



Amphibian Voice

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Winter 2007

2008: Year Of The Frog

Amphibian Campaign

By: Ian McIntosh, AAP Coordinator

2008 is the Year of the Frog at zoos and aquariums around the world. This campaign to build awareness and support conservation initiatives is in response to the alarming global amphibian decline.

After more than 360 million years of survival, 1/3 to 1/2 of the world's approximately 6000 known amphibian species could become extinct in our lifetime. Earth is facing the single largest mass extinction since the disappearance of dinosaurs.

Habitat loss is the main threat in terms of number of species affected, but the rapid dispersal of amphibian chytrid fungus is an urgent concern because it kills frogs quickly, driving many species to extinction.

In 2006, the Conservation Breeding Specialist Group of the World Conservation Union, and the World Association of Zoos and Aquariums formed the Amphibian Ark (AArk) with a mission to ensure the long-term survival of amphibians.

To implement amphibian conservation projects, the Amphibian Ark has launched the global campaign – “2008: Year of the Frog.”

As a campaign participant, Toronto Zoo has organized many events for 2008 focused on amphibian

conservation (Page 2 for a list of Toronto Zoo's Year of The Frog events). The campaign's official launch is February 29th (in recognition of the leap year).

Never has it been so important to build awareness of amphibian conservation. The AArk program and Year of the Frog will help us confront one of our planet's biggest environmental challenges. So leap in to 2008 by learning more about amphibians and the threats they are facing.



amphibian ark
2008 YEAR OF THE FROG

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EDITORS' NOTE: This winter's issue of Amphibian Voice is dedicated to 2008: Year of The Frog (YOTF). All of our stories are about frogs and/or their conservation. The cover story is a brief background on the YOTF campaign and the alarming rate of global amphibian decline. Our inside stories include a lesson from Anishnawbe author and storyteller Basil Johnston about the importance of frog in First Nation science; a heartwarming record from FrogWatcher Lucy Brennan about her backyard frog habitat; John Urquhart's wood frog observations; and the efforts of Toronto Zoo as part of Project Golden Frog. If you would like to get involved in the Year of The Frog, there is also a list of Toronto Zoo events below.

Hopefully our winter issue will get everyone excited for a whole year of "ribbiting" conservation fun!



Toronto Zoo YOTF Events

Love at the Zoo - Feb 9/10 - Kiss a Frog, meet "Toady" and show your love for all things amphibian.

Leap Day - Feb 29 - Press event to introduce FROG RESCUE LAB, and Puerto Rican Crested Toad exhibit, and YOTF.

Frogzibitz - March 7-16 - Special exhibit (10 frog species and interactive activities) for March Break.

Easter Egg-stravaganza – Mar. 21-24 – Receive a passport that will be stamped at egg-laying amphibian exhibits

Teachers' Days – Apr. 6 and Sept. 21 - Resources will be provided to teachers regarding amphibian conservation.

Party for the Planet Green Fest – Apr. 19/20 - Focus on amphibians

Spring Toad Festival - May 3 and 4 – 9th annual event. Celebrate with singing American toads.

Wildlife Conservation Week - June 30-July 4 - CAZA - TZ launching the rescue unit for frogs and amphibian Taxon Advisory Group.

Disney Concert for Conservation - Summer Date TBD - Will focus on amphibian conservation.

Boo at the Zoo – Oct. 18, 19, 25, 26 - Featuring Halloween Newt and a Frog theme.

The Earth Teaches Us

(In conversation with Basil Johnston, 2008 – submitted by Candace Maracle, FN Program Coordinator)

There is an Anishnawbe word which means to teach or show the way, *Kinomaagewin*. Words in the Anishnawbe language denote much more than a single action; the root of *Kinomaagewin* means that *the earth teaches us*. First Nations people have a close connection with Earth Mother and in their stewardship over Her, have established a means of living in balance with all those who share this earth. We used our science, now called Traditional Ecological Knowledge, which examined species in their natural habitat. This knowledge was transmitted through stories. Our stories are not always meant to be taken literally but rather to be used as a guide in understanding the earth and living in balance. Below is a story of how the earth teaches us through the frog:

The Good of Plants As Medicine

By Basil Johnston

That plants possess curative properties was deduced from the relationship between animals and birds and plants. The healing powers of the plants were found in a manner similar to the following account.



