

**Ontario Species at Risk Evaluation Report for
Redside Dace
Méné long
(*Clinostomus elongatus*)**

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

Assessed by COSSARO as Endangered

August 2020

Méné long (*Clinostomus elongatus*)

Le méné long vit dans les ruisseaux d'amont aux eaux claires et froides. Au Canada, son aire de répartition se limite à l'Ontario, et la majorité de ses occurrences s'observent dans des affluents des bassins versants entourant l'ouest du lac Ontario. Il est également présent dans la partie supérieure de la rivière Grand, dans le bassin versant du lac Huron, et dans deux affluents du lac Simcoe. La répartition du méné long dans l'est de l'Amérique du Nord offre un schéma irrégulier. Son occurrence va de New York et au sud de l'Ontario, jusqu'au Minnesota à l'ouest et à la Virginie occidentale et au Kentucky au sud. Il s'agit d'une espèce en péril à l'échelle mondiale, et rare dans presque toute son aire de répartition.

En Ontario, le méné long est menacé par la perte et la dégradation de son habitat, les altérations du débit des cours d'eau, les espèces envahissantes et la pollution diffuse. La première inscription du méné long sur la liste des espèces en péril de l'Ontario, en 2000, était à titre d'espèce menacée. Compte tenu du déclin des populations restantes et des menaces auxquelles elles sont exposées, l'espèce a fait l'objet d'une réévaluation en 2009 et acquis le statut d'espèce en voie de disparition. Après la préparation d'un programme de rétablissement du méné long, en février 2010, le gouvernement provincial a achevé sa déclaration en réponse à ce programme en novembre de la même année.

Le statut du méné long n'a connu aucune amélioration en Ontario, où il demeure une espèce en voie de disparition. Sa petite aire de répartition, en décroissance, est sérieusement fragmentée. La population semble avoir diminué de plus de 50 % au cours de la dernière décennie en raison d'une réduction de son aire de répartition et du nombre d'emplacements où il a été observé.

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Executive summary

Redside Dace is a small colourful minnow that lives in clear, cool headwater streams. Its Canadian range is restricted to Ontario, and most occurrences are from tributaries in the watersheds surrounding western Lake Ontario. It is also found in the upper Grand River, a few rivers in the Lake Huron watershed, and two Lake Simcoe tributaries. Redside Dace has a discontinuous distribution in eastern North America. It occurs from New York and southern Ontario west to Minnesota and south to West Virginia and Kentucky. It is vulnerable globally and rare throughout most of its range.

In Ontario, Redside Dace is threatened by habitat loss and degradation, alterations to stream flows, invasive species and non-point source pollution. Redside Dace was originally assessed as Threatened in Ontario in 2000. Based on observed declines and threats to remaining populations the species was reassessed as Endangered in 2009. A recovery strategy was prepared for the Redside Dace in February 2010 (Redside Dace Recovery Team 2010) and a provincial government response statement was finalized in November 2010. Since the last assessment, new methods to sample and detect this species have been introduced including underwater video cameras and environmental DNA.

The status of Redside Dace has not improved in Ontario, and it continues to be assessed as Endangered. It has a small, declining range that is severely fragmented. The population appears to have declined by over 50% in the last decade based on a reduction in its range and the number of sites where it has been found. For example, it now appears to be extirpated in the Don River and Grand River watersheds. Most of this species' range occurs in the Greater Toronto Area, there is a predicted future decline in its range, the number of sites and quality of the habitat due to continued urban development. This is predicted to result in a continued decrease in its population. Down-listing of Redside Dace in Ontario will require a demonstration that threats to the extent and quality of its habitat have ceased, and there is an increase in the number of viable occurrences.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Redside Dace is one of two species in the genus *Clinostomus*. The other member of the genus, Rosyside Dace (*C. funduloides*) does not occur in Ontario. No subspecies of Redside Dace are recognized (COSEWIC 2017).

1.1.2. Designatable units

The Canadian population occurs within the Great Lakes – Upper St. Lawrence freshwater biogeographic zone and is considered a single designatable unit (COSEWIC 2017).

