose Minnow (*Opsopoeodus emiliae*) is a valid taxonomic species recognized in the scientific literature, with no taxonomic uncertainty, although its family designation has been revised from Cyprinidae to Leuciscidae since the previous report.

1.1.2. Designatable units

A single designatable unit is recognized for Pugnose Minnow, as there is no evidence of discrete, evolutionarily significant populations, subspecies, or designatable units within Ontario.

1.1.3. Native status

Pugnose Minnow is a native species in Ontario.

1.1.4. Occurrence

In Canada, Pugnose Minnow only occurs in Ontario. Abundance trends and Canadian population size is unknown.

1.2. Eligibility results

Pugnose Minnow (*Opsopoeodus emiliae*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G5 Secure (NatureServe 2025)
- IUCN: Least Concern (3 March 2012)
- NRANK Canada: N2 (NatureServe 2025)
- COSEWIC: Endangered (May 2025)
- SARA: Threatened (Schedule 1 in 2003)
- MBCA protection: No
- Aquatic Species under SARA: Yes
- COSSARO: Threatened (May 2012)
- ESA 2007: Threatened (2012)
- SRANK: S1 (ranked in February 2026)

2.2. Distribution in Ontario

In Canada, and in Ontario, Pugnose Minnow occurred historically in 11 localities including Detroit River, Sydenham River and Thames River watersheds, and Lake St. Clair, as outlined in the 2012 COSEWIC assessment report (COSEWIC 2012). In the last 10 years, all Pugnose Minnow in Ontario have been sampled from the Canard River. By 2010, Pugnose Minnow was no longer detected at many locations where it had previously been recorded, including the East and North Sydenham rivers, Otter Creek and East Otter Creek, Indian Creek, Whitebread Drain/Grape Run Drain, Little Bear Creek, and Maxwell Creek (DFO unpublished data; Gáspárdy et al. 2025, as cited in COSEWIC 2025, IN PRESS). During 2010 sampling, the species was documented at five sites in the East Sydenham River (21 individuals) and at two sites in Little Bear Creek (11 individuals). Subsequent sampling at these locations has not resulted in additional detections. In contrast, Pugnose Minnow was captured in the Canard River during sampling conducted in 2018, with records indicating continued presence in that system between 2013 and 2021. However, targeted surveys undertaken by DFO in 2023 and 2024 did not detect the species.

The Natural Heritage Information Centre (NHIC) has 56 records for Pugnose Minnow dating from 1935 to June of 2013, however, the NHIC has no further observations after 2013. Element occurrence information is summarized in Table 1. Locations for this species are defined by watershed and watercourse.

Table 1. Element Occurrence Summary for Pugnose Minnow (*Opsopoeodus emiliae*) in Ontario (November 2025)

Element Occurrence / Location	Watershed / System	No. of Records	Date Range of Records
Detroit River (incl. Amherstburg, Ruwe Marsh)	Detroit River	10	1935–2004
Chenail Ecarté	St. Clair River delta	3	1993–2010
Mitchell Bay	Lake St. Clair	1	1935
Canard River	Lake Erie (Detroit R.)	5	1994–2013
Sydenham River (mainstem)	Lake St. Clair	8	1997–2010
North Sydenham River	Lake St. Clair	8	1972–2003
East Sydenham River	Lake St. Clair	3	1979–2003
Bear Creek	Sydenham River	2	1976–1979
Little Bear Creek	Sydenham River	6	1982–2010
Maxwell Creek	Sydenham River	3	1982–2003
East Otter Creek	Sydenham River	1	2003
Whitebread Drain / Grape Run	Lake St. Clair	1	2003
McDougall Drain	Lake St. Clair	1	1984
Unnamed Drain	Lake St. Clair	2	1979
Thames River	Lake St. Clair	1	1968

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

Pugnose Minnow occurs in the central United States and southwestern Ontario, Canada. In the United States, the species is more widespread and abundant, occurring

from the southeastern states west to Texas and north through the Mississippi River basin to the Laurentian Great Lakes watershed, including southeastern Wisconsin. In Canada, its distribution is limited to southwestern Ontario.

