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ADENOMERA FROGS IN THE PUTUMAYO: description of three new species of the *A. simonstuarti* complex from the Colombian Amazonia

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***Adenomera* frogs in the Putumayo: description of three new species of the *A. simonstuarti* complex from the Colombian Amazonia**

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RESUMO

A Amazônia é uma das regiões mais biodiversas do planeta e, na Colômbia, ocupa 42,3% do território continental. No oeste da Amazônia colombiana encontra-se o departamento de Putumayo, uma região caracterizada por uma grande variedade de ecossistemas, como as florestas tropicais muito úmidas e o sopé andino-amazônico, ambos reconhecidos por sua alta diversidade biológica. Embora recentemente tenha havido avanços no conhecimento dos anuros amazônicos, persistem desafios importantes relacionados à compreensão de sua riqueza específica (déficit linneano) e seus padrões de distribuição (déficit wallaceano). Parte dessa dificuldade se deve à presença de complexos de espécies crípticas, o que levou a uma subestimação da verdadeira diversidade. Um exemplo claro desse fenômeno é o caso de *Adenomera*, um gênero de rãs-de-espuma endêmico da América do Sul ao leste dos Andes, que atualmente conta com 32 espécies reconhecidas. Esse gênero é composto por oito clados principais distribuídos ao longo da América do Sul, entre eles o clado *Adenomera andreae*, endêmico da Amazônia. Dentro deste clado encontra-se um complexo de espécies agrupadas sob o nome de *Adenomera simonstuarti*, distribuídas principalmente na Amazônia ocidental. Este estudo analisa, por meio de uma abordagem taxonômica integrativa baseada em características acústicas, morfológicas e genéticas, a diversidade não descrita do complexo de *A. simonstuarti* no departamento de Putumayo, Amazônia ocidental da Colômbia. A análise filogenética baseada em genes mitocondriais e nucleares permitiu identificar onze linhagens, incluindo *A. albarena* e *A. simontuarti*. Os dados acústicos revelaram três possíveis novas espécies em Putumayo. Essas descobertas destacam uma subestimação significativa da diversidade do gênero *Adenomera* na Colômbia. A divergência nos cantos de acasalamento constitui a principal evidência para a delimitação específica das linhagens identificadas. Cada uma das três espécies propostas apresentou padrões acústicos únicos dentro do gênero, diferenças que reforçam seu status como unidades evolutivas independentes, apesar de algumas inconsistências nos dados mitocondriais, possivelmente atribuíveis a contaminação ou a eventos recentes de cladogênese. Além de sua relevância taxonômica, este estudo documenta mudanças nos padrões de uso do habitat, registrando pela primeira vez a presença de linhagens do clado de *A. andreae* em áreas abertas, tanto naturais quanto antropizadas, em Putumayo. Esses são habitats tipicamente ocupados por espécies associadas a formações abertas em outras localidades da Amazônia, o que sugere uma possível substituição ecológica regional do clado de *A. hylaedactyla*, ausente na zona. Por fim, os resultados fornecem conhecimentos fundamentais e destacam a importância do trabalho de campo, especialmente em regiões pouco exploradas como o departamento de Putumayo, onde a riqueza específica ainda é pouco documentada. A identificação de espécies não descritas e o reconhecimento de seus padrões de distribuição representam contribuições fundamentais para a tomada de decisões e o desenho de estratégias de conservação em paisagens altamente biodiversas e ameaçadas.

Palavras-chave: Amazônia ocidental; diversidade críptica; Putumayo; taxonomia integrativa.

ABSTRACT

The Amazon is one of the most biodiverse regions on the planet, and in Colombia, it occupies 42.3% of the continental territory. In the western part of the Colombian Amazon is the department of Putumayo, a region characterized by a great variety of ecosystems, such as the very humid tropical forests and the Andean-Amazonian piedmont, both recognized for their high biological diversity. Although in recent times there have been advances in the knowledge of Amazonian anurans, there are still important challenges related to understanding their specific richness (deficit Linnean) and distribution patterns (deficit Wallacean). Part of this difficulty is due to the presence of cryptic species complexes which has led to an underestimation of the true diversity. A clear example of this phenomenon is the case of *Adenomera*, a genus of terrestrial foam frogs, distributed in South America and on the eastern slopes of the Andes, which currently has 32 recognized species. This genus comprises eight main clades distributed throughout South America, including the *Adenomera andreae* clade, endemic to Amazonia. Within this clade is a complex of species grouped under the name *Adenomera simonstuarti*, distributed mainly in western Amazonia. This study analyzes, using an integrative taxonomic approach based on acoustic, morphological, and genetic characteristics, the undescribed diversity of the *A. simonstuarti* complex in the department of Putumayo, western Amazonia, Colombia. The phylogenetic analysis based on mitochondrial and nuclear genes allowed the identification of eleven lineages, including *A. albarena* and *A. simonstuarti*. Acoustic data revealed three putative new species in the Putumayo. These findings underline a significant underestimation of the diversity of the genus *Adenomera* in Colombia. The divergence in advertisement calls constitutes the main evidence for the specific delimitation of the identified lineages. Each of the three proposed species presented unique acoustic patterns within the genus, differences that reinforce their status as independent evolutionary units, despite some inconsistencies in the mitochondrial data, possibly attributable to contamination or recent cladogenesis events. In addition to its taxonomic relevance, this study documents changes in habitat use patterns, recording for the first time the presence of lineages of the *A. andreae* clade in open areas, both natural and anthropized, in Putumayo. These habitats are typically occupied by species associated with open formations in other Amazonian localities, suggesting a possible regional ecological replacement of the *A. hylaedactyla* clade, which is absent in the area. Finally, the results provide key knowledge and highlight the importance of fieldwork, especially in poorly explored regions such as the department of Putumayo, where specific richness is still poorly documented. The identification of undescribed species and the recognition of their distribution patterns represent fundamental inputs for decision-making and the design of conservation strategies in highly biodiverse and threatened landscapes.

Keywords: cryptic diversity; integrative taxonomy; Putumayo; Western Amazonia.

FIGURE CAPTIONS

Figure 1. (A) Distribution map of the molecular vouchers linked to each of the genetic lineages within the *Adenomera simonstuarti* complex. (B) Distribution map focused on the Department of Putumayo, in southwestern Colombia. Red symbols indicate type localities.

Figure 2. Phylogenetic relationships of *Adenomera*, focused on the *A. andreae* clade, inferred from Maximum Likelihood method based on mtDNA+nuDNA dataset. Bootstrap values are shown near the nodes. Scale is given as nucleotide subtitution rate.

Figure 3. Advertisement calls (spectrogram and oscillogram of one call note) of species of the *Adenomera* clade. (A) *Adenomera* sp. 1 nov., (B) *Adenomera* sp. 2 nov., (C) *Adenomera* sp. 3 nov., (D) *Adenomera albarena*, (E) *Adenomera simonstuarti,* (F) *Adenomera andreae*, (G) *Adenomera chicomendesi*, (H) *Adenomera guarayo*. Calls are equally scaled (x-axis = 300 ms; y-axis = 8 kHz).

Figure 4. Oscillograms of the temporal organization (single-note and multi-note calls) of advertisement calls of the *Adenomera andreae* clade. (A) *Adenomera* sp. 1 nov.: two notes; (B) *Adenomera* sp. 2 nov.: 22 notes, (C) *Adenomera* sp. 3 nov.: 21 notes in antiphonal calling with a background male, (D) *Adenomera simonstuarti*: two multinote calls. Call sections are equally scaled (= 30 s).

Figure 5. Variation in the amplitude modulations (pulsing) in the advertisement call of three individuals of *Adenomera* sp. 3 nov. (A) CBUFMG 1173: three-pulse note; (B) CBUFMG 1186: two-pulse note; (C) CBUFMG 1184: nonpulsed note. Calls are equally scaled (x-axis = 300 ms; y-axis = 8 kHz).

Figure 6. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 1 nov. (MHUA-A 13962) from Mocoa, Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

Figure 7. Life colors (adult males) of the holotype of three new species of the *Adenomera simonstuarti* complex from the Department of Putumayo, Colombia. (A–D) *Adenomera* sp. 1 nov. (MHUA-A 13962: SVL = 21.9 mm); (E–H) *Adenomera* sp. 2 nov. (MHUA-A 13957: SVL = 23.5 mm); (I–L) *Adenomera* sp. 3 nov. (MHUA-A 13972: SVL = 23.4 mm).

Figure 8. Life colors of type specimens of *Adenomera* sp. 1 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13962 (male, holotype; SVL = 21.9 mm); (B) MHUA-A 13984 (male; SVL = 21.8 mm); (C) MHUA-A 13955 (female; SVL = 23.0 mm); (D) MHUA-A 13956 (female; SVL = 22.7 mm).

Figure 9. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 2 nov. (MHUA-A 13957) from the Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

Figure 10. Life colors of type specimens of *Adenomera* sp. 2 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13957 (male, holotype; SVL = 23.5 mm); (B) MHUA-A 13968 (male; SVL = 22.7 mm): (C) MHUA-A 13970 (female; SVL = 23.0 mm); (D) MHUA-A 13971 (female; SVL = 22.9 mm).

Figure 11. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 3 nov. (MHUA-A 13972) from the Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

Figure 12. Life colors of type specimens of *Adenomera* sp. 3 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13972 (male, holotype; SVL = 23.4 mm); (B) MHUA-A 13968 (male; SVL = 23.5 mm); (C) MHUA-A 13970 (female; SVL = 24.4 mm); (D) MHUA-A 13971 (female; SVL = 23.1 mm).

TABLE CAPTIONS

Table 1. Measurements (mm) of the type series (adult specimens only) of the three new species of the *A. simonstuarti* complex. Morphometric traits are defined in Materials and Methods. Values are presented as X ± SD (range). N = sample sizes (M = male, F = female).

Table 2. Advertisement call traits of species of the *Adenomera simonstuarti* complex. Values are presented as X ± SD (range). N = sample sizes (recorded males / analyzed calls). * *Adenomera simonstuarti* has a multi-note call, thus the note repetition rate is not directly comparable to single-note calls of the other species. H1 = fundamental harmonic; H2 = second harmonic. See section Advertisement calls for variation in the dominant frequency.

SUMMARY

INTRODUCTION

Amazonia stands out as one of the most biodiverse regions on the planet and is threatened by multiple anthropogenic pressures (Godinho and Silva 2018). Amazonian ecosystems cover 42.3% of Colombia's continental territory (SIAT-AC 2022). Southwestern Colombian Amazonia corresponds to the Department of Putumayo, which is known to harbor different ecosystems (Mueses-Cisneros 2005), including lowland Amazonian forests and part of the eastern foothills (Eastern Cordillera) of the Andes, recognized as the Andean-Amazonian piedmont region (Prieto and Arias 2007). These characteristics make this region accumulate one of the highest biodiversity levels in Colombia. Despite representing a megadiverse region in Colombia, the Putumayo has been strongly affected by Colombia's internal armed conflict for more than 50 years (Krause 2020), as well as alarming rates of habitat loss that are mainly caused by deforestation, illicit crops, and illegal gold mining, among other factors (Lapola et al. 2023).

Nevertheless, there are impediments to our understanding of species richness and distribution patterns, the so-called Linnean and Wallacean shortfalls, respectively (Brown and Lomolino 1998; Lomolino 2004). This is partially explained by cryptic diversity (two or more species under a single species name and morphologically indistinguishable) (Bickford et al. 2007), which complicates their taxonomic delimitation (Angulo and Icochea 2010). Advances in tools and technologies and the integration of diverse data sources have facilitated the discovery of such species, with significant implications for the conservation of species complexes (Angulo and Icochea 2010).

Molecular and phylogenetic methods have revolutionized the discovery and formalization of taxonomic diversity. However, species delimitation based solely on molecular characters or genetic distances is insufficient (Bickford et al. 2007). Although integrative taxonomy approaches go a long way, the modern concept of integrative taxonomy and delimitation methods are relatively new (Dayrat 2005) and have been used to address complex taxonomic problems. This integrative framework supports incorporating multiple independent lines of evidence to test better hypotheses related to species delimitation and cryptic species richness (Padial et al. 2010). One of the most important tools for anuran species delimitation is bioacoustics, as vocalizations can establish prezygotic isolation between species (Angulo et al. 2003).

A clear example of cryptic diversity in Amazonia is the genus *Adenomera*, a group of terrestrial foam-nesting frogs with 32 species (Frost 2025). This genus, endemic to South America east of the Andes, remains underestimated in species richness (Fouquet et al. 2014; Carvalho et al. 2021a), especially in Amazonian ecosystems. The taxonomic impediment of *Adenomera* frogs reflects the recurrent cases of cryptic species diversity (Angulo et al. 2003). For this reason, the integrative taxonomy approach through the analysis of morphological, acoustic, and DNA-sequence data is paramount for bridging the current gap in the taxonomic knowledge of *Adenomera*. This approach has contributed to the recognition of more than half of the species described for the genus over the past decade, and recent research suggests that the species accumulation curve has yet to level off (Carvalho et al. 2020a, 2021a). Almost all species described in that period are endemic to Amazonian ecosystems. Taxonomic and phylogenetic studies on *Adenomera*, in addition to naming new species, have highlighted the underestimation of species in different Amazonian regions and the sympatric occurrence of two or more morphologically cryptic species (e.g., Carvalho et al. 2021a). Ecosystems in western Amazonia represent the major gap in the current taxonomic knowledge of *Adenomera*. At least two putative new species have been reported for the Colombian Amazon: *Adenomera* sp. P is from a locality in the Department of Vaupés, which belongs to the clade Adenomera Lutzi; the second is *Adenomera* sp. Q from a locality in the triple border between Colombia (Department of Guainía), Brazil, and Venezuela within the clade *Adenomera heyeri*, according to the phylogeny of *Adenomera* (Fouquet et al. 2014). Both localities are in the southeastern Amazon of Colombia.

In addition to *Adenomera simonstuarti*, described by Angulo and Icochea (2010) using morphological and acoustic characters, a species that belongs to the *Adenomera andreae* clade (Fouquet et al. 2014) and is part of a complex composed of eight genetic lineages, including that of the nominal species *Adenomera simonstuarti*. These lineages are distributed from the montane forests of the Venezuelan Andes, through Andean-Amazonian montane ecosystems, to lowland forests, in ecosystems of western and northern Amazonia, and probably correspond to as yet undescribed species (Carvalho et al. 2020a).

In this study we analyze, through an integrative taxonomic approach based on morphological, phylogenetic, acoustic and some ecological traits, the taxonomic identity of three lineages related to the *A. simonstuarti* complex in the western Amazon of Colombia, contributing significantly to reduce the Linnean and Wallacean deficits of foam frogs of the genus *Adenomera* in the country.

MATERIALS AND METHODS

Field data collection

We conducted fieldwork in three municipalities in the department of Putumayo, located in the southwestern part of the Colombian Amazonia: (1) Mocoa, in the Centro Experimental Amazónico (CEA), a conservation area in the Andean Amazonian foothills (1.084332°S, 76.628589°W; 545 m above sea level [asl]), where we collected from open areas and forests; (2) Puerto Asís (0.49983°S, 76.49860°W; 248 m asl), where we collected in urban areas; and (3) Puerto Leguízamo (0.18857°S, 74.78047°W; 191 m asl), where we collected in urban areas and forests of the municipality. Localities are provided in Figure 1.

Specimens were euthanized using a topical solution of 10% lidocaine, fixed with 10% formalin, and preserved in 70% ethanol (Cortez et al. 2006). Voucher specimens and tissues were deposited in the amphibian collection of the Museo de Herpetología Universidad de Antioquia, Medellín, Colombia (MHUA). Institutional acronyms followed the list published by Sabaj (2025).

Morphology and coloration

We analyzed the morphology and coloration of 33 adult specimens of *Adenomera*. To determine the sexual maturity of males, we examined the presence of a dermal ridge at the tip of the snout, in addition to those collected during vocal activity. For females, sexual maturity was determined by the presence of mature oocytes visible through the skin and a rounded snout.

Eleven body measurements were taken using an ocular micrometer (10 mm scale) fixed on a stereomicroscope, except for snout-vent length (SVL), which was measured with digital calipers. Eight measurements followed the definitions and terminology provided by Watters et al. (2016): snout-vent length (SVL), thigh length (THL), tibia length (TL), foot length (FL), eye diameter (ED), tympanum diameter (TD), eye-nostril distance (EN), and internarial distance (IND). Three measurements followed the definitions of Carvalho et al. (2019a): hand length (HAL), head length (HL), and head width (HW). The terminology related to head shape is according to Heyer et al. (1990). Character states of toe tips were assessed according to Carvalho et al. (2019b).

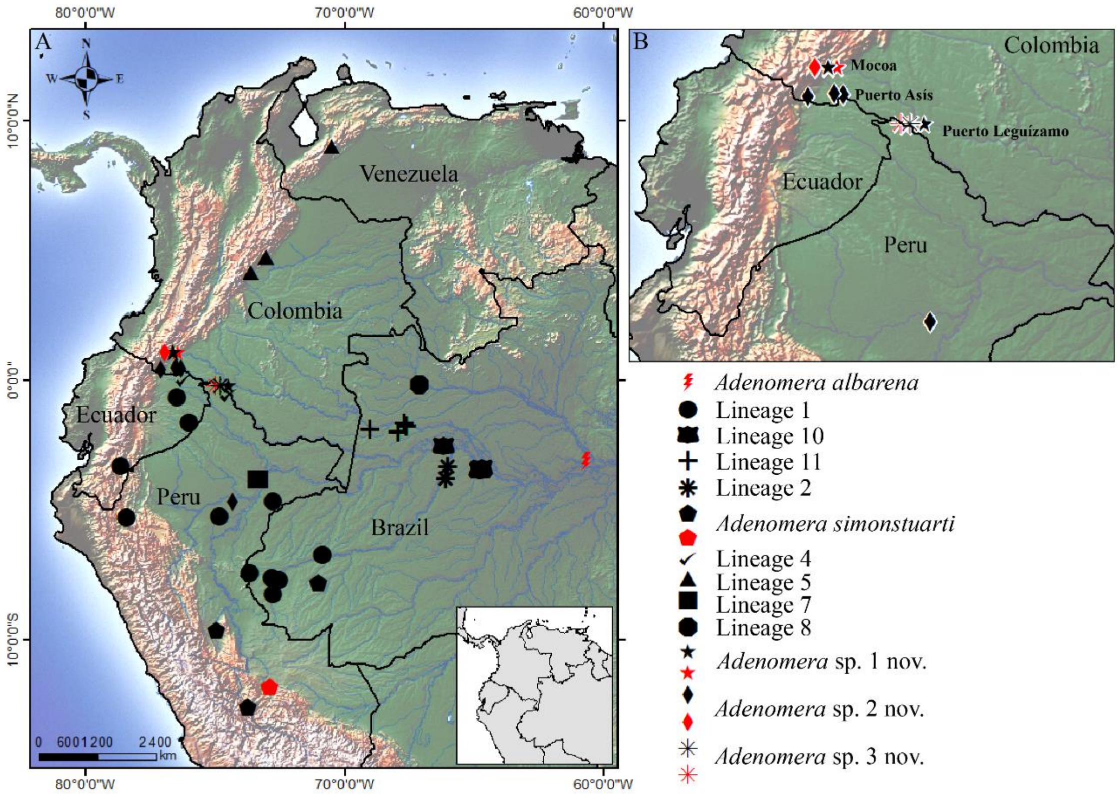

Figure 1. (A) Distribution map of the molecular vouchers linked to each of the genetic lineages within the *Adenomera simonstuarti* complex. (B) Distribution map focused on the Department of Putumayo, in southwestern Colombia. Red symbols indicate type localities.

