CROAKS AND TRILLS

Alberta Volunteer Amphibian Monitoring Program

Volume 13, Issue 2 March 2009

From the Editor

Conference Announcement:

The annual Canadian Amphibian and Reptile Conservation Network (CARCNET) meeting will be held in Saskatoon, SK 25-29 September 2009. The Canadian Association of Herpetologists will also be participating in this meeting. For more information visit: www.carcnet.ca

CARCNET annual meetings have symposia which cover current issues and topics which are important in amphibian and reptile research and conservation.

--- Kris Kendell

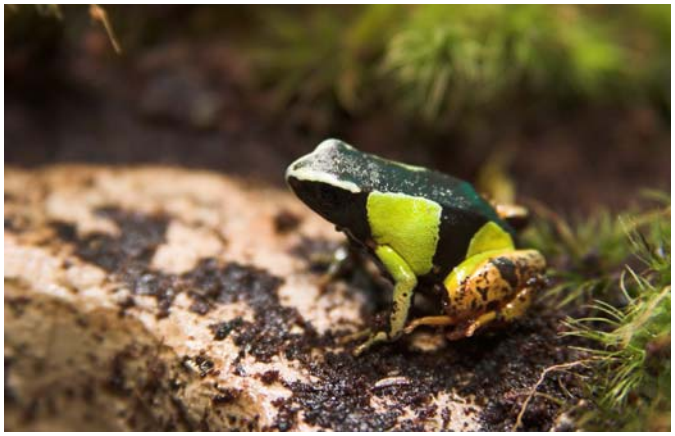
In This Issue

"Year of the frog" – A hopping success!

By Juanita Spence

The Valley Zoo and John Janzen Nature Centre (JJNC) were delighted to participate in the 2008 "Year of the Frog" global awareness campaign. This campaign was started by the Amphibian Ark, an organization run as a partnership between the International Union for Conservation of Nature and the World Association of Zoos and Aquariums. Why a campaign? Biologists are predicting that one-third to one-half of all amphibians could go extinct in our lifetime; the largest mass extinction since the dinosaurs!

As participating facilities, the Valley Zoo and JJNC launched several successful initiatives, focussing on public education and awareness. Two new displays were developed at the Valley Zoo. We welcomed 13 new species into a live display in the Saito Centre. The new residents include mantella and tomato frogs of Madagascar, African clawed frogs, critically endangered axolotls of Mexico, White's and Cuban tree frogs, bull frogs and fire-bellied toads.



The Mantella is one of 13 new species of amphibian on display in the Saito Centre at the Valley Zoo. (Photo: The Valley Zoo)

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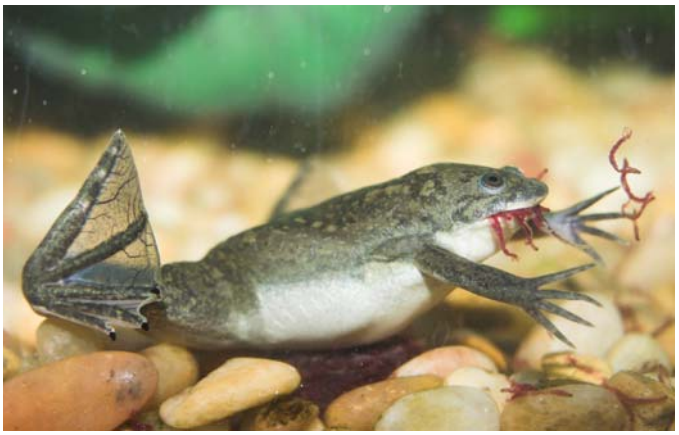
"Year of the frog" *(cont'd from page 1)*

Visitors have greatly enjoyed the new exhibit, though patience is often required to spot the amphibians in their enclosures!



African clawed frog on display in the Saito Centre at the Valley Zoo. (Photo: The Valley Zoo)

The second display, completed during the fall, is a hands-on, interactive display located in the Learning Lair. Families really enjoy exploring the exhibit and learning about frogs, why some are endangered, and how they can help!