Across its broader biologically relevant geographic range (BBRGR), Pugnose Minnow is considered globally secure (G5); however, its condition varies at the northern extent of its range. For the purposes of this assessment, the biologically relevant geographic range is best defined as the Great Lakes basin and adjacent upper-Midwest jurisdictions (including Ontario, Michigan, and Ohio), where hydrologic connectivity could theoretically allow population exchange. NatureServe ranks the species as imperilled in Canada (N2) and imperilled in Ontario (S1), reflecting its highly restricted and localized distribution. In adjacent Great Lakes jurisdictions relevant to Ontario connectivity, the species is ranked as critically imperilled in Michigan and Ohio (S1), indicating that populations nearest to Ontario are also limited and potentially unstable. Although the species is secure at a continental scale, the northern Great Lakes component of the BBRGR represents a small, vulnerable portion of the overall range.

Within Ontario, recent records indicate that Pugnose Minnow is now largely confined to the Canard River, suggesting reduced redundancy and limited resilience. The species is considered unlikely to migrate long distances, and there is no evidence of frequent exchange among Ontario and adjacent U.S. populations. As a result, Ontario populations likely function as a small, potentially isolated component of the broader BBRGR, with limited opportunity for demographic or genetic rescue. This pattern, combined with uncertain habitat tolerance and ongoing watershed pressures, indicates that the broader condition of the species outside Ontario does not substantially reduce risk within the province. The federal Recovery Strategy and Action Plan is ongoing for this species, and recovery is considered feasible (biologically and technically), but relies on addressing watershed level stressors (DFO 2022).

Table 2. 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	n/a	n/a	Species does not occur in Quebec.
Manitoba	n/a	n/a	Species does not occur in Manitoba.
Michigan	Yes	S1 (Critically Imperiled)	Rare and highly localized; occurs in Great Lakes basin adjacent to Ontario.
Minnesota	Yes	S4 (Apparently Secure)	Widespread and relatively secure; occurs within the upper Mississippi and Great Lakes basin.
Nunavut	n/a	n/a	Species does not occur in Nunavut.
New York	n/a	n/a	Species does not occur in New York.
Ohio	Yes	S1 (Critically Imperiled)	Highly imperiled; occurs in the Great Lakes and Ohio River basins.
Pennsylvania	Yes	S1 (Critically Imperiled)	Very rare with few known occurrences.

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
Wisconsin	Yes	S3 (Vulnerable)	Uncommon; occurs within the Great Lakes basin.
Other Relevant Jurisdiction – United States (national)	Yes	N5 (Secure)	Secure at the national scale despite regional rarity.

2.4. Ontario conservation responsibility

Ontario's conservation responsibility is low, less than 5% of the species' global range occurs in Ontario.

2.5. Direct threats

The primary threat to Pugnose Minnow in Ontario is ongoing habitat degradation associated with impaired water quality, particularly increased turbidity, sedimentation, and nutrient enrichment. These stressors are linked to agricultural and urban land use, channel modification, and watershed-scale alteration, and result in the loss or degradation of suitable habitat. Given the species' restricted distribution and limited dispersal ability, these threats are considered to affect all known Element Occurrences and define a single threat-based location in Ontario.

Additional threats include pollution and contaminants, which may further degrade habitat quality through nutrient loading, toxic substances, and reduced dissolved oxygen, and natural system modifications, such as water management structures, dredging, and shoreline or channel alterations that affect flow regimes, substrates, aquatic vegetation, and habitat connectivity. Climate change and severe weather represent emerging threats, with potential to exacerbate existing stressors through altered hydrology, increased frequency of extreme events, and temperature extremes. Threats associated with invasive or non-native species are considered secondary, while incidental harvest, disease, predation, competition, and genetic factors are assessed as low or negligible.

A threats assessment completed as part of the most recent COSEWIC status evaluation identified an overall High–Low threat impact for the Canadian population, corresponding to an anticipated population decline of approximately 30–70% over the next ten years or three generations (COSEWIC 2025, IN PRESS). The highest-ranked threats were climate change and severe weather, pollution, and natural system modifications, each assessed as having medium–low impact.

Threats identified in the current assessment are consistent with those documented in earlier evaluations, with habitat loss and degradation related to sediment and nutrient loading, poor water quality, and watershed disturbance remaining the dominant pressures on the species (COSEWIC 2012; DFO 2012a, 2012b; OMNR 2012; DFO

2022). No novel threat categories have been identified since the previous Ontario assessment.

