

**Ontario Species at Risk Evaluation Report for
Lake Chubsucker
Sucet de lac
(*Erimyzon sucetta*)**

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

Assessed by COSSARO as Endangered

November 2021

Sucet de lac (*Erimyzon sucetta*)

Le sucet de lac (*Erimyzon sucetta*) est classé dans la catégorie des espèces en voie de disparition en Ontario par le CDSEPO.

Le sucet de lac (*Erimyzon sucetta*) est un membre de la famille des Catostomidés, petit, robuste, au corps trapu qui habite les milieux humides à l'eau claire et chaude, où la végétation est abondante et la profondeur faible (< 2,5 m). Le sucet de lac en Ontario est confiné à 11 localités existantes, situées dans le lac Huron, le lac Sainte-Claire et le lac Érié, ainsi que dans un affluent de la rivière Niagara.

Cette espèce est largement répandue en Amérique du Nord, et sa répartition est continue dans l'est des États-Unis, de la Virginie à la Floride et, en direction de l'ouest, jusqu'au Texas. L'extrémité la plus au nord de l'aire de répartition du sucet de lac comprend le bassin hydrographique des Grands Lacs, où les seules mentions de spécimens au Canada proviennent de la partie la plus au sud. Le sucet de lac est coté S2 en Ontario, au Michigan et en Ohio et est présumé disparu en Pennsylvanie et peut-être également dans l'État de New York.

Les menaces pour cette espèce sont notamment l'envasement, l'augmentation de la turbidité, l'accumulation de nutriments et la perte de son habitat de prédilection (eau claire, tranquille et à la végétation abondante) liés à la modification de l'habitat, à la canalisation de l'eau, au drainage des milieux humides, à la pollution, aux changements du débit et, peut-être, à l'introduction d'espèces exotiques et au changement climatique.

Le sucet de lac (*Erimyzon sucetta*) est classé dans la catégorie des espèces en voie de disparition en Ontario, conformément au critère A3bce+4bce; B2ab(ii,iii,iv,v). Aucun facteur de modification de la situation n'a été appliqué. Une réduction > 50 % observée, estimée, déduite et présumée du nombre total d'individus matures est fondée sur le déclin continu de la situation relative des populations et du nombre total de populations, le déclin continu de l'indice de zone d'occupation (IZO) et de la qualité de l'habitat, la propagation rapide des *Phragmites* envahissants et l'impact global du calculateur de menaces très élevé – élevé.

L'IZO du sucet de lac a été estimé à 300 km² et l'espèce est présente dans 3 à 5 localités en Ontario. Le déclin continu de l'IZO est également observé et projeté, ainsi que celui de l'étendue et de la qualité de l'habitat, du nombre de populations et du nombre d'individus matures.

Cette publication hautement spécialisée n'est disponible qu'en anglais conformément au Règlement 671/92, selon lequel il n'est pas obligatoire de la traduire en vertu de la Loi sur les services en français. Pour obtenir des renseignements en français, veuillez communiquer avec le ministère l'Environnement, de la Protection de la nature et des Parcs au cossarosecretariat@ontario.ca

Executive summary

Lake Chubsucker (*Erimyzon sucetta*) is a small, robust, deep-bodied member of the sucker family that inhabits clear, warm, well-vegetated, shallow (< 2.5 m in depth) wetlands. Lake Chubsucker in Ontario is limited to 11 extant localities, which are located in Lake Huron, Lake St. Clair and Lake Erie, as well as a tributary of the Niagara River.

This species is widely distributed in North America, with a continuous distribution in the eastern United States from Virginia to Florida and west to Texas. The most northerly extent of Lake Chubsucker distribution includes the Great Lakes drainage, with the only Canadian specimens recorded from the southern Great Lakes. Lake Chubsucker is ranked S2 in Ontario, Michigan and Ohio, and is presumed to be extirpated in Pennsylvania and possibly extirpated in New York.

Threats to this species include siltation, increased turbidity, nutrient loading, and loss of its preferred wetland habitat (clear, still, well-vegetated waters) through habitat alteration, channelization, wetland drainage, pollution, changes to rates of flow, and possibly exotic species and climate change.

Lake Chubsucker (*Erimyzon sucetta*) is classified as Endangered in Ontario based on meeting criterion A3bce+4bce; B2ab(ii,iii,iv,v). No status modifiers were applied. There is an observed, estimated, inferred, and suspected reduction of >50% in total number of mature individuals, based on continuing decline in relative population status and in number of populations, a continuing decline in index of area of occupancy (IAO) and quality of habitat, the rapid expansion of invasive Phragmites and threats calculator overall impact of Very High – High. The IAO for Lake Chubsucker was estimated at 300 km² and the species occurs at 3-5 locations in Ontario. There is also a continuing observed and projected decline in IAO, area and quality of habitat, and number of populations and mature individuals.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Lake Chubsucker (*Erimyzon sucetta*) is a member of the sucker family (Catostomidae) and is one of 13 sucker species known from the Great Lakes basin and the only member of the *Erimyzon* genus in Canada.