To encourage Edmonton and area children to learn about amphibians through different media, an art contest was held. Several hundred entries were received and from those, 30 winners were chosen. The winning artwork was displayed at The Works Art and Design Festival in late June and then moved to the Zoo and Nature Centre for the remainder of the year.

We found ourselves to be very busy with programs throughout 2008. Thanks to the generous support of the Alberta Conservation Association, we developed new outreach programs. We visited 15 Edmonton Public Libraries, and several Edmonton festivals including Heritage Days and the Fringe, reaching more than 7000 people. Three new special events attracted more than 2000 people to learn about local and exotic amphibians, and regularly scheduled public interpretive talks reached a further 10,000 people.

Being a part of this global initiative has been very inspiring to Zoo and Nature Centre staff. We were continually impressed by the response of the public and the outpouring of support for amphibians.

One of the most endearing stories was that of two girls who heard about the amphibian crisis and set up a lemonade stand to raise money to help. Through their efforts, they were able to donate $80 to help frogs!

While "Year of the Frog" is over, the Zoo and Nature Centre look forward to continuing to connect with people about amphibians and build upon the foundation we established in 2008.

To learn more about The Valley Zoo in Edmonton and plan a visit, please visit: www.valleyzoo.ca

For information about the 2008 "Year of the Frog" campaign please contact: Juanita Spence (Program Manager Valley Zoo & John Janzen Nature Centre) Juanita.Spence@edmonton.ca ❖

Amphibian monitoring in Wood Buffalo National Park

By Michael Vassal

Wood Buffalo National Park has embarked on an amphibian monitoring project to determine if western (Boreal) toad (*Bufo boreas*) is present in the park. Amphibians in general and especially species at the limits of their range are good candidates for reflecting changing ecological conditions in an environment.

Boreal toad – *Bufo boreas.* (Photo: ACA)

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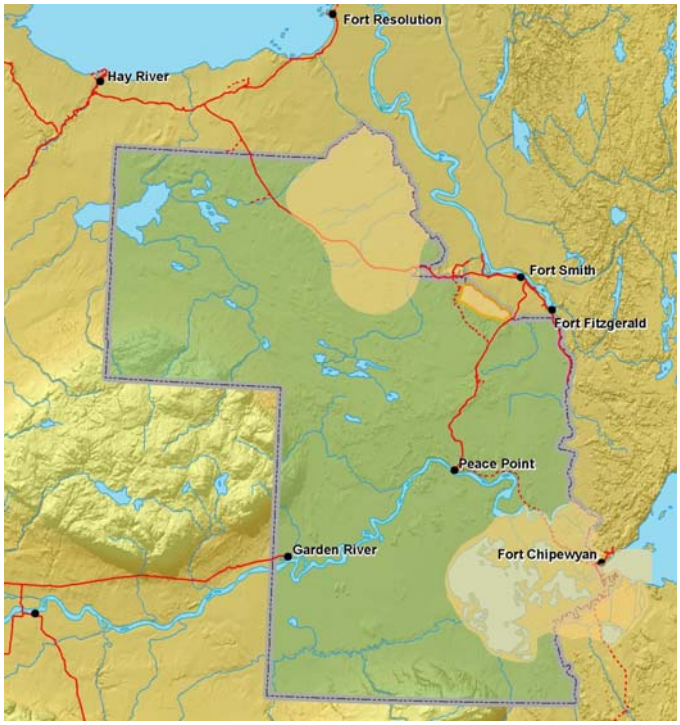
Amphibian monitoring *(cont'd from page 2)*

The approach is to search by listening for western toad and northern leopard frog (*Rana pipiens*) and recording spring mating calls. Bio-acoustic recording equipment is used.

Both species are listed as "Special concern" under Canada's *Species at Risk Act* (SARA). Other amphibian species that are monitored opportunistically include: boreal chorus frog (*Pseudacris maculata*), wood frog (*Rana sylvatica*) and Canadian toad (*Bufo hemiophrys*).

