



progress report



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March 2019

AMPHIBIAN SURVIVAL ALLIANCE

NEWSLETTER



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Batrachochytrium salamandrivorans: Building an Understanding of Invasion Threat in North America with Conservation Partners

Batrachochytrium salamandrivorans (*Bsal*) is a recently discovered fungal pathogen from Asia that is emerging and causing salamander declines in Europe. Unregulated trade of infected non-native salamanders is believed to be the route of entry. North America is home to the greatest diversity of salamanders in the world. Currently, no regulations exist in North America that require pathogen-free trade of amphibians. Estimates of trade volume and pathogen prevalence suggest that

thousands of *Bsal*-infected salamanders could have already crossed U.S. borders, although to date, no positive *Bsal* detections have occurred. Risk models developed by the U.S. Geological Survey based on environmental suitability suggest that the likelihood of *Bsal* invasion in North America is high. However, these and other risk analyses have not taken into consideration the susceptibility of amphibian host species, which could affect *Bsal* invasion potential.

In 2016, a collaboration among the University of Tennessee, Tennessee Wildlife Resources Agency, and North Carolina Wildlife Resources Commission began to investigate the relative susceptibility of North American salamander species to the foreign pathogen, *Bsal*. One year later the NGOs, Liquid Spark, BAND Foundation, and Amphibian Survival Alliance, joined the effort along with researchers from University of Massachusetts, Vanderbilt University, Washington State University, and



EDITORIAL

Building partnerships leads to fascinating combinations of skills, experiences and motivations. In this issue of the Froggress Report, we learn about a collaboration between several partners (including the University of Tennessee and adventure marketing agency Liquid Spark) to combat the threat of the infectious fungal pathogen *Bsal* to North American salamanders (page 1). Frogs & Friends have teamed up with Verband der Zoologischen Gärten and the German Society for Herpetology to launch the Citizen Conservation project, helping to integrate the amphibian captive breeding community into a “One

Plan” approach for holistic conservation action (page 5). Global Wildlife Conservation and Rainforest Trust have partnered with Temple University, Haiti National Trust and Société Audubon Haiti to create Haiti’s first ever private Nature Reserve, which will protect many threatened animals, including 16 amphibian species (page 6). You will also discover how painting rocks can help your local amphibian friends (page 8), hear about Paignton Zoo’s recent success in breeding Fea’s flying frog (*Rhacophorus feae*; page 9), encounter “Jewels of the Neotropics - A Documentary to Save Poison Frogs” (page 10), and meet ASA’s fantastic Communications Intern, Luis Fernando Marin da Fonte, who tells about his experiences of amphibian conservation across Brazil and beyond (page 11).

Finally, there is still time to register for the Amphibian Conservation Research Symposium (ACRS), which

this year is taking place at the Manchester Metropolitan University, UK, on 27th-28th April 2019 (www.manchesteramphibianresearch.com) in collaboration with Chester Zoo. ACRS is a great place for members of the amphibian conservation community to mingle, learn about many fascinating research and conservation projects, and meet this year’s Future Leaders of Amphibian Conservation, who are awarded scholarships to attend and present the wonderful work they are doing in their home countries to benefit amphibian conservation. The closing date for registrations is this Friday 29th March. We hope to see you there!

Helen Meredith, PhD
Executive Director
Amphibian Survival Alliance

Universidad Nacional Autónoma de México.

“Liquid Spark is proud to that our first 1% for the Planet donation in 2016 started the seed grant for this critical early research on the *Bsal* threat to salamanders in the Great Smoky Mountains, our agency’s “backyard.” It’s extraordinarily gratifying for us to play a part in a project that ultimately has the protection of amphibian biodiversity on an entire continent – North America – at stake. Fast forward to 2019 – and key grants from federal sources have amplified this project across North America. We support Amphibian Survival Alliance (ASA) because ASA is a proven organization at the forefront of watershed and ecosystem protection. We know our donation goes immediately to work being conducted by Dr. Gray to assess the threat of this invasive pathogen in southern Appalachia. Our relationship with ASA and the

UT Center for Wildlife Health has been great; Dr. Matt Gray, the lead scientist on the Southern Appalachians project at the Center for Wildlife Health, Institute of Agriculture, University of Tennessee, Knoxville, TN keeps us apprised of recent research developments and we get to visit his team to see the ongoing experiments and learn how that research translates to field applications. This is a transparent, meaningful conservation partnership at its very best,” said Julie Thorner, president, Liquid Spark, Inc.

