

Amphibia and Reptilia, Quebrada de los Cuervos, Departamento de Treinta y Tres, Uruguay

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ABSTRACT: We present an annotated list of the herpetofauna at the Protected Area Quebrada de los Cuervos, Departamento de Treinta y Tres, Uruguay. We recorded 24 species of amphibians and 29 of reptiles, accounting for near half of the species already reported from Uruguay. New records of *Dendropsophus minutus* (Hylidae) and *Liophis almadensis* (Colubridae) are presented, being the southernmost known for these species. Additionally, *Melanophryniscus sanmartini* (Bufonidae), *Anisolepis undulatus* (Polychridae), *Crotalus durissus terrificus* (Viperidae) and *Xenodon histricus* (Colubridae) are cited for the first time for the Departamento de Treinta y Tres.

INTRODUCTION

Quebrada de los Cuervos is a small ravine along the Yerbal Chico stream in Sierra del Yerbal, Departamento de Treinta y Tres, central-eastern Uruguay. This ravine is a touristic point which gives its name to one of the few natural areas protected by law in Uruguay. A natural park of 365 ha at this site become under protection of the Municipality of Treinta y Tres in 1986, and in 2008 the recently created "Sistema Nacional de Áreas Protegidas" included this small area into a protected landscape of 4413 ha of private and public land. The landscape in this part of the country consists of rocky hills mainly with natural grasslands, hardly exceeding 300 m a.s.l (Evia and Gudynas 2000). The vertebrate fauna of Quebrada de los Cuervos has been scarcely studied; herein we present an annotated checklist of the amphibians and reptiles of this site which may serve as baseline information for further studies on this area.

MATERIALS AND METHODS

We reviewed the available information about amphibians and reptiles of Quebrada de los Cuervos, and provide data obtained in non-systematic surveys made by the authors, including all four seasons of the year. The study area is within the protected landscape of the "Sistema Nacional de Áreas Protegidas" at Quebrada de los Cuervos. It corresponds mainly to a transect of approximately 35 km along the road to the ravine at Quebrada de los Cuervos from National Route N°8, between 50–270 m a.s.l. (33°02'–33°51' S, 54°22'–54°28' W). Surveys also included a significant portion of the natural park (Figure 1). Mean annual temperature and precipitation in this region are about 17°C and 1200 mm; the landscape is part of the biogeographic unit "Serranías" in eastern Uruguay that corresponds to hilly areas usually below 500 m a.s.l., characterized by open grasslands, rocky floors, and patches of native forest and *Eucalyptus* crops (Evia and Gudynas 2000). Land use in the study area is primarily

dedicated to extensive sheep and beef cattle production. The compilation of amphibians and reptiles list consisted of qualitative data accumulated during several surveys made between 2001 and 2010 employing different techniques; we searched in all possible microhabitats both during day and night, also looking for specimens at shelter under rocks, recording amphibian presence in nocturnal acoustic surveys, and with the aid of some pit-fall traps and the capture of tadpoles in temporary ponds and streamlets (Scott 1994). Voucher specimens were deposited at the herpetological collection of Museo Nacional de Historia Natural, Montevideo (MNHN), and Colección de Batracios (ZVC-B) and Colección de Reptiles (ZVC-R) of Departamento Zoología Vertebrados, Facultad de Ciencias, Universidad de la República, Montevideo, Uruguay. Specimens were collected under current law and regulations of División Fauna-MGAP, permits # 417/03, 195/06 and 18/09. Amphibian taxonomy follows Frost (2011), reptile nomenclature follows the electronic database accessible at <http://www.reptile-database.org>, and the work of Kearney (2003), Wüster *et al.* (2005), Adalsteinsson *et al.* (2009), Curcio *et al.* (2009), Fenwick *et al.* (2009) and Zaher *et al.* (2009).

