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## Amphibian Ark Conservation Grants – We're calling for proposals!

AArk has offered grants since 2009 and in the past, these have been predominantly seed grants, for newly created *ex situ* programs for species that have been assessed as in need of urgent *ex situ* rescue.

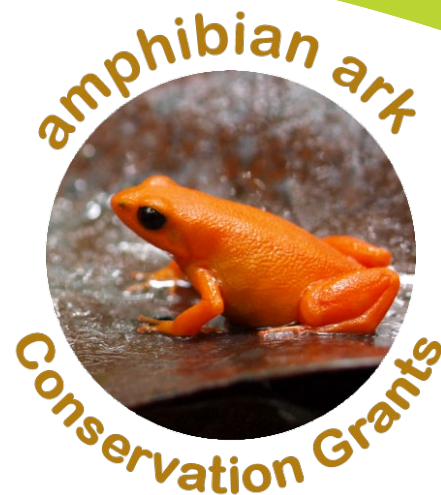
In 2018 our grants program was expanded, to include a wider range of programs types that are eligible for funding, as well as some new guidelines and requirements for grant recipients. Download the complete guidelines from [www.amphibianark.org/grants/AArk-Conservation-Grants.pdf](http://www.amphibianark.org/grants/AArk-Conservation-Grants.pdf).

We will be accepting Project Outline funding applications (see below) for the following types of grants from 15th March 2019:

- **Start-up grants** – initial funding to help newly-launched projects get started at the very beginning of their life, to help them attract larger and/or long-term funding for the duration of the program. We will not fund projects that are already well-established or have significant funding, although we will consider projects with funding in place for complementary components (such as fieldwork or education). One-time grants of up to US\$5,000 are available. Recipients are able to apply for second and third year extension grants.
- **Start-up grant extensions** – additional funds are available to provide continued support for AArk seed or start-up grant projects that a) have met their stated objectives for year one, and b) can demonstrate that additional supplemental funds have been secured for years two and three. Recipients of funding from the AArk in 2016-2018 are eligible to apply for these extensions. Grants of up to US\$4,000 for year 2 and US\$3,000 for year 3 are available.
- **Workshop attendance** – partial funding to assist attendance at *ex situ* amphibian conservation-related workshops, especially those which focus on amphibian husbandry, planning and reintroduction. Applicants must have already secured partial funding to attend the workshop. You must already be actively involved in an amphibian conservation project or have well-developed plans and funding in place to implement a new program. Grants of up to US\$750 are available.
- **Mentorship grants** – support for organizations which have previously received an AArk seed or start-up grant, to bring in a designated outside expert to assist with an aspect of their amphibian conservation efforts (e.g. veterinary training, environmental control etc.). Grants up to US\$1,500 are available.

**All applicants are required to submit a brief Project Outline, prior to submitting a full application.** Your Project Outline should be less than 200 words in length and should contain information under the following headings: Species, Organization, Project Manager, Goals, Proposed Outcomes and Other funding Sources (both requested and received). Project Outlines will be reviewed, and successful applicants will then be invited to submit a full application. Full applications will not be accepted without a Project Outline having been submitted, reviewed and approved by the review committee.

Our grants are intended to support conservation projects for amphibian species that cannot currently be saved in the wild, with a focus on *ex situ* actions, and in partnership with appropriate field activities. Preference will be given to projects for species which have been assessed as in need of *ex situ* rescue or research work, either as a recommendation from a **Conservation Needs Assessment** or a similar, national assessment process.



These grants are **not** intended to fund:

- Workshops
- Educational exhibits
- Project overhead or indirect costs
- Field projects without a strong *ex situ* component.

All applications must reflect AArk values. Please pay careful attention to the **grant guidelines**, and address all of the appropriate items.

### Need some help?

AArk staff are available if you need assistance in formulating your proposal. Please do not hesitate to contact us with any questions. Each year several proposals have been rejected due to issues that could have been prevented with a little extra guidance! We also have several past seed grant recipients who are willing to act as mentors, to help with your application – please let us know if you would like us to put you in contact with one of them. Email us at [grants@amphibianark.org](mailto:grants@amphibianark.org).

### Important dates

- Project Outline deadline: 17 April 2019
- Grant application deadline: 15 May 2019
- Grant decision/notification date: 22 May 2019
- Successful applicants must provide bank account details, signed MOU and 3-4 photos of species and/or facilities by: 5 June 2019
- Grant payment date: 10 June 2019
- Initial progress report and species action plan provided by 1 December 2019
- Final progress report, species action plan and husbandry guidelines due 1 June 2020.

We would like to acknowledge the generous support of **AArk funders** and **donors** who have helped to establish and support these grants.



## Bringing Andasibe frogs to the public – news from Toby Sahona's Education Center, Madagascar

**Justin Claude Rakotoarisoa, Director of Amphibian Conservation; and Sebastian Wolf, Association Mitsinjo, Madagascar**

Breeding Malagasy frogs within their home country is still somewhat in its infancy and for the conservation breeding center in Andasibe, Madagascar, also called Toby Sahona ("frog facility"), tasks are still as manifold as they were at the beginning. During recent years it has become evident that the presentation of local species and related conservation and research activities should be communicated to a greater extent to visitors to the center. This objective has taken another big leap forward, with a donation via the Amphibian Ark given to the center's team so we could build larger terrariums. This donation has enabled us to expand the already existing public frog exhibit that is open year round in the adjacent education center.

Such projects are a challenge in many ways in Madagascar, largely due to restricted access to infrastructure and materials. Therefore, one of the first steps consisted mainly of acquiring material abroad and organizing its transport into the country. It is a constant trade-off to decide what to bring and what to try to purchase in-country – special terrarium equipment such as drain systems, lighting equipment, food and instruments must always be always brought from overseas, however. Upon arrival, this fancy collection of equipment can also lead to surprising reactions at the airport customs services.