1.1.3. Native status

Redside Dace is native to Ontario and has been documented for over a century. One of the first accounts of the Redside Dace in Ontario report it as a “very abundant species found in most streams in southern and central Ontario” (Nash 1908).

1.1.4. Occurrence

Redside Dace currently occurs in Ontario with many observations in the last five years (COSEWIC 2017).

1.2. Eligibility results

Redside Dace (*Clinostomus elongatus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G3G4 (NatureServe 2018)
- NRANK Canada: N2 (NatureServe 2018)
- COSEWIC: Endangered (November 2017)
- SARA: Endangered (Schedule 1)
- ESA 2007: Endangered (February 2009)
- SRANK: S2 (ranked in 2007)

2.2. Distribution in Ontario

Redside Dace is found in streams in the Lake Ontario, Lake Erie and Lake Huron watersheds. More than 80% of the Redside Dace currently found in Ontario occur in the Greater Toronto Area. Occurrences are also known from the Lake Erie watershed (upper Grand River), rivers in the Lake Huron watershed (Saugeen River, Gully Creek, South Gully Creek, Two Tree River), and two Lake Simcoe tributaries (Kettleby Creek, Sharon Creek). It is known to be extirpated from several watersheds within its Ontario range.

There are 6-15 locations of Redside Dace in Ontario, down from a historic estimate of 26. This decline has occurred despite significant search efforts including new methods to sample and detect this species including underwater video cameras and environmental DNA (COSEWIC 2017).

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

Redside Dace has a discontinuous distribution in eastern North America. It occurs within the Hudson and upper Susquehanna river drainages (New York and Pennsylvania) and the Great Lakes (except Lake Superior) and Mississippi River basins, from New York and southern Ontario west to Minnesota and south to West Virginia and Kentucky.

Redside Dace has been listed as Least Concern on the IUCN Red List of Threatened Species. It can be locally abundant in some states, but generally rare where it occurs (NatureServe 2013). In the eastern part of the range, Redside Dace is more common (though still rare and declining in many areas), than in the west where it is more localized.

2.4. Ontario conservation responsibility

Less than 10% of the global range of the Redside Dace occurs in Ontario (Redside Dace Recovery Team 2010).

2.5. Direct threats

The overall threat level calculated for the Redside Dace is very high. The highest ranking threats based on the COSEWIC threats calculator are: residential development, alterations to flows (caused by channel widening, storm water management, stream bed alteration and reservoirs), invasive species (including introduced salmonids and other fishes), pollution from stormwater, and other urban non-point source pollution. Residential development will impact at least 10 of the 17 catchments where Redside Dace currently occurs. These threats are focused in the Greater Toronto Area where more than 80 per cent of the Redside Dace found in Canada occurs (COSEWIC 2017).

Collection for the aquarium trade, bait harvesting bycatch and agricultural run-off were ranked as low and medium threats, with climate change ranked as a significant future threat (COSEWIC 2017). A recent study that tested the thermal tolerance of Redside Dace found that temperature pulses caused by climate change can impose negative fitness consequences (Leclair, 2020).

2.6. Specialized life history or habitat use characteristics

Redside Dace are distributed discontinuously throughout their range. This isolation in cool headwater streams makes local populations vulnerable to extinction because losses from natural or human caused causes cannot be replaced by neighboring populations. Redside Dace is also highly susceptible to changes in stream flow and declines in water quality (COSEWIC 2017).

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

Endangered because of past, ongoing and future declines in the number of mature individuals.

Meets A2b: the inferred reduction in total number of mature individuals is greater than 50% over the last 10 years based on a reduction in: (b) an index of abundance appropriate to the taxon (1 km² area of occupancy grids).

Meets A3bc: the projected reduction in total number of mature individuals is greater than 50% over the next 10 years based threats within: (b) an index of abundance appropriate to the taxon (1 km² area of occupancy grids), and (c) a decline in the index of area of occupancy, and quality of habitat.

Meets A4bc: the observed and projected reduction in the total number of mature individuals is greater than 50% over a 10-year period spanning the past and future based on: (b) an index of abundance appropriate to the taxon (1 km² area of occupancy grids), and (c) a decline in the index of area of occupancy, and quality of habitat.

