

REFERENCIAS

- Balado, R., Bas, S. & Galán, P. 1995. Anfibios e réptiles. 65–170. In: Consello da Cultura Galega & Sociedade Galega de Historia Natural (eds.), *Atlas de Vertebrados de Galicia. Aproximación a Distribución dos Vertebrados Terrestres de Galicia Durante o Quinquenio 1980-85*. Santiago de Compostela.
- Cabana, M., Romeo, A., Rivero, A., Reigada, X.R., Vázquez Graña, R. & Ferreiro, R. 2011. Novas poboacións de *Pelobates cultripes* no sueste de Galicia. *Chioglossa*, 3: 41–47.
- Domínguez, J., Lamosa, A., Pardavila, X., Martínez-Freiría, F., Regos, A., Gil, A. & Vidal, M. 2012. *Atlas de los vertebrados terrestres reproductores en el Parque Natural Baixa Limia-Serra do Xurés y ZEPVN-LIC Baixa Limia*. Xunta de Galicia. A Coruña.
- Galán, P., Cabana, M. & Ferreiro, R. 2010. Estado de conservación de *Pelobates cultripes* en Galicia. *Boletín de la Asociación Herpetológica Española*, 21: 90–99.
- Pleguezuelos, J.M., Márquez, R. & Lizana, M. (eds.). 2002. *Atlas y libro rojo de los anfibios y reptiles de España*. Dirección General de Conservación de la Naturaleza - Asociación Herpetológica Española. Madrid.
- Rey Muñiz, X.L. 2011. *Pelobates cultripes*. 34–35. In: Sociedade Galega de Historia Natural (eds). *Atlas dos Anfibios e Réptiles de Galicia*. Sociedade Galega de Historia Natural. Santiago de Compostela. España.
- Salvadores, R. & Rodríguez, F. 2012. Datos sobre una nueva localidad de *Pelobates cultripes* en la provincia de Pontevedra (Galicia). *Boletín de la Asociación Herpetológica Española*, 23: 70–72.
- Sociedade Galega de Historia Natural. 2011. *Atlas dos Anfibios e Réptiles de Galicia*. Santiago de Compostela. España.
- Sociedade Galega de Historia Natural. 2019. *8ª Actualización do Atlas dos Anfibios e Réptiles de Galicia*. Sociedade Galega de Historia Natural. Santiago de Compostela. España.

Amphibians and reptiles of Villa Tunari, Department of Cochabamba. Bolivia

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RESUMEN: Se realiza un listado preliminar de las especies de anfibios y reptiles de Villa Tunari, Provincia Chapare, Departamento de Cochabamba, Bolivia. Los datos se obtuvieron entre 2017 y 2018. La lista taxonómica incluye 27 especies, 11 anfibios y 16 reptiles, agrupados en 13 familias. Las zonas de muestreo se eligieron de acuerdo con sus características: Z1) zona natural, dominada por bosques y pequeñas corrientes de agua; Z2) zona antrópica, con casas y construcciones asentadas en las proximidades del río Espíritu Santo. *Stenocercus prionotus* se registra por primera vez para el Departamento de Cochabamba y se proporcionan datos adicionales para especies poco conocidas, como *Adenomera coca*.

Bolivia is considered a megadiverse country (Mittermeier *et al.*, 1997; Ibsch, 2003). In recent years, the diversity, taxonomy and systematics of several groups of amphibians and reptiles from Bolivia have been studied, resulting in a significant increase in the number of documented species (Ocampo *et al.*, 2012; De la Riva *et al.*, 2017; Abdala *et al.*, 2019).

Currently, 258 amphibian species (AmphibiaWeb, 2020) and 313 reptile species (Uetz *et al.*, 2018) are recorded in Bolivia.

The present study reports a preliminary listing of amphibians and reptiles in Villa Tunari, Department of Cochabamba, Bolivia. Recently, new records have been obtained in the area, such as *Chelonoidis carbonaria*

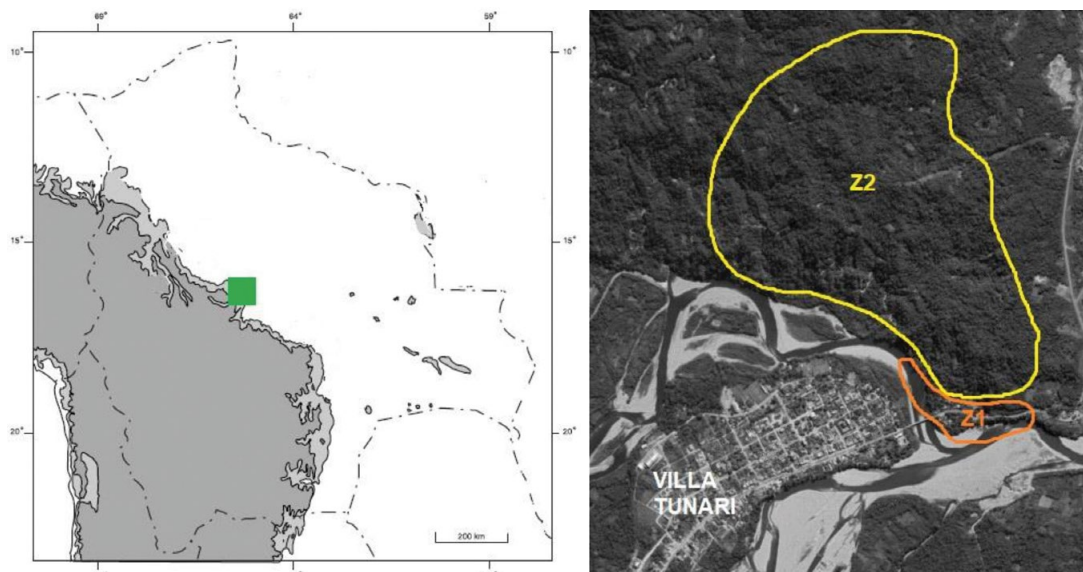


Figure 1: a) Sampled locality (Villa Tunari, Dpto. Cochabamba, Bolivia. 16°58'S / 65°24'W, 300 masl). b) Satellite image of Villa Tunari and the sampling areas: Z1 (yellow) and Z2 (orange) [Map data 2020 (C) Google].

Figura 1: a) Localidad muestreada (Villa Tunari, Dpto. Cochabamba, Bolivia. 16°58'S / 65°24'W, 300 msnm). b) Imagen satelital de Villa Tunari y las áreas de muestreo: Z1 (amarillo) y Z2 (naranja) [Map data 2020 (C) Google].

and *Bothrops sanctaerucis* (Gómez-Murillo & Arellano-Martín, 2019; Gómez-Murillo *et al.*, 2020), suggesting that the diversity of this region is far from known. Some of the amphibian and reptile species recorded in this study are endemic and of great ecological importance. The data obtained for each of the species observed in the area are also shown.

Villa Tunari (Figure 1a) is located within the ecoregion known as the Pre-Andean Amazon Forest, located in the Department of Cochabamba, in the Chapare region, Bolivia (16° 58'S / 65° 24'W, 300 masl). The town is located at the confluence of the Espíritu Santo and San Mateo rivers. The average annual rainfalls range from 1300-7000 mm and the average annual temperature is 24-28° C. The landscape consists of low hills, high alluvial terraces, undulations and plains (Figures 6d, e & f). It is characterized by the presence of plant species such as: *As-*

trocarium murumuru, *Brosimum lactescens*, *Calycophyllum spruceanum*, *Ceiba pentandra*, *Clarisia racemosa*, *Eschweilera coriacea*, *Hura crepitans*, *Iriartea deltoidea*, *Pouteria bilocularis*, *Pseudolmedia laevis*, *Sloanea obtusifolia*, *Virola peruviana* (Ibisch *et al.*, 2003).

The study was divided into two sampling zones (Figure 1b). Although similar, each of these zones has its own characteristics: Z1) Area characterized by forest and small streams of water; Z2) Anthropic zone, with houses and constructions, and river.