This purchase phase was followed by setting objectives; the purpose of these terrariums is not only to enable visitors of all kinds to see local species up-close, but also to conduct breeding trials and to strengthen captive care expertise for the local zoo keepers from the nearby conservation breeding center. This means that visibility and aesthetic aspects are the main issues for the construction process, which began soon after the materials arrived. Construction material had to be brought from another town, as well as qualified personnel - despite the high number of hotels in Andasibe, the most time-consuming activity has been the search for a mason who could build the terrariums. Unfortunately, very

unrealistic price offers by the former mason caused an unintended delay of almost three months, however everybody was glad when the most important and basic construction work was completed before Christmas 2018. The most expensive part of this phase of construction was the cement, iron, and transportation of the materials.

Towards the end of last year, the basic construction was finished. The display consists of two terrariums which share the same middle wall, and are made from local bricks. The height provides suitable viewing access for children as well as adults, and the front will be completely visible. The volume of each terrarium (approximately 1.5 m<sup>3</sup>) should give enough space to design an interior which attracts visitors and delivers a high structural complexity to harbor a well-chosen subset of the local amphibian fauna. Some focal species have been previously selected, according to their (assumed) visibility and their breeding biology.

The next steps will consist of the installation of a single, thick, front glass. Transport of the glass from Antananarivo to the construction site is certainly going to be nerve-wracking, due to its size and weight - anyone who has seen the rugged state of Madagascar's paved and unpaved roads will easily understand why. This will be followed by the installation of doors, designing of a landscape and sealing of the interior walls and bottoms. New construction workers are needed for the installation of this front glass and side windows, but luckily there are people who have already worked for us previously, who live nearby and so far, have not suggested unrealistic salaries. The rest of the set-up such as the interior design, sealing, and installation of the technical equipment will be done by the team itself.

The Toby Sahona's Education Center which holds the live frog collection, as seen from the visitor's trail. Photo: Sebastian Wolf.







For construction of the walls and foundations of the terrariums, a mason was brought in from another town.  
Photo: Justin Claude Rakotoarisoa.



The newly built terrariums, measuring 2 m long x 1 m wide x 1.3 m high. Photo: Justin Claude Rakotoarisoa.

It is probably not exaggerated to state that such a construction and project takes considerably more time in Madagascar than would be needed in other countries. We therefore thank our donors for the ongoing support and patience in this ambitious task. Once finished, these terrariums will hopefully generate interest on a wider scale and support the huge task to expand the knowledge of captive breeding of endemic anurans in Madagascar.

When thinking big, this project will hopefully have an important impact for various people and stakeholders – for locals to see, for tourists to get in touch with hidden wildlife, for students to study reproductive biology or behavior, for the frog team to acquire new skills in frog breeding, for the frog center in general to promote these activities, and finally for authorities to overcome their prejudice against herps in captivity. Despite the difficulties in Madagascar, the project is heading in a good direction.



Justin Claude in front of one of the smaller, older terrariums which were also designed and built by the frog team. Photo: Jean Blaise Lahinirina.



## Update on the reintroduction program for the Northern Pool Frog in the UK

**Karen Haysom, Species Programmes Manager; Yvette Martin, Amphibian Conservation Officer; and Jim Foster, Conservation Director, Amphibian and Reptile Conservation Trust, UK**

The Northern Pool Frog (*Pelophylax lessonae*) became extinct in the United Kingdom in 1995, as a result of habitat loss, habitat fragmentation and changes in land management. Ten years later, in 2005, a reintroduction program was undertaken by Amphibian and Reptile Conservation (ARC) Trust and Natural England to an undisclosed site in eastern England. Frogs were wild-caught in Sweden and translocated to the UK. While this reintroduction appears to have been successful to date, there is still only one established population in the UK, and so the team from ARC is endeavoring to establish a head-starting program for the species, so that captive-reared animals can be released, to reinforce and secure a second wild population in the UK. The project was initiated in 2017, and received an AArk seed grant in that year, along with a start-up extension grant from the AArk in 2018. We thank Woodland Park Zoo, Seattle, USA, for partial support of these grants.

At the global level, the Northern Pool Frog is listed in the **IUCN Red List** as Least Concern (Kuzmin et al 2009), since this includes southern forms which occur across a substantially larger range and have not shown such significant declines. The Pool Frog receives strict legal protection in England. It is classified as a European Protected Species (EPS) under the Conservation of Habitats and Species Regulations 2017 and receives additional limited protection under the Wildlife and Countryside Act 1981 (as



A male Pool Frog (*Pelophylax lessonae*). This species became extinct in the United Kingdom in 1995, as a result of habitat loss, habitat fragmentation and changes in land management. Photo: Jim Foster/ARC.

amended). A provisional country-level Red List Assessment for England has suggested it should be listed nationally as Endangered. The northern clade also occurs in Sweden, where it is listed as Vulnerable, and in Norway, where it is Critically Endangered. The second reintroduction site is Thompson Common, which is designated as a Site of Special Scientific Interest (SSSI) and a Special Area of Conservation (SAC). These designations accord the area a high level of protection.

The species is also listed as a biodiversity priority species under Section 41 of the Natural Environment and Rural Communities Act 2006. This means that tailored actions are required for the recovery or restoration of the species in England. Tailored actions identified by Buckley & Foster (2005) include translocation and this action has been justified because the species has limited dispersal ability and specific habitat requirements. Further reintroductions are envisaged to increase the abundance, range and future prospects of the species in England. Short-term aims include the restoration of the species to three sites in their presumed former range of Norfolk, Lincolnshire or Cambridgeshire.

