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A new species of Sipo Snake, *Chironius* (Serpentes: Colubridae), from the Yungas of Bolivia

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Abstract.—A new snake of the genus *Chironius* is described based on external morphological characters and phylogenetic evidence. The new species occurs in Bolivia, both in the humid montane forests of the Yungas of Cochabamba and in Santa Cruz. It differs from all congeners in having 10 dorsal scale rows at midbody, an entire cloacal plate, keeled paravertebral rows, lightly colored lower portions of the supralabials, a yellow snout, a short hemipenis, and lacking postocular stripes, proximal enlarged spines on the hemipenis, and apical pits. Adults and juveniles have an emerald green background color. The new species is recovered as the sister taxon of *C. leucometapus*, which is known from the Amazonian slopes of the Andes between central Peru and northern Ecuador. We also provide an identification key to the species of *Chironius* with 10 dorsal rows at midbody.

Keywords. Carrasco National Park, hemipenes, phylogeny, reptiles, Squamata, systematics

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Introduction

The genus *Chironius* Fitzinger, 1826 currently contains 24 terrestrial or semi-arboreal species, five of which have been described in the last 15 years (Entiauspene Neto et al. 2020; Fernandes and Hamdan 2014; Hamdan and Fernandes 2015; Kok 2010; Sudré et al. 2024). Commonly known as Sipo Snakes, they are unique among Neotropical snakes in having 10 or 12 longitudinal rows of dorsal scales around the midbody (Dixon et al. 1993; Hollis 2006). Species of *Chironius* occur from Honduras in Central America to Uruguay and Argentina in South America (Dixon et al. 1993). The monophyly of *Chironius* is strongly supported by both morphological and DNA-sequence data (Hamdan et al. 2017; Hollis 2006; Klaczko et al. 2014; Torres-Carvajal et al. 2019b).

Following the comprehensive taxonomic revision of *Chironius* by Dixon et al. (1993), along with subsequent

taxonomic work, nine species of *Chironius* are currently recognized in Bolivia (Embert 2007; Wallach et al. 2014): *C. exoletus* Linnaeus, 1758, *C. flavolineatus* Jan, 1863, *C. fuscus* Linnaeus, 1758, *C. laurenti* Dixon, Wiest, and Cei, 1993, *C. maculovertris* Dixon, Wiest, and Cei, 1993, *C. monticola* Roze, 1952, *C. multivertris* Schmidt and Walker, 1943, *C. quadricarinatus* Boie, 1827, and *C. scurrula* Wagler, 1824. Recent herpetological field work in the Bolivian-Peruvian Yungas of Carrasco National Park (Cochabamba, Bolivia) and the Tucuman-Bolivian Yungas of Santa Cruz yielded several specimens of *Chironius* that could not be assigned to any of the described species. Herein we describe them as a new species based on morphological and phylogenetic evidence.

Materials and Methods

Specimen Sampling and Morphological Data

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In addition to the type series listed below, specimens examined in this study are listed in Appendix 1. Specimens were collected under permits MMAyA-VMA-DGBAP-004 and VMABCCGDF N° 16/19 issued by Ministerio de Medio Ambiente y Aguas and sacrificed in the field by intracardiac injection of 1% xylocaine solution. Immediately after euthanasia, muscle tissue samples were extracted from all specimens and preserved in 96% ethanol. Specimens were subsequently fixed in 10% formalin, stored in 75% ethanol, and deposited in the Bolivian herpetological collections of the Museo de Historia Natural Alcide d'Orbigny (MHNC-R), Cochabamba, and Museo de Historia Natural Noel Kempff Mercado (MNKR), Universidad Autónoma Gabriel René Moreno, Santa Cruz de La Sierra.

