amphibian ark

Keeping threatened amphibian species afloat

Newsletter

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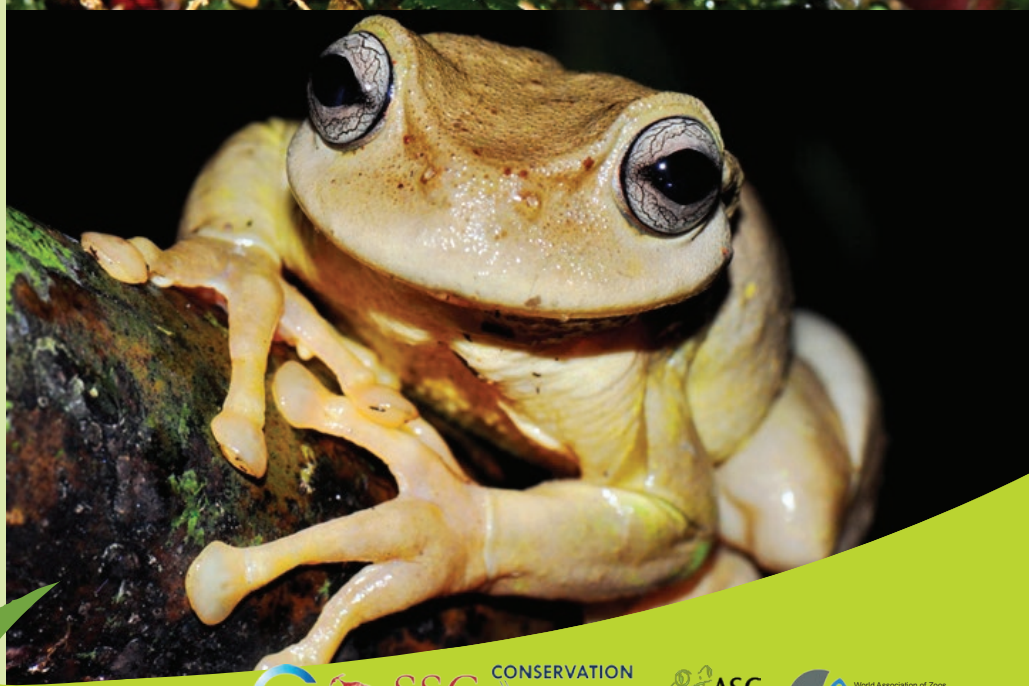
In this issue...



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Amphibian Advocates

In this newsletter we're really excited to introduce two amphibian conservationists, Justin Claude Rakotoarisoa and Devin Edmonds, both from Mitsinjo, in Madagascar, who, along with many others around the world, focus much of their efforts on captive rescue and research programs for some of the most threatened amphibian species. These captive efforts allow us to buy time, so that the threats faced by the species in the wild can be properly evaluated and overcome, and eventually, captive-bred animals can be returned to a safe environment. The profiles of all of our Amphibian Advocates can be found on the AArk web site at www.amphibianark.org/amphibian-advocates.

If you would like to nominate an Amphibian Advocate to be featured in a future edition of the AArk Newsletter, please send us an email at newsletter@amphibianark.org and we'll add your suggestion to our list!

Justin Claude Rakotoarisoa, Mitsinjo, Andasibe, Madagascar

My name is Justin Claude and I was born in Ankaizinina village near the town of Andasibe in June 1981. I grew up here and still live in this village thirty-four years later. When I was a child I knew the forest because my father spent his time working as a forest patroller for almost forty years. Back when I was growing up I joined people in the forest just for fun, to look for honey, to hunt birds, and to find wood for cooking. It was something like a mystery to me, to be alone in the forest, hiding beside trees and in different valleys, and listening to the different sounds from the wind and from the leaves.

When I was a kid I played with frogs. We used them for fishing, for food, and for medicine too. My village is almost in the forest, and it is always raining here so frogs are everywhere. There were also many different species of reptiles. As a kid, I attracted the tourists by showing them big chameleons I caught in the forest. I would put a chameleon on a stick and take it to the side of the road and wait. Then the tourists would pass by and stop to take photographs and we would get a little money, or they would give us some souvenirs as toys.

I started work with Mitsinjo in 1999, when I was still a student, and I became real member with the Association in 2001 after I left school. My dream was to work as a forest guide with the tourists. I also did different types of research with visiting biologists about lemurs and insects before I helped study frogs. Then I worked with frogs with a herpetologist who studied their habitat and the density. I learned the different frog species and to identify their predators in the wild and also to consider their diet and ecology. Finally, I worked to translate the book "Amphibians and Reptiles of Madagascar" by Frank Glaw and Miguel Vences to the Malagasy language around 2006 and it was published in 2007. Translating the book helped me to understand the threats the frogs of Madagascar face. I also learned about chytrid fungus while translating this book, and also many key words in English that helped me to expand my knowledge.

In 2010 I started work to develop a breeding station for frogs with Mitsinjo. In 2010 I also went to a workshop about amphibian diseases at Parc Ivoloina, near Toamasina in eastern Madagascar, held by the Durrell Wildlife Conservation Trust, and I gave my first PowerPoint presentation here. It was about frogs and Mitsinjo's new breeding facility. We opened the breeding center in 2011 and started to keep different species to learn about their husbandry. Then in April 2013 I was accepted to participate in the Amphibian Academy at Toledo Zoo, USA. It was my first time leaving Madagascar. I learned new techniques and methods to keep amphibians in captivity and also about other amphibian breeding projects around the world. I brought this experience back to Mitsinjo, and since then we continued our work at the breeding facility.

