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**Canadian Herpetological Society /
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Instructions for Authors

We will print articles and news of interest to herpetologists in Canada. These may be in the form of short announcements or letters, or may be written as

longer articles. We especially request news of your lab and current conservation and research activities, lists of your latest publications (up to one year old), travel plans, new students, grants, awards, fellowships, new books or book reviews, trivia or concerns. We also encourage you to send in your photographs of Canadian herpetofauna. Please send your submissions as MS Word documents attached to an email to the Editors (jlitzgus@laurentian.ca or Joe.Crowley@ontario.ca).

EDITORIAL NOTES

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With the onset of the cold weather, Canada's reptiles and amphibians are preparing to spend another winter nestled into the forest floor, buried underground or submerged at the bottom of a lake, river or wetland. For many of us, this time of year also marks a transition period as we emerge from the field, clear stacks of papers off our desks and prepare for a winter filled with data entry, writing, teaching, or other desktop herpetology. Hopefully, everyone has had a productive and exciting field season. I was very fortunate this year as my work brought me face-to-face with 40 of Ontario's reptile and amphibian species, not to mention several new species in Quebec!

It has been a busy and exciting year for the Canadian Amphibian and Reptile Conservation Network (CARCNET) and the Canadian Association of Herpetologists (CAH), which have merged to form the Canadian Herpetological Society (CHS). More information about these changes and what they mean for the organization can be found in *Introducing the Canadian Herpetological Society* in the News and Announcements section of this issue. That article also provides some background on the new name and logo that have been selected by the membership. In addition to information about these recent changes, this issue of TCH includes a detailed summary of our 2013 conference and AGM in Quebec, several interesting feature articles and field notes, as well as lots of news and updates. I would like to thank everyone who contributed information and photographs to this issue of the TCH.

MEETINGS

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

2013 Joint Canadian Herpetology Meetings, Orford, PQ

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On Friday 13 September 2013, at the Centre d'Arts Orford, in Orford, Québec, the joint annual meeting of the Canadian Amphibian and Reptile Conservation Network and of the Canadian Association of Herpetologists took place. It was the 23rd annual meeting for CARCNET and the 28th annual meeting for CAH. The 72 participants came from British-Columbia, Ontario, Quebec and Nova Scotia to attend the 4 day conference.

Friday opened with our guest speakers, Tommy Montpetit from the Centre d'Information sur l'Environnement de Longueuil and Tanya Pulfer from Ontario Nature who presented the challenges of herpetological conservation in urban and rural landscapes. Group discussions followed the presentations in which participants shared ideas from their respective experiences in order to answer these two questions: 1) What is (are) the biggest challenge(s) to herpetological conservation in Canada? and 2) What is (are) the solution(s) to these challenge(s)? These group discussions enabled participants to get into the action, meet new people, share information and find common interests. The following challenges and solutions were among the priorities identified by the participants: improving anthropogenic development planning, filling in knowledge gaps, increasing data sharing among organizations (e.g. land managers), doing long-term projects with volunteers, protecting a mosaic of habitats in urban landscapes, reconnecting people to nature, working on values associated with herp species, balancing the law and power of stewardship efforts, creating/protecting corridors, increasing the link between conservation groups and academic communities and prioritizing our efforts. A summary of the discussions will be available in the coming months.

Open forums, where participants proposed the topics in a round table format filled the afternoon with great exchanges, ideas, laughter and smiles. The

participants proposed and ran the eight following workshops: increased habitat connectivity, how to get more data, creating public support, augmentation vs "counting until they are gone", improving mitigation measures, keeping common species common, improving communication within the conservation community and long term projects. A short report has been produced for each workshop and will be made available in the coming months.



Open forum discussion group during the Friday Workshop
(photo by Catherine Jimenea)

After a short break to allow time to bid on their favourite items at the silent auction, participants gathered for the wine and cheese social. From the comments received after the meeting, we can say that the wine and cheese night was a blast! Everybody enjoyed the free time to chat with friends and colleagues, discovered new wine, and tasted delicious cheeses and "tapas". By mid-evening, Étienne Plasse, a young film maker, presented to the already sold crowd, a few short videos and the trailer of his next movie: *An Unseen World*, covering the diversity of herpetofauna and the challenges they face! A standing ovation and cheers showed all the support and admiration the crowd felt at the sight of such beautiful images!

Saturday morning might have been a hard wake-up for some but everybody enjoyed the talk of our third guest speaker, Mélanie Lelièvre from Corridor appalachien, who presented the long term project of protecting significant habitats for herpetological species such as the Spring Salamander and the Wood Turtle in the heart of the Quebec Appalachian mountains. This presentation showed that some challenges identified in the Friday workshops and discussions, such as increasing connectivity and filling knowledge gaps, were already addressed by this organization. Platform presentations covering road impacts, species distribution, reproduction and population management were presented throughout the day. The CARCNET annual general meeting followed and members had the once in

a lifetime task of voting to transform CARCNET into a new organization that would also encompass CAH. As the members voted in favour, we all also realised that the 2013 Orford annual meeting was going to be the last joint meeting of CARCNET and CAH! After the AGM, everybody was invited to the poster session, where great work was displayed and discussed in a friendly atmosphere.



Herpetologists mingling during the Wine and Cheese (photo by Catherine Jimenea)

The annual banquet followed in the Centre d'Arts Bistro. People enjoyed the roast and vegetables before testing their knowledge on the annual herp quiz! The vast array of questions ranging from morphological features of the Ribbonsnake, to the Ice Cube "block buster" movie *Anaconda*, to species richness of Labrador challenged even the "geekiest" of the herp community! Entertainment provided by the local musician, Guillaume Tremblay, delighted everybody's ears and dancing shoes. The dancing and chatting continued late in the night for the most ambitious of us.

The annual banquet was also the occasion to honour the winner of the Silver Salamander and Blue Racer awards. The Silver Salamander award went to the Centre d'information sur l'environnement de Longueuil (CIEL) in recognition of their important contribution to Chorus Frog protection in the greater Montreal area. Dr Roger Bider was honored posthumously with the Blue Racer award for his career achievements, which include his pioneering work and devotion to the conservation and research of amphibians and reptiles in Quebec. Dr. Bider was a professor at McGill University and founded the Ecomuseum zoo, a well-recognised organization known for research, conservation and education projects on amphibian and reptiles in Quebec.

Sunday saw the continuation of great platform presentations covering reproductive strategies and growth, genetics, ecology and population dynamics. By late afternoon, the organizing committee gave their most sincere acknowledgements to all the participants for their presence, enthusiastic participation and friendly

attitude! Most of the participants were leaving Orford that night, but a few people stayed another night for the annual field trip on Monday.

On Monday morning the drizzle and cold temperatures were a bit of disappointment. However, as everybody was gathering at the meeting point, the drizzle stopped, and as the bus and cars were leaving smiles were back on everybody's faces! A few minutes after arriving at the first site of textbook stream salamander habitat, field trippers were looking at Spring Salamanders, Northern Dusky Salamanders and Two-lined Salamanders. As we were looking under rocks, branches and dead leaves along the brooks flowing down the mountain, many of us were able to find our own specimen and to take great photos.