Acoustic data acquisition and analysis

We recorded calls in the field (Department of Putumayo, Colombia) using unidirectional microphones (Sennheiser ME66 and ME67/K6) and digital recorders (Marantz PMD 670 and PMD 671) at a sampling rate of 44.1 kHz and a sample size of 16 bits. We also had access to recordings of the two described species of the *A. simonstuarti* complex: *A. albarena* and *A. simonstuarti*. We reanalyzed calls of both species under our analytical procedures for standardization and direct acoustic comparisons. The acoustic analysis was conducted using a customized version (0.9.6.1) of Soundruler (Gridi-Papp 2007) and Matlab scripts (Matlab 2004) to quantify acoustic traits through automated procedures. A 500-Hz high-pass filter was applied to sound files in Soundruler before conducting the acoustic analysis to reduce background noise. Note rate was measured manually in Raven Pro version (1.6.5) (Yang 2024). Overall settings were: FFT size = 1024 samples, FFT overlap = 90%, window type = Hann, contrast = 70%. Sample sizes for automated recognition of pulses (detection and delineation, respectively) were: smoothing = 250, resolution = 1; and smooth factor = 1, smoothing = 25, resolution = 1. Acoustic definitions and terminology adopted in this study follow those of Carvalho et al. (2019b); information on sound recordings is in Appendix S1. Sound figures were produced using seewave 2.1.0 (Sueur et al. 2008) in R 3.5.0 (R Core Team 2018). Settings were: window Hann, FFT size = 256 samples, FFT overlap = 90%.

DNA sequencing and phylogenetic analysis

We completed a dataset with two mitochondrial genes (COI and CYTB) and two nuclear genes (POMC and RAG1), based on sequences available in GenBank (Appendix S2), in addition to new sequences produced for this study. Our sampling included lineages of all described species of *Adenomera* and candidate lineages (sensu Fouquet et al. 2014). Outgroup taxa were represented by the genera *Lithodytes*, *Leptodactylus*, and *Hydrolaetare*. Our analysis focused on the *A. andreae* clade, especially the *A. simonstuarti* complex. For new sequences, we extracted genomic DNA from ethanol-preserved tissues using the ammonium acetate precipitation method (Maniatis et al. 1982). Primers and amplification conditions are the same used in Fouquet et al. (2014). PCR products were purified using a mix of 0.5 unit of thermosensitive alkaline phosphatase and 1 unit of Exonuclease I (Thermo Fisher Scientific Inc.). Sequencing were conducted in Macrogen Inc. (Seoul, Republic of Korea). Resulting sequences were quality verified using Geneious v11 (Biomatters).

Gene alignment was performed using MAFFT (Katoh and Standley 2013). The phylogenetic inference was conducted using the Maximum Likelihood optimatily criterion (RAxML analysis; Stamatakis 2014) in IQ-TREE v3.0.1 (Wong et al. 2025). All four genes were considered as separate partitions, with three positions each (protein-coding genes). Best-fitting nucleotide substitution models were as follows: TPM3u+F+R3 (COI position 2, RAG1 position 2), HKY+F+I+R2 (CYTB position 2, RAG1 position 3), TIM2+F+R3 (POMC positions 1 and 2, and RAG1 position 1), TIM2+I+R2 (POMC position 3), TN+F+ASC+G4 (COI position 3), TIM2e+I+R3 (COI position 1 and CYTB position 1), and GTR+F+ASC+R3 (CYTB position 3). Genetic distances (uncorrected pairwise distances) were computed for the COI gene using Mega X (Kumar et al. 2018); see Appendix S3.

Interspecific comparisons

Among the seven clades of *Adenomera* (sensu Carvalho et al. 2021a), two are endemic to Amazonia, composed of species that inhabit forested areas (*A. andreae* and *A. lutzi* clades). There is a third clade, composed of species that inhabit both forested and open areas, the *A. heyeri* clade (Carvalho et al. 2021a), and a fourth clade, the *A. hylaedactyla* clade (Carvalho et al. 2019b), which is represented exclusively by species that inhabit open and anthropized areas throughout and outside Amazonia. Interspecific comparisons (morphology and calls) considered only Amazonian species with occurrence in both forest and open formations, which are: *A. simonstuarti*, *A. albarena*, *A. andreae*, *A. chicomendesi*, and *A. guarayo* (*A. andreae* clade); *A. kayapo*, *A. phonotricus*, *A. gridipappi*, *A. tapajonica*, *A. aurantiaca*, *A. inopinata*, and *A. heyeri* (*A. heyeri* clade); *A. glauciae* and *A. lutzi* (*A. lutzi* clade); *A. coca* and *A. hylaedactyla* (*A. hylaedactyla* clade).

RESULTS

Phylogenetic relationships

Our analysis recovered a monophyletic *Adenomera* and *A. andreae* clade with maximum bootstrap support (BP). In addition to the nine recognized lineages within the *A. simonstuarti* complex, i.e., *A. albarena*, *A. simonstuarti*, and seven unnamed lineages, two new lineages were revealed with newly produced sequences from Amazonian Colombia and Brazil, referred herein to as lineages 10 and 11 (Fig. 2). Lineage 10 (BP = 82) is formed by individuals from the Brazilian Amazonia on the south bank of Solimões River (Fig. 1). Lineage 11 (BP = 100) is formed by 13 individuals from the Japurá-Juami interfluve, in northwestern Brazilian Amazonia, and five individuals from Mocoa, in the middle Putumayo River of Colombia's Putumayo (Fig. 1). The other new sequences from the Putumayo were recovered as belonging to lineage 6 (BP = 100) of the *A. simonstuarti* complex, formed also by a single sequence from Loreto, in northern Peru (Fig. 1).

Lineage 10 and its sister group (*A. albarena*) display a minimum distance of 3.4 % in the COI gene. Lineage 11 and is sister group (clade formed by lineage 4 + 5) display a minimum distance of 3.6%. Genetic distances within groups (i.e., lineages 10 and 11) did not exceed 0.7%.

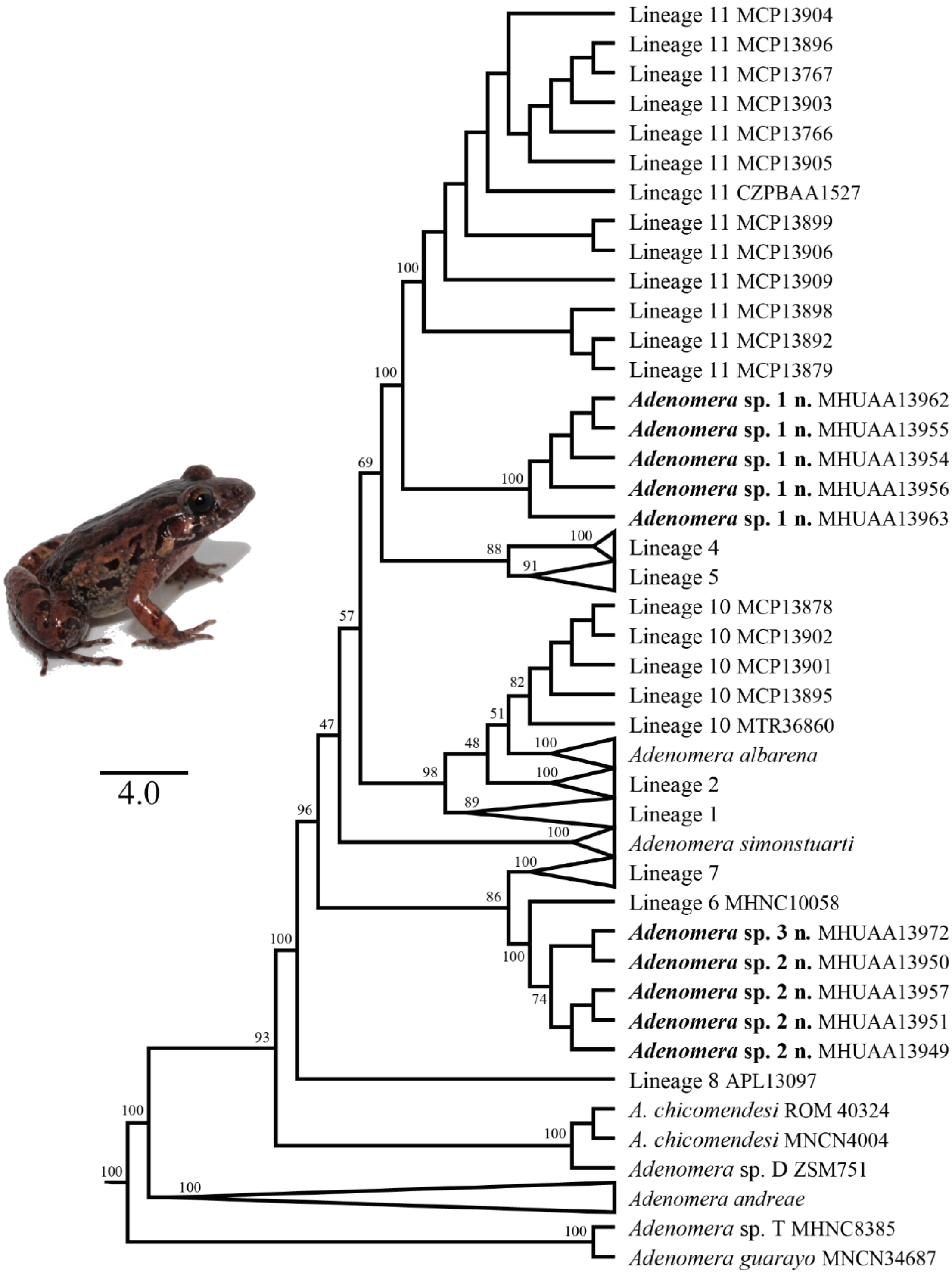

Figure 2. Phylogenetic relationships of *Adenomera*, focused on the *A. andreae* clade, inferred from Maximum Likelihood method based on mtDNA+nuDNA dataset. Bootstrap values are shown near the nodes. Scale is given as nucleotide subtitution rate.

Advertisement calls

Three distinct call patterns were recorded in Colombia's Putumayo from different habitats (Fig. 3). One call type was recorded from non-flooded forests, whereas the other two call types were recorded from anthropized open areas. The forest call type (*Adenomera* sp. 1 in Taxonomic accounts; 38 notes of five males) consists of a single, nonpulsed note, emitted at 1–5 per minute (Figs. 3A, 4A). Note duration varies from 17–40 ms, with rise time varying from 1–8 % of the note. The dominant frequency coincides with second harmonic, ranging from 4027–4587 Hz. Fundamental frequency ranges from 1949–2207 Hz. Frequency modulation is descendent, ranging from -1249 to -215 Hz.

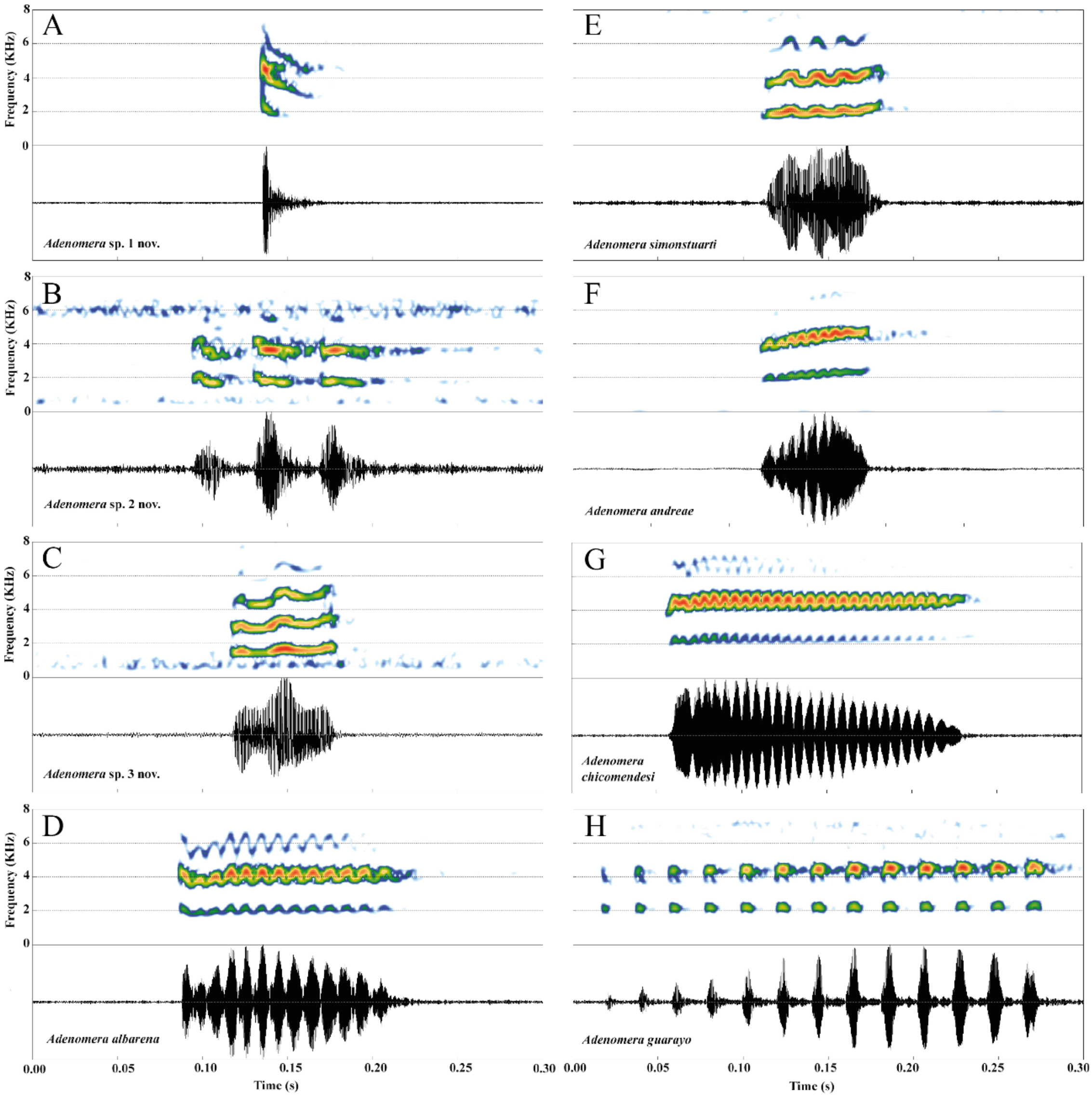

Figure 3. Advertisement calls (spectrogram and oscillogram of one call note) of species of the *Adenomera* clade. (A) *Adenomera* sp. 1 nov., (B) *Adenomera* sp. 2 nov., (C) *Adenomera* sp. 3 nov., (D) *Adenomera albarena*, (E) *Adenomera simonstuarti,* (F) *Adenomera andreae*, (G) *Adenomera chicomendesi*, (H) *Adenomera guarayo*. Calls are equally scaled (x-axis = 300 ms; y-axis = 8 kHz).

The second call type (*Adenomera* sp. 2 in Taxonomic accounts; 91 notes of four males) consists of a single, pulsed note emitted at 31–72 per minute (Figs. 3B, 4B). Note duration varies from 48–109 ms, with rise time varying from 12–80 % of the note. The note is composed of 2–3 complete pulses, emitted at a rate of 20–38 per second. Pulse duration varies from 15–

56 ms. The dominant frequency coincides either with the fundamental harmonic (1615 Hz; three notes of one male) or the second harmonic (3208–3811 Hz; remaining notes). Frequency modulation is negligible but slightly ascendant, ranging from 43–302 Hz.

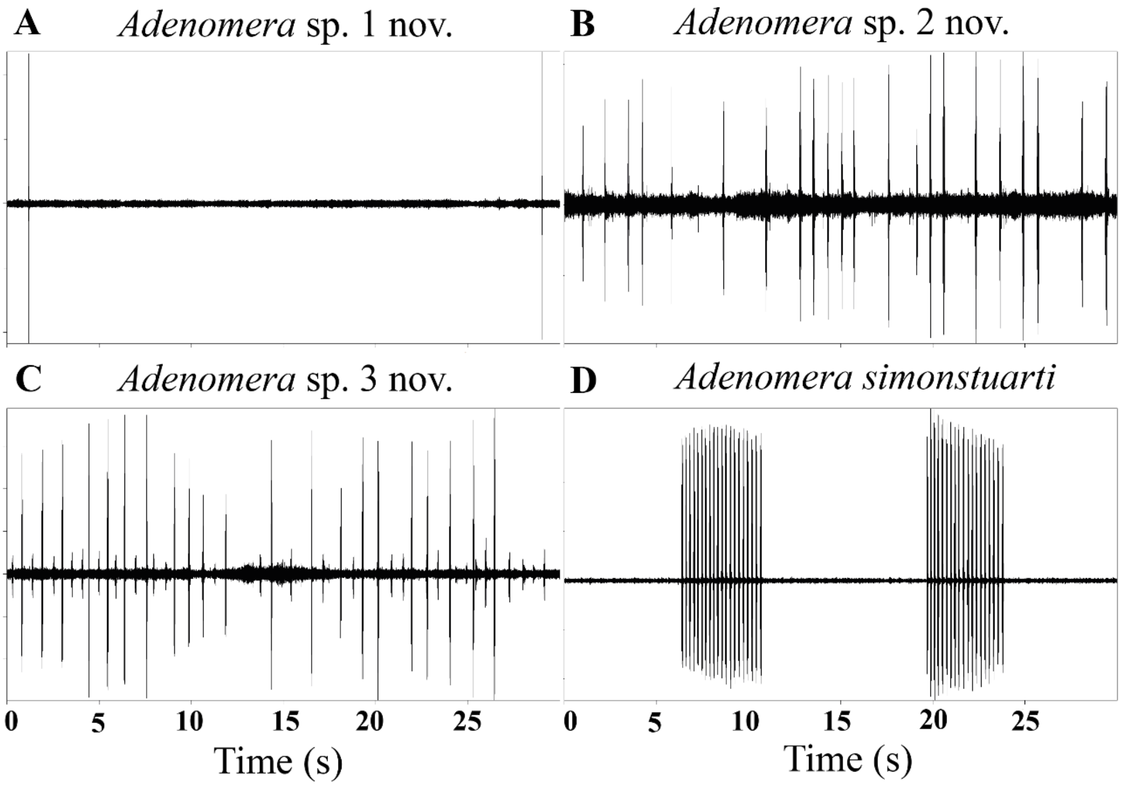

Figure 4. Oscillograms of the temporal organization (single-note and multi-note calls) of advertisement calls of the *Adenomera andreae* clade. (A) *Adenomera* sp. 1 nov.: two notes; (B) *Adenomera* sp. 2 nov.: 22 notes, (C) *Adenomera* sp. 3 nov.: 21 notes in antiphonal calling with a background male, (D) *Adenomera simonstuarti*: two multinote calls. Call sections are equally scaled (= 30 s).

The third call type (*Adenomera* sp. 3 in Taxonomic accounts; 76 notes of three males) consists of a single, pulsed note emitted at 34–44 per minute (Figs. 3C, 4C). Note duration varies from 49–82 ms, with rise time varying from 47–83 % of the note. The note is composed of 2–3 incomplete pulses, emitted at a rate of 38–60 per second. Pulse duration varies from 17–

33 ms. The dominant frequency coincides either with the fundamental harmonic (1529–1744 Hz; 55 calls of three males) or the second harmonic (2864–3510 Hz; 21 calls of two males). Frequency modulation is ascendant, ranging from 215–818 Hz. Even though the call of this species is defined as being formed by 2 or 3 incomplete pulses, all 17 calls recorded from one male (recording CBUFMG 1184) are nonpulsed, with distinct temporal envelope and the absence of sinusoidal modulations in the harmonic series that are typical of pulsed notes in *Adenomera* (see Fig. 5).