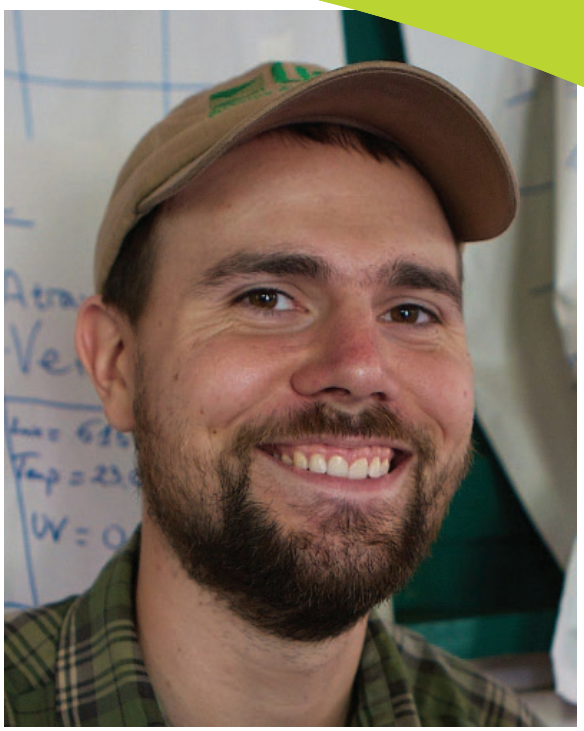
The future for frogs in Andasibe will be clear if everyone cares a little more about them, the same as for Madagascar as a whole. My life now depends on the conservation of nature. It is my work and supports me and my village.

Devin Edmonds, Mitsinjo, Andasibe, Madagascar

I saw my first Golden Mantella as a child for sale at a pet store in Madison, Wisconsin. I saved my allowance and returned to the store and bought it. Through adolescence, keeping amphibians became a defining feature of my identity, an urban misfit with few logs to turn or ponds to catch tadpoles in, but with dozens of terrariums and aquariums lining the walls of my bedroom, nature in glass boxes to observe under fluorescent lights. I turned my obscure hobby into a small business in college, breeding exotic frogs and selling them to private breeders and zoos. My parents' basement became my own personal amphibian production facility. I had a business card and it had a frog on it.

Towards the end of my time at the university, I began volunteering at Henry Vilas Zoo. Hundreds of frogs had been evacuated from Panama after a disease outbreak, and part of the captive assurance colony was sent here. At the zoo there were shelves lined with ter-

rariums, but inside were not frogs kept as commodities but instead the last of a population on the brink of extinction. I realized that my unusual set of amphibian husbandry skills could be applied to something more than just a hobby or business, but used also to assist declining wild populations of the species I was so fond of.



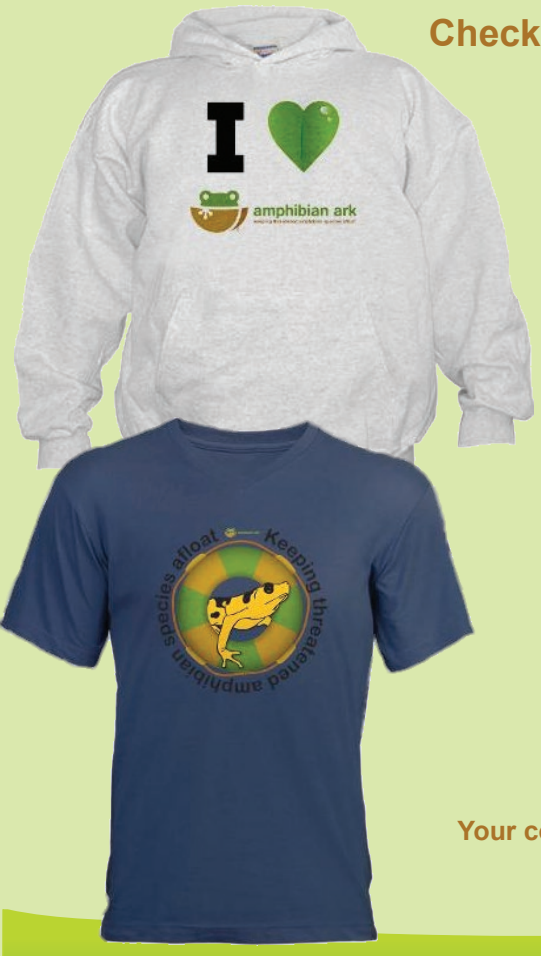
Around the same time I began travelling outside the US to see my favorite amphibians in nature. With earnings from selling home-grown frogs out of my parents' basement and the proceeds from writing a book about pet amphibians, I bought airplane tickets and applied for visas. I was vaccinated for strange diseases. I spent days in dugout canoes and got lost more than once. I was bitten by ants, chased by hornets. I tumbled down mountains. I ate new foods and promptly evacuated them from my body. And I found lots and lots of frogs, which I began to realize were part of something much bigger than a transparent deli cup with a price tag on it.

In 2006 one of these trips led me to Madagascar. I wanted to see the Golden Mantella *in situ*, the frog that had started it all nearly a decade earlier. I walked down a misty road towards the village of Andasibe, lemurs howling in the rainforest nearby. Here I found a local guide. He belonged to an organization called Mitsinjo. They had an unofficial plan for starting a "frog breeding station", something that had been proposed some months before I arrived. I told them I knew how to breed frogs. They said come back again and teach us how.

Four years later I did. By that point I had given away my personal exotic amphibian collection, and had worked to survey frogs in the Sierra Nevada. Watching frogs in terrariums was nice, but watching them in the field was even better. With the help of Jennifer Pramuk of Woodland Park Zoo and the support of Amphibian Ark, I found funding to help Mitsinjo launch their conservation breeding station, which we officially opened through a contract with the Malagasy government in April 2011.

Though I never intended to stay in Madagascar, I found I enjoyed more than just the frogs. I am now fortunate enough to call this island home. Working with a team of more than a dozen Mitsinjo members, we maintain a captive assurance colony of the Golden Mantella from a population extirpated from a nearby forest due to mining activities. We also run frog surveys to monitor for population declines, conduct studies to learn how best to maintain poorly known species in captivity, screen wild frogs for diseases, and raise awareness of the importance of amphibians within our local community.

It feels good to look back and see that what started as an adolescent's unusual hobby turned into something much more. I am hopeful that in another fifteen years I will be able to reflect upon where amphibians have led me since and say the same again.



Check out our Amphibian Ark t-shirts, hoodies and sweatshirts!

