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Cover Photograph of Bullsnake from Alberta by Jonathan D. Wright

INSTRUCTIONS FOR AUTHORS

All submissions should be relevant to Canadian herpetofauna or other topics related to Canadian herpetology. Submissions by Canadian herpetologists about research or programs they have been involved with outside of Canada are also considered for publication. Please submit:

- Citations of recent (within the last 2 years) publications relevant to Canadian herpetology that have not already been listed in TCH. If the publication was "in press" in the previous issue, we will re-list it in the upcoming issue with the full citation information
- Abstracts of student theses (4th year, M.Sc., Ph.D.) that have not already been listed in a previous issue of TCH
- Feature articles on topics such as ecology, genetics, taxonomy, conservation issues, field techniques, recovery programs, etc.
- Field notes outlining the results of recent herpetological work
- News, announcements, job postings, collaboration opportunities or any other information that may be of interest to Canadian amphibian and reptile researchers and conservation practitioners
- Photographs and art
- Book reviews

Please e-mail your submissions as MS Word documents with photos attached separately as JPEGs to the Editors (jlitzgus@laurentian.ca or Joe.Crowley@ontario.ca).

EDITORIAL NOTES

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Happy spring everyone! I hope your field seasons have had good productive starts. To help you celebrate this herpy time of year, here is your head-lamp reading material for those buggy nights sitting on a sand bank or roadside waiting for your females to nest. Or perhaps you have finished your spring frog call surveys and need a distraction from the data entry. Or a change from flipping rocks to flipping pages? In any event, I am sure you will enjoy this spring issue of TCH!

We have two Feature Articles that take you first on a snake measuring journey to Alberta and Ontario in search of Canada's largest snake species, and then on a biographical journey of the interesting life of Karel Fortyn, former owner of the Seaway Serpentarium, the original home of some very special crocs. From the field, we hear about a Christmas present of Snapping Turtle hatchlings, and a thought-provoking consideration of our one and only Spring Salamander record for Ontario. Of course we also have all the usual sections, too, including recent publications by our colleagues and thesis abstracts from our stellar herpetologists in training.

Save the date for our annual conference in September at the Toronto Zoo in Ontario; see below for details. Hope to see you all there! Also note that we are looking for a Director of Research for the CHS Board. Please send President Scott an email if you are interested in serving the society in this role.

MEETINGS

TCH will post announcements about upcoming herpetological meetings and provide reports of recently-held meetings.

Canadian Herpetological Society 2016 Conference and Annual General Meeting

The weather is warming up and herpetologists all over the country are starting to stir from their long winter slumber, wandering through the wetlands and forests of Canada in search of our elusive reptile and amphibian friends. To learn about some of the exciting conservation and research projects your fellow herpetologists are up to and to share your own experiences, we invite you to join us for the Canadian Herpetological Society's 2016 annual conference!

The conference will be held in Ontario on Friday September 16th to Monday September 19th at the Toronto Zoo. We will kick things off with a workshop and wine and cheese social on Friday, followed by poster and platform presentations on Saturday and Sunday, and will finish up with a field trip on Monday. As always, the conference will include a Saturday evening banquet, a silent auction and the infamous herp trivia quiz. There will also be an opportunity to explore the Toronto Zoo and see 70+ species of reptiles and amphibians, as well as learn about the Zoo's reptile and amphibian conservation and research programs.

Register early to reserve your spot and take advantage of early bird rates! Registration details and additional information about the conference will be available in the coming months on the CHS website (http://canadianherpetology.ca/conf/index.html)

Sincerely, your 2016 CHS conference organizing committee.

Milksnake (photo by Joe Crowley)

Wood Turtle (photo by Nick Cairns)

FEATURE ARTICLES

Which is Canada's Largest Snake? Establishing the Record to Species and Individual

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Abstract

Sample lengths and masses of adult Gray Ratsnakes (*Pantherophis spiloides*) from the Frontenac Axis population in eastern Ontario and adult Bullsnakes (*Pituophis catenifer sayi*) from along the Red Deer River in Alberta were compared to ascertain which of the two is Canada's largest species of snake, and in hopes of establishing a national record for individual snake size. The Ontario Gray Ratsnakes, often recognized as Canada's largest snake species, had a mean SVL of 1369 mm (n = 95; range 1200 – 1670 mm) and mass of 864 g (n = 94; range 369 - 1400). The Alberta Bullsnakes had a mean SVL of 1448 mm (n = 52; range 1120 – 1820 mm) and mass of 1157 g (n = 52; range 465 – 2260 g). The Bullsnake sample was both significantly longer and significantly heavier in this examination than the Gray Ratsnake sample, and also yielded what is likely Canada's largest recorded individual snake. This examination suggests that the Bullsnake is the largest species of snake in Canada.

Introduction

Herpetologists from the United States have long been interested in keeping records of the maximum known measurements for snake species and subspecies occurring in the wild. These records, documenting

maximum total lengths but rarely mass, are readily available to professional and amateur herpetologists, and to the general public (Conant and Collins 1991; Stebbins, 1985; Boundy, 1995; Kolbe *et al*, 1999). Roger Conant's records of snake sizes have been available in these compendiums since 1958, and are likely the most utilized source of this information.

No such widely available records appear to be in existence for the northern extent of the species' ranges across Canada, although Rowell (2012) does provide an updated summary of this sort of information for the snakes of Ontario. The snakes of Canada occur in extensions of ranges that lie primarily south of the Canada-United States border and Canadian herpetologists must sometimes rely on data from the United States for this type of information. It is nonetheless of both esoteric and scientific interest to herpetologists to know the maximum sizes of snakes collected in Canada, as snakes here reach the northern extremes of range and climate, and for this reason may reasonably be presumed to be unique. Furthermore, the formal establishment with periodic re-establishment of records of the maximum lengths and masses of snakes nationally and by region/study, whatever the motivation, is by no means trivial. It can be a powerful comparative tool for evaluating changes within populations and environments over time and even for determining the nature of mortality pressures on populations. For example, these data may be useful in evaluating the demographic effects of traffic mortality on roads (Wright, 2007) which tends to reduce or eliminate larger size classes. Finally, the formal, empirical establishment of which snake species is Canada's largest should serve to reduce the likelihood of perpetuating scientific inaccuracies.

The Gray Ratsnake, (*Pantherophis spiloides*; Fig. 1) has been historically accepted in popular Canadian literature, as well as by scientists and academics, as being Canada's largest snake (Froom, 1972; Canadian Herpetological Society [CARCNET], 2015; Canada Species at Risk Public Registry, 2015). The only snake native to Canada large enough to stand in dispute of this claim is the Bullsnake (*Pituophis catenifer sayi*; Fig. 2) of the western interior plains, which reaches the northern limit of a continental range spanning three nations in Alberta and Saskatchewan. For the Gray Ratsnake, Conant and Collins (1991) record a maximum total length in the United States of 2565 mm. For the Bullsnake, the same reference records a maximum total length of 2540 mm. However, Collins (1993) considers the Bullsnake to be the largest snake native to Kansas, a state in which the closely allied Western Ratsnake (*Pantherophis obsoletus*) – until recently considered the same species as Canada's Gray Ratsnake – also occurs. Furthermore, Fitch (1999) has stated that, "The Bullsnake is the largest species of snake native to the United States."