Field work was previously scheduled and random tours were performed through explorations of sites suitable for herpetological species (underbrush, rocks, trunks, trails, trees and parts of plants). Head and hand flashlights were used. All individuals were examined by direct observations. In situ pictures of some of the species found were taken and behavior was noted.

List of species

AMPHIBIA

Rhinella poeppigii (Tschudi, 1845)

Bufo poeppigii Tschudi, 1845

Type(s): Not designated; MHNN 90.77 (see Annex 1 for Museum abbreviations) is a type according to museum records (Frost, 2020).

Type locality: "In den Montañas von Monobamba", Peru.

Distribution: Ecuador, Peru and Bolivia (Pramuk, 2006).

Remarks: Large toad with coffee-color, rough and tuberculated skin. It has cranial ridges and large parotid glands (De La Riva, 2002). It was one of the most abundant species (Table 1; Figure 2a) in the sampling area, found in roads, roadside ditches, rivers and streams. According to the International Union for Conservation of Nature (IUCN), this species is listed as Least Concern (LC) (IUCN SSC, 2020).

Rhinella major (Müller & Hellmich, 1936)

Bufo granulatus major Müller & Hellmich, 1936

Type(s): ZSM 153/1928 and ZSM 202/1929/1–2 (Syntypes) according to Glaw & Franzen (2006).

Type locality: San José de Chiquitos, Bolivia.

Distribution: Argentina, Paraguay, Bolivia and Brazil (Frost, 2020).

Remarks: Medium-sized toad with the body covered with keratin granules as spines distributed irregularly (Pacheco, 2015). We found numerous individuals near a swimming pool for recreational use; several individuals are also observed in amplexus. Common species in the area (Table 1; Figure 2b). It is not listed by IUCN.

Pristimantis fenestratus (Steindachner, 1864)

Hylodes fenestratus Steindachner, 1864

Type(s): NHMW 19940.1 and NHMW

19940.2 (Syntypes), according to Häupl & Tiedemann (1978) and Häupl *et al.* (1994).

Type locality: Rio Mamoré and Borba, Brazil.

Distribution: Bolivia, Brazil, Ecuador, Guyana and Peru (AmphibiaWeb, 2020).

Remarks: Medium-sized frog, up to 5 cm for females and less than 4 cm for males. The color of the back varies between cream, coffee or gray, presenting bands and stains ranging from very little noticeable to non-existent, in addition to dark bands on the lips (Pacheco, 2015). They can be seen during the day jumping along the paths of the forest and hanging in the branches of the shrubs. They sing throughout the year. Although abundant, its cryptic coloration does not make it easy to detect (Table 1; Figure 2c). According to IUCN, this species is listed as Least Concern (LC) (Rodríguez *et al.*, 2004).

Oreobates cruralis (Boulenger, 1902)

Hylodes cruralis Boulenger 1902

Type(s): BMNH 1947.2.15.70 (formerly 1901.8.2.44) (Holotype), according to Frost (1985).

Type locality: La Paz, Bolivia.

Distribution: Peru and Bolivia (Frost, 2020).

Remarks: Small size frog, usually less than 3 cm and morphologically variable. The skin on the back is granulated, with soft and rounded warts (Pacheco, 2015). Abundant, although difficult to detect due to its cryptic coloration. One of the most common species to see in the area; it is found in fissures, roots and underbrush (Table 1; Figure 2d). According to IUCN, this species is listed as Least Concern (LC) (Cortez *et al.*, 2004).

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Figure 2: a) *Rhinella poeppigii*, b) *Rhinella major*, c) *Pristimantis fenestratus*, d) *Oreobates cruralis*, e) *Ameerega picta*, f) *Dendropsophus acreanus*.

Figura 2: a) *Rhinella poeppigii*, b) *Rhinella major*, c) *Pristimantis fenestratus*, d) *Oreobates cruralis*, e) *Ameerega picta*, f) *Dendropsophus acreanus*.

Ameerega picta (Tschudi, 1838)

Hylaplesia picta Tschudi, 1838

Type(s): MNHNP 4910 (Syntypes) [2 specimens, according to Guibé (1950)].

Type locality: Santa Cruz, Bolivia.

Distribution: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru,

Suriname, Venezuela (AmphibiaWeb, 2020).

Remarks: Small frog, black or very dark coffee-color, with two bright yellow stripes ending in orange spots on the thigh and underarms (Pacheco, 2015). Abundant in the study areas; it was observed between the underbrush or near fissures.

Very active at the end of the afternoon (Table 1; Figure 2e). According to IUCN, this species is listed as Least Concern (LC) (La Marca *et al.*, 2008).

Dendropsophus acreanus (Bokermann, 1964)

Hyla acreana Bokermann, 1964

Type(s): WCAB 1363 (Holotype), by original designation (Frost, 2020).

Type locality: Tarauacá, Brazil.

Distribution: Brazil, Bolivia and Peru (Frost, 2020).

Remarks: A small treefrog, about 3.5 cm in size; a yellowish coffee-color back with gray and green shades that contribute to a cryptic appearance (Pacheco, 2015). Only one individual was found in the area; an adult in a house within the study area on August 29, 2017 at 08:13 p.m. Common frog, although difficult to locate in the area (Table 1; Figure 2f). According to IUCN, this species is listed as Least Concern (LC) (Azevedo-Ramos *et al.*, 2004).

Leptodactylus rhodonotus (Günther, 1869)

Cystignathus rhodonotus Günther, 1869

Type(s): BMNH 1947.2.17.39 (Holotype), according to De Sá *et al.* (2014).

Type locality: Chyavetes [=Chayavitas], Peru.

Distribution: Bolivia, Brazil, Colombia and Peru (Angulo *et al.*, 2004).

Remarks: Large frog with a smooth back and several noticeable warts, gray coffee-color or yellowish (Pacheco, 2015). Two adult individuals were registered. The first was found in the afternoon, on November 13, 2017 when moving a trunk in a small stream; a second individual was subsequently detected at the same place (Table 1; Fig. 3a). According to IUCN, this species is listed as Least Concern (LC) (Angulo *et al.*, 2004).

Leptodactylus fuscus (Schneider, 1799)

Rana fusca Schneider, 1799

Type(s): MNHNP 680 (Neotype), according to Heyer (1968).

Type locality: Surinam.

Distribution: Argentina, Bolivia, Brazil, Colombia, French Guiana, Guyana, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, and Venezuela (Reynolds *et al.*, 2004).

Remarks: Small size frog; it has granulated back skin with large and scattered soft warts (Pacheco, 2015). Very abundant in the area; individuals were frequently trapped in a recreational pool; they were rescued and released later (Table 1; Figure 3b). According to IUCN, this species is listed as Least Concern (LC) (Reynolds *et al.*, 2004).

Engystomops freibergeri (Donoso-Barros, 1969)

Eupemphix freibergeri Donoso-Barros, 1969

Type(s): Donoso-Barros 745 (Holotype), (Frost, 2020).

Type locality: Runerrabaque, Bolivia.

Distribution: Bolivia, Brazil and Peru (Angulo, 2010).

Remarks: Medium-sized frog, coffee-color, with a stubby body and orange flanks toward the crotch. Two adults were registered in the afternoon of November 13, 2017; both were inactive in the underbrush. Cryptic and nocturnal species (Table 1; Figure 3c). According to IUCN, this species is listed as Least Concern (LC) (Angulo, 2010).

Adenomera coca (Angulo & Reichle, 2008)

Leptodactylus coca Angulo & Reichle, 2008

Type(s): NKA3630 (Holotype), by original designation.

Type locality: El Palmar, Bolivia.

Distribution: Bolivia (Frost, 2020).

Remarks: Small, coffee-color or gray frog

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Figure 3: a) *Leptodactylus rhodonotus*, b) *Leptodactylus fuscus*, c) *Engystomops freibergeri*, d) *Adenomera coca*, e) *Lithodytes lineatus*, f) *Chelonoidis denticulata*.