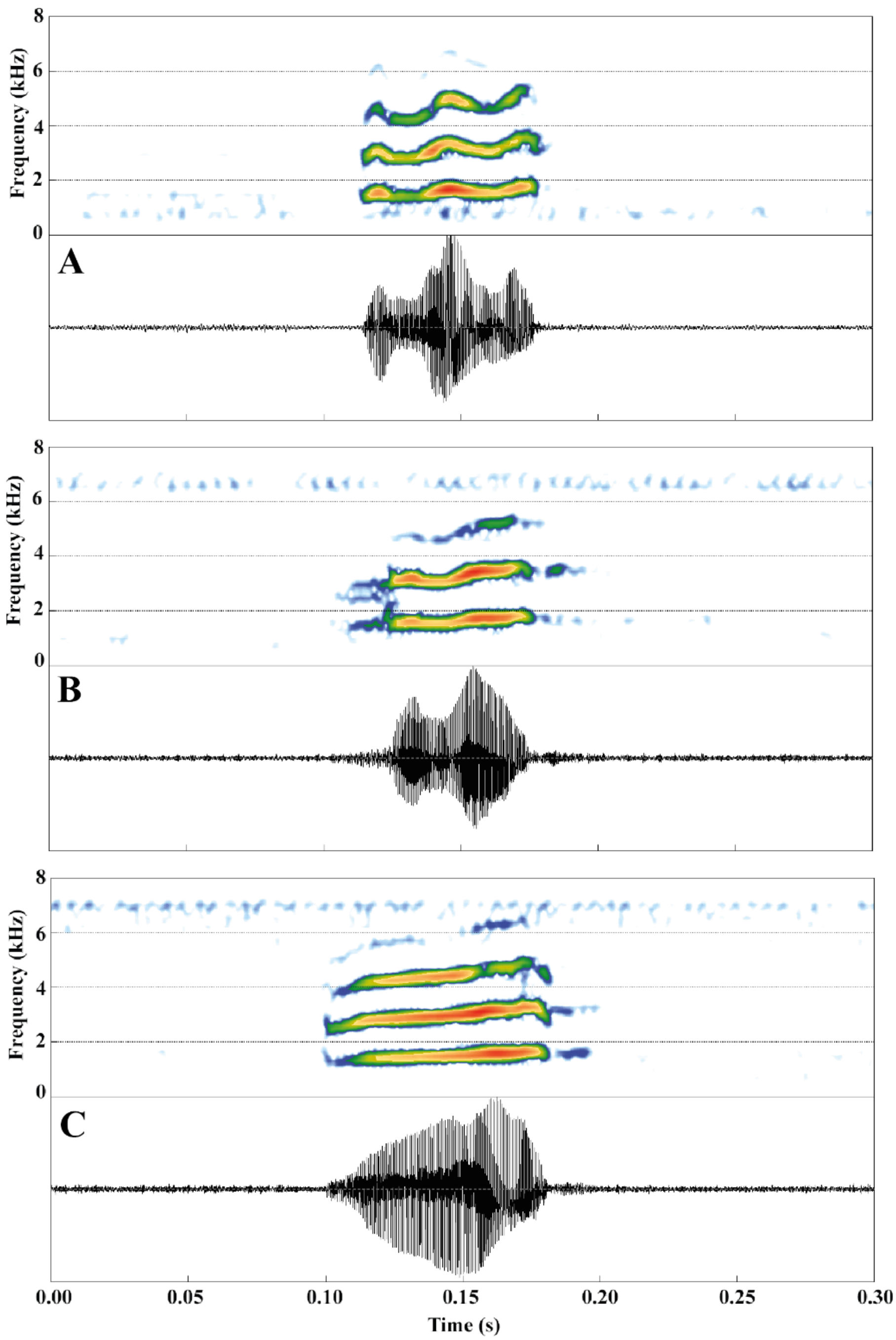

Figure 5. Variation in the amplitude modulations (pulsing) in the advertisement call of three individuals of *Adenomera* sp. 3 nov. (A) CBUFMG 1173: three-pulse note; (B) CBUFMG 1186: two-pulse note; (C) CBUFMG 1184: nonpulsed note. Calls are equally scaled (x-axis = 300 ms; y-axis = 8 kHz).

Adenomera simonstuarti (282 notes of 5 males) produces a multinote call emitted at 1–4 per minute (note series per minute; Fig. 4D). Call duration varies from 1.2–13.8 s, formed by

6–59 notes. Note duration varies from 47–62 ms, with rise time varying from 18–80 % of the note (Fig. 3E). The note is composed of 2–7 incomplete pulses, emitted at a rate of 16–85 per second. Pulse duration varies from 12–36 ms. The dominant frequency coincides either with the second harmonic (3941–4328 Hz; 31 notes of three males) or the fundamental harmonic (1916–2132 Hz; remaining notes). Frequency modulation is ascendant, ranging from 129–861 Hz.

The call of *A. albarena* (40 notes of four males) consists of a single, pulsed note emitted at 12–37 per minute (Fig. 3D). Note duration varies from 112–183 ms, with rise time varying from 16–68 % of the note. The note is composed of 10–18 incomplete pulses, emitted at a rate of 97–141 per second. Pulse duration varies from 5–31 ms. The dominant frequency coincides with second harmonic, ranging from 3725–4199 Hz. Fundamental frequency ranges from 1900–2088 Hz. Frequency modulation is negligible but ascendant, ranging from 129–861 Hz.

Taxonomic accounts

***Adenomera* sp. 1 nov.** (Tables 1–2; Figs. 6, 7A–D)

Holotype. MHUA-A 13962 (field number TRC 502), an adult male from the conservation area at the Centro Experimental Amazónico (CEA; 1.08255°N, 76.62855°W) in Mocoa, Department of Putumayo, Colombia, collected on 20 October 2024 by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán.

Paratypes. MHUA-A 13963 (field number TRC 503) adult male, MHUA-A 13954–6 (field number TRC 494–6) adult females; with the same collection data as the holotype; MHUA-A 13973 (field number TRC 513) adult male collected at the Villa del Rosario farm (0.17608°N, 74.79314°W), rural district "vereda" la Raizita, municipality of Puerto Leguízamo, Department of Putumayo; collected on 19, 20, and 23 October 2024 by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán. MHUA-A 13981–4 (field numbers AMS 321–4) adult males, from the type locality (1.08425°N, 76.62911°W), collected on 5–8 September 2019 by Alejandra M. Salazar-Guzmán.

Diagnosis. *Adenomera* sp. 1 nov. is recognized within *Adenomera* by the following combination of character states: (1) medium size (adult male SVL = 21.4–22.1 mm); (2) robust body shape; (3) toe tips moderately to fully expanded (character states C–D); (4) distal antebrachial tubercle absent; (5) single note advertisement call; (6) nonpulsed note; (7) note duration varying from 17–40 ms; (8) note repetition rate varying from 1–4 per minute; (9) note with descendent frequency modulation.

Morphological comparisons. *Adenomera* sp. 1 nov. has adult males (SVL = 21.4–22.1 mm; Table 1) that are smaller than *A. coca* [23.6–24.1 mm (Angulo and Reichle 2008)]; *A. glauciae* [27.0–30.4 mm (Carvalho et al. 2020b)]; *A. gridipappi* [25.4–25.7 mm (Carvalho et al. 2021a)]; *A. heyeri* [22.5–25.8 mm (Boistel et al. 2006)]; *A. hylaedactyla* [22.2—26.5 mm (Carvalho et al. 2019a); *A. inopinata* [23.5 mm (Carvalho et al. 2021a)]; *A. lutzi* [25.7–33.5 mm (Kok et al. 2007)]; *A. simonstuarti* [25.9–26.2 mm (Angulo and Icochea 2010)]; and *A. tapajonica* [23.6–25.6 mm (Carvalho et al. 2021a)]. On the other hand, *Adenomera* sp. 1 nov. is larger than *A. aurantiaca* [20.9 mm (Carvalho et al. 2021a); *A. kayapo* [17.5–21.0 mm (Carvalho et al. 2021a)], and *A. phonotriccus* [19.8–21.6 mm (Carvalho et al. 2019c)]. *Adenomera* sp. 1 nov. has moderately to fully expanded toe tips (character states C–D; Heyer 1973; Carvalho et al. 2019a), differing from *A. hylaedactyla* (character state B; Carvalho et al. 2019a), *A. aurantiaca*, *A. glauciae*, *A. kayapo*, and *A. phonotriccus* (character states B–C; Carvalho et al. 2020b, 2021a). *Adenomera* sp. 1 nov. lacks a dark-colored stripe on the ventral surface of the forearm, a feature present in *A. albarena* (Martins et al. 2024) and *A. simonstuarti* (Angulo and Icochea 2010). Also, *Adenomera* sp. 1 nov. lacks the distal antebrachial tubercle on the underside of the forearm present in *A. glauciae* and *A. lutzi* (Kok et al. 2007; Carvalho et al. 2020b), and all species of the *A. heyeri* clade: *A. amicorum*, *A. aurantiaca*, *A. gridipappi*, *A. inopinata*, *A. kayapo*, *A. phonotriccus,* and *A. tapajonica*, except *A. heyeri* (Carvalho et al. 2019c, 2021a).

Table 1. Measurements (mm) of the type series (adult specimens only) of the three new species of the *A. simonstuarti* complex. Morphometric traits are defined in Materials and Methods. Values are presented as X ± SD (range). N = sample sizes (M = male, F = female).

	***Adenomera* sp. 1 nov.**		***Adenomera* sp. 2 nov.**		***Adenomera* sp. 3 nov.**	
	N = 6 (M)	**N = 3 (F)**	**N = 7 (M)**	**N = 4 (F)**	**N = 6 (M)**	**N = 2 (F)**
SVL	21.85 ± 0.24 (21.4 - 22.1)	23.09 ± 0.45 (22.7 - 23.6)	22.49 ± 1.12 (20.2 - 23.5)	23.38 ± 0.93 (22.9 - 24.8)	23.32 ± 0.92 (22.4 - 25.0)	23.74 ± 0.92 (23.1 - 24.4)
HW	8.52 ± 0.31 (8.2 - 9.1)	9.03 ± 0.15 (8.9 - 9.2)	8.88 ± 0.41 (8.0 - 9.2)	9.09 ± 0.47 (8.6 - 9.5)	8.85 ± 0.18 (8.6 - 9.1)	9.09 ± 0.14 (9.0 - 9.2)
HL	7.38 ± 0.23 (7.1 - 7.7)	7.66 ± 0.32 (7.3 - 7.9)	7.49 ± 0.33 (6.9 - 7.9)	7.62 ± 0.40 (7.3 - 8.2)	7.50 ± 0.24 (7.2 - 7.8)	7.5 ± 0.0 (7.5)
ED	2.15 ± 0.12 (2.0 - 2.3)	2.39 ± 0.17 (2.2 - 2.5)	2.26 ± 0.21 (1.9 - 2.5)	2.22 ± 0.05 (2.2 - 2.3)	2.41 ± 0.17 (2.1 - 2.6)	2.19 ± 0.28 (2.0 - 2.4)
EN	1.81 ± 0.15 (1.7 - 2.1)	1.98 ± 0.26 (1.7 - 2.2)	1.72 ± 0.13 (1.6 - 2.0)	1.88 ± 0.25 (1.7 - 2.2)	1.68 ± 0.16 (1.5 - 1.9)	1.78 ± 0.28 (1.6 - 2.0)
TD	1.56 ± 0.10 (1.4 - 1.7)	1.75 ± 0.20 (1.6 - 2.0)	1.65 ± 0.14 (1.5 - 1.9)	1.79 ± 0.18 (1.6- 2.0)	1.68 ± 0.09 (1.6 - 1.8)	1.6 ± 0.0 (1.6)
IND	2.11 ± 0.09 (2.0 - 2.2)	2.36 ± 0.05 (2.3 - 2.4)	2.41 ± 0.12 (2.2 - 2.5)	2.42 ± 0.09 (2.3 - 2.5)	2.25 ± 0.13 (2.1 - 2.4)	2.40 ± 0.14 (2.3 - 2.5)
HAL	4.73 ± 0.20 (4.5 - 5.1)	5.06 ± 0.05 (5.0 - 5.1)	4.97 ± 0.36 (4.4 - 5.4)	5.15 ± 0.55 (4.4 - 5.7)	4.81 ± 0.33 (4.5 - 5.3)	5.23 ± 0.64 (4.8 - 5.7)
THL	10.11 ± 0.24 (9.9 - 10.5)	11.03 ± 0.32 (10.8 - 11.4)	9.99 ± 0.65 (8.9 - 10.8)	11.12 ± 0.79 (10.2 - 11.8)	10.73 ± 0.36 (10.3 - 11.3)	10.80 ± 0.28 (10.6 - 11.0)
TL	10.38 ± 0.31 (9.8 - 10.6)	11.66 ± 0.11 (11.6 - 11.8)	10.68 ± 0.38 (10.0 - 11.2)	11.55 ± 0.79 (10.6 - 12.4)	10.93 ± 0.43 (10.4 - 11.6)	11.09 ± 0.28 (10.9 - 11.3)

FL	10.52 ± 0.50 (9.9 - 11.2)	11.86 ± 0.23 (11.6 - 12.0)	11.39 ± 0.54 (10.5 - 12.0)	12.01 ± 0.53 (11.3 - 12.5)	11.29 ± 0.37 (10.7 - 11.7)	11.97 ± 0.99 (11.3 - 12.7)

Acoustic comparisons. *Adenomera* sp. 1 nov. differs markedly from its Amazonian congeners in its advertisement call (Fig. 3A, 4A). The nonpulsed call of *Adenomera* sp. 1 nov. is distinguished from all species, except *A. lutzi* (Carvalho et al. 2021a). The descending frequency modulation is a unique spectral structure within *Adenomera*, which differs from all species, including *A. lutzi* (Carvalho et al. 2020b). The single-note call of *Adenomera* sp. 1 nov. is distinguished from the multi-note calls of *A. amicorum*, *A. aurantiaca*, *A. gridipappi*, *A. inopinata*, *A. glauciae*, and *A. simonstuarti* (Carvalho et al. 2020b; Carvalho et al. 2021).

Table 2. Advertisement call traits of species of the *Adenomera simonstuarti* complex. Values are presented as X ± SD (range). N = sample sizes (recorded males / analyzed calls). * *Adenomera simonstuarti* has a multi-note call, thus the note repetition rate is not directly comparable to single-note calls of the other species. H1 = fundamental harmonic; H2 = second harmonic. See section Advertisement calls for variation in the dominant frequency.

Call traits	***Adenomera* sp. 1 nov. (N = 5 / 38)**	***Adenomera* sp. 2 nov. (N = 4 / 91)**	***Adenomera* sp. 3 nov. (N = 3 / 76)**	***A. simonstuarti* (N = 4 / 282)**	***A. albarena* (N = 4 / 40)**
Note duration (ms)	27.6 ± 5.2 (17–40)	82.7 ± 17.8 (48–109)	64.6 ± 7.0 (49–82)	66.4 ± 6.8 (47–101)	136.8 ± 13.5 (112–183)
Notes per minute*	0.9 ± 1.7 (1–5)	54.7 ± 19.9 (31–72)	39.5 ± 7.1 (35–45)	59.9 ± 24.0 (34–88)	29.7 ± 11.6 (12–38)
Relative rise time (%)	2.1 ± 0.7 (1–8)	56.6 ± 10.2 (12–80)	63.6 ± 11.3 (47–83)	48.3 ± 12.7 (12–30)	34.7 ± 15.2 (16–68)
Pulses per note	Nonpulsed	2.4 ± 0.5 (2–3)	2.5 ± 0.7 (2–3)	3.1 ± 0.3 (2–7)	14.4 ± 1.8 (10–18)
Pulse rate (per second)	Nonpulsed	27.9 ± 4.8 (20–38)	46.0 ± 4.1 (38–60)	65.5 ± 3.5 (16–86)	112.8 ± 10.9 (98–141)
Pulse duration (ms)	Nonpulsed	28.8 ± 4.8 (15–56)	22.9 ± 6.1 (17–33)	20.7 ± 1.2 (12–30)	9.0 ± 1.6 (7–11)
Frequency modulation (Hz)	-674.8 ± 293.8 (-1249 to -215)	211.4 ± 89.6 (43–301)	590.8 ± 52.1 (215–818)	387.8 ± 148.1 (129–861)	338.4 ± 125.8 (129–861)
H1 peak frequency (Hz)	2060.6 ± 42.3 (1949–2207)	1717.1 ± 97.5 (1572–1841)	1590.0 ± 64.7 (1432–1680)	2038.8 ± 35.9 (1863–2107)	1962.8 ± 22.0 (1900–2088)
H2 peak frequency (Hz)	4355.5 ± 159.9 (4027–4587)	3505.8 ± 193.4 (3208–3811)	3179.0 ± 394.9 (2864–3510)	4087.0 ± 206.6 (3941–4328)	3940.1 ± 74.8 (3725–4199)

Description of holotype. MHUA-A 13962. Body robust (Figs. 6; 9A–D). Snout subovoid in dorsal view (Fig. 6A), acuminate in lateral view. Nostril closer to the snout tip than to the eye; dermal ridge at snout tip; *canthus rostralis* not marked; loreal region slightly concave; supratympanic fold from the posterior corner of the eye to the base of the arm; oval postcommissural gland; vocal sac subgular with a fold from jaw extending to the base of the arm, vocal slit present; vomerine teeth in two straight rows medial and posterior to choanae. Tongue elongated, free behind, heart-shaped. Relative finger lengths IV < I < II < III; fingers without ridges or fringes; finger tips rounded, not expanded or flattened; inner metacarpal tubercle oval; outer metacarpal tubercle nearly rounded (Fig. 6C). Subarticular tubercles rounded; supernumerary tubercles oval or elongated. Dorsum and flank shagreened. Throat and belly smooth (Fig. 6B). Axillary gland ovoid. Lumbar gland present. Ventral surface of thigh granular (Fig. 6B). Paracloacal gland rounded. Relative toe lengths I < II < V < III < IV; toes without ridges or fringes; toe tips rounded and swollen (character state between C and D), but not expanded into discs (character state D). Inner metatarsal tubercle is elongated, outer metatarsal tubercle rounded (Fig. 6D). Tarsal fold from the inner metatarsal tubercle extending 2/3 length of tarsus. Subarticular tubercles oval; supernumerary tubercles rounded (indistinct; fixation bias). Measurements of the holotype are (in mm): SVL 21.9; HW 8.5; HL 7.1; ED 2.3; EN 1.7; TD 1.4; IND 2; HAL 4.5; THL 10.1; TL 10.3; and FL 10.1.

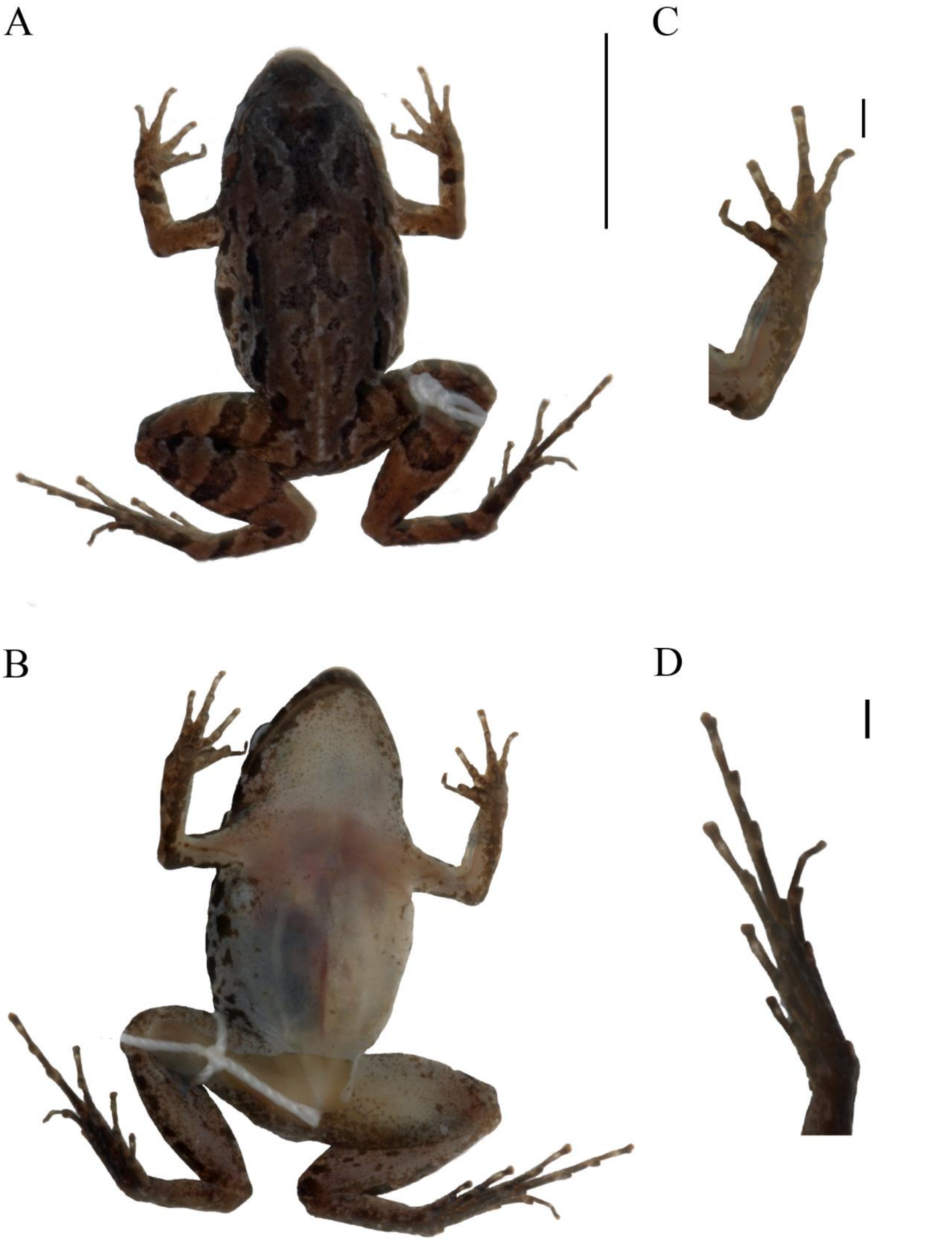

Figure 6. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 1 nov. (MHUA-A 13962) from Mocoa, Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

In preservative (Fig. 6), snout tip with a faded white coloration (coincident with the dermal ridge). Dorsum medium brown, with darker and lighter brown specks and spots. Vertebral pinstripe on the posterior third of body length, cream-colored, interrupted. Lumbar gland black. Dorsal surface of limbs with dark brown stripes/blotches on a slightly lighter brown background. Upper jaw with dark brown vertical bars; whitish post-commissural gland, dark brown on the border. Tympanum brown, with a granular texture dorsally and at middle length. Throat, belly, and ventral surface of limbs cream, with melanophores, throat with a black-dotted pattern, concentrated laterally. Axillary gland cream-colored. Posterior surface of thigh densely covered with dots and spots on a light background, paracloacal gland with the same color, with a black horizontal blotch.

