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**Amphibian Ark**  
c/o Conservation Breeding Specialist Group  
12101 Johnny Cake Ridge Road  
Apple Valley MN 55124-8151  
USA

[www.amphibianark.org](http://www.amphibianark.org)

Phone: +1 952 997 9800  
Fax: +1 952 997 9803

[www.amphibianark.org](http://www.amphibianark.org)



## Amphibians as pets

Considering an amphibian pet? Growing up with tadpoles in your backyard or classroom is a great way to learn about and appreciate the natural world. Some amphibians make excellent pets for enjoyment and education. However, keeping an amphibian (or any pet) in captivity is a real commitment to its well-being for the entirety of its possibly very long life.

### Recommended guidelines

No amphibian from any commercial source (e.g., pet store, online merchant, reptile show) may be released into the wild – never, under any circumstances, even if the species technically is native to your region. The risk of introducing exotic diseases to native amphibians is just too high. And in most places it is illegal.

Wild amphibians should not be moved between sites (e.g. new pond or stream). If you bring an amphibian to your home, and you have other amphibians, you should not release it back into the wild, because of risk of disease transfer between animals.

Ask for background health information about your pet and how and where it was produced. Ask for documentation of legality for imports or protected species. Check with your local wildlife agency to make sure the species you wish to keep is legal (for example, Cane Toads, *Rhinella marina*, are illegal in some states). There may be restrictions or laws in your state regarding keeping amphibians and other wildlife as pets regardless of the source.



Go captive born! If amphibians are to be kept as pets, we encourage purchasing captive-born animals only from reputable dealers. Please always choose pets that are documented to be from a captive-breeding program. Do your homework and support vendors who support conservation efforts. Wild-caught amphibians are being badly over-harvested.

Avoid mixing species! If they don't live together in nature, don't keep them together in your terrarium. This will reduce the chances of disease transfer.

Never dump wastewater from amphibian enclosures into the natural environment where it could contaminate local populations of amphibians. Instead, dump wastewater in the toilet.

Always wash your hands before handling amphibians (to protect your amphibians) and after (to protect you); be sure to thoroughly rinse off the soap before handling your animals!

In rare cases, amphibians may carry diseases that can harm humans (zoonoses), including *E. coli* or Salmonella; more information is here: [www.cdc.gov/salmonella/water-frogs-0411/051011/index.html](http://www.cdc.gov/salmonella/water-frogs-0411/051011/index.html).

Thoroughly clean items that come into your enclosure from outdoors (branches, plants, rocks, etc.) to protect your pet from diseases that may be out there and vice versa when discarding enclosure contents (other than water).

### Diseases

Amphibians may appear to be perfectly healthy, showing no signs of illness whatsoever, yet still carry a pathogen that can later harm them or you or other amphibians in the environment. More information about the deadly Amphibian Chytrid Fungus is here: [www.amphibianark.org/chytrid-fungus/](http://www.amphibianark.org/chytrid-fungus/).

### Humane treatment

Regardless of the source, all animals in captivity deserve the highest quality environment and conditions as possible. Resist the urge to purchase or acquire amphibians on impulse and without having proper food and housing ready. Basic amphibian care and welfare information can be found here: [www.amphibianark.org/pdf/AZAAmphibianHusbandryResourceGuide.pdf](http://www.amphibianark.org/pdf/AZAAmphibianHusbandryResourceGuide.pdf).

Before you bring in a pet amphibian, ask yourself: "Am I able and willing to provide the proper environment, food and facilities for this animal for its lifetime?" If not, then we recommend visiting amphibians in nature or at a regional educational exhibit. Better yet, build a backyard pond to attract native frogs, toads, and salamanders to your property ([www.treewalkers.org/operation-frog-pond/](http://www.treewalkers.org/operation-frog-pond/))!

### More resources for you

[www.amphibianark.org/pdf/Amphibian\\_Disease\\_Manual.pdf](http://www.amphibianark.org/pdf/Amphibian_Disease_Manual.pdf)  
[www.amphibianark.org/commercial-activities/](http://www.amphibianark.org/commercial-activities/)  
[www.ssarherps.org/documents/amphibians\\_in\\_classroom.pdf](http://www.ssarherps.org/documents/amphibians_in_classroom.pdf)

You can also download this as a pdf file, [www.amphibianark.org/pdf/Amphibians%20as%20Pets.pdf](http://www.amphibianark.org/pdf/Amphibians%20as%20Pets.pdf).





## New range of 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.amphibi-anark.org/AArk-products.htm](http://www.amphibi-anark.org/AArk-products.htm) and check out our clothing items - if you can't find the design and color combination you're looking for, drop us a line and we'll see if we can create it for you!



