



A new occurrence record for the Vulnerable *Rhinella rumbolli* (Carrizo, 1992) (Anura, Bufonidae) in Tarija, Bolivia

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Abstract

We present a new altitudinal record for Salta Toad, *Rhinella rumbolli* (Carrizo, 1992). This species is recorded in northern Argentina and southern Bolivia from 700 to 1800 m a.s.l. Our new record comes from San Lorencito, Méndez Province, Tarija Department, Bolivia, and extends the altitudinal range by 569 m a.s.l.

Keywords

Altitudinal range, Amphibia, distribution, Salta Toad, Tucumano Boliviano forest

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Introduction

In Bolivia, bufonid frogs are represented by 23 species distributed into six genera: *Amazophrynella* Fouquet et al., 2012, *Atelopus* Duméril & Bibron, 1841, *Melanophryniscus* Gallardo, 1961, *Nannophryne* Günther, 1870, *Rhaebo* Cope, 1862, and *Rhinella* Fitzinger, 1826. The last genus is the most speciose, with 17 species (De la Riva and Reichle 2014) present in 10 of the 12 ecoregions of Bolivia (Ibáñez et al. 2003).

Rhinella rumbolli (Carrizo, 1992) is the most southernly occurring toad within the *R. veraguensis* group (Pramuk 2006). It is found in some localities of Salta and Jujuy provinces, Parque Nacional Calilegua, Parque Nacional Baritú, and Reserva Nacional El Nogalar de

Los Toldos in Argentina (Carrizo 1992; Vaira et al. 2012; Schocchi and Kretzschmar 2017). In Bolivia, its distribution was restricted to the Reserva Nacional de Flora y Fauna Tariquía and Parque Nacional y Área Natural de Manejo Integrado Serranía del Aguargüe, both in Tarija Department (Muñoz and Aguayo 2009). Thus, as currently known, this species' distribution extends from northern Argentina to southern Bolivia.

The natural history of *R. rumbolli* is limited to only a few studies on the biology of the species (e.g., Carrizo 1992; Haad et al. 2014; Pereyra et al. 2015). Although Muñoz and Aguayo (2009) classified *R. rumbolli* as Vulnerable in Bolivia, it is considered to be globally Near

Threatened according to the International Union for the Conservation of Nature (IUCN 2020). Based on the limited information on this species, especially in Bolivia, we contribute new altitudinal records of *R. rumbolli*.

Methods

Surveys were carried out on 6–12 February 2020 as part of a biodiversity assessment. We intensively searched along transects. Each transect was 50 m long by 2 m wide and was searched for 30 minutes per person. We used the visual encounter surveys “VES” method (Crump and Scott 1994), which can be used to measure species composition and relative abundance in a study area. At each location, a geographic position was recorded with a GPS receiver using the UTM system, as well as the altitude. We also noted a general description of the area.

The individuals were manipulated following biosecurity protocols (Aguirre and Lampo 2006). Measurements were carried out using manual calipers. One specimen was euthanized in 25% ethanol (Cortez et al. 2006). Muscle and liver tissue samples were preserved in 96% ethanol. The collected specimen was fixed in 10% formalin (Simmons and Muñoz-Saba 2005), kept in 70% ethanol, and deposited at the Natural History Museum Alcide d’Orbigny (MHNAD) in Cochabamba, Bolivia.

All permits were granted by the Environment Ministry of Bolivia (MMAyA-VMA-DGBAP-003 no. dictamen MMAyA-VMA-DGBAP 0038/10 and VMABCC no. 026/09).

Results

New records. BOLIVIA • Tarija Department, Méndez Province, San Lorencito, edge of San Lorencito River, 21°09'41.80"S, 064°28'26.01"W, 2,369 m a.s.l.; 12 Feb 2020; P. Mendoza-Miranda & B. Nieto-Ariza, leg.; at 23:25 h, 1 specimen, juvenile, snout–vent length 26.6 mm, MHNC-A 2771/PMM-100 (Fig. 1) • Tarija Department, Méndez Province, San Lorencito, edge of San Lorencito River, 21°09'26.72"S, 064°27'44.61"W; 2,015 m a.s.l.; 10 Feb 2020; P. Mendoza-Miranda & B. Nieto-Ariza, obs.; at 12:19 h, 1 specimen, juvenile, not collected; hidden under leaf litter and medium-sized rocks.

Identification. Based on the description by Carrizo (1992), the two individuals were identified as *R. rumbolli* by the presence of a well-developed supraorbital crest and supratympanic crest, a sharp preorbital crest, a very prominent, ovoid paratoid gland, a small tympanum, medium-length fingers and toes with the first finger slightly shorter than the second, a more conspicuous dorsolateral chain from paratoid to groin, glands on the



Figure 1. *Rhinella rumbolli* juvenile, MHNC-A 2771/PMM-100, collected at San Lorencito, Méndez province, Tarija Department, Bolivia, in the Boliviano Tucumano ecoregion. Photograph: Kenny Ure.

forelimbs and absent on the hind limbs, and barely evident interdigital membranes on the hands but the extensive on the feet (almost reaching the tips of the fingers). *Rhinella rumbolli* differs from the only known sympatric species in the study area, *R. arenarum* (Hensel, 1867), in that the latter has a less marked cephalic crest, no supra-orbital crest, elongate paratoid glands with an irregular contour that extends beyond the armpit, no interdigital membranes on the forelimbs but incomplete interdigital membranes in the hind limbs, a slightly granular belly, and a clear, uniform, whitish, gray, or greenish-yellow color (Duport 2020).

