

Project ID 02123413

Saving the endangered marsupial frogs in Yungas forests of Argentina



Argentina. Andean Yungas Forests. Field activities from August 2013 to December 2014

Grupo Yavi de Investigaciones Científicas; Administración de Parques Nacionales de
Argentina

Ensure the long term preservation of the three endangered species of marsupial frogs of
Argentina

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Section 1:

Summary:

The project was based in three keystones. First, to ensure the long-term preservation of the rediscovered species *Gastrotheca gracilis*. Second, to search for the two missing species *Gastrotheca christiani* and *Gastrotheca chrysosticta*, and last, to create awareness about the conservation status of the marsupial frogs and their habitat in Yungas Andean forest of North Western Argentina. The registry of *Gastrotheca gracilis* in Campo de los Alisos National Park allowed the incorporation of this endangered species as part of the conservation priority in the management plan of the protected area. The other two populations of *Gracilis gracilis* appeared to be stable but still without effective protection. In addition, a new source of threat for this marsupial frog was detected. After one year of intensive field search, it was not possible to find new registries of the two missing species of Argentinean marsupial frogs. The release of the field guide of anuran amphibians of Yungas forest was the first step in developing a long term searching/monitoring program of marsupial frogs in the protected areas of NW Argentina with the active involvement of National Park Administration. Through academic, multimedia, and other outreach activities the project reached a great visibility and impact.

Introduction:

The conservation status of the three endemic argentinean species of marsupial frogs is cause of major concern due to sudden lack of registries for almost two decades. One of these species was rediscovered in 2011 after 20 years without registries in the wild, this gives us expectation that the other two species are still extant (Akmentins *et al.*, 2012). Considering this, the project was based in three keystones. First, to ensure the long-term preservation of the rediscovered species *Gastrotheca gracilis*. Second, to search for the two missing species of marsupial frogs *Gastrotheca christiani* and *Gastrotheca chrysosticta*, and last, to create awareness about the conservation status of the marsupial frogs and their habitat in Yungas Andean forest of North Western (NW) Argentina.

Yungas Andean forests represent the southernmost extension of the biodiversity hotspot of the tropical Andes (Myers *et al.*, 2000), but this ecorregion is under threat by human activities such as selective logging of valuable woody species, clear cutting of primary forest and forestation with exotic species, extensive cattle raising, oil prospection and exploitation, and the development of engineering projects (Lavilla & Heatwole, 2010).

After the stakeholder analysis, we identified National Parks Administration of Argentina (APN) as the key actor for the project's success. This institution is of extreme relevance due to the geographic distribution of the missing species that covers almost the whole extension of two national parks. Furthermore it was very plausible the presence of populations of the rediscovered *Gastrotheca gracilis* on Campo de los Alisos National Park. Thus, park rangers are considered important part of a long term monitoring/searching programme. Therefore, we allocate our biggest effort in engaging APN as a partner in the project.

Project members

Mauricio Sebastián Akmentins.

Leader of the project team. Age 34. He achieved a doctorate degree in biological sciences and his research interests are ecology, behaviour and conservation of anuran amphibians. Currently is a postdoc fellow of the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).



Laura Cecilia Pereyra.

Age 32. She achieved a doctorate degree in biological sciences and her research interests are ecology, biodiversity measures and impact of land use change on biodiversity. She is actually a postdoc fellow in the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). She participated in the fieldwork, educational campaigns and in the development of the field guide for anuran species recognition.



Cecilia García

Age 30. Biologist. She is a doctorate fellow in the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET). Her research interests are behaviour and reproductive biology of anuran amphibians. She participated in the fieldwork and contributed with hers valuable skills in English to the writing /translation of documents and publications.



Yanina Vanesa Bonduri

Age 33. Biologist and she is currently working as a professional assistant at the provincial system of protected areas (SiPAP) of Salta province. She participated in the fieldwork and advised on technical aspects to get permissions from governmental agencies.



Pablo Martín Contreras

Age 34. Biologist. He is currently a freelance field assistant for researchers. He has experience in biodiversity inventories of herpetofauna. He participated in the fieldwork and contributed with the development of the field guide.



Marín Lépez

Age 32. Biologist. He currently works at the Botanical Museum of the Universidad Nacional de Córdoba. He is a passionate naturalist and photographer. He participated in the fieldwork and contributed with development of the field guide.



Section 2:

Aim and objectives

The project aim was to perform the first concrete conservation actions and to review the actual conservation status of the three endangered species of marsupial frogs of Argentina. This included the active search of populations of the recently rediscovered *Gastrotheca gracilis* in natural protected areas with effective protection and the development of a conservation action plan for these populations, as well as a long term searching/monitoring program with the participation of national parks rangers. For the two missing species (*Gastrotheca christiani* and *Gastrotheca chrysosticta*) it was imperative to determine if both species are still extant. All field activities and conservation measures were accompanied with a proactive campaign in order to raise awareness to general public about the existence of the marsupial frogs and the importance of preserving these endangered species and their natural habitat.

Methodology

We employed non-restricted (by time or area) diurnal and nocturnal visual encounter surveys and aural encounter surveys as techniques for the detection of adult specimens of marsupial frogs (Heyer *et al.*, 1994). During the active search of *Gastrotheca christiani* we also performed playback at fixed points (Schwartz, 2001). For tadpoles detection of the species *Gastrotheca chrysosticta* and *Gastrotheca gracilis*, we employed dip netting in temporary springs used as reproductive habitat by marsupial frogs (Heyer *et al.*, 1994).