This initial collaborative effort resulted in testing 29 North American amphibian species to *Bsal* infection and development of the disease, *Bsal* chytridiomycosis. In biosecure environmental chambers, salamanders of these species were exposed at the University of Tennessee to one of four *Bsal* zoospore doses (103-6), and their condition monitored for at least six weeks. Because

Bsal is a skin pathogen, the team swabbed animals every six days after pathogen exposure to estimate *Bsal* infection intensity. Of the species tested, approximately 75% became infected and 30% developed *Bsal* chytridiomycosis. Generally, dose-dependent infection prevalence and mortality were observed in susceptible species. Gross signs of *Bsal* chytridiomycosis included necrotic ulcerations that penetrated through the epidermis and sometimes into granular glands with occasional focal hemorrhaging. In addition, diseased salamanders demonstrated excessive skin shedding and altered behavior. Susceptible species that developed *Bsal* chytridiomycosis and experienced mortality included five lungless salamander species (Family Plethodontidae) and four newt species (Family Salamandridae). In particular, several species of conservation concern (e.g., Green salamander, *Aneides aeneus*; Striped newt, *Notophthalmus perstriatus*)

developed *Bsal* chytridiomycosis. In addition, some abundant species with large geographic distributions (e.g., Eastern newt, *N. viridescens*; Rough-skinned newt, *Taricha granulosa*) were very susceptible, and could contribute significantly to the amplification and spread of *Bsal* in North America. Seven additional salamander species in Plethodontidae, Ambystomatidae, and Cryptobranchidae maintained *Bsal* infections without disease developing, and could serve as carrier species. The team also documented that some frogs species could become infected with *Bsal*, illustrating the host range of *Bsal* is broader than previously thought. Several species that became infected with *Bsal* are traded internationally (e.g., Mexican axolotl, *Ambystoma mexicanum*), and could facilitate translocation of *Bsal* into naïve locations, such as North America. Nine amphibian species tested were resistant to *Bsal* infections, which is hopeful, and could provide insight into developing disease treatment and management strategies.

“The invasion of *Bsal* into North America would be devastating and could result in cataclysmic biodiversity losses that exceed the impacts of *Batrachochytrium dendrobatidis* and *Pseudogymnoascus destructans*

– two other invasive fungal pathogens known to kill wildlife species,” said Matt Gray with the Center for Wildlife Health, Institute of Agriculture, University of Tennessee. Our results suggest that most North American amphibian communities will be composed of a combination of amplification, tolerant and resistant host species, which will facilitate the emergence, spread and maintenance of *Bsal* in the western hemisphere if the pathogen is introduced. Natural resource and wildlife health agencies should deem the introduction of *Bsal* into the USA, Canada and Mexico as a serious conservation threat, proactively establish regulations to reduce the likelihood of introduction, and support research and planning activities that evaluate disease response and management strategies that could fight an invasion if *Bsal* emerges in North America.

“*Bsal* represents an existential threat to salamander species in North America. Salamanders are not often seen, yet they perform vital ecosystem services. The work performed by Dr. Matt Gray is vital to understanding the risk posed by *Bsal* to salamanders. Support from Liquid Spark and other organizations is an example of how the private sector, NGOs and wildlife disease

experts can come together in the effort to control an invasive wildlife disease,” said Reid Harris, director of international disease mitigation, Amphibian Survival Alliance.

Recent federal grants by the U.S. National Science Foundation (Division of Environmental Biology, Ecology of Infectious Disease Program, Grant #1814520) and U.S. Fish and Wildlife Service (competitive state wildlife grant TN-U2-F19AP00047 awarded to Tennessee Wildlife Resources Agency) are helping expand research on *Bsal* in North America. More information of the *Bsal* project led by the University of Tennessee is available at: <https://ag.tennessee.edu/fwf/bsalproject/>.

