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# CROAKS AND TRILLS

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## From the Editor

### Do you need additional data sheets?

Data sheets can be printed directly from the Alberta Conservation Association website: [www.ab-conservation.com](http://www.ab-conservation.com).

To locate the data sheets on the ACA website, click on the following links: “*Your dollars at work*” followed by “*Current projects*” followed by “*Alberta Amphibian Monitoring Program*”, followed by “*datasheets*”.

See page 6 for more details on how to obtain additional data sheets.

--- Kris Kendell

## Are amphibian populations on the rise or decline in Banff National Park?

By Kari Gunson and Charlie Pacas

Population declines of amphibians have been dramatic over the last decade in various parts of the world, and the same trend has been documented among amphibian species in Alberta (Russell and Bauer 1993). Declines have not only occurred in developed areas where amphibian habitat has been lost, but also in natural areas, where the abiotic environment should be relatively unaffected. Monitoring amphibian populations in natural, undeveloped areas such as Banff National Park (BNP) is critical, as land use changes and human disturbance are relatively controlled, so declines in population numbers can be attributed to other factors (St. Clair 1999).

Banff National Park (6 640 km<sup>2</sup>) is situated in the Rocky Mountains of Canada along the southwestern border of Alberta. The Bow Valley runs east to west through the park and contains relatively undisturbed forest interspersed with a mosaic of wetlands. These wetlands support four species of amphibians: the long-toed salamander (*Ambystoma macrodactylum*), the Columbia spotted frog (*Rana luteiventris*), the boreal toad (*Bufo boreas*) (also known as the western toad), and the wood frog (*Rana sylvatica*). The first three species are listed as “Sensitive” (Alberta Sustainable Resource Development 2001).

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Long-toed salamander larvae (photo by Selwyn Rose)

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## **Amphibian populations in Banff** (cont. from page 1)

We conducted amphibian surveys at the same 32 wet areas (ponds, lakes, and marshes) throughout the Banff Bow Valley corridor from April to September in 2003 and 2004. Surveys coincided with peak times of egg deposition and emergence (metamorphosis) of young, and consisted of slowly walking the perimeter of each wet area. All egg masses/strings, tadpoles, adults, and froglets were counted during each survey.

Tadpole surveys were carried out by randomly deploying minnow traps along the perimeter of each wet area, 1 m from the water edge. Traps were left for 24 hours, and aquatic predators, minnows, and tadpoles were counted.

Sixty-six percent of the ponds had confirmed wood frog breeding, followed by long-toed salamanders (19%), boreal toads (17%) and spotted frogs (6%). Wood frog and boreal toad breeding slightly decreased by 6% and 3% respectively from 2003 to 2004, while long-toed salamander breeding presence increased by 6% and spotted frog breeding presence remained the same. The number of wood frog egg masses in the ponds remained the same from 2003 to 2004, while the number of boreal toad strings decreased by 50%. There was not enough egg mass data for long-toed salamanders and spotted frogs to assess an increase or decrease in counts. Wood frog tadpole numbers were significantly correlated with the number of egg masses found.

At this point caution should be taken when quantifying amphibian trends in Banff National Park since data collection has been over a short period of time. We plan to consistently carry out these surveys at the same ponds over the next three years in order to draw accurate conclusions on the status of amphibian populations in Banff National Park.

### References

- Alberta Sustainable Resource Development. 2001. The general status of Alberta wild species 2000. Alberta Sustainable Resource Development, Fish and Wildlife Service. Edmonton, AB. 46 pp.
- Russell, A.P., and A.M. Bauer. 1993. The amphibians and reptiles of Alberta. Second edition. University of Calgary Press, Calgary, Alberta. 292 pp.

St. Clair, R. 2001. Amphibian Monitoring Programme for Banff Park. Report submitted to Parks Canada. Banff, Alberta, Canada.

For more information on this study contact Kari Gunson: Kari.Gunson@pc.gc.ca ❖

## **Finding Alberta's grassland toads**

*By Chris Fisher*

The phone rang early one morning in late May. On the other end was Sandi Robertson. Now any call from Sandi, an articulate, attractive, Kangaroo Rat biologist, is one to be treasured. But this one offered an added bonus--she had just found her first Great Plains Toad.

Alberta does not have a particularly rich amphibian fauna in comparison to other Canadian provinces--much less tropical regions. Nor are many of the frogs, toads, and salamanders all that easy to locate. In fact, many friends and colleagues that are interested in the natural history of Alberta have seen fewer than half of our 10 species of amphibians. Most Albertans would do well by naming two or three. I have long been interested in seeing and photographing amphibians and in order to do so, I have been recruiting the assistance of biologists who may encounter them in the field.