The acoustic registries of males of marsupial frogs were recorded with a Sennheiser ME66-K6 super-cardioid directional microphone and a Marantz PMD661 digital recorder. All records were made with a sampling frequency of 96 kHz and 24 bit resolution (Akmentins *et al.*, 2014a). Together with each recording, air temperature was measured with a digital thermometer to the nearest 0.1° C.

In order to obtain the engagement of the National park administration (the main stakeholder of project) we conducted personal interviews with the authorities to explain the scope and conservation benefits of the project.

For the establishment of a long term search/monitoring program of marsupial frogs in the National Parks of NW Argentina, we conducted workshops of amphibian recognition with the park ranger staffs of the National Parks of NW Argentina.

Workshop activities were supported with develop of a field guide for amphibian diversity recognition (printed and pdf).

We employed multiples approaches to raise awareness about the conservation status of marsupial frogs’ in general public and scientific community, which are listed below:

- Lectures about the conservation of marsupial frogs in primary and secondary schools.
- TV and radio interviews.
- Web pages and social media.
- Edition of a field guide for amphibian species identification of the Yungas forests of NW Argentina, as printed and free-download resource.
- Divulgation note in FroLog (IUCN Amphibian Specialist Group).
- Scientific note in a herpetological journal.
- Presentation of CLP project results in a Herpetological Congress.

Outputs and Results

The main achievement of the project, that contributes directly to ensure the long term persistence of the rediscovered marsupial frog *Gastrotheca gracilis*, was the registry of two populations of this endangered frog in Campo de los Alisos National Park (Akmentins *et al.*, 2014a). This represents a high proportion of the success in relation of two of the four objectives stated.



Figure 1: CLP team and park rangers of Campo de los Alisos National Park during fieldwork in the search of marsupial frogs.

We obtained new data about the current status of the populations of *Gastrotheca gracilis* in the two localities where this species was originally rediscovered in 2011 (Akmentins *et al.*, 2014b).

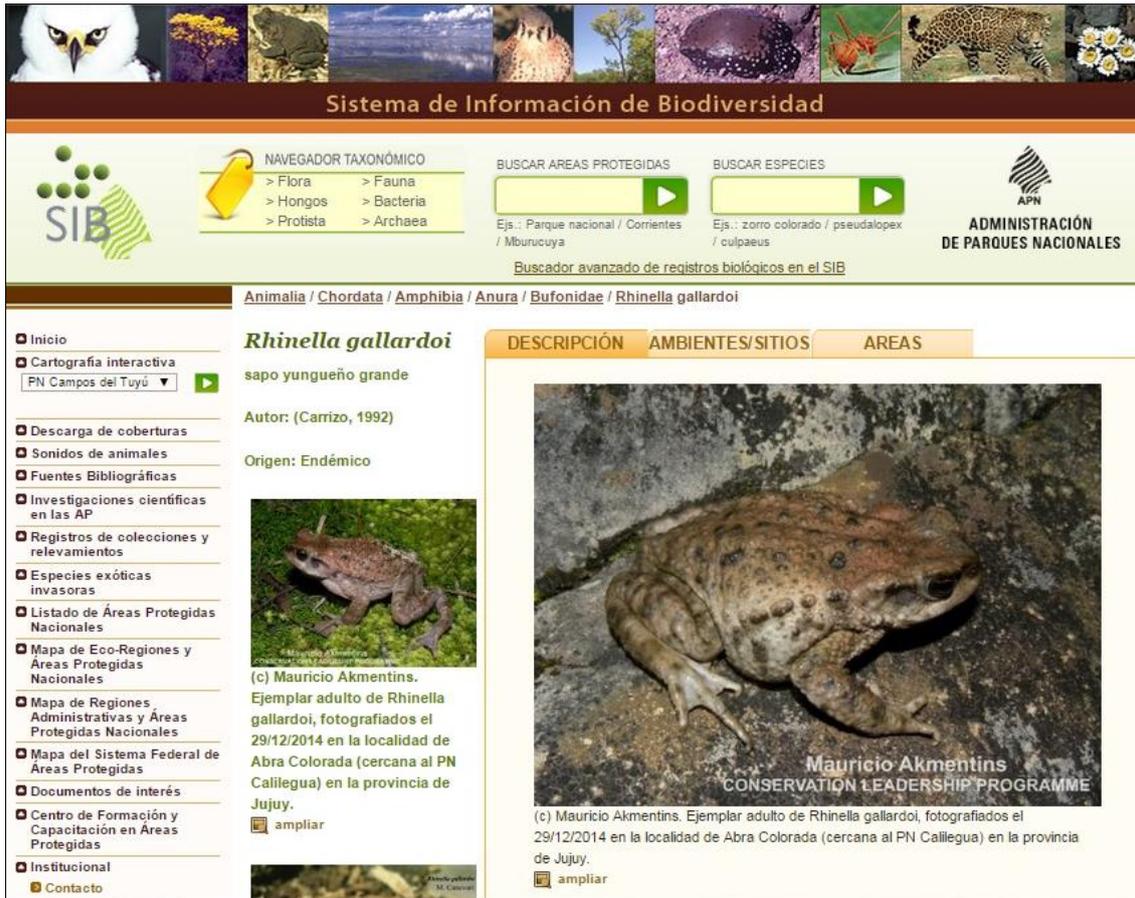


Figure 2: Fieldwork for monitoring the rediscovered populations of *Gastrotheca gracilis* in Tucumán province, Argentina.

Unfortunately, we found no new registries of the two missing species of marsupial frogs despite of the efforts in the intensive field searches. During the fieldwork campaigns on December 2014 we found specimens of the endangered (EN) toad *Rhinella gallardoi* in a locality near Calilegua National Park (figure 4), adults of this species were not registered in the wild since 1997 (Vaira *et al.*, 2012).