RESULTS AND DISCUSSION

The herpetofauna of the study area at Quebrada de los Cuervos includes records of 24 species of amphibians and 29 species of reptiles. The taxonomic list is given in Table 1 which includes 23 amphibian and 21 reptile species that were detected during surveys, besides records from literature reports, and information obtained from the electronic database of The Field Museum of Natural History of Chicago (FMNH 2010). The FMNH collection contains several vertebrates collected at Quebrada de los Cuervos by the mammalogist Colin Campbell Sanborn, who briefly visited this place in 1926 (Sanborn 1929). Sanborn collected specimens of 24 species of amphibians and reptiles during this stay. More recently, Simó *et al.* (1994)

published a faunal inventory of Quebrada de los Cuervos in which nine species of amphibians and 15 of reptiles are reported. Other references to the herpetofauna of this site are sparse in the literature (see Table 1).

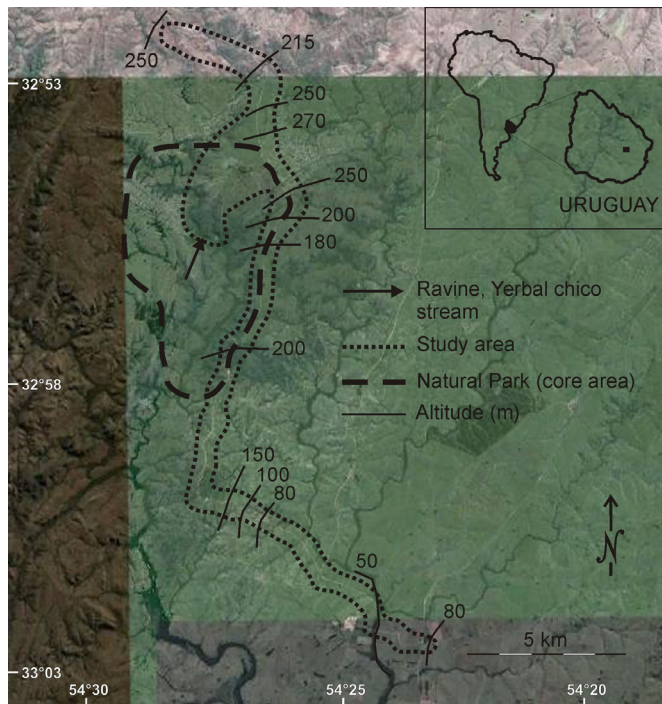


FIGURE 1. Study area at Quebrada de los Cuervos, Departamento de Treinta y Tres, Uruguay. Satellite image downloaded with Google Earth 5, captured on 3 January 2010.

Comments on some species:

Amphibians

Dendropsophus minutus (MNHN 9304) – This species was found in natural and artificial ponds, usually with scarce edge vegetation, in open areas of the whole study area. Calling males of *D. minutus* were detected from late winter (early September) up to the end of the summer (early March), and tadpoles were observed throughout the year. The present record is the southernmost point in the distribution of this species; previous ones in Uruguay are about 100 km to the northeast (Olmos et al. 1997).

Melanophryniscus sanmartini (MNHN 9302) – This small bufonid was previously known from a few localities in Uruguay (Klappenbach 1968; Prigioni and Arrieta 1992; Naya and Maneyro 2001; Núñez et al. 2004). All previous records and the present one correspond to open areas of hilly environments. We found this species at the headwaters of a small streamlet, in the northern part of the study area.

Physalaemus riograndensis (MNHN 9306) – This leiuperid frog was found in the southernmost point of the study area. The habitat was a small marsh in an open grassland close to a stream – in the transitional zone between lowlands and hilly landscapes –, which is the usual habitat of this species in Uruguay (Borteiro and Kolenc 2007).