We followed the terminology proposed by Dowling (1951) and Dixon et al. (1993) for scale counts and measurements. Snout-vent length and tail length were recorded using a measuring tape to the nearest 0.1 mm. All other measurements were made with digital calipers to the nearest 0.01 mm (rounded to the nearest 0.1 mm) and included: head width (HW), at widest point of head between mouth commissures; head length (HL), from tip of rostral to posterior border of last supralabial; horizontal eye diameter (EL); eye-nostril distance (EN), from posterior border of nostril to anterior corner of eye; snout length (SL), from rostral tip to anterior margin of eye; maximum loreal length; and maximum loreal height. The morphological and hemipenial terminology follows Dowling and Savage (1960) and Dixon et al. (1993). Color was recorded for both living and preserved specimens. Maxillary teeth were counted *in situ* on the right side. Sex was determined by searching for hemipenes either by eversion or through a ventral incision at the base of the tail. We prepared the left hemipenis of paratype MHNC-R 3229 (SVL = 810 mm) following standard techniques (Pesantes 1994). We compared data from the specimens examined with literature data from Dixon et al. (1993) and Torres-Carvajal et al. (2019a).

DNA Data and Phylogenetic Analyses

We obtained new DNA sequences from the holotype of the new species described here for three mitochondrial genes, the small (*12S*, 424 aligned bp) and large (*16S*, 444 aligned bp) ribosomal subunit genes, and subunit IV of NADH dehydrogenase (*ND4*, 693 aligned bp), as well as one nuclear gene, the oocyte maturation factor *mos* (*c-mos*, 537 aligned bp). The muscle tissue sample was mixed with Proteinase K and lysis buffer and digested overnight. Total genomic DNA was extracted using a guanidinium isothiocyanate extraction protocol. DNA samples were quantified using a Nanodrop® ND-1000 (NanoDrop Technologies, Inc.), re-suspended, and diluted to 25 ng/μl in ddH₂O prior to amplification. Primers and amplification protocols follow Torres-Carvajal et al. (2019b), and we added the new sequences

to the dataset in that study to produce a matrix of 173 taxa and 2,098 aligned nucleotides. GenBank accession numbers of the sequences produced in this study are PP408265 (*12S*), PP408266 (*16S*), PP411803 (*ND4*), and PP411804 (*c-mos*).

Data were assembled and aligned in Geneious Prime 2022.1.1 (<https://www.geneious.com>) under default settings for MUSCLE 3.8.425 (Edgar 2004). Protein-coding sequences were translated into amino acids for confirming the alignment and absence of pseudogenes. After partitioning the concatenated dataset by gene, we ran a maximum likelihood analysis in RAxML v8.2.10 (Stamatakis 2014) under the GTRGAMMA model for each partition. We assessed nodal support with the rapid bootstrapping (BS) algorithm (Stamatakis et al. 2008) on 1,000 replicates. We executed these analyses in the CIPRES Science Gateway (Miller et al. 2010). Outgroup taxa were the same as in Torres-Carvajal et al. (2019b). We used DIVEIN (Deng et al. 2010) to calculate *16S* uncorrected pairwise genetic distances between the new species described herein and other species of *Chironius*, and compared those distances with recently published data (Sudré et al. 2024).

Species Concept

In this work we follow the unified species concept (de Queiroz 1998, 2007). We infer the existence of the new species described below based on morphological and phylogenetic criteria, which we interpret as evidence of lineage separation.

Results

Systematic Account

Chironius whipala sp. nov.

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Proposed common English names: Whipala Sipos, Whipala snakes

Proposed common Spanish names: Sipos Whipala, serpientes Whipala

Holotype. MHNC-R 3099 (Fig. 1), an adult male collected in Chaquisacha, Carrasco National Park, Cochabamba Department, Bolivia (17°24'24.42"S, 65°15'34.88"W, 1,337 m) on 21 February 2021 by Rene Carpio-Real at 2345 h in humid montane forests (Yungas).