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



## Thanks to our Amphibian Ark associates

In this newsletter we are pleased to feature another of our professional associates, who regularly offer their services to support our amphibian conservation work. These individuals have contributed many hundreds of hours of their time to share their expertise and help with workshop facilitation, instructing at training courses, and chairing advisory groups.

We very much appreciate the continued support of these individuals, and their respective institutions.

For a list of our associates, please visit: [www.amphibianark.org/associates/](http://www.amphibianark.org/associates/).

## Association spotlight - Luis Carrillo, General Curator, Zoofari, Morelos, Mexico

Luis Carrillo serves in a volunteer capacity as an Amphibian Ark Officer for Latin America. Luis started working in zoos back in 1994 in his native Venezuela as head veterinarian at the Caricuao Zoo in Caracas. From there, he has had the opportunity to receive training both as a wildlife veterinary clinician and also as a biologist. Having worked formally in Colombia and Mexico, Luis now resides in Mexico and works as the General Curator at Zoofari, a safari park zoo near Morelos in Mexico.

Since 2005, Luis has also worked with the Conservation Breeding Specialist Group (CBSG/SSC/IUCN) Regional Network Mexico and since 2012, has been the regional representative for Mexico. It was attending CBSG's annual conference in 2007 when he was exposed to the amphibian crisis through a presentation by AArk's Program Director, Dr. Kevin Zippel. This eye-opening experience led Luis and his director at the time, to make a long-lasting commitment toward amphibian conservation and to do what they could to help.

During that meeting, Luis agreed to translate the first version of AArk's Global Amphibian Infopack into Spanish and to adapt it first to the reality in Mexico, and then, to Latin America, so all of the information could be shared with the Mexican Zoos and Aquariums Association and the Latin American Zoos and Aquariums Association members. From there he started collaborating with AArk, translating documents, sharing AArk documents within the Latin American community, attending and assisting in facilitating training courses and/or conservation needs assessment workshops in countries such as Mexico, Colombia, Venezuela, Chile, Panama, and Ecuador among others.

By 2008, the Year of the Frog, he was appointed as Amphibian Group Coordinator for the Latin American Zoos Association, a position that he still holds today. Luis also started training in amphibian conservation and management through the Association of Zoos and Aquariums course and then eventually through training courses and professional visits to conservation projects and private collections. With a background in veterinary medicine, Luis was recruited by Amphibian Ark to help in translation of key amphibian veterinary documents and lectures and also to be an instructor at training courses in Latin America. Luis is also an active member of the Amphibian Veterinary Outreach Program alongside other veterinarians and pathologists such as Brad Wilson (Atlanta Botanical Garden), Sam Rivera (Zoo Atlanta) and Allan Pessier (San Diego Zoo).

Amphibian Ark would especially like to recognize the support of Zoofari in allowing Luis the time and resources to help the AArk.



Luis Carrillo and a Cane Toad, *Rhinella marina*, that he found in the grounds of Zoofari in Mexico. Photo: Natalia Carrillo.

## AArk surplus animal service for researchers

Amphibian Ark represents a global network of amphibian captive breeding programs as part of the global IUCN Amphibian Conservation Action Plan (ACAP). The ACAP emphasizes the primary importance of basic research in fields such as climate-change, ecotoxicology, or disease ecology in order to inform appropriate conservation programs. Much of this research takes place in the realm of academic labs around the globe, and this research often requires the use of living animals (per Institutional Animal Care and Use Committee (IACUC guidelines)). Some amphibian breeding programs produce surplus progeny that are not needed to ensure the appropriate genetic integrity of a particular survival-assurance breeding program.

Amphibian Ark can help potential partners at breeding institutions and research labs to direct surplus animals to the research programs where they can really contribute towards the research needed to inform amphibian conservation. While many *ex situ* partners have disposition policies that cannot support this activity, many do not and surplus animals often are available for qualified IACUC-approved research. Interested institutions should check the "Animals for ACAP" page on the Amphibian Ark website [www.amphibianark.org/mailman/listinfo/animalsforacap\\_amphibianark.org](http://www.amphibianark.org/mailman/listinfo/animalsforacap_amphibianark.org).





## Amphibian Academy - Call for interested participants

### Developing Amphibian Conservation Expertise

Amphibian Ark and partners in Georgia, USA, including the Atlanta Botanical Garden and Zoo Atlanta are in preliminary planning stages for the 2014 Amphibian Academy course to be held in Georgia in Spring 2014. Exact dates and schedule are currently under development and will be announced in the coming months.

The Amphibian Academy ([www.amphibianark.org/amphibian-academy/](http://www.amphibianark.org/amphibian-academy/)) is a new capacity-building program with a novel and holistic approach to amphibian conservation training for *ex situ* program development, and which will additionally integrate some supportive aspects of *in situ* training too. The course includes lectures, hands-on practical exercises, and light fieldwork.