Matthew J. Gray, Ph.D.

Center for Wildlife Health, Institute of Agriculture, University of Tennessee, Knoxville, TN, mgray11@utk.edu





ACRS

Amphibian Conservation Research Symposium

Amphibian Conservation Research Symposium 2019

27-28th April 2019

Manchester Metropolitan Business School, Manchester, UK

Keynote speakers:

Helen Meredith (Amphibian Survival Alliance)

Brad Wilson (Atlanta Botanical Gardens)

Luis Coloma (Centro Jambatu)

Jamie Voyles (University of Nevada)

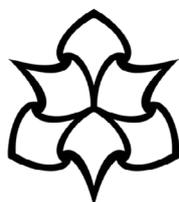
Early bird registration closes **28th February 2019**

Normal registration closes **29th March 2019**

Abstract deadline for a talk or poster **29th March 2019**

For more information and to register, visit:
www.manchesteramphibianresearch.com

The **Future Leaders** of Amphibian Conservation award is returning to ACRS 2019. Visit the above website for more information.



**Manchester
Metropolitan
University**



Citizen Conservation: Reinforcing the One Plan Approach



We all know about the devastating predictions regarding species extinction. And we also know that we'll only succeed in slowing down the grim trend if all stakeholders committed to conservation work together in a cooperative and open-minded way.

From the very beginning, Frogs & Friends has collaborated closely with zoos and private amphibian enthusiasts. These two stakeholders have a wealth of knowledge and experience in captive breeding. Zoos have been working for decades to establish well-coordinated, scientifically led breeding programs for a variety of species, while private experts have built up expertise in fostering a variety of species.

New insights prompt new ideas. In the light of the massive extinction event we're facing, and in the spirit of the One Plan approach, we are convinced that captive breeding programs must be an essential part of any strategy to preserve biodiversity. That is why Frogs & Friends teamed up with the VdZ (Verband der Zoologischen Gärten) and DGHT (German Society for Herpetology) to jointly launch what we see as the next important step: the Citizen Conservation project. Citizen Conservation aims to help solve two major problems:

First, extinction of species: If we want to save a relevant number of threatened species, we'll have to quickly expand the amount of available space and the number of knowledgeable caretakers. Zoos won't be able to achieve this goal on their own.

Second, public misconceptions about captive breeding: Zoos and private breeders are facing significant opposition at both a societal and a legislative level. If we want to safeguard our potential to help solve the existing challenges in the field of biodiversity loss, we have to convince society of the importance of our work.

Citizen Conservation, therefore, has to be two things from the very beginning: a breeding program and a campaign. We have to make it clear that captive breeding is part of the solution, not part of the problem – and we'll have to prove it.

For the last three years, we've been busy with preparations, interviewing dozens of captive breeding stakeholders, marketing professionals, and media experts to create a viable framework for the project to succeed. One key insight was that almost all stakeholders suffered from a perceived lack of acknowledgment for their efforts by the public and

even by the conservation community. Consequently, reframing this upside-down perception of captive breeding must be the key target of the Communication Campaign.

With Citizen Conservation #Amphibians we have now started a five-year pilot phase that will help us test and improve our organizational structure and procedures, management and participation guidelines, marketing and communication strategy and, of course, funding. This process of evaluation and adjustments will give us a solid base on which to build as we scale up Citizen Conservation both geographically and taxonomically.

The program currently includes five species. We have plans to expand to between 10 and 15 species within the next four years. Meanwhile, we hope to be able to open up the first Citizen Conservation Centers in zoos. These will serve as training centers, breeding facilities and give volunteers a chance to get involved. It is a quite ambitious agenda. However, we are optimistic that it will soon be clear that the benefits far outweigh the obstacles--and that Citizen Conservation will demonstrate its potential to effectively contribute to our shared task: finding effective ways to slow the extinction crisis.