Wood Buffalo National Park (WBNP) straddles the Alberta - Northwest Territories border. Monitoring amphibians in an area as large and remote as WBNP can be challenging. Thus far, only wetlands with road access have been monitored. Auditory searches have occurred in the Northwest Territories (NWT) at wetlands along Highway #5 (joins Fort Smith to Hay River), and in Alberta along the Pine Lake Rd. (Hwy #58) and Hay Camp Rd. at various locations.



Wood Buffalo National Park, Alberta, Canada. (Photo: Rhona Kindopp)

Northern leopard frogs have been heard or seen on a very occasional basis in and around the Alberta section of WBNP. There are records of northern leopard frogs in the NWT, but not within WBNP.

There are no records of western toad in WBNP, but the species may have been sighted east of Garden River and in the High Level area. These are unconfirmed sightings however, and may have been Canadian toads.


Young-of-the-year Canadian toad (*Bufo hemiophrys*). (Photo: Rhona Kindopp)

The protocol for the spring surveys follows information from the Alberta Volunteer Amphibian Monitoring Program to determine presence or absence. The success of this work will determine what other monitoring approaches are taken. Surveys are conducted on calm evenings and recordings are made for four to five minutes.

During the spring surveys of 2007 and 2008 neither western toad nor northern leopard frog were observed or recorded. In contrast, the boreal chorus frog and wood frog were heard at virtually all substantial wetland complexes. Canadian toads were heard from the Lane Lakes trail near Pine Lake in Alberta.

Monitoring will continue in 2009 in areas that were not visited in the previous years.

For more information please contact: Rhona Kindopp (rhona.kindopp@pc.gc.ca) or Michael Vassal (mike.vassal@pc.gc.ca) / 867-872-7900 ❖

Participate in species at risk stewardship right in your own backyard!

By Scott Stevens, Kris Kendell, and Dave Prescott

The northern leopard frog recovery team is calling on Albertans, including landowners, land-managers, and producers, to help bolster the population of the Threatened northern leopard frog in the province by nominating potential reintroduction sites on their properties.

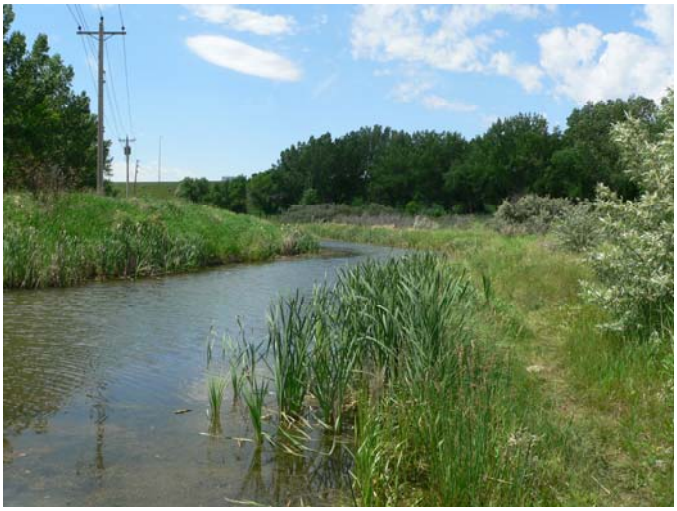
A lone male northern leopard frog serenades female frogs with his low snoring croak as he floats near freshly laid eggs. (Photo: Scott Stevens)

For many Albertans, the leopard frog is a familiar amphibian. Some may recall dissecting this frog in their biology classroom while others may have childhood memories of capturing leopard frog tadpoles and older frogs at their local slough or dugout. Unfortunately, for many the leopard frog is best known for its mysterious disappearance from many areas of its provincial range nearly four decades ago. Thankfully, a broad group of people and organizations are working together on a provincial recovery team to ensure that healthy leopard frog populations remain in Alberta for future generations.

Creating self-sustaining populations of leopard frogs through reintroductions is just one action the recovery team has undertaken over the last couple years to meet the objectives of the recovery program.

Since 2007, we have initiated seven leopard frog reintroduction projects, through the careful translocation of leopard frog eggs. Achievements at reintroduction sites have ranged from the successful metamorphosis of tadpoles, to the confirmation of over-wintering survival of frogs. In 2002, a reintroduction project initiated by Alberta Fish and Wildlife Division resulted in a self-sustaining leopard frog population on private and town-owned land, in Magrath.