Figure 3: Fieldwork in order to search for new registries of the two missing species of Argentinean marsupial frogs.



Sistema de Información de Biodiversidad

Inicio
 Cartografía interactiva
 PN Campos del Tuyú
 Descarga de coberturas
 Sonidos de animales
 Fuentes Bibliográficas
 Investigaciones científicas en las AP
 Registros de colecciones y relevamientos
 Especies exóticas invasoras
 Listado de Áreas Protegidas Nacionales
 Mapa de Eco-Regiones y Áreas Protegidas Nacionales
 Mapa de Regiones Administrativas y Áreas Protegidas Nacionales
 Mapa del Sistema Federal de Áreas Protegidas
 Documentos de interés
 Centro de Formación y Capacitación en Áreas Protegidas
 Institucional
 Contacto

Animalia / Chordata / Amphibia / Anura / Bufonidae / Rhinella gallardoi

Rhinella gallardoi
 sapo yungueño grande
 Autor: (Carrizo, 1992)
 Origen: Endémico

ampliar

DESCRIPCIÓN AMBIENTES/SITIOS AREAS

(c) Mauricio Akmentins. Ejemplar adulto de *Rhinella gallardoi*, fotografiados el 29/12/2014 en la localidad de Abra Colorada (cercana al PN Calilegua) en la provincia de Jujuy.
 Mauricio Akmentins
 CONSERVATION LEADERSHIP PROGRAMME

(c) Mauricio Akmentins. Ejemplar adulto de *Rhinella gallardoi*, fotografiados el 29/12/2014 en la localidad de Abra Colorada (cercana al PN Calilegua) en la provincia de Jujuy.
 ampliar

Figure 4: Report of the registry of *Rhinella gallardoi* in the webpage of the Biodiversity Information System (SIB) of National Park Administration of Argentina.

We performed two successful workshops with 20 park rangers of Campo de los Alisos National Park and Baritú National Park/Nogalar de los Toldos National Reserve. Moreover, we edited and distributed 200 field guides of anuran amphibians of Yungas forest. The pdf version of the field guide is free to download at: http://issuu.com/jcojoroso/docs/guia_completa/1.



Figure 5: workshops of amphibian diversity recognition with the park ranger staffs of Baritú National Park and Nogalar de los Toldos National reserve (Top), and Campo de los Alisos National Park (bottom).