Most of all there will be ample opportunities for students to be personally mentored by globally-recognized and successful amphibian conservationists to help them address their specific program's focus and needs. The students can rely on the faculty members to remain as their mentors and professional contacts throughout their careers.

The hands-on activities are designed for students to "learn by doing" in small groups with an instructor, thus providing an optimal learning opportunity. The faculty for the course includes leaders in the fields of amphibian husbandry, medicine, research, reintroduction, and conservation.

As amphibian decline knows no borders and is a significant global concern, we invite a diverse group of students from all countries. The vision for this training course is to Serve Amphibians. If this motto is in alignment with your conservation interests, this course provides you a unique opportunity to develop the appropriate skills for making a difference.

Some scholarship opportunities will be available for deserving individuals with limited resources. Interested parties can contact AArk Education Officer, Rachel Rommel ([Rachel@AmphibianArk.org](mailto:Rachel@AmphibianArk.org)), Training Officer, Ron Gagliardo ([Ron@AmphibianArk.org](mailto:Ron@AmphibianArk.org)) or Andy Odum ([RAOdum@aol.com](mailto:RAOdum@aol.com)).



2013 Zoo Med Amphibian Academy Scholarship recipient Justin Claude Rakotoarisoa, from the Mitsinjo Amphibian Conservation Center Madagascar, with AArk Education Officer Rachel Rommel. Photo: R. Andrew Odum.

## Featured Frog MatchMaker project

In 2010, we launched our conservation project list, Frog MatchMaker, which now includes 49 amphibian conservation projects from 25 countries. The complete list can be searched by genus, country, project type, or by the amount of support required, and we would urge you to take a minute to look through the list and find a project that you or your organization might be able to support.

### Mountain Chicken conservation, Dominica, Caribbean Islands

The amazing Mountain Chicken, *Leptodactylus fallax*, is a large frog named because of its size and the fact that it eaten for food, and is found only in Dominica and Montserrat in the Caribbean. Across both islands, the population has declined > 95% in recent years primarily due to chytridiomycosis and this species is now critically endangered. In Dominica, the Zoological Society of London and its partners are working on population monitoring and disease surveillance to better understand how population recovery can be achieved; in country captive breeding for future re-introduction, and a large-scale conservation education and awareness campaign. They are always on the lookout for volunteers with experience in captive husbandry, community outreach and amphibian population monitoring.

If you can help, please contact Ben Tapley at [ben.tapley@zsl.org](mailto:ben.tapley@zsl.org). More information can be found on the Frog MatchMaker web site, <http://aark.portal.isis.org/Amphibian%20Partnerships/Lists/Amphiban%20partnershis/Disp-Form.aspx?ID=71>.



The Mountain Chicken, native to Dominica and Montserrat. Photo: Richard Gibson.

## Are you a budding film-maker?

We're always looking for new and fun ways to promote more awareness of amphibian conservation issues, and **we'd like to invite you to help with our latest effort!**

Images, music, sound effects and strong messages are a perfect opportunity to really make people listen to your story, and we're inviting you to get creative and develop your own one- or two-minute video to inspire people to support Amphibian Ark, and to do their bit for helping to save amphibians. So why not get cracking, get your friends together, and send us a short video.

We'll feature the best ones on our web site and YouTube channel, and will promote the best ones to a global audience - who knows, this might be an opportunity for international fame, and the start of your film-making career! We also have a copy of two fantastic books for the video voted as the best one by AArk staff - the producer of the best video will receive a copy of *Sapos* [Frogs] and a copy of *Threatened Amphibians of the World*.



Your film needs to be no longer than two minutes, and needs to include a few key items, such as why we should save amphibians, what people can do to help, and a few key facts about the plight of amphibians. We want these videos to be inspiring, but also to be exciting and have maximum impact. Here's a few ideas to get you on the right track:

- We have a belief - We know you care
- We're losing 30% of our frogs
- 30% of all amphibians are in danger of going extinct
- No one wants to lose 30% of anything
- Habitat destruction and environmental pollution are two of the major causes of amphibian declines
- Climate change and introduced species and major contributors to the loss of amphibians

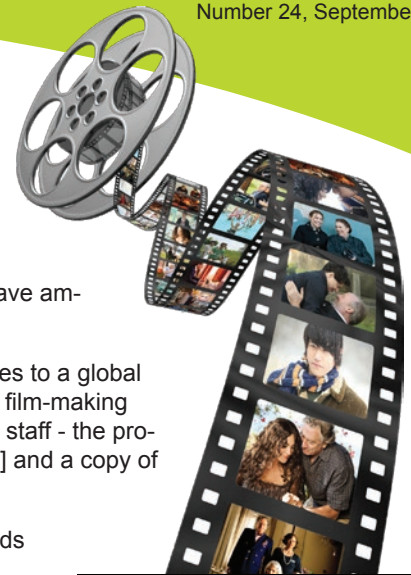
- The dinosaurs went extinct about 65 million years ago - we don't want the same thing to happen to amphibians
- Amphibians are beautiful animals
- You have the power to help
- Amphibian Ark is helping to save the most threatened amphibians
- Would you like it if an entire group of animals was lost forever?
- If we lose all our frogs, bugs (frogs' food) might take over the world!