A little girl and her grandmother were out picking blueberries. As they made their way along the lush patches of berries, the grandmother abruptly halted, pointed to the ground, and whispered to her granddaughter,

"Watch, you will never see this again."

The little girl looked to the ground where her grandmother pointed. There in the grasses was a snake pursuing a small green frog. Little girl and the aged woman watched the drama on the ground. The snake was gaining but before he could seize the frog in his jaws, the frightened quarry leaped into a grove of poison ivy.

In the growth of poison ivy, the little frog waited, his sides heaving with exertion. He appeared unconcerned, not seeking more cover or further refuge. The snake did not enter the poison ivy but coiled himself as if he were going to strike out at the little frog in his sanctuary. But the snake, tongue darting in and out of his jaws, remained poised, not daring to go closer. He simply waited for the frog to come out. But the little frog did not move. At length, certain but disappointed that his victim would not leave his haven, the snake crawled slowly away. Even with the departure of the snake, the frog did not immediately vacate his shelter. Only after he was sure that the snake had abandoned his

enterprise did the frog leave his place of security.

Once out of the poison ivy the little frog fairly flew over the ground bounding without pause until he came to another grove of plants. Within that grove of jewel weed, the little frog twisted and turned and writhed washing every part of himself. From the conduct of the little frog the Anishnabeg learned the cure for poison ivy.

Similarly were the properties of other plants discovered. The Anishnabeg found that the root of a certain plant ingested, will terminate a haemorrhage; that the soft waxen substance between bark and wood of cedar will stop external bleeding; that the leaf of cedar or balsam will form a brew when boiled that will relieve throat congestion; that the swamp root called jeebkae will relieve throat pains and that large flat grass leaves will alleviate abrasions.

The healing power of plants could relieve physical pain and confer well-being. But many medicine men and women knew that many forms of ill health were but outward manifestations and forms of poor state of inner being. There was recognition that there was a relationship between the physical well being of a person and his inner being; illness and inner turmoil.

Consequently, in addition to the application of medicines to hurts, a state of peace had to be instilled in the inner being of a patient.

- Johnston, Basil. (1976). *Ojibway Heritage*. Toronto: McClelland and Stewart Limited.



Leopard frog © AAP Staff

A Garden for Timid Wild Things

By Lucy Brennan, FrogWatcher

There was a great stretch of fallow land across from the subdivision I moved into some years ago. All kinds of wildlife made it their home. There were even large pools of water in the hollows. But, 'progress' was on its way. Developers dug down and up the stores and houses grew. The wild life had nowhere else to go except into our backyards.

I have a strangely shaped yard. It is only twenty-five feet wide but it is one hundred feet deep. At the beginning, I tried to mow all that lawn. I got a mulcher-mower, but I had a busy job and often got home too late to mow. So when I did mow, the mulch, being too long, smothered the grass and gave me a great crop of wild flowers, also known as weeds. For the sake of some of my neighbours' well-tended gardens, some rethinking had to be done. After consulting various Gardens and Master Gardeners, I got some newspapers and ordered compost from the municipal compost site.

Then I got to know my neighbours better. "What are you going to do with all that compost on your driveway? Why doesn't it stink?" "It's compost, of course, it's not manure."

Well, the neighbourhood kids got curious and offered to help. So, within two weeks, we had laid down newspapers all over my backyard and over that, three inches of compost. I was ready for the wildest garden you ever saw!

It grew wild, and before long all sorts of wildlife discovered it. There were bees, butterflies, rabbits and birds. However, it was the frogs and toads who took me over. You see, I included a small pond in my plans. The frogs loved to perch in the sun on a lily pad.

Then West Nile panic arrived! The pond had to go. Would I lose my frogs? I left out water in all kinds of containers at ground level and

changed the water every day or two all summer. Would they come back?