The main aim of the Reintroduction Strategy is to restore the species to a Favourable Conservation Status (FCS), by reintroducing Pool Frogs to a series of representative sites across its historic English range, to form a robust distribution that takes account of the potential negative impact of climate change. Habitat restoration measures should be undertaken in parallel with species reintroductions, so that both habitat and species restoration outcomes identified under "Biodiversity 2020" (the UK Government's biodiversity strategy for England) are met.

The second reintroduced population is being established via head-starting, using stock from the first reintroduction site. There is currently no plan to establish a captive breeding program, although this may be reviewed in the future. The **Pool Frog Species Action Plan** was developed in 2009 and defines the long-term goals of the program, which are to establish a viable breeding population of northern clade Pool Frogs at Thompson Common, and to make preparations for future reintroductions and

Jim Foster surveys a pond for pool frogs.  
Photo: Karen Haysom/ARC.







other activities to ensure a more resilient future for the Pool Frog in England.

The objectives, results and short-term goals of the program are to:

- Raise a target number of 1,500 northern clade Pool Frog tadpoles (500 per year) via head-starting.
- Release a target number of 1,500 (500 per year) northern clade Pool Frog tadpoles back into the wild at Thompson Common.
- Identify other suitable areas of habitat within the historic range into which further Pool Frog translocations could be carried out and liaise with appropriate stakeholders to plan reintroductions.
- Ensure appropriate habitat management plans are in place and agree on a long-term commitment with landowners to manage sites for the species.
- Establish a biosecure facility in which northern clade Pool Frog larvae can be raised to a suitable state prior to release back into the wild.
- Train one intern in methods of spawn searches and collection.
- Train one intern in methods of head-starting.
- Train one intern in methods of translocation and release.
- Review the success of the newly established head-starting program after the first year of translocations and make changes to methods if needed.

Jim Foster (Amphibian and Reptile Conservation Trust Conservation Director) examining a Northern Pool Frog before release. Photo: Yvette Martin/ARC.

In 2018 ARC secured sufficient funds to move forward with plans to establish a biosecure head-starting unit. A suitable unit was located, and plans are in place for refurbishing the unit with the aim of equipping the space by the end of March 2019.

For additional information about the program, please see the following sites:

**Web site:** [www.arc-trust.org/pool-frog](http://www.arc-trust.org/pool-frog)

**Facebook:** [www.facebook.com/ARCTrust/](https://www.facebook.com/ARCTrust/)

**YouTube:** [www.youtube.com/user/ARCTrust](https://www.youtube.com/user/ARCTrust)



A female pool frog.  
Photo: Jim Foster/ARC.





## AArk-lead Amphibian Translocation (Reintroduction and Reinforcement) for Conservation Symposium, September–October 2019

**Luis Carrillo, Training Officer, AArk**

Many amphibian populations have been decimated in the wild and many others are severely fragmented, meaning that re-colonizing suitable habitat is almost impossible. Reintroduction and reinforcement are two of the tools in the conservation translocation toolkit, and often require the help of captive breeding programs as a source of animals. It has become more relevant to amphibians due to the continued population declines for many species. However, we still need to better understand the different factors that affect the success of amphibian reintroduction programs.

Reintroduction in conjunction with threat mitigation and habitat protection should be one of the major goals of almost any comprehensive amphibian conservation program. To be successful, program managers should properly plan reintroduction programs. The IUCN has produced guidelines for animal species reintroduction and the Reintroduction Working Group of the Amphibian Specialist Group has drafted specific guidelines for amphibians.

**Target audience:** Amphibian conservation program managers - the people who are managing programs at different stages of progress. The symposium is especially intended for programs that have produced surplus animals, potentially as candidates for reintroduction programs, but with no clear reintroduction strategy in place. It also is intended to be helpful for managers and institutions interested in setting-up amphibian conservation programs with a clear exit strategy focused on reintroduction.

**Format:** This free symposium will be online-based, avoiding the cost of transportation and attendance fees. The symposium will be



In 2010 the Institute for Conservation Research at San Diego Zoo released 300 Mountain Yellow-legged Frog eggs into a stream on the University of California's James San Jacinto Mountains Reserve near Idyllwild, California. Photo: Ken Bohn, San Diego Zoo.



The second reintroduction of captive-bred Valcheta Frogs, with participation of children from a local school in March of 2018 which we have been able to accomplish thanks to a recent donation. Photo: Federico Kacolis.

divided into themes, and most of the themes will be covered over three days each week, during two-hour talks. Each theme will be covered within a week. Talks will be delivered using GoToMeeting. The symposium is planned to be delivered between September 23rd and October 18th, 2019. Major themes to be covered include theoretical framework, habitat management and restoration, reintroduction examples, and post-release monitoring.

**Speakers:** Experienced program managers with previous experience in amphibian reintroductions, amphibian disease risk assessment, habitat management and restoration, threat management, and post-release monitoring will share their successes and failures. Other speakers will include small-population managers, amphibian conservationists and general reintroduction specialists.

**Registration and information:** Although this is an online-based symposium, there will be a maximum number of participants at the same time in a given session. There are 100 spots opened for participants in each session. If you are interested in participating or receiving more information please contact Luis Carrillo – [luis@amphibianark.org](mailto:luis@amphibianark.org).

Learning from each other's successes and failures will allow symposium participants to gather new and unpublished information and project experiences that could be helpful to better design their reintroduction protocols; avoid unsuccessful practices or strategies; and connect with amphibian management experts and other program managers from different regions of the world.