This includes its apparent extirpation in the Don River and Grand River watershed in the past decade, and an overall threat calculation of very high based on residential development, alterations to flows, invasive species and non-point source pollution.

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

Endangered because of its small range, fragmentation and decline.

Meets B2a: the index of area of occupancy (IAO) (332 km²) meets the threshold for Endangered and the locations are severely fragmented (separated by distances larger than its known dispersal capability) and greater than 50% of its locations probably do not have viable populations. Meets B2b (i,ii,iii,iv,v): the IAO meets the threshold for Endangered and there is an inferred decline in i) Extent of occurrence (EOO), ii) IAO, iii) area, extent and quality of habitat, iv) number of subpopulations, v) and number of mature individuals.

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

Does not apply. Exceeds thresholds.

3.1.4. Criterion D – Very small or restricted total population

Does not apply. Exceeds thresholds.

3.1.5. Criterion E – Quantitative analysis

Insufficient information.

3.2. Application of Special Concern in Ontario

Does not apply. Meets criteria for Endangered.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Not applicable. Assessed as Endangered.

3.3.2. Rescue effect

The Ontario population does not interact with other populations. Individuals in the U.S. are extremely unlikely to cross the Great Lakes and migrate to headwater streams. Rescue is very unlikely due to current isolation of sub-populations, pressures on existing habitat and the species' specialized habitat needs.

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

Redside Dace (*Clinostomus elongatus*) is classified as Endangered in Ontario based on meeting criterion A2b+3bc+4bc+B2ab(i,ii,iii,iv,v).

The status of Redside Dace has not improved in Ontario since it was last assessed as Endangered in 2009. It has a small, declining range in Ontario that is severely fragmented. The population appears to have declined by over 50% in the last decade based on a reduction in its range and the number of sites where it has been found, including likely extirpation in Don River and Grand River watersheds. Because of the overlap between the watersheds where this species occurs and continued development in the Greater Toronto Area, there is a predicted future decline in its range, the number of sites and quality of the habitat which will result in a continued decrease in its abundance. Down-listing of Redside Dace in Ontario will require a demonstration that threats to the extent and quality of its habitat have ceased, and there is an increase in the number of viable occurrences.

5. Information sources

COSEWIC. 2017. *COSEWIC assessment and status report on the Redside Dace Clinostomus elongatus in Canada*. Ottawa: Committee on the Status of Endangered Wildlife in Canada, xii + 63 pp.

Goforth, RR. 2000. *Special Animal Abstract for Clinostomus elongatus (redside dace)*. Lansing, MI: Michigan Natural Features Inventory.

Leclair, A. T. A. (2020). *Seasonal Variation in the Critical Thermal Maxima and Thermal Safety Margin of Redside Dace at its Northern Range*. (M.Sc.). University of Toronto, Toronto.

Michigan Natural Features Inventory. 2017. *Rare Species Explorer*. <https://mnfi.anr.msu.edu/explorer/species.cfm?id=11307>.

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Nash, CW. 1908. *Manual of the vertebrates of Ontario*. Toronto: Department of Education.

NatureServe. 2018. *NatureServe Explorer: An online encyclopedia of life [web application]*. https://explorer.natureserve.org/Taxon/ELEMENT_GLOBAL.2.101069/Clinostomus_elongatus

New York State Department of Environmental Conservation. 2018. *Fish Atlas Maps of New York*. March 18. <https://www.dec.ny.gov/animals/94427.html>.

Redside Dace Recovery Team. 2010. *Recovery Strategy for Redside Dace (Clinostomus elongatus) in Ontario*. Peterborough: Ontario Ministry of Natural Resources. <https://www.ontario.ca/page/redside-dace-recovery-strategy>.