Figura 3: a) *Leptodactylus rhodonotus*, b) *Leptodactylus fuscus*, c) *Engystomops freibergeri*, d) *Adenomera coca*, e) *Lithodytes lineatus*, f) *Chelonoidis denticulata*.

with dark marks, flanks with dark rounded dots and white belly (Angulo & Reichle, 2008). In Bolivia, the species has so far been recorded in the Department of Cochabamba and only its type locality (El Palmar, Bolivia) is known on the old road

from Villa Tunari to Cochabamba at an altitude of 800 meters, Chapare province (Angulo & Reichle, 2008; Angulo, 2009). On the morning of January 2, 2018, one individual was found among the underbrush (16°96'S / 65°41'W, 304 masl) at the edge

of a trail (Table 1; Figure 3d). No more individuals were found in the study area. The individual, approximately 15 mm in length, it had patterns and morphological characteristics coinciding with those described for the species by Angulo & Reichle, (2008). The individual that is detailed and illustrated in this note, represents a new altitude and distribution record for the species, being this one of the northernmost one, placing it about 16 km from the previously known population (Angulo & Reichle, 2008; Angulo, 2009; Frost, 2020; AmphibiaWeb, 2020). According to IUCN, it is listed as a species with Insufficient Data (DD) (Angulo, 2009).

REPTILIA

Chelonoidis denticulatus (Linnaeus, 1766)

Testudo denticulata Linnaeus, 1766

Type(s): NHRM DeGeer collection 21 (Holotype), agreeing to Andersson (1900).

Type locality: Virginia (in error) (Uetz *et al.*, 2018).

Distribution: Venezuela, Guyana, French Guiana, Brazil, Trinidad and Tobago, Ecuador, Colombia, Peru and Bolivia (Carvajal-Campos & Rodríguez-Guerra, 2019).

Remarks: It is the largest turtle species in South America mainland. It can reach 820 mm in length of the shell, although the average length is about 400 mm (Rueda-Almonacid *et al.*, 2007; Páez *et al.*, 2012). Abundant in the study area, more than 30 individuals were found (Table 1; Figure 3f). According to IUCN, this species is listed as Vulnerable (VU) (TFTSG, 1996).

Norops fuscoauratus (D'Orbigny, 1837)

Anolis fusco-auratus D'Orbigny, in Duméril & Bibron 1837

Type(s): MNHN-RA 2420 (Lectotype) (Uetz *et al.*, 2018).

Lithodytes lineatus (Schneider, 1799)

Rana lineata Schneider, 1799

Type(s): Syntype(s), not stated, in "Musei Lampiani" (Daudin, 1802, 1803; Frost, 2020).

Type locality: Not stated.

Distribution: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname and Venezuela (La Marca *et al.*, 2010).

Remarks: Medium-sized frog with black back and yellow or bronze dorsolateral stripes. Its coloring makes it resemble some dendrobates (Ron & Read, 2018). On September 21, 2017 at 3:05 p.m., a single adult was located inside a water pipe (Table 1; Figure 3e). According to IUCN, this species is listed as Least Concern (LC) (La Marca *et al.*, 2010).

Type locality: Río Mamoré, Bolivia.

Distribution: Brazil, French Guiana, Guyana, Venezuela, Colombia, Peru, Bolivia and Ecuador (Carvajal-Campos & Ayala-Varela, 2019).

Remarks: A species of medium-sized anolis. It usually has a uniform back with coffee or green tones (rarely splashed or mixed); white belly with some gray or coffee-color spots; pink violet or yellow crease, with white scales (Ávila-Pires, 1995; Carvajal-Campos & Ayala-Varela, 2019). On October 16, 2017 at 4:11 p.m., an adult individual was found on the floor of a house toilet in the study area (Table 1; Figure 4a). It is not listed by IUCN.

Norops ortonii (Cope, 1868)

Anolis ortonii Cope, 1868

Type(s): ANSP 11404 (Holotype) (Uetz *et al.*, 2018).

Type locality: Río Marañón, Peru.

Distribution: Brazil, French Guiana, Suri-

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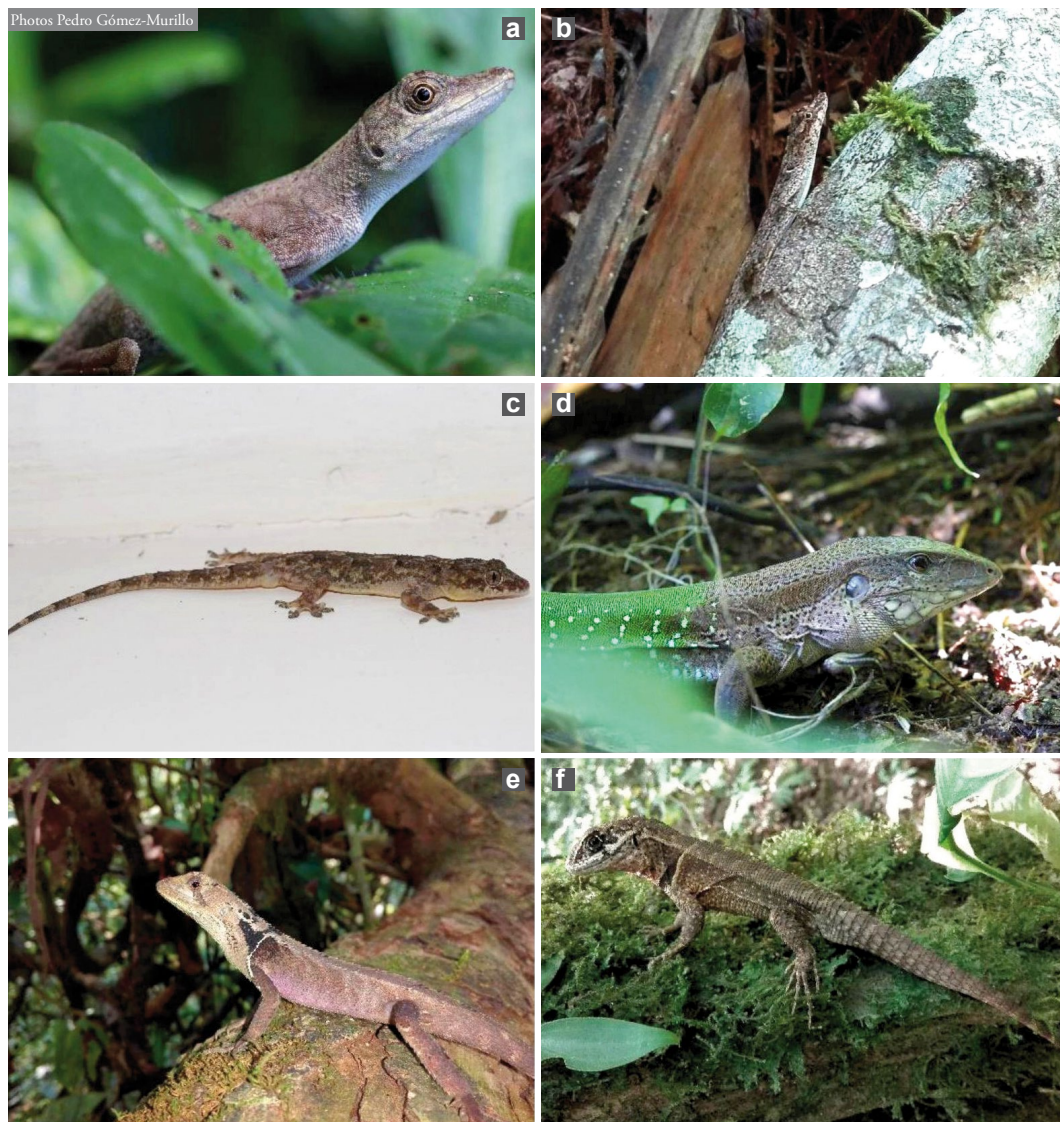


Figure 4: a) *Norops fuscoauratus*, b) *Norops ortonii*, c) *Hemidactylus mabouia*, d) *Ameiva ameiva*, e) *Stenocercus priotnotus*, f) *Stenocercus roseiventris*.