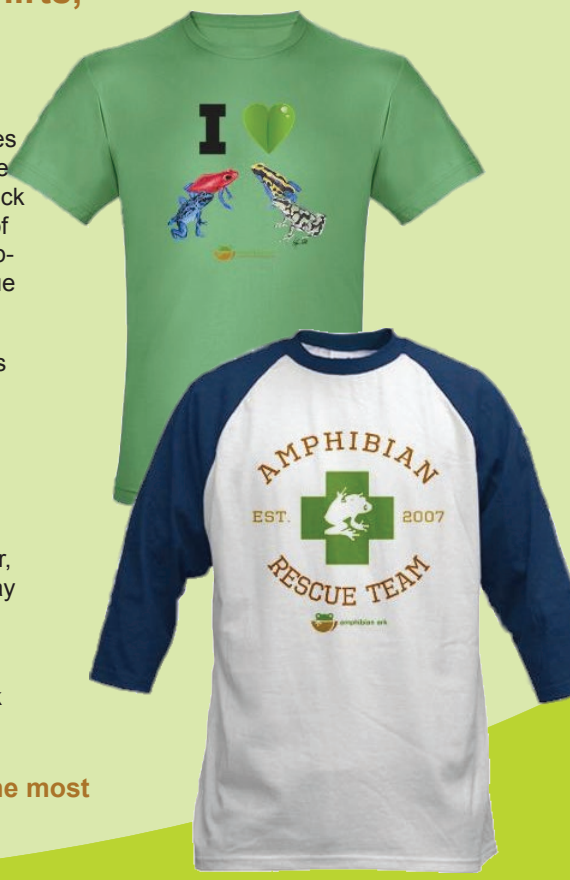
We're continuing to help support amphibian conservation programs for threatened species by raising awareness and resources, with the sale of AArk clothing. Please join us and check out our new T-shirt designs featuring some of your favourite frog species, or show your support by proudly wearing our new AArk Rescue Team t-shirts

We've recently added many different designs and colors, in men's women's and children's sizes.

Some of the items feature species from our partners' breeding programs, and all profits from these shirts will go directly to supporting our friends at Centro Jambatu in Ecuador, Mitsinjo in Madagascar and the Kihansi Spray Toad program in Tanzania.

Head to the AArk clothing store at www.amphibianark.org/AArk-products.htm and check out our clothing items!

Your continued support is helping to save the most threatened amphibians!



Recent animal husbandry documents on the AArk web site

The Husbandry Document library on the AArk web site (www.amphibianark.org/husbandry-documents/) currently has over 160 articles in it, with additional articles being added regularly. Four new documents have been added recently:

Successful treatment of *Batrachochytrium salamandrivorans* infections in salamanders requires synergy between voriconazole, polymyxin E and temperature

M. Blooi, F. Pasmans, L. Rouffaer, F. Haesebrouck, F. Vercammen & A. Martel

Chytridiomycosis caused by the chytrid fungus *Batrachochytrium salamandrivorans* (*Bsal*) poses a serious threat to urodelan diversity worldwide. Antimycotic treatment of this disease using protocols developed for the related fungus *Batrachochytrium dendrobatidis* (*Bd*), results in therapeutic failure. Here, we reveal that this therapeutic failure is partly due to different minimum inhibitory concentrations (MICs) of antimycotics against *Bsal* and *Bd*. In vitro growth inhibition of *Bsal* occurs after exposure to voriconazole, polymyxin E, itraconazole and terbinafine but not to florfenicol. Synergistic effects between polymyxin E and voriconazole or itraconazole significantly decreased the combined MICs necessary to inhibit *Bsal* growth. Topical treatment of infected fire salamanders (*Salamandra salamandra*), with voriconazole or itraconazole alone (12.5 µg/ml and 0.6 µg/ml respectively) or in combination with polymyxin E (2000 IU/ml) at an ambient temperature of 15°C during 10 days decreased fungal loads but did not clear *Bsal* infections. However, topical treatment of *Bsal* infected animals with a combination of polymyxin E (2000 IU/ml) and voriconazole (12.5 µg/ml) at an ambient temperature of 20°C resulted in clearance of *Bsal* infections. This treatment protocol was validated in 12 fire salamanders infected with *Bsal* during a field outbreak and resulted in clearance of infection in all animals.

www.amphibianark.org/?wpfb_dl=180

Reducing disease risks in captive amphibians and protecting our wild native amphibians from invasive disease

British and Irish Association of Zoos and Aquariums

Batrachochytrium salamandrivorans (*Bsal*) is a newly-discovered species of chytrid fungus that can infect and kill a wide range of newts and salamanders. This fungus has become established in a few wild amphibian populations in parts of Europe where it is causing devastating population declines. It is thought to be spread internationally by the amphibian trade and unless all concerned (pet traders, scientists and amphibian keepers) take great care and apply some simple biosecurity measures, there is a risk that it could be introduced to captive and wild amphibian populations elsewhere in Europe. *Bsal* has already been found in captive newts and salamanders in the United Kingdom.

www.amphibianark.org/?wpfb_dl=181

Amphibians and conservation breeding programmes: do all threatened amphibians belong on the ark?

Benjamin Tapley, Kay S. Bradfield, Christopher Michaels and Mike Bungard

Amphibians are facing an extinction crisis, and conservation breeding programmes are a tool used to prevent imminent species extinctions. Compared to mammals and birds, amphibians are considered ideal candidates for these programmes due to their small body size and low space requirements, high fecundity, applicability of reproductive technologies, short generation time, lack of parental care, hard wired behaviour, low maintenance requirements, relative cost effectiveness of such programmes, the success of several amphibian conservation breeding programmes and because captive husbandry capacity exists. Superficially, these reasons appear sound and conservation breeding has improved the conservation status of several amphibian species, however it is impossible to make generalisations about the biology or geo-political context of an entire class. Many threatened amphibian species fail to meet criteria that are commonly cited as reasons why amphibians are suitable for conservation breeding programmes. There are also limitations associated with maintaining populations of amphibians in the zoo and private sectors, and these could potentially undermine the success of conservation breeding programmes and reintroductions. We recommend that species that have been assessed as high priorities for *ex situ* conservation action are subsequently individually reassessed to determine their suitability for inclusion in conservation breeding programmes. The limitations and risks of maintaining *ex situ* populations of amphibians need to be considered from the outset and, where possible, mitigated. This should improve programme success rates and ensure that the limited funds dedicated to *ex situ* amphibian conservation are allocated to projects which have the greatest chance of success.

www.amphibianark.org/?wpfb_dl=183

Long-term recovery strategy for the Critically Endangered Mountain Chicken 2014-2034

Adams, S L, Morton, M N, Terry, A, Young, R P, Dawson, J, Martin, L, Sulton, M, Hudson, M, Cunningham, A, Garcia, G, Goetz, M, Lopez, J, Tapley, B, Burton, M and Gray, G.