The next spring, I was digging in my garden. I always start with gloves on, but inevitably they come off and I scabble in the mud with my bare hands. I dug with mud up to my wrist and, suddenly, a small creature hopped out of my hand. After the initial shock I noticed the smallest frog I'd ever seen, sitting stock still on the ground. I couldn't leave him there. The birds were calling back and forth and would have loved to eat this tasty morsel. I have never yet succeeded in persuading myself that I would not hurt these tiny creatures if I picked them up. So it was half an hour before I could persuade him to move under the new leaves of the cornflowers nearby. (Fortunately, by then, I was a retiree with some free time on my hands!) A few days later I was digging again, this time with a large gardening fork, and another frog popped up from the soggy ground. He had a narrow escape from the tines of the fork.

Over time I learned I had American toads, tree frogs and the pickerel frog. Every evening I would stand at my patio doors as the light waned and darkness took over my garden. At first all I'd hear would be the traffic and the last birds settling down. But, if I stayed quite still and concentrated, I would hear them: the tree frogs calling to each other and the pickerel just snoring away in rhythm.

But, like the butterflies and bees in my garden, there were less each year. Last spring and early summer I listened carefully at sundown – and heard nothing of my frogs. Then, one night, it must have been late June, early July. I stood at my patio door at twilight and, to my absolute delight, there it was, I could hear them clearly, cheeping, snoring, cheep-cheeping, snoring. They were back! I can only conclude that with all the hot, dry weather this year, the creek they'd been summering in had dried up and somehow, they remembered, that my garden would have little watering places. Will they come back again next year? Have they buried themselves under my lilac bush? I'll leave the little supplies of water out for them in early Summer, just in case!

Wood Frog Frenzy

By John Urquhart, TZ Staff



Wood frogs mating © Joe Crowley

What's brown, wears a mask, can freeze solid for months and, when it thaws, breed a few days later? It's the wood frog (*Rana sylvatica*). Wood frogs are fascinating creatures and can be found all over North America; in fact they are the widest ranging North American amphibian.

So why on earth would a frog want to be able to freeze solid? Well there are two main reasons. First, freezing solid permits wood frogs to go where no frog has gone before...the Arctic Circle! That's right; wood frogs can live in the arctic where they transform from egg to frog in as little as 45 days. The second advantage of freezing is that wood frogs can hibernate closer to the surface and thus are the first frogs to emerge in the spring. This allows them to breed in vernal pools (temporary water bodies) that are free of amphibian predators. So if you are walking through a forest in early spring, even before wildflowers emerge, and hear a chorus of 'quacking' you are near a breeding congregation of wood frogs.

In late march, early April of 2005 and 2006 I had the privilege of searching for wood frogs to assist my lab-mate with her M.Sc. research. Since we needed to find many breeding groups in a fairly large area we didn't have time to just stroll through the forest. We went to a couple of known breeding areas every

couple of days to identify the start of the breeding season. Once the breeding began we drove slowly through breeding areas with the windows down and listened. I have to admit it was a strange feeling searching for frogs with a car, but it worked! We found sufficient breeding sites for her to do her research.

Wood frogs are known as explosive breeders. This means that they all come to the pond and do most of their breeding in a couple of days, with males calling for a few more days in case there are late females. Catching the breeding season at its peak is an amazing sight. There are literally hundreds of frogs scrambling over each other 'quacking' like mad ducks, doing everything they can to find a mate. The plan is for a calling male to be approached by a female. He then grabs her and holds on in amplexus until she lays her eggs while he externally fertilizes them.

Of course things don't always go according to plan. When the females emerge the males go crazy and grab anything they can get a hold of - including other males. In fact, they will even grab your finger if it is available! Once they get a grip it's incredibly difficult for another frog to shake them off. This creates one of nature's most intriguing phenomena: the mating ball. In the picture below there are 8 males, and the female is completely obscured from view. The largest mating ball we witnessed had 13 males attempting to breed one female!

If you take the time to enjoy this miracle of nature please take the care not to disturb this mating frenzy as frogs breed only once a year and have many other issues to deal with in their struggle to survive.



Wood frog mating ball © Joe Crowley

Frogs in the News

By Christine Baptista, H.S.C

The year 2008 may be dubbed "Year of the Frog" around the world, but 2007 was certainly a 'hopping' year for frogs in the news! From amphibian declines to genetically modified amphibians, frogs were a hot topic for researchers, journalists, and amphibian-inclined naturalists. Here is a look at some of the hot news topics surrounding frogs in the media:

Formulated Frogs

In Japan, scientists created the first ever "see-through frog" for the purposes of saving wild frogs from the scalpels of high-school and university students. Unlike the Glass Frogs of South America, the skin on these tiny frogs is completely transparent, which allows students and researchers to observe the frogs' insides without cutting the frog open. In gravid females, egg development can also be safely studied, without harming the mother, or any of her babies.