Stream Salamander Habitat in Mount Orford National Park (photo by Joe Crowley)



Spring Salamander (photo by Joe Crowley)

On the way to the next stop, everybody was telling stories and laughing! After a quick lunch and coffee at the beautiful visitor centre of the Association du Marais aux Cerises in Magog, participants were first invited to join local volunteers to retrieve the 10 hoop nets that were installed in small ponds for the occasion. Midland Painted Turtles were observed as well as a huge illegally introduced exotic Goldfish! A discussion on the



The CARCNET (now CHS) membership at the 2013 AGM (photo by Simon Pelletier)

morphology of the turtles went on for a few minutes, as the sun was finally breaking through the clouds, warming up everybody for the boardwalk. Gartersnakes were observed basking in the sun and posed for photos. On the boardwalk, everybody was interested in the talk about the invasive and indigenous *Phragmites*, given by Fred Schueler. By mid-afternoon, everybody was back at the Centre d'Arts and were leaving for a drive or a flight back home, hopefully with good memories and few new friends!

We want to thank everybody for their comments, their collaboration and patience. Organizing such an event was new for all of us and we learned a lot throughout the conference, from managing the waves of registrants, to ensuring everybody had hot water in their dorm room and being sure everybody saw the salamanders at the field trip! It was a true and sincere pleasure to meet you all and do our best for you to enjoy your experience! Thank you from all the organizing committee and we'll see you next year!

FEATURE ARTICLES

The Importance of Species Occurrence Data and Herpetofauna Atlases in Canada

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With the end of the field season at hand, now is the time to be thinking about entering and submitting all of our field observations to provincial atlases or data centers. This occurrence information may not have been the focus of our field work and it is easy to forget about it, being lost to time in the he pages of a thesis or technical report. However, the conservation value of this

data in the hands of provincial conservation data centers (CDC) cannot be overstated, and in many cases this data may have more direct conservation benefit to reptiles and amphibians than the target research itself!

Despite having a general sense of species' distributions in Canada, the detailed occurrence data that is necessary to inform local, on-the-ground protection and recovery efforts is often absent at a regional or municipal scale. As we see from Heisler et al. in this issue, there is still a lot to learn about the local distribution of our herpetofauna. This is especially true in the north where there has been very little survey effort. Recent efforts by Dr. Steve Hecnar and his students, as well as the Ontario Reptile and Amphibian Atlas volunteers (ORAA) have improved our knowledge of species distributions in northern Ontario. However, there are still vast areas where we have no data – and no idea what species may reside there!

This detailed distribution information is very important in informing local conservation efforts. One very direct application of this information is in the legal protection of species at risk habitat. It is often the case that only the areas with recent occurrence records will receive habitat protection under the federal Species at Risk Act (SARA) and provincial legislations. For example, Massasauga Critical under SARA and general habitat under the Ontario Endangered Species Act (ESA), 2007 is being identified as any suitable habitat within 1.2 km (based on typical species movement data) of a species occurrence. If field researchers did not share their Massasauga occurrence data with the Ontario Natural Heritage Information Centre (or other organizations/projects that forward it to the NHIC), the areas they worked in may not receive legal protection! As such, submitting occurrence data is an easy but important way of directly contributing to habitat protection for reptile and amphibian species at risk in your area. In additional to habitat protection, species occurrence data are also important in informing

COSEWIC and provincial-level species status assessments, recovery strategies, research projects and local stewardship initiatives.

By engaging the general public in addition to the herpetological community, provincial atlases are an excellent way to increase the volume of species occurrence data that are available to inform conservation work. Several provinces have ongoing reptile and amphibian atlases, including Manitoba (www.naturenorth.com/Herps/Manitoba_Herps_Atlas.html), Ontario (www.ontarionature.org/atlas) and Quebec (www.atlasamphibiensreptiles.qc.ca). The new Ontario Reptile and Amphibian Atlas (ORAA) was launched in 2009, and over 183,000 records have been submitted by over 2,500 volunteer participants to date. When combined with the data from the previous Ontario Herpetofaunal Summary (1984-2009), about 350,000 records have been collected by these atlases! The ORAA provides these data to the NHIC on an annual basis to ensure that they are available to inform all of the protection and recovery initiatives carried out by government, conservation organizations and individuals. These atlases do not only collect species occurrence data, they are also a great public-facing resource for information about the provinces herpetofauna.



This past spring, the ORAA launched an iPhone app for reporting species occurrences to the atlas, and followed up with an android app in the summer. This app allows observers to report observations in real time as they encounter species in the field. Although this technology makes it easier for the casual herpetologist to report sightings, the true value is the ability to engage the public in a way that has never before been possible. With built-in photo capability and auto-fill geographic coordinates, these apps make it easy for anyone to

submit high quality occurrence records (photo-validated and geographically precise). The ORAA app has resulted in a massive increase in the number of people that have submitted observations from a four year total of 1,500 to over 2,500 in just a few months! That being said, atlases will always rely heavily on the large, rigorous data sets that are submitted from herpetological field researchers.

In conclusion, submitting your reptile and amphibian observation data is an easy way to contribute to reptile and amphibian research and conservation in Canada. I encourage everyone to find the time to dust off those notebooks and submit your data to your local atlas or CDC.



IMPARA Nomination: Pemberton Valley, B.C.

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The Important Amphibian and Reptile Areas (IMPARA) designation program is a major conservation initiative of the Canadian herpetofaunal community. Patterned on the Important Bird Areas of Canada, the objective of these designations is to raise public awareness and encourage stewardship. At present, Canada has seven IMPARAs: Okanagan-Similkameen Valley, B.C.; Creston Wildlife Management Area, B.C.; Spruce Woods Provincial Park, Manitoba; Narcisse Wildlife Management Area, Manitoba; the contiguous Cootes Paradise, Carroll's Bay and Grindstone Creek Valley Nature Sanctuaries, Ontario; Pelee Island, Ontario; and Kejimikujik National Park, Nova Scotia. There are also several other submissions pending consideration. One, which I present here (submitted summer, 2013) comprises another high-diversity warm pocket containing recently discovered species in the labyrinthine topography of southern British Columbia: the Pemberton Valley.

Although the primarily agrarian town of Pemberton is itself rather small (pop. ~2,100), "Pemberton Valley" refers to a large central section of the Lillooet River Valley, a 100+ km long and generally 2-3 km wide former glacial lake bottom that stretches from where the Upper Lillooet River rises in the Coast Range, southeast toward the Interior, communicating with the Fraser River Valley via Lillooet and Harrison Lakes. Within it

are many habitat types, from riparian floodplains fringing agricultural bottomlands to steep mountainsides of both coastal and interior forests depending on slope, aspect and altitude. The area hit the national herpetological radar in August, 2011 with discovery of the first confirmed mainland population of Sharp-tailed Snakes for British Columbia. Since then, this federally endangered species has been found at seven sites in a 5 km section of the central valley, and extensive searching in the area has yielded much coincident information about the diverse and unexpected local herpetofauna - including the discovery of provincially blue-listed Northern Red-legged Frogs.