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Haiti's First-Ever Private Nature Reserve Will Safeguard Treasure Trove of Imperiled Species

In an historic move, Global Wildlife Conservation (GWC) has joined forces with several partners to establish the first private nature reserve in Haiti. The project—in partnership with Rainforest Trust, Temple University, Haiti National Trust and local NGO Société Audubon Haiti (SAH)—launched this week with the final acquisition of more than 1,200 acres on Grand Bois mountain, home to a remarkable 68 vertebrate species. This includes many species threatened with extinction, such as Ekman's magnolia tree, the Yellow cave frog and the Tiburon streamfrog.

“With less than one percent of Haiti's original forest left, the country is on the verge of a potential ecological collapse,” said GWC Chief Scientist and CEO Wes Sechrest,

who is also on Haiti National Trust's board of trustees. “We knew that we needed to take action to protect the country's staggering diversity of unique and threatened species, many of which are found only in Haiti. Global Wildlife Conservation has partnered with Haiti National Trust to directly protect, manage and restore this high-priority conservation site in an effort to begin to turn the tide of centuries of unregulated environmental destruction.”

S. Blair Hedges, director of Temple University's Center for Biodiversity, in collaboration with Société Audubon Haiti President Philippe Bayard, led two expeditions to Grand Bois during the last seven years. The team documented 68 species of vertebrates, including 16 amphibian species, giving this area the distinc-

tion of being home to one of the largest groupings of frog species anywhere in the Caribbean.

One of the species, the Tiburon streamfrog, had not been seen in four decades despite intensive search efforts. The stream frog is a unique lost species that made an evolutionary reversal to an aquatic lifestyle after its ancestors evolved traits for living in the forest. The expedition team discovered three new frog species, all of which the IUCN Red List of Threatened Species will likely classify as critically endangered once they have been scientifically described.

Mirroring what is happening across Haiti, Grand Bois's forests are being cut for building materials, slash-and-burn agriculture and charcoal.



© Global Wildlife Conservation/Robin Moore

At least 50 percent of the original forest on Grand Bois, however, is still intact above 1,000 meters. The expedition identified Grand Bois as a biodiversity hotspot and in response, the government of Haiti declared it a national park in 2015, Parc National Naturel de Grand Bois, recognizing it as a priority for conservation and confirming the critical need to acquire and protect the area. The local community has been incredibly supportive of maintaining the natural ‘water tower’ of the forested mountain, as nearby peaks have been deforested, resulting in landslides and lack of controlled and clean water in natural forests.

“That Grand Bois and two other areas were named as national parks based on our work has been very gratifying,” Hedges said. “Now with funding from Global Wildlife Conservation and Rainforest Trust, we are beginning the process of land purchase and management to build

a network of private nature reserves in the country.”

Repeated scientific expeditions have identified Haiti’s 12 remaining hotspots for wildlife diversity, of which Grand Bois was considered the highest conservation priority because of existing forest habitat and imminent threats. Haiti National Trust is working to implement a forest management and restoration plan for Grand Bois Nature Reserve, with funding from GWC and Rainforest Trust, and to raise support to build the network of private nature reserves.

“When I first landed on Grand Bois mountain with Professor Hedges, I immediately thought that a new strategy had to be found to preserve the plants, animals, and ecosystem services such as clean water and protection from flooding,” said Bayard who, together with Hedges, founded Haiti National Trust to preserve the country’s natural

environment and biodiversity. “The species will never come back if we lose them.”

Grand Bois is found in Haiti’s Massif de la Hotte mountain range, the number one priority conservation site in the country and one of the most important sites for amphibians in the world. Because 19 critically endangered amphibian species are restricted to this single site globally, Massif de La Hotte has been recognized as an Alliance for Zero Extinction site. It is also a Key Biodiversity Area, a nationally identified site of global significance for biodiversity.

This work was made possible by a generous donation from the Sheth Sangreal Foundation.



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The Family Pond: A Creative Approach to Amphibian Conservation Awareness



It can be simple, fun, and rewarding being an ambassador for our often overlooked friends: the amphibians! But with a little creativity, you and your family can make a big splash! Enjoyable family activities can have an impact on amphibian conservation and can create a ripple effect across generations. It can bring the common interest of conservation into your personal relationships. It can also make your family more environmentally conscientious and contribute to amphibian conservation all while having family fun! When you find yourself wondering, "What can we do today?" the answer may be as simple as painting a rock.