Of course we hope these videos will also spread the word about the Amphibian Ark and the work we do, and we'd like each video to finish with something like: Please visit [www.amphibianark.org](http://www.amphibianark.org) to jump on board, donate for amphibian conservation, and find out other ways you can help!

You can find copies of the AArk logo on our web site, [www.amphibianark.org/logos/](http://www.amphibianark.org/logos/). If you need any further help, please contact [webmaster@amphibianark.org](mailto:webmaster@amphibianark.org).

**We're looking forward to seeing your amazing ideas come to fruition!**

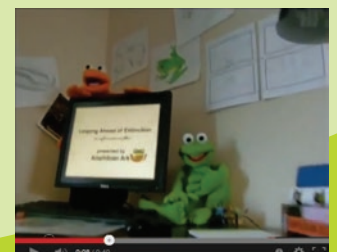


## Coming soon - Amphibian Ambassadors!

Over the coming months, we'll be featuring a great range of short videos made by Amphibian Ambassadors from around the world. These 30-second clips feature people sharing their thoughts on amphibian conservation, and the ways in which they are helping to save amphibians.

Everyone will be able to send us their own short video clips, whether you work with amphibians, or you are just passionate about saving amphibians.

**More details will be released on our web site and Facebook page soon...**





## Mountain Chicken Project Update – Dominica

**Luke Harding, Volunteer Project Worker, Zoological Society of London**

The Dominican Mountain Chicken Project is a collaboration between the Zoological Society of London (ZSL) and the government of the Commonwealth of Dominica to save the Critically Endangered frog, *Leptodactylus fallax*, from extinction.

The Mountain Chicken (known in Dominica as the Crapaud) is a cultural symbol of Dominica. It forms part of the coat-of-arms and is used as a logo by several important Dominican institutions, including the National Bank of Dominica.

In 2002 Dominica experienced the first rapid decline of the Mountain Chicken populations due to arrival on the island of the deadly fungal disease amphibian chytrid. This disease wiped out an estimated 80% of the population within eighteen months. Other threats to the Mountain Chicken population include habitat destruction and degradation, mainly due to human population growth and poor land management, and hunting (although hunting is now illegal, some incidents still occur).

In response to the declines a captive breeding facility was constructed in 2007 at the Botanical Gardens in the island's capital of Roseau. It is imperative that there is capacity on Dominica to care for the frogs, and to this end, staff from the Commonwealth of Dominica, Ministry of Agriculture, Fisheries and Forestry, Wildlife and Parks Division were trained in the captive husbandry of Mountain Chickens at London Zoo in England and Durrell Wildlife Conservation Trust in Jersey.

Mountain Chickens have a voracious appetite; therefore the most important husbandry aspect to address was that of providing adequate food. In captivity these gargantuan frogs can gobble down an astonishing 100 adult field crickets a week. Invertebrate colonies were set up using native species (non-native invertebrates could not be used as there was a real risk that they could establish on the island and become new pest species).

Four years after the Dominican facility was constructed, and with live food cultures running successfully, preparations were in place for an in-country captive population, and the facility now houses eleven frogs (four females and seven males). The animals were given twelve months to settle into the facility and in this time the younger individuals have attained sexual maturity and put on weight. This year we had the first indications of breeding. Females produced foam nests and interaction was observed in the nest sites and although no fertile nests have been produced in the facility so far we are optimistic about next year's breeding season.

As well as the increased efforts to breed the frogs at the facility another important angle of the project that we have been focusing on is public outreach and engagement. The main objectives of the project's public outreach program are to increase knowledge about the plight of the Mountain Chicken, to get people passionate about Mountain Chicken conservation, and to get people in Dominica directly involved in the project. There are many different approaches and methods that have been used to help achieve these objectives. One approach is the public outreach campaign launched in 2011 entitled *Have you seen me? Have you heard me?* which has been publicised on national radio, TV and via public presentations. The campaign was supported in the 2012 carnival with a dance troop promoting the project and enforcing the *Have you seen me? Have you heard me?* message on their T-shirts. This campaign continues to develop with new events and ideas being implemented whenever possible.

Further to the *Have you seen me? Have you heard me?* campaign, Fisheries and Forestry staff and ZSL staff have participated in a number of other activities which include visiting schools to raise awareness and discuss Mountain Chicken conservation. Larger public events have also served to raise awareness, such as a Mountain Chicken hike (August 31st) and the first annual Mountain Chicken Day are planned for September 13th.



