

eggshells (not counted) from hatchlings. In total, 12 live hatchlings were found. All of the turtles were newly hatched with yolk sacs still visible (Fig. 1). Maximum recorded air temperature was 13°C on 23 December and 19°C on 24 December 2015, but when the first hatchling was found, recorded temperature on site was only 8-9°C. Mean temperature for December was higher than the mean historic recorded temperature. There were a few days and many nights with temperatures below freezing, but probably not enough to make the nest freeze. The septic tank could have helped to prevent the nest from freezing. However, that event suggests that increased November and December temperatures due to climate change might have some beneficial impacts on reproductive success of turtles at the northern limit of their range. In most years, not all eggs are likely able to hatch before the end of summer and some hatchlings probably stay in the nest very late or even overwinter.



**Figure 1.** Hatchling snapping turtles hatched from a nest in late December in Quebec (photo by Isabelle Picard)



## The Spring Salamander in Ontario

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The Spring Salamander (*Gyrinophilus porphyriticus*) is a species associated with the Appalachian landform region of eastern North America. In Canada, it is found in Quebec south of the St. Lawrence River in mountainous stream habitat. Its presence in Ontario has been represented for nearly 140 years by a sole record

from the Niagara Region. A 2011 COSEWIC Assessment and Status Report listed this species' "Carolinian Population" as Extirpated. Below I provide a review of this record, offer a new perspective on its legitimacy, and make a recommendation on our interpretation of its identification.



**Figure 1.** Ontario's supposed Spring Salamander (*Gyrinophilus porphyriticus*), A-1370, showing dorsal features and degenerating skin integrity and missing tail tip (photo by Peter Mills)

In April of 1877 three salamanders were collected by A.R. Grote "near Buffalo, N.Y. Canada side" (catalogue number 1370 Museum of Comparative Zoology, Harvard University). Though it is annotated in hand writing on the original museum accessioning document that there were "Adult + Larva", only one larval specimen remains (A-1370). The other two were perhaps given "to Amhurst, de Villiers" (penned into the comments section by a different hand), assumed to mean the nearby Amherst College and to Cornelius Gerhardus Stephanus de Villiers at Stellenbosch University in South Africa. Attempts to track down these specimens by contacting these establishments were not successful. The remaining specimen (#1370) is a small (approximately 60 mm) wet specimen, with no pattern remaining, ripping skin, and missing a portion of the tail (Fig. 1). This specimen has been identified by separate authors as belonging to this species over the past century (see the comments in the 2011 COSEWIC report by Boutin). However, its characteristics as-is do not satisfactorily separate it from being a larval Red Salamander (*Pseudotriton ruber*), which is also found near the border between Ontario and New York. Skull features regarding the nasal and pre-maxillar bones can be used to differentiate these genera (see Martof and Rose, 1962), but even a skull x-ray arranged in 2015 (Fig. 2) was unable to afford a clear identification because its skull was not completely ossified at death. I would also like to make note of the peculiarity that the

dorsal profile of the snout appears atypical for both of these species (it is more pointed, rather than truncated).



**Figure 2.** Skull x-ray of A-1370 showing poor definition of cranial bones due to incomplete ossification at death. Photo by P. Mills

This specimen may be *Gyrinophilus*, but its current condition cannot support a confident identification (Fig. 3) and no photographs or a formal publication regarding its identification were ever completed earlier in its shelf life. Even if either Spring or Red Salamanders did occur in Ontario, it would have been a marginal edge-of-range population similar to the still-extant *Desmognathus* populations that also occur in the Niagara area. I recommend this species be removed from Ontario's list of extirpated species and suggest further discussions and inclusions of it in lists of the province's herpetofauna be referred to as questionable or disregarded altogether.

#### Acknowledgements

Several people at multiple establishments aided my efforts to track down the information above: Canadian Museum of Nature (Francis Cook), Museum of Comparative Zoology, Harvard University (Joseph Martinez), Stellenbosch University (Conrad Matthee, P.le F.N. Mouton), and Amherst College (Michael Hood, Ronald Hebert, Kate Wellspring).

#### Literature Cited

Martof, B.S. and F.L. Rose. 1962. The comparative osteology of the anterior cranial elements of the salamanders *Gyrinophilus* and *Pseudotriton*. *Copeia* 4: 727-732.



**Figure 3.** From left to right, comparison of morphologies among *Gyrinophilus porphyriticus* from Rhode Island (A-107821), Ontario's A-1370 specimen, and *Pseudotriton ruber* from Kentucky (A-4560). All specimens are catalogued in Harvard University's Museum of Comparative Zoology. Note 1370's non-conformity to overall snout morphology expressed by A-107821 and A-4560—a deviation perhaps attributed to the specimen's age and poor condition, or a wildly incorrect identification. Photo by P. Mills

## THESIS ABSTRACTS IN CANADIAN HERPETOLOGY

*TCH publishes abstracts of recently completed Honours, M.Sc., and Ph.D. theses from Canadian universities and professors. Students or their supervisors are invited to send abstracts to the Editor.*

**Brazeau, Daniel J.** M.Sc. (Biology) 2016. Lakehead University (Supervisor: S.J. Hecnar)

#### Habitat selection in the Common Five-lined Skink near the northern extent of its range.

The study of habitat selection is vital to identify potential threats and to conserve species at risk. The consequences of living in a particular habitat can influence processes beyond the individual with observable effects on populations, species interactions, assembly of ecological communities, and the origin and