

Ontario Species at Risk Evaluation Report
for
Eastern Milksnake (*Lampropeltis triangulum*)

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

Assessed by COSSARO as Not at Risk

May 2015

Final

Couleuvre tachetée (*Lampropeltis triangulum*)

La couleuvre tachetée (*Lampropeltis triangulum*) est de couleur havane, brune ou grise et présente des taches dorsales rouges ou brunes bordées de noir. La longueur totale maximale consignée pour cette espèce est 132 cm, mais la longueur moyenne varie entre 60 et 90 cm. L'aire de répartition mondiale de la couleuvre tachetée englobe le sud-est du Canada et l'est des États-Unis. En Ontario, elle s'étend de la partie sud de la province jusqu'au nord du lac Nipissing et de Sault Ste. Marie. La couleuvre tachetée est généraliste dans son choix d'habitats, comme en témoignent différents habitats dans les hautes terres, mais on la trouve le plus souvent dans des habitats ouverts, notamment dans les affleurements rocheux, les champs et les prés. On l'aperçoit souvent dans des habitats modifiés par l'activité humaine, notamment dans de vieux immeubles où sa principale proie, c'est-à-dire les rongeurs, peut être abondante. La couleuvre sort de son gîte d'hibernation au début du printemps et la période de reproduction peut s'étendre sur plusieurs semaines. Au début de l'été, une couvée d'environ dix œufs est déposée dans des tas de végétaux, de grumes en décomposition, de vieilles souches ou d'autres substrats convenables.

Il n'y a pas d'estimations disponibles de l'abondance de la couleuvre tachetée en Ontario, mais la taille globale de la population adulte, qui est probablement beaucoup plus grande que 10 000 individus, a été consignée dernièrement dans chaque administration à l'intérieur de sa propre aire de répartition en Ontario. Les menaces les plus importantes pour la couleuvre tachetée au Canada sont la perte d'habitat et la mortalité routière. L'abattage intentionnel, la capture pour le commerce des animaux de compagnie et la prédation sont au nombre des autres menaces qui la guettent. Au Canada, la couleuvre tachetée est considérée comme une espèce « préoccupante » en vertu de la *Loi sur les espèces en péril*. La couleuvre tachetée est également inscrite comme un « reptile spécialement protégé » en vertu de la *Loi de 1997 sur la protection du poisson et de la faune*.

La couleuvre tachetée a été désignée « non en péril » par le CDSEPO. Elle montre des signes de déclin dans l'extrême sud-ouest de l'Ontario ainsi que dans la région de Toronto, mais ces secteurs représentent une petite partie de son aire de répartition provinciale. Il n'y a pas d'indications claires de déclin dans d'autres endroits et les menaces pour cette espèce sont moins graves dans la partie de son aire de répartition qui est située sur le Bouclier canadien et dans les environs.

Cette publication hautement spécialisée « Ontario Species at Risk evaluation report prepared under the Endangered Species Act, 2007 by the Committee on the Status of Species at Risk in Ontario », 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 des Richesses naturelles par courriel à recovery.planning@ontario.ca.

Executive summary

The Eastern Milksnake (*Lampropeltis triangulum*) is tan, brown or grey and has large, black-outlined red or brown dorsal blotches. The maximum total length recorded for this species is 132 cm, although normal lengths range from 60-90 cm. The global range of the Eastern Milksnake includes southeastern Canada and eastern U.S. In Ontario, it ranges across the southern part of the province north to Lake Nipissing and Sault Ste Marie. Eastern Milksnakes are habitat generalists that occur in a variety of upland habitats but are most commonly found in open habitats, including rock outcrops, fields and meadows. They are often found in human-altered habitats including old buildings where its predominant prey (i.e. rodents) may be abundant. The snakes emerge from hibernacula in early spring, after which time mating may last several weeks. In early summer, a clutch of approximately 10 eggs are laid in piles of vegetation, rotting logs, old stumps or other suitable substrates.

Abundance estimates for the Eastern Milksnake in Ontario are unavailable, but the total adult population size is likely much greater than 10,000, and it has been recently recorded in every jurisdiction within its known Ontario range. The most significant threats to Eastern Milksnakes in Canada are habitat loss and road mortality. Other threats include intentional killing, collection for the pet trade, and predation. In Canada, the Eastern Milksnake is considered a species of 'Special Concern' under the federal *Species at Risk Act*. The Eastern Milksnake is also listed as a 'specially protected reptile' under the *Fish and Wildlife Conservation Act*.

