

Addendum
to the
COSEWIC Status Report
on the
Spring Salamander
Gyrinophilus porphyriticus
Carolinian population
in Canada

**DATA DEFICIENT
2018**

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

*Addendum to the COSEWIC Status Report on the Spring Salamander (*Gyrinophilus porphyriticus*), Adirondack / Appalachian and Carolinian population.

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Production note:

COSEWIC would like to acknowledge Kristiina Ovaska and Joe Crowley for writing the addendum to the status report on the Spring Salamander (*Gyrinophilus porphyriticus*), Carolinian population, in Canada. This addendum was overseen and edited by Tom Herman, Co-chair of the COSEWIC Amphibians and Reptiles Specialist Subcommittee.

*Please note: This is an addendum to the COSEWIC Status Report on the Spring Salamander (*Gyrinophilus porphyriticus*), Adirondack / Appalachian and Carolinian population, in which the latter was designated Extirpated in 2011. Please refer to the 2011 report for more information on this species.

For additional copies contact:

COSEWIC Secretariat
c/o Canadian Wildlife Service
Environment and Climate Change Canada
Ottawa, ON
K1A 0H3

Tel.: 819-938-4125

Fax: 819-938-3984

E-mail: ec.cosepac-cosewic.ec@canada.ca
<http://www.cosewic.gc.ca>

Également disponible en français sous le titre Addenda au Rapport de situation du COSEPAC sur le Salamandre pourpre (*Gyrinophilus porphyriticus*), population carolinienne, au Canada.

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COSEWIC Assessment Summary

Assessment Summary – April 2018

Common name

Spring Salamander - Carolinian population

Scientific name

Gyrinophilus porphyriticus

Status

Data Deficient

Reason for designation

The historical presence of this salamander in Ontario is based on a record comprised of three specimens dating from 1877. Only one of the three museum specimens associated with this record remains. The identification of this specimen cannot be ascertained with confidence due to its poor present condition and developmental stage. While the possibility remains that Spring Salamander is a native species to Ontario and the Carolinian DU is valid, this cannot be confirmed at present.

Occurrence

Ontario

Status history

The species was considered a single unit and designated Special Concern in April 1999 and May 2002. Split into two populations in May 2011. The Carolinian population was designated Extirpated in May 2011. Species considered in April 2018 and placed in the Data Deficient category.



Addendum to the COSEWIC assessment and status report on the Spring Salamander, Adirondack / Appalachian and Carolinian populations *Gyrinophilus porphyriticus* in Canada. 2011. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 52 pp.

Gyrinophilus porphyriticus

Spring Salamander
Carolinian Population

salamandre pourpre
Population carolinienne

Range of occurrence in Canada (province/territory/ocean): Ontario

Preface:

Since the previous status assessment, new information has come to light that casts doubt on the identity of the sole remaining museum specimen of Spring Salamander (*Gyrinophilus porphyriticus*) from Ontario (Mills 2016). This record played a key part in the designation of Spring Salamander (Carolinian population) as Extirpated in COSEWIC's 2011 assessment. Unfortunately, conclusive determination of the identity of this specimen is impossible using currently available methods due to its poor condition and larval developmental stage. Therefore, the former presence of Spring Salamander in Ontario and the validity of the Carolinian DU remains enigmatic. Consequently, the wildlife species meets COSEWIC's guidelines for use of Data Deficient.

Previous COSEWIC Assessment:

Status category: Extirpated

Criteria applied at last assessment:
Not applicable

Evidence (indicate as applicable):

Wildlife species:

Change in eligibility, taxonomy or designatable units: Yes

Explanation:

Spring Salamander's status as a native species in Ontario is based on two >100 year old records, both of which have been questioned (COSEWIC 2011; Mills 2016). The locality information associated with one of the records (Britannia Creek) is in doubt, so it was not considered in the previous status assessment (COSEWIC 2011). The former presence of Spring Salamander in Ontario depends on the validity of the other record, which dates from 1877. Two of the three museum specimens associated with this record have been lost.