2.6. Specialized life history or habitat use characteristics

In Canada, habitat requirements of Pugnose Minnow are not well defined, contributing to uncertainty in assessing vulnerability. The species has historically been described as associated with clear, slow-moving waters, but Canadian records demonstrate occurrence in a broader range of conditions, including warm, slow-moving turbid streams with substrates of silt, sand, and clay, and with variable aquatic vegetation cover, ranging from little or none to abundant vegetation (Minns 1996; Bouvier and Mandrak 2013; COSEWIC 2025, IN PRESS). Records collected in Canada between 2003 and 2025 indicate persistence in turbid environments; however, it remains unclear whether this reflects true tolerance or occupancy of sub-optimal habitat conditions. The species is considered unlikely to undertake long-distance movements, limiting its ability to respond to localized habitat degradation or recolonize suitable habitat following disturbance (Minns 1996; COSEWIC 2025, IN PRESS). This combination of uncertain habitat requirements, potential sensitivity to turbidity, and limited dispersal capacity increases vulnerability to population decline for Pugnose Minnow.

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 an inferred decline in total number of mature individuals based on lack of detections during recent targeted sampling events at sites that were occupied prior. However, the total number of mature individuals and population size is not known.

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

EOO (2.64 km²) and IAO (12 km²) are below threshold for Endangered. The population occurs at 1 location and is experiencing a continuing decline in EOO, IAO, extent and quality of habitat, number of locations, and number of mature individuals.

Meets criteria for Endangered under B1ab(i,ii,iii,iv,v) and B2ab(i,ii,iii,iv,v).

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

There is insufficient information to determine the number of mature individuals.

3.1.4. Criterion D – Very small or restricted total population

Meets criteria for Threatened under D2 where IAO is 12km² and location is 1. Vulnerable to decline from human effects and stochastic activities.

3.1.5. Criterion E – Quantitative analysis

Does not apply. A quantitative analysis was not completed.

3.2. Application of Special Concern in Ontario

Does not apply as the species meets criteria for Endangered under criterion B and Threatened under criterion D.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Pugnose Minnow does not meet the criteria for elevated conservation priority based on global risk and Ontario conservation responsibility. The species is ranked as globally secure (G5), and Ontario supports only a small proportion of the global range and population, well below the ≥25% threshold used to indicate significant provincial conservation responsibility. Accordingly, Ontario's conservation responsibility for this species is considered low.

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

Pugnose Minnow meets the criteria for Endangered in Ontario, and no status modifier is considered warranted. Although the condition of the species within its broader biologically relevant geographic range was evaluated using available status ranks and other relevant information, this assessment does not support application of a lower classification for Ontario.

3.3.3. Rescue Effect

Overall, rescue effect is considered unlikely because cross-border immigration appears limited, bordering populations are not clearly secure source populations, and suitable habitat in Ontario is localized and sensitive to ongoing watershed stressors; therefore, status should not be reduced on the basis of rescue effect at this time (COSEWIC 2012; COSEWIC rescue effect guidelines).

3.4. Other status categories

3.4.1. Data deficient

The species is not considered data deficient.

3.4.2. Extinct or extirpated

The species is not considered Extinct or Extirpated.

3.4.3. Not at risk

Based on available information, the species meets the criteria for being at risk and therefore does not qualify as Not at Risk.

4. Summary of Ontario status

Pugnose Minnow (*Opsopoeodus emiliae*) is classified as Endangered in Ontario based on meeting criterion B1 END under B1ab(i,ii,iii,iv,v) and B2ab(i,ii,iii,iv,v). No status modifiers are applied. This is the same status as COSEWIC reassessment in 2025 (2025, IN PRESS).

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

The change in status of Pugnose Minnow (*Opsopoeodus emiliae*) from Threatened in 2012 to Endangered in 2025 is considered a genuine¹ change. This reassessment reflects the continued effects of threats and an observed deterioration in the condition of the species in Ontario, including a further contraction in distribution and reduced population resilience, rather than changes arising from revised assessment criteria, taxonomic revision, or the availability of substantially new information alone.

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.

5. Information sources

COSEWIC. 2025. IN PRESS. *COSEWIC assessment and status report on the Pugnose Minnow *Opsopoeodus emiliae* in Canada*. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 42 pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>).

COSEWIC. 2012. *COSEWIC assessment and status report on the Pugnose Minnow *Opsopoeodus emiliae* in Canada*. Committee on the Status of Endangered Wildlife in Canada. Ottawa. x + 29 pp.

Dextrase, A.J., S.K. Staton, and J.L. Metcalfe-Smith. 2003. *National Recovery Strategy for Species at Risk in the Sydenham River: An Ecosystem Approach*. National Recovery Plan No. 25. Recovery of Nationally Endangered Wildlife (RENEW), Ottawa, Ontario. 73 pp.

DFOa. 2012. *Recovery potential assessment for Pugnose Minnow (*Opsopoeodus emiliae*) in Canada*. DFO Canadian Science Advisory Secretariat, Science Advisory Report 2012/069. Fisheries and Oceans Canada, Ottawa. 16 pp.