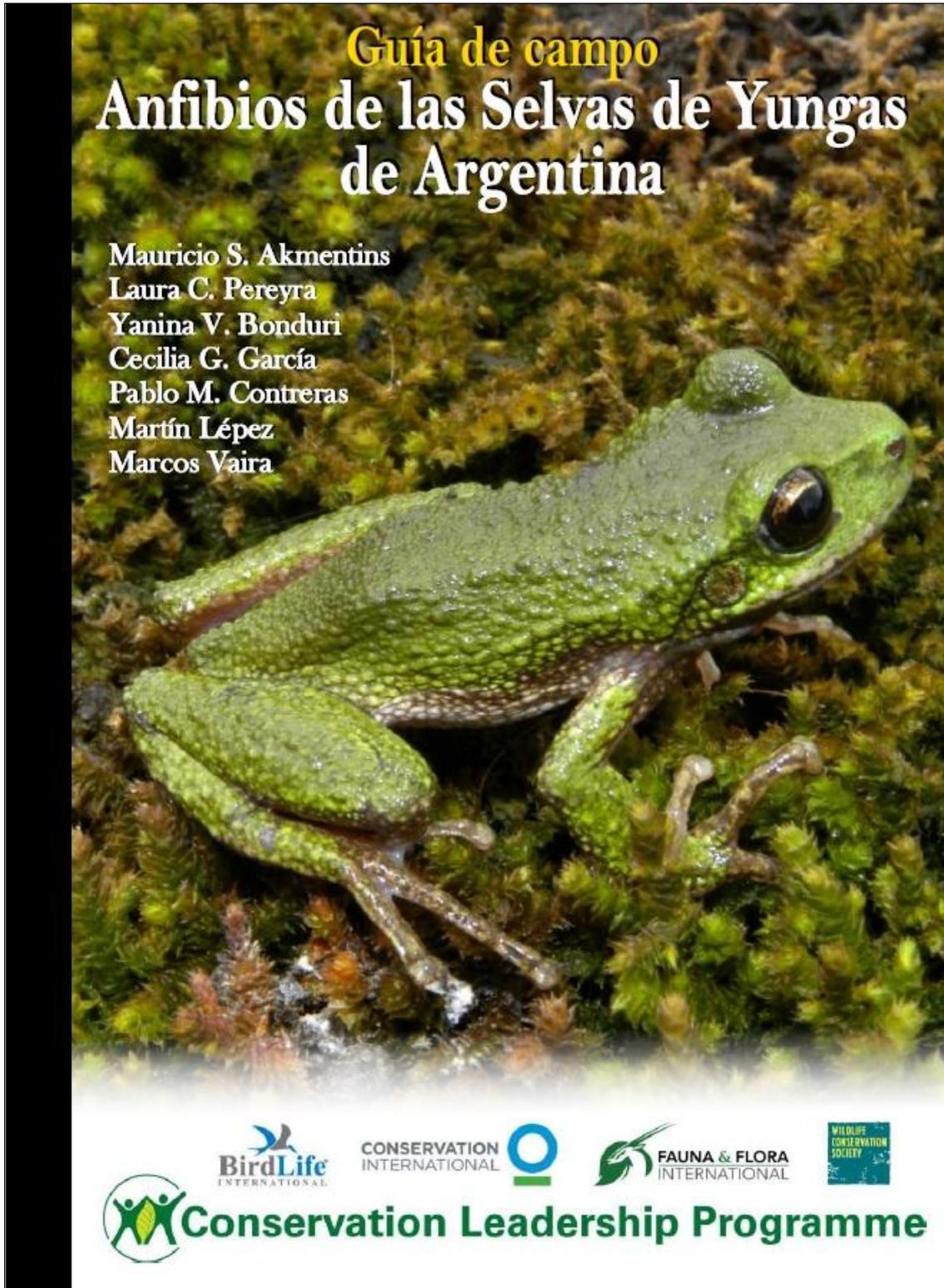


Figure 6: Front cover of the field guide of amphibians of Yungas forest of Argentina.

To generate awareness about the conservation of the endemic amphibian species and the importance of preserving the Yungas Andean forests using the marsupial frogs as flag species, we perform diverse outreach activities to reach broader audiences:

- TV interview in the show Científicos Industria Argentina of Argentinean Public TV, TV interview is available at: <https://www.youtube.com/watch?v=b6vynTFPquw>.
- Radio interview for the Jujuy National University radio station.
- Publication of an article in the CLP newsletter. The article is available at: <http://maildogmanager.com/page.html?p=000001XDDtjH8qFrsVdWM3x6ElFaxrmw> ==.
- Publication of a scientific note with the redescription of *Gastrotheca gracilis*' advertisement call. The scientific note is available at: <http://ppct.caicyt.gov.ar/index.php/cuadherpetol/article/view/3384/3589>.
- Post of pictures and the call audio of *Gastrotheca gracilis* in AmphibiaWeb (available at: http://amphibiaweb.org/cgi/amphib_query?special=call&genus=Gastrotheca&species=gracilis), and in the webpage of the National Biodiversity System (SIB) of National Parks Administration of Argentina (available at: http://www.sib.gov.ar/ficha/ANIMALIA*Gastrotheca*gracilis).
- Post of a picture of *Gastrotheca gracilis* in CalPhotos (photo database of Berkeley's University). Available at: http://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0214+0571
- Release of the printed and digital version of the field guide of anuran amphibians of Yungas. Available at: http://issuu.com/jcojoroso/docs/guia_completa.
- Post of the field guide of anuran amphibians of Yungas in the webpage of the IUCN Amphibian specialist Group. Available at: <http://www.amphibians.org/publications/manuals-guides/>.
- Post of the field guide of anuran amphibians of Yungas in the webpage of National Biodiversity System (SIB) of National Parks Administration of Argentina. Available at: <http://www2.sib.gov.ar/doc558.html>.
- Providing the illustration (adult male of *Gastrotheca gracilis*) for the cover image of the Volume 28 (2014) of Cuadernos de Herpetología herpetological journal.
- Participation in the activities of the National Science Week of Science and Technology with elementary and high schools of Jujuy province. This included two full days of activities and lectures with primary and secondary public schools of Jujuy province, with the participation of more than 300 school kids.

- Presentation of CLP project results in the anuran conservation symposium organized in the XV Argentinean herpetological Congress (see appendix IV).



Figure 7: Backstage of the TV interview for Científicos Industria Argentina show in Calilegua National Park.



Figure 8: Radio interview in a radio program of the Jujuy National University.

Conservation in Action



CLP Ranger Training Unveils Populations of a Threatened Frog Species in Argentina

By: Mauricio Akmentins & Yanina Bounduri ("Saving the Endangered Marsupial Frogs in Yungas Forests of Argentina," 2013)

The 2013 CLP project "Saving the Endangered Marsupial Frogs in Yungas Forests of Argentina" is yielding its first positive results! The team started by training national park rangers on amphibian species recognition and acoustic registries in northwestern Argentina. On October 13, 2013, two team members who were accompanying the first trained group of rangers, registered one population of the recently rediscovered marsupial frog *Gastrotheca gracilis* in Campo de los Alisos National Park.



This finding represents a great opportunity for the long term conservation of this threatened amphibian species because Campo de los Alisos National Park was recently created and is in the implementation phase of the park's management plan. The team therefore has the opportunity to encourage the inclusion of *Gastrotheca gracilis* in the conservation priorities of this national park. Also, on November 11, 2013, the team received the first report of another population of this marsupial frog species in Campo de los Alisos National Park registered by the trained rangers. The project continues with the training of national park rangers and intensive field work to find two other species of marsupial frogs that are yet to be found in northwestern Argentina.



Photos by Mauricio Akmentins

Photo 1: Male marsupial frog (*Gastrotheca gracilis*) from Campo de los Alisos National Park, Tucumán, Argentina.

Photo 2: From left to right: Yanina Bounduri (CLP team), Don Felipe Nieva (local ranger assistant), Emiliano Fransconi (park ranger assistant), Pablo Contreras (National Park volunteer), Pedro Massabie (park ranger assistant) and Mauricio Akmentins (CLP project leader).

Figure 9: Article published in the CLP Newsletter.

Preserving the Endangered Marsupial Frogs of the Genus *Gastrotheca* in Argentina



By ¹Mauricio S. Akmentins¹, ²Laura C. Perroye, ³Cecilia G. Garcia, ⁴Yanina V. Bonduri, Pablo M. Contreras & ⁵Martin Lijeren

Since the rediscovery of the southernmost species of the hemiphractid marsupial frog *Gastrotheca gracilis* after 20 years without registration in the wild, the conservation awareness of the three endemic species of marsupial frog inhabiting Argentina has become more important. The remarkable reduction in the localities of occurrence of *G. gracilis* and without any sightings in the wild of *G. christiani* since 1996 and *G. deyeuxi* since 1993 were the main reasons for increasing the threat status of these species from Vulnerable to Endangered in the last Argentinean Red List assessment (7).