A campaign called Amphibian Conservation Rocks takes this idea head-on. This family-oriented campaign was introduced in 2018 by Trinity Favazza, an eleven-year-old with a passion for amphibian conservation and awareness. Trinity has found a unique way to bring families together using a fun and creative approach to spread the word about amphibian conservation. Finding a way to reach and impact the younger generation is the key to sustainability in a movement to protect our natural resources. This campaign brings families together with a simple, enjoyable and effective activity, and it toad-ally rocks!

The Amphibian Conservation Rocks campaign encourages families to paint amphibian-themed rocks together. It is an excellent activity for those days when the weather keeps you indoors. You can add simple information, such as a specific species status, a fact, or just a word like "conservation" to your rocks. Consider tying cards onto your rocks with more information if the mood strikes you.

The bottom line is to try to share your artistic creations along with some fun and interesting amphibian facts. This will inspire those who find your rocks to tell their families and friends about the cool rock they found! Seeing this painted rocks campaign becoming a trend with families can make for a huge leap forward in the future of amphibian conservation awareness! The idea is to leave your painted rocks around your community for others to find, to remind them of our amphibian resources, to share information with family, and friends and to inspire others to do the same. You may even consider getting your local nature centers, zoos, and/or schools involved.

Taking the time to post photos of your Amphibian Conservation Rocks on social media is a great way to make new friends and help introduce this campaign, one rock at a time. Don't be afraid to show your creativity, no matter your skill level... the amphibians will always love what you are doing.

Spending time together, outdoors, hiding your painted amphibian rocks at local hotspots and parks makes for great family time. Invite your friends and their children to paint with you and even suggest it as an activity for your babysitter while you are out. Simply researching the amphibians you are painting

and writing a little bit about them will lead you and your children to become ambassadors for amphibian conservation! As your knowledge grows, you will be more driven and better-equipped to share useful information with others. If you instill that passion in others, it will grow exponentially.

The more we share our love and concern for amphibians, the greater the impact we make. Just remember to have fun, paint amphibian rocks, spend time with your family, be creative, and spread the word, ribbit, ribbit, ribbit...

"The Family Pond is a segment that our family will continue to fill with fun and creative Ideas, to reach others... one pad at a time until the pond is full," said Thomas Favazza.





© Paignton Zoo/ Eleanor Stobbart

Big Frog, Little Frog

Frogs come in all shapes and sizes – as these two demonstrate. Paignton Zoo photographer Eleanor Stobbart took this stunning image of a young Thao whipping frog on top of an adult of the same species to mark World Frog Day, on Wednesday 20th March. The species has just bred at Paignton Zoo for the very first time.

Like so many species of exotic frog, this one goes by different names. It's the Thao whipping frog, Fea's tree frog, or Fea's flying frog... The one thing we can agree on is the scientific designation, *Rhacophorus feae*. The whipping part of the name comes from the way the females use their back legs to whip up foam to make a nest for their eggs. Thao comes from the Thao river, which flows through China and Vietnam. The Thao whipping frog is found in parts of China, Laos, Vietnam, Thailand and Myanmar.

How did the keepers go about breeding this species? Senior Paignton Zoo keeper Dr Katy Upton explained: "This is our first time breeding them. We raised the temperatures by a couple of degrees and moved them into a larger specialist breeding enclosure, then increased the humidity and sprays. The enclosure is half water with a land area planted with bamboo and large bamboo canes for them to sit on. Within a couple of days of being in this enclosure they spawned!"

There is currently no European Endangered species Programme or studbook for the species. Katy again: "There are other collections working with this species – this is not a UK first but it is still another great achievement for Paignton Zoo!" This is one of the largest tree frogs in the world. It's known as a flying frog – but can it really fly? Honestly,

no. But it has long toes with strong webbing between; it can drop from a tree and slow its fall to a glide (a trick known as 'parachuting'). It's not really flying, but it is pretty impressive falling.