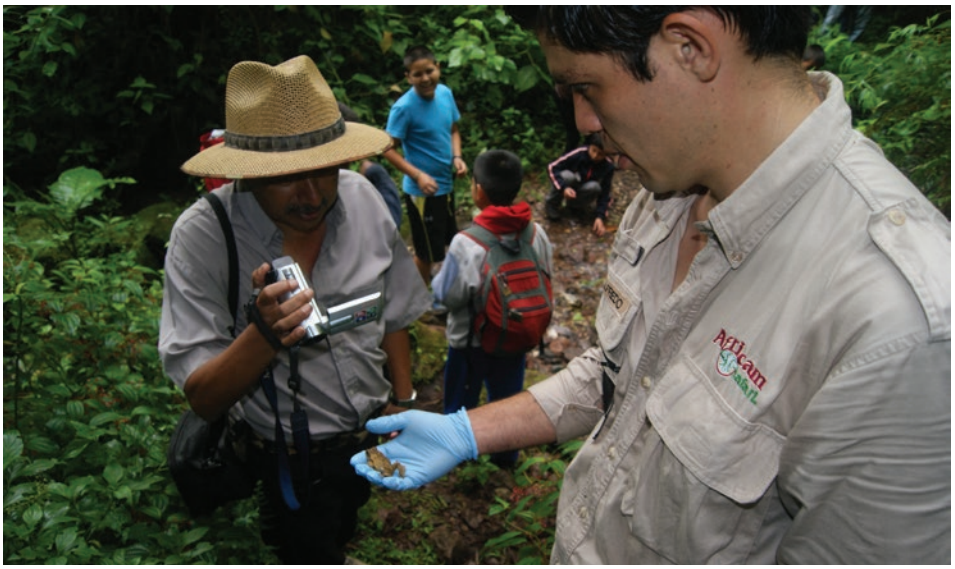
The Mountain Chicken's perilous situation has brought together the conservation efforts taking place in both Dominica and Montserrat to produce the unified strategy presented in this document for trying to reverse the trajectory of the species towards extinction. This Long-term Recovery Strategy will promote closer collaboration between our partners in Montserrat and further afield and encourage the exchange of ideas and methods we are developing to effect the recovery of this iconic species. The Strategy is aligned with the Dominica National Biodiversity Strategy and Action Plan 2014-2020 which sets out a series of actions to minimise the loss of biodiversity in Dominica. The Strategy will help deliver this goal, supported by the crapaud captive breeding centre that has been established in our country.

www.amphibianark.org/?wpfb_dl=184

Recent successes from the Large-crested Toad program at Africam Safari

José Alfredo Hernández Díaz, MSc., Africam Safari, Puebla, Mexico

In previous editions of the Amphibian Ark Newsletter, we have shared some of our most important successes with the Large-crested Toad program at Africam Safari. Just as a reminder, the Large-crested Toad (*Incilius cristatus*) is a Critically Endangered amphibian, which is endemic to Mexico. The only population known in Puebla survives in the Xocoyolo Rift, in the North Sierra of Puebla. The Africam Safari team has been working with conservation of the Large-crested Toad since 2012, breeding the species in captivity and working with the community to engage them in conservation of the species.



Local community members, including primary, secondary and high school students and their teachers were involved with releasing Large-crested Toads (*Incilius cristatus*) that had been captive-bred at Africam Safari in Mexico. Photo: José Alfredo Hernández Díaz.

After the first two reproductive events in December 2012 and March 2013, and the first release event of 137 captive-bred toads in July 2013, the project has developed different actions. In October 2013 we carried out a monitoring survey in order to find the toads that we had released three months earlier. We were working in the field for a week, but the weather was not helpful at all - it was raining during the whole week and most animals were hidden. Fortunately we were able to find a total of eight toads, one of them belonging to the group that we had released three months before. We were able to identify it because all the released toads had been marked. Although one toad recaptured from 137 released toads could seem like a low number, the best news was that the toad had increased its weigh 28 times. It weighed 0.5g when released and 14g when recaptured. This event demonstrated that captive-bred toads are able to adapt to the wild habitat and future reintroductions can be successful.

In 2014 we only had one reproductive event, in December. It was a small clutch with only fifty tadpoles hatching and these are now being reared at our facilities. Recently, in May, we had perhaps the most important reproductive event for the Large-crested Toads at Africam Safari. A total of five females laid eggs, one of them belonging to the founder group and the other four are from the first group of toads born in our facilities. This clutch, from 228 toads that have already completed metamorphosis, represents the second generation of Large-crested Toads bred at Africam Safari. However, the clutch obtained from the founder group is much bigger, and we have already 450 toads that have completed metamorphosis to date.

Some of the second generation Large-crested Toads bred at Africam Safari. Photo: José Alfredo Hernández Díaz.

Last May we also undertook the second release of Large-crested Toads in the North Sierra of Puebla. We released forty-four two-year old individuals from the toads born between 2012 and 2013 at our facilities. All of them are sexually mature and are ready to breed in the wild. As in the previous release, community members were invited to help us with this activity.

One of forty-four two-year old Large-crested Toads being released in the Xocoyolo Rift, in the North Sierra of Puebla, Mexico. Photo: José Alfredo Hernández Díaz.

We released the toads in two days, the first day with the participation of twenty-one high school students and the second day with children from primary and secondary school, together with their teachers. As always teachers and students were very enthusiastic and happy to collaborate with us. And now they have the commitment to take care of the toads into the future.

As you can see, we continue to work hard for the Large-crested Toad conservation Program. We have had many important achievements, but there are still many things to do. We are planning a future release from the recent clutch that was produced in May. Also during the next breeding season, we are going to collect more tadpoles for the new founder group for our captive colony in order to improve the population genetics. We are also evaluating the possibility of a future reintroduction of the species to other sites where it was formerly distributed. This is still just a possibility but we hope we can do it with the help from local people. If we are able to do so, we will be able to ensure a promising future for the Large-crested Toad.