Sharp-tailed Snake (photo by Leslie Anthony)

The valley's biological and ecological importance stem from a uniquely warm but mesic climate that make it a meeting area for both coastal and interior flora and fauna – a unique mix and level of biodiversity found nowhere else in the province. For example, all previous verified Sharp-tailed Snake records in B.C. occurred on Vancouver and surrounding Gulf Islands in the Coastal Douglas Fir (CDF) Biogeoclimatic Zone, a generally frost-free mesic area characterized by Douglas Fir and understory of Salal and/or Oregon Grape. Within the region, Western Red Cedar is found on more moist sites; Garry Oak and Arbutus are abundant on drier sites, which generally also feature numerous grassy openings. Although Pemberton Valley is transitional between moist coast and dry interior, it is *not* frost-free and, biogeoclimatically, lies technically within the Coastal Western Hemlock (CWH) Zone and abuts the Interior Douglas Fir (IDF) Zone. Pemberton thus hosts de facto floral and faunal overlaps between interdigitating zones; despite no such overlap with typical Sharp-tailed Snake habitat (CDF), the Pemberton sharp-tail sites on Mackenzie Ridge, comprising the north wall of the main valley, do feature functional overlap in being a dry sub-variant of CWH with a moisture regime reminiscent of

the CDF and similarly defined by abundant Oregon Grape, Indian Plum and abundant berry shrubs (*Vaccinium* sp.) but without Salal, Garry Oak, or Arbutus. Three additional snake species and Alligator Lizards rely on similar south-facing slopes on Mackenzie and Owl Ridges for denning and reproduction; valley bottom wetlands and remnant oxbows are important breeding areas for amphibians; first-order streams and springs are important for all life-history aspects of Pacific Tailed Frogs and Northern Red-legged Frogs.

IMPARA sites can be designated for: 1) containing species of conservation concern; 2) containing a high diversity of species, and; 3) fulfilling important life history functions for herpetofauna. Pemberton fulfills all three criteria.

Annotated List of Known Pemberton Valley Herpetofauna (¹ = species of federal, provincial or local conservation concern)

- **Wandering Gartersnake** (*Thamnophis elegans vagrans*); extremely common; hundreds of records in unlimited distribution; obs. abundance approx. 20:1 ratio with *T. sirtalis fitchi*.
- **Valley Gartersnake** (*Thamnophis sirtalis fitchi*); common; ecologically more restricted than *T. elegans vagrans*, always syntopic but niche partitioning not presently understood.
- **Northwestern Gartersnake** (*Thamnophis ordinoides*); rare; one confirmed observation from southeastern end of Lillooet Lake; nearest other record is 50 km south, 15 km south of Whistler.
- **Sharp-tailed Snake**¹ (*Contia tenuis*), status and abundance unknown; 14 records from 7 sites; 3 sites with multiple records; 3 sites with hatchlings; 3 sites hibernacula.
- **Northern Rubber Boa**¹ (*Charina bottae*); common; over 100 individuals at approx. 20 sites; 7 sites identified as hibernacula and parturition areas.
- **Northwestern Alligator Lizard** (*Elgaria coerulea principis*); very common; unlimited distribution; syntopic with all snake species, esp. near den and parturition areas.
- **Long-toed Salamander** (*Ambystoma macrodactylum*); most common amphibian in area; breeds in any water from valley to alpine.
- **Northwestern Salamander** (*Ambystoma gracile*); common; aquatic adults occupy channels and ditches in valley bottoms.
- **Common Ensatina**¹ (*Ensatina escholtzii*); uncommon; < 5 individuals including juveniles, usually in rotten logs in forest, but sometimes on dry hillsides.

- **Western Red-backed Salamander¹** (*Plethodon vehiculum*); rare; two individuals 3 years apart from the same one-metre area on a north-facing slope.
- **Rough-skinned Newt** (*Taricha granulosa*); locally common; spotty in valley bottom wetlands.
- **Western Toad¹** (*Anaxyrus boreas*); locally common; breeds in oxbows and other remnant valley bottom wetlands.
- **Pacific Chorus Frog** (*Pseudacris regilla*); very common; found at almost all elevations on south-facing hillsides, and in agricultural areas on valley bottom.
- **Pacific Tailed Frog¹** (*Ascaphus truei*); locally common; limited to first-order streams in alpine(ish) areas.
- **Northern Red-legged Frog¹** (*Rana aurora*); uncommon; so far known only from one site each in the Southeast and Northwest ends of the valley; both records are range extensions for the species.



Rubber Boa (Photo by Leslie Anthony)



Pacific Chorus Frog (photo by Leslie Anthony)

Human Impacts, Habitat Threats and Conservation Concerns

Historical logging activity and watercourse alterations have already affected much of the valley’s original habitat, yet not enough to erase its original biodiversity signature. South-facing Mackenzie Ridge is

currently an area of heavy recreational use containing an extensive and expanding mountain bike, motorbike and hiking trail systems, and crisscrossed by active 4-wheel roads used for hunting, selective logging and access to paragliding launch-sites. Most of the area is privately owned and at some stage in the development process. Ground-breaking, site prep and road-building have taken place for a valley bottom school complex and the first adjacent dense hillside housing development. All of this is taking place without competent environmental impact assessments (EAs) on the known habitat of the yet unstudied local Sharp-tailed Snake population, and without mitigation for Rubber Boa or Sharp-tailed Snake hibernacula. At the behest of Stewardship Pemberton the provincial MOE species-at-risk biologist for the region reviewed the EAs provided by the developer to date and subsequently advised the village of Pemberton of their inadequacy in meeting federal and provincial SAR guidelines.

Some limited pollution exists in the form of pesticides and fertilizers from the extensive agricultural activity in the valley, though impact is increasingly lessened as more land is given over to organic farming. Pollution from industrial sources and garbage/waste disposal areas is limited and localized.

Efforts are underway through Stewardship Pemberton, including a Habitat Conservation Trust Foundation (HCTF) grant in 2013, to work with the village of Pemberton, the First Nations community, developers and other landowners on development issues in consultation with the B.C. Ministry of the Environment herpetofauna specialists and the Sharp-tailed Snake Recovery Team. Two sensitive areas in the valley are currently protected due to park and conservation area boundaries and a land tract purchase by Stewardship Pemberton, but formal protection is recommended for Rubber Boa Sharp-tailed Snake denning areas, as well as protection of remaining valley bottom wetland breeding areas for Western Toads.



