CROAKS AND TRILLS

Volume 7, Issue 2 October 2002

From the Editor

As the new coordinator of the Alberta Volunteer Amphibian Monitoring Program, I would like to introduce myself and say that I am excited to have the opportunity to work with all the dedicated individuals that continue to make this important program a success.

My interest in amphibians and reptiles has been life-long and over the years I have had the pleasure of working on several projects relating to this amazing group of animals. I look forward to receiving your observations, photos and learning about your experiences while monitoring for amphibians and reptiles!

--- Kris Kendell

In This Issue

I have a frog in my throat

Kris Kendell

Of all the creatures on planet, amphibians exhibit some of the most bizarre and fascinating breeding behavours. In fact, they have evolved a number of parental care strategies that may exceed that of all other classes of vertebrates!

Perhaps the most astonishing reproductive strategy of all vertebrates belongs to a nondescript aquatic frog discovered in 1973 in the Conondale Range of southeastern Queensland, Australia. The frog was described as the gastric brooding frog (*Rheobatrachus silus*) belonging to the Genus Rheobatrachus. The gastric brooding frog is an inhabitant of mountain, boulder-strewn streams with fast-flowing water in the rainforest north of Brisbane. It is a small frog (about 5 cm in total body length) that has slimy skin, webbed feet and large bulging eyes which are positioned towards the top of its head (Hofrichter 2000).

A gastric brooding frog with young.
(photo taken from Hofrichter 2000)

It utilizes one of the most interesting modes of parental care to appear in anurans (frogs and toads). Its stomach serves as a "uterus" and the female "gives birth" to its young from the mouth!

(*Con't on page 2*)

Gastric Brooding Frog (*Con't from page 1*)

This extraordinary reproductive cycle begins with the female swallowing her fertilized eggs. The young are protected from the stomach's digestive juices by the production of a hormone in each egg sac and secretions produced by the developing tadpoles. The hormone is known to inhibit the production of hydrochloric acid.

In a nonfunctional state, the stomach soon becomes greatly distended with the growing tadpoles and the subsequent froglets. To help accommodate the developing froglets in the body of the female, her lungs collapse and respiration occurs through the skin.

Metamorphosis takes approximately 6 to 8 weeks from the time the eggs are consumed to the development of the young frogs, during which time the female frog stops eating. The froglets, which may number as many as 21 (Tyler 1989, Tyler and Davies 1985), are finally delivered through an enlarged esophagus and widely opened mouth.

Although originally believed to be relatively common, six years after scientists first discovered this interesting species, a dramatic decline was noted and the last sighting of the species in its natural habitat occurred in 1981 (Hofrichter 2000). In 1984 the last frog in captivity died and thorough searches have failed to find it in the wild since then.

The species is now believed to be extinct. Like many amphibian species worldwide, the reason for rapid decline and disappearance of the gastric brooding frog has remained a mystery.

References:

- Hofrichter, R. 2000. The encyclopedia of amphibians. Weltbild Verlag GmbH, Augsburg.
- Tyler, M. J. 1989. Australian frogs. Viking O' Neil, New York.
- Tyler, M. J., and M. Davies. 1985. The gastric brooding frog (Rheobatrachus silus). In G. Grigg, R. Shine, and H. Ehmann, eds., Biology of Australian frogs and reptiles. Surrey Beatty & Sons and Royal Zool. Soc., New South Wales. ❖

Volunteer Highlights

For the seventh year, Elmwood Elementary School has monitored the Clifford E. Lee Nature Sanctuary located north west of Devon, AB. On June 6th the grade 5's reported hearing four species of amphibians, including the boreal toad, Canadian toad, boreal chorus frog and wood frog.

Mira Snyder surveyed several waterbodies within Waterton Lakes National Park between May 9th and August 8th. She recorded five different amphibian species including long-toed salamanders, boreal toads, boreal chorus frogs, spotted frogs and wood frogs.