DFOb. 2012. *Recovery potential assessment for Pugnose Minnow (*Opsopoeodus emiliae*) in Canada*. DFO Canadian Science Advisory Secretariat, Research Document 2012/135. Fisheries and Oceans Canada, Ottawa. vi + 44 pp.

DFO. 2022. *Recovery strategy for the Pugnose Minnow (*Opsopoeodus emiliae*) in Canada*. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa. vi + 41 pp.

OMNR. 2012. *COSSARO candidate species evaluation for Pugnose Minnow (*Opsopoeodus emiliae*)*. Ontario Ministry of Natural Resources, Species at Risk Branch, Peterborough, Ontario. Unpublished report.

Appendix 1: Technical summary for Ontario

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.	Approximately 1.2 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, inferred based on lack of detections of Pugnose Minnow during recent targeted sampling at previously occupied sites.
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Unknown Historical and present-day population abundance of mature individuals are 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?	Unknown as population size is unknown

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO).	2.64 km ²
Index of area of occupancy (IAO).	12 km ² based on species detections 2013-2024
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy is in habitat patches that are:	a. No b. No

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.	1 Pugnose Minnow is considered presumed extirpated from all watercourses other than Canard River (a tributary of Detroit River).
Number of NHIC Element Occurrences	1, a single element occurrence is reported for this species
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Yes, observed based on targeted sampling in previously occupied sites
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?	Yes
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)

Number of mature individuals is not known.

Quantitative analysis (population viability analysis conducted)

Unknown, analysis not conducted.

Threats

Threats to Pugnose Minnow in Ontario were assessed using the COSEWIC Threats Calculator (COSEWIC 2025, IN PRESS). The overall threat impact was assessed as

High–Low, corresponding to an anticipated population decline of approximately 30–70% over the next ten years or three generations, whichever is longer. These results reflect the cumulative effects of multiple threats acting across the species' restricted Ontario range.

The highest-ranked direct threats to Pugnose Minnow are climate change and severe weather, pollution, and natural system modifications, each assessed as having medium–low impact. Climate-related threats include altered hydrologic regimes and temperature extremes that may reduce habitat suitability and population resilience. Pollution-related threats include nutrient enrichment, contaminants, turbidity, and sedimentation associated with agricultural, urban, and wastewater sources. Natural system modifications include water management structures, dredging, shoreline hardening, and other alterations that affect flow, substrates, aquatic vegetation, and habitat connectivity. Other threat categories were identified but assigned unknown or uncertain impacts due to limited species-specific information.

Because dominant threats operate at the watershed scale and affect all known occurrences within the Canard River system, the Ontario population of Pugnose Minnow is considered to occur at a single threat-defined location.

Summary of Threats Identified in the COSEWIC Threats Assessment

Threat Rank	Threat Category (IUCN–CMP)	Relative Impact	Description / Key Stressors
1	Climate change and severe weather (IUCN 11)	Medium–Low	Altered hydrology, temperature extremes
2	Pollution (IUCN 9)	Medium–Low	Nutrient loading, contaminants, turbidity, sedimentation
3	Natural system modifications (IUCN 7)	Medium–Low	Flow alteration, dredging, shoreline and channel modification
4	Transportation and service corridors (IUCN 4)	Unknown	Road crossings, associated infrastructure
5	Agriculture and aquaculture (IUCN 2)	Unknown	Runoff, erosion, habitat alteration
6	Biological resource use (IUCN 5)	Unknown	Indirect habitat effects
7	Human intrusions and disturbance (IUCN 6)	Unknown	Recreational or other disturbance

Key limiting factors include habitat quality, short lifespan, and limited dispersal capacity, which reduce the species' ability to recover from habitat degradation or recolonize suitable areas following disturbance.

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	Critically imperiled in adjacent Great Lakes jurisdictions (e.g., Michigan and Ohio; NatureServe S1); globally secure (G5) but northern populations are limited
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Possibly
Would immigrants be adapted to survive in Ontario?	Possibly
Is there sufficient suitable habitat for immigrants in Ontario?	Possibly
Are conditions deteriorating in Ontario?	Probably
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, but unlikely. Due to distance and small body size it is considered unlikely that individuals would migrate into Canadian waters and that enough individuals would migrate to result in status change.

Sensitive species

Pugnose Minnow is not a data sensitive species.

Acronyms

BBRGR: Broader Biological Relevant Geographic Range
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
MNR: Ministry of Natural Resources
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
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