

Amphibian Conservation Needs Assessment in Bolivia

The Conservation Needs Assessment for the amphibians of Bolivia brought together sixteen amphibian field biologists from around Bolivia, representing eight different museums, universities, zoos and non-governmental organizations. The three-day assessment workshop, held in July, was hosted by the Museo de Historia Natural Alcide d'Orbigny in Cochabamba, Bolivia, and was facilitated by Kevin Johnson from the Amphibian Ark.

By using a proven process for prioritizing national conservation actions, this assessment process guides conservationists to focus their limited resources towards those species that are most in need of intervention to ensure their ultimate survival in the wild. The Conservation Needs Assessment process was initially developed in 2006, during an Amphibian *Ex Situ* Conservation Planning workshop in Panama, where a taxon selection and prioritization working group developed a series of questions to select and prioritize which taxa are most in need of assistance in captivity. The decision tree has subsequently been further reviewed and refined, and has now been developed into the AArk Conservation Needs Assessment process, and a standardized electronic data entry tool, using Microsoft Excel (www.amphibianark.org/planning-workshops/). The assessment process has proven to be a logical, transparent, and repeatable procedure for guiding amphibian conservation activities within a country or region.

During the Conservation Needs Assessment workshop, all 265 amphibian species found in Bolivia were assessed and prioritized for the most urgent conservation actions required to ensure their ongoing survival in the wild. The workshop brought together the leading amphibian biologists and researchers from Bolivia, and their collective expertise has resulted in a thorough and up-to-date assessment. The results of the workshop include prioritized reports for seven different conservation actions. These recommended actions can be used to update the Plan de Acción para la Conservación de los Anfibios Amenazados de Bolivia (Action Plan for the Conservation of Threatened Amphibians of Bolivia), which was produced by the Bolivian Ministry of Environment and Water in 2012.

The 265 amphibian species found in Bolivia include 16 that are listed in the IUCN Red List as Critically Endangered, 16 Endangered, 25 Vulnerable, 5 Near Threatened, 185 Least Concern and 18 Data Deficient. Eighty-eight of the species (33%) are endemic to Bolivia, and of these, 45 species are considered to be threatened.

The recommendations from the conservation needs assessment for Bolivian amphibians include:

- **29 Rescue** - species that are in imminent danger of extinction (nationally) and require *ex situ* management, as part of an integrated program, to ensure their survival.
- **40 In situ conservation** - species for which mitigation of threats in the wild may still bring about their successful conservation.
- **113 In situ research** - species that for one or more reasons require further *in situ* research to be carried out as part of the conservation action for the species. One or more critical pieces of information is not known at this time.

The Titicaca Water Frog (*Telmatobius culeus*) is the world's largest aquatic frog and is only found in high altitudes in the Andes. It was assessed as the highest priority Bolivian amphibian species for a range of conservation actions. Photo: Arturo Muñoz.



- **18 Ex situ research** - species currently undergoing, or proposed for specific applied research that directly contributes to the conservation of the species, or a related species, in the wild (this includes clearly defined 'model' or 'surrogate' species).
- **2 Mass production in captivity** - species threatened through wild collection (e.g. as a food resource), which could be bred in captivity - normally in-country - to replace a demand for wild harvested specimens.
- **73 Conservation education** - species that are specifically selected for management – primarily in zoos and aquariums – to inspire and increase knowledge in visitors, in order to promote positive behavioral change.
- **29 Biobanking** - species for which the long-term storage of sperm or cells to perpetuate their genetic variation is urgently recommended, due the serious threat of extinction of the species.
- **86 No conservation action** - species that do not require any conservation action at this point in time.

Almost all of the fourteen species in the genus *Telmatobius* were amongst the highest priority species for a range of conservation actions, as well as a number of *Hyloscirtus*, *Gastrotheca*, *Rhinella* and *Psychrophrynella* species.

The importance of building capacity to enable additional *ex situ* rescue, research and breeding facilities was discussed considerably, and in support of this, a husbandry training course for *ex situ* conservation of Bolivian amphibians was held immediately after the assessment workshop, and hopefully, this will lead to additional *ex situ* rescue programs being implemented for some of the most threatened species (see separate report below).