Plains Spadefoot Toad (photo by Chris Fisher)

Great Plains toads and Plains spadefoot toads are Alberta's herpetological Holy Grail. They are found only in scattered localities within the southeastern Grassland ecoregion of the province.

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## Alberta's grassland toads (cont. from page 2)

This corner of Alberta is very rural, sparsely populated, and characterized by native pastures, deeply cut by large river valleys. This region is also very dry, which is why both of these anurans spend upwards of 90% of their adult lives buried in a self-made crypt. It is, therefore, near pointless to initiate a search for either toad if there has been little rain. Added to this temporal challenge is one of access. When rains hit the prairies, the back roads turn to gumbo.

It was burdened with this knowledge that I eagerly jumped into my truck to begin the 6-hour commute to where Sandi had discovered her Great Plains toad. Fortunately, her study site has good access along sandy roads, so as evening fell it wasn't long until the calls of both Great Plains and spadefoot toads were heard. Both species are well known for their loud voices, and the experience of walking more than 2 km to reach a breeding chorus left no doubt as to the purpose of the volume. With so few breeding wetlands and so little time to take advantage of the temporary puddles, males have to call long distance to ensure that they maximize their breeding opportunities.



Great Plains Toad (photo by Chris Fisher)

Since that late May experience I have yet to find another Great Plains toad, but have had a number of encounters with spadefoots. In meeting either amphibian, good fortune and the right circumstances have to fall into play. While they spend little of their adult lives above ground, the time spent is dominated by intense reproductive activities. To be lucky enough to experience it, you need good planning, willing scouts, and an eagerness to jump when the phone rings. ❖

## Volunteer highlights – 2004

James P. reported a snake den located in Southwest Calgary that is occupied by wandering garter snakes.

In 2004, Jessie K. observed three species of amphibians on her property near Bentley: wood frogs, boreal chorus frogs and tiger salamanders. This spring, Jessie reported hearing wood frogs calling on April 5<sup>th</sup>, which she believed was the earliest date wood frogs have started calling since 1995.

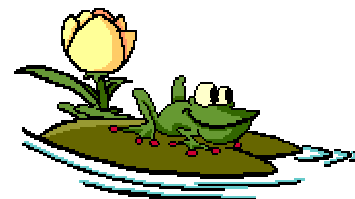
Krista G. heard and observed wood frogs in Beaver Creek, near Cold Lake, in early May. Wood frogs in amplexus (mating) and egg masses were also observed.

On March 31<sup>st</sup>, Lea C. heard boreal chorus frogs calling in many ponds, dugouts and sloughs as she walked along her road near Waterton Lakes National Park.

On July 30<sup>th</sup>, Jonah M. observed a wood frog that narrowly avoided being eaten by a garter snake on the lakeshore of Lake Wabamun.

The Ward family observed wood frogs and boreal chorus frogs on several occasions along the lakeshore in front of their cottage.

In August, Brad D. stumbled across 40 leopard frogs along Red Creek near the U.S. border. Before Brad's observation, leopard frogs had not been observed in that locality since July 2000. ❖



Please remember to send in  
your data from this year!

Every record is important to us and is put to good use in creating current distribution maps and improving our understanding of the timing of breeding activity of the amphibians found throughout Alberta. ❖

## Who goes there? Amphibians and reptiles in the vicinity of Edmonton

By Dr. Anthony P. Russell

For amphibians and reptiles, Alberta, as part of the northern portion of western North America, represents a recent expanding front of occupancy. With the retreat of the last great ice sheets less than 10 000 years ago, most of Alberta (save for the glacial refugium of Cypress Hills) became newly occupiable by amphibians and reptiles, and those species with biological characteristics compatible with existence in the Continental climatic regime of the prairie provinces expanded their ranges northward. As the glaciers continued to recede, geographic and climatic factors combined and resulted in the establishment of four major vegetation zones that we recognize today in Alberta--the prairies to the south, the aspen parkland in a south central band and in a pair of isolated fragments in the north west, the boreal forest occupying most of the northern two-thirds of the province, and the mountain region to the west. Each of these regions provides particular challenges for the herpetofauna of Alberta, and diversity generally diminishes as more northerly latitudes are approached, or as elevation increases in the mountain region.