Figure 1. Ontario Gray Ratsnake (top: photo by Amelia Argue, bottom: photo by Nick Cairns)

Figure 2. Bullsnake (*Pituophis catenifer sayi*) from Alberta (photo by Jonathan Wright)

I had suspected for some time based on my personal field experiences in Canada with both the Gray Ratsnake and the Bullsnake that the latter, rather than the former, is our largest Canadian snake (Fig. 3). In order to test this assumption, I compared measurements

of these species originating from Canadian populations. Shaun Thompson and Chris Burns provided measurement data from the Frontenac Axis, population of the Gray Ratsnake and I was able to compare these data with corresponding data for the Bullsnake that I collected at my study sites on the Red Deer River in Alberta (Wright, 2008). Ontario and Alberta, respectively, support the most northerly ranging Gray Ratsnakes and Bullsnakes on the continent, and the data used here were derived from populations near the northern extreme of both Ontario and Alberta ranges for these species.

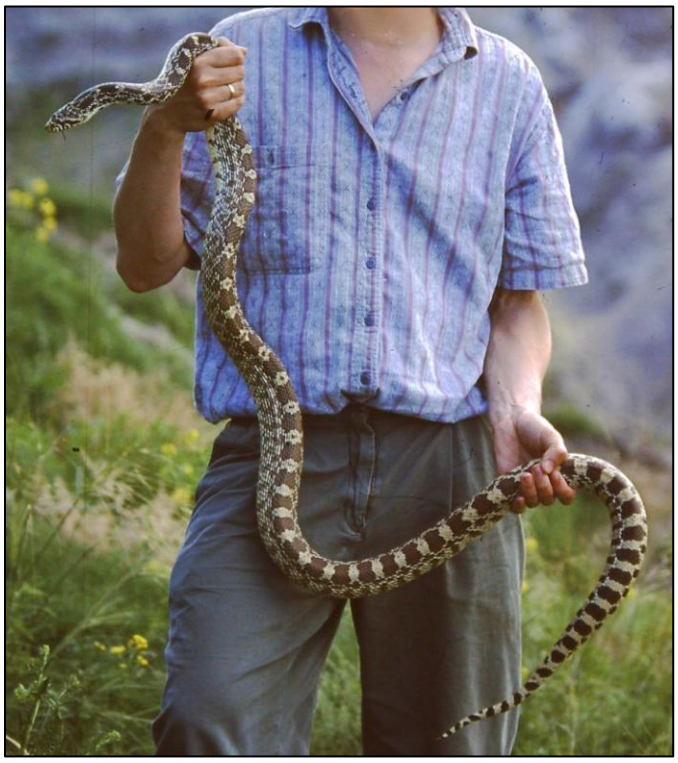

Figure 3. Bullsnake being held, giving context for its large body size (photos by Jonathan Wright)

Materials and Methods

While length has drawn the majority of focus where snake sizes have been documented, there are two obvious components to the size of snakes: length and mass. It is possible for instance, to have two "largest" species of snakes in Canada – a longest species and a heaviest species. With this in mind, I compared both mass and length of the snakes in question. The Gray Ratsnakes were either stretched out directly on a tape or were measured using a non-stretch lace or string to better follow contours. In both cases they were measured two or three times and the measurements were averaged (Shaun Thompson, pers. comm.). They were weighed by placing them in a plastic bag and suspending them from Pesola® scales. The bags' masses (10 g) were predetermined on digital scales and subtracted from the total to arrive at the snake's mass.

The Bullsnakes were stretched to their maximum (until muscles relaxed) along meter sticks attached precisely end-to-end. They were placed in cloth bags and weighed using Pesola® scales, the mass of the bag subtracted from the total to arrive at the mass of the snake. We recorded snout-to-vent (SVL, body excluding tail) lengths for both species. We considered adult snakes only by excluding all snakes under the estimated minimum adult sizes of 1200 mm SVL for Gray Ratsnakes and 1120 mm SVL for Bullsnakes.

Determining the actual length of a snake is not easy and the results are often inconsistent between methods, observers and repeated measurements. Recording snake length is nonetheless a long-standing tradition among herpetologists, and it is assumed here that inconsistencies in snake measurement have always been a factor (*i.e.*, we have been consistent in our inconsistencies); that these inconsistencies are not species-dependent; and that the inconsistencies become less relevant with larger sample sizes. Including the masses of the snakes in addition to lengths, as we have here, may lend a more accurate size comparison in any case, and in particular in cases like this one where the methodology used for determining mass was constant and accurate to the level of scale manufacturer.

Results and Discussion

The Ontario Gray Ratsnakes had a mean SVL of 1369 mm (n = 95; range 1200 – 1670 mm) and mass of 864 g (n = 94; range 369 – 1400 g). The Alberta Bullsnakes had a mean SVL of 1448 mm (n = 52; range 1120 – 1820 mm) and mass of 1157 g (n = 52; range 465 – 2260 g). Male Bullsnakes were both longer and heavier than females, whereas female Gray Ratsnakes were longer than males in this sample, yet had lower mass (Table 1). The sample size for male Bullsnakes was small, and a larger number of males in the sample would likely have resulted in a higher average length and mass since males are the larger sex. Female Gray Ratsnakes may have had lower mass because of the presence of post-partum females of low condition in the sample, whereas the female Bullsnake sample did not contain post-partum females and was composed rather of females collected earlier in the season prior to oviposition and later in the season when they had regained mass. Twenty two percent of the Gray Ratsnakes in this database were unsexed, reducing the sample size for sex comparisons, whereas all Bullsnakes were sexed.

Table 1. Comparison of mean body sizes between Bullsnakes and Gray Ratsnakes. Sex was undetermined for 21 of the 95 Gray Ratsnakes and they were excluded from this comparison.

Variable	Bullsnakes		Gray Ratsnakes	
	Male (n = 9)	Female (n = 43)	Male (n = 52)	Female (n = 22)
Mass (g)	1279	1132	902	726
SVL (mm)	1535	1430	1395	1580

The Bullsnake sample was taken from a communal nesting site and was heavily biased towards gravid females over non-gravid females (n = 35 versus n = 8, respectively). One might expect this to result in a higher mean mass than is representative of the population. My data suggest, however, that the range of masses for gravid females of a given SVL are similar to the range of masses for non-gravid females outside the nesting season for this species. In fact, the gravid female Bullsnakes in this sample were only a mean of 7 g heavier than the non-gravid females, with the mean SVL of the females from each sample being less than a centimeter different (Table 2). This difference in body mass is less than one-quarter the mean mass of a single Bullsnake egg (30.2 g) from clutches at this study site, and the mean Bullsnake clutch size was 16 eggs (Wright, 2008).

Table 2. Mean body sizes of gravid and non-gravid female Bullsnakes from Alberta.