Its natural habitat is tropical forest, rivers, swamps and irrigated farmland; it breeds on quiet, shaded reaches of mountain streams. Their frothy nests tend to be near or above the water, and the tadpoles drop into the water when they hatch. This species is threatened by habitat loss and collecting for food.

PAIGNTON
ZOO
THE KING OF ZOOS



Jewels of the Neotropics - A Documentary to Save Poison Frogs

As recent research suggests, the skin of many frogs is a potential global pharmacopeia for the treatment of certain medical conditions such as pain or Alzheimer's Disease. It is this characteristic, a remarkable skin, that draws attention to anyone who runs into a frog of the Dendrobatidae family. Commonly known as poison frogs, many of the species in this large family have a very vivid skin color that warns its predators of highly toxic or, at least, irritant substances present in the outer layer of their bodies. This phenomenon, called aposematic coloration, is what hypnotized many people like us, germinating in our interior a real passion and dedication for these delicate beings.

In March 2016, during a trip to Panama in search of the different morphotypes of *Oophaga pumilio* in their natural environment, we had the opportunity to observe how their habitat was being destroyed. Trees 30 meters high, whose trunks were home to countless lives were being cut down to open new routes through almost virgin forest to build houses to the increasing demand for accommodations for wealthy people who wanted a home in paradise. A paradise that, ironically, was being destroyed to (un)welcome them.

With each tree felled, hundreds of species including plants, invertebrates, birds, reptiles and amphibians, were stripped of their true Eden forever. In the depth of that panorama, we continued to hear the cry of the Howler monkeys (*Alouatta palliata*) and the claims of the Strawberry poison frog (*Oophaga pumilio*). Our perspective changed during that trip. We could not help feeling the weight of a gray pessimism on our backs. Towards the end of our trip, we realized that there was some hope: a biological station, a recycling plant in the middle of the main island and even an ecological coffee farm whose owner had deliberately increased the number of bromeliads in his lands to favor the reproduction of dendrobatids in the area. Something could be done, and we were willing to contribute. At that time, we started recording what we saw and what we would like to be changed. Maybe a post on a social network could work, perhaps a campaign on any platform could gain enough strength... but why not to propose a crowdfunded project that unites poison frogs fans and those with initiatives and active projects to save these very specific amphibians? And that's how *Poison Dart Frogs, The Documentary Project* was born. It has now gone

further than we could have imagined at that time.

Thanks to the support received by all those people who believed that telling this story could provide that grain of sand so fundamental for changes to be possible, we undertook an unprecedented trip in our lives with the ultimate goal of making an audiovisual project to show how different initiatives are saving dendrobatids: from BioTrade as an alternative to black and grey amphibian markets, to *ex situ* and *in situ* conservation at amphibian arks and private reserves, respectively.

I am grateful to all our 101 Kickstarter backers. Thanks to Brian Kubicki (director of C.R.A.R.C), Candace M. Hansen-Hendrikx (Director of Operations Amphibian Survival Alliance), Carlos Galvis (Head of the Section of the Biology Area of the Zoological Foundation of Cali), Dendrobates España, Giovanni Chaves (Fundación Ecodiversidad Colombia), Giovanni Onore (Founder of Otonga Foundation), Josh's Frogs, La Y Griega, Lola Guarderas (General Manager of Wikiri), Luis Coloma (Director of Jambatu Center) and Mist King. This project would not be possible without Jane Goodall's reasons for hope.



Q&A with Luis Fernando Marin da Fonte

Meet Luis Fernando Marin da Fonte, ASA's Communication Intern!

What got you interested in amphibians?

I have always been amazed by what is different and exotic, by everything out of the ordinary. And that was what drew my attention to amphibians in the first place. I was amazed by their singularity, the things that make them so unique among other animals. I was also intrigued by the reason why these animals, so inoffensive and harmless, can be so feared and disliked? I wanted to know how threatened they were, and what I could do to help protect them.

What projects have you been involved in to promote amphibian conservation?