Figura 4: a) *Norops fuscoauratus*, b) *Norops ortonii*, c) *Hemidactylus mabouia*, d) *Ameiva ameiva*, e) *Stenocercus priotnotus*, f) *Stenocercus roseiventris*.

name, Guyana, Ecuador, Colombia, Peru, Bolivia and Venezuela (Uetz *et al.*, 2018).

Remarks: Medium-sized anolis with the dorsal generally mottled (rarely uniform) in shades of olive green, olive yellow, olive coffee-color, gray and green; it has a brown band in the supraocular

region (Ávila-Pires, 1995; Vitt & De la Torre, 1996). Only one individual was found in the study area. An active individual was found on the trunk of a tree on August 24, 2017 at 2:22 p.m. It is a cryptic species that it is difficult to find (Table 1; Figure 4b). It is not listed by IUCN.

Hemidactylus mabouia (Moreau de Jonnès, 1818)
Gekko mabouia Moreau de Jonnès, 1818

Type(s): MNHN-RA 6573 (Lectotype) (Uetz *et al.*, 2018).

Type locality: originally not stated. Subsequently restricted to St Vicent island in Lesser Antilles (Stejneger, 1904), but it is in error (Carranza & Arnold, 2006).

Distribution: introduced species, it is distributed naturally in central and southern Africa. It has been introduced in West Africa, Caribbean, Central America, Brazil, Guyana, French Guiana, Ecuador, Peru and Bolivia (Carvajal-Campos, 2019a).

Remarks: Medium sized Gecko. Dorsally it can vary from neutral pale gray, the entire range of smoky gray to olive coffee-color (in the dark phase); ventrally pale than dorsally, almost white or ivory; golden iris or ochre with gold reflections and coffee-color transverse bands. *Hemidactylus mabouia* differs from *H. frenatus* (another introduced species in America morphologically similar to *H. mabouia*) in having transverse dark bands onto the tail and a more tuberculated dorsal skin; also, subdigital lamellae on the fourth toe of *H. mabouia* do not reach the base of the finger (Kluge, 1969; Ávila-Pires, 1995; Krysko & Daniels, 2005; Carranza & Arnold, 2006). A very abundant species in the area, easily located in the houses of the study area at night (Table 1; Figure 4c). It is not listed by IUCN.

Ameiva ameiva (Linnaeus, 1758)

Lacerta ameiva Linnaeus, 1758

Type(s): NHRM (2 specimen) and 1 in Gyllenborg collection, Uppsala (Syntypes) (Uetz *et al.*, 2018).

Type locality: America.

Distribution: Brazil, French Guiana, Suriname, Guyana, Venezuela, Colombia, Ecua-

dor, Peru, Bolivia and Argentina (Andrango & Rodríguez-Guerra, 2019).

Remarks: Medium-sized lizard. Coloring varies with age: Adults may have a brown reticulation on the front of the back and the back of the back and green tail: juveniles may be completely brown or have green front of the back and brown posterodorsal color (Ávila-Pires, 1995). This species is abundant in the area, with numerous individuals being located throughout the present study (Table 1; Figure 4d). According to IUCN, this species is listed as Least Concern (LC) (Ibáñez *et al.*, 2019).

Stenocercus prionotus Cadle, 2001

Stenocercus prionotus Cadle, 2001

Type(s): USNM 193683 (Holotype), by original designation.

Type locality: Río Huallaga, Peru.

Distribution: Peru and Bolivia (Uetz *et al.*, 2018).

Remarks: Medium-sized lizard, commonly called the iguana lizard. In Bolivia, the species has been recorded in the Department of Beni and the Department of La Paz (Cadle, 2001; Torres-Carvajal, 2007; Teixeira *et al.*, 2015; GBIF, 2019). On August 30, 2017 at 11:08 a.m., an adult individual was found (Table 1; Figure 4e) resting on the trunk of a tree (16°57'S/65°25'W, 323 masl). The individual, approximately 35 cm in length, had patterns and morphological characteristics coinciding with those described for the species: Strongly keeled ventrals; laterally oriented nostrils; two projecting angulated temporal; prominent vertebral crest; keeled posterior scales of the thighs, imbricated; tail length 70–73% of total length; brown back with white vertical line on shoulder; dark brown interorbital line back of head; dark brown stripe extending previously from the subocular region to the



Figure 5: a) *Chironius exoletus*, b) *Dendrophidion dendrophis*, c) *Helicops angulatus*, d) *Mastigodryas boddaerti*, e) *Philodryas aestiva*, f) *Atractus emmeli*.

Figura 5: a) *Chironius exoletus*, b) *Dendrophidion dendrophis*, c) *Helicops angulatus*, d) *Mastigodryas boddaerti*, e) *Philodryas aestiva*, f) *Atractus emmeli*.

supraciliary present; creme-colored gular region (Cadle, 2001; Torres-Carvajal, 2007). To date, this species has been recorded five times in Bolivia (Cadle, 2001; Torres-Carvajal, 2007; Teixeira *et al.*, 2015; GBIF, 2019). The individual detailed and illustrated in this note, represents the first record of *S. prionotus* for the Department of

Cochabamba, expanding the distribution of the species in its southern area to 208 km from the near record in the municipality of San Marcos, department of Beni (Teixeira *et al.*, 2015; GBIF, 2019). According to IUCN, this species is listed as Least Concern (LC) (Agua-yo *et al.*, 2017).

Stenocercus roseiventris D'Orbigny, 1837

Stenocercus rosei-ventris D'Orbigny, in Duméril & Bibron, 1837.

Type(s): MNHN-RA 6879 (Holotype) (Uetz *et al.*, 2018).

Type locality: Bolivia.

Distribution: Peru, Bolivia, Argentina and Brazil (Uetz *et al.*, 2018; Dirksen & De la Riva, 1999).

Remarks: Medium-sized lizard. It is characterized by a pink ventral coloration, more vivacious in males, a notorious dorsal crest and by its compressed, robust tail, with conspicuous and sharp spines (Cei, 1993). Only two individuals were observed on October 1, 2017 (Table 1; Figure 4f); at 6:14 p.m., an adult individual was found resting on the trunk of a tree in the forest; then, an active juvenile was found in the same place between the leaf litter. According to IUCN, this species is listed as Least Concern (LC) (Abdala *et al.*, 2019).

Chironius exoletus (Linnaeus, 1758)

Coluber exoletus Linnaeus, 1758

Type(s): ZMUU 150 of Linnaeus' Collection (Holotype) (Uetz *et al.*, 2018).

Type locality: "Indiis".

Distribution: Panama, Costa Rica, Venezuela, Guyana, Suriname, French Guiana, Brazil, Argentina, Bolivia, Peru, Colombia and Ecuador (Dixon *et al.*, 1993).

Remarks: Medium-sized colubrid, greenish-colored and highly irritable. On November 12, 2017 at 4:35 p.m., an adult was found (Table 1; Figure 5a); it was observed attacking a Capuchin monkey (*Sapajus apella*), ignoring our presence. The second individual was found on January 12, 2018 in a dry stream; it was active during the day. It is not listed by IUCN.

Dendrophidion dendrophis (Schlegel, 1837)

Herpetodryas dendrophis Schlegel, 1837

Type(s): BMNH 1946.1.12.98 (Syntype) (Uetz *et al.*, 2018).

Type locality: Cayena, French Guiana.

Distribution: Colombia, Venezuela, French Guiana, Ecuador, Peru, Bolivia and Brazil (Uetz *et al.*, 2018).

