

# THE AMPHIBIAN FAUNA OF THE SOUTHWEST AMBORÓ NATIONAL PARK, SANTA CRUZ, BOLIVIA

## LA FAUNA DE ANFIBIOS DE LA REGIÓN SUROESTE DEL PARQUE NACIONAL AMBORÓ, SANTA CRUZ, BOLIVIA

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***Palabras clave:*** Anfibios, Conservación, Lista de especies Parque Nacional Amboró

***Key words:*** Amphibians, Amboró National Park, Conservation, Species lists

### INTRODUCTION

Habitat destruction represents the most serious threats to biodiversity (Fahrig, 2001) and in several regions of Bolivia the deforestation rates have been increased, even in protected areas (Killeen et al., 2008; Pinto-Ledezma y Rivero, 2013). Amphibians occur at high densities in tropical forest and play important roles as primary, midlevel, and top consumers and are species highly sensitive to environmental changes (Burton y Likens, 1975; Blaustein et al., 1994). Some negative effects of habitat destruction may include decline in species diversity and abundance, change in species composition and decreased genetic diversity. Besides, the amphibians are a group especially vulnerable to environmental change because they have relatively narrow moisture and temperature tolerance and specific breeding-habitat requirements (Gibbons et al., 2000; Hanlin et al., 2000).

The Amboró National Park and Natural Area of Integrated Management (hereafter ANP) stretches from approximately 17°15' to 18°05'S and from 63°30' to 64°45'W, is the largest (637.600 ha) protected area in western Santa Cruz (central Bolivia) and one of the most diverse of Bolivia and must be one of the most biologically most diverse national parks in the world (Nee, 2010). Additionally, the ANP should be considered as one of the last continuum patches of natural vegetation that serve as habitat and refuge for several species, including fauna and flora, because, the human activities in the region are increased exponentially in the last 30 years (Killeen et al., 2008).

Here we report a list of amphibians that occur in four localities (Table 1) at the southwestern ANP, and propose some recommendations for the management and conservation the habitats in the region. Data were collected using a combination of field observation (during day and night), and bibliographic sources. Field work extended for 54 days (2013). Specimens were captured and released immediately after confirm the specie. We follow the taxonomy of Frost

**Table 1.** Localities of data collection, include the central coordinates of each locality, the number of species and specimens registered and the number of days in each locality.

**Tabla 1.** Localidades de colecta de datos, incluye las coordenadas centrales de cada localidad, el número de especies y especímenes registrados y el número de días en cada localidad.

Locality	Central coordinates		Number of individuals	Number of species	Number of days
	X	Y			
Los Remates	-64.346882	-17.874187	68	9	14
Abra de la Cruz	-64.359707	-17.856765	39	8	8
Santa Rosa de Lima	-64.244198	-17.873622	110	12	16
Sivingalito	-64.144491	-17.931701	70	10	16

(2014), and to assign the conservation status we used the categories of the IUCN (2014) and the Red book of threatened fauna of Bolivia (hereafter LRVB) (MMAyA, 2009) for comparison.

## RESULTS AND FINAL CONSIDERATIONS

All combined amphibian sampling methods resulted in 287 individual of 24 species (seven families) (Tables 1 and 2). According IUCN conservation status, two species are in the category of Vulnerable (VU), 15 species in the category of Least Concern (LC), three species in Data Deficient (DD) and Not Evaluated (NE). The two species listed as Vulnerable in the IUCN (*Rhinella justinianoi* and *R. quechua*), are in the category Endangered (EN) in the LRVB, and one specie (*Rhinella amboroensis*) considered as DD in the IUCN is considered Critically Endangered (CR) in the LRVB (MMAyA, 2009).

**Table 2.** Amphibian list registered in the study area, according with the taxonomy proposed by Frost (2014). It denote the presence of each specie by habitat type. The classification of conservation status corresponding to the IUCN code (2014) and the Red book of threatened fauna of Bolivia (2009).

**Tabla 2.** Lista de anfibios registrados en el área de estudio, de acuerdo a la taxonomía propuesta por Frost (2014). Se indica la presencia de la especie por tipo de hábitat. La clasificación del estado de conservación corresponde al código de la UICN (2014) y al Libro rojo de vertebrados amenazados de Bolivia (MMAyA, 2009).