Variable	Gravid	Non-gravid
Mass (g)	1133	1126
SVL (mm)	1428	1437

Female snakes will often cease feeding as their gravid condition advances, and this has been true of female Bullsnakes from my study retained in captivity prior to and during oviposition. The additional mass of the eggs they are carrying may be largely offset by the mass lost through not feeding. Female Bullsnakes in my study experienced a 33-42% mass reduction and were noticeably wasted in appearance immediately post-oviposition. In most cases they seemed to regain condition quickly, however. For example, a female from my study of SVL 1675 mm and only 1090 g in mass immediately following oviposition on 23 June 2002, was retained in my care and given regular feedings of rodents until her release on 19 July 2002, at 1500 g – a recovery of 28% of her body-mass in less than a month. This rapid improvement in condition appears to occur under natural conditions as well; females caught in late summer and early spring during this study generally show no indication of the emaciation that is apparent immediately following nesting, although the sample size of female Bullsnakes from these time periods was small.

Finally, it should be noted that the largest Bullsnake in my study, both in length and mass, was a male. This particular individual, at 2,045 mm total length and 2,260 g in mass, is likely the largest documented snake in Canada.

This evidence suggests that the Bullsnake is in fact both Canada's longest snake species [$t(145) = 2.01$, $p < 0.05$] and Canada's heaviest snake species [$t(144) = 4.37$, $p < 0.05$, sex data combined for analyses]. Additionally, it is our largest snake in terms of having yielded our national record individual. It should be noted that the minimum length of the Bullsnakes included in my dataset was less than the minimum length of the Ratsnakes measured (1120 mm versus 1200 mm). Had I chosen the same minimum size for the Bullsnake sample rather than using the minimum size at maturity, the mean length of the Bullsnake sample would have been marginally greater. At any rate, the matter of which is Canada's largest snake species is not necessarily settled beyond future equivocation here. This paper may not prove definitive nor is it intended as such. Just as there seem to be areas within the Alberta Bullsnake range where the average snake is larger (for example along the Red Deer River as compared to the Medicine Hat area), there may be areas within the Ontario range of the Gray Ratsnake where individuals are larger than the ones from which the data used here were derived. Also, it is my opinion, supported by local anecdotal evidence, that the Gray Ratsnakes of Ontario are smaller than they were decades ago as a result of traffic mortality and perhaps environmental contamination (it is unfortunate we have not had a history of the relevant data-collection and publication to support this!). While this may be true as well of the Alberta Bullsnakes, the populations from my study sites seem to suffer less from traffic mortality, if not contamination of their environment, than do the Gray Ratsnakes of Ontario. Additional to these considerations, some of the sample sizes could be larger, for instance, for male Bullsnakes. It *is* hoped that my attempt will help engender a larger enthusiasm for the examination and establishment, with periodic re-establishment, of size records for all our Canadian species of snakes. It is recommended, barring future works that may contest the conclusions reached herein, that for the sake of accuracy, the Bullsnake be recognized as Canada's largest species of snake from this point on.

Acknowledgements

I would like to thank Shaun Thompson and Chris Burns for so generously providing me with their measurement data for the Gray Ratsnake. I would like to thank Alberta Environment for supplying permits for

my Bullsnake study, and notably Ed Hofmann for initial approval and support. I would especially like to thank Francis Cook and Harry Greene for their various encouragements, including for the subject matter herein. Thanks to Joe Crowley and Jackie Litzgus for their suggestions pertaining to the original manuscript.

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Crown Jewels in Canadian Herpetology and Herpetoculture: A Tribute to Karel Fortyn, his Orinoco Crocodiles, and the Seaway Serpentarium

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Let me first introduce you to the Karel Fortyn[1] (1959-2011), late owner and operator of the Seaway Serpentarium. Karel has been fittingly described as a "colourful, Czech-born, chain-smoking renegade of the reptile world"[2]. He was a character among characters, as reptile enthusiasts often are; however, Karel took this to another level with his charisma, wit, expertise, and a certain twinkle in his eye. Many visitors to the Seaway Serpentarium had a hard time separating his articulate language and humour from his thick accent, a combination of the five languages he spoke (Czech, German, Russian, English, and Spanish – learned fluently in that order). He was quick to offer a drink, smoke, or even a full meal, the moment you walked in the door of his small street-corner home in a quiet industrial district of Welland, Ontario, also the location of the Serpentarium in its early and later years. Amid the bellowing of crocodilians, fitful rattling of countless crotalids, and overhead scamper of a free-ranging day gecko, Karel could keep a herpetological enthusiast roaming walls of enclosures or seated and completely enthralled with lore beyond their wildest imagination. Spending the better part of my childhood visiting the Serpentarium, that was my experience exactly. Karel arrived in Canada with his passion and most cherished belongings: a broken polystyrene cooler with Black Necked Spitting Cobras (*Naja nigricollis*), some vipers, and a New Guinea Crocodile (*Crocodylus novaeguinea*)[1]. Needless to say, Karel defied convention and in doing so he left a legacy.

The Seaway Serpentarium, as the collection would come to be known, got a humble start in the early 1980s. Karel grew up in Prague and moved to Germany in his young adult life. Following a snake collecting trip in the Balkans in his early twenties, Karel settled in Munich and started work at the city's zoo. With his devotion, albeit meagre wages, he began to amass a personal reptile collection that would rival that of most professional institutions. In 1982, at the age of 23, Karel arrived in Canada with his famous polystyrene box. In later years Karel travelled – to the United States, Mexico, El Salvador, Guatemala, Costa Rica, Peru, Belize, Venezuela, Nigeria, and Australia, among others countries – to collect specimens firsthand, returning with new breeding stock and an intimate knowledge of

their ecology that could be applied to captive husbandry and propagation. Karel was devoted to his collection. He was a pioneer in herpetology and herpetoculture, not only in Canada but internationally. Unique among herpetoculturalists, Karel acquired a thorough understanding of the biology of the reptiles he cared for through firsthand experience. He had visited their habitats and, in many cases, he had collected the very animals that were under his care. He spent a great deal of time learning and his literature collection was extensive. Karel worked alongside accredited zoological facilities in honing husbandry and breeding techniques, and exchanging animals. The Seaway Serpentarium was the first facility in the world to breed many snake species[4] (Fig. 1), most notably the Guatemalan Palm Pitviper (*Bothriechis aurifer*), Central Asian Cobra (*Naja oxiana*) and the Barnett's Lancehead (*Bothrops barnetti*). The Serpentarium's collection was a draw not only for its rarities, but also its more common species that were often accompanied by an interesting story. Among the unique inhabitants of the collection, the Central American Alligator Lizards (*Abronia fimbriata*), Andean and Patagonian Lanceheads (*Bothrops andianus* and *B. ammodytoides*, respectively), Speckled Palm Vipers (*Bothriechis nigroviridis*), Amazonian Two-stripe Pitvipers (*Bothriopsis bilineatus*), Red-headed River Turtle (*Podocnemis erythrocephala*), and Australian Freshwater Crocodile (*Crocodylus johnstoni*) would turn heads. There was a Brown Treesnake (*Boiga irregularis*), very likely the only individual in a North American collection given the species infamous and ongoing involvement in bird extinctions in Guam (that snake created quite a stir among visiting American herpetologists and herpetoculturalists during the 31st International Herpetological Symposium in 2007, the first such meeting on Canadian soil). Other highlights in his collection included a Black Caiman (*Melanosuchus niger*), Banded Krait (*Bungarus fasciatus*)[5], and "Sal", a humane society confiscated and tamed Asian Water Monitor (*Varanus salvator*). However, above all else, was Karel's breeding pair of Orinoco Crocodiles (*Crocodylus intermedius*).