Good news for amphibians – the story of two conservation heros

Amadeus lives in the South of Germany. Ben lives in Ohio. They share the distinction of being amphibian conservation heros. Several months ago Amadeus wrote to the Amphibian Ark saying that he wanted to donate his pocket money (a considerable sum) to help amphibians. Then, just a few weeks later we heard from Ben's mother. Ben, who was about to turn nine, had asked that instead of bringing presents for his birthday party his guests make donations to the Amphibian Ark.

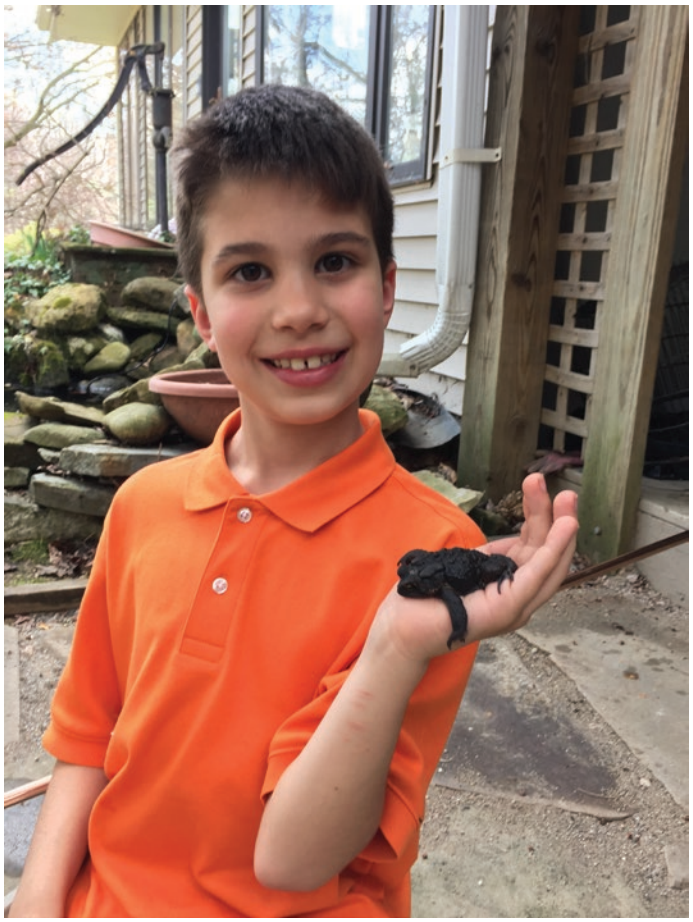
We asked Amadeus and Ben to tell us a bit about what got them interested in amphibians and why they thought conserving them was important. Here's what they said:

Amadeus: "At the age of three I started my interests in amphibians when I watched the metamorphosis of a green frog in our garden pond. I was so fascinated that I wanted to know more about these animals". Now fourteen years old, Amadeus has a small breeding program in his parents' garden for yellow-bellied toads. He reports that the program runs very well. Amadeus has seen all but two of the twenty species found in South Germany in the wild.

Ben: "My family moved to a house in the country a few years ago. Our property in the country has woods, a main pond, and some smaller ponds. I started exploring and was intrigued by all of the plants and animals I saw. The most common animals were frogs and toads, which is how I became interested in amphibians." Ben's family helps him identify new species when he finds them. Thus far they have identified ten different species of amphibians.

Amadeus and Ben both are concerned about the future of amphibians.

Amadeus, from Germany, recently donated his pocket money to the AArk help amphibians. He has always been interested in amphibians and has seen all but two of the twenty species found in South Germany in the wild.



Ben, who has just turned nine, asked that instead of bringing presents for his birthday party his guests make donations to the Amphibian Ark. Ben, who lives in Ohio, USA, says 'It's important to save amphibians because they are becoming more and more endangered. If we don't do something to save them, then they could die".

Amadeus: "Amphibians play an important part in the ecosystem and they are good indicators of an intact ecosystem". He's concerned because in his opinion most nature conservation organizations only care about large mammals and birds. Amadeus is a member of LARS, an organization that works to protect amphibians and reptiles, and LBV (the Bavarian Society for the Protection of Birds), another conservation organization. He helps educate his classmates, some of whom are afraid of amphibians, by taking newts or tadpoles to school when he has to do a presentation.

Ben: 'It's important to save amphibians because they are becoming more and more endangered. If we don't do something to save them, then they could die. When healthy amphibians are spotted at a site then it means that it is a healthy ecosystem". Ben learns about amphibians from books and websites and thinks it's important to know how they help the environment and how many are endangered. He suggests that people who have land set aside some natural areas for amphibians to live in. "We learned that we have a vernal pool area that is important to amphibian development, so we protect it".

The Amphibian Ark salutes these two young amphibian conservation heroes. They help us believe that there's a brighter future for amphibians in the years ahead.

Proudly supported by:

amphibian ark

Shirts for salamanders

Dan Madigan, President, National Amphibian Expo

In an attempt to continue to support amphibian conservation during an off year the National Amphibian Expo launched the "Shirts for Salamanders" t-shirt design contest. This contest encouraged the general public to design and submit a graphic which will be featured on the front of a limited edition t-shirt. The t-shirts will be available for sale in the coming weeks via the Amphibian Ark website. We have partnered with Amphibian Ark to support both the Atlanta Botanical Garden Amphibian Conservation Program and the Costa Rican Amphibian Research Center (CRARC) thus continuing our "Support Local. Support Global." initiative.

Locally, we've chosen a recovery project for Flatwoods Salamanders (*Ambystoma cingulatum*), run by Mark Mandica from the Atlanta Botanical Garden Amphibian Conservation Program. He, Leslie Phillips, Brad Wilson and about a dozen volunteers and interns are devoted to conserving amphibians through *in situ* and *ex situ* applied research strategies.

Flatwoods Salamanders are in real trouble and facing impending extinction. Recent research indicates there has been a 90% reduction in their populations since 1999. A plan for recovery needs to be initiated now. In response to this decline, a Structured Decision Making workshop sponsored by the United States Fish and Wildlife Service and the United States Geological Survey and occurred in August 2014 to discuss options and alternatives for Flatwoods Salamander recovery.

Globally, we've chosen a research and recovery project for eight species of moss salamanders (genus: *Nototriton*) that are endemic to Costa Rica. This project is run by Brian Kubicki from the Costa Rican Amphibian Research Center (CRARC). Brian and his wife Aura Reyes have dedicated hundreds of hours of fieldwork in the cloud forests along the Caribbean slopes of Costa Rica specifically to studying moss salamanders.

