

COSSARO Candidate Species at Risk Evaluation

for

Eastern Ribbonsnake (*Thamnophis sauritus*)

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

Assessed by COSSARO as Special Concern

January 2013

Final

Couleuvre mince (*Thamnophis sauritus*)

La couleuvre mince est un serpent du genre *thamnophis* ayant des rayures nettes noires et jaunes avec une bande latérale plus basse couleur châtaigne, un cou mince et des écailles blanches en avant des yeux. Elle vit dans divers habitats de terres humides ouvertes ou semi-ouvertes, dont les marais, les tourbières et les fens. On la trouve dans la plupart des États-Unis à l'est de la rivière Mississippi jusqu'au sud de l'Ontario, vers le nord jusqu'à l'île Manitoulin et le sud du Bouclier canadien. La couleuvre mince peut être assez abondante dans certains endroits, mais sa répartition est éparpillée et elle est absente de nombreuses parties de son aire de répartition. Il n'existe pas d'études de population exhaustives pour la province, mais on présume son déclin en raison de la perte continue d'habitat de terres humides ainsi qu'une augmentation des routes et de circulation de véhicules dans la majeure partie de son aire de répartition. Les couleuvres minces sont très susceptibles à la mortalité sur les routes; par conséquent, la désignation d'espèce **préoccupante** est appropriée.

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PART 1

1.1 CURRENT STATUS AND DISTRIBUTION

Current Designations:

GRANK – G5 (Assessed 07/09/2006) (NatureServe, accessed 10/01/2013)

NRANK Canada – N3 (Assessed 10/09/2011) (NatureServe, accessed 10/01/2013)

COSEWIC – Special Concern (November 2012)

SARA – Special Concern (Schedule 1) (Environment Canada, accessed 10/01/2013)

ESA 2007 – Special Concern (Ministry of Natural Resources, accessed 10/01/2013)

SRANK – S3 (NHIC/NatureServe, accessed 10/01/2013)

Distribution in Ontario:

The Eastern Ribbonsnake occurs through much of southern Ontario from Manitoulin Island east to the southeastern tip of the province and southward but it is not evenly distributed throughout this area. Eastern Ribbonsnakes are reported in 40 counties/districts in Ontario (COSEWIC 2012). The species is most numerous on the Bruce Peninsula and along the southern fringe of the Canadian Shield.

Distribution and Status Outside Ontario:

Eastern Ribbonsnake is widespread through most of the United States east of the Mississippi River, from Wisconsin to Louisiana and eastward to Maine and Florida. The northern subspecies *T.s.septentrionalis* ranges from Michigan, Ontario to Maine, south to New York, Ohio and Indiana. The species marginally ranges into Quebec and there is a disjunct population in southern Nova Scotia. Throughout their range, Eastern Ribbonsnakes appear to be patchily distributed but may be locally abundant (COSEWIC 2012).

PART 2

ELIGIBILITY FOR ONTARIO STATUS ASSESSMENT

2.1 APPLICATION OF ELIGIBILITY CRITERIA

Taxonomic Distinctness

Yes. Eastern Ribbonsnake has long been recognized as taxonomically valid. The Eastern Ribbonsnake (*Thamnophis sauritus*) has four recognized subspecies: Common (*T. s. sauritus*), Peninsula (*T.s. sackenii*), Blue-striped (*T.s. nitae*) and Northern (*T.s. septentrionalis*) (Crother 2012) with only the latter occurring in Canada.

Designatable Units

The Ontario records of Eastern Ribbonsnake constitute one designatable unit (DU). Records are widespread through much of southern Ontario with no wide gaps in records that would suggest more than one DU should be recognized. All Ontario records are of the Northern Ribbonsnake subspecies.

Native Status

Yes. Eastern Ribbonsnake is definitely native in Ontario as it lies well within the known range of the species. Records in Ontario go back to 1858, and there are many records from then until the present (COSEWIC 2012).

Presence/Absence

Present. There are records of Eastern Ribbonsnake in many counties since 2000 with some as recent as 2012 (COSEWIC 2012).

2.2 ELIGIBILITY RESULTS

1. The putative taxon or DU is valid. **Yes**
2. The taxon or DU is native to Ontario. **Yes**
3. The taxon or DU is present in Ontario, extirpated from Ontario or extinct? **Present**

PART 3

ONTARIO STATUS BASED ON COSSARO EVALUATION CRITERIA

3.1 APPLICATION OF PRIMARY CRITERIA (Rarity and Declines)

1. Global Rank

Not in any category. Global ranking is G5.

2. Global Decline

Insufficient information. There are no widespread studies of population trends that indicate that the species is declining globally (NatureServe 2013; COSEWIC2012).

3. Northeastern North America Ranks

Special Concern. Eastern Ribbonsnake has been ranked as S1, S2, SH or SX in 7 of 19 or 37% of northeastern North American jurisdictions in which the species is ranked. See detailed information in Appendix 1.