Sharing your property with a species at risk such as the leopard frog can be very gratifying. For starters, it will provide you a special opportunity to see this charismatic frog up close and add an element of uniqueness about your land. It will also instill a sense of pride in that your land use practices maintain the quality and amount of habitat required by this rare frog. As a steward, you can be directly involved with recovery efforts of a species at risk and help preserve an important part of Alberta's natural heritage for future generations!



This man-made wetland is a part of Seven Persons Creek in Kin Coulee Municipal Park and provides quality habitat for the northern leopard frog within the City of Medicine Hat. (Photo: Scott Stevens)

Importantly, if your land already provides suitable habitat for the leopard frog, keeping it attractive to these frogs simply means doing more of the same. Therefore, having leopard frogs on your property should not limit the use of your land or affect your current land management regime.

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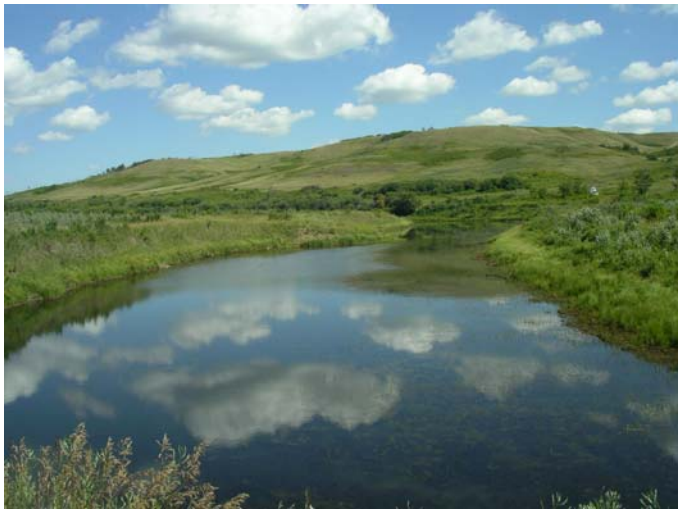
Species at risk stewardship *(cont'd from page 4)*

One of the greatest challenges we face undertaking reintroductions is finding high quality reintroduction sites. We believe that private landowners can play an important and vital role in the recovery program by nominating potential reintroduction sites. Ideal reintroduction sites posses a mosaic of interconnected habitats over a relatively large tract of healthy land with well-functioning ecosystems.

For breeding habitat, the site must have multiple man-made or natural permanent standing bodies of clear water. This breeding habitat can be of various sizes and either uniformly shallow or if deeper, with substantial shallow zones. It should also be fishless and possess abundant emergent and aquatic plant life. Importantly, breeding habitat must be flanked or connected to over-wintering habitat. Bodies of water that offer over-wintering habitat must be deep, flowing, and/or warmed by ground water or springs. They must not freeze to the bottom and must maintain sufficient dissolved oxygen throughout the winter.



A large oxbow along the Battle River, presence of local springs, and healthy upland habitat provide quality northern leopard frog habitat at this site in east central Alberta. (Photo: Kris Kendell)

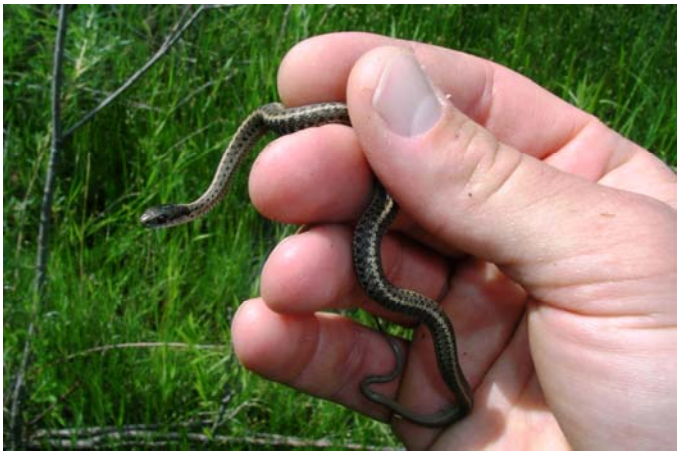
If you are interested in sharing your property with the leopard frog, or for more details on the required criteria for a reintroduction site, please contact: Scott Stevens (scott.stevens@gov.ab.ca / 403-755-1400), Species at Risk Biologist, Alberta Fish and Wildlife Division. ❖

Eggs or Babies?