The goal of the project is to conduct a detailed taxonomic review of the moss salamanders of Costa Rica, in addition to further documenting their natural history and known distributions. Moss salamanders are considered to be among the most poorly known groups of herpetofauna native to Costa Rica, but Brian is working hard to change that.

Voting on the entries for the t-shirt design contest has ended, and the winner is... Natalie Criss and her "Support Local. Support Global." green shirt design. Thank you again to all the participants and please check back soon as there will be further details regarding how to support salamander conservation while wearing this awesome t-shirt.

All proceeds from "Shirts for Salamanders" will be divided among the two featured projects. For more information regarding this campaign and the target species please visit http://naexpo.org/conservation.

The winning entry in the Shirts for Salamanders t-shirt design competition is Natalie Criss and her "Support Local. Support Global." green shirt design.

The recovery project for Flatwoods Salamanders (*Ambystoma cingulatum*), run by the Atlanta Botanical Garden Amphibian Conservation Program is one of the two projects being supported by the "Shirts for Salamanders" effort. Photo: Pierson Hill.

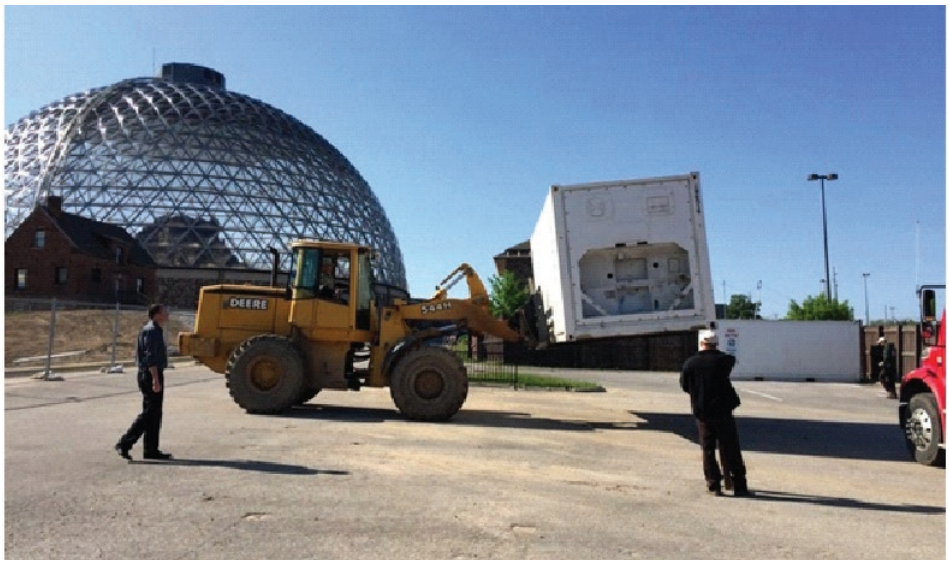
A research and recovery project for eight species of moss salamanders from Costa Rica will also benefit from the sale of t-shirts. This project is run by the Costa Rican Amphibian Research Center. Photo: Brian Kubicki.

Honduras Amphibian Rescue and Conservation Center (HARCC) 2014-2015 Progress report

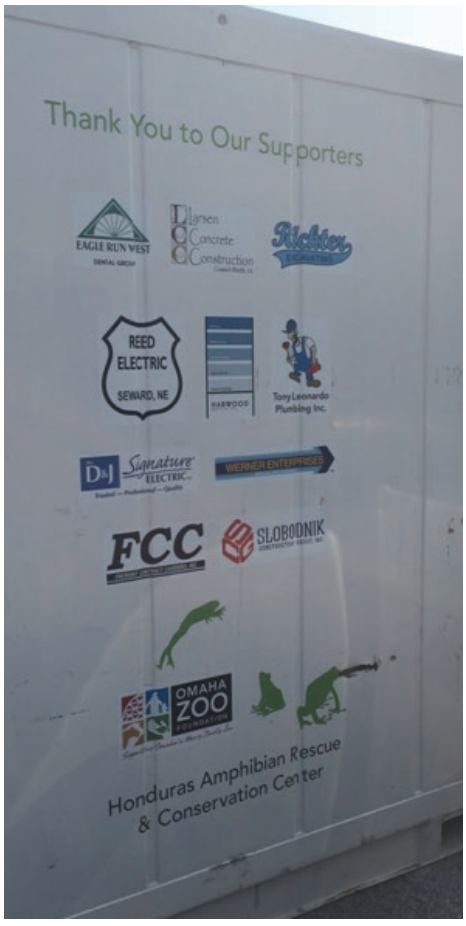
Jonathan E. Kolby, IUCN SSC Amphibian Specialist Group, Regional Co-Chair (Honduras);
Brandon L. Greaves and Jessi Krebs, Omaha's Henry Doorly Zoo & Aquarium, Omaha, NE, USA

The endangered amphibians of Honduras are continuing to experience a storm of assaults from habitat destruction, climate change, and emerging infectious diseases. A growing number of species face an uncertain future unless *ex situ* management efforts are soon implemented to ensure long-term survival. Cusuco National Park (CNP) is a biodiversity hotspot recognized by the Alliance for Zero Extinction for the Honduran endemic amphibians found only in this one location. Despite its relatively small size (approximately 120 square miles), CNP provides refuge for sixteen amphibian species listed as Endangered or Critically Endangered on the IUCN Red List of Threatened Species.

To combat amphibian biodiversity loss, the Honduras Amphibian Rescue and Conservation Center (HARCC) will prevent the extinction of three Critically Endangered amphibian species by performing a head-start program to quickly raise amphibians for reintroduction while simultaneously creating captive assurance populations for long-term protection against extinction. After several years of fundraising and planning, HARCC is now officially in construction, made possible by funding from an Amphibian Ark Seed Grant, ASA Seed Grant, the Chicago Zoological Society-Chicago Board of Trade Endangered Species Fund, Rufford Small Grants for Nature Conservation, Omaha's Henry Doorly Zoo & Aquarium, and a generous donation from the Omaha Zoo Foundation.