Paratypes (12). *Cochabamba Department:* Same collection data as holotype: MHNC-R 3100, juvenile male collected by Oliver Quinteros-Muñoz on 15 March 2021 at 2330 h; MHNC-R 3101, adult female collected by Rene Carpio-Real on 17 December 2020 at 2300 h; MHNC-R 3102, adult male (specimen in poor condition,

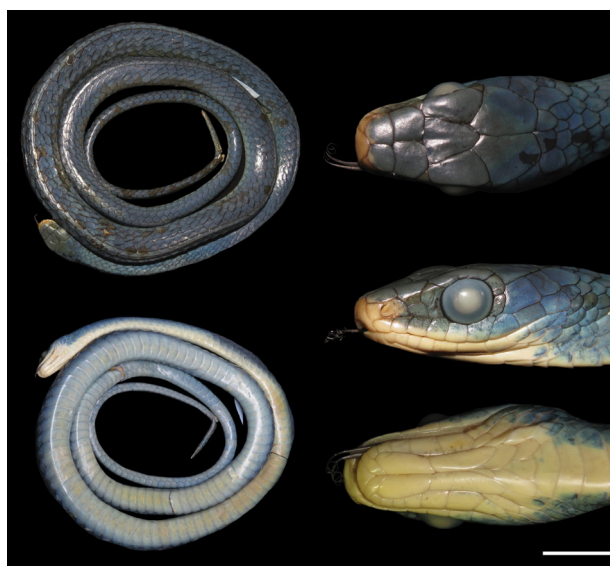


Fig. 1. Male holotype (MHNC-R 3099) of *Chironius whipala* sp. nov. in preservative. Left: dorsal (top) and ventral (bottom) views of body. Right: dorsal (top), lateral (middle), and ventral (bottom) views of head. Scale bar (head only) = 10 mm. Photographs by Rene Carpio-Real.

found dead), collected by José Balderrama on 27 September 2020; MHNC-R 3133, adult male collected by Oliver Quinteros-Muñoz on 17 April 2021 at 1930 h; MHNC-R 3134, juvenile female collected by Rene Carpio-Real on 20 April 2021 at 2349 h; MHNC-R 3135 juvenile female collected by Rene Carpio-Real on 17 May 2021 at 2152 h; MHNC-R 3227, an adult male found dead in poor condition, collected by Jorge Espinoza on 17 December 2022 at 1500 h near La Pajcha close to type locality, 2,000 m; MHNC-R 3229, an adult male found dead, collected by Bladimir Marca on 25 May 2023 at 1146 h near Arepucho close to type locality, 1,270 m. *Santa Cruz Department*: MNKR 3073, adult male collected by Walter Romero on 28 October 2001 in Pampagrande, Florida Province, 18°6'0.02"S, 64°6'0.00"W, 1,300 m; MNKR 3589, adult male collected by Pedro Maida on 18 December 2003 in La Hoyada, Florida Province, 17°55'12.02"S, 64°7'12.01"W, 1,730 m; MNKR 4833 adult male and MNKR 4834 adult female, collected by Lucindo Gonzales, Ruty Rodriguez, and Oswaldo Helmig on 15 November 2009 in Laja Tocos, Vallegrande Province, 18°29'41.37"S, 63°43'55.34"W, 1,300 m.

Etymology. The specific name “*whipala*” comes from the original Aymara language, which means “emblem,” i.e., the emblem of the original people of the Andes of Bolivia and an emblem that honors and symbolizes respect for our Pachamama (Mother Earth). According to an anonymous Aymara phrase, “where there is a wiphala, love and respect for Mother Earth (Pachamama) and the universe will be represented.”

Diagnosis. *Chironius whipala* can be distinguished from other species of *Chironius* by the following combination

of characters: (1) dorsal scale formula 10-10-8 in males, 10-10-10 in females; (2) apical pits absent; (3) paravertebral keels present, inconspicuous in females; (4) ventrals 149–151 in males, 151–155 in females; (5) subcaudals 117–122 in males, 119–120 in females; (6) cloacal plate single; (7) loreal slightly longer than high; (8) maxillary teeth 32; (9) juveniles emerald green or olive green, without markings; (10) adults emerald green, unmarked; (11) black postocular stripe absent; (12) snout yellow; (13) ventrals and subcaudals yellowish or greenish, immaculate; (14) hemipenis short (i.e., ~2X as long as wide), cylindrical, unlobed, with undivided *sulcus spermaticus* and base covered with tiny spines.