The Eastern Milksnake has been designated Not at Risk by COSSARO. It has exhibited declines in extreme southwestern Ontario and in the Toronto area, but these areas represent a small portion of its provincial range. There is no clear evidence of decline elsewhere and threats to this species are less severe in the part of its range on and near the Canadian Shield.

Eastern Milksnake from Port Severn, Ontario. Photo by James Kamstra



1. Background information

1.1. Current designations

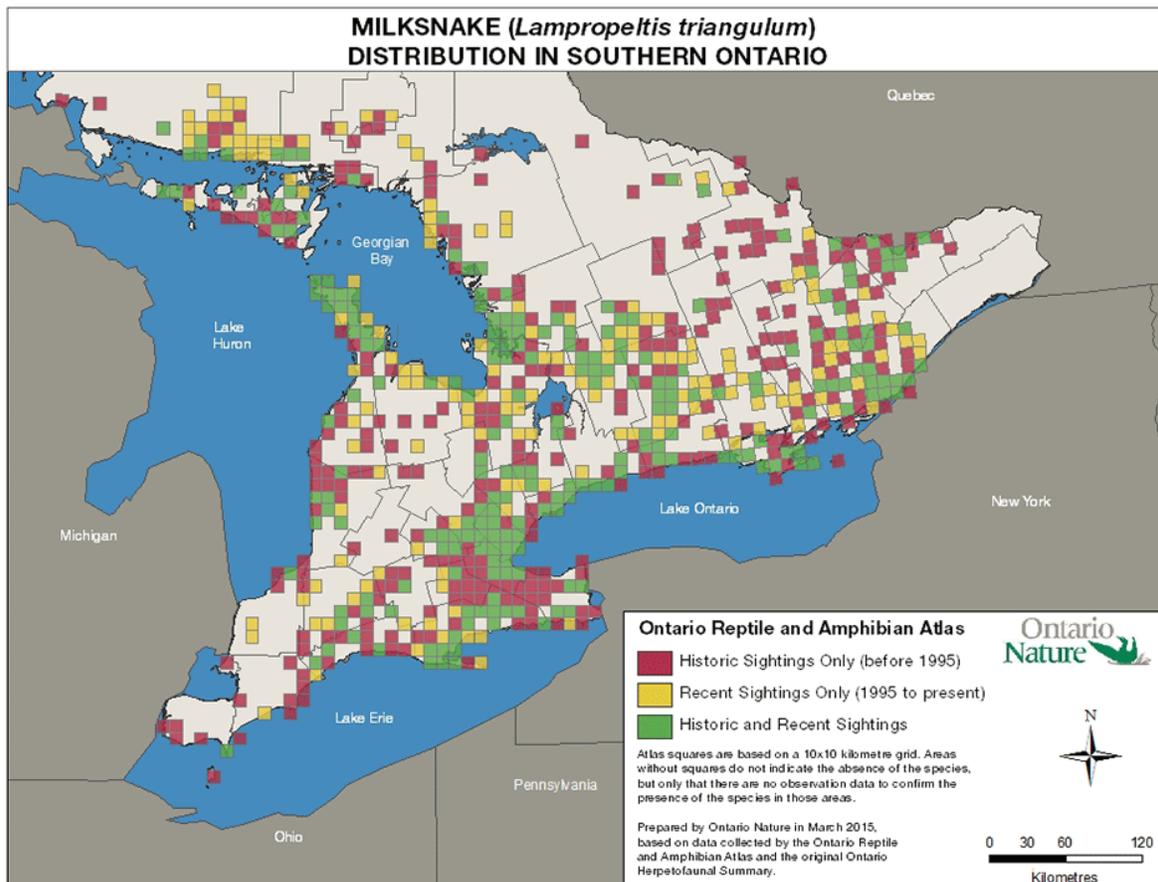
- GRANK: G5T5 (NatureServe 2014)
- NRANK Canada: N3N4
- COSEWIC: Special Concern (May 2014)
- SARA: Special Concern (Schedule 1)
- ESA 2007: Special Concern
- SRANK: S3

1.2. Distribution in Ontario

The Eastern Milksnake is widely distributed through most of southern Ontario extending as far north as southern Algoma District, Sudbury and Lake Nipissing. There are historic records from Sault Ste. Marie. Range gaps occur in the southeastern corner of the province and in the Algonquin Highlands but otherwise the range is continuous. The Natural Heritage Information Centre (NHIC) recognizes 597 Element Occurrences (EOs) in the province (Oldham, pers. comm. 2014). The Extent of Occurrence in Ontario is approximately 200,000 km² and the Area of Occupancy is probably about 25,000 km² (COSEWIC 2014). Ontario accounts for approximately 80% of this species' Canadian range.