Discussion

Records of *Rhinella rumbolli* in Argentina indicate that this species has an altitudinal range from 700 to 1700 m a.s.l. (Carrizo 1992; Vaira 2002; Vaira et al. 2012; Haad et al. 2014; Pereyra et al. 2015; Schocchi et al. 2017; IUCN 2020). However, information on this species in Bolivia is sparse, this species is only mentioned in the red book of wildlife of vertebrates of Bolivia (e.g., Aguirre et al. 2009). Muñoz and Aguayo (2009) reported this species from Parque Nacional y Área Natural de Manejo Integrado Serranía del Aguarañe and Reserva Nacional de Flora y Fauna Tariquía, both in Tarija Department, establishing its altitudinal distribution from 700 to 1800 m a.s.l. Here, we provide the first records of *R. rumbolli* from San Lorencito, Méndez Province, Tarija Department. The highest of these two records was at 2,369 m a.s.l., highest known record for the species, and extends the known maximum elevation of this species 569 m.

San Lorencito is 103 km northwest from Aguarañe (Fig. 2). The new records are also the first in Bolivia from outside a protected area, opening up a vast opportunity

to expand the conservation and research efforts for this species throughout the Boliviano-Tucumano ecoregion. At the 2019 IUCN Bolivia Red List Assessment Workshop, deforestation for livestock pastures and agricultural crops, road development, and oil exploration were identified as major threats to *R. rumbolli* populations (IUCN 2020).

Amphibians are the most threatened class of vertebrates (Catenazzi 2015). Our new records not only increase our knowledge of *R. rumbolli* but provide new opportunities to help save this species and its habitat. Additional study investigating the biology, ecology, and conservation of this species is still required.

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Authors’ Contributions

PMM and BNA collected the data, PMM made the analysis and wrote the text. BNA, MH, and XVL made important contributions to the manuscript.

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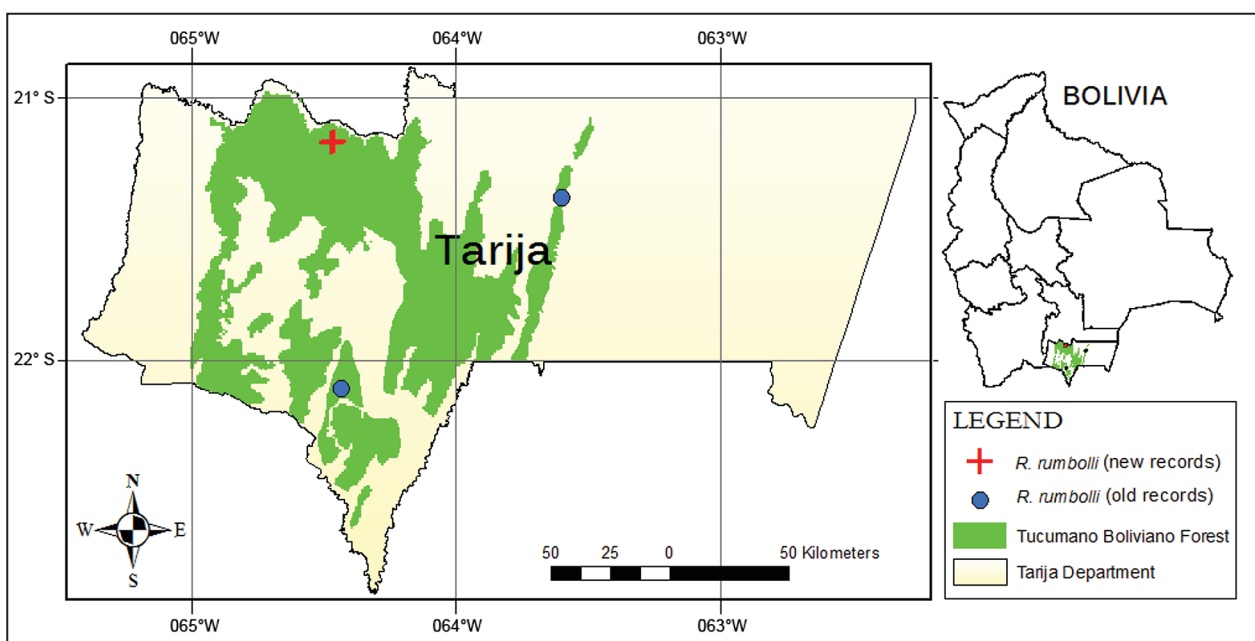


Figure 2. Spatial distribution of *Rhinella rumbolli* in Bolivia. The blue dots show previous records, and the red dots show the new records within the Tucumano Boliviano forest, which is represented by green shading in Tarija Department.

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