On morphological grounds, Mills (2016) recently called into question the identification of the single remaining specimen. That specimen is larval, wet preserved (141 yrs in formalin) and badly degraded, significantly constraining both molecular and morphological assessments. Although F.R. Cook (2009 in COSEWIC 2011) noted that it was virtually impossible for this specimen to be *Desmognathus*, Mills (2016), following an x-ray assessment of the same specimen, suggested that it was indistinguishable from a larval Red Salamander (*Pseudotriton ruber*), due to incomplete ossification of skull bones (Mills 2016). Red Salamander has a similar range in the U.S. as Spring Salamander, but there is no record of its occurrence in Canada. He concluded that the remaining specimen could not support confident identification given its present poor condition and noted that no photographs or other historical documentation exists to support previous identifications. The Amphibian and Reptile Specialist Subcommittee of COSEWIC concurred.

The 1877 record played a key part in the designation of the Carolinian DU as extirpated in COSEWIC's 2011 assessment. Because the authenticity of this record is now in question, there is no longer sufficient support for this status for the Carolinian DU. However, the possibility remains that Spring Salamander is a native species to Ontario and that the Carolinian DU is valid, although it cannot be confirmed at this time.

Range:

Change in Extent of Occurrence (EO):	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Change in Index of Area of Occupancy (IAO):	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Change in number of known or inferred current locations:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Significant new survey information	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>

Explanation: NA

Population Information:

Change in number of mature individuals:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Change in population trend:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Change in severity of population fragmentation:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Change in trend in area and/or quality of habitat:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
Significant new survey information	yes <input type="checkbox"/> no <input checked="" type="checkbox"/>

Explanation: NA

Threats:

Change in nature and/or severity of threats:	yes <input type="checkbox"/> no <input checked="" type="checkbox"/> unk <input type="checkbox"/>
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Explanation: NA

Protection:

Change in effective protection:

yes ☐ no ☒

Explanation: NA

Rescue Effect:

Change in evidence of rescue effect:

yes ☐ no ☒

Explanation: NA

Quantitative Analysis:

Change in estimated probability of extirpation:

yes ☐ no ☒ unk ☐

Details: NA

Summary and Additional Considerations:

Since the previous status assessment, new information has come to light that casts doubt on the identity of the sole remaining museum specimen of Spring Salamander (*Gyrinophilus porphyriticus*) from Ontario (Mills 2016). This record played a key part in the designation of the Spring Salamander (Carolinian population) as Extirpated in COSEWIC's 2011 assessment. Unfortunately, conclusive determination of the identity of this specimen is impossible using currently available methods due to its poor condition and larval developmental stage. Therefore, the former presence of Spring Salamander in Ontario and the validity of the Carolinian DU remain enigmatic.

As a result of this new information, the Ontario Natural Heritage Information Centre has removed Spring Salamander from Ontario's list of tracked species, meaning that it is no longer considered to be a native species by the Ontario Ministry of Natural Resources and Forestry. However, the possibility remains that it is a native species to the province. At present, the best available information is insufficient to resolve whether the species is native to Ontario (and determine whether it is eligible for assessment) and therefore the species meets COSEWIC's guideline (a) for use of Data Deficient. This is also consistent with IUCN Red List Guidelines for designation of Data Deficient when dealing with species with unknown provenance and/or taxonomic uncertainty.

Acknowledgements and authorities contacted:

Jim Bogart
Professor Emeritus
Department of Integrative Biology
University of Guelph,
Guelph, Ontario

Peter Mills
Graduate Student
Environmental & Life Science,
Trent University
Toronto, Ontario

Information sources:

COSEWIC. 2011. COSEWIC assessment and status report on the Spring Salamander, Adirondack / Appalachian and Carolinian populations *Gyrinophilus porphyriticus* in Canada. 2001. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 52 pp.

Mills, P. 2016. The Spring Salamander in Ontario. Canadian Herpetologist 6(1):15–16.