The shipping containers finally arrive at Omaha's Henry Doorly Zoo & Aquarium! Time to get to work! Photo by: Brandon Greaves.



Donor acknowledgments are posted on the side of each container.
Photo by: Brandon Greaves.

At the time of our report last year, initial HARCC blueprints had relied upon a building provided on site at Lancetilla Botanical Garden and Research Institute in Tela, Honduras inside which we would build a series of isolated amphibian rooms. Unfortunately, upon closer inspection of this facility, we determined it would be too difficult and costly to make the series of structural repairs that would have been required to raise the integrity of the entire building to meet our biosecurity standards. Over the past year, we have been pursuing our "Plan B": acquire two 20-foot insulated shipping containers and modify them into biosecure amphibian laboratories that will become stationed next door to this building. This original building will instead be converted into HARCC headquarters office and a feeder-insect rearing facility to produce the food for HARCC's frogs. The modified shipping container concept has a proven track record of success with similar amphibian rescue projects in Australia and Panama and seemed like a perfect fit for our situation at Lancetilla in Honduras.

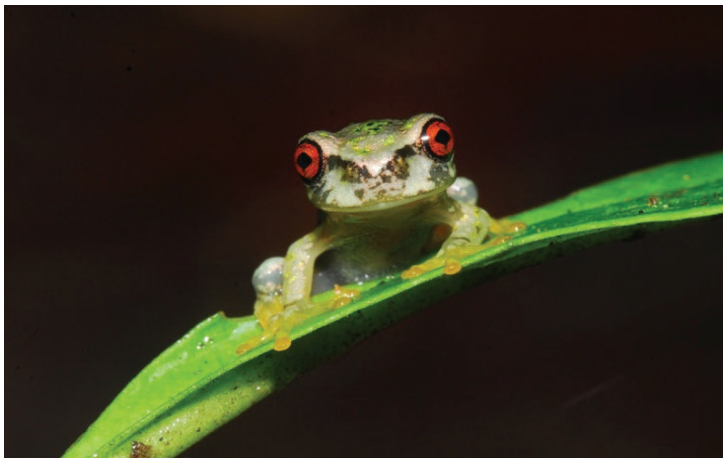
We invested several months of time into researching container options, how and where to acquire them, and the best way to build our laboratories. A site visit was made to the Atlanta Botanical Gardens to consult with staff regarding their own "FrogPod" amphibian facility, and discuss the pros and cons of different construction and operational methods.

In May 2015, with help from the Omaha Zoo Foundation and Slobodnik Construction Group, Inc., we acquired two used insulted shipping containers and had them transported to Omaha's Henry Doorly Zoo & Aquarium in the United States. Over the following months, zoo interns, zoo staff, and local businesses graciously volunteered their time and expertise to assist with construction activities. Each unit has been retrofitted with sanitization vestibules, additional plumbing, and improved electrical infrastructure. When development of these frog laboratories is completed within the next month, the containers will then be transported to Honduras via ocean cargo ship and installation will begin on site at Lancetilla.

We are currently planning our next visit to Honduras in order to be present for the arrival of these containers. Upon arrival, the containers will be transported by truck to Lancetilla and then placed on concrete platforms, now under construction. We will spend several weeks on site working on the containers and getting them connected to plumbing and electricity. Before the end of 2015, the frog rescue laboratories will be fully operational. In the meantime, we are also working to identify on site staff and will soon begin training them in amphibian husbandry. Preliminary training of Honduran staff will be done in

the Amphibian Conservation Area at Omaha's Henry Doorly Zoo & Aquarium.

During the past year, we have also been working to raise greater public awareness about this project through outreach and social media. We presented talks about this project at herpetological society meetings, and developed a dedicated Facebook page and Twitter account, all in an effort to generate engagement with the public about our work and about the conservation challenges that amphibians face in Honduras. We have also become an Associate Partner with the Amphibian Survival Alliance and developed a project web page: (www.amphibians.org/seedgrants/2015kolby/)



The three species that will be housed in the new facilities at the Honduras Amphibian Rescue and Conservation Center: *Duellmanohyla soralia* (top) *Plectrohyla exquisita* (center) and *Plectrohyla dasypus* (bottom). Photos by: Jonathan Kolby.

Facebook: HARCC-Honduras Amphibian Rescue and Conservation Center
Twitter: @HondurasARCC
Email: Hondurasarcc@gmail.com

Project Snapshot

Project Title: Honduras Amphibian Rescue and Conservation Center (HARCC)

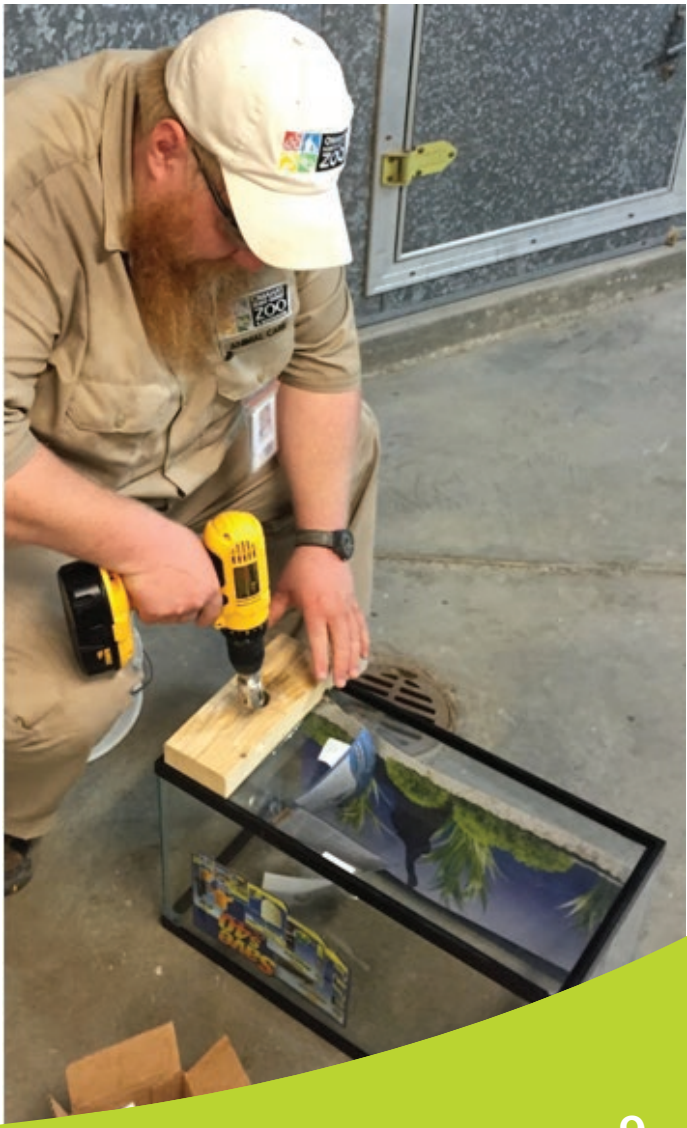
Current project team members and partner organizations:

- IUCN SSC Amphibian Specialist Group (Jonathan Kolby)
- Omaha's Henry Doorly Zoo and Aquarium (Jessi Krebs & Brandon Greaves)
- El Jardin Botanico y Centro de Investigacion Lancetilla
- Escuela Nacional de Ciencias Forestales (ESNACIFOR)
- Departamento de Vida Silvestre del Instituto Nacional de Conservacion y Desarollo
- Forestal Areas Protegidas y Vida Silvestre; Honduran Government; (ICF)
- Operation Wallacea
- Expediciones y Servicios Ambientales de Cusuco (ESAC)

Target species:

- *Plectrohyla dasypus*
- *Plectrohyla exquisita*
- *Duellmanohyla soralia*

Glass aquarium tanks are modified for assembly on the rack system. Photo by: Nathan O'Brate.



News from the amphibian rescue center in Argentina

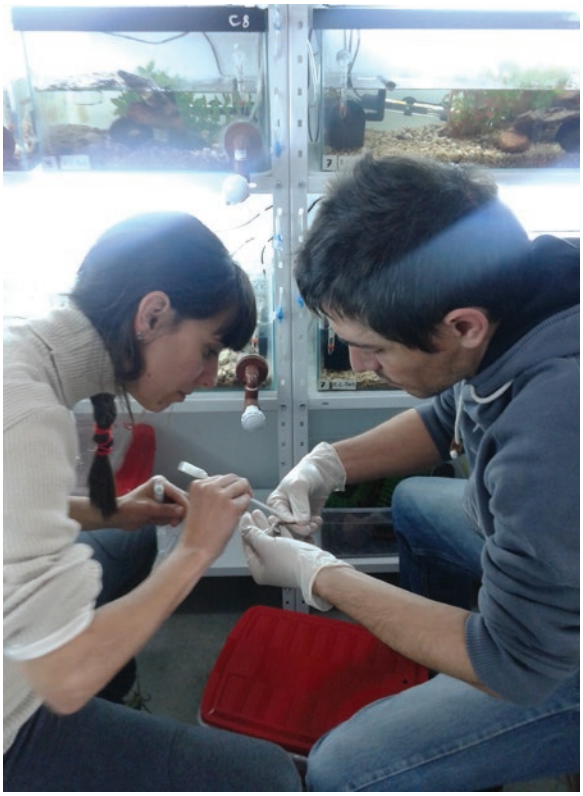
Federico P. Kacoliris, Melina A. Velasco and Jorge D. Williams, Museo de La Plata, Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina

The Valcheta Frog (*Pleurodema somuncurense*) is Critically Endangered due to its extremely small area of distribution and threats from habitat fragmentation, exotic predatory fishes, unusual climate events, and infection from chytrid fungus. Photo: Federico P. Kacoliris.

In 2014 we created the first amphibian rescue center in Argentina, thanks to a seed grant given to us by Amphibian Ark. Some months later, during March 2015, we established the first survival colony of the Valcheta Frog (*Pleurodema somuncurense*). This species is one of the three frogs in our country listed as Critically Endangered in the IUCN Red List. This category of threat was determined for Valcheta Frogs on the basis of their very small distribution range, which is restricted to the first 10km of the headwaters of the Valcheta streams, at northern Patagonia in Argentina. The species is also threatened by habitat fragmentation, exotic predatory fishes (Rainbow Trout) unusual climate events, and infection from chytrid fungus (*Batrachochytrium dendrobatidis*, *Bd*), which has been recently recorded from skin samples of this species.

In an attempt to overcome the problems faced by this species, we began an *ex situ* program for Valcheta Frog to act as a complement to the management actions being developed *in situ*, with both programs being aimed at ensuring the long-lasting viability of the Valcheta Frog population and its habitat.

To begin the program, we captured forty frogs from the wild, including females and males, adults and juveniles from the three main sub-populations of this species. These individuals were then established in the rescue center located at La Plata Museum, inside terrariums specifically equipped for replicating the wild conditions. Each terrarium was furnished using rocks taken from the frogs' habitat and artificial plants, similar to the natural ones. The water movement of the stream was recreated using a water pump and a water heater was incorporated to obtain the same water temperature, considering that the habitat where this frog is found has thermal conditions with a nearly constant water temperature ranging from 22°C to 26°C. A feed platform was incorporated into each terrarium and we include several prey items in the diet of the frogs in order to simulate their natural food, including cockroaches, crickets, worms, ladybugs and crustaceans.



Swabbing the frogs for chytrid testing at the rescue centre. All forty captive animals were found to be infected with chytrid fungus.
Photo: Federico P. Kacoliris.

To date we have successfully achieved the survival of the whole colony, avoiding the loss of any individuals during the transportation and the acclimatization processes. All forty individuals are now well habituated to the terrariums, showing a generally good health status and accepting all the food items we offer to them. Each frog was identified with a unique code by using Visible Implant Elastomers and we collected skin samples, which confirmed that all individuals are infected with *Bd*.

In the short term our next steps are to develop a treatment protocol to deal with *Bd*, and to test several management methods aimed at promoting reproduction. We already have observed several attempts at amplexus, so we are very enthusiastic that we will achieve reproduction of this *ex situ* colony of Valcheta Frog, so we can eventually plan for the restoration of wild sub-populations at sites where the species has disappeared.

Valcheta Frogs in terrariums at the amphibian rescue centre in La Plata Museum, Buenos Aires, in Argentina. All animals have adapted well to their captive environment and are feeding well. Photo: Federico P. Kacoliris.

Amphibian Ark donors, January-August 2015

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