Wood Frog (photo by Dan Farr)

Edmonton today stands more or less at the boundary between the south central band of the aspen parkland, and the boreal forest. Both of these vegetation zones contain many bodies of standing water, including large and small lakes, sloughs, and marshes. As such, their herpetofaunal complement is strongly biased towards amphibian representation, and those reptiles that, among other things, exploit amphibians as a dietary resource. Six of the ten species of amphibians known to occur in Alberta are, or once were, found in the vicinity of Edmonton (*Ambystoma tigrinum*, *Bufo*

*boreas*, *B. hemiophrys*, *Pseudacris maculata*, *Rana sylvatica*, and *R. pipiens*). However, only two of the province's eight recorded species of reptile occur in the vicinity of Edmonton (*Thamnophis sirtalis* and *T. radix*) (Russell and Bauer 2000).

For amphibians and reptiles, a key limiting factor related to occupancy of such northern regions is the length of winter and the severity of temperature depression. One of the main reasons for the bias in persistence of amphibian versus reptile species in the regions around Edmonton, and further north, is that their preferred body temperatures are generally lower, and the range of temperatures over which most physiological maintenance functions can be continued is greater. Reptiles are generally larger and have a lower surface area to volume ratio than amphibians and thus take longer to warm up to their preferred body temperature. Day length and available insolation combine to exclude all but the most cold tolerant of Alberta's reptiles from these more northerly regions (Russell and Bauer 2000).

Despite these limitations, the reptiles that occur this far north can be extremely abundant (as can the amphibians), although human exploitation of the land over the last century and a half has surely had an impact on this. This abundance was responsible for the first recorded mention of reptiles in Alberta, by Aemilius Simpson 178 years ago in 1826 (Bauer and Russell 2001). Simpson was in the employ of the Hudson's Bay Company, which until 1870 controlled the present area of central and southern Alberta. On Monday, September 4th, 1826, Simpson (1826) made the following observation at a point located on the North Saskatchewan river 10 km north of Myrnam, approximately 117 km ENE of Edmonton:

"Thick fog in the morning, followed by very warm weather during the day. Thermometer at noon 75° [F]... Along the north banks I observed boulders or masses of limestone embedded in clay. During the heat of the day we passed great numbers of a small striped black and green snake swimming from the south to the north bank of the river and strewed along the sandy beach on the north shore, as if enjoying the powerful influence of the sun, and it appeared that those crossing were leaving the cold of the northern aspect to gain the more pleasing heat of the southern exposure."

(cont. on page 6)

## Alberta Amphibian Monitoring Program photo contest winners!

The Alberta Amphibian Monitoring Program held its first ever photo contest in 2004. Photographs submitted through this contest have been generously donated for education and outreach initiatives associated with the Alberta Amphibian Monitoring Program.

Many thanks to everyone who submitted a photo for the contest and congratulations to all the winners: first place will receive an ACA stainless steel thermos and travel mug prize pack; second place an ACA Magna flashlight and ceramic mug prize pack; and third place an ACA hat and multitool prize pack. ❖



**First Place:** Boreal Toad, photo taken by Adrienne Schipperus



**Second Place:** Northern Leopard Frog; photo taken by Pat Young



**Third Place:** Short-horned Lizard; photo taken by Stephen Glendinning

## Who goes there? (cont. from page 4)

This is almost certainly an observation referring to *Thamnophis sirtalis*, the red-sided garter snake and a true northern specialist. These notes predate the earliest subsequent observations of Alberta reptiles by more than 75 years.

Such observations made by pioneers long before Alberta was a province, and continued investigations up to the present day, reveal that although the herpetofauna of Alberta is not highly diverse, the range-marginality of almost all of Alberta's species renders them of particular interest in terms of the evolutionary and environmental challenges that they face.

### References

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- Gregory, PT. 1975. Aggregations of gravid snakes in Manitoba. Copeia 1975: 185-186.
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- Simpson, A. 1926. Journal of a voyage across the continent of North America in 1826. Hudson's Bay Company Archives (Provincial Archives of Manitoba). B.223/a/3. Microfilm No. 1M148. ❖

### **Need more data sheets?**

To obtain data sheets you require Acrobat Reader on your computer. If you do not already have Acrobat Reader, you can download Acrobat Reader free of charge from the Internet on the following website: [www.adobe.com](http://www.adobe.com) ❖

**CROAKS AND TRILLS** is the official information newsletter of the Alberta Amphibian Monitoring Program, a volunteer program delivered jointly by the Alberta Conservation Association and Alberta Sustainable Resource Development.

For more information on:

- the Alberta Amphibian Monitoring Program
- amphibians and reptiles of Alberta
- how to submit monitoring data or other amphibian and reptile observations

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