Pleurodema bibroni – Three specimens of *P. bibroni* stored at FMNH were studied by Gallardo (1968), who briefly reported their origin as “Treinta y Tres”. According to the FMNH on-line database they were collected on 8

December 1926 by Sanborn (FMNH 10576-78), who by this date was at Quebrada de los Cuervos (see Sanborn 1929). At present, this is the only known record of *P. bibroni* for the study area. We were also unable to detect this species in much of its range in eastern Uruguay, including hilly environments, which would be attributable to a severe and recent population decline (Kolenc et al. 2009).

Rhinella achavali (MNHN 9301) – This toad is distributed over hilly landscapes in Uruguay and Rio Grande do Sul in southern Brazil, apparently associated to lotic water bodies (Maneyro et al. 2004; Kwet et al. 2006). The species is not commonly seen in the study area, and we could only observe a sub adult when foraging between rocks of the main course of the Yerbal Chico stream during nighttime, on 10 November 2002. An adult specimen collected by Sanborn at Quebrada de los Cuervos in 1926 stored at the Field Museum of Chicago (FMNH 10486, Figure 2), is the oldest known record of this species.

Scinax aromothyella (ZVCB 11520-21, 14561-63) – One population is known from within the study area (Prigioni et al. 2005; this study). Reproduction was observed in late April (Kolenc et al. 2007), and tadpoles were found in winter and spring (June, September and November).

Scinax uruguayus (ZVCB 10241-10243, 14574-76) – Quebrada de los Cuervos is the type locality of this species, which was described by Schmidt (1944) based on a series collected by Sanborn in 1926. As pointed by Kolenc et al. (2003) this frog inhabits open areas over hill slopes and breed both in natural and artificial ponds, including waterholes built for cattle (which are also used by most species of the local anuran community). This frog was detected over the whole study area, where it is fairly abundant. Nocturnal choruses composed by hundreds of individuals are common during explosive breeding



FIGURE 2. *Rhinella achavali* (FMNH 10486), original photos by S. Rieboldt.

episodes, which occur up from late winter, by the end of August.

Reptiles

Anisolepis undulatus (MNHN 9314) — This species was occasionally collected in Uruguay, at a few localities in hilly landscapes and coastal areas (Carreira *et al.* 2005). One specimen was captured with a small pit-fall trap set on a grassland area.

Crotalus durissus terrificus — A specimen was killed by local people in the early 1960's at Quebrada de los Cuervos, being at present the only known record for Treinta y Tres; its rattle is still conserved by local people (Figure 3).

Liophis almadensis (ZVC-R 6107) — A few specimens of this colubrid were collected in Uruguay, the one of the present study was found by the authors under a rock

in an open grassland area on 1 May 2002. Quebrada de los Cuervos is the southernmost known point of its distribution in Uruguay.

Xenodon histricus — An adult specimen was observed in the core protected area of Quebrada de los Cuervos on February 2010 (O. López, photograph record, not vouchered; photograph MNHN 9451). In Uruguay, there are only a few records of this species (Carreira *et al.* 2005). All known localities correspond to hilly landscapes, and the scarcity of records is probably due to the fossorial habits of this snake in rocky habitats that are hard to survey.

Some other reptile species neither observed nor collected within the study area are potentially present according to previous distributional records (see Carreira *et al.* 2005), such as the blind lizard *Amphisbaena darwini darwini* Duméril and Bibron, 1839, the snakes *Calamodontophis paucidens* (Amaral, 1935), *Xenodon dorbignyi* (Duméril, Bibron, and Duméril, 1854), *Micrurus altirostris* (Cope, 1860) and *Tomodon ocellatus* (Duméril, Bibron, and Duméril, 1854), and the emydid turtle *Trachemys dorbignyi* (Duméril and Bibron, 1835).

The herpetofaunal diversity recorded for the study area account for near half of the species of amphibians and reptiles already reported from Uruguay. The Protected Area of Quebrada de los Cuervos, besides its natural beauty, harbors a rich community of species associated with the hilly landscapes of Uruguay, whose particular herpetofauna has been already noticed (Maneyro and Langone 2001; Kolenc *et al.* 2003; Kolenc *et al.* 2007). As hilly landscapes in this country are being strongly modified by woodland production, the Protected Area of Quebrada de los Cuervos is important for the conservation of this kind of habitats.