Following a trip to Venezuela in 1987, Karel returned to Canada with two hatchling Orinoco Crocodiles (Fig. 2a). Karel landed in Miami and travelled to the Canada-U.S. border at Buffalo, NY. The hatchlings were not packed in a thermos, as is sometimes repeated in Serpentarium lore, but in a cloth bag and an aluminum box with perforated air holes − standard in those days in Czechoslovakia to pack food and the standard way Karel packed animals for transport. Although Orinoco Crocodiles were listed on Appendix I of the Convention on the International Trade of Endangered Species (CITES) on 1 August 1975, there was reportedly little fuss at the international border. The on-duty inspector was a veterinarian primarily interested in livestock; reptiles did not concern him whatsoever. Estimated to have hatched in April, acquired by Karel in May, and transported to Canada in June 1987, the hatchling pair of Orinoco Crocodiles found an unlikely home in Welland for the 24 years that followed. Having raised these crocodiles from hatchlings, Karel affectionately referred to them as his children: his very large, toothy, and roaring children. These two crocodiles were his pride and joy. They were aptly named *Blade* (male) and *Suede* (female) through a community radio contest. The pair reached maturity under Karel's care and by the mid-2000s, *Suede* had laid multiple infertile clutches. Due to space and monetary constraints, Karel was not able to regularly house the pair together when they were of reproductive age. In 2007, a crocodile "stag and doe" was even held, dually in support of a local children's organization and a facility upgrade for the crocodiles. It was Karel's aspiration to have an enclosure large enough to pair these individuals, both critically important potential contributors in the otherwise shrinking worldwide gene pool. Unfortunately, that dream was never realized, at least on Canadian soil and in Karel's lifetime. The barred partition that separated *Blade* and *Suede* remained in place while the crocodiles remained at the Seaway Serpentarium.

The Seaway Serpentarium opened its doors in the Seaway Mall of Welland in 1994/1995, drawing an estimated crowd of a quarter million people to the sleepy town attraction during its two-year occupancy. The walls of well-maintained enclosures that adorned the Serpentarium appeared to draw inspiration from reptile houses around the world[3]. Detailed in an issue of the IUCN Crocodile Specialist Group Newsletter[4] are the specifics of the valium-induced sedation and the harrowing move of *Blade* and *Suede*, of impressive proportions at the time (male: 181 kg, 2.7 m; female: 91 kg, 2.4 m, respectively), into the mall facility. The new location was even complete with a nursery where eggs would incubate, hatch, and young would grow in plain view of the public. I even slept over at the Serpentarium mall location on one occasion as part of a scout group.

In short time, the Serpentarium's business partnership went sour, which ultimately drove the facility out of its popular Seaway Mall location. By the late 1990s, the now sizable collection migrated back into the home of Karel and his long-term partner Dana Kubias. Shortly before *Blade* and *Suede* were moved from the Seaway Mall, they were observed mating but the resulting eggs were non-viable. Anyone who visited the small two-storey home would have been awestruck

Figure 1. Snakes of the Seaway Serpentarium: a. Banded Krait (*Bungarus fasciatus*); b. Side-stripe Palm Pit Viper (*Bothreichis lateralis*); c. Wagler's Pit Viper (*Tropidolaemus* [*Trimeresurus*] *wagleri*); d. Hundred-pace Viper (*Deinagkistrodon acutus*); e. Gaboon Viper (*Bitis gabonica*); and f. Saharan Horned Viper (*Cerastes cerastes*). Photos a-c by Christopher Law, photos d-f by Patrick Moldowan.

that this inconspicuous location was the venue for Canada's largest, most diverse, and accomplished collection of reptiles. Indeed, the location was non-descript aside from the illuminated sign bearing the Seaway Serpentarium logo and the facility's mission, held from day one until closure: "understand and protect". After parking on the street and approaching the front gate, visitors entered a corral of whistling guinea pigs begging for handouts of carrots and lettuce leaves (Karel had such an inordinate fondness for guinea pigs that they were never fed to his snakes or crocodilians, despite the number of eager mouths that would willingly accept them). A few knocks on the door and wide-eyed guests were greeted by Karel's infectious smile and welcomed inside. Upon walking into the Serpentarium, visitors were immediately hit by a wave of humidity and soaring temperature akin to a tropical rainforest. Before being left to explore, first time guests were half-jokingly instructed to keep their hands in their pockets (as to not touch anything they should not) and place no part of their body anywhere close to the mesh screening that adorned some enclosures (*i.e.*, all liabilities waived on entry). Weaving between enclosure rows of Saharan Horned Vipers (*Cerastes cerastes*) and Hundred-pace Vipers (*Deinagkistrodon acutus*), past a Bushmaster (*Lachesis muta*), and into the leaky basement to see the monstrous Alligator Snapping Turtle (*Macrochelys temminckii*) or American Alligator (*Alligator mississippiensis*), the Serpentarium was not for the faint of heart. There was probably more venom per square metre in that house than anywhere on Earth.

Friday nights from 19:00-22:00 featured the feeding of non-venomous snakes, which were in disproportionately low numbers, and Gila monsters (*Heloderma suspectum*). Saturdays were venomous snake feedings and Sundays were for the crocodilians and turtles, as necessary to keep with feeding schedules. Crowds were never overly large, but then again they never really could be given the size of Karel's "living room", "basement", and add-on addition already brimming with fangs, venom and claws.

If you were lucky, you were treated to more than animal feedings. One of my favourite activities was hearing the crocodilian vocalizations. By reverberating a metal pipe beside their enclosure, or likewise turning on the upstairs clothes dryer, the Spectacled Caimans (*Caiman crocodilus*) would slip off their basking platforms and into the shallow water. Legs spread and rhythmically pumping their abdominal muscles, they would begin to call. Water would dance off their backs and you could almost swear by their gaping grin that their calls would be successful in attracting a mate or scaring off a would-be territory challenger. It was absolutely magical. The low bass was enough the shake the walls. After the caimans, the American Alligator would follow suit, and very occasionally the African Dwarf Crocodile (*Osteolaemus tetraspis*) and Cuvier's Dwarf Caiman (*Paleosuchus palpebrosus*) too. However, it was the call of *Blade* and *Suede* that was enough to make your heart skip many beats. It sounded like a freight train coming through the back room. If you were standing in front of the enclosures you would see the reinforced bulletproof glass bow and flex under the pressure of their call. They would gargle, blow bubbles, and simply BOOM. After the water stopped churning, the Orinoco Crocodiles would release an expulsion of air equivalent to a strong breeze that was enough to sweep a hat off your head (a little fishy at that, too). They were simply magnificent animals.

When people stopped to admire the Orinoco crocs, Karel often appeared in the doorway letting the guests know something to the tune of "there are 10 Giant Pandas for every Orinoco in the wild" – a statement that was none too farfetched. The IUCN red-list[6] notes that there are an estimated 1000-2000 endangered Giant Pandas in the wild yet, disappointingly, their last review of the critically endangered Orinoco Crocodile was in 1996. The IUCN Crocodilian Specialist Group estimates a total wild Orinoco Crocodile population of 250 to 1500 individuals. The story of South America's largest predators is one of "millions to none"[8] as the wild populations were mercilessly exploited during the early to mid-1900s to produce handbags, boots, jackets, briefcase covers, among other trending items. Whether examining the low or high end of the crocodile population estimate, the conclusion is the same: bleak. Those who spent more time talking to Karel would also learn that there are only 7 Orinoco Crocodiles in captivity outside of Venezuela, 5 of which are on loan from the Venezuelan government. What of those last two? *Blade* and *Suede*.