Sharp-tailed Snake habitat (photo by Leslie Anthony)



Propriétaires agricoles riverains et tortue des bois : des résultats probants

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Depuis 2002, Corridor appalachien veille à la protection de la tortue des bois, rare et menacée, en réalisant divers projets auprès de la population du sud des Cantons-de-l'Est (forestiers, propriétaires fonciers), où se trouvent des habitats de grande qualité pour l'espèce. En 2009, l'organisme de conservation lançait une initiative ciblant tout particulièrement les propriétaires de terres agricoles le long des rivières Missisquoi, Missisquoi Nord et Sutton.



Wood Turtle (photo courtesy of Appalachian Corridor)

Pourquoi les agriculteurs?

Les résultats d'une étude réalisée en 1998 dans la région de Brome-Missisquoi (Saumure et Bider) suggèrent que l'on retrouve moins de juvéniles chez les tortues des bois vivant en milieu agricole qu'en milieu forestier. De plus, dans un contexte agricole, les tortues présentent un taux de blessure à la carapace deux fois plus élevé. Plusieurs collisions mortelles avec la machinerie agricole sont observées, de même que des cas d'ensevelissement à la suite de travaux effectués en bordure de rivière.

La tortue des bois est la plus terrestre des tortues du Québec : elle s'aventure jusqu'à 300 m des cours d'eau. Comme seulement 1 % des tortues atteignent la maturité sexuelle (environ 13 ans), les effets de la mortalité d'une seule tortue mature peuvent comporter de graves

conséquences sur la population entière. L'espèce comptant sur la viabilité des adultes pour se maintenir, un taux de mortalité de plus de 5 % de ceux-ci entraînerait le déclin graduel de la population (Congdon et al. 1993; Cameron and Brooks 2002).

Les agriculteurs peuvent faire une différence majeure dans la survie des populations de tortues des bois. Pour leur fournir les outils appropriés, des mesures ont été proposées en 2010 par un panel de spécialistes de l'espèce provenant des milieux agricole et de la conservation.

Le projet

En 2011, Corridor appalachien contactait 58 propriétaires et exploitants agricoles pour les inviter à augmenter la hauteur de fauche du foin et des prairies à 10 cm (4 pouces), sur 200 m de profondeur de chaque côté des rivières ciblées. De ce nombre, 23 ont répondu positivement, étonnés et fiers de la présence de cet animal rare et menacé sur leurs propriétés, représentant ainsi 300 ha d'habitat pour les tortues. Les propriétaires ne s'étant pas engagés ont cité deux principaux facteurs influençant leur décision : la perte de rendement ou de revenus et un scepticisme par rapport à la présence de la tortue des bois sur leurs terres.

En 2012, notre équipe réalisait le suivi auprès des agriculteurs engagés: 12 des 23 avaient fauché leurs champs (plus de 52 %). De ces 12 propriétaires, 8 avaient respecté la hauteur de coupe suggérée (plus de 66 %). Ceux qui n'avaient pas respecté la nouvelle mesure avaient eu recours, en majorité, à un contractant externe pour effectuer la fauche. Dans ces cas, il peut être difficile pour certains propriétaires de faire appliquer la mesure car les sous-traitants l'ont parfois oublié, ou sont réfractaires à son application. De plus, le respect de la hauteur de coupe n'est pas contraignant dans les ententes avec un tiers et les opérations peuvent avoir lieu à une date inconnue du propriétaire. En 2012, la validation sur le terrain a donc permis d'identifier où la hauteur de fauche n'a pas été augmentée et d'en informer les propriétaires afin de corriger la situation à la prochaine coupe.

Une histoire probable...

Une tortue des bois vit 30 ans, elle commence à pondre à 15 ans à raison de 10 œufs par année et à peine 1% de ses rejets se rendent à l'âge adulte ; elle aura donc en moyenne mis au monde seulement 1,5 tortue qui deviendra adulte !

Des recommandations

Il serait d'abord important d'octroyer un incitatif financier aux propriétaires désirant appliquer cette mesure. De plus, inclure les propriétaires aux prochains

suis des populations de tortues des bois sur le terrain permettrait d’aller à la rencontre de l’espèce et d’effacer les doutes sur sa présence. Il serait également suggéré d’inviter les agriculteurs, dans une perspective plus globale, à participer aux différentes initiatives de protection de la tortue des bois, afin qu’ils prennent part aux processus de décisions. Nous souhaitons aussi contacter les contractants engagés à forfait pour les informer du projet, les sensibiliser à la protection de la tortue des bois et les inciter à respecter la mesure d’atténuation proposée.

Finalement, la méthode d’ensilage en un jour pourrait faire l’objet d’une campagne de promotion. Elle requiert de hausser la coupe à 10 cm pour accroître l’aération de l’andin et ainsi assécher plus rapidement la matière végétale, augmentant la valeur nutritive du foin par la perte réduite de sucres et d’amidon dans le fourrage (due à la respiration de la plante pendant la nuit). La concentration dans le temps des opérations au champ réduirait le risque de contacts entre la machinerie et les tortues.

Les prochaines étapes

Afin de contribuer au maintien de la tortue des bois ailleurs au Québec, Corridor appalachien compte transférer le projet à d’autres organisations œuvrant sur des territoires où des populations de l’espèce subissent les mêmes menaces.

En terminant, nous tenons à souligner la réponse positive des propriétaires au projet et leur sensibilité au bon maintien des populations de l’espèce. Leur engagement saura sans doute améliorer la situation des populations de tortues des bois dans les secteurs visés. Rappelons que les exploitants agricoles peuvent jouer un rôle déterminant dans le maintien et la protection de la biodiversité, nécessaire à l’équilibre des écosystèmes qui sont au cœur du développement physique et économique de nos communautés.



Wood Turtle (photo by Joe Crowley)

FIELD NOTES

Herpetofauna observed during the Royal Saskatchewan Museum bioblitz of southwest Saskatchewan

Leanne Heisler, Ashley Fortney, Nicholas A. Cairns, Adam Crosby, Cory Sheffield and Ray Poulin
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In the summer of 2013, the Royal Saskatchewan Museum organized a large scale ‘bioblitz’ in southwestern Saskatchewan. Four teams stationed at four sites (Figure 1) for nearly four months systematically collected vertebrate and invertebrate specimens to record species distributions and further the research objectives of the museum. The surveys were focused in areas known to be ‘hotspots’ for Species at Risk (SAR), and other species, and are characterized by distinct geophysical features (i.e., steep river valleys, badlands, and sand dunes) surrounded by relatively homogeneous grassland landscapes. These sites facilitated a concentrated effort to survey for SAR while collecting invertebrate and vertebrate samples to improve our understanding of Saskatchewan’s biodiversity. Through this effort, the Royal Saskatchewan Museum has contributed significant observations to the herpetological knowledge of the province.