Remarks: Medium-sized colubrid with a coffee-color surface over which transversal dorsal bands are marked. An adult was found inside a house near the forest on August 7, 2017 at 4:13 p.m. This individual had an incomplete tail. It was captured and then released (Table 1; Figure 5b). According to IUCN, this species is listed as Least Concern (LC) (Ines *et al.*, 2019).

Helicops angulatus (Linnaeus, 1758)

Coluber angulatus Linnaeus, 1758

Type(s): NHRM (Uetz *et al.*, 2018).

Type locality: Asia (in error).

Distribution: Venezuela, Colombia, Brazil, Bolivia, Peru, Trinidad, Ecuador, French Guiana and Guyana (Uetz *et al.*, 2018).

Remarks: Relatively small snake; mostly nocturnal, although occasionally active during the day. It is exclusively aquatic when active, and semiaquatic when resting (Pazmiño-Otamendi & Torres-Carvajal, 2019). Only one individual was found (Table 1; Figure 5c) at 1:09 a.m. on September 1, 2017 moving between the stones on the river bank. According to IUCN, this species is listed as Least Concern (LC) (Nogueira *et al.*, 2019).

Mastigodryas boddaerti (Sentzen, 1796)

Coluber boddaerti Sentzen, 1796

Type(s): ANSP 5651 (Holotype) (Koch *et al.*, 2018).

Type locality: Venezuela.

Distribution: Colombia, Venezuela, Bolivia, Brazil, Trinidad, French Guiana, Guyana and Peru (Uetz *et al.*, 2018).

Remarks: Medium-sized snake, of diurnal and terrestrial habits. This species has an ontogenetic change in color; juveniles have the brown back with stripes; adults are dorsally brown, almost uniform, with anterior bands (Cole *et al.*, 2013). A single adult was found (Table 1; Figure 5d) on December 5, 2017 active at 6:03 p.m. moving through vegetation within the forest. According to IUCN, this species is listed as Least Concern (LC) (Rivas *et al.*, 2019a).

Philodryas aestiva (Duméril, Bibron & Duméril, 1854)

Dryophylax aestivus Duméril, Bibron & Duméril, 1854

Type(s): MNHN-RA 3842 (Lectotype), designated by Thomas (1976).

Type locality: Santa Catarina, Brazil.

Distribution: Brazil, Bolivia, Paraguay, Uruguay and Argentina (Uetz *et al.*, 2018).

Remarks: Medium-sized snake, green color, opisthoglyphous dentition. On December 18, 2017, an adult individual was found at 5:32 p.m.; it was found in the surroundings of a house located within the study area. It was captured and then relocated (Table 1; Figure 5e). According to IUCN, this species is listed as Least Concern (Cacciali *et al.*, 2019).

Atractus emmeli (Boettger, 1888)

Geophis emmeli Boettger, 1888

Type(s): SMF 19364 (Holotype) (Uetz *et al.*, 2018).

Type locality: Río Mapiri, Bolivia.

Distribution: Bolivia and Peru (Uetz *et al.*, 2018).

Remarks: Small-sized snake of fossorial habits. Colouration varies from light brown

to dark brown or uniformly black, usually with a wide white to pale brown parietal band (Passos *et al.*, 2019). On August 26, 2017, an adult was found at 1:30 a.m. entering one of the houses in the study area. The individual was captured and relocated (Table 1; Figure 5f). According to IUCN, this species is listed as Least Concern (LC) (Aguayo *et al.*, 2016).

Siphlophis compressus (Daudin, 1803)

Coluber compressus Daudin, 1803

Type(s): MNHN-RA 3730 (Holotype) (Uetz *et al.*, 2018).

Type locality: Suriname.

Distribution: Costa Rica, Panama, French Guiana, Guyana, Peru, Brazil, Bolivia, Colombia, Ecuador, Venezuela and Trinidad (Uetz *et al.*, 2018).

Remarks: Medium-sized snake, arboreal, with an elongated and laterally compressed body; red back surface with a dark banded pattern (Pazmiño-Otamendi, 2019). At 3:01 a.m. on January 26, 2018, an individual was found (Table 1; Figure 6a) moving between the forest bushes at 2 m height. According to IUCN, this species is listed as Least Concern (LC) (Embert *et al.*, 2019).

Xenodon severus (Linnaeus, 1758)

Coluber severus Linnaeus, 1758

Type(s): NHRM Stockholm (Holotype) (Uetz *et al.*, 2018).

Type locality: Asia (in error).

Distribution: Brazil, Venezuela, Colombia, Ecuador, Peru, Bolivia, French Guiana, Guyana (Uetz *et al.*, 2018).

Remarks: Medium-sized, daytime, and terrestrial-habit snake. It has a dark gray to black coloring with yellow spots and a coffee-color head. This species presents spe-



Figure 6: a) *Siphlophis compressus*, b) *Xenodon severus*, c) *Lachesis muta*, d-f) Representation of the areas studied in Villa Tunari.

Figura 6: a) *Siphlophis compressus*, b) *Xenodon severus*, c) *Lachesis muta*, d-f) Representación de las áreas estudiadas en Villa Tunari.

cialized dentition (opisthomegadont dentition) for the feeding of frogs (Carvajal-Campos, 2019b). On December 10, 2017, an adult individual was located at 1:58 a.m. resting under spoils in the surroundings of a house. When threatened, it opens the mouth and inflates its body (Table 1; Figure 6b). According to IUCN, this species is listed as Least Concern (LC) (Rivas *et al.*, 2019b).

Lachesis muta (Linnaeus, 1766)

Crotalus mutus Linnaeus, 1766

Type(s) – Holotype not designated, location unknown (Wallach *et al.*, 2014).

Type locality: Suriname.

Distribution: Colombia, Ecuador, Brazil, Venezuela, Suriname, Guyana, French Guiana, Trinidad, Peru and Bolivia (Uetz *et al.*, 2018).

Table 1: Taxonomic diversity of amphibians and reptiles in Villa Tunari (Sampling zones: Z1 = forest; Z2 = anthropic; IUCN Categories: LC = Least Concern; VU = Vulnerable; DD = Data Deficient; NE = Not Evaluated).**Tabla 1:** Diversidad taxonómica de anfibios y reptiles en Villa Tunari (Zonas de muestreo: Z1 = bosque; Z2 = antrópica; Categorías UICN: LC = Preocupación Menor; VU = Vulnerable; DD = Datos Insuficientes).