Chironius whipala differs from all known species of *Chironius* except *C. fuscus* and *C. leucometapus* in having 10 dorsal scale rows at midbody, an entire cloacal plate, lightly colored lower portion of supralabials, and keeled paravertebral rows. From *C. fuscus* (character states in parentheses), *C. whipala* can be distinguished by having a yellow snout and forehead (head uniformly colored) and lacking both a postocular stripe (present) and enlarged spines on the proximal aspect of the hemipenial body (large spines present) (Dixon et al. 1993; Torres-Carvajal et al. 2019a). From *C. leucometapus* (character states in parentheses), *C. whipala* can be distinguished by having a yellow snout patch covering rostral, first supralabials, and anterior portion of nasals and internasals (rusty brown or coppery orange snout patch covering rostral, first pair of supralabials, internasals, prefrontals, nasals, frontal, and anterior half of supraoculars). Finally, *C. whipala* differs from both *C. fuscus* and *C. leucometapus* in having a much shorter hemipenis (~2X versus > 5X as long as wide) and in lacking apical pits on the dorsal scales.

Description of holotype. Adult male (Fig. 1), total length (TTL) 1,356 mm, SVL 960 mm, tail incomplete; head well differentiated from neck, narrow anteriorly, wider in temporal region, HW 43.6% of HL; snout rounded in dorsal and lateral views, SL 11.4 mm; eye large (EL 6.5 mm), pupil round, EN 20.8% of HL; rostral large, wider than high, visible from above; nasal divided, with large nostril separating anterior half from posterior half; internasals quadrangular, as wide as long, smaller than prefrontals, laterally in contact with nasals; prefrontals slightly wider than long, larger than internasals, each laterally in contact with nasal, loreal, and preocular; frontal bell-shaped, longer than wide, twice the length of suture between prefrontals; parietals large, 1.4 times as long as wide, interparietal suture length similar to length of frontal; postcephalic scales four; preocular single, separated from frontal by prefrontal-supraocular contact; loreal slightly longer than high, in contact with nasal, prefrontal, preocular, and supralabials II and III; postoculars two on each side; temporals 1 + 1; supralabials nine, I in contact with nasal, II in contact with nasal and loreal, III in contact with loreal and

preocular, IV - VI in contact with orbit (VI also in contact with postocular), VII and VIII in contact with anterior temporal, and IX in contact with both anterior and posterior temporals; infralabials 10/9, 6/5 in contact with chinshields; chinshields in two pairs, anterior pair shorter than posterior pair, both pairs in contact medially, except for last half of posterior pair; maxillary teeth 32; dorsal scales in 10-10-8 rows, smooth without apical pits; ventrals 151; cloacal plate single.

Color of holotype in life. Dorsal background uniformly emerald green, with grey skin between scales; snout yellow; lower portion of supralabials yellowish cream; ventral aspect of head immaculate white; dorsal coloration extending onto lateral tips of ventrals; ventral coloration white anteriorly, yellowish green on first third of body, turning into green tones posteriorly.

Color of holotype in preservative. Dorsum uniformly bluish-green, darker on posterior two-thirds of body; dorsal aspect of head dark brown; snout light brown; lower portion of supralabials and ventral aspect of head cream; venter bluish grey, lighter anteriorly (Fig. 1).

Hemipenis. The hemipenial description is based on the left organ of MHNC-R 3229, an adult male with SVL = 810 mm (Fig. 2). Organ relatively short, ~2X as long as wide, unilobed, non-capitate, and subcylindrical in shape; *sulcus spermaticus* undivided, linear, running centripetally from base to apex and terminating near center of apex, bordered by naked tissue proximally, spines centrally, and papillae distally; base of organ covered with small spines; basal naked pocket on medial region; proximal half of body densely covered with large spines; distal half of body densely covered with small spines (less than half the size of proximal spines) proximally, which are replaced by papillate fringes and calyces with papillate borders distally; apex with nude area.



Fig. 2. Left hemipenis of *Chironius whipala* sp. nov. (MHNC-R 3229) in asulcate (left) and sulcate (right) views. Scale bar = 5 mm. Photographs by Diego A. Paucar.