On April 13th, Floyd Kunnas heard boreal chorus frogs calling from a pond near St. Paul. The next day ice and snow covered the pond.

Hannelove Krieger, of Wildwood, observed (presumably) the same toad in her flowerbed for years. It is possible that this is the same individual toad. Toads can live for many years and, like many vertebrates, tend to have a "home range" and as a result may be found repeatedly in the same location!

Wood frogs and boreal chorus frogs were heard calling from a slough near Leduc by Tricia Abbott. The wood frogs were first heard on May 1st and continued calling until May 27. According to Tricia, fewer numbers than usual were heard this year. Boreal chorus frogs were heard for the first time on May 7th and they too continued to call until May 27th. A follow-up visit to the slough in August revealed successful metamorphosis with the observation of "quite a few" young frogs. Tricia also discovered a secretive tiger salamander hiding in a molehill located in a vegetable garden. ❖

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 to help improve our understanding of the timing of breeding activity of the amphibians found throughout Alberta. ❖

AMPHIBIAN WORD SEARCH

E K A L M A R S H S P D
R D O E W A R T S P A S
G T A L G V E W G O B N
O S L O U G H E T T D A
R C G P T T S N S T I I
F W I D E L A T K E T B
S L L A C I A L I D C I
U A L T D A N E N F H H
R R S A D N O P R R D P
O V N G O R F D O O W M
H A S D E B B E W G B A
C G O R F D R A P O E L

Directions:
Look vertically, horizontally, diagonally, forwards and backwards for the following words:

boreal toad	amphibians	tadpole
Canadian toad	calls	ditch
chorus frog	eggs	lake
leopard frog	gills	webbed
spotted frog	larva	marsh
wood frog	newts	slough
skin	bog	UV
warts	pond	

Carefully circle each letter when you find the words in the puzzle. Then use the remaining letters to solve the *statement* below.

Question:
Amphibians found in Alberta depend on habitats such as swamps, marshes and other waterbodies for breeding and occasionally hibernating (as in the case of the leopard frog and spotted frog). For this reason it is important that we _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ to ensure that this important habitat is available for amphibian species as well as other wildlife.

This puzzle was adapted from the Teacher's Guide for the Alberta Amphibian Monitoring Program. ❖

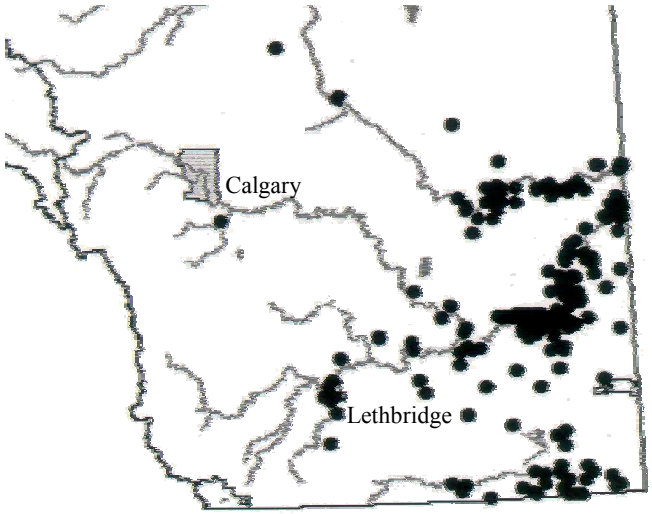
Lethbridge Rattlesnake Conservation Project

Reg Ernst

The prairie rattlesnake is a tan to brown snake with faded brown blotches running the length of the back. The most distinguishing feature of the prairie rattlesnake, however, is the rattle located at the end of the tail. Additional features that readily identify it from other snake species found in Alberta include the presence of a **vertical** eye pupil and a triangular head that is significantly wider than the neck.

Rattlesnakes at a den site.