In life (Figs. 7A–D; 10A), dorsum is medium brown, with diffusely distributed dark brown spots, including two elongated but interrupted dorsolateral spots, and a triangle-shaped spot with irregular outlines between the eyes. The vertebral pinstripe is poorly defined and located on the posterior third of the body length in a cream-orange color. Lumbar gland black; posterior dorsum with a granular concentration, dark orange. The dorsal surface of the limbs has dark brown stripes/stripes on a medium brown background, especially on the hindlimbs. Iris of intense copper color, faintly reticulated. Upper jaw with dark brown vertical bars, interspersed with thin whitish bars. Postcommissural gland orange-cream colored, with a dark brown anterior border. Tympanum dark brown, with a spot in its anteroexternal portion in the shape of an irregular lunula, dark brown. The throat, belly, and ventral surface of the limbs are partially translucent and whitish. Belly cream colored in the central region and yellowish colored laterally towards the flank, and presence of melanophores. Throat with dark-colored dots concentrated toward the periphery. Thigh with spots of black dots concentrated toward the periphery.

Figure 7. Life colors (adult males) of the holotype of three new species of the *Adenomera simonstuarti* complex from the Department of Putumayo, Colombia. (A–D) *Adenomera* sp. 1 nov. (MHUA-A 13962: SVL = 21.9 mm); (E–H) *Adenomera* sp. 2 nov. (MHUA-A 13957: SVL = 23.5 mm); (I–L) *Adenomera* sp. 3 nov. (MHUA-A 13972: SVL = 23.4 mm).

Variation. The type series is generally homogeneous in morphology and coloration (Fig. 8). Variation includes the specimen MHUA-A 13984 with a cream-colored dorsolateral stripe from behind the eye to the inguinal region in (Fig. 8B). Character state C of toe tip development in MHUA-A 13973.

Figure 8. Life colors of type specimens of *Adenomera* sp. 1 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13962 (male, holotype; SVL = 21.9 mm); (B) MHUA-A 13984 (male; SVL = 21.8 mm); (C) MHUA-A 13955 (female; SVL = 23.0 mm); (D) MHUA-A 13956 (female; SVL = 22.7 mm).

Habitat and natural history. *Adenomera* sp. 1 nov. is associated with non-flooded forest habitats. Males vocalize hidden under leaf litter, initiating their vocal activity between 17:30 and 18:00, with a decrease of vocal activity around 20:00. Vocalizations were recorded mainly between May and October. At its type locality, it is found in sympatry with *Adenomera* sp. 2 nov.

Distribution. *Adenomera* sp. 1 nov. seems to have its distribution restricted to the Caquetá-Putumayo interfluve in the Department of Putumayo, southwestern Colombia. The occurrence of the species was confirmed in two localities on opposite sides of the Department of Putumayo: the Centro Experimental Amazónico (CEA) in Mocoa, its type locality, and in Puerto Leguízamo, based on calls inside the forest that were heard on different occasions in the field in December 2023 (AMS) and October 2024 (TRC and AMS). Terminals linked to lineage 11 of *A. simonstuarti* from ESEC Juami-Japurá were considered as potentially conspecific with *Adenomera* sp. 1 nov. (Fig. 2), with genetic distance (COI) from 1.0 to 1.5 % between the Putumayo and Japurá populations (see Appendix S3). However, we could not analyze morphological and acoustic data of the Japurá population to confirm its taxonomic identity.

Adenomera sp. 2 nov. (Tables 1–2; Figs. 9, 7E–H)

Adenomera simonstuarti (Fouquet et al. 2014), in part

Adenomera simonstuarti 6 (Carvalho et al. 2020a), in part

Holotype. MHUA-A 13957 (field number TRC 497), an adult male from the conservation area at the Centro Experimental Amazónico (CEA; 1.08273°N, 76.62864°W), in Mocoa, Department of Putumayo, Colombia, was collected on 20 October 2024 by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán.

Paratypes. MHUA-A 13949, 13951, 13968–71 (TRC field numbers 488, 490, 508–11, respectively), corresponding to four adult males and two adult females, collected on the bank of the Singuiyá micro-watershed (0.49983°N, 76.49860°W), where the sewage flows in the municipality; MHUA-A 13950, 13967 (field numbers TRC 489, 507), located outside the 20 de Julio Health Post (0.506823°N, 76.499208°W), both in the municipality of Puerto Asis, department of Putumayo. Collected by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán between 17–21 October 2024. IAvH-Am 16158–9 (field numbers AMS 221, 296) from the village of Valle de las Palmeras and the San Andrés inspection (0.640403°N, 77.087670°W and 0.571237°N, 76.738500°W, respectively), both localities in the municipality of Orito, Department of Putumayo; collected from 9–18 August 2019 by Alejandra M. Salazar-Guzmán.

Diagnosis. *Adenomera* sp. 2 nov. is recognized within *Adenomera* by the following combination of character states: (1) medium size (adult male SVL 20.2–23.5 mm); (2) robust body shape; (3) toe tips moderately to fully expanded (character states C–D); (4) distal antebrachial tubercle absent; (5) single-note advertisement call; (6) note formed by 2 to 3 complete pulses; (6) note duration varying from 48–109 ms.

Morphological comparisons. *Adenomera* sp. 2 nov. has adult males with SVL 20.2–23.5 mm (Table 1) that are smaller than *A. coca* [23.6–24.1 mm (Angulo and Reichle 2008)]; *A. glauciae* [27.0–30.4 mm (Carvalho et al., 2020b)]; *A. gridipappi* [25.4–25.7 mm (Carvalho et al. 2021a)]; *A. heyeri* [25.4–25.7 mm (Carvalho et al. 2021a)]; *A. lutzi* [25.7–33.5 mm (Kok et al. 2007)]; *A. simonstuarti* [25.9–26.2 mm (Angulo and Icochea 2010)]; and *A. tapajonica* [23.6–25.6 mm (Carvalho et al. 2021a). *Adenomera* sp. 2 nov. has moderately to fully expanded toe tips (character states C–D; Heyer 1973; Carvalho et al. 2019a), differing from *A. hylaedactyla* (character state B; Carvalho et al. 2019a), *A. aurantiaca*, *A. glauciae*, *A. kayapo*, and *A. phonotriccus* (character states B–C; Carvalho et al. 2020b; Carvalho et al. 2021a). *Adenomera* sp. 2 nov. lacks a dark-colored stripe on the ventral surface of the forearm, a feature present in

A. albarena (Martins et al. 2024) and *A. simonstuarti* (Angulo and Icochea 2010). Also, *Adenomera* sp. 2 nov. lacks the distal antebrachial tubercle on the underside of the forearm present in *A. glauciae* and *A. lutzi* (Kok et al. 2007; Carvalho et al. 2020b), and all species of the *A. heyeri* clade: *A. amicorum*, *A. aurantiaca*, *A. gridipappi*, *A. inopinata*, *A. kayapo*, *A. phonotriccus*, and *A. tapajonica*, except in *A. heyeri* (Carvalho et al. 2019c; Carvalho et al. 2021a).

Acoustic comparisons. The single-note call of *Adenomera* sp. 2 nov. (Fig. 3C) is distinguished from the multi-note calls of *A. amicorum*, *A. aurantiaca*, *A. gridipappi*, *A. inopinata*, *A. glauciae*, and *A. simonstuarti* (Carvalho et al. 2020b; Carvalho et al. 2021). The single-note call of *Adenomera* sp. 2 nov. is formed by complete pulses, whereas the single-note calls of *A. albarena*, *A. andreae*, *A. chicomendesi*, *A. coca*, *A. heyeri*, *A. hylaedactyla*, *A. kayapo*, and *A. tapajonica* are formed by incomplete pulses (Carvalho et al. 2021; Martins et al. 2024), and the calls of *A. lutzi* and *Adenomera* sp. 1 nov. are nonpulsed (Carvalho et al. 2020b). The single-note calls of *A. guarayo* and *A. phonotriccus* are also formed by complete pulses, but differ from the call of *Adenomera* sp. 2 nov. in the number of pulses per note (2–3 in the new species; 9–17 in *A. guarayo*; 14–26 in *A. phonotriccus*; Carvalho et al. 2020b; Fig. 3H) and note duration (48–109 ms in the new species; 187–364 ms in *A. guarayo*; 213–433 ms in *A. phonotriccus*; Carvalho et al. 2020b).

Description of holotype. MHUA-A 13957. Body robust (Figs. 7E–H; 9). Snout subovoid in dorsal view (Fig. 9A), acuminate in lateral view. Nostril closer to the snout tip than to the eye; dermal ridge at snout tip; *canthus rostralis* not marked; loreal region slightly concave; supratympanic fold from the posterior corner of the eye to the base of the arm; supratympanic fold from the posterior corner of the eye to the base of the arm; triangular post commissural gland; vocal sac subgular with a fold from jaw extending to the base of the arm, vocal slit present; vomerine teeth in two straight rows medial and posterior to choanae. Tongue elongated, free behind. Relative finger lengths IV < I < II < III; fingers without ridges or fringes; finger tips rounded, not expanded or flattened; inner metacarpal tubercle oval; outer metacarpal tubercle ovoid (Fig. 9B). Subarticular tubercles oval; supernumerary tubercles oval. Dorsum and flank shagreened. Throat and belly smooth (Fig. 9C). Axillary gland ovoid. Lumbar gland present. Ventral surface of thigh granular (Fig. 9C). Paracloacal gland oval. Relative toe lengths I < II < V < III < IV; toes without ridges or fringes; toe tips rounded and swollen (character state C), but not expanded into discs, i.e., flattened. Inner metatarsal tubercle is oval, outer metatarsal tubercle rounded (Fig. 9D). Tarsal fold from the inner metatarsal tubercle extending 2/3 length of tarsus. Subarticular tubercles oval; supernumerary tubercles rounded. Measurements of the holotype are (in mm): SVL 23.5; HW 9.1; HL 7.9; ED 2.5; EN 1.7; TD 1.7; IND 2.5; HAL 5.2; THL 10.8; TL 11; and FL 11.8.

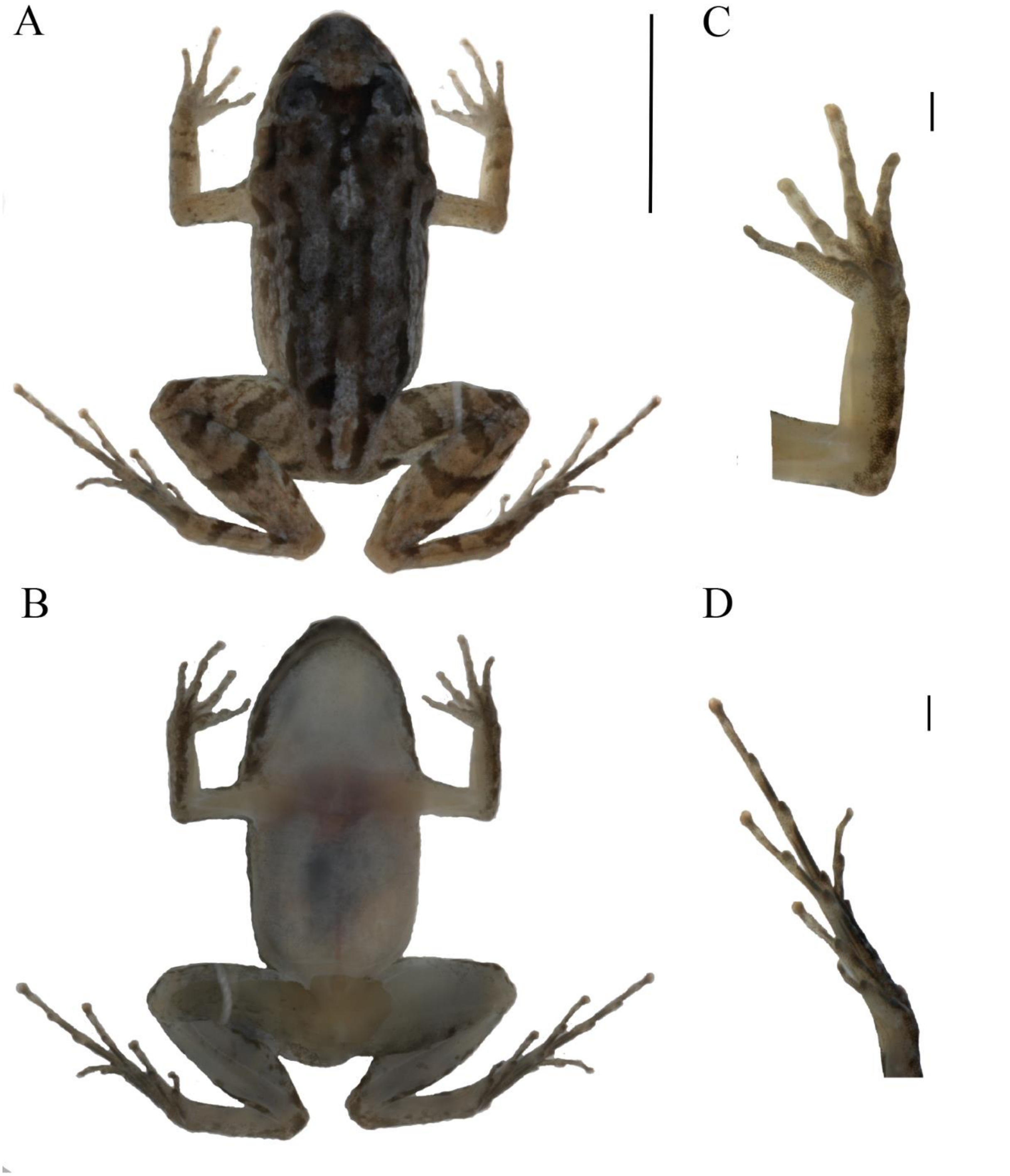

Figure 9. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 2 nov. (MHUA-A 13957) from the Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

In preservative (Fig. 9), snout tip with a faded white coloration (coincident with the dermal ridge). Dorsum grayish, with darker specks and spots. Vertebral stripe (broad) on the posterior third of body length, cream-colored, interrupted. Lumbar gland black. Dorsal surface of limbs with dark brown stripes/blotches on a slightly lighter brown background. Upper jaw with dark brown vertical bars; whitish post-commissural gland, dark brown on the border. Tympanum brown, with a granular texture dorsally and at middle length. Throat, belly, and ventral surface of limbs cream, with melanophores, throat with a black-dotted pattern. Axillary gland cream-colored. Posterior surface of thigh sparsely covered with dots and spots on a light background, paracloacal gland with the same color.

In life (Fig.7E–H; 11A), dorsum is grayish-brown, with diffusely distributed dark brown spots, including two elongated but interrupted dorsolateral spots, and two lateral cream-colored stripes interrupted, and a triangle-shaped spot with irregular outlines between the eyes. The vertebral pinstripe is poorly defined and located on the posterior third of the body length in a cream-orange color. Lumbar gland black; posterior dorsum with a granular concentration of rounded, small, dark orange. The dorsal surface of the limbs has grayish-brown stripes/stripes on a medium brown background, especially on the hindlimbs. Iris of intense copper color, faintly reticulated. Upper jaw with dark brown vertical bars, interspersed with thin whitish bars. Postcommissural gland orange-cream colored. Tympanum dark brown, with a spot in its anteroexternal portion in the shape of an irregular lunula, dark brown colored. The throat, belly, and ventral surface of the limbs are partially translucent and whitish. Belly cream colored in the central region of the belly, and presence of melanophores. Axillary gland cream colored. The posterior surface of the thigh grayish-brown colored, with scattered orange-cream spots. Paracloacal gland rounded and dark brown

Variation. The type series is homogeneous in morphology and coloration (Fig. 10).

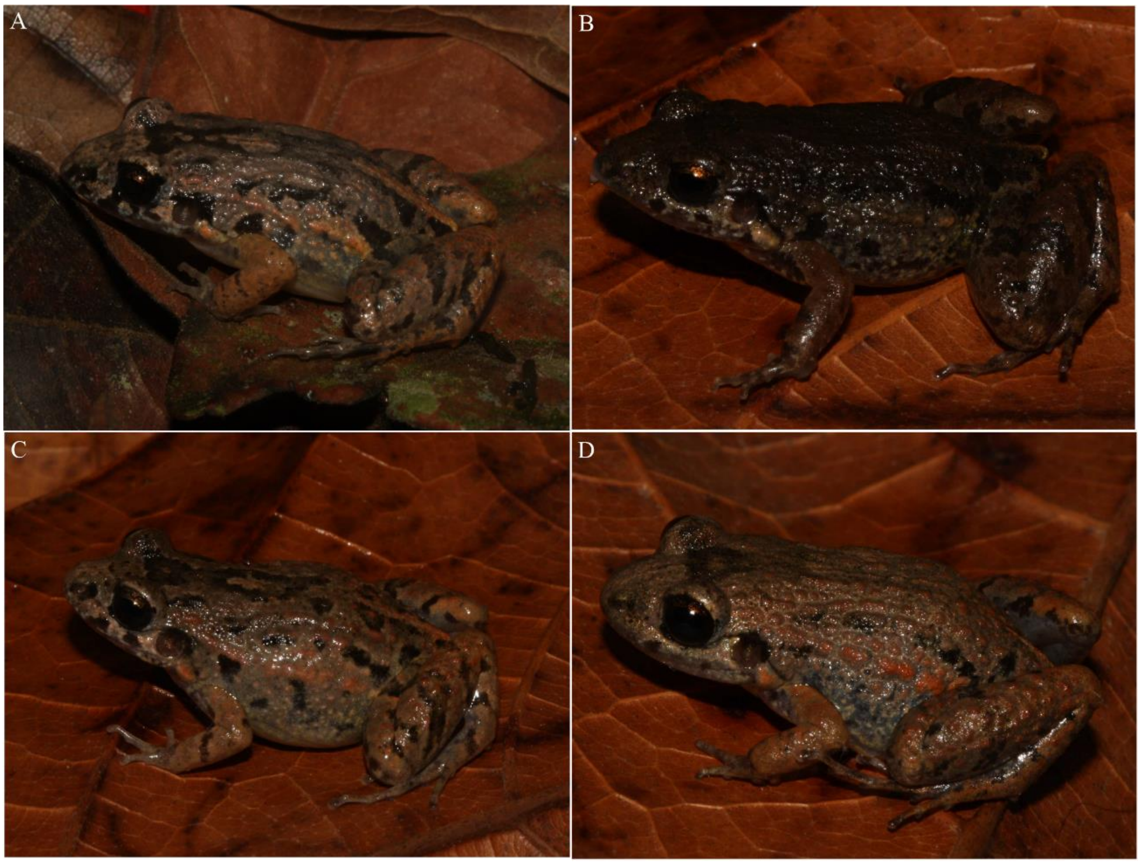

Figure 10. Life colors of type specimens of *Adenomera* sp. 2 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13957 (male, holotype; SVL = 23.5 mm); (B) MHUA-A 13968 (male; SVL = 22.7 mm): (C) MHUA-A 13970 (female; SVL = 23.0 mm); (D) MHUA-A 13971 (female; SVL = 22.9 mm).