<http://news.nationalgeographic.com/news/2007/09/070928-frog-picture.html>



Mountain chicken frog © Ian McIntosh

Conserving Our Croakers

The "Year of the Frog" idea came about due to the many threats that frogs face, particularly in the past few years. The deadly chytrid fungus has caused rapid amphibian decline. Recently

researchers have found there may be more to the fungal spread, at least in some regions. Researchers in La Selva, Costa Rica, found that reptiles in the area were also declining, which struck them as odd, since reptiles are not susceptible to chytrid. Upon further investigation, it was found that the leaf litter on the forest floor had greatly decreased due to a warming climate. This resulted in a loss of amphibian (and reptilian) habitat and shelter, adding to the stress for these animals. The reduction in suitable habitat and shelter likely makes them more susceptible to chytrid infections.

<http://news.bbc.co.uk/2/hi/science/nature/6564329.stm>

The mountain chicken frog is being bred in captivity to avoid extinction. The frogs are large and taste like chicken, making them a highly sought-after dish for local peoples on the island of Dominica. But hungry locals aren't the frog's only plight: yet again, chytrid has spread. With only 2 populations of the mountain chicken frog known in Dominica, one group of 17 frogs has been taken to the London Zoo, and another group of 12 frogs is being held by a private collector in the United States. It is hoped that the frogs will breed in captivity, and that the young will be able to be released and re-populate the island once (or if) chytrid passes.

<http://www.timesonline.co.uk/tol/news/environment/article3118736.ece>

A Gleam of Hope

With so many amphibian species succumbing to chytrid fungus, is there anything at all that can be done, or is the world destined to slowly lose its every amphibian species? Researchers in the U.S. have found a bacterium on the skin of red-backed salamanders that has been known to ward off chytrid fungus, and they are hoping this can somehow be applied to our declining wild amphibian populations. Though this bacterium seems to work in a lab setting, it is still in the testing stages to ensure that it works on more than just one species of amphibian. Scientists are working quickly to try to stop the disease that has already driven several species of amphibians to extinction.

<http://news.mongabay.com/2007/0523-amphibians.html>

Zoo Staff in Race to Save Golden Frogs

By Bob Johnson, Curator Amphibians and Reptiles

Good news for Panamanian golden frogs - Toronto Zoo has partnered with Project Golden Frog to help rescue some of the world's rarest frogs. The mountain slopes of western Panama are the last refuge of many unusual amphibians, including the endangered Panamanian golden frog, *Atelopus zeteki*. We described our support of the construction of an amphibian breeding centre in El Valle, Panama in the 2006 Fall issue of Toronto Zoo's *Collections* magazine. Scientists were concerned that a fungal disease, chytridiomycosis, was killing stream dwelling frogs throughout Central America (and in other regions of the world). At that time a new breeding centre was under construction in Panama in advance of the spreading fungal epidemic. Shortly after that article was written, an urgent request for help was sent to all North American zoos, including Toronto Zoo. The chytrid fungus had arrived in the last refuge for Panama's mountain frogs a year earlier than expected and well before the completion of the El Valle Rescue Centre at El Nispero Zoo,. Not even protected forest preserves were able to save frogs from this new infectious disease. In response to Paul Crump's (Houston Zoo) urgent and graphic description of frogs dying on the forest floor, Toronto Zoo secured funds to send two staff to help with the rescue hundreds of lucky survivors from over 35 species.

Americas Senior Keeper Doug Chessell, his daughter Jessica, who is a vet technician, and keeper Rick Tamlin spent a fortnight each helping staff from the more than 20 zoos who rotated through the El Valle Amphibian Conservation Centre. As the centre was still unfinished, rescuers (and frogs) spent nights in crowded rooms of the Hotel Campestre donning headlamps to collect frogs and insects to feed them, mornings disinfecting the rescued amphibians with anti fungal baths, and afternoons constructing special water filtration systems and frog holding cages. Toronto Zoo

has contributed over \$1000 to help with the construction of the El Valle Amphibian conservation Centre.