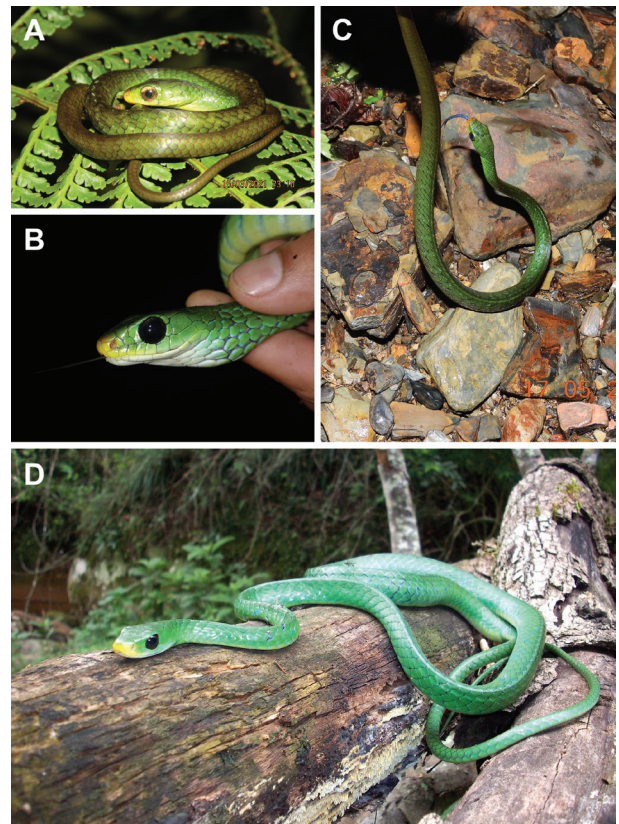


Fig. 3. General view of *Chironius whipala* sp. nov. in life. (A) juvenile male, paratype MHNC-R 3100; (B) adult male, paratype MHNC-R 3133; (C) juvenile female, paratype MHNC-R 3135; (D) adult female, paratype MNKR 4834. Photographs by Oliver Quinteros-Muñoz (A, B, C) and Lucindo Gonzales (D).

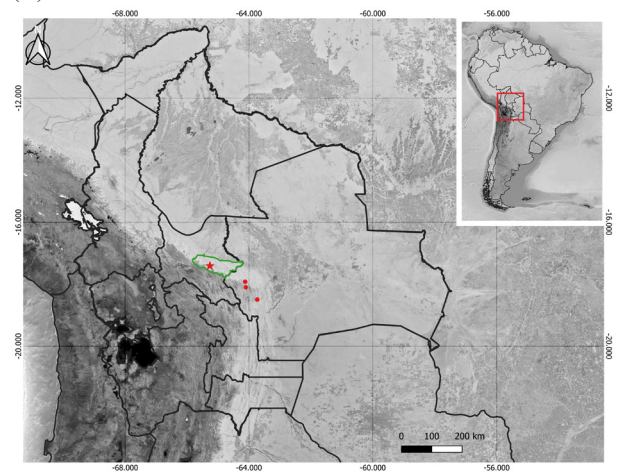


Fig. 4. Known distribution of *Chironius whipala* sp. nov. in Bolivia. The star corresponds to the type locality, and the green line depicts the boundaries of Carrasco National Park.

Variation. Intraspecific variations of *Chironius whipala* sp. nov. in scutellation and meristic characters are presented in Table 1. While males present reduction in the number of dorsal scales (10-10-8), females maintain the same number along the body (10-10-10). All specimens are similar in color pattern (Fig. 3). Female juvenile MHNC-R 3134 (SVL 260 mm) and male juvenile MHNC-R 3100 (SVL 277 mm) have faint, light transverse bands along body, which are separated from

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Table 1. Sexual variation in selected meristic and morphometric characters for *Chironius whipala* sp. nov. Range (first line) and mean \pm SD (second line) are presented when appropriate (n = sample size). Abbreviations are defined in the Materials and Methods section.