Habitat and natural history. *Adenomera* sp. 2 nov. is associated in urban and open areas. Despite disturbed environmental conditions, the species prefers microhabitats with some vegetation cover, shade, and accumulation of leaf litter, where it is common to hear males vocalizing. Vocalizations were recorded throughout the year, initiating their vocal activity between 17:00 and 18:00, with a decrease of vocal activity around 20:00, as well as after rainfall events. At its type locality, it is found in sympatry with *Adenomera* sp. 1 nov., particularly at forest edges, clearings, and disturbed or anthropized areas within the reserve.

Distribution. *Adenomera* sp. 2 nov. is known from urban and rural areas in western Amazonia, in the municipalities of Mocoa, Puerto Asis, and Orito, in the Department of Putumayo, southwestern Colombia. In addition, the species was recorded acoustically in the urban centers of other municipalities in the same department, including Villa Garzón, Puerto Guzmán, Puerto Caicedo, and Valle del Guamuez. *Adenomera* sp. 2 nov. formed a clade with one individual from the Parinari (Department of Loreto) in northern Peru (see voucher MHNC10058 in Appendix S2) that belongs to lineage 6 of the *A. simonstuarti* complex (Figs. 1–2). This terminal and the new species exhibit a COI distance of 1.7–2.1 %. We do not have available phenotypic data for the Peruvian population to confirm their conspecificity.

Adenomera sp. 3 nov. (Tables 1–2; Figs. 7I–L, 11)

Holotype. MHUA-A 13972 (field number TRC 512), an adult male in an urban area, in the garden of La Consolata Church (0.18865°N, 74.78033°W), in the municipality of Puerto Leguízamo, Department of Putumayo, Colombia, collected on 22 October 2024 by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán.

Paratypes. MHUA-A 13974 (field number TRC 514) adult female captured on the road to vereda la Raicita (0.18003°N, 74.78482°W), municipality of Puerto Leguízamo, department of Putumayo, Colombia; MHUA-A 13975–78, 13980 (field numbers TRC 515–18, 520), four adult males and one adult female, with the same collection data as the holotype; MHUA-A 13979 (field number TRC 519), adult male collected in a street-side garden (0.18857°N, 74.78047°W), in front of La Consolata church, municipality of Puerto Leguízamo, department of Putumayo, Colombia. All individuals were collected on 23 and 24 October 2024 by Thiago R. Carvalho and Alejandra M. Salazar-Guzmán.

Diagnosis. *Adenomera* sp. 3 nov. is recognized within Adenomera by the following combination of character states: (1) medium to large size within the genus (adult male SVL 22–25 mm); (2) robust body shape; (3) toe tips unexpanded to modestly expanded (character states B–C); (4) distal antebrachial tubercle absent; (5) single-note advertisement call; (6) call formed by 2 to 3 incomplete pulses; (6) call duration varying from 49–82 ms; (7) note dominant frequency coinciding either with fundamental (1529–1744 Hz) or the second (2864–3510 Hz) harmonic.

Morphological comparisons. *Adenomera* sp. 3 nov. has adult males (SVL = 22.4–25.0 mm; Table 1) that are smaller than *A. glauciae* [27.0–30.4 mm (Carvalho et al. 2020b)]; *A. gridipappi* [25.4–25.7 mm (Carvalho et al. 2021a)]; *A. heyeri* [22.5–25.8 mm (Boistel et al. 2006)]; *A. lutzi* [25.7–33.5 mm (Kok et al. 2007)] and *A. simonstuarti* [25.9–26.2 mm (Angulo and Icochea 2010)]. On the other hand, it is larger than *Adenomera* sp. 1 nov. (21.4–22.1 mm); *A. aurantiaca* [20.9 mm (Carvalho et al. 2021a); *A. kayapo* [17.5–21.0 mm (Carvalho et al. 2021a)], and *A. phonotriccus* [19.8–21.6 mm (Carvalho et al. 2019c)]. *Adenomera* sp. 3 nov. has toe tips unexpanded or modestly expanded (character states B–C; Heyer 1973; Carvalho et al. 2019a), whereas *A. albarena*, *A. amicorum*, *A. andreae*, *A. chicomendesi*, *A. gridipappi*, *A. guarayo*, *A. heyeri*, *A. lutzi*, *A. simonstuarti*, and *A. tapajonica* have toe tips moderately to fully expanded (character states C–D; Angulo and Icochea 2010; Carvalho et al. 2019a, b, 2020a, b, 2021a; Martins et al. 2024). *Adenomera* sp. 3 nov. lacks almost solid stripes on the lower part of the arms, a feature present in *A. albarena* (Martins et al. 2024) and *A. simonstuarti* (Angulo and Icochea 2010). Additionally, *Adenomera* sp. 3 nov. lacks the distal antebrachial tubercle on the underside of the forearm present in *A. glauciae* and *A. lutzi* (Kok et al. 2007; Carvalho et al. 2020b), and all species of the *A. heyeri* clade: *A. amicorum, A. aurantiaca, A. gridipappi, A. inopinata, A. kayapo, A. phonotriccus,* and *A. tapajonica,* except in *A. heyeri* (Carvalho et al. 2019c, 2021a).

Acoustic comparisons. The single-note call of *Adenomera* sp. 3 nov. is distinguished from the multi-note calls of *A. amicorum*, *A. aurantiaca*, *A. gridipappi*, *A. inopinata*, *A. glauciae*, and *A. simonstuarti* (Carvalho et al. 2020b; Carvalho et al. 2021). The single-note call of *Adenomera* sp. 3 nov. is formed by incomplete pulses, whereas the single-note calls of *A. guarayo*, *A. phonotriccus*, and *Adenomera* sp. 2 nov. are formed by complete pulses (Carvalho et al. 2021; Martins et al. 2024), and the calls of *A. lutzi* and *Adenomera* sp. 1 nov. are nonpulsed (Carvalho et al. 2020b). The call of *Adenomera* sp. 3 nov. is distinguished from other congeners with single-note calls formed by incomplete pulses in the number of pulses per note (2–3 in the new species; 10–18 in *A. albarena*; 22–35 in *A. chicomendesi*; 10–15 in *A. coca*; 4–12 in *A. heyeri*; 4–10 in *A. hylaedactyla*; 12–16 in *A. kayapo*; Fig. 3D, 3G) and lower dominant frequency (2.86–3.51 kHz in the new species; 4.24–5.23 kHz in *A. andreae*; 4.05–4.43 kHz in *A. tapajonica*; Fig. 3F).

Description of holotype. MHUA-A 13972. Body robust (Figs. 7I–L, 11). Snout subovoid in dorsal view (Fig. 11A), acuminate in lateral view. Nostril closer to the snout tip than to the eye; dermal ridge at snout tip; *canthus rostralis* not marked; loreal region slightly concave; supratympanic fold from the posterior corner of the eye to the base of the arm; nearly rounded postcommissural gland; vocal sac subgular with a fold from jaw extending to the base of the arm, vocal slit present; vomerine teeth in two straight rows medial and posterior to choanae. Tongue elongated, free behind. Relative finger lengths IV < I < II < III; fingers without ridges or fringes; finger tips rounded, not expanded or flattened; inner metacarpal tubercle oval; outer metacarpal tubercle rounded (Fig. 11B). Subarticular tubercles oval; supernumerary tubercles rounded. Dorsum shagreened, warty on flank and inguinal region. Throat and belly smooth (Fig. 11C). Lumbar gland present. Ventral surface of thigh granular (Fig. 11C). Paracloacal gland rounded. Relative toe lengths I < II < V < III < IV; toes without ridges or fringes; toe tips rounded and swollen (character state C), but not expanded into discs, i.e., flattened. Inner metatarsal tubercle is elongated, outer metatarsal tubercle rounded (Fig. 11D). Tarsal fold from the inner metatarsal tubercle extending 2/3 length of tarsus. Subarticular tubercles oval; supernumerary tubercles rounded, posterior surface of tarsus covered with white-tipped tubercles. Measurements of the holotype are (in mm): SVL 23.4; HW 8.9; HL 7.6; ED 2.4; EN 1.7; TD 1.8; IND 2.4; HAL 4.7; THL 10.8; TL 10.7; and FL 11.5.

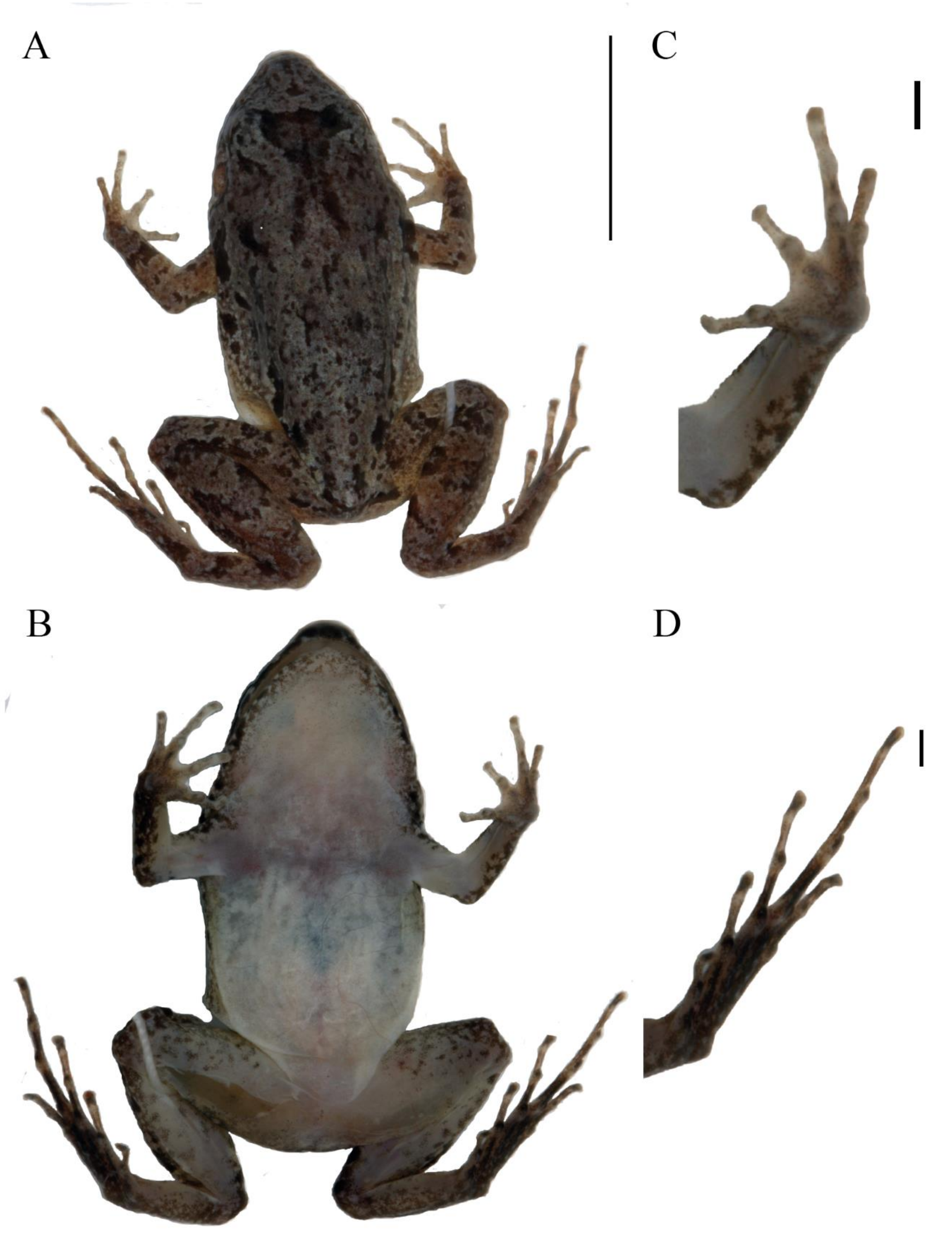

Figure 11. Dorsal and ventral body (A, B), hand (C), and foot (D) of the preserved holotype of *Adenomera* sp. 3 nov. (MHUA-A 13972) from the Department of Putumayo, Colombia. Scale bars (A, B = 10 mm; C, D = 1 mm).

In preservative (Fig. 11), snout tip with a faded white colouration (coincident with the dermal ridge). Dorsum gray/marron with darker specks and spots. Lumbar gland black. Dorsal surface of limbs with dark brown stripes/blotches on a slightly lighter brown background. Upper jaw with dark brown blotches irregular vertical bars, whitish postcommissural gland, with dark blotches. Tympanum brown. Throat, belly, and ventral surface of limbs cream. Belly and ventral surface of limbs with melanophores. Throat immaculate with a cream-dotted pattern, concentrated laterally. Axillary gland cream-colored. Posterior surface of the thigh has a few dark brown spots on a light background. Paracloacal gland are half black and half cream-colored.

In life (Figs. 7I–L, 12A), the dorsum is light brown color, with dark brown spots distributed as splashed, and a triangle-shaped spot with irregular outlines between eyes. Lumbar gland black; posterior dorsum with a granular concentration of rounded, small, dark orange. The dorsal surface of the limbs is of the same light brown color as the body. Iris of intense copper color, faintly reticulated. The upper jaw has dark brown vertical bars. The post-commissural gland is cream-colored. Tympanum dark brown, with a spot in its anteroexternal portion in the shape of an irregular lunula, dark brown colored. The throat, belly, and ventral surface of the limbs are translucent and whitish. Belly cream colored in the central region. Axillary gland cream. The posterior surface of the thigh presents a color grayish-brown, finely dotted. Paracloacal gland dark.

Variation. The type series is homogeneous in morphology and coloration (Fig. 12).

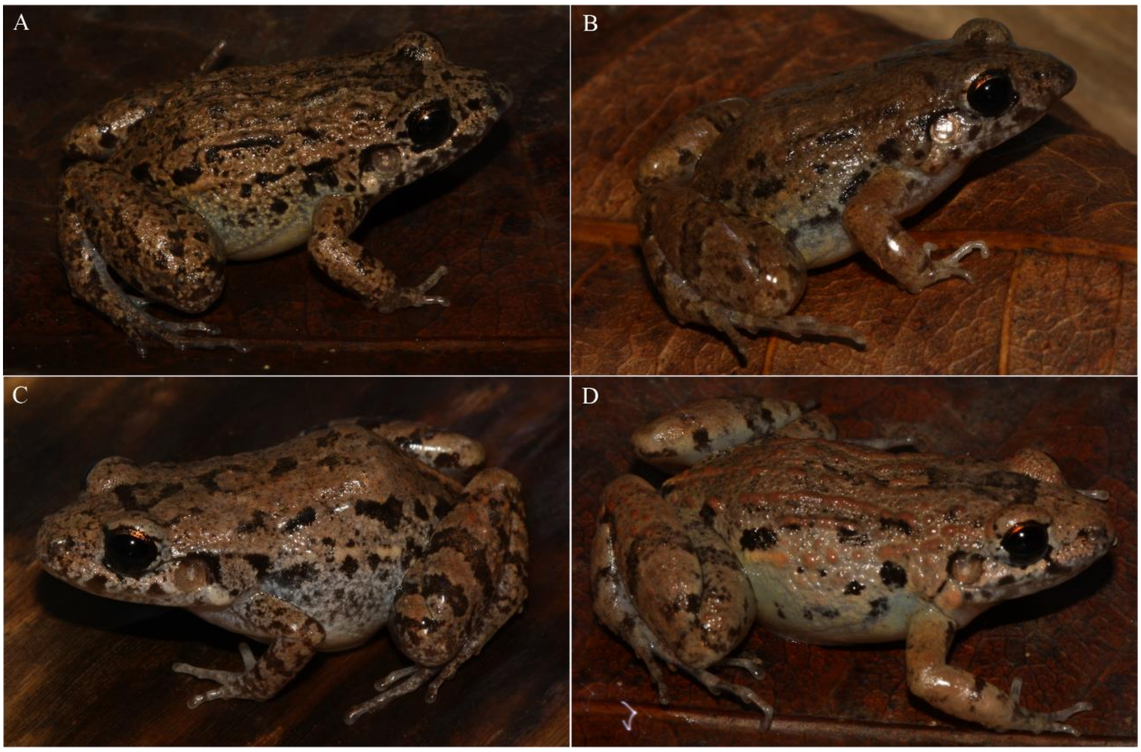

Figure 12. Life colors of type specimens of *Adenomera* sp. 3 nov. from the Department of Putumayo, Colombia. (A) MHUA-A 13972 (male, holotype; SVL = 23.4 mm); (B) MHUA-A 13968 (male; SVL = 23.5 mm); (C) MHUA-A 13970 (female; SVL = 24.4 mm); (D) MHUA-A 13971 (female; SVL = 23.1 mm).

Habitat and natural history. *Adenomera* sp. 3 nov. has been recorded exclusively in urban and open areas of Puerto Leguízamo, including parks, green areas, gardens, and roadsides. The species prefers microhabitats with shrubs, or some vegetation cover, shade, and, in some cases, an accumulation of leaf litter. It is common to hear males vocalizing among the shrubs or hiding in leaf litter when present. Vocal activity begins between 18:00 and 20:00 hours and is heard throughout the year, with increased activity during and after rains.

Distribution. *Adenomera* sp. 3 nov. has been recorded only at its type locality, in Puerto Leguízamo, Department of Putumayo. The species uses human-altered areas, including urban and rural areas on the outskirts of the town of Puerto Leguízamo.

DISCUSSION

The diversity of anurans in Colombian Amazonia remains poorly understood, with significant gaps in the collection of scientific data and the understanding of biological diversity in the region (Vásquez-Restrepo 2021; Camacho-Rozo and Urbina-Cardona 2023). This is especially critical in taxa with prevalent cryptic morphology, illustrated in this study by the foam-nesting frogs of the genus *Adenomera*. In Colombia, the information available on this genus is limited to scattered records of two widely distributed species (*A. andreae* and *A. hylaedactyla*; Acosta-Galvis 2025), mainly from lists, guides, and technical reports. However, based on the present study and additional evidence from the *Adenomera* phylogeny (Fouquet et al. 2014), the species richness of the genus in Colombia has been significantly underestimated. In addition to *A. andreae* and *A. hylaedactyla*, there are at least two candidate new species, the lineage "sp. P" and the lineage "sp. Q" indicated by Fouquet et al. (2014), plus the three new species from the Putumayo that were characterized for the first time in the present study.

The use of multiple lines of evidence, especially the combined information derived from bioacoustics, morphology, and DNA sequences, has contributed to the advance of the taxonomy of the main clades of *Adenomera* (e.g., Carvalho et al. 2020a, 2021a; Zaracho et al. 2023; Cassini et al. 2024). The recent description of *A. albarena* is another example from central Brazilian Amazonia (Martins et al. 2024). Considering both *A. albarena* and *Adenomera* sp. 3 nov., the *A. simonstuarti* complex contains at least eleven distinct lineages. This strategy allowed us to identify three unnamed species in the Department of Putumayo, associated with the *A. simonstuarti* species complex. Our results show genetic correspondence with two of these lineages. *Adenomera* sp. 1 nov. corresponds to lineage 11 of *A. simonstuarti* from Japurá or the sister group of this lineage, thus assuming that lineage 11 corresponds to an additional unnamed species within this species complex. Likewise, *Adenomera* sp. 2 nov. corresponds to lineage 6 of *A. simonstuarti* from Loreto or the sister group of lineage 6 if they do not correspond to the same taxonomic unit. In both cases, we still need to obtain phenotypic data for confirmation of their identities in comparison with the two new species from the Putumayo. In addition, we identified a third putative new species that had not been sampled previously, given its divergent call, which indicates the existence of additional unnamed lineages within the *A. simonstuarti* complex (but see a discussion on its phylogenetic assessment below).

Considering the heterogeneity of habitats in southwestern Amazonia, the *A. andreae* clade and the original eight lineages of the *A. simonstuarti* complex have been recorded only in non-flooded forests (Carvalho et al. 2020a). However, *A. albarena*, the most recently described species of this species complex, is found in white-sand forest ecosystems. In this context, *Adenomera* sp. 2 nov. and *Adenomera* sp. 3 nov. are species that inhabit open and urban areas within their known distribution, habitats that are primarily associated with species of the "open-formation" clade, formed by the *A. hylaedactyla* and *A. martinezi* clades. The latter is widely distributed, but restricted to the open formations across the South American Dry Diagonal, whereas the former is also distributed in open areas throughout Amazonia (Fouquet et al. 2014; Carvalho et al. 2019a). Interestingly, the natural and human-altered open areas of Putumayo are occupied by two lineages of the *A. simonstuarti* complex, where *A. hylaedatyla* does not occur. Therefore, there is a species turnover of open-formation *Adenomera* in western Amazonia

(Colombia, Peru, and Ecuador), whose limits are still poorly understood. These species represent the only two cases in the *A. andreae* clade using non-forested environments.