Since 2010 I have been involved in the Admirable red-belly toad (*Melanophryniscus admirabilis*) conservation project. It is a Critically Endangered microendemic species from the southern Brazilian Atlantic Forest that until recently had been threatened by the possible imple-

mentation of a small hydroelectric power plant. Working with a multi-disciplinary and multi-institutional team, we were able to prevent the construction of the hydroelectric. In Germany, I have also helped with a project on the Fire salamander and the highly deadly chytrid fungus *Batrachochytrium salamandrivorans*. Moreover, since 2015 I am a Program Officer at the IUCN SSC Amphibian Specialist Group for Brazil. Over the last years, we have conducted a massive review of the conservation activities involving amphibians in our country, and have organized the I Amphibians in Focus (ANFoCO): Brazilian Symposium on Amphibian Conservation (held in São Paulo in August 2018). Since 2017 I have been involved in the Giant of the Pampas initiative, an international effort aiming for the conservation of the Ornate horned frog (*Ceratophrys ornata*) in Argentina, Uruguay, and Brazil. Finally, since the end of 2018, I have been collaborating with the Amphibian Survival Alliance as a Communication Intern, taking care of the ASA social media channels.

Can you tell us a little about your Ph.D.?

I am currently finishing my Ph.D. at the Universität Trier, in Germany, on the diversity of amphibians in the Amazonian floodplains, with a focus on the influence of floating meadows as promoters of long-distance dispersal.

What are you currently working on for ASA?

Currently, as a Communication Intern, I take care of the ASA social media channels (Facebook, Twitter, and Instagram). Our primary focus is to highlight the fantastic work conducted by our partners, to publicize opportunities (grants, jobs, prizes, events, etc.), to share recent news on amphibian conservation and to raise awareness about these amazing creatures.

What is your favourite amphibian species and why?

Hard to say, since I have worked with amazing species such as the Admirable red-belly toad. Oddly enough, I think my favourite species is the Montevideo treefrog (*Boana*

pulchella), one of the most common amphibians in the South of Brazil, where I come from. It has the most beautiful vocalization I have ever heard! They can call even at extremely low temperatures and very often its amazing choirs are the only sound to be heard throughout the cold winter nights.

Do you have a funny anecdote from your work with amphibians that you can share?

In 2009 I was searching for frogs with a good friend in the Southern Brazilian countryside. Though it was very cold outside, we heard a vocalization that I've never heard before coming from a small swamp next to a soybean plantation. Full of excitement, we soon spotted that small Striped treefrog (*Boana caingua*) calling from the top of the single tree in the place. But it was too high for us, so I had to climb on the shoulders of my friend to be able to reach the animal. It must have been a funny scene, although there was no one to see it: a guy with water on his knees holding another one

on his shoulders in a cold night in the middle of a soybean plantation! But it was worth the effort. It was a new register to that region. To take pictures in sunlight, we brought the treefrog home. Inside the car, on our way back, we heard music and when the radio played The Salmon Dance, a song by The Chemical Brothers, the treefrog started singing along to it! We were amazed! Other songs played, and the treefrog did not react. So we played The Salmon Dance again, and he vocalized again! Have you ever heard of an amphibian that liked pop songs?

What can we all do to help raise awareness of amphibians and their plight?

Before trying to change the world, let us try to change ourselves. And we can only do that by learning. The only problem with education is that knowledge brings responsibility. Currently, there is plenty of evidence that human meat-eating habits are significant drivers of climate change, deforestation, and pollution of terrestrial and aquatic ecosystems.

Therefore, if we are worried about the future of amphibians and other wild animals, we should start by raising awareness of this topic and reducing our consumerism. I believe only education can give us a brighter future. People will only respect (and therefore protect) what they know, understand and identify themselves with. We have to teach children and adults about the importance of protecting the environment and, in our case, the amphibians. We have to put an end to the belief that frogs are disgusting, dangerous and associated with the dark side, to witchcraft. We have to show that they are beautiful and essential to the environmental balance; and for those who seek for an anthropocentric purpose for animals, we need to show that amphibians are also important to humankind. If you love amphibians and want to help protect them, so learn, learn, learn! And then tell other people what you have learned, show them how beautiful and important these animals are. Help educate and raise awareness!