Species	Area		Total	IUCN Categories
	Z1	Z2		
Order ANURA				
Family Bufonidae				
1. <i>Rhinella poeppigii</i>	>10	>10	>20	LC (IUCN SSC, 2020)
2. <i>Rhinella major</i>	0	>10	>10	Not listed
Family Craugastoridae				
3. <i>Pristimantis fenestratus</i>	>10	0	>10	LC (Rodríguez <i>et al.</i> , 2004)
4. <i>Oreobates cruralis</i>	>10	0	>10	LC (Cortez <i>et al.</i> , 2004)
Family Dendrobatidae				
5. <i>Ameerega picta</i>	>10	>10	>20	LC (La Marca <i>et al.</i> , 2008)
Family Hylidae				
6. <i>Dendropsophus acreanus</i>	0	1	1	LC (Azevedo-Ramos <i>et al.</i> , 2004)
Family Leptodactylidae				
7. <i>Leptodactylus rhodonotus</i>	2	0	2	LC (Angulo <i>et al.</i> , 2004)
8. <i>Leptodactylus fuscus</i>	0	>10	>10	LC (Reynolds <i>et al.</i> , 2004)
9. <i>Engystomops freibergeri</i>	2	0	2	LC (Angulo, 2010)
10. <i>Adenomera coca</i>	1	0	1	DD (Angulo, 2009)
11. <i>Lithodytes lineatus</i>	1	0	1	LC (La Marca <i>et al.</i> , 2010)
Order TESTUDINES				
Family Testudinidae				
12. <i>Chelonoidis denticulata</i>	>10	0	>10	VU (TFTSG, 1996)
Order SQUAMATA (Lizards)				
Family Dactyloidae				
13. <i>Norops fuscoauratus</i>	1	0	1	Not listed
14. <i>Norops ortonii</i>	0	1	1	Not listed
Family Gekkonidae				
15. <i>Hemidactylus mabouia</i>	0	<10	>10	Not listed
Family Teiidae				
16. <i>Ameiva ameiva</i>	>10	>10	>20	LC (Ibáñez <i>et al.</i> , 2019)
Family Tropiduridae				
17. <i>Stenocercus prionotus</i>	1	0	1	LC (Aguayo <i>et al.</i> , 2017)
18. <i>Stenocercus roseiventris</i>	2	0	2	LC (Abdala <i>et al.</i> , 2019)
Order SQUAMATA (Snakes)				
Family Colubridae				
19. <i>Chironius exoletus</i>	2	0	2	Not listed
20. <i>Dendrophidion dendrophis</i>	0	1	1	LC (Ines <i>et al.</i> , 2019)
21. <i>Helicops angulatus</i>	0	1	1	LC (Nogueira <i>et al.</i> , 2019)
22. <i>Mastigodryas boddaerti</i>	1	0	1	LC (Rivas <i>et al.</i> , 2019a)
23. <i>Philodryas aestiva</i>	0	1	1	LC (Cacciali <i>et al.</i> , 2019)
Family Dipsadidae				
24. <i>Atractus emmeli</i>	0	1	1	LC (Aguayo <i>et al.</i> , 2019)
25. <i>Siphlophis compressus</i>	1	0	1	LC (Embert <i>et al.</i> , 2019)
26. <i>Xenodon severus</i>	1	0	1	LC (Rivas <i>et al.</i> , 2019b)
Family Viperidae				
27. <i>Lachesis muta</i>	2	0	2	Not listed

Remarks: It is the largest venomous snake in South America and the world's largest viper; adults usually exceed 2 m in length (Campbell & Lamar, 2004). On August 3, 2017, an active adult individual was found at 4:24 p.m. close to a stream; by detecting our presence, the individual waved his tail quickly making a loud sound produced by the stridulation with the rubbing of the scales, the sound was audible at more than 20 meters. On February 20, another adult was found resting among the rocks on the edge of a stream at 7:37 a.m. Both individuals were similar in size, about 2 m in length (Table 1; Figure 6c). It is not listed by IUCN.

The current list of amphibians and reptiles in Bolivia shows a total of 571 species (Uetz *et*

al., 2018; AmphibiaWeb, 2020). In this preliminary listing performed in Villa Tunari (Department of Cochabamba), 27 species were recorded (Table 1; Figures 1, 2, 3, 4 and 5). Five families of anurans were represented: Bufonidae (1 genus, 2 species), Craugastoridae (2 genera, 2 species), Dendrobatiidae (1 genus, 1 species), Hylidae (1 genus, 1 species) and Leptodactylidae (4 genera, 5 species). Eight families of reptiles were recorded: Testudinidae (1 genus, 1 species), Dactyloidae (1 genus, 2 species), Gekkonidae (1 genus, 1 species), Teiidae (1 genus, 1 species), Tropiduridae (1 genus, 2 species), Colubridae (5 genera, 5 species), Dipsosidae (3 genera, 3 species) and Viperidae (1 genus, 1 species).

For two species, the individuals found in this study represent new distribution records. The range extension of *A. coca*, 16 km northwards from the only known population (the type locality) in Bolivia represents the northernmost locality in which it has been found (Angulo & Reichle, 2008; Angulo, 2009). *Stenocercus prionotus* is herein registered for the first time in the Department of Cochabamba, which was previously known from Beni and La Paz Departments (Cadle, 2001; Torres-Carvajal, 2007; Teixeira *et al.*, 2015; GBIF 2019). In this sense, the

development of local faunistic studies for under-sampled regions in Bolivia through a rapid taxonomic screening will contribute to increase the knowledge on little known species before they become extinct by anthropic factors.

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REFERENCES

- Abdala, S., Aguilar-Kirigin, A.J., Semhan, R.V., Arroyo, B., Valdes, J. & Paz, M.M. 2019. Description and phylogeny of a new species of *Liolaemus* (Iguania: Liolaemidae) endemic to the south of the Plurinational State of Bolivia. *PLOS ONE*, 14(12): e0225815
- Abdala, S., Aparicio, J., Arzamendia, V., Avila-Pires, T.C.S., Fitzgerald, L., Giraudo, A., Kacoliris, F., Monterio, R., Moravec, J., Pelegrin, N., Perez, P., Scrocchi, G. & Williams, J. 2019. *Stenocercus roseiventris*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Aguayo, R., Aparicio, J., Gonzales, L. & Cortez, C. 2016. *Atractus emmeli*. In: *The IUCN Red List of Threatened Species 2016*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Aguayo, R., Embert, D. & Aparicio, J. 2017. *Stenocercus prionotus*. In: *The IUCN Red List of Threatened Species 2017*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- AmphibiaWeb. 2020. Universidad de California, Berkeley, CA, EE.UU. <<http://amphibiaweb.org/>> [Accessed: May 11, 2020].