The acoustic divergence among the three lineages of the *A. simonstuarti* complex from the Putumayo constitutes the primary line of evidence for their delimitation as distinct species. The unique call characteristics of each lineage provide valuable diagnostic features, enhancing our understanding of acoustic diversity and revealing previously unrecognized call patterns within the *A. andreae* clade. *Adenomera* sp. 1 nov. has an advertisement call composed of a single nonpulsed note with a descendent frequency modulation, which makes it unique among all five species of the *A. andreae* clade and more broadly among *Adenomera*. *Adenomera lutzi* is the only Amazonian congener that also has a nonpulsed call, whereas nonpulsed calls are pervasive in the Atlantic Forest endemic *A. marmorata* clade. Besides, the call of *Adenomera* sp. 1 nov. has a unique spectral feature among *Adenomera* species, descending frequency modulation, a previously unknown call pattern in the genus. The call of *Adenomera* sp. 2 nov. is formed by complete pulses. This feature is present in many species of the *A. heyeri* clade (Carvalho et al. 2021), but only in one species of the *A. andreae* clade (*A. guarayo*). However, they differ markedly in the number of pulses per call (Fig. 3). Finally, the call of *Adenomera* sp. 3 nov. is formed by incomplete pulses, a trait shared with the other described species of the *A. andreae* clade. The three-pulse note pattern of this lineage is most similar to the note structure of *A. simonstuarti*, but they differ in the emission pattern. *Adenomera simontuarti* has a multi-note call (i.e., series of pulsed notes; Carvalho et al. 2020a), whereas *Adenomera* sp. 3 nov. produces the same structure (three-pulse notes) as single notes (Fig. 4).

The use of advertisement calls as a tool in taxonomic studies is widely documented as highly reliable and effective for the diagnosis and delimitation of anuran species. In an integrative taxonomic approach, where multiple lines of evidence are considered, differences in bioacoustics can be interpreted as an indication of taxonomic differentiation (Köhler 2007). This applies well to the three taxonomic entities from the Putumayo, with marked differences in their vocalizations, a taxonomic character of high relevance in the genus (e.g., Angulo and Icochea 2010; Fouquet et al. 2014; Carvalho et al. 2020a, 2021a; Martins et al. 2014). However, despite the acoustic divergence between *Adenomera* sp. 2 nov. and *Adenomera* sp. 3 nov., they were recovered together in a clade, without clear distinction in the mtDNA COI gene (< 1 %; see Appendix S3). It is worth mentioning that, to date, we could produce only one COI sequence of *Adenomera* sp. 3 nov. and, as such, we do not discard the possibility of contamination (in the field or laboratory) or, alternatively, the incorrect assignment of a tissue sample. We are going to sequence additional individuals and genes to confirm this possibility. This is especially because their advertisement calls are consistently divergent, which indicates that they should correspond to independently evolving lineages. Another scenario to explain the discordance between topology and advertisement call is the limitation in the ability to accurately recover relationships between populations (Lougheed et al. 2006). We cannot rule out the possibility of such a recent cladogenesis, so the COI gene might not resolve relationships adequately. This was also highlighted by Fouquet et al. (2014) to explain the genotype-phenotype discordance within the acoustically divergent lineages subsumed under *A. hylaedactyla*. In this context, a future genetic sampling should also aim at nuclear genes to investigate haplotype networks and mitonuclear discordance, and underlying mechanisms, such as incomplete lineage sorting and introgression.

In addition to contributing to taxonomic knowledge, the documentation of taxonomic diversity and its distribution patterns is fundamental for developing effective conservation strategies and land-use planning in regions of high biological diversity. This challenge is especially urgent in areas with scarce biological information, such as the Amazonian ecosystems, which are likely to face significant environmental transformations in the coming years (Camacho-Rozo and Urbina-Cardona 2023). This study highlights the need for investment in taxonomic sampling in the natural areas of Colombia's Putumayo, a region that shelters a diversity of lowland forest ecosystems, as well as the transitional Andean-Amazonian Piedmont.

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Appendix S1.

Appendix S2.

Appendix S3.

Appendix S1. Locality data and voucher specimens of sound recording analyzed in this study.

Sound recording	Voucher specimen	Taxon	Country	Locality	Latitude	Longitude	Air (°C)
CBUFMG 1150	MHUA-A 13982	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.083389	-76.62956	20,9
CBUFMG 1151	MHUA-A 13982	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.083389	-76.62956	20,9
CBUFMG 1152	MHUA-A 13983	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.082417	-76.62931	23
CBUFMG 1153	MHUA-A 13983	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.082417	-76.62931	23
CBUFMG 1154	MHUA-A 13984	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.082444	-76.62936	23,1
CBUFMG 1155	MHUA-A 13984	*Adenomera* sp. 1 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.082444	-76.62936	23,1
CBUFMG 1156	--	*Adenomera* sp. 2 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.084639	-76.62858	21,2
CBUFMG 1157	--	*Adenomera* sp. 2 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.084639	-76.62858	21,2
CBUFMG 1158	--	*Adenomera* sp. 2 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.084639	-76.62858	21,2
CBUFMG 1159	--	*Adenomera* sp. 2 nov.	Colombia	CEA_Centro Experimental Amazonico, Vereda El Pepino, municipality of Puerto Asís,	1.084639	-76.62858	21,2
CBUFMG 1160	MHUA-A 13957	*Adenomera* sp. 2 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08273	-76.62864	24,4
CBUFMG 1161	MHUA-A 13957	*Adenomera* sp. 2 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08273	-76.62864	24,4
CBUFMG 1162	MHUA-A 13957	*Adenomera* sp. 2 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08273	-76.62864	24,4
CBUFMG 1163	MHUA-A 13957	*Adenomera* sp. 2 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08273	-76.62864	24,4
CBUFMG 1164	--	*Adenomera* sp. 2 nov.	Colombia	Area abierta entrada a Sendero de Yagé, CEA_Centro Experimental Amazonico, Vere	1.08273	-76.62864	24,4
CBUFMG 1165	MHUA-A 13962	*Adenomera* sp. 1 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08255	-76.62855	24
CBUFMG 1166	MHUA-A 13963	*Adenomera* sp. 1 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08255	-76.62855	24
CBUFMG 1167	MHUA-A 13963	*Adenomera* sp. 1 nov.	Colombia	Sendero de Yagé, CEA_Centro Experimental Amazonico, Vereda El Pepino, municipal	1.08255	-76.62855	23,8
CBUFMG 1169	MHUA-A 13967	*Adenomera* sp. 2 nov.	Colombia	20 de Julio Health Post, municipality of Puerto Asís, department of Putumayo, Colombi	0.507009	-76.49892	25,4
CBUFMG 1170	MHUA-A 13967	*Adenomera* sp. 2 nov.	Colombia	20 de Julio Health Post, municipality of Puerto Asís, department of Putumayo, Colombi	0.507009	-76.49892	25,4
CBUFMG 1171	MHUA-A 13967	*Adenomera* sp. 2 nov.	Colombia	20 de Julio Health Post, municipality of Puerto Asís, department of Putumayo, Colombi	0.507009	-76.49892	25,4
CBUFMG 1172	MHUA-A 13967	*Adenomera* sp. 2 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	25,4
CBUFMG 1173	MHUA-A 13972	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	25,7
CBUFMG 1174	MHUA-A 13972	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	25,7
CBUFMG 1175	MHUA-A 13972	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	25,7
CBUFMG 1180	--	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	23
CBUFMG 1181	--	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	0.18865	-74.78033	23
CBUFMG 1182	MHUA-A 13978	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	-0.18857	-74.78047	22,8
CBUFMG 1183	MHUA-A 13978	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	-0.18857	-74.78047	22,8
CBUFMG 1184	MHUA-A 13978	*Adenomera* sp. 3 nov.	Colombia	La Consolata church, municipality of Puerto Leguizamo, department of Putumayo, Colo	-0.18857	-74.78047	22,8
CBUFMG 1185	MHUA-A 13979	*Adenomera* sp. 3 nov.	Colombia	In front of la consolata church (garden of a house), municipality of Puerto Leguizamo, de	-0.18857	-74.78047	22,8
CBUFMG 1186	MHUA-A 13979	*Adenomera* sp. 3 nov.	Colombia	In front of la consolata church (garden of a house), municipality of Puerto Leguizamo, de	-0.18857	-74.78047	22,8
CBUFMG 1187	MHUA-A 13979	*Adenomera* sp. 3 nov.	Colombia	In front of la consolata church (garden of a house), municipality of Puerto Leguizamo, de	-0.18857	-74.78047	22,8
FNJV 59562	INPAH 44868	*Adenomera albarena*	Brazil	RDS Rio Negro, Iranduba	--	--	--
FNJV 59563	INPAH 44869	*Adenomera albarena*	Brazil	RDS Rio Negro, Iranduba	--	--	--
FNJV 59564	INPAH 44876	*Adenomera albarena*	Brazil	RDS Rio Negro, Iranduba	--	--	--
FNJV 59566	MPEG 44651	*Adenomera albarena*	Brazil	RDS Rio Negro, Iranduba	--	--	--
FNJV 45412	INPAH 40967	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--
FNJV 45409	MUSM 18218	*Adenomera simonstuarti*	Peru	Camisea, Echarate, Cusco Amazónico	--	--	--
FNJV 59567	INPAH 44903	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--
FNJV 59568	INPAH 44904	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--
FNJV 59569	INPAH 44905	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--
FNJV 59570	INPAH 44911	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--
FNJV 59571	--	*Adenomera simonstuarti*	Brazil	UGAI Rio Acurauá	--	--	--

Appendix S2. GenBank accession numbers and locality data of genetic vouchers included in this study. New sequences are indicated in bold.

Taxon	Lineage	Voucher specimen	Field number	Clade	Country	locality	latitude	longitude	GenBank accession number			
									CYTB	COI	RAG1	POMC
Adenomera sp. 1 nov.	Lineage 11	MHUA-A 13962	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08255	76.62855	X	X	---	---
Adenomera sp. 1 nov.	Lineage 11	MHUA-A 13963	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08255	76.62855	---	X	---	---
Adenomera sp. 1 nov.	Lineage 11	MHUA-A 13954	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08273	76.62864	---	X	---	---
Adenomera sp. 1 nov.	Lineage 11	MHUA-A 13955	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08252	76.62853	---	X	---	---
Adenomera sp. 1 nov.	Lineage 11	MHUA-A 13956	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08252	76.62853	---	X	---	---
Adenomera sp. 2 nov.	Lineage 6	MHUA-A 13949	---	andreae	Colombia	San Nicolas Park (behind La Alvernia	0.49983	-76.49860	---	X	---	---
Adenomera sp. 2 nov.	Lineage 6	MHUA-A 13950	---	andreae	Colombia	20 de Julio Health Post, municipality of	0.50682	-76.49921	---	X	---	---
Adenomera sp. 2 nov.	Lineage 6	MHUA-A 13951	---	andreae	Colombia	San Nicolas Park (behind La Alvernia	0.49983	-76.49860	---	X	---	---
Adenomera sp. 2 nov.	Lineage 6	MHUA-A 13957	---	andreae	Colombia	Sendero de Yagé, CEA_Centro Exper	1.08273	76.62864	X	X	---	---
Adenomera sp. 3 nov.	Lineage 6	MHUA-A 13972	---	andreae	Colombia	La Consolata church, municipality of P	0.18865	-74.78033	X	X	---	---
Adenomera simonstuarti 5	Lineage 5	IAvH-Am-17904	---	andreae	Colombia	Departamento del Meta, Villavicencio,	4.18377	-73.62514	---	X	---	---
Adenomera simonstuarti 1	Lineage 1	LSU13787	---	andreae	Brazil	Porto Walter, Acre, Brazil	-8.26639	-72.74361	KF674885	KF674575	KF674256	KF673943
Adenomera simonstuarti 1	Lineage 1	---	AJC2777	andreae	Peru	Pongo de Rentema, Bagua-Sara Meris	-5.30111	-78.39556	KF674884	KF674574	KF674255	KF673942
Adenomera simonstuarti 1	Lineage 1	MHNC10092	---	andreae	Peru	PV5_Sta Elena, Rio Samiria, Dist. Par	-5.23472	-74.82611	KF674883	KF674573	KF674254	KF673941
Adenomera simonstuarti 1	Lineage 1	---	PEP515	andreae	Peru	Rio Yavari Miri, Peru	-4.66306	-72.76972	KF674882	KF674572	KF674253	KF673940
Adenomera simonstuarti 1	Lineage 1	---	QU2965	andreae	Brazil	Comunidade Condor, Amazonas, Braz	-6.75000	-70.85000	KF674886	KF674576	KF674257	KF673944
Adenomera simonstuarti 1	Lineage 1	QCAZA51254	---	andreae	Ecuador	km 40 Pompeya-Iro Road, Orellana, E	-0.66570	-76.44378	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	QCAZA55844	---	andreae	Ecuador	Trail to Tigre military camp, southern b	-1.63331	-75.99219	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	QCAZA74932	---	andreae	Ecuador	Vía Sígsig-Gualaquiza, Ruta de los Arr	-3.30607	-78.63634	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 280	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 302	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 303	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 335	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 333	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 341	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 1	Lineage 1	---	TRC 342	andreae	Brazil	Upper Juruá River, Cruzeiro do Sul, A	-7,62325	-72,78799	---	W SEQUEN	---	---
Adenomera simonstuarti 2	Lineage 2	---	QU5337	andreae	Brazil	Comunidade Vai Quem Quer, Amazor	-3.31667	-66.01667	KF674887	KF674577	KF674258	KF673945
Adenomera simonstuarti 2	Lineage 2	INPAH39792	---	andreae	Brazil	RESEX Baixo Juruá, comunidade Cun	-3.75711	-66.08317	MT472181	---	---	---
Adenomera simonstuarti 2	Lineage 2	INPAH39814	---	andreae	Brazil	RESEX Baixo Juruá, comunidade Cun	-3.76022	-66.08033	MT472182	---	---	---
Adenomera simonstuarti 2	Lineage 2	INPAH39796	---	andreae	Brazil	Reserva Extrativista do Baixo Juruá, C	---	---	---	---	---	---
Adenomera simonstuarti 3	Lineage 3 (n	MNCN23203	---	andreae	Peru	Dpt Cusco, Prov. La Convención, Peru	-12.59524	-73.73074	KF674889	KF674579	KF674260	KF673947
Adenomera simonstuarti 3	Lineage 3 (n	ZSM748	---	andreae	Peru	Huanusco, Est Bio Panguana, Peru	-9.60393	-74.93580	KF674888	KF674578	KF674259	KF673946
Adenomera simonstuarti 3 (	Lineage 3 (n	INPAH40967	---	andreae	Brazil	UGAI Acurauá, Amazonas, Brazil	-7.79232	-71.01397	MT472180	---	---	---
Adenomera simonstuarti 4	Lineage 4	LSU12840	---	andreae	Ecuador	Cuyabeno, Ecuador	0.00000	-76.16667	KF674891	KF674581	KF674262	KF673949
Adenomera simonstuarti 4	Lineage 4	MHNC6302	---	andreae	Peru	Soplin Vargas, ZRGueppi, Dist. Tnte M	-0.37250	-74.67528	KF674892	KF674582	KF674263	KF673950
Adenomera simonstuarti 5	Lineage 5	---	CB5696	andreae	Venezuela	San Ramòn, Calderas, estado Barinas,	9.05680	-70.50797	KF674890	KF674580	KF674261	KF673948
Adenomera simonstuarti 5	Lineage 5	---	AJC4091	andreae	Colombia	Casanare, Sabanalarga, Colombia	4.77300	-73.03700	---	KP149148	---	---
Adenomera simonstuarti 5	Lineage 5	---	AJC4093	andreae	Colombia	Casanare, Sabanalarga, Colombia	4.77300	-73.03700	---	KP149245	---	---
Adenomera simonstuarti 5	Lineage 5	---	AJC4094	andreae	Colombia	Casanare, Sabanalarga, Colombia	4.77300	-73.03700	---	KP149175	---	---
Adenomera sp. 2 nov.	Lineage 6	MHNC10058	---	andreae	Peru	PV1_Samiria, Rio Samiria, Dist. Parin	-4.67472	-74.31528	KF674893	KF674583	KF674264	KF673951
Adenomera simonstuarti 7	Lineage 7	MNCN27344	---	andreae	Peru	Arboretum de la UNAM, camino hacia	-3.83077	-73.37327	KF674894	KF674584	KF674265	KF673952
Adenomera simonstuarti 7	Lineage 7	---	EJRA1002	andreae	Peru	Loreto, Instituto de Investigaciones de	-3.81456	-73.31986	---	ON732865	---	---
Adenomera simonstuarti 7	Lineage 7	---	EJRA1003	andreae	Peru	Loreto, Instituto de Investigaciones de	-3.81456	-73.31986	---	ON732866	---	---
Adenomera simonstuarti 7	Lineage 7	---	GGU7555	andreae	Peru	Loreto, Iquitos	-3,814556°	-73,319861°	---	W SEQUEN	---	---
Adenomera simonstuarti 7	Lineage 7	---	GGU7515	andreae	Peru	Loreto, Iquitos	-3,814556°	-73,319861°	---	W SEQUEN	---	---