By Kris Kendell

Alberta reptiles reproduce in one of two ways. Species that lay leathery-shelled eggs are called oviparous and deposit their eggs in carefully constructed nest chambers, loose soil, or abandoned mammal burrows, and promptly desert them. Here, the heat of the sun or warmth from decomposing plant matter in the soil incubates the eggs. The western painted turtle, western hog-nosed snake, and bullsnake are Alberta reptiles that lay eggs.

Species that carry their developing embryos in membranous envelopes within their body and give birth to live young are called ovoviviparous. The birth of live young takes place in a secluded place or in the open, and the independent young appear as scaled-down versions of the adults. Garter snakes, prairie rattlesnakes, and mountain short-horned lizards are Alberta reptiles that give birth to live young.



Like all garter snakes, the wandering garter snake is live-bearing—giving birth in late summer to up to 20 young that are about the length of a pencil. (Photo: Kris Kendell)

Both reproductive strategies have their advantages. Live-bearers are able to exploit habitats further north and that are too cold to allow successful incubation of eggs laid in the ground. In these northern areas, live-bearing females can move about habitats and actively bask and select warmer shelters that enhance embryonic development within their body. Egg-laying species benefit from a shorten gestation period and reduced mobility and feeding. ❖

Amazing amphibians and remarkable reptiles!

- Amphibians and reptiles are ectotherms – animals that are dependent upon their surroundings to provide them with warmth (e.g., solar radiation). In contrast, mammals and birds are endotherms – animals that are able to generate their own body heat through their own metabolism. There are just two known examples of significant endothermy in reptiles: several species of female python have been observed to "shiver" during egg-brooding, causing their body temperatures to rise from intense muscular activity; and it appears that the leatherback sea turtle (*Dermochelys coriacea*) may also produce regional internal heat by muscular activity.

- By absorbing solar radiation, a species of *Liolaemus* lizard found at high elevations in the Andes of South America can maintain a body temperature of 31^{o}C, despite air temperatures being just 0^{o}C.

- When mating, male frogs and toads clasp the female with their forearms – a process called amplexus. This clasping can be behind the female's arms (pectoral amplexus), or around her waist (pelvic amplexus). All species of frogs and toads native to Alberta use pectoral amplexus, with the exception of the Plains Spadefoot (*Spea bombifrons*) which uses pelvic amplexus.

- The sex ratio among the world's snakes is found to be roughly 50:50.

- When frightened, the Chuckwalla (*Sauromalus obesus*), a type of lizard found in the southwestern United States, flees to a rocky crevice and inflates its lungs with air, increasing its size so much that it becomes difficult to pry loose from its tight retreat.

- Salamander larvae and tadpoles, as well as adult forms of completely aquatic amphibians, possess a lateral-line system that extends in an interconnected network along the head and body. The lateral-line has tactile sense organs and receptors composed of a group of hair cells that when exposed to the surrounding water can detect water-borne vibrations similar to how our inner ear hair cells detect vibrations in the fluid of the inner ear. This lateral-line system helps aquatic amphibians detect movements and pressure changes in the surrounding water, warning them of potential predators, location of prey, etc.

- *Agkistrodon himalayanus* (a pit viper species) has been reported at an altitude of 4,900 m (16,000 ft) in the Himalayas, the highest altitude recorded for any species of snake.

CROAKS AND TRILLS is the official information newsletter of the Alberta Volunteer Amphibian Monitoring Program, a program delivered by the Alberta Conservation Association.

For more information on:
- the Alberta Volunteer Amphibian Monitoring Program
- amphibians and reptiles of Alberta
- how to submit monitoring data, or other amphibian and reptile observations

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