## Rescuing the southern-most Marsupial Frog species in Argentina

**Mauricio Akmentins, Investigador Asistente CIC CONICET, Instituto de Ecorregiones Andinas (INECOA), UNJu-CONICET, Argentina**

### Introduction

Our project focuses on the conservation status of La Banderita Marsupial Frog (*Gastrotheca gracilis*) and implementing the first conservation actions for this rediscovered species. The main outcomes we anticipated for the first six months are:

- Develop a breeding facility and husbandry research centre for population supplementation of La Banderita Marsupial Frog populations within the Horco Molle Nature Reserve (Tucumán National University).
- Obtain permission from the Tucumán province environmental authorities for field collection of La Banderita Marsupial Frog tadpoles from Los Sosa Provincial Reserve for the *ex situ* breeding program.
- Collect an estimated 100 representative La Banderita Marsupial Frog tadpoles from Los Sosa Provincial Park and raise them in captivity until metamorphosis occurs. The resulting froglets will be put in quarantine until they can be released in the wild at the same breeding site where the tadpoles were collected.
- We will survey three reproductive sites in Los Sosa Provincial Park in order to determine the incidence of active threats in the reproductive habitats of La Banderita Marsupial Frogs.
- Apply Routine Lm Risk-Based (RLm) swabbing protocol for *Bd* (chytrid fungus) detection to all adult specimens detected and to a pool of the tadpoles collected for the *ex situ* breeding program. Analyze the samples with the qPCR technique to determine the presence of chytrid fungus in wild populations of La Banderita Marsupial Frogs.

This has been the first inter-institutional collaboration between INECOA institute (CONICET-UNJu) and Horco Molle Experimental Reserve (UNT) and resulted in a very enriching experience because it has allowed interaction between professionals from different disciplines, including scientific researchers, biology students, veterinarians and social communicators.

The main stakeholder for the project is the environmental agency of Tucumán province. The government authorities provided full support to the project and gave the corresponding permission for specimen collection.

We established a collaborative work with Med.Vet. Judit Dopazo, of the Instituto Multidisciplinario Sobre Ecosistemas y Desarrollo Sustentable of Facultad de Ciencias Exactas of Universidad Nacional del Centro de la Provincia de Buenos Aires, for qPCR analysis of the *Bd* samples.

We also obtained excellent media coverage from the largest newspaper in Tucumán province, La Gaceta.

Four major outcomes were highlighted in the first phase of our project. We completed conditioning of the *ex situ* facilities at Horco Molle Experimental Reserve. The facilities were provided with one air conditioner to maintain the environmental temperature at about 24° C, and they contain two, 200-liter aquariums equipped with air pumps and water filters, and one 240-liter terrarium.

We obtained permission from the Tucumán province environmental authorities to collect La Banderita Marsupial Frogs. We also received the formal commitment of the environmental authorities to implement effective conservation measures to protect the identified reproductive habitats in Los Sosa Provincial Reserve. We collected the first cohort of forty-seven La Banderita Mar-



Monitoring one well-preserved reproductive site of La Banderita Marsupial Frog (*Gastrotheca gracilis*) in Los Sosa Provincial Reserve, Tucumán province, Argentina. There had been previous reports of habitat destruction by domestic pigs at this particular breeding site, although currently it seems to have recovered from this. Photo: Martín Boullhesen.

supial Frog tadpoles, in Gosner's stage ranging from 31 to 35 and we obtained a survival rate to froglet stage of about 90%. The froglets were placed in quarantine, in 48-litre sterile, plastic containers with moist blotting paper as the substrate, one water recipient and *ad libitum* food supply (fruit flies and springtails). A second cohort of twenty tadpoles is currently being raised in the breeding facilities.

We detected the presence of the species in two of the three monitored reproductive habitats. In the two temporary ponds with tadpoles, one contained a very low density of tadpoles with clear evidence of habitat alteration, and in the other there was a high density of tadpoles in different developing stages and the breeding site was relatively well-preserved. We confirmed that the active threats to the reproductive sites of La Banderita Marsupial Frog in Los Sosa Provincial Reserve continue, with plastic pollution in the temporary ponds being the most significant one.

We did not detect any adult La Banderita Marsupial Frogs during field surveys. We applied the RLM swabbing protocol to twenty representative tadpoles to check for the presence of *Bd* in the species. The samples were sent for qPCR analysis and we are waiting for the results.





### Action plan

We started to write the draft of the conservation action plan for La Banderita Marsupial Frogs.

The main goals for the next twelve months are:

- To obtain the results of the *Bd* analysis, confirm the presence or absence of chytrid fungus in wild specimens, and determine infection loads in the case that the animals are *Bd* positive.
- We will release the post-metamorphic frogs to the wild in the same breeding site that they were collected, after the quarantine period.
- We will select at least ten froglets from the two raised cohorts to start the conservation education breeding program (with no prospect of releasing these specimens into the wild). These specimens will act as species ambassadors and for scientific research of biology and behaviour of the species.
- We will gather information about the ongoing threats so we can write a technical report for the Tucumán province environmental authorities, with specific recommendations for mitigating or eradicating the active threats which are faced by the La Banderita Marsupial Frog population in Los Sosa Provincial Park.

La Banderita Marsupial Frog froglet from the first cohort of tadpoles raised in the *ex situ* facilities in Horco Molle Experimental Reserve. Photo: Mauricio Akmentins.



Aquariums for La Banderita Marsupial Frog tadpoles in the *ex situ* facilities in Horco Molle Experimental Reserve, Tucumán province, Argentina. Photo: Mauricio Akmentins.