The Ontario Reptile and Amphibian Atlas coordinated by Ontario Nature (2015) is compiling distribution data on all Ontario herpetofauna including Eastern Milksnake (Figure 1). Eastern Milksnake has been recently (1994-2014) documented in 395 UTM squares (each 10 x 10 km) and 327 other squares prior to 1994, which are considered historic, for a total of 722. Records are provided from a variety of sources and generally not from targeted surveys. As a result, milksnakes may still be present in a high percentage of the squares with historical sightings. However, they may no longer be present in some of those squares due to habitat alterations, and they have largely disappeared from extreme southwestern Ontario. Recent observations show that it is more widespread at the northern edge of its range than previously believed (Figure 1).

Figure 1. Ontario distribution of species (Ontario Nature 2015).



1.3. Distribution and status outside Ontario

The global range of the Eastern Milksnake extends from southeastern Minnesota, central Ontario and southern Maine south to northeastern North Carolina and northern Alabama. Population declines have been reported in Virginia (Mitchell 1994).

1.4. Ontario conservation responsibility

Just over 10% of the global range of the Eastern Milksnake occurs in Ontario.

1.5. Direct threats

The most significant threats to the Eastern Milksnake are habitat loss due to development and agricultural intensification and road mortality. Other threats vary in their intensity throughout its range and include persecution, illegal collection and subsidized predators.

Although milksnakes frequently occur in human-altered landscapes, the trend toward more intensive land use practices particularly in agriculture is no longer leaving suitable

habitat patches where the species can survive. The Ontario Reptile and Amphibian Atlas has shown that milksnakes have not been observed in over 20 years in 45% of the 10 x 10 km UTM squares and may have disappeared from some of those. The species is cryptic however, and lack of recent record does not mean they are no longer present. In addition, 21% of UTM squares represented new sightings between 1995 and 2014.

Mortality on roads is one of the most serious threats to this species since individuals. The ever-expanding road network and increasing traffic volume is limiting the snakes' ability to disperse or colonize habitats that become available. Roads also fragment contiguous blocks of habitat, creating barriers and occasionally making the remaining blocks too small to sustain a population. Of the 2571 Eastern Milksnake observation records in the Ontario Reptile and Amphibian Atlas database, 227 (10%) represent road kills, and another 83 were observed on roads (Ontario Nature 2015).

Eastern Milksnakes are occasionally killed when encountered especially since they superficially resemble rattlesnakes and often rattle their tails when nervous (From 1972).

1.6. Specialized life history or habitat use characteristics

The Eastern Milksnake is not particularly specialized as it is a habitat generalist and frequently occurs in human-altered habitats as long as there is sufficient cover and an abundance of small mammals for food. Small mammals make up the largest part of its diet but it also feeds opportunistically on birds, amphibians, reptiles and invertebrates. It is a relatively long lived species and has a long period of reproductive capability. However, the naturally high annual adult survival increases the vulnerability of populations to increases in adult mortality from roads or persecution.

2. Eligibility for Ontario status assessment

2.1. Eligibility conditions

2.1.1. Taxonomic distinctness

Yes. The Milksnake (*Lampropeltis triangulum*) was considered to be a single species with multiple subspecies ranging through a large part of North, South and Central America (Crother 2012). Recently however, it has been divided into at least seven distinct species. The subspecies *L.t. triangulum* along with two closely related subspecies which occur in Canada and the northeastern United States, has been elevated to a full species now known as the Eastern Milksnake (Ruane *et al.* 2014). Milksnake as a species was first described in 1789 (COSEWIC 2014). Although the subspecies issue is confusing, in Ontario there has only ever been one subspecies reported that is clearly distinct taxonomically.