Adenomera simonstuarti 7	Lineage 7	---	GGU7044	andreae	Peru	Loreto, Iquitos	-3,814556°	-73,319861°	---	W SEQUEN	---	---
Adenomera simonstuarti 8	Lineage 8	---	APL13097	andreae	Brazil	Comunidade Yamado, São Gabriel da	-0.15583	-67.08611	KF674895	KF674585	KF674266	KF673953
Adenomera simonstuarti 1	Lineage 1	CFBH 45998	---	andreae	Brazil	lower Moa River on the south bank of	-7.62325	-72.78799				
Adenomera simonstuarti 1	Lineage 1	---	TRC342	andreae	Brazil	rio croa, Cruzeiro do Sul, Acre, BR	-7.72390	-72.53970				
Adenomera simonstuarti 1	Lineage 1	CFBH 46013	---	andreae	Brazil	Parque Nacional da Serra do Divisor	-7.45481	-73.66365				
Adenomera albarena (holot	Lineage 9	INPA-H 44867	---	andreae	Brazil	white-sand forests of the Rio Negro Su	-3.09306	-60.67667	---	OQ974336	---	---
Adenomera albarena	Lineage 9	INPA-H 44868	---	andreae	Brazil	Amazonas state, Iranduba, RDS Rio N	-3.09306	-60.67667	---	OQ974334	---	---
Adenomera albarena	Lineage 9	INPA-H 44871	---	andreae	Brazil	Amazonas state, Iranduba, RDS Rio N	-3.09306	-60.67667	---	OQ974333	---	---
Adenomera albarena	Lineage 9	INPA-H 44872	---	andreae	Brazil	Amazonas state, Iranduba, RDS Rio N	-3.09306	-60.67667	---	OQ974335	---	---
Adenomera simonstuarti 10	Lineage 10	MCP13878	---	andreae	Brazil	Amazonas, Tefé	-3,45432°	-64,7681°	---	W SEQUEN	---	---
Adenomera simonstuarti 10	Lineage 10	MCP13902	---	andreae	Brazil	Amazonas, Tefé	-3,45432°	-64,7681°	---	W SEQUEN	---	---
Adenomera simonstuarti 10	Lineage 10	MCP13901	---	andreae	Brazil	Amazonas, Tefé	-3,45432°	-64,7681°	---	W SEQUEN	---	---
Adenomera simonstuarti 10	Lineage 10	MCP13895	---	andreae	Brazil	Amazonas, Tefé	-3,45432°	-64,7681°	---	W SEQUEN	---	---
Adenomera simonstuarti 10	Lineage 10	---	MTR36860	andreae	Brazil	Amazonas, Fonte Boa	-2,528°	-66,1619°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13767	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13903	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13905	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13766	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13896	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13879	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13892	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13898	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13899	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13909	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13906	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	MCP13904	---		Brazil	Amazonas, ESEC Juami-Japurá	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera simonstuarti 11	Lineage 11	CZPB-AA1527	---		Brazil	Amazonas, Japurá margem direita	-1,75834°	-67,6153°	---	W SEQUEN	---	---
Adenomera andreae 1	---	---	H369	andreae	Brazil	Roraima state, Mutum7	-9.59531	-65.06399	KF674836	KF674204	KF674204	KF673892
Adenomera andreae 1	---	---	MTR18580	andreae	Brazil	Amazonas state, Mata GPS2, Chavian	-4.18314	-61.48801	KF674837	KF674525	KF674205	KF673893
Adenomera andreae 1	---	LSU15351	---	andreae	Brazil	Amazonas state, Rio Ituxi	-8.47944	-65.71639	KF674838	KF674526	KF674206	KF673894
Adenomera andreae 2	---	LSU17479	---	andreae	Brazil	Roraima state, Parque Estadual Guajar	-10.32138	-64.56333	KF674839	KF674527	KF674207	KF673895
Adenomera andreae 3	---	MUSM39464	---	andreae	Peru	Madre de Dios, Tambopata	-12,835930°	-69,272870°	---	MK959185	---	---
Adenomera andreae 3	---	MUSM39470	---	andreae	Peru	Madre de Dios, Tambopata	-12,835930°	-69,272870°	---	MK959186	---	---
Adenomera andreae 3	---	MUSM39469	---	andreae	Peru	Madre de Dios, Tambopata	-12,835930°	-69,272870°	---	MK959184	---	---
Adenomera andreae 3	---	MHNC8342	---	andreae	Peru	Campamento II, Nva Arequipa, Guaca	-12.93743	-69.98875	KF674842	KF674530	KF674210	KF673898
Adenomera andreae 3	---	MUSM39471	---	andreae	Peru	Madre de Dios, Tambopata	-12,835930°	-69,272870°	---	MK959188	---	---
Adenomera andreae 3	---	MHNC10031	---	andreae	Peru	Peru Mashira JX, Dist. Rio Tambo, Pr	-11.21322	-73.45205	KF674843	KF674531	KF674211	KF673899
Adenomera andreae 3	---	MHNC9783	---	andreae	Peru	Río Mayapo, Tsoroja, Echarate, La Co	-11.39719	-73.48229	KF674844	KF674532	KF674212	KF673900
Adenomera andreae 3	---	---	PV2060	andreae	Brazil	Para state, UHE Marabá	-4.83415	-48.96534	KF674841	KF674529	KF674209	KF673897
Adenomera andreae 3	---	---	MTR19423	andreae	Brazil	Amazonas state, Moiobamba, Margem	-4.72010	-62.13304	KF674840	KF674528	KF674208	KF673896
Adenomera andreae 4	---	---	MTR13880	andreae	Brazil	Lourenço, Amapá, Brazil	2.29806	-51.64111	KF674830	KF674518	KF674198	KF673886
Adenomera andreae 5	---	---	CTMZ06322	andreae	Brazil	Para state, Jacareacanga	-6.22222	-57.75278	KF674847	KF674535	KF674215	KF673903
Adenomera andreae 5	---	---	PMJ261	andreae	Brazil	Mato Grosso state, Colniza	-8.85111	-59.43306	KF674848	KF674536	KF674216	KF673904
Adenomera andreae 5	---	---	MTR10142	andreae	Brazil	Amazonas state, Cachoeira das Pomba	-6.41761	-60.35806	KF674849	KF674537	KF674217	KF673905
Adenomera andreae 5	---	CHUNB34636	---	andreae	Brazil	Para state, Novo Progresso	-7.14495	-55.37947	KF674845	KF674533	KF674213	KF673901
Adenomera andreae 5	---	---	CTMZ06626	andreae	Brazil	Mato Grosso state, Paranaíta	-9.66472	-56.47667	KF674846	KF674534	KF674214	KF673902
Adenomera andreae 5	---	---	MCP13875	andreae	Brazil	Amazonas, Japurá				NEW SEQUENCE		
Adenomera andreae 5	---	---	GARI17	andreae	Brazil	Mato Grosso state, Aripuanã	-10.05305	-59.49389	KF674850	KF674538	KF674218	KF673906

Adenomera andreae 6	---	---	565PG	andreae	French Guiana	Mitaraka	2.26667	-54.51667	KF674856	KF674545	KF674226	KF673913
Adenomera andreae 6	---	---	CN2124	andreae	Brazil	Para state, Grao Para Centro	0.63028	-55.72861	KF674857	KF674546	KF674227	KF673914
Adenomera andreae 6	---	---	104AF	andreae	Suriname	Road to Apura	5.18333	-55.61667	KF674854	KF674543	KF674224	KF673911
Adenomera andreae 6	---	---	1689BPN	andreae	French Guiana	Saüll	3.62556	-53.20722	KF674855	KF674544	KF674225	KF673912
Adenomera andreae 6	---	---	MTR13961	andreae	Brazil	Amapá state, Laranjal do Jari	-0.71667	-52.38333	KF674858	KF674547	KF674228	KF673915
Adenomera andreae 6	---	---	89PG	andreae	French Guiana	Mont Saint Marcel	2.38583	-53.01889	KF674859	KF674549	KF674230	KF673917
Adenomera andreae 6	---	---	CN1408	andreae	Brazil	Amapá state, Maicuru	0.82861	-53.93111	KF674860	KF674550	KF674231	KF673918
Adenomera andreae 6	---	---	482AF	andreae	French Guiana	Cisame Right	4.11777	-52.22246	JQ321649	KF674548	KF674229	KF673916
Adenomera andreae 6	---	---	MTR13806	andreae	Brazil	Amapá state, Serra do Navio	0.91806	-52.00278	KF674862	KF674552	KF674233	KF673920
Adenomera andreae 6	---	---	440AF	andreae	French Guiana	Regina Right	4.16771	-52.07659	JQ321793	KF674542	KF674223	KF673910
Adenomera andreae 6	---	---	300AF	andreae	French Guiana	Matoury	4.86333	-52.35778	KF674852	KF674540	KF674221	KF673908
Adenomera andreae 6	---	---	295AF	andreae	French Guiana	Patawa	4.54806	-52.15194	KF674851	KF674539	KF674219	KF673907
Adenomera andreae 6	---	---	317AF	andreae	French Guiana	Parare Left	4.04252	-52.67879	JQ321766	KC520689	KF674220	KC604061
Adenomera andreae 6	---	---	232AF	andreae	French Guiana	Angouleme	5.38333	-53.65000	KF674853	KF674541	KF674222	KF673909
Adenomera andreae 6	---	---	121AF	andreae	Suriname	Brownsberg	4.91720	-55.22072	KF674861	KF674551	KF674232	KF673919
Adenomera andreae 7	---	CFBH5717	---	andreae	Brazil	Reserva Ducke, Manaus, Amazonas, I	-2.96615	-59.93122	KF674864	KF674554	KF674235	KF673922
Adenomera andreae 7	---	---	DT3192	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866431	---	---
Adenomera andreae 7	---	---	DT3794	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866432	---	---
Adenomera andreae 7	---	---	DT3201	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866428	---	---
Adenomera andreae 7	---	---	DT3789	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866430	---	---
Adenomera andreae 7	---	---	DT3804	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866434	---	---
Adenomera andreae 7	---	---	DT3795	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866433	---	---
Adenomera andreae 7	---	---	DT3806	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866435	---	---
Adenomera andreae 7	---	---	DT3193	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866427	---	---
Adenomera andreae 7	---	---	DT3174	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866422	---	---
Adenomera andreae 7	---	---	DT3187	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866426	---	---
Adenomera andreae 7	---	---	DT3165	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866420	---	---
Adenomera andreae 7	---	---	DT3167	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866421	---	---
Adenomera andreae 7	---	---	DT3186	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866425	---	---
Adenomera andreae 7	---	---	DT3176	andreae	Brazil	Para state, middle Tapajos River, Wes	---	---	---	MN866423	---	---
Adenomera andreae 7	---	---	MTR13130	andreae	Brazil	Amazonas state, Pacamiri, Rio Abaca:	-4.33333	-58.13333	KF674868	KF674558	KF674239	KF673926
Adenomera andreae 7	---	AAG-UFU2797	---	andreae	Brazil	Amazonas, Manaus	-3,103983°	-59,974858°	---	MK959184	---	---
Adenomera andreae 7	---	---	CN269	andreae	Brazil	Para state, Faro	-1.71389	-57.21333	KF674865	KF674555	KF674236	KF673923
Adenomera andreae 7	---	MNRJ52896	---	andreae	Brazil	Para, Porto Trombetas, Oriximina	-1.76557	-55.80723	KF674866	KF674556	KF674237	KF673924
Adenomera andreae 7	---	AMNH20053	---	andreae	Brazil	Tamaga, CF 5 Km 7, BR 174 ~Km 85	-2.22331	-60.06556	KF674863	KF674553	KF674234	KF673921
Adenomera andreae 7	---	---	SMS048	andreae	Brazil	Manaus, Fragmento ao lado do Passeio	-3.08171	-60.00357	KF674869	KF674559	KF674240	KF673927
Adenomera andreae 7	---	---	MSH10219	andreae	Brazil	Estação Ecológica Anavilhanas- Base	-2.53444	-60.83667	KF674867	KF674557	KF674238	KF673925
Adenomera andreae 7	---	---	MTR15533	andreae	Brazil	Sao Gabriel da Cachoeira	-0.02060	-66.92677	KF674870	KF674560	KF674241	KF673928
Adenomera andreae 8	---	---	BM225	andreae	Brazil	Vitória do Xingu	-2.92933	-51.94965	KF674873	KF674563	KF674244	KF673931
Adenomera andreae 8	---	---	MTR16770	andreae	Brazil	Altamira, Margem Esquerda Rio Xingu	-3.20167	-51.90944	KF674874	KF674564	KF674245	KF673932
Adenomera andreae 8	---	---	SMS460	andreae	Brazil	FLONA do Trairão, Ramal do 80, próx	-4.53363	-55.22855	KF674875	KF674565	KF674246	KF673933
Adenomera andreae 8	---	---	MTR11093	andreae	Brazil	Floresta Nacional do Tapajós	-3.50000	-55.06667	KF674872	KF674562	KF674243	KF673930
Adenomera andreae 8	---	---	DT3184	andreae	Brazil	Para state, middle Tapajos River, East	---	---	MN866424	---	---	---
Adenomera andreae 8	---	---	DT3455	andreae	Brazil	Para state, middle Tapajos River, East	---	---	MN866429	---	---	---
Adenomera andreae 9	---	---	MTR12724	andreae	Brazil	Igarapé Açu, Rio Abacaxis	-4.34417	-58.63500	KF674876	KF674566	KF674247	KF673934
Adenomera andreae 10	---	---	TRC285	andreae	Brazil	Acre, Alto Juruá	---	---	NEW SEQUEN		---	---
Adenomera andreae 10	---	---	TRC290	andreae	Brazil	Acre, Alto Juruá	---	---	NEW SEQUEN		---	---
Adenomera andreae 10	---	---	TRC284	andreae	Brazil	Acre, Alto Juruá	---	---	NEW SEQUEN		---	---

Adenomera andreae 10	---	---	TRC291	andreae	Brazil	Acre, Alto Juruá	---	---		NEW SEQUEN	---	---
Adenomera andreae 10	---	---	TRC283	andreae	Brazil	Acre, Alto Juruá	---	---		NEW SEQUEN	---	---
Adenomera andreae 10	---	---	TRC282	andreae	Brazil	Acre, Alto Juruá	---	---		NEW SEQUEN	---	---
Adenomera andreae 10	---	LSU13786	---	andreae	Brazil	Acre state, Porto Walter	-8.26639	-72.74361	KF674808	KF674496	KF674176	KF673864
Adenomera andreae 10	---	---	QU4250	andreae	Brazil	Acre state, PORONG	-8.66667	-72.78333	KF674810	KF674498	KF674178	KF673866
Adenomera andreae 10	---	MHNC9799	---	andreae	Peru	Nuevo Mundo, Dist. de Echarate, Prov	-11.55172	-73.14363	KF674809	KF674497	KF674177	KF673865
Adenomera andreae 10	---	---	QU2822	andreae	Brazil	CONDOR	-6.75000	-70.85000	KF674812	KF674500	KF674180	KF673868
Adenomera andreae 10	---	---	JMP2129	andreae	Colombia	Leticia, Km 10 carretera	-4.12417	-69.94139	KF674811	KF674499	KF674179	KF673867
Adenomera andreae 10	---	---	APL14070	andreae	Brazil	Amazonas, Ipixuna	---	---	---	W SEQUEN	---	---
Adenomera andreae 11	---	---	FS090	andreae	Brazil	Amazonas state, Varadouro do Ouro F	-5.60783	-67.58334	KF674816	KF674504	KF674184	KF673872
Adenomera andreae 11	---	LSU16902	---	andreae	Brazil	Amazonas state, Manaus	-3.61944	-60.44633	KF674814	KF674502	KF674182	KF673870
Adenomera andreae 11	---	---	QU5762	andreae	Brazil	Amazonas state, ILHAZI	-3.15930	-66.18324	KF674815	KF674503	KF674183	KF673871
Adenomera andreae 11	---	---	FS043	andreae	Brazil	Amazonas state, Anaxiqui esquerda	-5.76257	-67.89884	KF674813	KF674501	KF674181	KF673869
Adenomera andreae 11	---	---	QU4920	andreae	Brazil	Amazonas state, VQQ	-3.31667	-66.01667	KF674817	KF674505	KF674185	KF673873
Adenomera andreae 11	---	---	MTR20955	andreae	Brazil	Roraima state, Tepequem	3.72826	-61.69890	KF674832	KF674520	KF674200	KF673888
Adenomera andreae 11	---	---	SMS975	andreae	Brazil	Roraima state, Apiaú	2.32229	-61.34153	KF674833	KF674521	KF674201	KF673889
Adenomera andreae 11	---	---	AJC2523	andreae	Colombia	Guainia state, Comunidad Sabanita, rio	2.08333	-67.10694	KF674831	KF674519	KF674199	KF673887
Adenomera andreae 12	---	---	MTR18847	andreae	Brazil	Amazonas state, Varzea do Lago Cha	-4.18314	-61.48801	KF674818	KF674506	KF674186	KF673874
Adenomera andreae 12	---	---	MTR19317	andreae	Brazil	Amazonas state, Lago Jari, Margem D	-5.04402	-62.42455	KF674819	KF674507	KF674187	KF673875
Adenomera andreae 12	---	---	SMS109	andreae	Brazil	Amazonas state, Campo Tupana	-4.15750	-60.13194	KF674821	KF674509	KF674189	KF673877
Adenomera andreae 12	---	---	MTR19377	andreae	Brazil	Amazonas state, Terra Vermelha, Mar	-4.70215	-62.30907	KF674820	KF674508	KF674188	KF673876
Adenomera andreae 12	---	---	SMS635	andreae	Brazil	Amazonas state, Comunidade São Seb	-3.78943	-59.03405	KF674827	KF674515	KF674195	KF673883
Adenomera andreae 12	---	---	VOGT2004	andreae	Brazil	Amazonas state, Lago Açaí, Margem	-5.56611	-60.41389	KF674828	KF674516	KF674196	KF673884
Adenomera andreae 12	---	---	MTR10008	andreae	Brazil	Lago Cipotuba, Margem Direita Rio A	-5.80139	60.22111	KF674826	KF674514	KF674194	KF673882
Adenomera andreae 12	---	---	SMS658	andreae	Brazil	Amazonas state, Comunidade Sampaic	-3.70804	-59.14736	KF674825	KF674513	KF674193	KF673881
Adenomera andreae 12	---	---	CN1165	andreae	Brazil	Pará state, GPN	1.28528	-58.69583	KF674824	KF674512	KF674192	KF673880
Adenomera andreae 12	---	MHNC8119	---	andreae	Peru	Palma 1 B, Dist. Inambari, prov. Taml	-12.36492	-69.07091	KF674823	KF674511	KF674191	KF673879
Adenomera andreae 12	---	---	QU3410	andreae	Brazil	Amazonas state, BVERME	-6.46667	-68.76667	KF674822	KF674510	KF674190	KF673878
Adenomera andreae 13	---	---	AJC3150	andreae	Venezuela	AmazonasTobogán de la Selva, aguas	5.38528	-67.61333	KF674834	KF674522	KF674202	KF673890
Adenomera andreae 14	---	---	QU3419	andreae	Brazil	Amazonas state, BVERME	-6.46667	-68.76667	KF674829	KF674517	KF674197	KF673885
Adenomera andreae 15	---	---	MCP13873	andreae	Brazil	Amazonas, Japurá	---	---	---	W SEQUEN	---	---
Adenomera andreae 15	---	---	MCP13876	andreae	Brazil	Amazonas, Japurá	---	---	---	W SEQUEN	---	---
Adenomera andreae 15	---	---	AJC2460	andreae	Colombia	Departamento Vaupes, Comunidad Pu	1.21000	-70.61917	KF674835	KF674523	KF674203	KF673891
Adenomera andreae 16	---	---	APL13687	andreae	Brazil	Amazonas state, Lago das Pedras loca	-1.63722	-61.68583	KF674871	KF674561	KF674242	KF673929
Adenomera chicomendesi	---	---	AA9972	andreae	Peru	Madre de dios, Tambopata	-14.22361	-69.17667	JQ321831	KF674586	KF674267	KF673954
Adenomera chicomendesi	---	MNCN4004	---	andreae	Bolivia	PN Amboro, Ichilo, Santa Cruz	-17.66000	-63.70167	KF674903	KF674594	KF674275	KF673962
Adenomera sp. D	---	ZSM751	---	andreae	Peru	Huanuco, Est Bio Panguana	-9.60393	-74.93580	KF674881	KF674571	KF674252	KF673939
Adenomera guarayo	---	MNCN34687	---	andreae	Bolivia	Orilla boliviana del rio Heath, Iturralde,	-12.68000	-68.71167	KF674878	KF674568	KF674249	KF673936
Adenomera sp. T	---	MHNC8385	---	andreae	Peru	Campamento III, Primavera baja, Qda	-12.86385	-70.10152	KF674877	KF674567	KF674248	KF673935
Adenomera saci	---	---	MTR14648	martinezi	Brazil	EESGT (Estação Ecológica Serra Gera	-11.22083	-46.88556	KF675001	KF674692	---	---
Adenomera saci	---	CHUNB49509	---	martinezi	Brazil	Goiás state, Alto Paraíso de Goiás	-14.12886	-47.49908	KF675004	KF674695	KF674378	KF674063
Adenomera sp. B	---	---	ESTR307	martinezi	Brazil	Maranhão state, Carolina	-7.22941	-47.26147	KF675007	KF674698	KF674381	KF674066
Adenomera martinezi	---	CHUNB40218	---	martinezi	Brazil	Para state, Novo Progresso, Cachimbo	-7.14495	-55.37947	KC603968	KC603996	---	---
Adenomera hylaedactyla 2	---	---	CFBHT8289	hylaedactyla	Brazil	Maranhão state, Município de Alcânta	-2.39807	-44.39954	KF674929	KF674620	KF674301	KF673988
Adenomera hylaedactyla 3	---	MPEG28084	---	hylaedactyla	Brazil	Para state, Juruti, Margem Direita Rio	-2.96142	-56.54709	KF674934	KF674625	KF674307	KF673993
Adenomera hylaedactyla 6	---	---	ESTR1626	hylaedactyla	Brazil	Tocantins state, Palmeirante	-7.86000	-47.92583	KF674972	KF674663	KF674345	KF674031
Adenomera coca	---	---	AMG1	hylaedactyla	Bolivia	Bateon	-17.06126	-65.48020	KF674969	KF674660	KF674342	KF674028
Adenomera hylaedactyla 4	---	ZUFG100	---	hylaedactyla	Brazil	Amazonas state, Reserva Ducke	-2.98083	-59.92111	KF674937	KF674628	KF674310	KF673996