Character	Males (n = 9)	Females (n = 4)
Dorsal scale formula	10–10–8	10–10–10
Ventrals	149–156 151.11 \pm 2.09	151–155 153.25 \pm 1.71
Subcaudals	114–122 118.43 \pm 3.05	119–120 119.67 \pm 0.58
Supralabials	8–10, usually 9	8–9, usually 9
Supralabials entering orbit	4–5–6 (n = 8) 5–6–7 (n = 1)	4–5–6
Infralabials	8–10, usually 9	8–10, usually 9
SL/HL	0.36–0.41 0.39 \pm 0.02	0.37–0.39 0.38 \pm 0.01
EL/EN	1.00–1.5 1.19 \pm 0.16	1.07–1.37 1.28 \pm 0.15
HW/HL	0.37–0.67 0.50 \pm 0.11	0.39–0.56 0.45 \pm 0.08
Loreal height/length	0.62–0.82 0.70 \pm 6.53	0.78–0.94 0.85 \pm 6.83
Maximum SVL in mm	1,082	912
TL/SVL in adults	0.47–0.54 0.49 \pm 0.02	0.51



Fig. 5. General habitat of *Chironius whipala* sp. nov., near Chaquisacha, Carrasco National Park, Cochabamba, Bolivia. Photograph by Oliver Quinteros-Muñoz.

each other by \sim 3 scales.

Distribution and ecology. *Chironius whipala* sp. nov. is known from the type locality and immediate surroundings in Carrasco National Park, Cochabamba Department, as well as from Santa Cruz Department (Figs. 4–5). This species occurs in the Bolivian-Peruvian Yungas and Tucuman-Bolivian Yungas ecoregions (Ibisch and Mérida 2003). All specimens were collected at night between 1,270 and 2,000 m asl. Most of them were found lying on the vegetation at heights from 1–6 m above ground during the rainy season. Stomach contents in one of the specimens (MHNC-R 3102, adult male) included remains (hind leg) of a specimen of *Oreobates* sp., one undigested adult specimen of *Pristimantis* cf. *reichlei*, and one undigested adult specimen of “*Cercosaura manicata boliviana*.” An adult female contained seven eggs (average length/width = 40.1 mm/15.6 mm.) Within its range, *C. whipala* sp. nov. is found in sympatry with three congeners: *C. exoletus*, *C. laurenti*, and *C. monticola*.

Phylogenetic relationships. The phylogenetic tree recovered in this study (Fig. 6) is generally congruent with the tree presented by Torres-Carvajal et al. (2019b). The new species is the sister taxon of *Chironius*