In Alberta, the prairie rattlesnake (*Crotalus viridis viridis*) is primarily found south of the Red Deer River and east of Lethbridge. The map below depicts both current and extirpated populations.



The prairie rattlesnake range in Alberta.

(*Con't on page 4*)

Rattlesnake (*Con't from page 3*)

In Canada, the Oldman river valley of southwest Lethbridge is at the western-most limit of its range.

As its name implies, the prairie rattlesnake is a grassland species, occupying the drier areas of native prairie and sagebrush of southern Alberta that offer refuge, suitable den sites, basking sites and presence of prey species. During the winter months, rattlesnakes hibernate in dens (or hibernacula), below the frost line, from October until April.

Prey items include juvenile ground squirrels, voles and mice, which are ambushed. When rattlesnakes strike, injection and release of venom occur in a split second. They then follow the scent trail left by their dying prey, which once located, are swallowed whole and head first.

A draft management plan was developed in 2000 for the Lethbridge population of prairie rattlesnakes because of what were considered unsustainable losses through road kills, habitat loss, and other factors. The plan was developed through the cooperation of various interested groups and individuals. Major conservation strategies outlined in the plan called for an emphasis on educating the public about rattlesnakes to reduce human/snake conflicts and for a focus on relocating and maintaining a population at a site away from major subdivision and recreational development.

Although rattlesnakes can live more than 20 years (under ideal conditions), it is difficult to maintain a small population like the Lethbridge one (estimated at fewer than 50 adults). This is because of factors such as human caused mortality, loss of habitat, late maturity and a biennial (or greater) breeding cycle by females. In addition, young rattlesnakes have a low survival rate.

Rattlesnakes mate during the summer resulting in about ten young the following year (usually at the beginning of September). Female rattlesnakes give birth to live young and may not feed during the year they give birth.

In 2001, an artificial hibernaculum (den site) was developed within a nature reserve in southwest Lethbridge and efforts were undertaken to relocate and maintain problem rattlesnakes at the new site.

In 2002, eight rattlesnakes captured in 2001 were implanted with PIT (passive integrated transponder) tags for long-term monitoring and with externally attached transmitters for short term monitoring. The transmitters did not perform as anticipated (i.e. poor range and early detachment); however, researchers were able to collect some valuable data on rattlesnake dispersal and habitat use. Redesigned and improved transmitters are to be used for the 2003 season.

The project is expected to be a success because rattlesnakes were able to hibernate at the artificial den site in 2001 and at least some of the rattlesnakes released in the spring of 2002 have returned there this fall (2002).

Normally, prairie rattlesnakes are not aggressive and only strike when physically handled or threatened from very close range. Respect and caution should always be used when in the vicinity of these snakes.

For more information on the prairie rattlesnake and the general status of prairie rattlesnakes in Alberta visit:

http://www3.gov.ab.ca/srd/fw/status/reports/pdf/prsnake.pdf ❖

The Long-toed Salamander : Alberta's small, secretive and sensitive salamander

Lisa Wilkinson

The long-toed salamander is one of two species of salamanders found in Alberta, the other being the tiger salamander. The long-toed salamander is found primarily at lower elevations in the mountain and foothill regions of western Alberta. This small (8-12 cm in length) salamander is typically black with an irregular yellow, olive green or orange stripe down the back.

Long-toed salamanders are listed as "sensitive" in Alberta because they are found in isolated populations in a relatively limited breeding range.

(*Con't on page 5*)

Long-toed Salamander (*Con't from page 4*)

Their reliance upon small, shallow, fishless ponds for breeding makes them vulnerable to habitat disturbances at those sites.

Long-term monitoring is essential to better understand the population size and distribution of these salamanders, and provide information on whether populations are declining.

To help accomplish this, select breeding ponds are encircled with silt fencing and pitfall traps are placed around and on both sides of the fence, harmlessly catching any amphibians that are travelling to or from the pond. This monitoring method allows researchers to discover how many salamanders are visiting the pond each year, and see if the number is changing over time. It also allows us to monitor frogs and toads using the pond.