## RanaNoel: Creating little guardians of the Titicaca Water Frog

**Pilar Verónica Choquehuanca Roldan, Gariz Chileca Riveros Urbina, Jhazel Arnold Quispe Coila, Association for Environmental Science and Development, Natural Way, Peru**

Lake Titicaca as an ecosystem in the Andes, is unique in the world. As well as including endemic and unique species of flora and fauna, one of them, the Titicaca Water Frog (*Telmatobius culeus*), is currently listed as Critically Endangered in the **IUCN Red List**, and is facing problems associated with alteration of its habitat (the lake), the introduction of exotic species and collection for markets in several cities of Peru, through illegal trafficking. This is due to the general ignorance of the importance of this species.

### Changing generations

Two years ago, the organization Natural Way, began several research and education programs as pillars for the conservation of the lake and the frogs, in the community of Perka Norte, in Puno, Peru, which is located on the shores in the southern area of the lake. We were able to show a considerable population of frogs and the urgent need to develop environmental education programs with the local community, which aim to create new behaviors: each of the community members is involved, they understand and value the frogs, and hopefully this will guarantee the care and the conservation of the species and also the unique place where they live.

In December 2017 we focused the first environmental education initiative on the children, who will become the future of their community. We linked the Christmas celebration (which is expected by children) with the Titicaca Water Frog, to create and present "RanaNoel", a modified Santa Claus. RanaNoel is a costume which represents the Titicaca Water Frog, with a bag and a Christmas hat. We hoped that the children would become familiar with and learn more about the species, change their perspectives, and show increased interest in the frogs. RanaNoel is a charismatic frog and is characterized not only by bringing a fraternal day of penitence, hot chocolate and gifts, but also sharing knowledge through games and workshops aimed at children between 5-14 years of age. During the last workshop in December 2018, Rana-

Noel encouraged children to draw and paint, and each of them drew the home (community) where they live and now coexist with the Titicaca Water Frog, and several other species of flora and fauna. At the end of the workshop each child explained the importance of this species as well as the other aspects of its environment and we also talked about the threats present in the lake and how RanaNoel could disappear if people don't help to prevent this.

### Small guardians

Unfortunately, the Puno Region, which covers 100% of the geographical area of Lake Titicaca within Peru, is among the poorest regions in the country, with more than 33% of the population living in poverty and/or extreme poverty (Instituto Nacional de Estadística e Informática (National Institute of Statistics and Informatics), 2018), so the communities that live around the lake do not have stability or a good economy. The Peruvian state does not do much to provide options for development, so during the Christmas season many children spend the holidays just like any other day of the year, helping their parents with their crops or taking care of their livestock, without much to look forward to at Christmas.

First presentation of RanaNoel in 2017, with children and their cups ready to enjoy hot chocolate. Photo: Jhazel Quispe.



RanaNoel is a suit that represents the Titicaca Water Frog, and with much laughter and much joy, the children who knew him enjoyed Christmas like never before. Photo: Alexander Almonte.







Five-year-old Neymar, who participated in RanaNoel in both years, appreciates and holds a Titicaca Water Frog, ready to be released to the Lake. Photo: Roberto Elias.

With the first appearance of RanaNoel in 2017, we saw different types of responses in the children from the community of Perka Norte. Initially they were curious, not knowing who they were, what they represented and what they did within their community, but after the workshop, they had a great admiration and a lot of appreciation for RanaNoel. During subsequent visits to the community and in each meeting we had with the children, they showed enthusiasm and great expectations for what was coming for the year 2018, in addition to their new attitudes as the interest for the Titicaca Water Frog.

In 2018 we invited the neighboring community of Perka to join us, so that more children could get to know RanaNoel, and in both years we had more than sixty children participating. With many laughs and much joy they lived Christmas like never before, making these days unforgettable for them and also becoming "little guardians". The participation and support from the moms and dads from the communities to help us develop the events was fundamental in making this Christmas beneficial for the children, the Titicaca Water Frog and the future of their home.

In 2018, the RANA Group joined the RanaNoel initiative as an alternative to help address the problems faced by the Giant Junin Frog (*Telmatobius macrostomus*) in Peru, which is also **Endangered**.

### What does RanaNoel expect?

During 2019 we hope to reach more communities and children who live near the lake, and to reach additional cities to share knowledge about their local species and promoting care of the environment. We expect that the RanaNoel initiative will represent more species of threatened frogs in Peru, and in other countries, uniting more organizations and people to support conservation initiatives, and helping to confront the global amphibian decline.

At Natural Way we are sure that the events at Christmas in 2017 and 2018 brought joy and increased knowledge to the children, creating a positive impact that fosters care and affection for the Titicaca Water Frog.

### Acknowledgements and information

In both years the presence of RanaNoel was possible thanks to the support of Denver Zoo (James Garcia, Roberto Elias and Enrique Ramos) and the representative costume of the Titicaca Water Frog, StrategiK - Peru (Jans Huayca) and Seturtik - Puno (Alexander Almonte). We would like to thank them and all the other people who helped, for making the children dream in a better world.

If you would like to help us or join RanaNoel, please contact us through our Facebook page: [NaturalWay - Peru](#) or email: [nwa.peru@gmail.com](mailto:nwa.peru@gmail.com).

At the Christmas events in 2017 and 2018, RanaNoel encouraged the children to draw and paint, bringing joy and knowledge, and creating a positive impact that fosters care and affection for the Titicaca Water Frog. Photo: Joel Zapana.





## Supporting the conservation of Xochimilco Axolotl with science

**Dr. José Antonio Ocampo Cervantes, Project Manager; and MVZ. Erika Servín Zamora, Veterinarian, Biological and Aquatic Research Center of Cuernavaca, Mexico**

The Xochimilco Axolotl (*Ambystoma mexicanum*), is an endemic Urodele from central Mexico, which is classified by the IUCN as **Critically Endangered**, due to the degradation of its habitat and the introduction of exotic species.