4. Northeastern North America Decline

Insufficient information. There are no systematic studies to indicate rates of population decline/range contraction in northeastern North America (NatureServe 2013).

5. Ontario Occurrences

Not in any category. The species is quite widespread in southern Ontario and the Natural Heritage Information Centre lists 275 EOs in Ontario (Oldham pers. comm. 2013)

6. Ontario Decline

Insufficient information. Although there is an inferred decline in the population due to loss of habitat and increase in roads through much of its range in Ontario, there is no clear evidence of decline in area of occupancy and extent of decline is unknown (COSEWIC 2012). The Ontario Reptile and Amphibian Atlas (Ontario Nature 2013) shows that Ribbonsnakes have not been recently recorded at many historical southwestern Ontario locations, which likely indicates that some populations are extirpated or have declined significantly. However surveys have not been consistent enough to draw conclusions.

7. Ontario's Conservation Responsibility

Not in any category. The Ontario portion makes up about 5% of the global range of Eastern Ribbonsnake and about 20% of the range of the Northern subspecies (COSEWIC 2012).

3.2 APPLICATION OF SECONDARY CRITERIA (Threats and Vulnerability)

8. Population Sustainability

Insufficient information. No Population Viability Analyses of the species have been conducted in Ontario and there have not been sufficient studies or long-term surveys to determine trends or if populations are sustainable.

9. Lack of Regulatory Protection for Exploited Wild Populations

Not in any category. This species is not harvested commercially and is not of great interest as a captive animal. Eastern Ribbonsnake is also identified as Special Concern under the Ontario Endangered Species Act, 2007 and is protected under the Fish and Wildlife Act.

10. Direct Threats

Special Concern. Eastern Ribbonsnake is being affected by habitat loss through draining or degradation of wetlands, shoreline development, habitat fragmentation and spread of invasive plant species into wetlands (e.g., European Common Reed *Phragmites australis australis*). Like other snakes, it is highly susceptible to road mortality and therefore increases in roads and traffic can be significant causes of mortality and isolation/fragmentation of populations. Sightings are largely absent from areas that have experienced significant habitat loss (Crowley 2009). It is uncertain how climate change could affect the species, but is likely to be negative if decreased precipitation leads to drying up of wetlands. It is reasonable to assume that such changes are occurring in over 25% of its range in Ontario (particularly south of the Bruce Peninsula and Canadian Shield) which qualifies as special concern in this category.

11. Specialized Life History or Habitat-use Characteristics

Special Concern. Eastern Ribbonsnake is essentially restricted to open wetlands such as bogs, fens and marshes. It also feeds primarily on amphibians and amphibian larvae, as well as small fish. These relatively narrow ecological tolerances make them quite susceptible to habitat loss, shoreline development and decline of amphibian populations (COSEWIC 2012). This habitat specialization may explain why this snake has a patchy distribution and is generally rare except for small areas of local abundance. In Nova Scotia recent studies show a similar pattern and suggest that even patches of high abundance may rapidly decline or disappear with anthropogenic changes to habitat (COSEWIC 2012).

3.3 COSSARO EVALUATION RESULTS

1. Criteria satisfied in each status category

Number of primary and secondary criteria met in each status category:

ENDANGERED – [0/0]
THREATENED – [0/0]
SPECIAL CONCERN – [1/2]

Ontario-specific criteria met in each status category (primary criteria 5, 6 and 7):

ENDANGERED – [0]
THREATENED – [0]
SPECIAL CONCERN – [0]

2. Data Deficiency

No. Although there is not detailed information on population trends in Ontario, it is certain that there are sufficient threats to infer a decline in populations and in the area of available habitat.

3. Recommended Status

It is recommended that **Eastern Ribbonsnake** be classified as **Special Concern**.

PART 4

ONTARIO STATUS BASED ON COSEWIC EVALUATION CRITERIA

4.1 APPLICATION OF COSEWIC CRITERIA

Regional (Ontario) COSEWIC Criteria Assessment

Criterion A – Decline in Total Number of Mature Individuals

Insufficient information. No numerical data are available to indicate Eastern Ribbonsnake's rate of decline in Ontario. Declines have likely occurred due to continual loss of wetland habitat and expansion of roads inferred or projected over the last 3 generations or 10 years.

Criterion B – Small Distribution Range and Decline or Fluctuation

Not in any category. The Extent of Occurrence is estimated at 186,200 km² and the Area of Occupancy is estimated at 2,160 km² according to COSEWIC (2012). The Extent of Occurrence is well over the criteria limit for Threatened but the Area of Occupancy is only slightly over the 2000 km² threshold for Threatened. This value for IAO appears to be an underestimate because Eastern Ribbonsnakes occur in 40 counties or regional municipalities (COSEWIC 2012) and well over 100 Element Occurrences (<https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB/mainSubmit.do>). Therefore it does not qualify under this criterion.