FIGURE 3. Rattle of a specimen of *Crotalus durissus terrificus* killed by local people at Quebrada de los Cuervos in early 1960s. Photo by A. Sosa.

TABLE 1. Amphibians and reptiles from Quebrada de los Cuervos and adjacent areas, Departamento de Treinta y Tres, Uruguay. PS: present study; MNHN: Herpetological collection of Museo Nacional de Historia Natural, Montevideo, Uruguay; ZVC-B: Colección de Batracios, and ZVC-R: Colección de Reptiles, Departamento Zoología Vertebrados, Facultad de Ciencias, Universidad de la República, Uruguay; * indicate species collected by Colin Campbell Sanborn in 1926 (see text).

TAXA		SOURCE
AMPHIBIANS		
Bufonidae	<i>Melanophryniscus sanmartini</i> Klappenbach, 1968	PS (MNHN 9302)
	<i>Rhinella achavali</i> (Maneyro, Arrieta, and de Sá, 2004)	PS (MNHN 9301), *
	<i>Rhinella dorbignyi</i> (Duméril and Bibron, 1841)	PS, Simó <i>et al.</i> (1994) as <i>Bufo</i> sp.
Cycloramphidae	<i>Limnomedusa macroglossa</i> (Duméril and Bibron, 1841)	PS (MNHN 9303)
	<i>Odontophrynus americanus</i> (Duméril and Bibron, 1841)	PS, *, Kolenc <i>et al.</i> (2007)
	<i>Dendropsophus minutus</i> (Peters, 1872)	PS (MNHN 9304)
Hylidae	<i>Dendropsophus sanborni</i> (Schmidt, 1944)	PS (MNHN 9305)
	<i>Hypsiboas pulchellus</i> (Duméril and Bibron, 1841)	PS, *, Núñez <i>et al.</i> (2004), Kolenc <i>et al.</i> (2007)
	<i>Phyllomedusa iheringii</i> Boulenger, 1885	PS, Simó <i>et al.</i> (1994), Núñez <i>et al.</i> (2004)
	<i>Pseudis minutus</i> Günther, 1859	PS, *, Núñez <i>et al.</i> (2004)
	<i>Scinax aromothyella</i> Faivovich, 2005	PS (ZVCB 11520-21, 14561-63), Prigioni <i>et al.</i> (2005)
	<i>Scinax granulatus</i> (Peters, 1871)	PS, *, Simó <i>et al.</i> (1994), Núñez <i>et al.</i> (2004)
	<i>Scinax squalirostris</i> (Lutz, 1925)	PS, *, Schmidt (1944), Simó <i>et al.</i> (1994), Núñez <i>et al.</i> (2004)
	<i>Scinax uruguayus</i> (Schmidt, 1944)	PS (ZVCB 10241-10243, 14574-76), *, Schmidt (1944), Kolenc <i>et al.</i> (2003)
	<i>Physalaemus biligonigerus</i> (Cope, 1861)	PS, *, Simó <i>et al.</i> (1994), Núñez <i>et al.</i> (2004), Borteiro <i>et al.</i> (2009)
	<i>Physalaemus gracilis</i> (Boulenger, 1883)	PS (MNHN 9307), *
Leiuperidae	<i>Physalaemus riograndensis</i> Milstead, 1960	PS (MNHN 9306)

TABLE 1. CONTINUED.