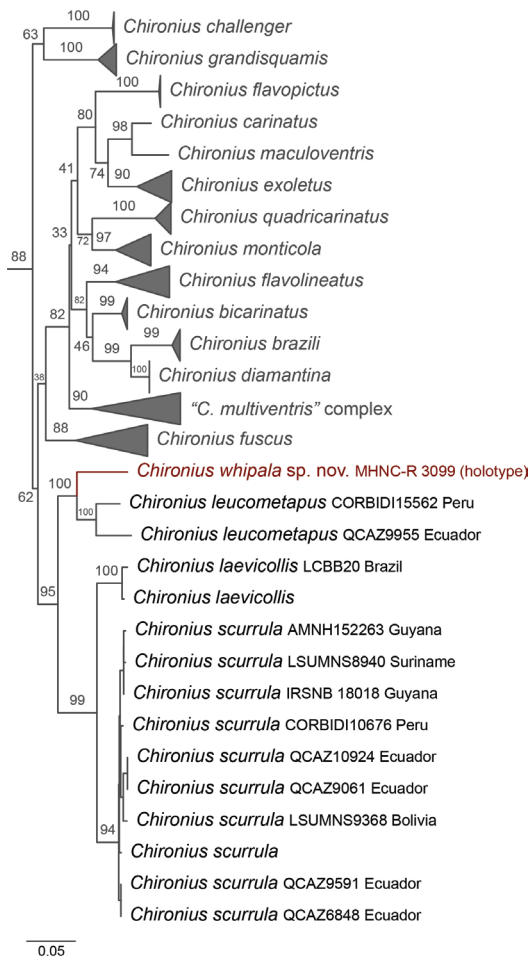


Fig. 6. Phylogeny of *Chironius*. Maximum likelihood tree obtained from a RAxML analysis of a concatenated matrix of 173 terminals and three mitochondrial (*12S*, *16S*, *ND4*) and one nuclear (*c-mos*) genes. Numbers along branches correspond to bootstrap support values. For most species, individual species clades are collapsed; outgroup taxa are not shown. For uncollapsed clades, species name followed by voucher number and country (if available) are provided. Except for the holotype of *C. whipala*, other details are available in Torres-Carvajal et al. (2019b).

leucometapus and, together with their sister clade (*C. laeivicollis*, *C. scurrula*), they form a strongly supported clade (BS = 95). The latter clade is the sister taxon of all remaining species of *Chironius* except for sister taxa *C. challenger* and *C. grandisquamis*. Uncorrected pairwise

genetic distances (*16S*) between *C. whipala* **sp. nov.** and its closest relatives *C. leucometapus*, *C. laeivicollis*, and *C. scurrula* are 3.4%, 6%, and 5.6%, respectively. The *16S* genetic distance between the two specimens of *C. leucometapus* included in this study is 1.9%.

Discussion

Like other animal taxa, the diversity and systematics of *Chironius* snakes from Bolivia have been poorly studied. For example, in a recent comprehensive phylogeny of *Chironius*, only two of the 97 samples were from Bolivia (Torres-Carvajal et al. 2019b), indicating that access to samples from Bolivia is limited. Here we describe a new species of *Chironius* endemic to the Bolivian Yungas (Bolivian-Peruvian and Tucuman-Bolivian) based on morphological and phylogenetic evidence. This adds to the recent descriptions of new species of sipo snakes from Brazil (Entiauspe-Neto et al. 2020; Sudré et al. 2024), increasing the number of *Chironius* species to 25 (including 10 in Bolivia).

Our phylogenetic analysis suggests that *C. whipala* **sp. nov.** is the sister species of *C. leucometapus* (Fig. 6), which is known from the eastern slopes of the Andes from central Peru to northern Ecuador (Torres-Carvajal et al. 2019a). The closest record of *C. leucometapus* (Rupa Rupa, Huánuco, Peru) lies about 1,428 km NW of the type locality of *C. whipala*. Although both species are similar at first glance in having a lightly colored snout (yellowish in *C. whipala* and rusty brown to coppery orange in *C. leucometapus*), they differ notably in the relative length of the hemipenis. Genetic distances represent another criterion supporting the recognition of the new species described in this paper. The uncorrected *16S* genetic distance between *C. whipala* and its sister species *C. leucometapus* (3.4%) is similar to those of several *Chironius* species pairs, such as *C. brazili* and *C. grandisquamis* (3.1–3.5%), or *C. diamantina* and *C. dracomaris* (3.1–3.7%); and within *Chironius*, *16S* distances range from 0.4% (*C. bicarinatus*/*C. gouveai*) to 10.5% (*C. flavolineatus*/*C. leucometapus*) (Sudré et al. 2024). Moreover, the *16S* distance between the two specimens of *C. leucometapus* included in this study,

Key to the species of *Chironius*

- 1. Cloacal plate single2
 Cloacal plate divided *C. grandisquamis*
- 2. At least lower portion of supralabials lightly colored3
 All supralabials black or dark colored *C. laeivicollis*
- 3. Paravertebral scale rows keeled.....4
 Paravertebral scale rows not keeled *C. scurrula*
- 4. Snout and forehead yellow or rusty; no basal large spine on hemipenis5
 Head uniformly colored; basal large spine on hemipenis *C. fuscus*
- 5. Apical pits present; hemipenis ~5X as long as wide *C. leucometapus*
 Apical pits absent; hemipenis ~2X as long as wide *C. whipala* **sp. nov.**

which were collected from two localities that lie ~930 km apart (Pastaza province in Ecuador and Huánuco department in Peru), is much lower (1.9%) than the distance between *C. whipala* and *C. leucometapus*, which further supports recognition of the new species described here.