The collection was always first in Karel's mind. Despite the Serpentarium being maintained on constant financial strain, the facility managed to get by, maybe from Karel's charm and good humour, and certainly from the financial support of Dana. Heating and water bills were undoubtedly astronomically high at the end of every month. The Serpentarium maintained a rodent colony to feed its own animals, sold overstock to keep the lights on, and happily accepted fisherman's donations to feed the crocs. Karel would outright refuse when I tried to pay the Serpentarium's modest suggested donation each time I visited, as he would with all true reptile enthusiasts regardless of discipline. I was later given a lifetime membership, which I cherish to this day.

Karel believed in giving back to the community. He annually won the best float display during the Welland Rose Festival and frequently attended Niagara-area events with his small collection of non-dangerous reptiles for the purposes of public education. Monies raised during fundraising initiatives were regularly shared between local community partners and the Serpentarium. He was strong and genuine in his messages directed at changing public opinion by dispelling ignorance, fear, and superstition about the animals he cared about most.

After leaving the Niagara area in 2008 to pursue post-secondary studies, I began to visit the Serpentarium less frequently, although holidays always opened up time to see what eggs had hatched, or individuals were born, and catch-up with long-time members of the collection. At this time Karel was acquiring fewer reptiles through zoo swaps and the Serpentarium was slowly shrinking via attrition. During one of my final visits with Karel he mentioned finding a suitable home for the collection and moving to the tropics, Guatemala perhaps. At the time I had not taken him seriously, thinking of his comment as a fleeting thought. Karel also told me that he had been writing a story about his life and the Seaway Serpentarium, "his story" of sorts, which would be titled “Out of Order”.

On 2 May 2011, Karel died at the age of 52. Extended legal dispute followed Karel's death over what should become of his collection. Embroiled in the conflict were Karel's close friends and fellow Serpentarium caretakers, Dana, outside interests, and Karel's brother, who flew in from the Czech Republic to provide oversight on the situation. The Seaway Serpentarium had never received so much press coverage, for better or worse. Local news agencies, along with national and international press took notice with headlines like “Reptile custody battle leaves tangled snake pit”[9], “A slithery reason why it’s important to have a will”[10], and “Great snakes! Judge rules on fate of 200 reptiles after owner dies”[11]. Most of the reptiles, including the venomous and non-venomous snakes, turtles, monitor lizards, and caimans were split among facilities in Ontario (Reptilia, Vaughan; Little Rays Reptile Zoo, Ottawa). The crown jewels stayed put for nearly six months. There was great difficulty over how to best proceed with the Orinoco crocs and the associated permits if they were to go cross-border or otherwise (recall that they had no authorization or documentation to enter Canada in the first place and tightened wildlife trade regulations in the interim made for a lot of bureaucratic red tape). The logistical concerns were immense given that under Karel’s expert care, *Blade* had grown to an impressive 4.3 m and 363 kg, while Suede tipped the scales at an estimated 3.4 m and nearly 200 kilograms.

Amid the legal matters surrounding Karel’s estate and the gargantuan question of what to do with the critically endangered crocs, a message marked URGENT was broadcast among American Zoo Association (AZA) member institutions. With time of the essence, a decision was finally made with the best interest of the crocs in mind. *Blade* and *Suede* would find their new home at the Gladys Porter Zoo in Brownsville, Texas – from one unlikely international border town to another, at opposite poles of the United States, no less. The Gladys Porter Zoo sent 4 personnel and a box truck on a mission from Brownsville to join with local law enforcement (Welland district SPCA, Canadian Wildlife Service/Environment Canada, US Fish and Wildlife Service), as well as a team of international crocodilian experts (AZA Crocodile Advisory and Specialist Group) at the Serpentarium. Another team stayed back at the Gladys Porter Zoo in a scramble to complete an exhibit revamp, including the addition of a divider (in case of aggression) and expanded holding space, to accommodate *Blade* and *Suede*. From 14-16 October 2011, water in the Serpentarium’s Orinoco Crocodile enclosure was drained, the welded steel frame was cut, and reinforced glass removed. The crating and move would take place without sedative for the crocs, a group of animals notorious for failing to recover from anesthesia. Video captured on the day of the big move[12] demonstrates how detailed planning, some firm prodding, and a hose stream came together resulting in a seamless shuttling of the crocs into their respective crates. The 3000 km drive south was continuous to limit holding time and the risk of stress-induced blood and tissue acidosis, sometimes fatal for large crocodilians. On 19 October, *Blade* and *Suede* arrived in Brownsville in front of a cheering crowd. The pair were hoisted into their enclosure by crane and their release filmed[13] to commemorate the heroic effort put forward by the multi-partner initiative. For the first time in their adult lives, the crocs left their crates and stepped into the warm glow of natural sunlight.

I spoke with Clint Guadiana, Herpetology Supervisor at the Gladys Porter Zoo (5 April 2016), to hear how *Blade* and *Suede* made the transition and their progress four years on. Following their arrival, the two were housed separately and declined food for three months during acclimation. True to her time at the Serpentarium, *Suede* enjoys her fish and it took zookeepers buying Tilapia from the local market to get her eating. Being less discriminating, *Blade* took to rodents, chicken quarters, and all manner of food (the same is now true of

Suede). The crocs were introduced in early 2012 (Fig. 2b) when *Suede* began to circle her enclosure, blow bubbles, and raise her head in courtship display. With the partition lifted, keepers waited with bated breath knowing the dicey situation that could arise from a large crocodilian introduction. A few nips aside, the pair mingled well and despite a few attempts by *Blade* to mount, *Suede* played hard to get. The pair would be separated and reintroduced multiple times over the following year with breeding observed in October 2012. Unfortunately, the mating would prove to be unsuccessful. Clint suggested that the adjustment to seasonal temperature and photoperiod cycling was a possible hurdle to breeding.

As the pair continued to settle, they underwent a behavioural training program. The crocodiles have been trained to exit their pools and enter their holding barns on command (and maybe with a little food incentive) to assist keepers as they perform routine enclosure maintenance. Clint mentioned that the pair took to the training positively and quickly, and were an absolute pleasure to work with. In April 2015, it was becoming clear the *Suede* was putting on mass. Despite access to a recently improved 1.5 m x 1.5 m nesting area with deep sand substrate, *Suede* opted to begin digging elsewhere. She produced a clutch of 25 eggs but it was not to be. All eggs were infertile and, to complicate matters, she settled on laying in the water feature of her enclosure. In February of this year *Suede* began digging in her enclosure once again and went off feeding. Exactly one week later, during one the busiest weekends of year (Spring Break, 13 March 2016), zoo visitors were treated to watching *Suede* lay and cover her nest. Now at 29 years of age, *Suede* deposited a nest of 25 eggs (Fig. 2c). Again, many eggs were infertile and during her first terrestrial egg laying, multiple eggs were cracked. Alas, however, five eggs (four intact, one cracked) were confirmed as fertile and are currently incubating. Only a few weeks into incubation at the time of this writing, the future of the eggs remains uncertain. Following a 70-90 day incubation period, any hatchlings would be expected by June 2016. Should these eggs hatch they would nearly double the number of Orinoco Crocodiles in captive recovery programs outside Venezuela and contribute much needed genetic diversity. At the Gladys Porter Zoo, *Blade* and *Suede* have entered into a Species Survival Plan alongside a number of other imperiled crocodile species, including the Philippine Crocodile (*C. mindorensis*) and Cuban Crocodile (*C. rhombifer*), among others. Should you find yourself in Brownsville, *Blade* and *Suede* can be visited in the Tropical America exhibit at the Gladys Porter Zoo (Fig. 3).