In mid-2013, we initiated a conservation project focused on the three endemic species of marsupial frog of genus *Gastrotheca* present in Argentina. This project was one of the winners of the Future Conservationist Award 2013 granted by the Conservation Leadership Programme (CLP) and it is part of a long-term program for the conservation of amphibian diversity of Yungas Andean forests in north-western Argentina. While this project is still underway, some notable results have been obtained to date.

One of the most concerning issues about the two rediscovered populations of *Gastrotheca gracilis* is the lack of effective habitat protection; despite the fact that one of these populations occurs in a provincial natural protected area (2). Fortunately, two new popula-

Cuad. herpetol. 28 (2): 00-00 (2014)

Nota

Redescripción del canto de anuncio de *Gastrotheca gracilis* Laurent, 1969 (Anura: Hemiphysalidae) y primer registro para el Parque Nacional Campo de los Alisos, Tucumán, Argentina

Mauricio S. Akmentins¹, Yanina V. Bonduri², Pablo Contreras³, Luis E. Francisconi⁴, Pedro J. Massabie⁵, Juan Santillán⁶

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El estado de conservación de las tres especies de ranas marsupiales del género *Gastrotheca* Fitzinger, 1843 de Argentina ha sido motivo de preocupación en los últimos años. Estas ranas marsupiales presentan una distribución geográfica restringida a las selvas de Yungas del noroeste de Argentina y entre las principales amenazas para su conservación se destaca la pérdida de hábitat (Vaira, 2003; Laurilla y Heatwole, 2010). Un reciente trabajo basado en una serie de métodos probabilísticos y un análisis de tendencia que empleó la serie temporal de los registros de cada una de las especies sugiere que, aunque existe la posibilidad de que estas tres ranas marsupiales aun persistan en la naturaleza, han sufrido una declinación importante de sus poblaciones (Akmentins et al., 2012). *Gastrotheca christiani* Laurent, 1967 y *Gastrotheca deyeuxi* Laurent, 1972, no han sido registradas en la naturaleza desde el año 1996 y el año 1993 respectivamente, mientras que *Gastrotheca gracilis* Laurent, 1969 fue recientemente redescubierta en el año 2011, después de 20 años sin registros (Akmentins et al., 2012). Esto llevó a que en la nueva categorización del estado de conservación de los anfibios de Argentina, las tres especies fueran catalogadas como En Peligro de Extinción (Vaira et al., 2012).

Gastrotheca gracilis es la especie con distribución más austral de la familia Hemiphysalidae y es la rana marsupial de Argentina con mayor número de registros geográficos históricos, desde su localidad tipo en "La Banderita" en el límite entre las provincias de Tucumán y Catamarca (Laurent, 1967), hacia el norte en las serranías del oeste y noreste de Tucumán (Laurent et al., 1986). Las dos poblaciones redescubiertas se encuentran en la Reserva Provincial Los Sosa y en la localidad tipo (Akmentins et al., 2012), pero en ambas localidades esta especie carece de protección efectiva (obs. pers.).

Las ranas marsupiales se caracterizan por sus hábitos de vida crípticos y generalmente no se encuentran cerca de los cuerpos de agua lénticos y lóticos como la gran mayoría de los anfibios de Yungas (Vaira, 2002). Las especies argentinas de ranas marsupiales han sido caracterizadas como de hábitos arbóricolas y rupícolas, debido a que siempre se las registró asociadas a grietas en las rocas y oquedades en los árboles (Laurent et al., 1986).

El contar con la descripción del canto de anuncio de especies de anfibios de interior de selva con hábitos de vida crípticos es de mucha utilidad, ya que es más probable registrar el canto de los machos que detectar individuos mediante otros métodos empleados frecuentemente en relevamientos de anfibios anuros como la búsqueda activa por encuentro visual (Crump y Scott, 1994). A su vez, el canto de anuncio permite registrar la presencia de una especie

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Figure 10: Published articles with the results of the CLP project.



Sistema de Información de Biodiversidad

NAVEGADOR TAXONÓMICO

- > Flora
- > Hongos
- > Protista
- > Fauna
- > Bacteria
- > Archaes

BUSCAR ÁREAS PROTEGIDAS

Ej.: Parque nacional / Comentes / Mburucujá

BUSCAR ESPECIES

Ej.: zorro colorado / pseudalopex / culpepus

ADMINISTRACIÓN DE PARQUES NACIONALES

Buscador avanzado de registros biológicos en el SIB

Animalia / Chordata / Amphibia / Anura / Hemiphysalidae / ***Gastrotheca gracilis***

Gastrotheca gracilis

rana marsupial tucumana

La Banderita Marsupial Frog

Sonido 1: Autor: Dr. Mauricio S. Akmentins, Conservation Leadership Programme / Área Protegida: (APN) Parque Nacional Campo de los Alisos / Fecha: 2013-10-13

A M P H I B I A W E B

Gastrotheca gracilis

family: Hemiphysalidae

233.6 K MP3 file

Locality	Campo de los Alisos National Park
County	
State	Tucumán Province
Country	Argentina
Date Recorded	2013-10-13
Call Type	
Temperature (F/C)	7.7° C
Temperature Type	air
Background	
Notes	Recorded on October 13 2013, 22:54 hs.
Recorded By	Dr. Mauricio S. Akmentins
Source	
Copyright	Dr. Mauricio S. Akmentins, Conservation Leadership Programme, msakmentins AT conicet.gov.ar
Date Entered	2014.02.09

Feedback or comments about this page.