Besides being of historical and cultural importance because it is traditionally related to the Aztec god Xolotl, its use in traditional medicine for the treatment of respiratory diseases is also known. For medical sciences this is an extremely valuable species because of a very particular characteristic: the regeneration of tissues, since it can regenerate any type of tissue including muscle, bone, skin, liver and nervous tissue.

Xochimilco, its habitat, is located within Mexico City - one of the most populated cities in the world - so the conservation of natural habitats within a large city, becomes a challenge. The increasing pressure of urban sprawl has degraded this last relict of what was the lake system of the Valley of Mexico basin, which stretched over an area of 114,477 ha. Currently there is very little of that great lake, the Protected Natural Area Ejidos de Xochimilco and San Gregorio Atlapulco has an extension of 2,522 ha, the only protected area for the conservation of the axolotl.

This is why science and environmental education can play an important role to achieve a better understanding of both the species and the habitat, trying to find solutions to preserve the axolotl and Xochimilco. To achieve this goal we must promote awareness in children and adults about the problems and the actions they can take to avoid further damage to the habitat that surrounds the city.

The Center for Aquaculture and Biological Research of Cuernavaca (CIBAC), belongs to the Autonomous Metropolitan University, one of the main universities in Mexico. For more than twenty-five years, it has had facilities that allow the development of research projects relating to reproduction, growth, and location of the habitat and surrounding species, among others, giving the opportunity and space to students and researchers to generate more information and knowledge that can contribute to the conservation of the axolotl and the species with which they share their habitat.

Another of the important actions carried out at CIBAC is environmental education. Each year students from different academic levels, public and private schools and the general public are taught, and they learn about the importance of the species and its habitat.

One of the great advantages of the CIBAC is its location, since it is within the protected natural area of Xochimilco, allowing it to be in direct contact with the axolotl's habitat. Its facilities include laboratories, breeding and rearing rooms for axolotls and other aquatic organisms, an area of agronomy, a butterfly garden, a multiple-use room and a palpa, where in the open air and in contact with nature there are talks and workshops mainly focused on children and adolescents. When we were young, we probably learned in school about scientific methods but we probably did not imagine that through science we could help endangered species.

In the scientific field, CIBAC has supported undergraduate and postgraduate students since its inception, as well as researchers from different universities, which is why various projects have been developed that have contributed to a better understanding of the problems faced by the axolotl and its habitat. Some of the most relevant projects are related to the reproduction of fish and axolotls, habitat quality and veterinary medicine applied to the axolotl.



The Xochimilco Axolotl (*Ambystoma mexicanum*), is endemic to central Mexico, and is classified by the IUCN as **Critically Endangered**, due to the degradation of its habitat and the introduction of exotic species. Photo: Dr. José Antonio Ocampo.

The CIBAC tries to inspire scientific knowledge, since, if we do not understand the biological bases of the axolotl and its habitat, we will not be able to do a great deal to find solutions for its conservation. At CIBAC we are convinced that science and education are fundamental for conservation.

Even though the axolotl is the main action flag of the CIBAC, they also work with endemic and native species of butterflies, fish and aromatic and medicinal plants, thus promoting an integral approach to conservation. The CIBAC has also been the headquarters of congresses and workshops specialized in the management and conservation of the axolotl, making this research center an ideal and open space for the conservation of Mexican amphibians.

We know that it is not an easy challenge and that there is much more to do and many more projects to consider, which is why we want to share what we do, and to join efforts with other institutions and universities that are interested in the conservation of this and other species of Mexican amphibians.



Collecting samples from the Xochimilco channels habitat. Photo: Erika Servín Zamora.



## An update on Georgia's rarest frog

**Victoria Gould, Communications Specialist, Lacey Avery, Communications Lead and Mark Mandica, Executive Director, Amphibian Foundation, USA**

One of the Amphibian Foundation's top priority species is the State of Georgia's rarest frog, the Gopher Frog (*Lithobates (Rana) capito*). In 2018 we launched a captive propagation program, which, when coupled with the head-start program that staff from the Foundation, in the USA, have been involved with since 2009, aims to increase the number of releasable frogs each year.

The Foundation holds one of only two captive populations of Georgia Gopher Frogs. In partnership with Georgia Department of Natural Resources and Zoo Atlanta, USA, this captive breeding effort allows the Amphibian Foundation to raise Gopher Frogs and produce offspring for release into protected habitats at the discretion of state and federal authorities. The Maerz Lab at the University of Georgia and the US Fish and Wildlife Service at Warm Springs, Georgia are continuing the head-starting program with wild-collected Gopher Frog eggs, until the Amphibian Foundation and Zoo Atlanta are able to produce eggs via the captive propagation program (hopefully, January 2020). Despite its protection, recent studies indicate that remaining populations continue to decline due to the added stress of human activity such as pollution and habitat destruction.

Gopher Frogs naturally live in the Longleaf Pine ecosystem in the south-eastern coastal plain, and are only one of many remarkable species struggling to survive in a dynamic ecosystem that has been reduced to three percent of its original range. The Amphibian Foundation recently made tremendous progress towards our comprehensive recovery plan for this priority species. One of our accomplishments was the completion of Metamorphosis Meadow, a private outdoor area that holds twenty tri-phasic mesocosms, or 320-gallon containers, that mimic the natural environment under

controlled conditions, including the upland habitat, wetlands and ecotone. Head-started amphibians are typically reared to late-stage larvae (salamanders) or recently metamorphosed froglets, then released. Although amphibians like frogs and salamanders have existed for more than 300 million years, over forty percent are disappearing - more than any other animal group. They are rapidly losing their habitats and are vulnerable to emerging diseases that spread from species to species, devastating local and global populations.