Doug was inspired by the Panamanian lead biologist, Edgardo Griffith. "His knowledge of local wildlife and how to find frogs who were not aware of the need to be rescued was inspirational. Edgardo's passion to save the frogs of his homeland was infectious."

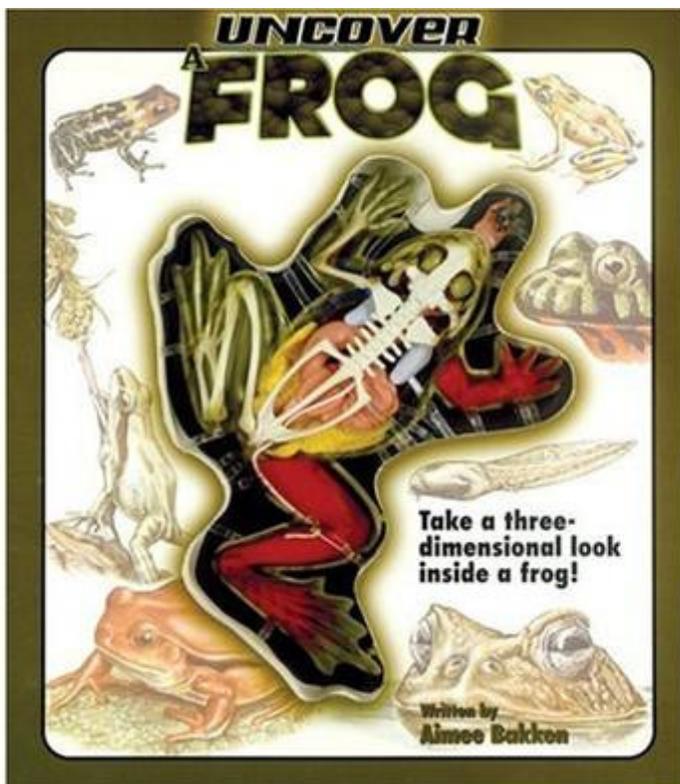


Panamanian golden frog couple © Paul Crump

Despite these efforts, scientists are still concerned that the last wild Panamanian golden frogs will die. Project Golden Frog is a partnership between Panamanian Zoos, the Panama government, and American Zoo Association to provide in-country education and conservation programmes and to set up and train staff to breed frogs in rescue centres. Our goal is to maintain rescued animals in their country of origin. Over 20 zoos in North America also have rescue groups of frogs as assurance colonies to ensure that this golden treasure of Panama does not disappear forever. Once again, your support of Toronto Zoo is making a difference for people and wildlife. All of our Americas Pavilion staff now care for a creature rarer and more precious than the golden metal it is named after. Please visit the frogs at Toronto Zoo. Take a moment to reflect on how rapidly we can lose one of our planet's living treasures, and hope that Panama's forests do not remain silent forever. Your ongoing support of Toronto Zoo's conservation, education, and recovery programmes is never needed more than now. - As previously published in the 2007 Spring Collections

Ribbit's Review - Uncover a Frog

Written by Aimee Bakken
 Published by Silver Dolphin Books
 Reviewed by Christine Baptista



This book is a wonderful resource for frog-lovers of all ages! Children will enjoy the 3D pieces that literally uncover the internal workings of a frog, layer by layer. Each page discusses a new system inside a frog's body, such as the circulatory, respiratory, digestive, and reproductive systems. The information in the book is scientific and educational, yet is easy enough for a child in middle-elementary school to read. Each page turns with its associated model layer attached, and the model is not to be removed from the book. The book is large (due to the space required for the model) but lightweight, and the pages are thick and easy to turn.

This book is part of the Uncover It series, which also includes Uncover a Cobra, Crocodile, T-Rex, Shark, Tarantula, the Human Body, and a Race Car.

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Amphibian Voice is distributed to schools and communities participating in the Adopt-A-Pond programme. The purpose of this newsletter is to provide information on amphibian, turtle and wetland conservation issues and efforts in Ontario.

Send in your stories, drawings and photographs to the address below and we will "hoppily" include them in future issues.

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We welcome support of our programme! Please make cheques payable to "Toronto Zoo" and send them to the following address. Thank you!

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