Criterion C – Small and Declining Number of Mature Individuals

Not in any category. The population size is not known but it is likely more than 10,000 mature individuals and therefore it would not qualify under this criterion even if declines were conclusive.

Criterion D – Very Small or Restricted Total Population

Not in any category. The population size is not known but it is likely more than 10,000 mature individuals (COSEWIC 2012) and certainly well over 1000. When Area of Occupancy or number of locations is used for threatened status, there must be evidence/rationale that the limited distribution makes the species vulnerable to human disturbance or stochastic events in a very short time frame. These criteria are not met. .
Note: not all of the above are required to meet criterion.

Criterion E – Quantitative Analysis

Insufficient information. No Population Viability Analyses have been conducted for this species in Ontario.

Rescue Effect

No. Although there are likely some populations that occur close to the US-Ontario or

Quebec-Ontario border, the ability of snakes to move far enough to rescue a population is unlikely.

Consideration of Special Concern Status

Yes. The Great Lakes population is relatively widespread and appears to be locally common in a few sites. However, quantitative data are lacking on population size and trends, and most information is anecdotal and from protected areas. Wetland and shoreline habitat loss and road development continue at an alarming rate within this species' range and present a significant threat to the species. Unless those losses are reversed, the species is at risk of becoming Threatened. Road mortality and habitat loss are widespread and much of the species' distribution occurs in pockets of habitat surrounded by agricultural land, roads and development (COSEWIC 2012).

4.2 COSEWIC EVALUATION RESULTS

1. Criteria satisfied in each status category

ENDANGERED – [no]
THREATENED – [no]
SPECIAL CONCERN – [yes]

2. Data Deficiency

No

3. Status Based on COSEWIC Evaluation Criteria

The application of COSEWIC evaluation criteria suggests that **Eastern Ribbonsnake** is **Special Concern** in Ontario.

PART 5

ONTARIO STATUS DETERMINATION

5.1 APPLICATION OF COSSARO AND COSEWIC CRITERIA

COSSARO and COSEWIC criteria give the same result. **Yes**

5.2 SUMMARY OF STATUS EVALUATION

The Eastern Ribbonsnake (*Thamnophis sauritus*) is a slender gartersnake that is characterized by clean black and yellow stripes with a lower lateral chestnut stripe, a slender neck and white scale in front of the eye. It is found in a variety of open or semi open wetland habitats including marshes, bogs and fens. It is found through much of the United States east of the Mississippi River extending into southern Ontario north to Manitoulin Island and the southern Canadian Shield. Eastern Ribbonsnake may be fairly abundant in some locations, but is patchily distributed and absent from many areas within its range. There is a lack of comprehensive population studies in the province; however, a population decline is inferred due to the continued loss of wetland habitat as well as an increase in roads and traffic through much of its range. Ribbonsnakes are highly susceptible to road mortality. Consequently, a status of Special Concern is appropriate.

Information Sources

1. Literature Cited

Crother, B.I. (ed.). 2012. Scientific and standard English names of amphibians and reptiles of North America North of Mexico, with comments regarding confidence in our understanding. 7th Edition. Herpetological Circulars. Society for the Study of Amphibians and Reptiles, St. Louis, Missouri.

Crowley, J. 2009. Identifying Habitat for At-risk Reptiles in Grey and Bruce Counties 2008-2009. Project Report to Ontario Ministry of Natural Resources. Peterborough, ON.

COSEWIC. 2012. COSEWIC status report on Eastern Ribbonsnake *Thamnophis sauritus* in Canada. Two-month Interim Report, November 2012.

NatureServe. 2013. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.3. NatureServe, Arlington, Virginia. Available at <http://natureserve.org/>. Last updated July 2012. Accessed: January 9 & 16 2013.

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http://www.ontarionature.org/protect/species/reptiles_and_amphibians/northern_ribbons_nake.php

2. Community and Aboriginal Traditional Knowledge Sources

No ATK was available for this report.

Appendix 1

NORTHEASTERN NORTH AMERICA STATUS RANK AND DECLINE

	Subnational Rank	Sources	Decline	Sources
CT	S3	NatureServe	See section 3.1.4	NatureServe
DE	S2			
IL	S1			
IN	SNR			
IA	Not Present			
LB	Not Present			
KY	S3			
MA	S4S5			
MB	Not Present			
MD	S5			
ME	S3			
MI	S5			
MN	Not Present			
NB	Not Present			
NF	Not Present			
NH	S5			
NJ	S5			
NS	S2S3			
NY	S5			
OH	SNR			
ON	S3			
PA	S3			
PE	Not Present			
QC	S1			
RI	S3			
VA	S5			
VT	S2			
WI	S1			
WV	S2			

Occurs as a native species in 21 of 29 northeastern jurisdictions
 Srank or equivalent information available for 19 of 21 jurisdictions = (90%)
 S1, S2, SH, or SX in 7 of 19 = (37%)