TAXA		SOURCE
Leiuperidae	<i>Pleurodema bibroni</i> Tschudi, 1838	*
	<i>Pseudopaludicola falcipes</i> (Hensel, 1867)	PS, *, Núñez et al. (2004)
Leptodactylidae	<i>Leptodactylus gracilis</i> (Duméril and Bibron, 1841)	PS, *, Simó et al. (1994)
	<i>Leptodactylus latinasus</i> Jiménez de la Espada, 1875	PS, *, Simó et al. (1994)
	<i>Leptodactylus latrans</i> (Steffen, 1815)	PS (MNHN 9308), *
	<i>Leptodactylus mystacinus</i> (Burmeister, 1861)	PS (MNHN 9309), *
Microhylidae	<i>Elachistocleis bicolor</i> (Guérin-Méneville, 1838)	PS (MNHN 9310), *
REPTILES		
Amphisbaenidae	<i>Amphisbaena munoai</i> Klappenbach, 1960	PS (MNHN 9311)
	<i>Anops kingii</i> Bell, 1833	PS (MNHN 9312)
Anguidae	<i>Ophiodes striatus</i> (Spix, 1825)	PS
Gymnophthalmidae	<i>Cercosaura schreibersii</i> Wiegmann, 1834	PS (MNHN 9313)
Polychridae	<i>Anisolepis undulatus</i> (Wiegmann, 1834)	PS (MNHN 9314)
Teiidae	<i>Cnemidophorus lacertoides</i> Duméril and Bibron, 1839	PS, Gudynas (1985), Simó et al. (1994), Carreira et al. (2005)
	<i>Teius oculatus</i> (D'Orbigny and Bibron, 1837)	PS, *, Gudynas (1985); Simó et al. (1994)
	<i>Tupinambis merianae</i> (Duméril and Bibron, 1839)	PS, *
	<i>Boiruna maculata</i> (Boulenger, 1896)	*
	<i>Taeniophallus occipitalis</i> (Jan, 1863)	Carreira (2002)
Colubridae	<i>Liophis almadensis</i> (Wagler, 1824)	PS (ZVC-R 6107), Simó et al. (1994), Carreira (2002)
	<i>Liophis anomalus</i> (Günther, 1858)	Carreira et al. (2005)
	<i>Liophis jaegeri jaegeri</i> (Günther, 1858)	PS, Simó et al. (1994)
	<i>Liophis miliaris semiaureus</i> (Cope, 1862)	PS, *
	<i>Liophis poecilogyrus sublineatus</i> (Cope, 1860)	PS, *, Simó et al. (1994)
	<i>Oxyrhopus rhombifer rhombifer</i> Duméril, Bibron, and Duméril, 1854	Simó et al. (1994), Carreira (2002)
	<i>Phalotris lemniscatus</i> (Duméril, Bibron, and Duméril, 1854)	Simó et al. (1994)
	<i>Philodryas aestiva subcarinata</i> (Duméril, Bibron, and Duméril, 1854)	PS, *, Simó et al. (1994)
	<i>Philodryas patagoniensis</i> (Girard, 1857)	*, Simó et al. (1994), Carreira et al. (2005)
	<i>Psomophis obtusus</i> (Cope, 1864)	Simó et al. (1994)
	<i>Thamnodynastes hypoconia</i> (Cope, 1860)	PS, Simó et al. (1994)
	<i>Thamnodynastes strigatus</i> (Günther, 1858)	Simó et al. (1994)
	<i>Xenodon histricus</i> (Jan, 1863)	PS (MNHN 9451, photograph)
	<i>Epictia munoai</i> (Orejas-Miranda, 1961)	PS, Simó et al. (1994)
	<i>Bothropoides pubescens</i> (Cope, 1869)	PS, *, Simó et al. (1994)
Viperidae	<i>Crotalus durissus terrificus</i> (Laurenti, 1768)	PS
	<i>Rhinocerocephalus alternatus</i> (Duméril, Bibron, and Duméril, 1854)	PS, *, Simó et al. (1994), Carreira et al. (2005)
Chelidae	<i>Hydromedusa tectifera</i> Cope, 1869	PS
	<i>Phrynops hilarii</i> (Duméril and Bibron, 1835)	PS

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