Karel and I once talked about the differences in hobbyist-driven herpetoculture and the scientific discipline of herpetology. He knew that I grew-up with the former, keeping and breeding lizards and snakes in my youth, and began to see my transition into the latter after entering post-secondary education. He seemed to make it clear that people in these communities navigated different spheres. Although, now looking back, I always thought of Karel as walking the borderline. Karel was innately familiar with the ecology and reproductive biology of the reptiles he kept, but he chose to apply this information in a captive setting. He had spent much time in the field throughout the American, African, and Australian tropics. In its early days, the Serpentarium went under the name "Herpetological Research Institute" to mark its research facility status and educational partnerships. Karel occasionally lectured for Brock University and veterinary students at the University of Guelph, and he mingled with dedicated research biologists around the world. The animals he kept in life would later enter biological collections in death because he understood the importance of voucher specimens with excellent locale data, all of which he kept (though there is lament that Karel did not keep records of his husbandry and breeding techniques). In recent years he had made sizeable and unique contributions to the reptile specimen collections at the University of Toronto and the Royal Ontario Museum. He did not hesitate to help when I began to gather genetic samples from reptiles for a fourth year undergraduate project. Following Karel's death I would inherit the contents of his freezer, years of accumulated specimens. Many of these specimens are now in the herpetology teaching collections at Laurentian University and the University of Guelph, providing students the opportunity to see and learn about exotic animals from far off places that they would not otherwise have exposure to. When it came to herpetoculturalist or herpetologist, the line was a little fuzzy for Karel because, I feel, the distinction need not be made.

Up until the time that *Blade* and *Suede* were packed into their crates bound for Texas, a photo of the hatchling pair from 1987 hung on the front of their enclosure – a reminder that they will forever be Karel's children and Crown Jewels in Canadian herpetology and herpetoculture.

Acknowledgements

I would like to extend immense gratitude to Dana Kubias and Kyle O'Grady for their intimate knowledge, passion, exhaustive fact checking, and encouragement in compiling this brief history of Karel and the Seaway Serpentarium. I also thank Steve Marks, Chris Law, and

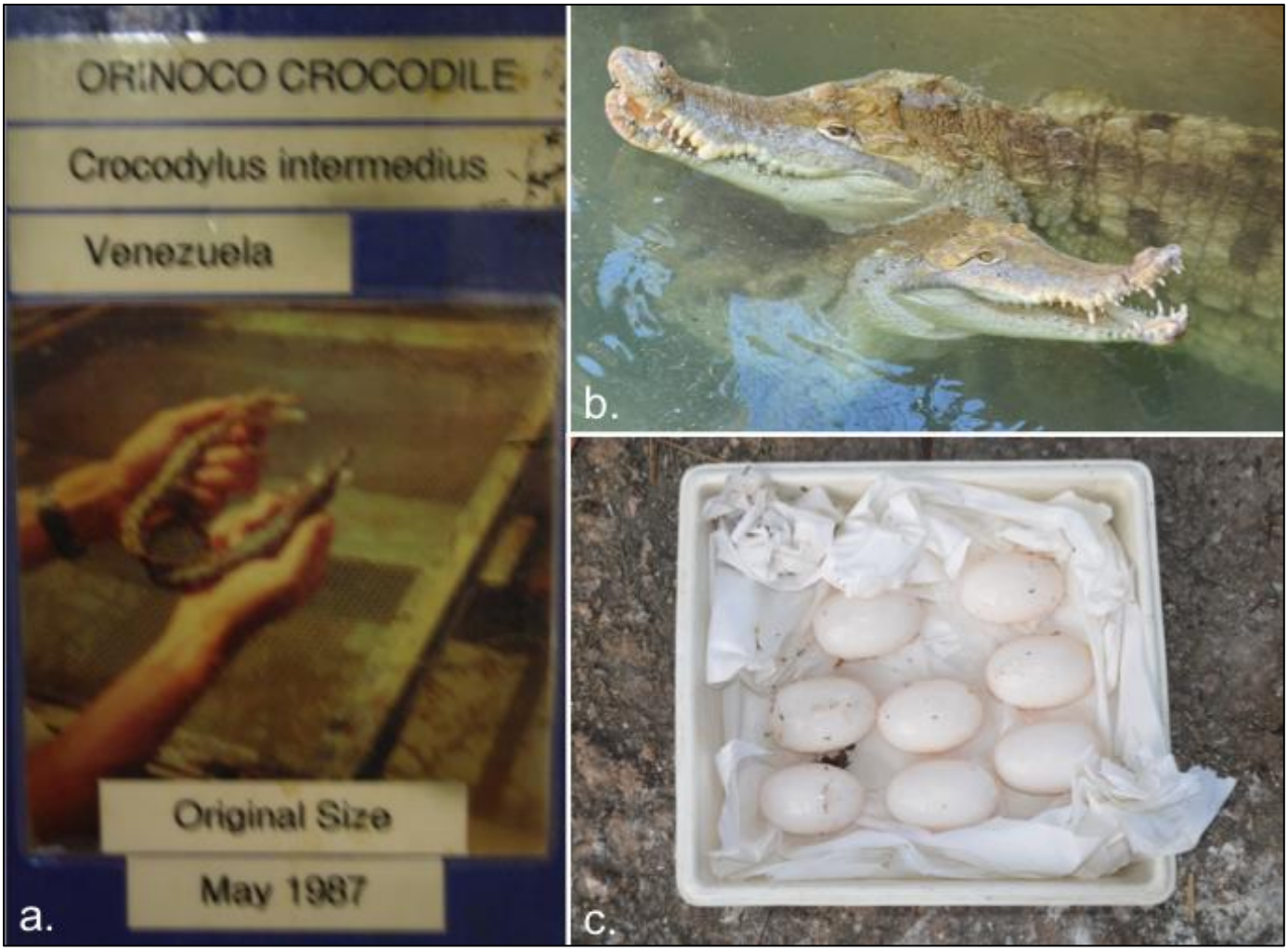

Figure 2. Blade and Suede, Orinoco Crocodiles (Crocodylus intermedius): a. the pair as hatchlings in Venezuela as acquired by Karel Fortyn and the Seaway Serpentarium; b. Blade (top) and Suede (bottom) at the Gladys Porter Zoo; c. eggs laid by Suede following breeding at the Gladys Porter Zoo. Photo a. by Patrick Moldowan - of a photo courtesy of Karel Fortyn and photos b-c by Clint Guadiana.