A Mountain Chicken at the breeding facility built at the botanical gardens in Dominica.  
Photo: Ben Tapley.



A key area to the outreach is the involvement from local contributors; generating a sense of local ownership of the project's goals and activities. Recently a talented local poet published a poem in support of the project called the "Crapaud Story" and collaboration with local artists has taken place to help use local talent and business to develop interest in the project.

As well as people-led outreach, interpretation boards have been put up around the botanical gardens, educating people about the Mountain Chicken and encouraging people to report to the forestry department if they have seen or heard a Mountain Chicken. New information signage and information display tables have been created for the local information centre within the botanical gardens. A number of flyers and leaflets have been developed on the project, and are distributed across Dominica, focusing on the target areas where Mountain Chickens are found.

It is vital that the outreach program is properly evaluated and continually developing. With the recent surge in the number of people that use social media sites like Facebook the decision was made to make a page for the project, entitled Dominican Mountain Chicken Project. ([www.facebook.com/pages/Dominican-Mountain-Chicken-Project/136933839835254](http://www.facebook.com/pages/Dominican-Mountain-Chicken-Project/136933839835254)). This page makes the project and the outreach information easily accessible to a new audience. A huge target audience has been reached for very little initial outlay. Resources can be made available online which reduces costs associated with outreach work. This technology-based approach has already proved a success, especially with the younger generation, with over 750 followers, and an average reach of 7,000 as of early September. In addition to the Facebook page, a project website [www.mountainchicken.org](http://www.mountainchicken.org) (for the Mountain Chicken Project, including work in Montserrat) including a blog ([www.mountainchicken.org/latest/](http://www.mountainchicken.org/latest/)) offer another outreach avenue.



Some of the hikers at the Mountain Chicken hike, an event designed to raise awareness about the plight of the Mountain Chicken. Photo: Luke Harding.

The final element to the project is the field work and we have seen some encouraging signs so far this year. There have been reports of frogs heard in areas that they have not been heard in since the 2002 chytrid outbreak. The number of frogs is still extremely low but there is evidence that the frogs are breeding in the wild and the capture of healthy juveniles gives hope that there is still a chance for this species to survive on Dominica. In late 2013/early 2014 there will be an increased effort to survey and monitor the populations of Mountain Chickens on Dominica as part of a PhD study and it is hoped that this will lead to a clearer picture of what is happening and plans for the future survival of this species can be further developed.

The Dominican Mountain Chicken Project is dedicated to the long-term survival of the remaining populations of Mountain Chicken frogs on Dominica. A recent Recovery Plan workshop held in Montserrat has developed a twenty-year plan to achieve this goal. Continued financial support is key to the future success of this project. The battle to save any species is never an easy challenge and there is no guarantee of success but there is hope that the Mountain Chicken frog can be saved from extinction.

You can help support this project - find out more from AArk's Frog MatchMaker database, <http://aark.portal.isis.org/Amphibian%20Partnerships/Lists/Amphiban%20partnershis/DispForm.aspx?ID=71>.



Thirty-nine White-bellied Frogs were successfully reared at Perth Zoo and were released in the south-west of Western Australia at a site near Margaret River in September 2012. Photo: Perth Zoo.

## Update from Perth Zoo

**Debbie Read, Media and Communications Manager, Perth Zoo, Perth, Australia**

With valuable support from the South-West Catchments Council through the Commonwealth Government "Caring for Our Country" program, work continued on the Zoo's rear and breed-for-release programs for the threatened White-bellied Frog, *Geocrinia alba* and Orange-bellied Frog, *Geocrinia vitellina*. Thirty-nine White-bellied Frogs were successfully reared at the Zoo from wild-collected egg nests plus five captive-bred frogs and were released in the south-west of the State at a site near Margaret River in September 2012.

Twenty Orange-bellied Frogs, were also reared from wild-collected egg nests and released in the south-west near Margaret River in September. The releases are aimed at re-establishing these critically endangered and vulnerable frogs in an area where they have become locally extinct. With heavy predation of egg nets in the wild, protective rearing of egg nests and tadpoles at Perth Zoo is aimed at increasing their chances of reaching adulthood.



## Houston Toad 2013 program update

**Dr. Cassidy Johnson, Houston toad specialist, Department of Herpetology, Houston Zoo**

The Houston Toad, *Anaxyrus (Bufo) houstonensis*, has the unfortunate distinction of being the first amphibian to have been included on the US Endangered Species List, in 1973. It is currently estimated that only ~150 toads remain in the wild. Habitat fragmentation, urban development, and natural disasters continue to pose significant threats to the toad's survival. The severe drought and wildfire that plagued Texas in 2011 is believed to have destroyed almost 40% of the largest, remaining toad habitat found within Bastrop State Park, therefore, ongoing efforts to preserve and protect the Houston Toad are critical now more than ever.