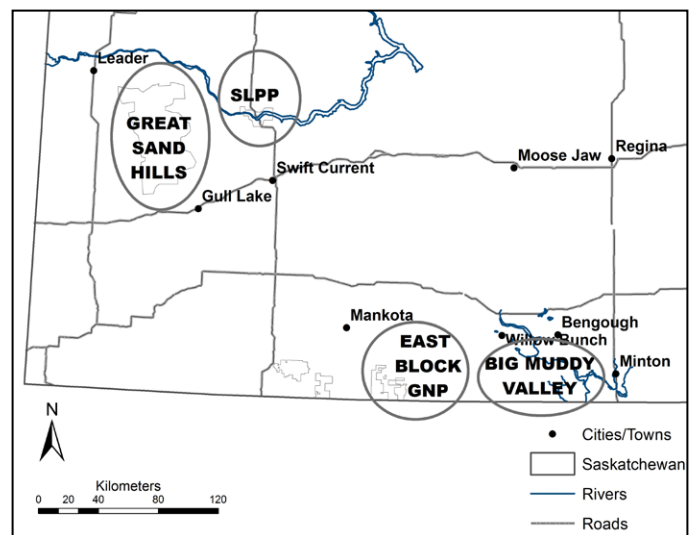


Figure 1. Locations of the four survey sites in south western Saskatchewan.

Novel observations and reconfirmations of species presence were made for the East Block of Grasslands National Park and surrounding private land. The East Block of the park is predominately native mixed-grass prairie associated with quartzite plateaus and gullied lands (Acton et al. 1998). Over the four month survey, five species of amphibians and seven species of reptiles were observed (Table 1). The first Western Hog-nose Snake and Smooth Greensnake were recorded in the area, adding two reptile species to the herpetofauna of Grasslands National Park. A Prairie Rattlesnake was also observed just outside the park boundaries, confirming the long-rumoured presence of this species in the area. Two rare species were also observed in the park: the Greater Short-horned Lizard (endangered), and the Eastern Yellow-bellied Racer (threatened). Plains Spadefoot Toads were recorded in several stages of development throughout the summer. Major choruses were heard during thunderstorms in late May, with smaller intermittent choruses during major rain events through June and July. Terrestrial metamorphs were observed approximately five weeks after the first choruses, but legless tadpoles were present until the end of July, suggesting delayed development.



East Block, Grasslands National Park (photo by Nick Cairns)



Prairie Rattlesnake (photo by Ashley Fortney)

Table 1. Herpetofauna observed ('X' indicates species presence) at four sites considered to be hotspots for species listed as at-risk by COSEWIC.

Species	SARA Status	GNP East Block	Big Muddy	SL PP	Great Sand Hills
Reptiles					
Greater Short Horned Lizard	EN	X			
Eastern Yellow-Bellied Racer	THR	X	X		X
Prairie Bullsnake	DD	X	X	X	X
Plains Garter Snake	NAR	X	X	X	X
Prairie Rattlesnake	NAR	X			X
Smooth Green Snake	NAR	X	X		
Western Hognose Snake	NAR	X			X
Western Terrestrial Garter Snake	NAR			X	X
Amphibians					
Northern Leopard Frog	EN	X	X	X	
Great Plains Toad	SC			X	
Western Tiger Salamander	SC	X	X	X	
Boreal Chorus Frog	NAR	X	X	X	
Canadian Toad	NAR	X			
Plains Spadefoot Toad	NAR	X			

Significant range extensions (or confirmations of estimated ranges) were recorded for the Eastern Yellow-bellied Racer in the vicinity of the Big Muddy Valley. The valley and surrounding uplands are a hummocky morainal landscape of native mixed-grass prairie interspersed with cropland. The valley itself was a spillway that drained a glacial lake into the Missouri River, and is characterized by badlands along the valley slope and clay 'gumbo' soils (Acton et al. 1998). Four snake species and three amphibian species were recorded during the survey (Table 1). Although there is anecdotal evidence for the presence of Western Hognosed Snakes and Prairie Rattlesnakes in the region, none were observed during this survey. Northern Leopard Frogs and Blotched Tiger Salamanders were observed at various sites across the valley. In this area, 18 Eastern Yellow-bellied Racers (16 adults and 2 juveniles) were observed, with nearly half of the observations in a tributary extending from the north side of the valley. Although a concerted effort was made to find living individuals, over half of the specimens were collected as roadkill. This suggests that vehicular traffic is a threat to Eastern Yellow-bellied Racers in the Big Muddy Valley (Fortney et al. 2012).

Several observations of unique habitat use by Bullsnares were made at Saskatchewan Landing Provincial Park (SLPP) and in the Great Sand Hills. SLPP encompasses the South Saskatchewan River valley and surrounding native grassland slopes, sand dunes, and uplands. The Great Sand Hills represent the largest sand dune complex in southern Saskatchewan. We recorded three reptile species and four amphibian species at SLPP, while six reptile species were observed in the Great Sand Hills (Table 1). Although Eastern Yellow-bellied Racers and Prairie Rattlesnakes have been rumoured to be in the park, none were seen during the survey. A total of 24 Bullsnares were observed in SLPP. Five of the Bullsnares were implanted with radio-transmitters with a battery life that will allow them to be tracked for two years. In the autumn following the bioblitz, researchers at the museum discovered two (and a possible third) winter hibernacula by radio-tracking these Bullsnares. In SLPP, Bullsnares were often present in campgrounds, sometimes staying for weeks in areas of high human traffic (e.g., main beach, around buildings, campsites) instead of the surrounding less disturbed native grasslands. Furthermore, Bullsnares were observed nesting behind the siding of a house on a farm near the Great Sand Hills. This suggests that this species may have an affinity for anthropogenic areas that has not been observed in previous studies of Bullsnares habitat selection (Martino et al. 2012, Gardiner et al. 2013). Bullsnares were also observed travelling along the sandy shorelines of Lake Diefenbaker, rather than through the undisturbed native hills nearby. Bullsnares are known to select lowland habitats over hill slopes and uplands during the summer (Martino et al. 2012; Gardiner et al. 2013), potentially explaining the affinity these snakes have for lake shorelines in SLPP.

The bioblitz organized by the Royal Saskatchewan Museum has provided invaluable information regarding the distributions of herpetofauna across southern Saskatchewan. Over the four month survey a total of eight reptile species and five amphibian species were observed at four sites considered hotspots for SAR. Of these 13 species, six species are listed under the Species at Risk Act. In these areas, the presence of some species has been reconfirmed where previous records are decades old, while new species were documented at some sites.

Acknowledgements

The authors would like to thank the staff and managers of Grasslands National Park and Saskatchewan Landing Provincial Park, as well as the private landowners (especially Miles Anderson) that

provided advice and access to their land during this survey. We thank the following organization for providing financial and logistical support: Saskatchewan Parks, Saskatchewan Environment Fish and Wildlife Development Fund, Earth Rangers, Canadian Agricultural Adaptation Program, Young Canada Works and Friends of the Royal Saskatchewan Museum. We also thank the following research technicians for participating in the bioblitz: Sam Jacques, Graham Rothwell, Shelby Stecyk, Sara Macdonald, Marla Anderson, and Allie Gallon. All collected specimens have been provided to the Royal Saskatchewan Museum.