1.1.2. Designatable units

Lake Chubsucker is known to occur in Ontario within a single designatable unit.

1.1.3. Native status

Lake Chubsucker is native to Ontario.

1.1.4. Occurrence

Lake Chubsucker has recently been confirmed at 11 extant locations in Ontario (DFO 2020 Unpublished data; COSEWIC 2021).

1.2. Eligibility results

Lake Chubsucker (*Erimyzon sucetta*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G5 (NatureServe 2021)
- IUCN: LC (December 2011)
- NRANK Canada: N2
- COSEWIC: Endangered (May 2021)
- SARA: Endangered (Schedule 1)
- ESA 2007: Threatened (2008)
- SRANK: S2 (2021)

2.2. Distribution in Ontario

Lake Chubsucker in Ontario have been documented in Lake Huron, Lake St. Clair and Lake Erie, as well as a tributary of the Niagara River (COSEWIC 2021). The distribution of Lake Chubsucker in Ontario is limited to 11 extant localities (Old Ausable Channel, L Lake, Lake St. Clair, Walpole Island dyked marshes, St. Clair National Wildlife Area (NWA), Long Point Bay, Big Creek NWA (dyked marsh), Point Pelee National Park, Rondeau Bay and Lyons Creek). Although COSEWIC (2021) reported that Lake Chubsucker is thought to be extirpated at three localities (Jeanette's Creek, Rondeau Bay, and Big Creek upper tributaries), a recent collection by DFO in 2020 confirmed this species continues to persist Rondeau Bay.

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

Lake Chubsucker is widely distributed in North America, with a continuous distribution in the eastern United States from Virginia to Florida and west to Texas (COSEWIC 2021). The most northerly extent of Lake Chubsucker distribution includes the Great Lakes drainage, with the only Canadian specimens recorded from the southern Great Lakes. The global range of this species is estimated at approximately 200,000 to 2,500,000 km² (COSEWIC 2021), however the range of Lake Chubsucker appears to be decreasing, with populations in Pennsylvania presumed to be extirpated and New York populations considered possibly extirpated (NatureServe 2021).

For the purposes of this assessment, the broader biologically relevant geographic range (BBRGR) for Lake Chubsucker is considered to be all jurisdictions within the Great Lakes Basin. This includes Michigan, Ohio, Indiana, Illinois and Wisconsin, as well as New York and Pennsylvania. Populations of Lake Chubsucker through the south and central southern United States were excluded from BBRGR, due to presumed genetic variability from populations in the Great Lakes basin.

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	n/a		
Manitoba	n/a		
Michigan	Yes	S2	NatureServe 2021
Minnesota	n/a		
Nunavut	n/a		
New York	Yes	SH	NatureServe 2021
Ohio	Yes	S2	NatureServe 2021
Pennsylvania	Yes	SX	NatureServe 2021
Wisconsin	Yes	S3	NatureServe 2021
Illinois	Yes	S2	NatureServe 2021
Indiana	Yes	S3	NatureServe 2021

2.4. Ontario conservation responsibility

Ontario's conservation responsibility for this species low, as only a small portion of the global range of Lake Chubsucker occurs within provincial boundaries.

2.5. Direct threats

A number of potential threats to Lake Chubsucker occur across its range. Threats to this species include siltation, increased turbidity, nutrient loading, and loss of its preferred wetland habitat (clear, still, well-vegetated waters) through habitat alteration, channelization, wetland drainage, pollution, changes to rates of flow, and possibly exotic species and climate change (Staton et al. 2010).

A threats calculation was conducted by COSEWIC (2021). The primary threats to this species are related to natural system modifications (agricultural practices, shoreline development and hardening, dredging, aquatic invasive species and drawdown of dyked wetlands and other water-level manipulations) and are considered to pose a very high-high impact. Pollution from agricultural, industrial and urban sources (medium impact), climate change (medium-low impact), and invasive and other problematic species (low impact) are also considered threats to Lake Chubsucker in Ontario. The overall impact of these threats is considered to be very high–high.

2.6. Specialized life history or habitat use characteristics

Lake Chubsucker is a small, robust, deep-bodied member of the sucker family (Catostomidae). The maximum size of this species is reported to be 292 mm (Coker et al. 2001), with an average total length reported at 200 mm (Holm et al. 2009). The maximum age of Lake Chubsucker reported is 8 years (Coker et al. 2001), with a generation time calculated range from 4 to 5.5 years (COSEWIC 2021).