After a short period of time exploring the captive care and release of Houston Toads in the 1980's, the Houston Zoo renewed its efforts to help protect and conserve the toad in collaboration with Texas State University, US Fish and Wildlife Service, and the Texas Parks and Wildlife Department. In 2006, a 1,200 square-foot Houston Toad quarantine facility was constructed which allowed for the upkeep and housing of toads for captive assurance colonies and breeding. The facility additionally provides a secure location for the head-starting of wild-collected egg strands. Currently, the Houston Zoo toad facility holds 641 toads. Of these toads, 385 were brought into the facility from the wild and represent 15 unique egg strands from Bastrop and Austin counties. The remaining 256 toads are the offspring of reproduction events between the wild individuals.

Between 2007 and 2010, we head-started thirty-one partial egg strands and put nearly 20,000 Houston Toads back into the wild at ten different sites in three counties. Unfortunately, head-starting was not possible between 2011 and 2012 due to space constraints in the facility and environmental conditions (drought and wildfire). Fortunately, 2013 has been a much different story, and in March, 711 adult Houston Toads that were originally head-started in 2010, but not released, were finally returned to the wild on private land in an area outside of Bastrop State Park. The exodus of this large number of toads from the facility allowed us to finally resume our primary role as a head-starting and breed-and-release program, which had been on hold for several years.

Because the adult release occurred in the middle of the Houston Toad breeding season (Houston Toads start breeding in early February after the first heavy rain) we opted to release eggs because of the rapid turn-around time. By the first week in May, we had successfully bred and released eggs from ten out of thirteen breeding pairs, producing approximately 36,000 eggs. The eggs were placed into wire cages that were designed to exclude most predators (aquatic invertebrates, fish and birds), and placed in ponds found within or around Bastrop State Park. Melissa Jones, a Texas State University graduate student in Dr. Mike Forstner's research group, was instrumental in the egg releases and will be monitoring all of the release sites as part of her dissertation work.

In addition to the adult and egg releases, we also released 206 juvenile toads in the Bastrop area. The tiny toadlets were "extras" from metamorphs we kept back for captive propagation from the eggs releases. The toad facility at the Houston Zoo did not participate in any head-starting this year; however, Texas State University successfully head-started four egg strands that were later returned to Bastrop State Park. It has been a good season for Houston Toads!



Houston Toad egg strands. Between 2007 and 2010, the Zoo head-started thirty-one partial egg strands and put nearly 20,000 Houston Toads back into the wild. Photo: Cassidy Johnson.

Education and public outreach continues to be a priority for our program. Last Spring we were very fortunate to have an opportunity to host a workshop entitled "Houston Toad research collaborative" at the University of St. Thomas, which is a local, minority-



Houston Toad eggs being put into cages that are designed to exclude most predators (aquatic invertebrates, fish and birds). The cages are then placed in ponds found within or around Bastrop State Park. Photo: Cassidy Johnson.





Toads were placed in natural-looking enclosures for a few days prior to release, at a research station managed by Texas State University. Photo: Cassidy Johnson.

serving institution (see the last edition of the AArk Newsletter for more information, [www.amphibianark.org/Newsletters/AArk-newsletter-23.pdf](http://www.amphibianark.org/Newsletters/AArk-newsletter-23.pdf)). The focus of the workshop was to demonstrate how molecular biology techniques can be used for conservation. Students got a hands-on laboratory experience using Houston toad DNA, visited the Houston Toad facility at the Zoo, and also participated in a habitat restoration project at Sheldon Lake State Park. This summer Houston Toads participated in the Endangered

Species Day hosted by the Houston Zoo, as well as the Lady Bird Johnson Wildflower Center's wildly popular "Nature Nights" program in Austin, Texas. We additionally hosted a contest for Seabrook Intermediate School's "Future Think" science magnet program that challenged students to design an interesting and informative public service announcement concerning the plight of the Houston Toad.



A calling male Houston Toad. Photo: Rachel Rommel.

Though we consider this past year a success for the program, we know that our work is far from done. The estimated survivorship of eggs and larva is less than one percent, therefore, in order to reach our ultimate goal of 1,000 adult toads in the wild, we must significantly increase the number of eggs we are returning to the environment. We recently completed a much-anticipated transfer of adult Houston Toads from our facility to the Dallas and Fort Worth Zoos, and are now very excited that both of these institutions are gearing up to assist us in our breeding efforts next Spring. It is our goal to make 2014 the year of the Houston Toad!