SLPP (photo by Ashely Fortney)



Plains Spadefoot Toad (photo by Nick Cairns)



Eastern Yellow-bellied Racer (photo by Joe Crowley)

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Severe multiple kyphosis (spinal kinking) in an Eastern Foxsnake (*Pantherophis gloydi*)

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Kyphosis is a form of spinal osteopathy that is often characterised by dorsally protruding undulations on the vertebrae. The deformity can have nutritional, congenital, bacterial, viral and multi-factorial causes and may lead to reduced fitness (Fitzgerald and Vera 2006). In theory, severe kyphosis in an adult female could lead to reproductive complications.

On 11 July 2013 we encountered a sub-adult female Eastern Foxsnake (*Pantherophis gloydi*) with a total of eleven posterior curves (kyphosis; Fig. 1). The snake was found under a cover board in stabilized dune habitat on the Canadian shore of Lake Erie. The individual weighed 91 g with a snout-vent length of 54.4 cm and a tail length of 7.3 cm. The snake behaved and moved normally, no ectoparasites were observed and the snake's body condition fell within the range of other subadult Eastern Foxsnakes encountered at the site. We

observed no evidence of significant motor disability caused by the spinal deformity, although we were not able to test this with comparative locomotor trials. Our observation suggests that some individuals with severe kyphosis can forage, evade predators and over-winter successfully. However, we cannot discount the possibility that this deformity could cause reproductive difficulties in mature, severely affected females. The kyphotic individual was marked with a passive integrated transponder and released, and future captures may shed light on her ability to reproduce.



Subadult female Eastern Foxsnake (*Pantherophis gloydi*) with 11 spinal kinks (kyphosis). The inset shows the largest kinks located midway down the body.

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Acknowledgments

This observation was made in the course of work on projects supported by Rondeau Provincial Park, the Rondeau Waterfowling Association, Lakehead University, the Government of Ontario and Wildlife Preservation Canada.

BOOK REVIEWS

This section of TCH includes reviews of not just books but other vehicles for the dissemination of information that might interest Canadian herpetologists.

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.

Davy, CM. 2013. Ph.D. University of Toronto.
(Supervisor: B. Murphy)

Conservation Genetics of Freshwater Turtles

Turtles have long life spans, overlapping generations and promiscuous mating systems. Thus, they are an ideal model system with which to investigate the application of conservation genetics methods and assumptions to long-lived organisms. Turtles are also one of the most threatened groups of vertebrates and conservation genetics studies are essential to effective recovery of turtle species. This thesis has two main objectives: 1) to evaluate some common population genetics assumptions with respect to turtles and other long-lived organisms, and 2) to collect important information on the population genetics of threatened turtles in Ontario, which can be used to inform species recovery. In Chapters Two and Three, I describe the development of novel microsatellite markers for the snapping turtle and Spiny Softshell. In Chapter Four I demonstrate significant genetic structure in populations of the endangered Spotted Turtle in Ontario, and find that “bottleneck tests” may fail to detect recent population declines in small turtle populations. I also show that Spotted Turtles do not show the typical correlation between population size and genetic diversity. In Chapter Five I use microsatellite markers developed in Chapter Two and document population structure in the widespread Snapping Turtle for the first time. I compare these results with results from Chapter Four to test the traditionally accepted hypothesis that genetic diversity is reduced in small, isolated populations compared to large, connected populations. As in Chapter Four, my results suggest that the usual patterns of genetic structure and loss of diversity may not apply to turtles. In Chapter Six I conduct a conservation genetics study of the endangered Blanding’s Turtle. Finally, in Chapter Seven I combine results from Spotted, Snapping and Blanding’s Turtles to test whether vagility predicts population structure, genetic diversity and significant barriers to gene flow in three species sampled across a single landscape. Analyses reveal minimal congruence in barriers to gene flow and the three species show unexpected and contrasting patterns of diversity across the landscape.

Discordant patterns among species highlight areas for further research and shed light on possible cryptic behaviour, and I discuss potential further directions for research in the Summary.



Spotted Turtle (photo by Joe Crowley)

Leung, M.N. 2012. MSc. University of Calgary. 2012.
(Supervisor : Anthony Russell)

Phylogeography of the Greater Short-Horned Lizard (*Phrynosoma hernandesi*) in Alberta.

The distribution pattern of a species reflects a mixture of historic and present-day influences. The Greater Short-horned Lizard is range-marginal in Alberta and exhibits a patchy distribution pattern. Many sites where it occurs appear to be isolated. Phylogenetic inference and population genetics were employed to investigate the historical source(s) of the Alberta representatives and to determine whether Alberta “populations” are subject to gene flow between them. Two mitochondrial and one nuclear DNA genes were sequenced from 94 lizard tail-tips collected from twelve localities in Alberta. Overall, Alberta lizard sequences displayed very little variability, and genetic analyses revealed that the most parsimonious explanation is that this species in Alberta is descended from one source population. All localities are inferred to be historically genetically interconnected. The correlation of horned lizard localities with selected landscape features revealed that they occupy only small portions of seemingly suitable habitat. Overall, the historic genetic information investigated and particular features of the landscape features failed to explain the species present-day distribution patterns in southeastern Alberta.



Greater Short-horned Lizard (photo by Ashley Fortney)

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.

- Baxter-Gilbert, J., J.L. Riley and J.D. Litzgus. 2013. *Plestiodon fasciatus* (Five-lined Skink). Artificial habitat use. *Herpetological Review* (accepted for publication 9 July 2013).
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Fowler's Toad (photo by Joe Crowley)

NEWS AND ANNOUNCEMENTS

Announcing the Canadian Herpetological Society / Société d'herpétologie du Canada

Joe Crowley

At the joint meeting in Orford, Quebec, the membership of the Canadian Amphibian and Reptile Conservation Network (CARCNET) and the Canadian Association of Herpetologists (CAH) voted in favour of merging to form one organization, which has now been named the Canadian Herpetological Society. The rationale for the merger was that both groups were already holding joint meetings and publishing a joint newsletter, and that there was a lot of overlap between the Boards and the membership. Even more important is the inherent overlap that existed between the primary mandates of each group: research and conservation. For example, although CARCNET's primary mandate was conservation, there has always been a significant focus on applied research that can inform conservation work, as well as disseminating research findings amongst the membership.

In recognition of the importance of both research and conservation, as well as the interdependency of these two fields, the organization's new mandate is to foster herpetological research and conservation of species and their habitats. The focus on both research

and conservation is clearly identified in the mission statement and throughout the governing documents, which were presented at the AGM in Orford, QC. The updated constitution also includes two new Director positions: a Director of Conservation and a Director of Research. These positions were created to help ensure that both mandates are upheld. The new governing documents will be available on the website shortly.

As a result of the merger of CARCNET and CAH, as well as a mandate that now formally includes both conservation and research, the organization needed a new name. At the AGM, the Board of Directors put forward a suggestion for a new name and logo. However, the membership expressed interest in holding a competition for the new logo. After the AGM, the Board of Directors decided to also hold a competition for the new name to ensure that the membership was involved in this important decision. In mid-October, all members were asked to contribute their ideas and then in early November everyone voted on their favourites.