The Conservation Needs Assessment for Bolivian amphibians has recommended a total of 231 different conservation actions for 179 species. These actions are based on current, expert advice, gathered from Bolivia's leading amphibian field biologists and researchers, and provide guidance for future conservation actions to help save Bolivia's amphibian species. As sufficient funding becomes available, these actions will be implemented, with the cooperation of national wildlife and environment departments, local communities, and other relevant stakeholders.

The workshop was generously supported by a grant from the Chicago Board of Trade (CBOT) Endangered Species Fund, which is administered by the Chicago Zoological Society.

Husbandry training course for *ex situ* amphibian conservation in Bolivia

The Bolivian amphibian husbandry training course was delivered immediately after the Amphibian Conservation Needs Assessment workshop, at the Museo De Historia Natural Alcides D'orbigny, in Cochabamba, Bolivia, June 6th - 8th. Instructors for the course were Arturo Muñoz (Museo De Historia Natural Alcides D'orbigny), Diego Almeida (Ecuador) and Luis Carrillo (Amphibian Ark).

The objectives of the training course were to:

- build capacity among Bolivian biologists and other professionals for the care and husbandry of endangered amphibians of Bolivia
- promote the establishment of assurance colonies for imperilled prioritized Bolivian amphibian species
- create partnerships between participants and their institutions to collaborate for the conservation of Bolivian amphibian species.

Course content and learning design

The course consisted of a mix of lectures, group activities and practical sessions designed to deliver the most relevant information about amphibian husbandry and to put into practice what the students had learned during the lectures/group work sessions.



Arturo Muñoz from the Museo De Historia Natural Alcides D'orbigny demonstrating the use of UV light meters. Photo: Kevin Johnson.

The course content was designed to:

- inform students about the critical situation of amphibian species, especially those in Bolivia
- deliver updated amphibian husbandry methods and techniques
- ensure that students are aware of infectious diseases and biosecurity in captive amphibian assurance colonies
- provide the students with information and skills to successfully breed and maintain different groups of amphibians.

The course was designed to encourage participation and sharing of knowledge and expertise through different activities in small groups, where different challenges were presented to students, allowing them to present and discuss ideas and determine the best practices and recommendations to tackle the issues. Each group then



AArk's Training Officer, Luis Carrillo explaining the importance of conservation needs assessment and planning when developing new *ex situ* conservation programs for amphibians. Photo: Kevin Johnson.

present their ideas in plenary to receive feedback from the other teams. This methodology also encourages the development of abilities to work in a group environment which is critical for any conservation initiative.

The course also took advantage of the previous Conservation Needs Assessment workshop, and four species that had been assessed as requiring urgent rescue were selected so the students could develop a complete species conservation plan ranging from exhibit design and breeding plans to education and awareness-raising campaigns and possible reintroduction plans. Students applied the knowledge and skills gained during the training course to develop their plans.

Prior to the workshop, a dedicated web page for the course was developed to share bibliography and references so the students could attend the course with background information.

Participants

Fifteen participants representing eight different zoos, museums and non-government organizations from Bolivia and Argentina participated in the course. Most of them had been working with amphibians for many years, although mainly in taxonomy.

Course evaluation

To evaluate the effectiveness of the course a pre- and post-workshop evaluation survey was delivered, consisting of basic questions relating to amphibian biology, husbandry and management. According to the results, the students' knowledge in these areas increased by 19% when comparing the pre- and post-workshop evaluations.

Also a post-workshop survey was sent to all the students as a way to also evaluate the effectiveness of the course in an indirect way. The results of that survey were:

- 80% of the participants expressed that the course content was better than what they were expecting, or it met their expectations
- 90% of the participants said that the information and knowledge acquired was very good to excellent
- 100% of the participants said that the quality of information relating to basic amphibian husbandry was adequate to excellent
- 90% of the participants said that the quality of information relating to *ex situ* management was adequate to excellent
- 90% of the information relating to biosecurity and veterinary issues was new to the participants
- 60% of the participants said they would like to have more practical sessions
- 100% said that they took advantage of the experiences of the other members of their working groups
- 100% agreed that with the information provided during the course they could initiate a new amphibian conservation program.

The funding to hold this workshop was generously provided by a grant from Chicago Zoological Society's Chicago Board of Trade, and with support from the Denver Zoo. The support of these two organizations is very much appreciated by everyone involved in the workshop.



One of the working groups presenting the terrarium they designed and built during the practical sessions during the amphibian husbandry course in Bolivia. Photo: Kevin Johnson.