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Appendix 1: Technical summary for Ontario

Species: Redside Dace (*Clinostomus elongatus*)

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.	2-3 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, inferred from declines in quality of habitat, particularly in the Greater Toronto Area where more than 80 per cent of the population occurs.
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	50% decline Based on overall threat impact of very high and an index of abundance appropriate to the taxon (area of occupancy based on 1 km x 1 km grids).
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	81% reduction Inferred from a decline in an index of abundance appropriate to the taxon (area of occupancy based on 1 km x 1 km grids).
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	>50% reduction Suspected based on ongoing habitat loss in the Greater Toronto Area.
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.	>50% reduction Inferred from a decline in an index of abundance appropriate to the taxon (area of occupancy based on 1 km x 1 km grids) and ongoing habitat loss in the Greater Toronto Area.
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. No b. Yes c. No

Demographic attribute	Value
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).	44,842 km ² (COSEWIC 2017)
Index of area of occupancy (IAO).	332 km ² (COSEWIC 2017)
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 (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. Yes b. Yes
Number of locations.	6-15 (plausible range)
Number of NHIC Element Occurrences	Not available
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Yes Observed 4.4% decline (46,900 km ² in 2007; 44,842 km ² currently)
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes Observed 47% decline (628 km ² in 2007; 332 km ² currently)
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Yes Observed. Likely extirpation from Grand River and Don River since last report, although more surveys are needed to confirm.
Is there an observed, inferred, or projected continuing decline in number of locations?	Yes Observed. Likely loss of Grand River location since last report. Likely loss of Don River location if Greater Toronto Area watershed are considered separate locations (i.e.,

Extent and occupancy attributes	Value
	there are 15 extant locations).
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes 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
Duffins Creek	2398 mean (range 423 – 2466)
Rouge River	9180 (3887 – 14 443)
Don River	1607 (1218 – 1711)
Humber River	38 582 (24 569 – 41 542)
Gully Creek	741 (206 – 1171)
TOTAL	50 900 (29 086 – 59 622)
	Number of individuals in other subpopulations is unknown

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown.

Threats

A threats calculator was prepared for this species (COSEWIC 2017). The overall threat impact is very high. The highest ranking threats are: residential development, alterations to flows (caused by channel widening, storm water management, stream bed alteration and reservoirs), invasive species (including introduced salmonids and other fish species) and pollution from stormwater, and other urban non-point source pollution.

Collection for the aquarium trade, and in bait harvesting bycatch, and agricultural run-off were ranked as low and medium threats with climate change ranked as a significant future threat.

Rescue effect and broader biologically relevant geographic range

Rescue effect attribute	Value
Status of outside population(s) most likely to provide immigrants to Ontario	Rare in Michigan (S1S2) and New York (S3). Now extirpated in several New York watersheds in the Lake Ontario basin.
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	No
Would immigrants be adapted to survive in Ontario?	Probably
Is there sufficient suitable habitat for immigrants in Ontario?	No
Are conditions deteriorating in Ontario?	Yes
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	No

Sensitive species

No

Appendix 2: Broader biologically relevant geographic range

Information regarding rank and decline for Redside Dace
(*Clinostomus elongatus*)

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Status & Trends	Condition	Notes & Sources
Quebec	n/a	n/a	n/a	n/a
Manitoba	n/a	n/a	n/a	n/a
Michigan	no	S1S2 Unquantified	Fair?	(NatureServe 2018) (Michigan Natural Features Inventory 2017) (Goforth 2000)
Minnesota	no	SNR State status: special concern Unquantified	Fair?	(NatureServe 2018) (Minnesota Department of Natural Resources 2018)
Nunavut	n/a	n/a	n/a	n/a
New York	no	S3 Appears to be declining in some watersheds	Fair	(NatureServe 2018) (New York State Department of Environmental Conservation 2018)
Ohio	no	S4 Unquantified	Good	(NatureServe 2018)
Pennsylvania	no	S5 Unquantified	Good	(NatureServe 2018)
Wisconsin	no	S3S4 Surveys in Wisconsin reported reidside dace within more drainages and at more sites that previously recorded.	Good?	Fago 1982 and 1983 in (Goforth 2000)

Broader Biologically Relevant Geographic Range in Other Jurisdictions

Redside Dace ranges south into the U.S. but have no connections to Ontario populations.

Global Status and Trends

Redside Dace has a rounded global rank of Vulnerable (NatureServe 2018) and has become extirpated from several watersheds where it once occurred.

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