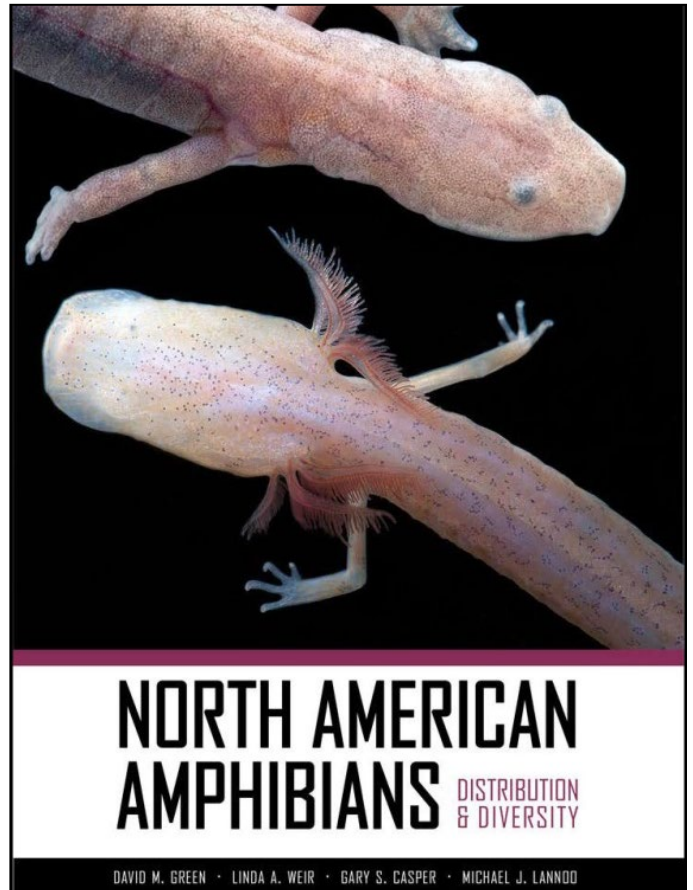
The winning name was the Canadian Herpetological Society / Société d'herpétologie du Canada, which was submitted by Dr. David Green. Although there were some good debates among the membership about the names, this name came out as a clear winner with more votes than the other two proposed names combined. This name also mirrors that of other prestigious reptile and amphibian organizations across the world with similar mandates for research and conservation, including the British Herpetological Society and the Australian Herpetological Society. When compared to groups like these, it becomes apparent that our new name not only fits well but will be instantly understood and recognized among the international community.

We received several excellent submissions for the logo contest, and we would like to thank everyone who took the time to design such amazing logos for us to choose from. The winning logo was submitted by Lucie Veilleux and is featured throughout this issue of TCH. Following is Lucie's description of the symbolism in our new logo: "The logo represents an amphibian (Yellow-spotted Salamander) and reptile species (Painted Turtle) that are common across Canada and to whom people can relate. Underneath you can see a raindrop representative of the conservation of wetlands and habitats, as well as the Canada's maple leaf." David and Lucie will receive a free one-year membership (to be used whenever their current membership expires).



A New Book on North American Amphibians:

North American Amphibians: Distribution and Diversity by David M. Green, Linda A. Weir, Gary S. Casper, and Michael J. Lannoo. University of California Press. 2013.



Some 300 species of amphibians inhabit North America. This volume reflects the enormous growth in interest about amphibians and the increased intensity of scientific research into their biology and distribution that has occurred during the past two decades. This volume presents the diversity of North American amphibians in a geographic context. It covers all formally recognized amphibian species found in the U.S. and Canada, many of which are endangered or threatened with extinction. Maps and accounts of each species provide current information about distribution, habitat and conservation. Researchers, professional herpetologists, and interested laypersons will value this volume as a guide and reference. Designed for portability, this volume features complete distribution maps and color photographs.



In Memory of William Burton Preston

Francis R. Cook
 Researcher/Curator Emeritus
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 frcook@ripnet.com

William Burton Preston (1937-2013) passed away at St. Boniface Hospital on 11 October 2013. Bill was born in Penticton, British Columbia on 6 March, 1937. He published on both herpetology and entomology particularly on Manitoba. Bill did a M.Sc. on rattlesnakes at the University of British Columbia and a Ph.D. at the University of Oklahoma on the ecology of two watersnake species. Bill was Curator of Amphibians, Reptiles, Fish and Invertebrates at the Manitoba Museum of Man and Nature for 28 years. His *Amphibians and Reptiles of Manitoba* was published in 1982 by the Museum and he co-authored *The Butterflies of Manitoba* and contributed to the *Encyclopedia of Manitoba* as well as journal articles. Notice of Bill's passing appeared in the Winnipeg Free Press on 19 October 2013. A tribute to Bill is being prepared for *The Canadian Field-Naturalist*.



Get Your CARCNET/CHS Greeting Cards!

Joe Crowley

At the AGM this year I announced the sale of CHS/SHC greeting cards! Although many of us miss the calendars, the greeting cards have the benefits of being cheaper and they do not expire. This year's set of four cards features the Blanding's Turtle, Gray Treefrog, Red-backed Salamander and Massasauga Rattlesnake.



Gray Treefrog
(Hyla versicolor)
 Canadian Distribution: MB, ON, QC, NB
 Status in Canada: Not assessed

The trilling call of the Gray Treefrog is a familiar sound in forested areas throughout eastern North America. The prominent adhesive toe-pads allow Gray Treefrogs to easily scale vertical surfaces and they spend most of their time in shrubs and trees. In the late spring, Gray Treefrogs congregate at wetlands where the males call to attract mates. Eggs are deposited in the wetlands and hatch into tadpoles within a week, which then undergo metamorphosis into juvenile frogs in the late summer.

As its Latin name implies, the Gray Treefrog is able to rapidly change colour, which can range from grey to brown to bright emerald green. These colours provide excellent camouflage against the green leaves and forest floor where this frog resides.

CARCNET / RÉCCAR
 Canadian Amphibian and Reptile Conservation Network / Réseau Canadien de Conservation des Amphibiens et des Reptiles
www.carcnet.ca

CARCNET is a registered Canadian charity that fosters the conservation of Canada's amphibian and reptile species (herpetofauna) and their habitats by promoting and supporting scientific research and conservation projects, facilitating collaboration, and advancing public understanding of our native herpetofauna.

All proceeds from the sale of these cards will support CARCNET and contribute to the conservation of Canada's reptile and amphibian species

Photograph by Joe Crowley Printed August 2013

The four greeting card designs and an example of the back

These unique cards are the perfect gift for anyone with an appreciation of Canadian Herpetofauna or wildlife in general. They feature original photography of Canada's reptiles and amphibians that has been donated by CHS members, and the back of each card includes interesting facts about the species. The cards are printed on FSC certified paper (the printed versions have an FSC logo in the white space in the bottom right corner).