David LeGros, whose commentary and proofreading further improved this manuscript. I greatly appreciate the enthusiasm and photos of Clint Guadiana who provided updates on *Blade* and *Suede*. Thanks to Jonathan Choquette who suggested that I share this Canadian herpetological story with a broad audience. Lastly, thanks to those who provided support to the Seaway Serpentarium and continue to uphold Karel's mission.

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[3] Video recording the Seaway Serpentarium as established in the Seaway Mall in Welland, Ontario, ca. 1995 (https://www.youtube.com/watch?v=qeEz3s5qKiM). Orincoco Crocodiles Blade and Suede at approximately 8 years of age can be seen at 0:50-1:30 in the video. Video by Bry Loyst.

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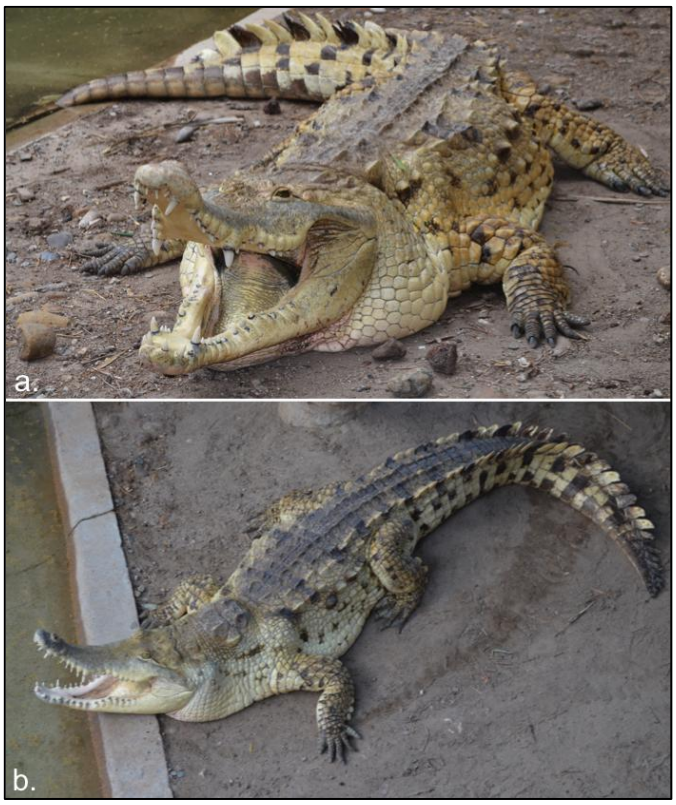

Figure 3. Orinoco Crocodiles (*Crocodylus intermedius*), a. Blade (male) and b. Suede (female), basking in their enclosure at the Gladys Porter Zoo, Brownsville, Texas (photos by Clint Guadiana)

FIELD NOTES

Very late Snapping Turtle (*Chelydra serpentina*) hatching in Quebec

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On 23 December 2015, a baby Snapping Turtle (*Chelydra serpentina*) was seen walking on a private lawn in Shefford, Quebec (45, 406725°N; 72, 657241°W). The hatchling was active and walking very fast. The next day, eight other hatchlings were found walking in the lawn and around the nest that was located. The nest was found in clay soil with mulch, about 20 feet from the house, just beside the concrete of a septic tank. The nest still contained three other live hatchlings, seven eggs with partially developed embryos, and

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 sceptic 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).

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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

maintenance of biodiversity. Northern populations of the Common Five-lined Skink (*Plestiodon fasciatus*) occur primarily in open areas within the eastern deciduous forest of North America. One of two Canadian populations of the Five-lined Skink, the Carolinian population, is currently listed as endangered. The comparative use of macrohabitat types available in northern populations has not been formally described. Furthermore, the relative importance of canopy structure (and associated thermal environment for skinks) when compared to other habitat factors is not well understood. My study asks (1) what macrohabitats are used most by skinks, (2) which habitat factors best predict occupancy, and (3) whether skinks show a gradual or a threshold response to increasing forest canopy cover. I conducted my study at Rondeau Provincial Park in southwestern Ontario. To measure macrohabitat use I completed visual surveys of coverboards placed in four main terrestrial habitat types available at the study site. I compared expected to observed use in each habitat type. To measure how occupancy might be affected by multiple habitat parameters, I completed visual surveys of coverboard transects and collected habitat measurements in the field and using GIS. I used Poisson regression analysis and Akaike Information Criteria to determine which variables contributed to the prediction of site occupancy. I then analysed the same data set using piecewise regression to test for abrupt changes in the relationship between site use and canopy cover. Skinks preferred dune habitat of the main terrestrial habitats available. Skink habitat use was affected most by temperature, canopy cover and moisture. Skinks exhibited a negative threshold response to canopy cover >50% for much of the active season. Habitat loss and the rate of natural succession are concerns for the remaining Endangered Carolinian populations of the Five-lined Skink. Understanding which habitats are used most by this species may assist targeted management efforts to preserve existing isolated populations and to restore areas for future translocations.

Kennedy, M.Q. B.Sc. (Biology) 2016. Laurentian University (Supervisors: G. Hughes and J. Litzgus)

Quantifying the success of rehabilitation in snapping turtles (*Chelydra serpentina*) through post-release measures of body condition and behaviour.

The goal of wildlife rehabilitation is to return unhealthy or injured individuals to their native home ranges such that they no longer require human assistance for survival, and can assimilate into the already established population. My project sought to investigate the success of rehabilitation on snapping turtles (Chelydra serpentina). Five snapping turtles from the Wild at Heart Wildlife Refuge Centre in Lively, Ontario were released after rehabilitation. These individuals were tracked using radio telemetry post-release and measures of body condition and spatial ecology were taken throughout the active season of 2015. Body condition was quantified using a comparison of carapace length and body mass for each turtle. Body conditions of rehabilitated turtles did not differ from 45 non-rehabilitated snapping turtles (n = 45). Spatial ecology was quantified by size of home range and daily distance travelled during the active season. The home range size of three rehabilitated turtles tracked during the active season of 2015 were compared to 11 non-rehabilitated turtles. Home range sizes of rehabilitated turtles were found to be significantly smaller than wild turtles; daily distance travelled for rehabilitated turtles increased throughout the active season. These data can provide important information on the success of rehabilitation on freshwater turtles as we investigate post-release findings and consider more conservation techniques to counteract declining populations.

Snapping Turtle (photo by Joe Crowley)

RECENT PUBLICATIONS IN CANADIAN HERPETOLOGY

TCH lists recent publications by Canadian herpetologists working in Canada and abroad. Please send to the Editor a list of your recent papers, and send citation information for new papers as they come hot off the presses.

Choquette, J.D. and L. Valliant. 2016. Road mortality of reptiles and other wildlife at the Ojibway Prairie

Complex and greater park ecosystem in southern Ontario. Canadian Field-Naturalist 130(1): 56-67.

Gregory, P.T. and K.N. Tuttle. 2016. Effects of body size and reproductive state on cover use of five species of temperate-zone natricine snakes. Herpetologica 72(1): 64-72.

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Pacific Treefrog (photo by Joe Crowley)

NEWS AND ANNOUNCEMENTS

IMPARA Update: Two New Locations Designated

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The early spring of 2016 has been busy for the Important Areas for Reptiles and Amphibians Committee (IMPARA). Work continues on several new location nominations and the committee and board have recently approved two new areas: Beausoleil Island and

the Ojibway Prairie Complex Greater Park Ecosystem, bringing the total number of designated sites across Canada to eleven.