- Andersson, L.G. 1900. Catalogue of Linnean type-specimens of Linnaeus's Reptilia in the Royal Museum in Stockholm. [type catalogue] *Bihang till Kongliga Svenska Vetenskaps-Akademiens. Handlingar. Stockholm*, (4) 26(1): 1–29.
- Andrango, M.B. & Rodríguez-Guerra, A. 2019. *Ameiva ameiva*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <https://bioweb.bio/> [Accessed: May 12, 2020].
- Angulo, A. 2009. *Adenomera coxa*. In: *The IUCN Red List of Threatened Species 2009*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 21, 2020].
- Angulo, A. 2010. *Engystomops freibergeri*. In: *The IUCN Red List of Threatened Species 2010*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 11, 2020].
- Angulo, A. & Reichle, S. 2008. Acoustic signals, species diagnosis, and species concepts: the case of a new cryptic species of *Leptodactylus* (Amphibia, Anura, Leptodactylidae) from the Chapare region, Bolivia. *Zoological Journal of the Linnean Society*, 152: 59–77.
- Angulo, A., De la Riva, I., Reichle, S. & Gascon, C. 2004. *Leptodactylus rhodonotus*. In: *The IUCN Red List of Threatened Species 2004*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 21, 2020].
- Ávila-Pires, T.C.S. 1995. Lizards of Brazilian Amazonia (Reptilia: Squamata). *Zoologische Verhandelingen*, 299(1):1–706.
- Azevedo-Ramos, C., Angulo, A., Jungfer, K., Reichle, S., De la Riva, I. & Icochea, J. 2004. *Dendropsophus acreanus* (errata version published in 2016). In: *The IUCN Red List of Threatened Species 2004*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 21, 2020].
- Cacciali, P., Giraudo, A., Arzamendia, V., Scott, N. & Scrocchi, G. 2019. *Philodryas aestiva*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 21, 2020].
- Cadle, J.E. 2001. A new species of lizard related to *Stenocercus caducus* (Cope) (Squamata: Iguanidae from Peru and Bolivia, with a key to the "Ophryoessoides Group". *Bulletin of the Museum of Comparative Zoology at Harvard*, 157(3): 183–222.
- Campbell, J.A. & Lamar, W.W. 2004. *The venomous reptiles of the western hemisphere*, Vol. 1. Comstock Publishing, Cornell University. Ithaca. New York. USA.
- Carranza, S. & Arnold, E.N. 2006. Systematics, biogeography, and evolution of *Hemidactylus* geckos (Reptilia: Gekkonidae) elucidated using mitochondrial DNA sequences. *Molecular Phylogenetics and Evolution*, 38(2): 531–545.
- Carvajal-Campos, A. 2019a. *Hemidactylus mabouia*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <https://bioweb.bio/> [Accessed: May 12, 2020].
- Carvajal-Campos, A. 2019b. *Xenodon severus*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <https://bioweb.bio/> [Accessed: May 12, 2020].
- Carvajal-Campos, A. & Ayala-Varela, F. 2019. *Anolis fuscoauratus*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <https://bioweb.bio/> [Accessed: May 11, 2020].
- Carvajal-Campos, A. & Rodríguez-Guerra, A. 2019. *Chelonoidis denticulatus*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <https://bioweb.bio/> [Accessed: May 11, 2020].
- Cei, J.M. 1993. *Reptiles del noroeste, nordeste y este de la Argentina. Herpetofauna de las selvas subtropicales, Puna y Pampas*. Monografía XIV. 1ª ed. Museo Regionale di Scienze Naturali. Torino. Italia.
- Cole, C.J., Townsend, C.R., Reynolds, R.P., MacCulloch, R.D. & Lathrop, A. 2013. Amphibians and reptiles of Guyana, South America: Illustrated keys, annotated species accounts, and a biogeographic synopsis. *Proceedings of the Biological Society of Washington*, 125(4): 317–578.
- Cortez, C., Reichle, S., Rodríguez, L., Martínez, J.L. & Arizabal, W. 2004. *Oreobates crunalis*. In: *The IUCN Red List of Threatened Species 2004*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <https://www.iucnredlist.org/> [Accessed: May 21, 2020].
- Daudin, F.M. 1802. "An. XI". *Histoire Naturelle des Rainettes, des Grenouilles et des Crapauds*. Quarto version. Paris: Levrault. France.
- Daudin, F.M. 1803. "An. XI". *Histoire Naturelle, Générale et Particulière des Reptiles; Ouvrage Faisant suit à l'Histoire Naturelle Générale et Particulière, Composée par Leclerc de Buffon; et Rédigée par C.S. Sonnini, Membre de Plusieurs Sociétés Savantes*. Volume 8. Paris: F. Dufart. France.
- De la Riva, I. 2002. Taxonomy and distribution of the South American toads, *Bufo poeppigii* Tschudi, 1845 (Amphibia, Anura, Bufonidae). *Graellsia*, 58: 49–57.
- De la Riva, I., Cortez, C. & Burrows, P.A. 2017. A new species of *Microkayla* (Anura: Craugastoridae: Holoadeninae) from Department La Paz, Bolivia. *Zootaxa*, 4363(3): 350–360.
- De Sá, R.O., Grant, T., Camargo, A., Heyer, W.R., Ponssa, M.L. & Stanley, E.L. 2014. Systematics of the Neotropical genus *Leptodactylus* Fitzinger, 1826 (Anura: Leptodactylidae): Phylogeny, the relevance of non-molecular evidence, and species accounts. *South American Journal of Herpetology*, 9 (Spec. Issue 1): 1–128.
- Dirksen, L. & De la Riva, I. 1999. Los lagartos y anfibios de Bolivia (Reptilia, Squamata): lista de verificación, localidades y bibliografía. *Graellsia*, 55: 199–215.
- Dixon, J.R., Wiest Jr, J.A. & Cei, J.M. 1993. *Revision of the neotropical snake genus Chironius (Serpentes: Colubridae)*. Museo Regionale di Scienze Naturali, Torino, Italia.
- Embert, D., Martins, M.R.C., Rivas, G., Stafford, P., Gonzales, L., Gagliardi, G., Catenazzi, A., Nogueira, C. de C., Murphy, J., Acosta Chaves, V., García Rodríguez, A., Batista, A., Cisneros-Heredia, D.F., Saborio, G. & Vargas Álvarez, J. 2019. *Siphophis compressus*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation

- and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Frost, D.R. 1985. *Amphibian Species of the World. A Taxonomic and Geographical Reference*. Association of Systematics Collections and Allen Press. Lawrence. Kansas. USA.
- Frost, D.R. 2020. *Amphibian Species of the World: an Online Reference*. Museum of Natural History. New York. USA. <<https://amphibiansoftheworld.amnh.org/>> [Accessed: May 24, 2020].
- GBIF Backbone Taxonomy. 2019. *Stenocercus prionotus*. Cadle, 2001. In: *GBIF Secretariat dataset*. Global Biodiversity Information Facility. <<http://www.gbif.org>> [Accessed: April 23, 2020].
- Glaw, F. & Franzen, M. 2006. Type catalogue of amphibians in the Zoologische Staatssammlung München. *Spixiana*, 29: 153–192.
- Gómez-Murillo, P. & Arellano-Martín, I. 2019. Población introducida de *Chelonoidis carbonaria* en Villa Tunari, Bolivia. *Boletín de la Asociación Herpetológica Española*, 30(1): 71–73.
- Gómez-Murillo, P., Arellano-Martín, I. & García-Antón, P. 2020. Registro adicional de *Bothrops sanctaecrucis* (Serpentes: Viperidae) en la provincia Chapare, Bolivia. *Boletín de la Asociación Herpetológica Española*, 31(1): 101–103.
- Guibé, J. 1950. "1948". *Catalogue des Types d'Amphibiens du Muséum National d'Histoire Naturelle*. Imprimerie Nationale. Paris. France.
- Häupl, M. & Tiedemann, F. 1978. Vertebrata 1. Typenkatalog der Herpetologischen Sammlung. *Kataloge der Wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien*, 2: 7–34.
- Häupl, M., Tiedemann, F. & Grillitsch, H. 1994. 3 Vertebrata, I Amphibia. Katalog der Typen der Herpetologischen Sammlung nach dem Stand vom 1. Jänner 1994. *Kataloge der Wissenschaftlichen Sammlungen des Naturhistorischen Museums in Wien*, 9: 1–42.
- Heyer, W.R. 1968. The proper name for the type-species of the genus *Leptodactylus*. *Copeia*, 1968: 160–162.
- Ibáñez, R., Jaramillo, C., Gutiérrez-Cárdenas, P., Rivas, G., Caicedo, J., Kacolis, F. & Pelegrin, N. 2019. *Ameiva ameiva*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Ibisch, P.L. 2003. Historia de la conservación de la biodiversidad en Bolivia. Pp: 348–357. In: Ibisch, P.L. & Mérida, G. 2003. *Biodiversidad: La riqueza de Bolivia. Estado de conocimiento y conservación*. Ministerio de Desarrollo Sostenible. 1ª Edición. Editorial FAN. Santa Cruz de la Sierra. Bolivia.
- Ibisch, P.L., Beck, S.G., Gerkmann, B. & Carretero, A. 2003. La Diversidad biológica. Pp: 47–88. In: Ibisch, P.L. & Mérida, G. 2003. *Biodiversidad: La riqueza de Bolivia. Estado de conocimiento y conservación*. Ministerio de Desarrollo Sostenible. 1ª Edición. Editorial FAN. Santa Cruz de la Sierra. Bolivia.
- Ines, A., Ramírez, M., Renjifo, J., Urbina, N., Nogueira, C., Gagliardi, G., Cisneros-Heredia, D.F., Hoogmoed, M., Schargel, W. & Rivas, G. 2019. *Dendrophidion dendrophis*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- IUCN SSC Amphibian Specialist Group. 2020. *Rhinella poeppigii*. In: *The IUCN Red List of Threatened Species 2020*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Kluge, A.G. 1969. The evolution and geographical origin of the New World *Hemidactylus mabouia brookii* Complex (Gekkonidae, Sauria). *Miscellaneous Publications Museum of Zoology*, 138: 1–78.
- Koch, C., Venegas, P.J., Santa Cruz, R. & Böhme, W. 2018. Annotated checklist and key to the species of amphibians and reptiles inhabiting the northern Peruvian dry forest along the Andean valley of the Marañón River and its tributaries. *Zootaxa*, 4385(1): 1–101.
- Krysko, K.L. & Daniels, K.J. 2005. A key to the geckos (Sauria: Gekkonidae) of Florida. *Caribbean Journal of Science*, 41(1): 28–36.
- La Marca, E., Azevedo-Ramos, C., Silvano, D., Hoogmoed, M., De la Riva, I., Reichle, S. & Acosta-Galvis, A. 2008. *Ameerega picta*. In: *The IUCN Red List of Threatened Species 2008*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- La Marca, E., Azevedo-Ramos, C., Coloma, L.A., Ron, S. & Hardy, J. 2010. *Lithodytes lineatus*. In: *The IUCN Red List of Threatened Species 2010*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Mittermeier, R.A., Robles Gil, P. & Mittermeier, C.G. 1997. *Megadiversidad: Los países biológicamente más ricos del mundo*. CEMEX. Ciudad de México. México.
- Nogueira, C., Gonzales, L., Cisneros-Heredia, D.F., Gagliardi, G., Catenazzi, A., Schargel, W., Rivas, G. & Murphy, J. 2019. *Helicops angulatus*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Ocampo, M., Aguilar-Kirigin, A. & Quinteros, S. 2012. A New Species of *Liolaemus* (Iguania: Liolaemidae) of the Alticolor Group from La Paz, Bolivia. *Herpetologica*, 68(3): 410–417.
- Pacheco, M. 2015. *Guía fotográfica de los anfibios de la región de los Yungas, Bolivia*. Diversidad Entre Pendientes. La Paz. Bolivia.
- Páez, V.P., Morales-Betancourt, M.A., Lasso, C.A., Castaño-Mora, O.V. & Bock, B.C. 2012. *V. Biología y conservación de las tortugas continentales de Colombia*. Serie Editorial Recursos Hidrobiológicos y Pesqueros Continentales de Colombia. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH). Bogotá. Colombia.
- Passos, P., Azevedo, J.A.R., C. Nogueira, C.C., Fernandes, R. & Sawaya, R.J. 2019. An integrated approach to delimit species in the puzzling *Atractus emmeli* Complex (Serpentes: Dipsadidae). *Herpetological Monographs*, 33(1): 1–25.
- Pazmiño-Otamendi, G. 2019. *Siphlophis compressus*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de