2.1.2. Designatable units

No. The range of the Eastern Milksnake in Ontario is continuous with no appreciable

gaps that would justify recognizing more than one Designable Unit.

2.1.3. Native status

Yes. The Eastern Milksnake has been known to occur in Canada since at least 1874 (COSEWIC 2014). Its range is contiguous with the species range in the United States and Quebec.

2.1.4. Occurrence

Yes. There are many recent reports of Eastern Milksnake in the Ontario Reptile and Amphibian Atlas (Ontario Nature 2015).

2.2. Eligibility results

Eastern Milksnake (*Lampropeltis triangulum*) is eligible for status assessment 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

There is not sufficient information to determine the decline in numbers since Eastern Milksnake is a cryptic species whose populations are difficult to sample effectively. There are recent records of the species in all upper level municipalities where it has been reported historically, therefore there is no appreciable contraction of its range, and indeed there is suggestion that its range is either expanding northwards, or that there have been more northerly populations than were previously documented (Ontario Nature 2015). The only two areas where significant declines have been reported in COSEWIC (2014) are in Essex county in extreme southwestern Ontario and in the Toronto area. There is an inferred decline in other parts of Ontario where urbanization and agricultural intensification is occurring (COSEWIC 2014), but this is probably far less than 30% in 10 years or three generations which is the threshold for Threatened status.

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

Does not apply. The Eastern Milksnake has a widespread distribution in the province extending through most of southern Ontario.

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

Does not apply. Although the population of Eastern Milksnake in the province has not been estimated, it is likely to be considerably more than 10,000 adults which is the threshold for Threatened status.

3.1.4. Criterion D – Very small or restricted total population

Does not apply. The Eastern Milksnake does not have a small or restricted population in the province.

3.1.5. Criterion E – Quantitative analysis

Does not apply. A quantitative population analysis has not been conducted for the Eastern Milksnake and therefore the probability of extirpation has not been determined.

3.2. Application of Special Concern in Ontario

The Eastern Milksnake does not qualify for the status of Threatened or Endangered in any of the categories above. The only criteria above that has any potential application to the designation of Special Concern is Criterion A relating to a population decline. However, in order to be assessed as Special Concern, IUCN guidelines suggest numbers be near the Threatened (i.e. Vulnerable) threshold. Using best available data, the rate of decline is not quantifiable but is probably not near Threatened given the number of recent reported observations.

The Eastern Milksnake is likely declining in parts of its Ontario range that lie south of the Canadian Shield due to habitat loss, agricultural intensification and especially from road expansion resulting in increased mortality. However the rate of decline has not been quantified and the species continues to be widespread across most of southern Ontario. The only areas where there is evidence for decline are in the Toronto area and extreme southwestern Ontario, and these make up a very small portion of the species range. There are recent documented records of the species in all upper tier municipalities from where it is known, showing that Eastern Milksnake has experienced minimal contraction of range. As a result it does not qualify for Special Concern.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Just over 10% of the global range of the Eastern Milksnake occurs in Ontario which is not enough to be considered a high conservation responsibility.

3.3.2. Rescue effect

Rescue effect from bordering municipalities is unlikely because of the Milksnake's limited dispersal ability and the significant barriers along the border including the Great Lakes, and major rivers.

3.4. Other status categories

3.4.1. Data deficient

Does not apply. Although there is not sufficient information to determine the rate of decline, there is detailed distribution data available and the species is relatively well known.

3.4.2. Extinct or extirpated

Does not apply. The species is clearly extant in Ontario.

3.4.3. Not at Risk

The Eastern Milksnake (*Lampropeltis triangulum*) has been assessed by COSSARO to be classified as Not at Risk in Ontario.

4. Summary of Ontario status

Eastern Milksnake (*Lampropeltis triangulum*) is classified as **Not at Risk** in Ontario. It remains widespread across most of Southern Ontario with no clear evidence of decline except in extreme southwestern Ontario and Toronto. It is probably declining in some areas in the southern part of its range particularly due to habitat loss and road mortality. The species is relatively adaptable to human altered environments since it frequently occurs near farms and homes where some habitat remains. The threats to this species are less intense throughout the large part of its range on and near the edge of the Canadian Shield.

Abundance estimates for the Eastern Milksnake are unavailable, but the total adult population size is likely much greater than 10,000, and it has been recently recorded in every jurisdiction within its known Ontario range.