## Large-crested Toad release in the North Sierra of Puebla, Mexico

**José Alfredo Hernández Díaz, MSc., Curator of Reptiles and Amphibians, Africam Safari, Puebla, Mexico**

In the last edition of the Amphibian Ark Newsletter ([www.amphibianark.org/Newsletters/AArk-newsletter-23.pdf](http://www.amphibianark.org/Newsletters/AArk-newsletter-23.pdf) or [www.amphibianark.org/Newsletters/AArk-newsletter-23-Spanish.pdf](http://www.amphibianark.org/Newsletters/AArk-newsletter-23-Spanish.pdf)), we wrote about our two successful breeding events with the Large-crested Toad, *Incilius cristatus*, at Africam Safari in January and March. We also talked a little about the next actions that we were planning to take in the conservation program. Now we want to share with amphibian conservationists the culmination of the first cycle in the conservation of Large-crested Toad - the release of 137 captive-bred toads to the wild, a very important achievement for us.

However, releasing the toad's into the wild was not our only goal. We wanted to involve people from the community. So before releasing the toads, the Education Department from Africam Safari held workshops directed to school children from the community of Xocoyolo. The aim of these workshops was to create awareness among children about the importance of amphibians as environmental indicators and plague controllers, the environmental conditions they need to survive, the importance of the river and the forest and the actions they can take to protect their environment. At the end of the week, we showed children and their teachers some baby toads so they could finally meet them and feel committed to the protection of the species. This activity was held in April and after that, participants were told that we would go back and release some toads in the forest with their help.

During June we chose the toads to be released, all of them belonging to the first clutch that was produced. They hatched in January but completed metamorphosis during February and March. Their size ranged from 14-20mm and they weighed from 0.2-1.0g. The toads were submitted to medical tests and treated against chytridiomycosis to avoid introducing diseases to the wild population. They were marked using the toe clipping method. We divided them into two groups according to their size and each group was marked using a different toe so we can recognize them in future recaptures. In this way we will be able to evaluate the toads' survival according to their size.

At this point we already had almost everything we needed to release the toads. The animals were ready. They were healthy and the corresponding markings had been made. And we had already prepared the community to help us release the toads. So we were just waiting to obtain the necessary the permits, and after receiving them, we planned the release trip for early July. The releases would take us two days to allow most children to participate with us. We called the schools and asked the teachers to create two groups of children, with each group being able to walk down the rift with us one day to release the toads.

Finally the expected day came. We travelled to Xocoyolo and met the first group of children at the school yard. The first group was included almost 30 people: some primary school children, some secondary school children and the school director who was very excited about releasing the toads. We transported them from the school to the top of the rift to start walking from there, and this was a funny part of the day because of the large number of children and because we had only one truck for all of them. The second group was a bit larger, with almost 35 people, but they were all high school students and two teachers.



Before we started walking into the forest, we gave each child a plastic box with the toads he or she would release.

We walked down the rift for an hour or so, making some stops along the trail and looking for ideal places to release the toads. Each child or teacher released two toads. All the participants were very enthusiastic about the releases and they really enjoyed the moment. They also had the privilege to see some wild individuals we found on the way down. After having released all the toads we continued walking to the river where we rested for a while and some children swam a little. Then we started climbing the rift back for about two hours. At the end of the second day, we went back to Puebla, after having finally released our toads in their habitat with the hope that people from the community now identify with the species and with the responsibility of taking care of it and its habitat.

We have achieved a very important goal in our program, but there is still much to do. Our captive colony still has 260



When we met the children at the school, we explained the logistics of the toad release to them and they saw the toads in the plastic boxes.



We organized the people in small groups so each group could walk together with one person from Africam's team. We walked for one hour down the rift and for almost two hours on the way up.



We explained to the children how to manipulate the toads carefully to release them.





137 captive-bred Large-crested Toads were released to the wild in Mexico, with the release involving school children from the local community of Xocoyolo.

offspring from two different clutches, and now we are planning to rear them to a larger size and release some of them in the future. The others will be kept in our captive colony. We are also planning to continue the field work to evaluate the success of the released toads. Our next visit will be during the breeding season with the objective of monitoring the adult population, the breeding site and their clutches, hoping to find some of the toads we released. We will then continue with an annual monitoring of the wild population as well as the education program to involve people in habitat conservation. This is just the beginning but the panorama looks very promising for the Large-crested Toad.

Finally I want to thank all the people that have made this project possible. Firstly I would like to thank Amphibian Ark for supporting the project. My collaborators from the Herpetology Department of Africam Safari: José Antonio Díaz Vallejo and Julieta Contreras Rodríguez. The Education Department members: Laura Aceves, Patricia Cortés, Josué Campos, Francisco Paredes, Eva Poblano, Yasmín Otero and Carmen Linares, our photographer Edith Ramos and Africam's Director Frank Carlos Camacho.