Author of Addendum:

Joe Crowley
Herpetology Species at Risk Specialist
Species Conservation Policy Branch
Ontario Ministry of Natural Resources and Forestry
Peterborough, Ontario

and

Kristiina Ovaska
Ecologist
Biolinx Environmental Research Ltd.
Victoria, British Columbia

TECHNICAL SUMMARY

Gyrinophilus porphyriticus

Spring Salamander

salamandre pourpre

Carolinian population

Population carolinienne

Range of occurrence in Canada (province/territory/ocean): Ontario

Demographic Information

Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines (2008) is being used)	7 years
Is there an inferred continuing decline in number of mature individuals?	Not applicable (no recent records)
Estimated percent of continuing decline in total number of mature individuals within 2 generations.	Not applicable
Inferred percent reduction in total number of mature individuals over the last 3 generations.	Not applicable
Suspected percent reduction in total number of mature individuals over the next 3 generations.	Not applicable
Inferred percent reduction in total number of mature individuals over any 3 generations period, over a time period including both the past and the future.	Not applicable
Are the causes of the decline clearly reversible and understood and ceased?	Not applicable
Are there extreme fluctuations in number of mature individuals?	Not applicable

Extent and Occupancy Information

Estimated extent of occurrence	0
Index of area of occupancy (IAO) (Always report 2x2 grid value).	0
Is the population severely fragmented?	Not applicable
Number of locations	0
Is there an inferred continuing decline in extent of occurrence?	Not applicable
Is there an inferred continuing decline in index of area of occupancy?	Not applicable
Is there an inferred continuing decline in number of populations?	Not applicable
Is there an inferred continuing decline in number of locations*?	Not applicable
Is there an inferred continuing decline in area, extent and/or quality of habitat?	Not applicable
Are there extreme fluctuations in number of populations?	Not applicable

Are there extreme fluctuations in number of locations?	Not applicable
Are there extreme fluctuations in extent of occurrence?	Not applicable
Are there extreme fluctuations in index of area of occupancy?	Not applicable

Number of Mature Individuals (in each population)

Population	N Mature Individuals
Total	0

Quantitative Analysis

Probability of extinction in the wild is at least 20% within 5 generations.	Not applicable
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Threats (actual or imminent, to populations or habitats)

Historically, loss of habitat from multiple anthropogenic sources

Rescue Effect (immigration from outside Canada)

Status of outside population(s)? New York (S5 – least concern); no records exist from near the international border, and the distribution in the state is scattered	
Is immigration known or possible?	No
Would immigrants be adapted to survive in Canada?	Unknown
Is there sufficient habitat for immigrants in Canada?	Not likely
Is rescue from outside populations likely?	No

Data Sensitive Species

Is this a data sensitive species?
No

Status History

COSEWIC: The species was considered a single unit and designated Special Concern in April 1999 and May 2002. Split into two populations in May 2011. The Carolinian population was designated Extirpated in May 2011. Species considered in April 2018 and placed in the Data Deficient category.

Status and Reasons for Designation

Status: Data Deficient	Alpha-numeric Code: Not applicable
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Reasons for Designation:

The historical presence of this salamander in Ontario is based on a record comprised of three specimens dating from 1877. Only one of the three museum specimens associated with this record remains. The identification of this specimen cannot be ascertained with confidence due to its poor present condition and developmental stage. While the possibility remains that Spring Salamander is a native species to Ontario and the Carolinian DU is valid, this cannot be confirmed at present.

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Not applicable

Criterion B (Small Distribution Range and Decline or Fluctuation): Not applicable

Criterion C (Small and Declining Number of Mature Individuals): Not applicable

Criterion D (Very Small or Restricted Population): Not applicable

Criterion E (Quantitative Analysis): Not applicable

Comments (not part of Assessment Summary)

The SAS template is used for the review of classification (i.e., reassessment) of Spring Salamander – Carolinian DU, so that all lines of evidence that relate directly to its COSEWIC reassessment are addressed in a systematic manner. The boxes have been checked, as appropriate. Similarly, a Technical Summary is also included, assuming that the taxon is eligible for COSEWIC assessment. Lake Winnipeg Phrynosoma, assessed in 2012, set the precedent for using an addendum for this type of review of classification.



COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS (2018)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.



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The Canadian Wildlife Service, Environment and Climate Change Canada, provides full administrative and financial support to the COSEWIC Secretariat.