The Beausoleil Island nomination was authored and submitted by Joe Crowley. Beausoleil Island is an 11 km^2 island in the rugged Georgian Bay Islands National Park near Port Severn, Ontario. The island has diverse landscapes characteristic of the Great Lakes – St. Lawrence Lowlands, from rocky shorelines (Fig. 1) to mature hardwood forests. Access is by boat only, and an absence of roads on the island shows how little human impact has occurred over the island's history. This makes it one of the few sizeable natural areas just north of the highly altered landscapes of southern Ontario. The island was designated because of its importance to species of conservation concern, and for the high diversity of reptiles and amphibians it supports. Of the 17 reptiles present, 11 are Species at Risk, including sizable populations or densities of Eastern Hog-nosed Snakes and Massasaugas. The island's shoreline and interior wetlands and forests also support 12 amphibian species. Beausoleil Island also serves an important educational function in recent years as it is being used for an annual species identification and monitoring workshop led by Crowley and his associates.

Figure 1. Rocky shoreline of Lake Huron at Beausoleil Island (top) and the Massasauga, a threatened species that is commonly encountered on the island (photos by Joe Crowley)

The Ojibway Prairie Complex and Greater Park Ecosystem nomination is a joint effort of Jonathan Choquette and myself who have both spent years conducting herpetofaunal work in the area. The 23.5 km^2 complex consists of numerous parcels of natural habitats up to 400 ha occurring in the industrialized western part of the City of Windsor and residential areas of the Town of LaSalle, Ontario. The number of properties acquired has grown for over half a century through the coordinated efforts of 14 governmental and non-governmental groups, the largest groups being the City of Windsor, Town of LaSalle, Ontario Parks, and the Essex Region Conservation Authority. The natural habitat in the complex is vitally important because it contains large remnants of tall-grass prairie and oak savanna habitat (Fig. 2) that originally covered the Carolinian zone of southern Ontario. The complex is also important as it supports a sizable portion of regional herpetological diversity remaining in one of the most heavily human-impacted areas of North America. At least 22 species of herpetofauna (8–10 Species at Risk) occur in the complex, and up to 26 species occur in intervening and adjacent lands. The location was designated for the species of conservation concern that occur in the complex, its high diversity of species, and for habitats providing the important life history requirements for so many remnant prairie populations of herpetofauna. Large populations of Butler's Gartersnake and Eastern Foxsnake occur in the area. A large population of Western Chorus Frogs in the ponds and wetlands of the area are doing well while the species is declining in most of the rest of its Canadian range. The complex is also home to the small and probably last prairie population of the Massasauga. A long use of the Ojibway location for herpertological research and other biological studies and education reveals that the area is still subjected to numerous threats including: habitat loss, road mortality, and pollution. The urgency of nominating the Ojibway location for its reptile and amphibian species at risk became clear with the recent Ontario Municipal Board ruling to allow development of box stores within the complex, surprising all the organizations that participate in managing the complex.

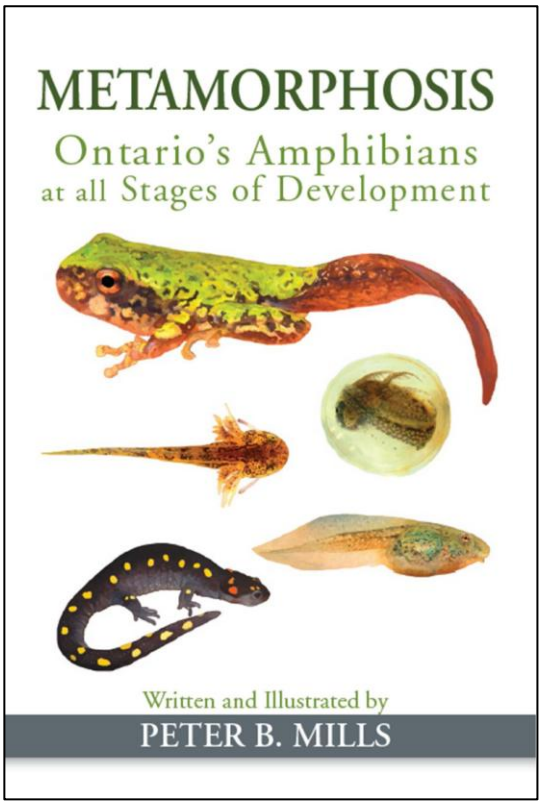
More details of the IMPARA program and its 11 sites can be found on the CHS website. The program also needs help from CHS members to nominate or suggest areas for nomination. As the recent summary paper (Lebarrères et al. 2014. Conservation of Canadian Herpetofauna: threats and challenges. Biological Conservation 170: 48-55) on herpetological conservation indicates, losses in Canada are as severe as the global situation. We would like to at least double the existing number of IMPARA sites with better coverage

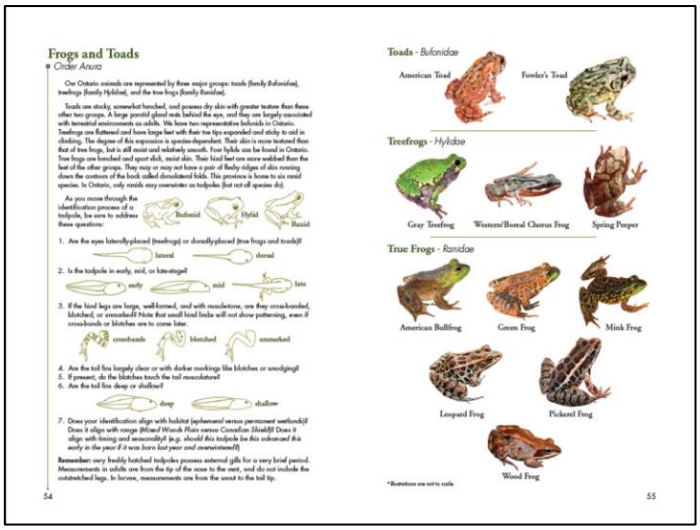
across Canada in the next few years. Please see the CHS website for details or contact the IMPARA Committee Chair, Steve Hecnar (shecnar@lakeheadu.ca).

Figure 2. Ojibway Tall-grass Prairie Preserve grading into Oak Savanna (top; photo by Steve Hecnar) and an inhabitant of this ecosystem, the Butler's Gartersnake (bottom; photo by Joe Crowley)

Metamorphosis: A New Book about Ontario's Amphibians

"*METAMORPHOSIS is a thorough and illuminating account of both halves of the double life of amphibians, who live in water and on land. The author's dual focus on both larval and adult amphibians opens up a new realm of information, and new keys to species identification. It will bring a deeper level of understanding to the many naturalists who know the adults well enough, but have limited knowledge of that critical developmental first half of the lives of frogs, toads, and salamanders.*" From the foreword by David M. Carroll, author of The Year of the Turtle (1991) and Swampwalker's Journal (2001), 2006 MacArthur Fellow, and winner of the John Burroughs Medal.





METAMORPHOSIS is 104 pages, 6 x 9 inches, printed on water-resistant paper, covers all of Ontario's amphibian species, and is available for $28.59 at peterbmills.com.

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