The money raised through the sale of the greeting cards will directly fund important CHS/SHC initiatives, including a website update, student travel grants and work on the IMPARA book. So, this is a great way to help support the organization and get some cool cards at the same time! These were printed with the CARCNET name and logo, making them limited edition collector's items ;)

The greeting cards are \$3 each or \$10 for the set of 4 cards. If you are interested in helping to sell the cards, or to order your own cards, please contact me at Joe.Crowley@ontario.ca



Outgoing and Incoming Directors

Joe Crowley

At the 2013 AGM, the interim Board of Directors for the Canadian Herpetological Society was proposed in the articles of merger. This interim Board consisted of all current CARCNET and CAH Directors, with the exception of Kris Kendell, whose term was to expire in the New Year. The Board of Directors would like to sincerely thank Kris for his time on the Board. Kris' quick responses and thoughtful insights will be missed on the Board, but he has indicated that he plans to stay involved with CHS. Three new members were also nominated by the membership and voted onto the Board during the 2013 AGM: Steve Marks, Jonathan Choquette and Leslie Anthony. We would like to welcome these new Directors, whose terms will begin in January of 2014.



Contribute to Canadian Turtle Conservation with Just a Few Clicks!

Jeff Hathaway

Scales Nature Park, Orillia, ON
info@scalesnaturepark.ca

We all know road mortality is a significant threat to turtle populations. The fledgling Georgian Bay Turtle Hospital aims to change that with a mix of rehabilitation, research, and education. You can help this effort over the winter months, from anywhere across Canada, by participating in two online funding challenges. You're not out in the field, so you should have time, right?

The first challenge, for \$150,000, is the Aviva Community Fund. We are in the semi-finals, which run from December 2 to 11. You can VOTE EACH DAY for the Georgian Bay Turtle Hospital at:

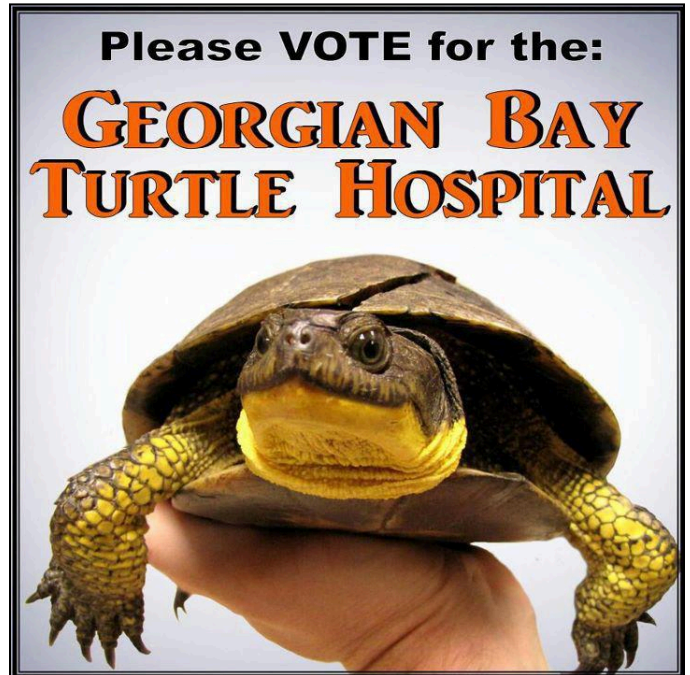
<http://www.avivacommunityfund.org/ideas/acf17527>

We need to finish in the top 10 to move on to the judges. The judging criteria include the number of votes

and number of individual supporters, so the more people vote, the better our chances of receiving \$150,000!

The second challenge, for \$50,000, is the Shell Fuelling Change competition. People can redeem codes on Shell gas receipts for votes to cast for their project of choice, from now until April 30. The direct link is: <http://www.fuellingchange.com/main/project/451/Saving-Turtles-at-Risk-Today>. We are in first place at the time of writing, and need to stay in the top tier in order to receive \$50,000.

With governmental funding sources drying up, these challenges are increasingly important for funding conservation activities. In recent years, Kawartha Turtle Trauma Centre, Toronto Zoo's Adopt-a-Pond program, and others have been successful in these campaigns. We hope that the reptile and amphibian conservation community across Canada will support our efforts. After all, what else can you do in December to help Canada's turtles?



2013 CARCNET/CHS Student Awards

Each year at the AGM, an award is given out for the best student platform presentation and the best student poster presentation. The award winners also receive \$250 each. The award for the best platform presentation

at the 2013 AGM went to James Baxter-Gilbert for his informative and entertaining talk titled “Where claws meet asphalt: using a novel technique to measure corticosterone in toe-nails to examine stress levels in Painted Turtles (*Chrysemys picta*) living around a major highway”. Camille Tremblay-Beaulieu was the recipient of the best student poster award for her poster titled “Effects of mining on the physiological ecology and morphology of herpetofauna in Sudbury, Ontario”. Congratulations James and Camille! There was no shortage of exceptional presentations and posters and it was difficult to choose the award recipients.

CARCNET/CHS also gives out travel awards to help make attending the AGM and conference more affordable for students. This year, the recipients of the CARCNET/CHS student travel awards, in the amount of \$225 each, were Hannah McCurdy Adams, Daniel Greenberg, Amanda Bennett and Jose Lefebvre. These travel awards are given out each year and the application for these awards is available on our website.

Congratulations to all of our 2013 award winners, and thank to you everyone who contributed talks and posters to the 2013 AGM!

And a few more pictures from the 2013 AGM....



Catching stream salamanders on the AGM field trip (photos by Joe Crowley)



Northern Dusky Salamander (photo by Joe Crowley)



Checking Turtle traps on the field trip (photo by Amelia Argue)



Dr. Fred Schueler teaching field trip participants about native and invasive Phragmites (photo by Joe Crowley)



Canadian Herpetological Society / Soci t  d'herp tologie du Canada

Membership Form

Membership begins and ends on January 1 of each year. Multi-year membership allows you to avoid the hassle of re-registering every year and protects you from increases in membership fees.

Student Membership: \$20 / year CDN **or \$90 / 5 years**

Regular Membership: \$30 / year CDN **or \$135 / 5 years**

Yes, I wish to donate to the on-going work of the Canadian Herpetological Society in the amount of:

\$25 \$50 \$100 Other (Please specify): _____

Total Amount Paid: _____

Please make cheques or money orders payable to Jose Lefebvre
Please mail this form, along with your membership fee, to:

Jose Lefebvre, Acadia University, Biology Dept., 33 Westwood Ave, Wolfville, NS, B4P 2R6.

Your Information:

Title: _____ First Name: _____ Last: _____

Institution/Affiliation: _____

Department/Section: _____

PO box / Unit / Building: _____

Street Address _____ City: _____

Province / State: _____ Postal / Zip code: _____ Country: _____

Email: _____

Phone: _____ Fax: _____