5. Information sources

COSEWIC. 2014. COSEWIC assessment and status report on the Eastern Milksnake *Lampropeltis triangulum* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 61 pp.

Crother, B.I. (ed.). 2012: Scientific and Standard English Names for Amphibians and Reptiles of North America north of Mexico, 7th Edition. Herpetological Circular No. 39. Society for the Study of Amphibians and Reptiles. Salt Lake City, 101 pp.

Froom, B. 1972. The Snakes of Canada. McClelland and Stewart Limited, Toronto, ON. 128 pp.

Mitchell, J. C. 1994. The Reptiles of Virginia. Smithsonian Institution Press, Washington, DC. 368 pp.

[NatureServe 2014](#). [website accessed on December 5, 2014].

Oldham, Michael J., 2014. Pers comm. Botanist and Herpetologist, Natural Heritage Information Centre, Ontario Ministry of Natural Resources & Forestry, Peterborough.

Ontario Nature 2015. ["Milksnake" in Ontario Reptile and Amphibian Atlas Program.](#) [website accessed May 26, 2015.

Ruane, S., R.W. Bryson, R.A. Pyron and F.T. Burbrink. 2014: Coalescent species limitations in milksnakes (genus *Lampropeltis*) and impacts of phylogenetic comparative analysis. *Systematic Biology* 63:231-250.

Appendix 1: Technical summary for Ontario

Species: Eastern Milksnake (*Lampropeltis triangulum*)

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. | 7 - 14 years |
| 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? | NA |
| 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. (Request value from MNR or use http://geocat.kew.org/) | Probably about 200,000 km ² since COSEWIC (2013) estimated about 30,000 for Canada and 80% of range is in Ontario |
| Index of area of occupancy (IAO). (Request value from MNR or use http://geocat.kew.org/) | Probably about 25,000 km ² since COSEWIC (2013) estimated about 30,000 for Canada and 80% of range is in Ontario |

| | |
|---|---|
| Is the total population severely fragmented? (i.e. is >50% of its total area of occupancy is 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?) | No |
| Number of locations (<i>as defined by COSEWIC</i>). | >>>10 |
| Number of NHIC Element Occurrences (<i>Request data from MNR</i>) | 597 EOs |
| Is there an observed, inferred, or projected continuing decline in extent of occurrence? | Unknown |
| Is there an observed, inferred, or projected continuing decline in index of area of occupancy? | Unknown |
| Is there an observed, inferred, or projected continuing decline in number of populations? | Unknown |
| Is there an observed, inferred, or projected continuing decline in number of locations? | No |
| Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat? | Inferred decline based on absence of recent records in SW Ontario and vicinity of Toronto |
| 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)

Less than 10,000.

Quantitative analysis (population viability analysis conducted)

Not done due to lack of data.

Rescue effect

| Rescue effect attribute | Likelihood |
|--|-----------------------|
| Is immigration of individuals and/or propagules between Ontario and outside populations known or possible? | Possible but unlikely |
| Would immigrants be adapted to survive in Ontario? | Yes |

| | |
|---|---|
| Is there sufficient suitable habitat for immigrants in Ontario? | Yes, but not in areas where decline is inferred |
| Is the species of conservation concern in bordering jurisdictions? | Yes only in Quebec |
| Is rescue from outside populations reliant upon continued intensive recovery efforts? | Unknown |

Appendix 2: Adjoining jurisdiction status rank and decline Information regarding status rank and decline for Eastern Milksnake

| Jurisdiction | Subnational rank | Sources | Population trend | Sources |
|--------------|------------------|------------------|------------------|---------|
| Ontario | S3 | NatureServe 2014 | n/a | n/a |
| Manitoba | Not present | n/a | n/a | n/a |
| Michigan | S5 | NatureServe 2014 | n/a | n/a |
| Minnesota | S4 | NatureServe 2014 | n/a | n/a |
| Nunavut | Not present | | n/a | n/a |
| New York | S5 | NatureServe 2014 | n/a | n/a |
| Ohio | SNR | NatureServe 2014 | n/a | n/a |
| Pennsylvania | S5 | NatureServe 2014 | n/a | n/a |
| Quebec | S3 | NatureServe 2014 | n/a | n/a |

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

GRANK: global conservation status assessments

IAO: index of area of occupancy

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

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