Chironius whipala **sp. nov.** is endemic to the Bolivian humid montane forests known as the Bolivian-Peruvian Yungas (Figs. 4–5) in Carrasco National Park, Cochabamba, and the Tucuman-Bolivian Yungas, Santa Cruz. Recently, Gonzales et al. (2020) described *Oxyrhopus emberti*, another snake species endemic to the Bolivian Yungas, which suggests that the diversity of snakes within this region needs further study. The Yungas ecoregions include significant landscape heterogeneity and altitudinal variation, which probably have facilitated the impressive diversification of different groups of fauna and flora (Navarro and Maldonado 2004; Vásquez et al. 2003). The Yungas of central Bolivia, where *C. whipala* was first discovered, is the area with the greatest number of endemic species of amphibians (de la Riva and Reichle 2014). For these reasons, the Yungas ecoregion should be given priority in terms of the exploration and conservation of Bolivia's herpetofauna.

Key to Species of *Chironius* with 10 Rows of Dorsal Scales around the Midbody

The above key is a modification of the key presented by Dixon et al. (1993) and only includes the species with 10 longitudinal rows of dorsals around midbody. All other species of *Chironius* have 12 rows of dorsals and were excluded from this key because the corresponding and significant taxonomic work is beyond the scope of this paper.

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during work in Vallegrande, Santa Cruz; and K. Rivero (Museo de Historia Natural Noel Kempff Mercado) for permissions and access to the collections. Laboratory work was funded by grants from SENESCYT (Arca de Noé Initiative; S.R. Ron and O. Torres-Carvajal PIs) and Pontificia Universidad Católica del Ecuador.

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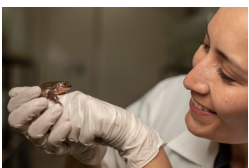
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A New Species of Sipo Snake, *Chironius*



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Appendix 1: Additional material examined. These additional specimens are deposited at Museo de Historia Natural Alcide d'Orbigny (MHNC-R), Swedish Museum of Natural History [Naturhistoriska Riksmuseet] (NRM), Centro de Investigación de Recursos Acuáticos (CIRA), and Estación Biológica de Doñana (EBD).

Chironius fuscus: Asia (error): NRM 34 (holotype; digital photographs). **Bolivia**: *Beni*: Yacuma, CIRA 257; *La Paz*: Abel Iturralde, CIRA 463; CIRA 465; *Pando*: Abuná, CIRA 814 (digital photographs); *Cochabamba*: Chapare, EBD 23615H. Venezuela: Amazonas, EBD 20665H.

Chironius monticola: **Bolivia**: *Cochabamba*: Chapare, EBD 30128H; unknown locality, MHNC-R 3181.

Chironius flavolineatus: **Bolivia**: Ichilo, MHNC-R 384.

Chironius laurenti: **Bolivia**: *Beni*: Ballivian, Río Negro, MHNC-R 339.

Chironius leucometapus: **Ecuador**: *Morona Santiago*: Concesión Minera Kinross-Aurelian, DHMECN 10207; Taisha, Mutintsa, FHGO 1147, 3570; *Napo*: Cotundo, 12 km NW Reserva Ecológica Antisana, QCAZ 10977; *Pastaza*: Ingaru community, Reserva Privada Ankaku, QCAZ 9955; Bosque Protector Pablo López de Oglan Alto, DHMECN 3096; *Sucumbios*: San Pablo de Kantsiya, DHMECN 0087. NO FURTHER LOCALITY DATA: Piso tropical oriental, EPN 9552; Oriente, EPN13223. **Peru**: *Huánuco*: Cruz Blanca, Parque Nacional Tingo Maria, CORBIDI 15562; Pampamarca-Embalse, CORBIDI 16478; Rupa rupa, CORBIDI 16386; Sharco, CORBIDI 19374; *Pasco*: Puesto de Control Huampal, CORBIDI 7260; *San Martín*: Paitoja, CORBIDI1276; El Dorado, near Río Blanco, CORBIDI 01256; La Cueva, CORBIDI 0620.