Citation: AmphibiaWeb: Information on amphibian biology and conservation. [web application]. 2014. Berkeley, California: AmphibiaWeb. Available: <http://amphibiaweb.org/>. (Accessed: Oct 30, 2014).

AmphibiaWeb's policy on data use.

Figure 11: Webpage of SIB and AmphibiaWeb with photos and call audios of *Gastrotheca gracilis*.

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Revista de la
Asociación Herpetológica Argentina

Figure 12: Cover image with *Gastrotheca gracilis* illustrating volume 28 of the herpetological journal Cuadernos de Herpetología.



Figure 13: Talking about the conservation of amphibian diversity with schools kids of Jujuy province.



Figure 14: Symposium of amphibian conservation projects during the XV Argentinean herpetological congress.



Figure 15: Field guide promotion through CLP Facebook page.

Achievements and Impacts

The project was based in three keystones: to ensure the long-term preservation of the rediscovered *Gastrotheca gracilis*, the search the two missing species of Argentinean marsupial frogs, and the creation of awareness about the conservation status of the marsupial frogs and their habitat in Yungas Andean forest of NW Argentina.

The registry of *Gastrotheca gracilis* in Campo de los Alisos National Park allowed the incorporation of this endangered species as part of the conservation priorities in the management plan of the protected area, giving this marsupial frog species a good chance for its long term preservation. The other two rediscovered populations of *Gastrotheca gracilis* appear to be stable but still without effective protection. In addition, a new source of threat for this marsupial frog was detected. We hope the obtained information will be used by environmental authorities to apply effective conservation measures for the scarce populations of this threatened marsupial frog species.

After more than one year of field search, it was not possible to find new registries of the missing species *Gastrotheca christiani* and *Gastrotheca chrysosticta*. But the registries of adult specimens of the endangered toad *Rhinella gallardo* was a clear sign of the need of increase the field search effort and maintain it over time in order to rediscover the missing marsupial frog species.

The release of the field guide of anuran amphibians of Yungas forest was the first step to establish a long term searching/monitoring program of marsupial frogs in the protected areas of NW Argentina with the active involvement of National Park Administration. The searching/monitoring program is in an incipient stage, and park rangers were very receptive to the training in amphibian recognition and they frequently reported to us the sight of amphibians in the protected areas where they work.

The outreach of the project activities exceeded our original expectations. Through scientific works, dissertations, multimedia, and other outreach activities we was able to reach a very diverse audiences. Even more, the possibility of posting photos, uploading audios, and the presentation of the field guide in the most important biodiversity and amphibian conservation institutions (national and international), like Diversity Information System of Argentinean National Parks Administration, AmphibiaWeb, and Amphibian Specialist Group of IUCN, ensured a massive impact of the outreach products of the project.

Section 3:

Conclusion

As first incursion in the field of conservation, the concretion of this project was an invaluable experience for all team members.

With the objectives achieved, especially with the fieldwork results of with *Gastrotheca gracilis* in Campo de los Alisos National Park, this project established a precedent for the conservation of amphibian diversity in Argentina.

We believe that outreach activities gave high visibility to the project and contributed to establish both, marsupial frogs and Yungas Andean forests as conservation priorities in the country.

Particularly, the field guide of amphibians of Yungas forests of Argentina had a great impact as outreach material, providing a valuable tool to park rangers, biologists and naturalists (even general public).

Problems encountered and lessons learnt

One of the assumptions was the possibility of developing educational activities in schools, but this resulted in a very bureaucratic process. This inconvenience was partially solved by incorporating the planned educational activities in events like the National Week of Science and Technology.

We also faced logistic problems in field campaigns. At the beginning of the project fieldwork was delayed by a severe drought in NW Argentina. After that, by the lack of vehicles available and interruptions of the unpaved roads due to heavy summer rain made it difficult to accomplish the stipulated deadlines and the number of field campaigns planned.

Regarding the methodology employed during the field search, we believe that the active search with visual/aural encounter survey technique was not the best for these frog species, mainly due to the elusive and cryptic life habits of adult frogs. We recommend incorporating passive monitoring techniques such as the employment of artificial cover objects (ACO's) or automatic recording devices (frogloggers) in order to maximize the chance of detecting adult specimens.

Concerning outreach activities, we opted for an adaptive approach rather than the LogFrame approach in order to maximize the quality and the impact of the outreach products. This approach was successful, although some of the proposed outreach products in the project plan were not developed (i.e. we originally proposed the creation of a Facebook page, but we preferred to use more massive platforms to advertise about our project result rather than a Facebook page with low periodicity of postings).

In the future

Firstly, after the project is over, we will apply to more conservation grants/awards to raise funds to continue with the field search of the two missing species of marsupial frogs. Thanks to the experience gained in the field, we consider that will be better to incorporate new technologies, such as automated recording devices (frogloggers), to maximize the chance of detecting those amphibian species with cryptic and elusive life habits like marsupial frogs.

Our intention is continue the work in collaboration with the National Parks Administration authorities, giving advice in conservation measures for endangered species as well as in the identification of amphibian species.

On the other hand, the project leader will work in the promotion and concretion of a workshop, with the participation of herpetologists and conservationists specialized in amphibians, to develop the conservation action plan for endangered amphibian species



of Argentina. This initiative will allow focusing and coordinating conservation efforts of threatened amphibian species in the country.