Further monitoring is primarily achieved through the detection of eggs in ponds during late spring. This is because adults live a nocturnal, underground existence in the forest and are consequently rarely seen except during spring when adults can be observed above ground traveling to ponds to mate.

Long-toed salamander populations have not been monitored long enough to determine if they are stable, but through continued efforts we hope to gather this important information and take the necessary actions to conserve long-toed salamanders and their habitat. Maintaining wetlands is an important step in ensuring the long-term survival of Alberta's diverse and interesting amphibians, including the small and secretive long-toed salamander.

If you would like further information on the long-toed salamander, contact:
Lisa Wilkinson (SRD): phone (780) 723-8556
e-mail lisa.wilkinson@gov.ab.ca). ❖

Amphibian/Reptile Facts: Did you know?

- The smallest frog in the Southern Hemisphere is the gold frog (*Psyllophryne didactyla*) of Brazil; equally as small, from the Northern Hemisphere, is *Eleutherodactylus limatus* of Cuba. Both species grow to an adult size of about 10 mm in body length and can comfortably sit on a dime!

- The largest frog is aptly named the Goliath frog (*Conraua goliath*) of West Africa. Its total body length (not including the legs) can exceed 30 cm and it can weigh as much as 3.3 kg.

- One of the best frog leapers is the American cricket frog (*Acris gryllus*), exceeding its own body length by 62 times in a single leap. This would be equivalent to a person 5' 6" inches tall jumping 104 m high!

- The Columbia spotted frog (*Rana luteiventris*) may take 4 to 6 years before it reaches sexual maturity and is able to breed.

- The fastest moving land snake is the black mamba from South Africa. It can sustain a speed of about 11 km/hr over a measured distance of 43 meters, and is capable of shorter bursts of speeds up to 24 km/hr while chasing prey.

- During long periods of drought or heat, frogs can enter into a period of dormancy similar to hibernation, called aestivation. ❖

A GREAT BIG THANKS!

To those individuals and organizations who have submitted data as of October 2002

Andrea Pollock
Brad and Cade Turlock
Carey Booth
Cedar Chittenden
Diane Mclvor
DM Mackay
Edward Hofman
Elmwood Elementary School
Floyd Kunnas
Georgina Shumaker
Claudette Landry
Hannelore Krieger
Ian Somers
Jane Stevenson
Jennifer Okrainec
Jessie Kinley
Katherine Kossmann
Kurtis Saker
Lance Engley
Lisa Priestley
Lisa Wilkinson
Muriel Mueller
Pat Young
Patrick Abbott
Patsy Drummond
Roy Schmelzeisen
Selwyn Rose
Shane Mascarin
Stephen Hanus
Steve Cunningham
Wm. G. Brese

Teacher's Guides Available:

- Alberta Threatened Wildlife Teacher's Guide [northern leopard frog] - Grades: K, 1-3
- Teacher's Guide for the Alberta Amphibian Monitoring Program - Grades: 5 and 6

Excellent Amphibian Web Sites:

- http://www.froguts.com/index.htm (A true virtual on-line dissection of a bull frog – very realistic, compressive and educational.)
- http://collections.ic.gc.ca/amphibians/index.html (A virtual exhibit on Canada's biodiversity: with a focus on amphibians – includes species, life histories, conservation and habitat information.)
- http://allaboutfrogs.org/froglnd.shtml (FROGLAND – this site features a variety of amphibian information ranging from educational (amazing) facts, to jokes, games, etc.)

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

For more information on:
- The Alberta Volunteer Amphibian Monitoring Program
- How to submit an article on amphibians, reptiles or wetlands
- How to submit monitoring data or other amphibian and reptile observations

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Alberta Conservation Association

Alberta SUSTAINABLE RESOURCE DEVELOPMENT