The captive populations of Gopher Frogs at the Amphibian Foundation were reared from eggs and have been living in the artificial wetlands on the property since May 2018. They are all young adults, and the males have begun calling, which is a great sign that they are healthy. The females will most likely need another season to grow before they are ready to breed in the mesocosms. Much of the courage needed to embark on this captive propagation program for Gopher Frogs came from the successful reproduction efforts with the species by Scott Pfaff at the Riverbanks Zoo in South Carolina.

If you would like to stay up to date on our efforts with the Gopher Frog, please see our [frog blog](#).

Several Gopher Frogs (*Lithobates capito*) 'in pseudo situ' in a tri-phasic mesocosm at the Amphibian Foundation, in Atlanta, GA USA. The young adult frogs are acclimating to their new environment and we hope to have captive produced offspring as early as Winter 2020. Photo: Amphibian Foundation.





## The first rescue center for the Endangered Patagonia Frog in Laguna Blanca National Park, Argentina

**Federico Pablo Kacoliris, Coordinator, Wild Plateau Initiative La Plata Museum; María Elena Cuello, Conservationist; and Leonardo Buria, Administración de Parques Nacionales, Argentina**

The Patagonia Frog (*Atelognathus patagonicus*) is an endemic species to north-western Argentinean Patagonia that only occurs at a small number of isolated lagoons scattered over the volcanic tablelands of Neuquén province. The known extent of occurrence for this species is very small, reaching an area of less than 100 km<sup>2</sup> (EOO sensu IUCN criteria). The Patagonia Frog has evolved to face the cycle of droughts that characterize the area. During the wet seasons, most of the lagoons have enough water of good quality and the frogs spend most of their time within these water bodies. These individuals, known as the aquatic morph of this species, have enough free skin that facilitates the exchange of oxygen when frogs are underwater, and they have a complete interdigital membrane which enables their swimming abilities. When the dry season comes, the lagoons become dry, and the aquatic morphs reabsorb both the excess of skin and the interdigital membrane. These so-called terrestrial morphs then hide under rocks until next wet season comes.

The major local population of Patagonia Frog used to be common at the White Lagoon (Laguna Blanca National Park), the unique permanent waterbody in the area, with an area of 16 km<sup>2</sup>. This local population that represented almost 50% of the whole species' meta-population, was mainly formed of aquatic morphs since this big lagoon does not suffer droughts during the dry season. Unfortunately, between 1943 and 1968 the Laguna Blanca was

intentionally infested with invasive and exotic predatory fish, including perch (*Percichthys trucha*) and trout species (*Onco-rhynchus mykiss*), for tourism purposes. The effect of these top predators on the endemic Patagonia Frog was evident and during the last surveys in the area made between 2000 and 2004, the major subpopulation of Patagonia Frog inhabiting this water body was formally declared extinct.

The other smaller subpopulations resist in the surrounding and isolated lagoons, being at higher threat due to stochastic factors. Even more, between 2010 and 2016, probably as a consequence of global climate change, a prolonged and severe drought that is still occurring, desiccated these small lagoons, increasing population decline of the species. This population decline, added to the previous extinction in the Laguna Blanca, have reduced the whole population of the Patagonia Frog by more than 90%. For all these reasons, the Patagonia Frog was declared to be of Special Value by the National Parks Administration and as Endangered by the **IUCN Red List**. A current update indicates that its status is getting worse, and the Critically Endangered category was suggested and is currently under evaluation by IUCN committee. The species has also been recommended for urgent *ex situ* rescue in an **AArk Conservation Needs Assessment**.

Concerned about this situation, in 2007 the authorities of the National Park Laguna Blanca, started an ambitious management plan aimed at reducing and permanently controlling invasive trout at the Laguna Blanca. This management action was successful, and after ten years, the results indicate a significant decrease in the abundance of the fish, with indirect signs of habitat restoration that can be observed in vegetation recovery and water transpar-

Three big terrariums were built inside the visitor center in the Laguna Blanca National Park, which will house founder animals for a survival colony of Patagonia Frogs (*Atelognathus patagonicus*), in Argentina. Photo: M. L. Arellano.







Members from the Wild Plateau Initiative and the National Parks Administration working together for the conservation of the Patagonia Frog. Photo: M. L. Arellano.

ency. This management was reinforced with help from researchers, who fenced some small lagoons to avoid access from livestock, alleviating this threat on small subpopulations of these frogs. The researchers, together with the National Parks Agency also conducted an awareness-raising campaign aimed at stopping new reintroductions of exotic fish. Although this management was very successful in protecting the Patagonia Frog in small lagoons, the natural recovery of the population of this species that became extinct from the Laguna Blanca is unlikely due to the current weather scenario of increasing droughts that make corridors non-viable for movement of the frogs.

In 2018, Amphibian Ark provided us with a Start-up Grant to support a project aimed at helping the return of the Patagonia Frog to the Laguna Blanca, and additional funding was received from a private donor via the AArk. Our objective is based on the fact that the re-establishment of the bigger local population of this frog is needed as a way to ensure the long-lasting viability of the

species. The habitat is being restored and controlled by the National Parks administration, but considering that natural recolonization will be very hard, we proposed an *ex situ* management program, followed by a reintroduction program to help this species return home. In February 2019 we began the first *ex situ* program for this species by building three big terrariums inside the visitor center called Nómades in the Laguna Blanca National Park, near the habitat which was occupied by this species in the past.