Section 4:

Appendix I. Authorization of National Parks Administration for project activities in the protected areas of NW Argentina.

ADMINISTRACIÓN DE PARQUES NACIONALES
Ley 22.351



FORMULARIO III

Autorización de Investigación

Proyecto Número: DCM 438

La Administración de Parques Nacionales autoriza a los investigadores y colaboradores Mauricio Sebastián Akmentins, Dr. Marcos Vaira, Biól. Laura Cecilia Pereyra, Cecilia Graciela García, María Inés Bonansea, Pablo Martín Contreras y Martín Lepez.

Institución: Centro de Investigaciones y Transferencia de Jujuy (CIT-JUJUY) e Instituto de Bio y Geociencias del NOA (IBIGEO) de la Universidad Nacional de Salta Correo electrónico:

Dirección y teléfono: Gorriti 237 (4600), S. S: de Jujuy; tel. 03884221506 o 0388155734478

A realizar, bajo las condiciones establecidas en el presente documento, las siguientes actividades:

- Realizar transectas auditivas y visuales tanto diurnas como nocturnas con el fin de detectar ejemplares juveniles y/o adultos de *Gastrotheca christiani*, *G. chrysosticta* y *G. gracilis*. Los ejemplares detectados serán identificados a nivel específico, fotografiados y devueltos en el mismo sitio donde se realizó el hallazgo.
- Obtener registros bioacústicos con un sistema de grabación digital, en aquellos casos en que las especies se encuentren vocalizado.
- Realizar búsqueda activa de renacuajos de las especies *G. chrysosticta* y *G. gracilis* con una red de mano. Los renacuajos capturados serán identificados, fotografiados y devueltos al mismo cuerpo de agua donde fueron encontrados.
- Realizar un hisopado en caso de detectar ejemplares adultos con signos de infección con quitridiomycosis y larvas con deformaciones en aparato bucal, con el fin de confirmar la infección por el hongo *Batrachochytrium dendrobatidis*.
- Realizar talleres sobre identificación de especies de anfibios, para capacitar a los guardaparques de la APN que cumplen funciones en las áreas protegidas propuestas en el presente proyecto.

En el marco del Proyecto: CONSERVANDO A LAS ESPECIES AMENAZADAS DE RANAS MARSUPIALES DE LAS YUNGAS DE ARGENTINA.

Especie/s: *Gastrotheca christiani*, *G. chrysosticta* y *G. gracilis*.

Número de ejemplares por especie: No colecta ejemplares.

Muestras: hisopado con el fin de confirmar la infección por el hongo *Batrachochytrium dendrobatidis*.

Número de muestras por sitio: a determinar.

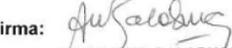
Número total de muestras: a determinar.

Depósito de material: en caso de ocurrir muertes accidentales de ejemplares por los métodos de muestreos y manipulación de este proyecto de investigación, el depósito final del ejemplar se hará en el Museo de Ciencias Naturales Lic. Miguel Ángel Arra de la Universidad Nacional de Salta.

En las siguientes unidades de conservación de jurisdicción de la Administración de Parques Nacionales: Parque Nacional Calilegua, Parque Nacional Baritú, Parque Nacional El Rey, Parque Nacional Campo de los Alisos, Parque Nacional Los Cardones y Reserva Nacional El Nogalar de Los Toldos.

Durante el período comprendido entre entre el 20 de agosto de 2013 y el 19 de agosto de 2014.

Fecha: 21 AGO 2013

Firma: 
MGS ANA BALABUSIC
Directora Nacional de
Conservación de Áreas Protegidas

Appendix II. Receipt note of the technical report to inform to National Park Administration authorities about the importance of the registry of *Gastrotheca gracilis* in Campo de los Alisos National Park.



Conservation Leadership Programme

Appendix III. Page of the draft of the management plan of Campo de los Alisos National Park describing the importance of the registry of *Gastrotheca gracilis* in this protected area.

Parque Nacional Campo de Los Alisos

Plan de Gestión

Mamíferos en Peligro: Lobito de río (*Lontra longicaudis*)

Mamíferos Endémicos regionales: pericote de Alisos (*Phyllotis alisosiensis*)

Mamíferos poco o nada representados en otras AP: Guanaco (*Lama guanicoe*).

Aves Amenazadas: (*Parabuteo leucorrhous*); canastero (*Asthenes maculicauda*); jilguero (*Sicalis citrina*); mirlo de agua (*Cinclus schultzi*)

Aves en Peligro: Águila solitaria (*Buteogallus solitarius*); gaucho andino (*Agriornis albicauda*)

Anfibios en Peligro: Rana marsupial (*Gastrotheca gracilis*) que fue recientemente re-encontrada en el año 2011, después de 20 años sin registros (Akmentins *et al.* 2012) (Fig. 64). *G. gracilis* es la especie con distribución más austral de la familia Hemiphractidae. Durante actividades de relevamiento en búsqueda de ranas marsupiales en el día 13 de octubre de 2013, se registraron varios machos vocalizando cerca del destacamento de La Mesada (Arkmentis *et al.* 2014). La presencia de esta especie en jurisdicción del PNCLA representa una excelente oportunidad para asegurar la persistencia a largo plazo de esta especie amenazada, catalogada como En Peligro en la categorización nacional y como Vulnerable en las listas rojas de IUCN (IUCN 2013; Vaira *et al.* 2012). La ranita montana (*Telmatobius ceiorum*) está considerada probablemente extinta y no hay registros de esta especie a pesar del esfuerzo intensivo de búsqueda desde el año 1984. Esta especie (junto con otras del mismo género) son de particular interés porque comparten características de las especies de anfibios que han declinado los últimos años (modo de vida acuático, presencia en la alta montaña, baja fecundidad y distribución endémica (Barrionuevo y Ponsa 2008)).