Taxonomic classification	Number of individuals per specie	Habitat			Conservation status	
		Tucumano-Boliviano	Bolivian Montane Dry Forest	Bolivian Yungas	IUCN	LRVB
<b>Anura</b>						
<b>Bufonidae (5)</b>						
<i>Rhinella amboroensis</i>	1			X	DD	CR
<i>Rhinella arenarum</i>	2	X	X		LC	
<i>Rhinella justinianoi</i>	3	X		X	VU	EN
<i>Rhinella quechua</i>	2	X		X	VU	EN
<i>Rhinella veraguensis</i>	8	X		X	LC	
<b>Centrolenidae (1)</b>						
<i>Nymphargus bejaranoi</i>	1	X			NE	VU
<b>Craugastoridae (7)</b>						
<i>Oreobates discoidalis</i>	4	X			LC	
<i>Oreobates sanctaerucis</i>	2	X	X		LC	VU

Taxonomic classification	Number of individuals per specie	Habitat			Conservation status	
		Tucumano-Boliviano	Bolivian Montane Dry Forest	Bolivian Yungas	IUCN	LRVB
<i>Pristimantis llojsintuta</i>	2			X	LC	
<i>Pristimantis platydactylus</i>	4	X		X	LC	
<i>Yuganastes pluvicanurus</i>	12	X		X	LC	VU
<i>Pristimantis rhabdalaemus</i>	37	X	X	X	NE	
<i>Pristimantis</i> sp.	1			X		
<b>Hemiphractidae (1)</b>						
<i>Gastrotheca marsupiata</i>	4			X	LC	
<b>Hylidae (7)</b>						
<i>Dendropsophus minutus</i>	32	X	X	X	LC	
<i>Hypsiboas cf. calipleura</i>	2	X		X	NE	
<i>Hypsiboas marianitae</i>	115	X	X	X	LC	
<i>Hypsiboas riojanus</i>	10	X	X	X	DD	
<i>Scinax castroviejo</i>	1			X	DD	
<i>Scinax fuscovarius</i>	7	X	X		LC	
<i>Phyllomedusa boliviana</i>	6	X			LC	
<b>Leptodactylidae (2)</b>						
<i>Leptodactylus gracilis</i>	2	X			LC	
<i>Pleurodema cinereum</i>	24	X	X	X	LC	
<b>Odontophrynidae (1)</b>						
<i>Odontophrynus americanus</i>	3	X			LC	

Additionally, we confirm the presence of eight endemic species for the Yungas (Köhler, 2000) (*Rhinella amboroensis*, *R. justiniano*, *R. quechua*, *Nymphargus berajanoi*, *Oreobates sanctaerucis*, *Pristimantis llojsintuta*, *Yuganastes pluvicanorus* and *Hypsiboas cf. calipleura*) and recorded a new record of an endemic frog (*Rhinella amboroensis*) for the Santa Cruz department (17.836397°N, 64.570981°W; 2181 m elevation), which only was previously recorded in the Cochabamba department (Carrasco National Park) (Harvey y Smith, 1993). This new record allow to extent the distribution of the species in 80 km SE.

Land-use changes and deforestation are the main threat to amphibian populations (Duellman y Trueb, 1994; Barret y Guyer, 2008). And in this part of Bolivia, deforestation and habitat destruction, is the major immediate threat to the forest and its biodiversity, caused by the immigration, road construction and globalization of the agricultural economy. If these activities continue, we expect high rates of deforestation to continue (as mentioned in Pinto-Ledezma y Rivero 2013). As a result, it is necessary to develop novel resource use plans, and generate new policies to improve conservation. Sustainable land use and forest management (Bucher y Huszar 1999) become the better alternative, because the present management system is degrading the resource base and is therefore unsustainable. This is important because the process of landscape transformation observed in the region is a risk for one of the most important ecosystems in Bolivia, from ecological, functional and economic points of view. In this sense, the development of social policies is likely necessary to overcome the resistance of campesinos (i.e., indigenous Andean colonists) to this management system (Huszar, 1999),

because management requires an initial investment that may be uneconomical in the short-term to campesinos and even larger producers (Bucher y Huszar, 1999).

### ACKNOWLEDGEMENTS

This manuscript is part of the results of the project “Long-Term Effects of Habitat Modification on Amphibians in the Yungas and Inter-Andean Dry Valley Ecoregions”, funded by the Rufford Small Grants (Project RSG-12939-1) to Ronald Sosa.

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