- Zoología, Pontificia Universidad Católica del Ecuador. <<https://bioweb.bio/>> [Accessed: May 12, 2020].
- Pazmiño-Otamendi, G. & Torres-Carvajal, O. 2019. *Helicops angulatus*. In: Torres-Carvajal, O., Pazmiño-Otamendi, G. & Salazar-Valenzuela, D. (eds.). *Reptiles del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <<https://bioweb.bio/>> [Accessed: May 12, 2020].
- Pramuk, J.B. 2006. Phylogeny of South American *Bufo* (Anura: Bufonidae) inferred from combined evidence. *Zoological Journal of the Linnean Society*, 146: 407–452.
- Rivas, G., Gutiérrez-Cárdenas, P., Valencia, J., Gonzales, L., Nogueira, C. & Murphy, J. 2019a. *Mastigodryas boddaerti*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Rivas, G., Gutiérrez-Cárdenas, P., Caicedo, J., Valencia, J., Gonzales, L., Catenazzi, A., Gagliardi, G. & Nogueira, C. 2019b. *Xenodon severus*. In: *The IUCN Red List of Threatened Species 2019*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Reynolds, R., Caramaschi, U., Mijares, A., Acosta-Galvis, A., Heyer, R., Lavilla, E. & Hardy, J. 2004. *Leptodactylus fuscus*. In: *The IUCN Red List of Threatened Species 2004*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Rodríguez, L., Martínez, J.L., Azevedo-Ramos, C., Reynolds, R., Reichle, S. & Gascon, C. 2004. *Pristimantis fenestratus*. In: *The IUCN Red List of Threatened Species 2004*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Ron, S.R. & Read, M. 2018. *Lithodytes lineatus*. In: Ron, S.R., Merino-Viteri, A. & Ortiz, D.A. (eds). *Anfibios del Ecuador*. Museo de Zoología, Pontificia Universidad Católica del Ecuador. <<https://bioweb.bio/>> [Accessed: May 21, 2020].
- Rueda-Almonacid, J.V., Carr, J.L., Mittermeier, R.A., Rodrigues-Mahecha, J.V., Mast, R.B., Vogt, R.C., Rhodin, A.G.J., De la Ossa-Velásquez, J., Rueda, J.N. & Mittermeier, C.G. 2007. *Las tortugas y los cocodrilianos de los países andinos del trópico*. Serie de guías de campo tropicales 6. Conservación Internacional. Bogotá. Colombia.
- Stejneger, L. 1904. The herpetology of Porto Rico. *Annual report of the United States National Museum for 1902*: 549–724.
- Teixeira, M., Prates, I., Nisa, C., Silva, N.S.C., Strüßmann, C. & Trefaut, M. 2015. Molecular data reveal spatial and temporal patterns of diversification and a cryptic new species of lowland *Stenocercus* Duméril & Bibron, 1837 (Squamata: Tropiduridae). *Molecular Phylogenetics and Evolution*, 94: 410–423.
- TFTSG Tortoise & Freshwater Turtle Specialist Group. 1996. *Chelonoidis denticulate*. In: *The IUCN Red List of Threatened Species 1996*. International Union for Nature Conservation and Natural Resources, Gland, Switzerland. <<https://www.iucnredlist.org/>> [Accessed: May 21, 2020].
- Thomas, R.A. 1976. *A revision of the South American colubrid snake genus Philodryas Wagler, 1830*. PhD Thesis. Texas A & M University. Texas. USA.
- Torres-Carvajal, O. 2007. A taxonomic revision of South American *Stenocercus* 1200 (Squamata: Iguania) lizards. *Herpetological Monographs*, 21: 76–178.
- Uetz, P., Freed, P. & Hošek, J. 2018. *The Reptile Database*. <<http://www.reptile-database.org/>> [Accessed: May 12, 2020].
- Vitt, L.J. & De la Torre, S. 1996. *Guía para la investigación de las lagartijas de Cuyabeno. A research guide to the lizards of Cuyabeno*. Museo de Zoología (QCAZ), Centro de Biodiversidad y Ambiente, Pontificia Universidad Católica del Ecuador. Quito. Ecuador.
- Wallach, V., Kenneth, L. & Boundy, J. 2014. *Snakes of the World: A Catalogue of Living and Extinct Species*. [type catalogue] Taylor and Francis. CRC Press. Florida. USA.

Annex 1: Museum abbreviations.

Anexo 1: Abreviaturas de Museos.

ANSP: Academy of Natural Sciences, Department of Herpetology, Pennsylvania, USA; **BMNH:** The Natural History Museum, Department of Zoology, London, United Kingdom (Formerly the British Museum [Natural History]); **MHNN:** Muséé d'Histoire Naturelle de Neuchâtel, Neuchâtel, Switzerland; **MNHNP:** Muséum National d'Histoire Naturelle, Laboratoire des Amphibiens et Reptiles, Paris, France; **NHRM:** Naturhistoriska Rijkmuseet, Section for Vertebrate Zoology, Stockholm, Sweden; **MNHN-RA:** Muséum National d'Histoire Naturelle, Laboratoire des Amphibiens et Reptiles, Paris, France; **NKA:** Greenland National Museum (Nuna-

tta Katersugaasivia Allagaateqarfialu) Nuuk, Greenland; **NHMW:** Naturhistorisches Museum Wien, 1. Zoologische Abteilung, Vienna, Austria; **SMF:** Forschungsinstitut und Natur-Museum Senckenberg, Frankfurt-am-Main, Germany; **ZMUU:** Zoological Museum of the Uppsala University. Uppsala, Sweden; **USNM:** National Museum of Natural History, Division of Amphibians and Reptiles, Washington, USA; **WCAB:** Werner C.A. Bokermann collection now transferred to MZUSP (Universidade de São Paulo, Museu de Zoologia, São Paulo, Brazil); **ZSM:** Zoologische Staatssammlung München, Münchhausenstraße. München, Germany.