Lake Chubsucker is found in clear, warm, well-vegetated, shallow (< 2.5 m in depth) wetlands (COSEWIC 2021). Lake Chubsucker occur in a variety of wetland types in Ontario, including dyked wetland cells (Walpole Island cells, St. Clair NWA, Big Creek NWA), small lakes (L Lake), old oxbow river channels (Old Ausable Channel), slow-moving sections of tributary streams (Little Bear Creek, Big Creek, Lyons Creek), agricultural drains (Prince Albert Drain and Collop Drain of Lake St. Clair), and coastal wetlands (Point Pelee, Rondeau Bay, Long Point Bay) (COSEWIC 2021). Bouvier and Mandrak (2011) reported a strong correlation between all life stages of Lake Chubsucker and the density and diversity of aquatic macrophytes. Water clarity to support photosynthesis and fine-grained substrates to support development of submergent and emergent plant species are presumed to be important habitat features (COSEWIC 2021). Coker et al. (2001) reported preferred water temperatures for Lake Chubsucker to be 28.2-34°C.

Trends in the habitats that support Lake Chubsucker are not well understood, however COSEWIC (2021) indicated that a decline in the availability of clear, warm, well-vegetated, and shallow wetlands is suspected due to agricultural effects and the impact of invasive species. Colonization by European Common Reed (*Phragmites australis*) is reported to be degrading Lake Chubsucker habitat by reducing wetted area and abundance of native macrophytes (COSEWIC 2021). Reductions in wetland habitat quality are also anticipated should Grass Carp (*Ctenopharyngodon idella*) spread to areas inhabited by Lake Chubsucker (Cudmore et al. 2017).

2.7. Existing Conservation and Recovery Actions

A Recovery Strategy for Lake Chubsucker has been adopted for Ontario (OMNR 2012) and a Government Response Statement produced (OMECP 2021). To help protect and recover the Lake Chubsucker, OMECP (2021) indicates that the Ontario government will directly undertake the following actions:

- Develop a Lake Chubsucker population and distribution monitoring protocol.
- Investigate the effectiveness of coastal wetland habitat restoration activities to recover Lake Chubsucker populations.
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the Endangered Species Act (ESA).
- Encourage the submission of Lake Chubsucker data to the Ministry's central repository at the Natural Heritage Information Centre.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Protect the Lake Chubsucker and its habitat through the ESA.
- Support conservation, agency, municipal, industry partners and Aboriginal communities to undertake activities to protect and recover the Lake Chubsucker. Support will be provided where appropriate through funding, agreements, permits (including conditions) and advisory services.
- Establish and communicate annual priority actions for government support in order to encourage collaboration and reduce duplication of efforts.

In addition to the above, OMECP (2021) indicates that the Government of Ontario will focus its support on these high-priority actions over the next five years.

- Enhancement and restoration of degraded habitat and addressing major threats.
- Improving the understanding of Lake Chubsucker habitat use and threats.
- Increasing knowledge of Lake Chubsucker distribution and populations.
- Increasing public awareness about the Lake Chubsucker, its habitat requirements, the role of healthy aquatic ecosystems, and opportunities for stewardship.

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

Meets Endangered, A3bce+4bce. Observed, estimated, inferred, and suspected reduction of >50% in total number of mature individuals based on: continuing decline in relative population status and in number of populations; continuing decline in index of area of occupancy and quality of habitat; rapid expansion of invasive Phragmites; and threats calculator overall impact of Very High – High.

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

Meets Endangered, B2ab(ii,iii,iv,v). IAO estimated at 300 km². Species occurs at 3-5 locations. Continuing observed and projected decline in index of area of occupancy, area and quality of habitat, and number of populations and mature individuals.

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

Not applicable. Insufficient information available on population size or trend.

3.1.4. Criterion D – Very small or restricted total population

Not applicable. Insufficient information available on population size.

3.1.5. Criterion E – Quantitative analysis

Not applicable. Analysis not completed.

3.2. Application of Special Concern in Ontario

Does not apply.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Does not apply. The species is designated G5 and ranked as Least Concern by IUCN. Widespread distribution in North America, with a small portion of this species range occurring in Ontario.

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

The broader biologically relevant geographic range of this species is considered to extend throughout the distribution in the Great Lakes basin. Populations in Michigan

and Ohio are ranked Imperiled (S2). Previous populations in New York are considered Possibly Extirpated (SH) and populations in Pennsylvania are Presumed Extirpated (SX). Because this species is ranked as vulnerable to imperiled in adjacent jurisdictions where it is presumed to occur, no status modifiers related to the BBRGR have been applied.

3.3.3. Rescue Effect

The potential for rescue effect from United States populations is unlikely. Little is known about the dispersal ability of Lake Chubsucker, however dispersal from populations in Michigan and Ohio is thought to be unlikely due to the distance between locations and unsuitable habitat conditions (COSEWIC 2021). Several locations in Ontario are also found in areas where natural dispersal is thought to be unlikely due to the presence of dykes, dams, or other impassible barriers.