We then conducted exhaustive fieldwork, searching for frogs near the dry lagoons in order to rescue them and translocate them to the *ex situ* facilities to use them as founder animals for a survival colony of this species. However, the drought that is currently affecting the area has been longer than usual and it was very difficult to find frogs. Luckily, thanks to the help of the local Park Rangers, we found three juvenile individuals under rocks in a remote place and translocated them to the recently created terrariums, which emulate their aquatic habitat.

After several weeks of observations, we are seeing that these individuals are feeding well, and they look healthy. This information is key to start the second step which involves looking for additional frogs to translocate to the rescue center to start a viable breeding colony of this species. In the future we hope to have the opportunity to reintroduce the first captive-bred individuals of Patagonia Frog once again into its largest home, the Laguna Blanca. This way we expect to take the first steps in the long-lasting conservation of this charismatic frog species.

Recently, we received a call from Cinthia, a local Park Ranger committed to the conservation of this frog, letting us know that she had found frogs in a dry lagoon. We are ready for a new field trip, and hopefully, in the coming days, the survival colony will include some new rescued frogs.

A prolonged and severe drought in the area inhabited by the Patagonia Frog has desiccated small lagoons, increasing the population decline of the species. Photo: M. L. Arellano.





## New steps for the conservation of the Titicaca Water Frog

**Teresa Camacho-Badani; Sophia Barrón-Lavayen; and Ricardo Zurita-Ugarte, Alcide d'Orbigny Natural History Museum, K'ayra Center for Research and Conservation of Threatened Amphibians of Bolivia, Bolivia**

The Titicaca Water Frog (*Telmatobius culeus*), from Lake Titicaca, is considered to be the largest aquatic frog in the world. It is included in the **IUCN Red List** as a Critically Endangered species and its distribution is restricted to Lake Titicaca and surrounding lagoons of the department of La Paz in Bolivia and Puno in Peru. A range of conservation actions, including urgent *ex situ* rescue, were recommended in an AArk **Conservation Needs Assessment** in Bolivia in 2014.

In Bolivia, the K'ayra Center for Research and Conservation of Threatened Amphibians of Bolivia of the Natural History Museum Alcide d'Orbigny in Bolivia, has about 200 Titicaca Water Frogs within its captive breeding program, with many of them being the second F1 animals born in the center. The program has been successful thanks to the support of several institutions, including Kansas City Zoo in the USA.

Timothy Steinmetz, Animal Curator and Bobby Bartels, Technician from Kansas City Zoo, visited the K'ayra Center for ten days, helping in the maintenance of the two captive breeding containers that house five species of the *Telmatobius* genus, including a container exclusive for the Titicaca Water Frog. Staff from Kansas City Zoo helped to build this facility in 2016. The work included the renewal of the electrical system for the two containers, the replacement of twenty-four submersible filters in the aquariums, and implementation of biosecurity measures in the Titicaca Water Frog container, among other improvements. We also planned the next steps that we will take towards the conservation of this species.

Conservation of the Titicaca Water Frog is a binational commitment involving both Bolivia and Peru and must be worked together, which is why during the visit of the staff from the Kansas City Zoo, we also organized a meeting that included the director of the Museum of Natural History Alcide d'Orbigny, Ricardo Céspedes; Teresa Camacho Badani, Head of the Herpetology Department of the Museum and in charge of the K'ayra Center;

Roberto Elias from the Denver Zoo, USA; and Cayetano Heredia, from the Peruvian University, who has been working together with other institutions in Peru for the conservation of this species since 2007; and lastly, Chris Jordan, Coordinator of Global Wildlife Conservation for Central America and the Tropical Andes, who are our allies in the conservation of other species of the *Telmatobius* genus in Bolivia. During this meeting, joint work to unify our methodologies, share information between both countries and joint work in the short and medium terms were planned.



The inside of the container which is specifically used to house Titicaca Water Frogs in the K'ayra Center. Photo Ricardo Zurita.

Titicaca Water Frog (*Telmatobius culeus*) at the K'ayra Center in Bolivia. Photo D. Alarcón / D. Grunbaum.





This meeting coincided with the transfer of Titicaca Water Frogs from Denver Zoo to Chester Zoo in England, which in turn, will send individuals to another ten zoos in Europe, so we took the opportunity to have a phone meeting with Gerardo Garcia, Curator of Minor Vertebrates & Invertebrates at Chester Zoo, to plan the conservation strategies of this species in Bolivia and Peru. These captive-born frogs will be ambassadors for the conservation of their species in eleven European countries.

These meetings and commitments mark a new chapter in the conservation of the Titicaca Water Frog, and for the first time, the efforts of Bolivia and Peru are being united to form a single front in the conservation of this species. It is thanks to the support of several institutions and the commitment of each country that have allowed this to happen.



Meeting for the conservation of the Titicaca Water Frog. From left to right, Ricardo Céspedes, Director of the Natural History Museum Alcide d'Orbigny (MHNC); Bobby Bartel and Tim Steinmetz from the Kansas City Zoo; Roberto Elias from the Denver Zoo; Teresa Camacho Badani (MHNC / Centro K'ayra); Chris Jordan from Global Wildlife Conservation; Bophia Barrón (MHNC / Centro K'ayra); Ricardo Zurita (MHNC / Centro K'ayra); and Eliana Lizárraga (MHNC). Photo: Teodoro Camacho.

Titicaca Water Frogs sent by the Denver Zoo to Chester Zoo. Photo: Chester Zoo.



Gerardo Garcia (right) and his team reviewing the Titicaca frogs upon arrival at the Chester Zoo. Photo: Chester Zoo.





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