Figura 64. *Gastrotheca gracilis*, la ranita marsupial. (foto: M. Akmentins).

2.4.6 Plantas nativas de uso tradicional en la zona de amortiguamiento

En comunidades campesinas el conocimiento y uso de plantas con fines curativos tiene especial importancia, mas si se tienen en cuenta la distancia de estas comunidades de los centros poblados y por lo tanto, de asistencia médico sanitaria. Por ello el conocimiento y uso de las plantas disponibles es un recurso terapéutico importante. Sin embargo, en la mayoría de las poblaciones rurales se nota que hay pérdida progresiva de estos

Ministerio de Turismo
Administración de Parques Nacionales
Argentina, enero de 2014

Appendix IV. Abstract of the presentation of the CLP project results Amphibian Conservation Symposium in the XV Argentinean Herpetological Congress.

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XV CONGRESO ARGENTINO DE HERPETOLOGÍA - SIMPOSIO CONSERVACION ANFIBIOS

Conservando a las especies amenazadas de ranas marsupiales de las Yungas de Argentina

Akmentins, M.¹, Pereyra, L.¹, García, C.¹, Bonduri, Y.², Contreras, P. & Lépéz, M.³

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² Profesional Asistente de Planta Permanente, SiPAP, Secretaría de Ambiente, Ministerio de Ambiente y Producción Sustentable de la Provincia de Salta. Salta.

³ Museo Botánico Córdoba, UNC. Córdoba.

El estado de conservación de las ranas marsupiales del género *Gastrotheca* de Argentina es causa de gran preocupación debido a la falta de registros en las últimas dos décadas. El reciente redescubrimiento de *Gastrotheca gracilis* luego de 20 años, nos da expectativas de que las otras dos especies aun persistan en la naturaleza. El proyecto de conservación se centró en tres objetivos principales: 1) búsqueda de nuevas localidades de ocurrencia y monitoreo de las poblaciones de *G. gracilis*; 2) búsqueda intensiva en las localidades históricas de ocurrencia de *G. christiani* y *G. chrysosticta*; 3) generar conciencia pública sobre el estado de conservación de las especies amenazadas de ranas marsupiales de Argentina. Se involucró activamente a la Administración de Parques Nacionales, institución que fue identificada como uno de los actores clave para el éxito del proyecto. Como resultado de las actividades en campo se registró a *G. gracilis* en el Parque Nacional Campo de los Alisos, lo que permitió incorporar a esta especie amenazada dentro de las prioridades de conservación del plan de manejo del área protegida. También se lograron realizar registros acústicos de *G. gracilis*, lo cual es una valiosa herramienta de monitoreo. Las dos poblaciones de *G. gracilis* registradas en 2011 parecen estables, pero carecen de protección efectiva y se detectó una nueva amenaza para la especie. A pesar de los esfuerzos de búsqueda no se lograron nuevos registros de *G. christiani* y *G. chrysosticta*. Las actividades se complementaron con una fuerte campaña de difusión de los resultados del proyecto en distintos medios de comunicación. Se pretende implementar un plan a largo plazo de búsqueda y monitoreo de ranas marsupiales con los guardaparques nacionales de las áreas protegidas de las Yungas, con la distribución de una guía de campo para el registro e identificación de especies de anfibios.

Palabras clave: *Gastrotheca*, actores clave, Administración de Parques Nacionales, búsqueda, difusión

Estrategias de gestión para la conservación de la herpetofauna del Paso Internacional Pehuenche, con énfasis en la rana *Alsodes pehuenche*

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En el año 2006, cuando comenzaron las obras de pavimentación de la ruta internacional N° 145 en el departamento de Malargüe de la provincia de Mendoza, fuimos consultados por la Dirección de Recursos Naturales de la Provincia de Mendoza acerca de los riesgos potenciales de esta obra sobre la población de *Alsodes pehuenche*. Debido a la ausencia de datos biológicos para esta especie, surgió la necesidad de recabar información a fin de proponer medidas de mitigación y evitar que las obras afectaran la supervivencia de este anfibio endémico. También detectamos otras especies endémicas en el área, las lagartijas *Liolaemus flavipiceus* y *Phymaturus verdugo*, que podrían verse afectadas por las obras viales. El objetivo de esta presentación es comentar las acciones que hemos llevado a cabo con los distintos organismos gubernamentales involucrados, cómo logramos ser escuchados y cuáles fueron las principales dificultades que encontramos en el proceso. Las acciones incluyen desde informes técnicos y reuniones con funcionarios de gobierno, hasta charlas directas con los ingenieros y responsables locales. Estas últimas reuniones, más informales, resultaron ser las más fructíferas y expeditivas. Luego de mucho esfuerzo, hoy contamos con un conocimiento más avanzado de la biología reproductiva y uso del espacio de *Alsodes pehuenche*, lo que ha servido para su recategorización a las máximas categorías de amenaza en las listas rojas internacional (IUCN) y nacional (AHA). Además, hemos logrado pequeñas modificaciones al plan de obra, pero significativas para la conservación de esta especie. Algo similar ocurrió con las lagartijas, las que fueron categorizadas a nivel nacional como Vulnerables y se ha logrado conservar algunos hábitats que de otro modo hubieran sido destruidos.

Palabras clave: obras viales, manejo, endemismos, anfibios, reptiles.



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