All photos by Edith Ramos Noriega, Designer/Photographer, Africam Safari.



Once we found the right places for the release, each member of Africam's team helped children take the toads out of the boxes.



Each child had the opportunity to release two toads into the forest.



## Joining myths and science to raise awareness about amphibians in Brazil

**Izabela Menezes Barata, Instituto Biotrópicos, Minas Gerais, Brazil**

Ever since I started to attend congresses and conferences in herpetology I have listened to that story about Linnaeus and when he described amphibians in his book, *The System of Nature*. Back at that time amphibians were seen as loathsome animals. Almost 300 years have passed since his statement, and many people still have a prejudice against amphibians. Working with amphibian ecology and monitoring in Brazil I am frequently interrogated about my research projects. The most frequent question I'm asked is "*Why frogs and toads?*".

Amphibians are colorful, their bodies are built to jump, swim and crawl, they can breathe through their skin, their shapes are variable, they sing lots of songs, and they are as important to nature as we are. But the sad thing is most people don't know very much about amphibians. Few understand their importance to nature, to ecosystem balance, to biological pest control, or the services obtained from amphibians.

I keep thinking what opportunities are there for people understand amphibians better? People are curious and they want to understand, but they just don't know how to do it. That is why I started to include educational activities as part of my conservation actions, even if the project goal is not education.

In Brazil we are leaping the myth, and going forward with science. Frogs are often seen in fairytales, witchcraft and proverbs, but they are also the first contact that many children have with nature and zoology. I believe children will care about amphibians and nature if they have enough knowledge to appreciate them. If we succeed and children appreciate nature, then they will want to preserve it.

In 2010 I started an education outreach program to engage children in amphibian conservation. The program is used in at schools, once a year, between January and May. It started in one city in the state of Minas Gerais, and now it is presented in five cities.

To reach as many schools as possible, undergraduate students participate in a one-week capacity-building program to learn every aspect about amphibians, especially anurans. They learn about ecology, biology, natural history and taxonomy. With this activity we are not only teaching them more about amphibians, but we are also training undergraduates in communication and leadership. They are trained to develop a lecture about the myths and facts regarding frogs and toads. The lecture is delivered at schools and the focus on fun facts about amphibians: Are they colorful? What is metamorphosis? How many species are there in the world? Why is a frog singing near the water? How do they use their skin for breathing and protection?

By the end of the lecture children draw the most amazing thing they have learned about frogs and toads. On paper they draw what they have learnt: species diversity, shapes and colors, frogs escaping from their predators, different types of reproduction, alarming extinctions, the disappearance of frogs in the wild, and also the importance of frogs to nature.



During a series of amphibian lectures in Brazil, students draw some of the things they have learned, and the drawings are later exhibited. Photo: Guilherme Ferreira.



Izabela Menezes Barata from Instituto Biotrópicos in Minas Gerais, Brazil, giving a presentations on amphibians to local school children. Photo: Michel Bechelini.





School children in Brazil learning about amphibians from preserved specimens. Photo: Michel Becheleni.

All of the drawings are exhibited during a five-day exhibition, which is free and open to the public. Schools are invited to visit the exhibition and we provide transportation to make the visit possible to all students that participated in the activities. During the exhibition children can play a game about amphibian life cycles, see variable shapes of real frogs, hear the sounds, and see many pictures. They can touch, they can hear, they can draw, and they can play. The best of all, they can learn.

In 2012 we interviewed 182 students that attended the program and more than 80% of them understand that many things are affected if frogs become extinct. We evaluated the children's interest and motivation, and found no statistical differences regarding age, gender and grade. Answers received a score and we found a better performance of children between ten and twelve years old, which in Brazil corresponds to 5th and 7th grades. In 2013 we interviewed 470 children and we are now analyzing the data to verify if children are effectively learning about amphibians. We are also comparing the drawings made before and after the lecture, to see if they are able to diversify the subjects across this learning experience.

At the moment, thirty-one schools and two universities have joined our efforts for amphibian conservation. So far 2,075 children have participated in the project and 1,830 drawings were produced. More than 1,250 people have visited the annual exhibition, and 105 undergraduate students have improved their knowledge on vertebrate zoology and developed the ability to teach and speak in public. We are now producing a leaflet focusing on amphibian curiosities illustrated by the students.

I know that with this project we are just starting to get children involved with conservation. There are many ways to get people involved: let them participate in your scientific projects, develop fun activities in local schools, get free time to talk to people, use volunteers in monitoring programs, and involve them with citizen science projects. In Brazil, our experience has shown the importance of empowering people with knowledge. We are bringing them close to nature.

You can see a video about this program on YouTube: [www.youtube.com/watch?v=xnwOpj7gg74](http://www.youtube.com/watch?v=xnwOpj7gg74).



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