3.4. Other status categories

3.4.1. Data deficient

Not applicable.

3.4.2. Extinct or extirpated

Not applicable.

3.4.3. Not at risk

Not applicable.

4. Summary of Ontario status

Lake Chubsucker (*Erimyzon sucetta*) is classified as Endangered in Ontario based on meeting criterion A3bce+4bce; B2ab(ii,iii,iv,v).

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

5. Information sources

Bouvier, L. D., and N. E. Mandrak. 2011. Information in support of a Recovery Potential Assessment of Lake Chubsucker (*Erimyzon sucetta*) in Canada. DFO Canadian Science Advisory Secretariat Research Document 2011/048. vi + 23 p.

Coker, G. A., C. B. Portt, and C. K. Minns. 2001. Morphological and ecological characteristics of Canadian freshwater fishes. DFO Canadian Manuscript Report of Fisheries and Aquatic Sciences. 2554:iv + 89 pp.

COSEWIC. 2021. IN PRESS. COSEWIC assessment and status report on the Lake Chubsucker *Erimyzon sucetta* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 49 pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>)

Cudmore, B., Jones, L.A., Mandrak, N.E., Dettmers, J.M., Chapman, D.C., Kolar, C.S, and G. Conover. 2017. Ecological risk assessment of Grass Carp (*Ctenopharyngodon idella*) for the Great Lakes basin. DFO Canadian Science Advisory Secretariat Research Document 2016/118. vi + 115 pp.

Holm, E., N. E. Mandrak, and M. Burrige. 2009. The ROM field guide to freshwater fishes of Ontario. Royal Ontario Museum, Toronto, ON.

NatureServe. 2021. NatureServe Explorer: An online encyclopedia of life [web application]. Arlington, Virginia.

Ontario Ministry of Natural Resources. 2012. Recovery Strategy for the Lake Chubsucker (*Erimyzon sucetta*) in Ontario. Ontario Recovery Strategy Series. Ontario Ministry of Natural Resources, Peterborough, Ontario. i + 3 pp. + Appendix vii + 49 pp. Adoption of the Recovery Strategy for the Lake Chubsucker (*Erimyzon sucetta*) in Canada (Staton et al. 2010).

Ontario Ministry of the Environment, Conservation and Parks. 2021. Lake Chubsucker Government Response Statement. <https://www.ontario.ca/page/lake-chubsucker-government-response-statement>.

Staton, S. K., K. L. Vlasman, and A. L. Edwards. 2010. Recovery strategy for the Lake Chubsucker (*Erimyzon sucetta*) in Canada. Species at Risk Act Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa, Ontario.

Appendix 1: Technical summary for Ontario

Species: Lake Chubsucker (*Erimyzon sucetta*)

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.	4-5.5 years. Based on average age of parents.
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, inferred. Based on declining habitat quality and threats calculator.
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. No b. Partially c. No
Are there extreme fluctuations in number of mature individuals?	Unknown

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EEO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	23,334 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>	300 km ²
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy in habitat patches that are: (a) smaller than would be required to support a viable population, and	a. No b. Yes

Extent and occupancy attributes	Value
(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>	3-5. Rondeau Bay not included as distinct location since potential threats similar to other Lake Erie populations
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	394 NHIC. Additional 18 occurrences reported by DFO
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	No
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	No
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Yes. Rondeau population was assumed extirpated, but species may persist in low numbers. Potential extirpation of Rondeau population possible.
Is there an observed, inferred, or projected continuing decline in number of locations?	Unknown
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes. Inferred decline in area and quality of habitat at localities with the introduction, establishment, and spread of the European Common Reed. Declines in the area and quality of habitat due to agricultural, industrial, and urban effluent have also been observed.
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
	Unknown

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown.

Threats

A threats calculator was completed by COSEWIC (2021) and concluded the overall impact of threats is considered to be very high–high.

- i. Natural system modification - Other ecosystem modifications (IUCN 7.3) and Dams and water management/use (IUCN 7.2) (very high-high impact)
- ii. Pollution - Agricultural (IUCN 9.3), Industrial (IUCN 9.2) and Urban (IUCN 9.1) (medium impact)
- iii. Climate change (IUCN 11) (medium impact)
- iv. Invasive and other problematic species - Aquatic Invasive Species (IUCN 8.1) and Illegal Stocking (IUCN 8.2) (low impact)

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	Species is ranked S2 in Michigan and Ohio
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Unknown
Would immigrants be adapted to survive in Ontario?	Likely
Is there sufficient suitable habitat for immigrants in Ontario?	Unknown
Are conditions deteriorating in Ontario?	Yes
Is the species of conservation concern in bordering jurisdictions?	Yes. S2 in Michigan and Ohio
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	No

Sensitive species

This is not a data sensitive species.

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
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