Adenomera hylaedactyla 11	---	---	AJC2882	hylaedactyla	Venezuela	Amazonas, Fundo Copaiba, Puerto Ay	5.69083	-67.60917	KF674992	KF674683	KF674365	KF674051
Adenomera hylaedactyla 1	---	---	APL15864	hylaedactyla	Brazil	Roraima state, Morrinhos Gravado _G	-9.02000	-64.17000	KF674917	KF674608	KF674289	KF673976
Adenomera hylaedactyla 5	---	---	MRT7511	hylaedactyla	Brazil	Tocantins state, Guaraí	-8.83417	-48.51028	KF674971	KF674662	KF674344	KF674030
Adenomera hylaedactyla 8	---	---	CN1800	hylaedactyla	Brazil	Para state, Paru	-0.94389	-53.23639	KF674984	KF674675	KF674357	KF674043
Adenomera hylaedactyla 7	---	---	CTMZ06288	hylaedactyla	Brazil	Para state, Jacareacanga	-6.22222	-57.75278	KF674979	KF674670	KF674352	KF674038
Adenomera hylaedactyla 10	---	---	AF1570	hylaedactyla	Brazil	Mato Grosso do Sul/Mato Grosso state	-17.46666	-53.91417	KF674988	KF674679	KF674361	KF674047
Adenomera hylaedactyla 9	---	---	UFMT2	hylaedactyla	Brazil	Mato Grosso state, Cuiabá	-15.59615	-56.03891	KF674987	KF674678	KF674360	KF674046
Adenomera guarani	---	IIBPH905	---	hylaedactyla	Paraguay	Concepción, Estancia GarayCué, Cerr	-22.72000	-57.37000	KC603966	KC603994	KF674278	KC604062
Adenomera diptyx 2	Nominal spec	---	RGA5254	hylaedactyla	Brazil	UHE Guaporé, Mato Grosso, Brazil	-15.33333	-58.85000	KF674910	KF674601	KF674282	KF673969
Adenomera diptyx 3	---	---	MJ1308	hylaedactyla	Bolivia	Santa Cruz, Sara, Buena Vista, Bolivia	-17.47391	-63.66973	KF674916	KF674607	KF674288	KF673975
Adenomera diptyx 4	---	---	AS0212	hylaedactyla	Bolivia	Santa Cruz, Velasco, Caparu, Bolivia	-14.91211	-61.08247	KF674911	KF674602	KF674283	KF673970
Adenomera nana 1	---	---	MTR18505	marmorata	Brazil	Paraná state, Morro Grande, Guaratub	-25.97130	-48.71403	KF675076	KF674767	KF674454	KF674135
Adenomera nana 2	---	---	CFBH3251	marmorata	Brazil	Santa Catarina state, São Bento do Su	-26.26965	-49.37828	KF675077	KF674768	KF674455	KF674136
Adenomera nana 3	---	---	MTR18499	marmorata	Brazil	Santa Catarina state, Quintal Erica, 32	-26.28647	-48.85222	KF675078	KF674769	KF674456	KF674137
Adenomera engelsi 1	---	---	MTR18497	marmorata	Brazil	Santa Catarina state, Trilha Praia dos	-27.82361	-48.56168	KC603970	KC603998	KF674450	KC604065
Adenomera engelsi 2	---	MNRJ72224	---	marmorata	Brazil	Santa Catarina state, São Bonifácio	-27.90341	-48.93391	KF675073	KF674764	KF674451	KF674132
Adenomera sp. N	---	CFBH10241	---	marmorata	Brazil	Paraná state, São João da Graciosa, M	-25.44101	-48.86553	KF675097	KF674788	KF674475	KF674156
Adenomera sp. O	---	CFBH7321	---	marmorata	Brazil	São Paulo state, Ilha de Cananéia	-25.04472	-47.97194	KF675098	KF674789	KF674476	KF674157
Adenomera cantitata	---	---	ITH0585	marmorata	Brazil	São Paulo state, Buri	-23.81250	-48.56250	KF675067	KF674758	KF674444	KF674126
Adenomera kweti 1	---	---	MTR18496	marmorata	Brazil	Santa Catarina state, Trilha Praia dos	-27.82361	-48.56168	KF675065	KF674756	KF674442	KF674124
Adenomera kweti 2	---	---	TRPD9	marmorata	Brazil	Santa Catarina state, Bombinhas	-27.19158	-48.56904	KF675066	KF674757	KF674443	KF674125
Adenomera marmorata 1	---	---	AF467	marmorata	Brazil	São Paulo state, Ubatuba, Praia Verm	-23.42388	-45.04639	KF675092	KF674783	KF674470	KF674151
Adenomera marmorata 2	---	CFBH12850	---	marmorata	Brazil	Rio de Janeiro state, Parque Nacional	-22.96119	-43.23861	KF675087	KF674778	KF674465	KF674146
Adenomera marmorata 3	---	---	MTR15511	marmorata	Brazil	São Paulo state, Praia do Toque Toque	-23.83079	-45.51401	KF675096	KF674787	KF674474	KF674155
Adenomera marmorata 4	---	---	AF1562	marmorata	Brazil	São Paulo state, São Vicente	-23.96305	-46.39194	KF675056	KF674747	KF674432	KF674115
Adenomera marmorata 5	---	MNRJ74640	---	marmorata	Brazil	Rio de Janeiro state, Lídice, Rio Claro	-22.84548	-44.20046	KF675111	KF674802	KF674490	KF674170
Adenomera araucaria	---	---	MCP10769	marmorata	Brazil	Rio Grande do Sul state, São Francisco	-29.34894	-50.18221	KC603969	KC603997	KF674440	KC604065
Adenomera sp. A	---	MNRJ47474	---	marmorata	Brazil	Rio de Janeiro state, REBio União, Ma	-22.49130	-42.00113	KF675112	KF674803	KF674491	KF674171
Adenomera bokermanni 1	---	---	K1730	marmorata	Brazil	Paraná state, Paranaguá	-25.52261	-48.55625	KF675115	KF674806	KF674494	KF674174
Adenomera bokermanni 2	---	---	MTR18508	marmorata	Brazil	Paraná state, Morro Grande, Guaratub	-25.97130	-48.71403	KF675116	KF674807	KF674495	KF674175
Adenomera ajurauna 1	---	---	CTMZ02393	marmorata	Brazil	São Paulo state, Parque Estadual de C	-24.05075	-47.99280	KF675079	KF674770	KF674457	KF674138
Adenomera ajurauna 2	---	---	H182	marmorata	Brazil	São Paulo state, Juquitiba	-23.92988	-47.06683	KF675080	KF674771	KF674458	KF674139
Adenomera ajurauna 3	---	---	CTMZ01932	marmorata	Brazil	São Paulo state, Jaceguava	-23.75916	-46.77806	KF675082	KF674773	KF674460	KF674141
Adenomera ajurauna 4	---	---	H33	marmorata	Brazil	São Paulo state, Piedade	-23.68750	-47.43750	KF675083	KF674774	KF674461	KF674142
Adenomera thomei 1	---	MNRJ60463	---	thomei	Brazil	Minas Gerais state, Caraça	-20.05818	-43.56840	KF675104	KF674795	KF674483	KF674163
Adenomera thomei 2	---	CFBH10573	---	thomei	Brazil	Espírito Santo state, Mimoso do Sul	-21.06619	-41.35291	KC603971	KC603999	KF674481	KC604067
Adenomera thomei 3	---	---	DT2891	thomei	Brazil	São Paulo state, Flona de Ipanema, Ipe	-23.43930	-47.64164	KF675106	KF674797	KF674485	KF674165
Adenomera thomei 4	---	---	CTRU22	thomei	Brazil	Rio de Janeiro state, Fazenda das Garç	-22.41325	-41.86120	KF675101	KF674792	KF674479	KF674160
Adenomera sp. L 1	---	---	MTR20994	thomei	Brazil	Bahia state, Igrapiuna	-13.82141	-39.13616	KF675113	KF674804	KF674492	KF674172
Adenomera sp. L 2	---	---	MTR21951	thomei	Brazil	Bahia state, Estação Ecológica Estadu	-13.69285	-39.50378	KF675114	KF674805	KF674493	KF674173
Adenomera sp. M	---	---	MD2568	thomei	Brazil	Bahia state, Una	-15.27281	-39.07049	KF675099	KF674790	KF674477	KF674158
Adenomera amicorum 1	---	---	MTR11092	heyeri	Brazil	Para state, Floresta Nacional do Tapaj	-3.50000	-55.06667	KF675023	KF674714	KF674398	KF674082
Adenomera heyeri 1	---	---	AF269	heyeri	French Guiana	Nouragues2, French Guiana	4.09167	-52.70000	KF675009	KF674700	KF674383	KF674068
Adenomera heyeri 2	---	---	AF127	heyeri	Suriname	Brownsberg, Suriname	4.91720	-55.22072	KC603972	KC604000	KF674387	KC604068
Adenomera lutzi	---	ROM40167	---	lutzi	Guyana	mt. Ayanganna, Guyana	5.39951	-59.95055	KC603974	KC604002	KF674366	KC604070
Adenomera sp. P	---	---	AJC2390	lutzi	Colombia	Comunidad Trubón, rio Vaupes, Vaupe	1.21000	-70.61917	KF675036	KF674727	KF674411	KF674095
Adenomera glauciae	---	MCP13880	---	lutzi	Brazil	ESEC Juami-Japura	1.96455	67.93579	---	MT956677	---	---
Adenomera sp. Q	---	---	AJC2490	heyeri	Colombia	Guainia department, Laguna Pavon, ca	---	---	KF675037	KF674728	KF674412	KF674096

Adenomera gridipappi 1	---	---	PMJ154	heyeri	Brazil	Mato Grosso state, Colniza	-8.85111	-59.43306	KF675028	KF674719	KF674403	KF674087
Adenomera gridipappi 2	---	---	MTR12832	heyeri	Brazil	Amazonas state, Sao Sebastiao, Rio A	---	---	KF675026	KF674717	---	---
Adenomera tapajonica	---	INPA-H 40515	---	heyeri	Brazil	Rio Tapajós, Margem esquerda, Itaitub	-4.67383	-56.44672	---	MN866436	---	---
Adenomera sp.	---	---	MTR12711	heyeri	Brazil	Amazonas state, Igarapé Açu, Rio Ab	-4.34417	-58.63500	KF675024	KF674715	KF674399	KF674083
Adenomera aurantiaca	---	INPA-H 40518	---	heyeri	Brazil	Rio Tapajós, Margem direita, Trairão,	-5.07003	-56.39433	---	MN866439	---	---
Adenomera inopinata	---	INPA-H 40517	---	heyeri	Brazil	Rio Tapajós, Margem direita, Itaituba,	-5.24018	-56.91538	---	MN866438	---	---
Adenomera kayapo 1	---	---	TG3259	heyeri	Brazil	Pará state, FLONA Carajás	-2.92134	-51.84454	KF675015	KF674706	KF674390	KF674074
Adenomera kayapo 2	---	MPEG 41619	---	heyeri	Brazil	FLONA Carajás, Paraupebas, Pará, B	-6.07624	-50.07445	---	MT162535	---	---
Adenomera phonotriccus	---	---	PV2412	heyeri	Brazil	Amazonas state, FLVII, Marabá, esqu	-5.68898	-48.92738	KF675020	KF674711	KF674395	KF674079
Adenomera amicorum 2	---	---	BM023	heyeri	Brazil	Pará state, UHE Belo Monte, Vitória d	-2.92933	-51.94965	KF675022	KF674713	KF674397	KF674081
Adenomera cotuba 1	---	---	AF970	heyeri	Brazil	Tocantins state, Palmas	-10.15592	-48.33241	KF675031	KF674722	KF674406	KF674090
Adenomera cotuba 2	---	CHUNB46027	---	heyeri	Brazil	Tocantins state, Caseara	-9.25915	-49.95220	KF675030	KF674721	KF674405	KF674089
Adenomera juikitam 3	---	---	AF1098	heyeri	Brazil	Tocantins state, Babaçulândia	-7.20472	-47.75694	KF675040	KF674731	KF674415	KF674099
Adenomera juikitam 2	---	---	MRT7494	heyeri	Brazil	Tocantins state, Guaraí	-8.83417	-48.51028	KF675039	KF674730	KF674414	KF674098
Adenomera juikitam 1	---	AAG-UFU 2663	---	heyeri	Brazil	Serra do Lajeado, Palmas, Tocantins, I	-10.19032	-48.22158	---	MT162521	---	---
Lythodites lineatus	---	---	55MC	outgroup	Brazil	Amapa, Laranjal do Jari	---	---	Q321833 (1	C604003 (1	(1)	C604060 (1
Leptodactylus longirostris	---	---	531AF	outgroup	---	---	---	---	KC603975	KC603988	KC604031	KC604050
Hydrolaetare caparu	---	---	H109	outgroup	---	---	---	---	C603978 (1	C603991 (1	C604028 (1	C604057 (1

Appendix S3. Matrix of genetic pairwise distances (uncorrected p-distances) of the COI gene among the lineages of the *Adenomera simonstuarti* complex.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1																															
2	0.130																														
3	0.142	0.070																													
4	0.150	0.061	0.017																												
5	0.150	0.061	0.017	0.000																											
6	0.150	0.061	0.017	0.000	0.000																										
7	0.150	0.064	0.021	0.010	0.010	0.010																									
8	0.155	0.068	0.021	0.007	0.007	0.007	0.007																								
9	0.145	0.077	0.056	0.062	0.062	0.062	0.057	0.066																							
10	0.142	0.075	0.056	0.060	0.060	0.060	0.057	0.064	0.009																						
11	0.140	0.070	0.051	0.055	0.055	0.055	0.051	0.058	0.009	0.005																					
12	0.130	0.080	0.066	0.066	0.066	0.066	0.062	0.066	0.060	0.056	0.051																				
13	0.128	0.077	0.064	0.064	0.064	0.064	0.060	0.064	0.060	0.063	0.058	0.025																			
14	0.132	0.068	0.059	0.057	0.057	0.057	0.053	0.057	0.058	0.061	0.056	0.023	0.023																		
15	0.133	0.072	0.058	0.055	0.055	0.055	0.051	0.055	0.060	0.060	0.054	0.018	0.021	0.016																	
16	0.127	0.066	0.059	0.055	0.055	0.055	0.055	0.055	0.058	0.058	0.053	0.023	0.020	0.019	0.019																
17	0.121	0.068	0.059	0.057	0.057	0.057	0.053	0.057	0.050	0.051	0.049	0.020	0.014	0.022	0.019	0.012															
18	0.132	0.070	0.058	0.055	0.055	0.055	0.051	0.055	0.054	0.053	0.048	0.015	0.012	0.011	0.013	0.014	0.011														
19	0.136	0.075	0.063	0.060	0.060	0.060	0.057	0.060	0.056	0.058	0.053	0.017	0.014	0.015	0.016	0.015	0.012	0.005													
20	0.131	0.073	0.055	0.053	0.053	0.053	0.049	0.053	0.058	0.053	0.049	0.022	0.015	0.016	0.015	0.015	0.013	0.010	0.013												
21	0.129	0.072	0.055	0.053	0.053	0.053	0.049	0.053	0.058	0.056	0.051	0.021	0.014	0.016	0.013	0.013	0.013	0.010	0.013	0.002											
22	0.129	0.072	0.055	0.053	0.053	0.053	0.049	0.053	0.058	0.056	0.051	0.021	0.014	0.016	0.013	0.013	0.013	0.010	0.013	0.002	0.000										
23	0.127	0.073	0.055	0.053	0.053	0.053	0.049	0.053	0.058	0.055	0.049	0.019	0.013	0.016	0.013	0.013	0.011	0.008	0.011	0.002	0.000	0.000									
24	0.132	0.077	0.061	0.058	0.058	0.058	0.055	0.058	0.060	0.063	0.058	0.025	0.022	0.020	0.016	0.017	0.017	0.015	0.017	0.015	0.013	0.013	0.013								
25	0.125	0.069	0.051	0.047	0.047	0.047	0.044	0.047	0.052	0.053	0.048	0.018	0.014	0.013	0.010	0.010	0.010	0.006	0.010	0.008	0.006	0.006	0.006	0.006							
26	0.125	0.069	0.051	0.047	0.047	0.047	0.044	0.047	0.052	0.053	0.048	0.018	0.014	0.013	0.010	0.010	0.010	0.006	0.010	0.008	0.006	0.006	0.006	0.006	0.000						
27	0.130	0.073	0.052	0.059	0.059	0.059	0.051	0.059	0.059	0.052	0.048	0.038	0.040	0.038	0.040	0.034	0.030	0.030	0.032	0.034	0.034	0.034	0.034	0.036	0.028	0.028					
28	0.130	0.073	0.052	0.059	0.059	0.059	0.051	0.059	0.059	0.052	0.048	0.038	0.040	0.038	0.040	0.034	0.030	0.030	0.032	0.034	0.034	0.034	0.034	0.036	0.028	0.028	0.000				
29	0.130	0.073	0.052	0.059	0.059	0.059	0.051	0.059	0.059	0.052	0.048	0.038	0.040	0.038	0.040	0.034	0.030	0.030	0.032	0.034	0.034	0.034	0.034	0.036	0.028	0.028	0.000	0.000			
30	0.130	0.073	0.052	0.059	0.059	0.059	0.051	0.059	0.059	0.052	0.048	0.038	0.040	0.038	0.040	0.034	0.030	0.030	0.032	0.034	0.034	0.034	0.034	0.036	0.028	0.028	0.000	0.000	0.000		
31	0.140	0.076	0.062	0.062	0.062	0.062	0.054	0.062	0.060	0.055	0.051	0.043	0.038	0.036	0.038	0.032	0.028	0.028	0.030	0.032	0.032	0.032	0.032	0.034	0.026	0.026	0.027	0.027	0.027	0.027	
32	0.140	0.076	0.062	0.062	0.062	0.062	0.054	0.062	0.060	0.055	0.051	0.043	0.038	0.036	0.038	0.032	0.028	0.028	0.030	0.032	0.032	0.032	0.032	0.034	0.026	0.026	0.027	0.027	0.027	0.027	0.000
33	0.140	0.076	0.062	0.062	0.062	0.062	0.054	0.062	0.060	0.055	0.051	0.043	0.038	0.036	0.038	0.032	0.028	0.028	0.030	0.032	0.032	0.032	0.032	0.034	0.026	0.026	0.027	0.027	0.027	0.027	0.000
34	0.134	0.073	0.061	0.066	0.066	0.066	0.058	0.066	0.056	0.053	0.048	0.038	0.038	0.043	0.041	0.033	0.030	0.031	0.033	0.033	0.034	0.034	0.032	0.038	0.031	0.031	0.025	0.025	0.025	0.025	0.005
35	0.136	0.087	0.062	0.070	0.070	0.070	0.070	0.074	0.072	0.061	0.057	0.050	0.053	0.048	0.050	0.042	0.044	0.041	0.042	0.048	0.046	0.046	0.046	0.049	0.042	0.042	0.036	0.036	0.036	0.036	0.043
36	0.135	0.078	0.063	0.068	0.068	0.068	0.068	0.072	0.058	0.050	0.046	0.046	0.050	0.044	0.046	0.043	0.041	0.037	0.039	0.044	0.043	0.043	0.043	0.046	0.039	0.039	0.034	0.034	0.034	0.034	0.038
37	0.135	0.078	0.063	0.068	0.068	0.068	0.068	0.072	0.058	0.050	0.046	0.046	0.050	0.044	0.046	0.043	0.041	0.037	0.039	0.044	0.043	0.043	0.043	0.046	0.039	0.039	0.034	0.034	0.034	0.034	0.038
38	0.135	0.078	0.063	0.068	0.068	0.068	0.068	0.072	0.058	0.050	0.046	0.046	0.050	0.044	0.046	0.043	0.041	0.037	0.039	0.044	0.043	0.043	0.043	0.046	0.039	0.039	0.034	0.034	0.034	0.034	0.038
39	0.137	0.076	0.061	0.066	0.066	0.066	0.066	0.070	0.056	0.048	0.044	0.044	0.048	0.043	0.044	0.041	0.039	0.036	0.037	0.043	0.041	0.041	0.041	0.044	0.037	0.037	0.032	0.032	0.032	0.032	0.036
40	0.142	0.077	0.075	0.068	0.068	0.068	0.068	0.068	0.058	0.053	0.051	0.061	0.058	0.066	0.065	0.056	0.053	0.054	0.056	0.062	0.061	0.061	0.060	0.064	0.058	0.058	0.062	0.062	0.062	0.062	0.074
41	0.142	0.077	0.075	0.068	0.068	0.068	0.068	0.068	0.058	0.053	0.051	0.061	0.058	0.066	0.065	0.056	0.053	0.054	0.056	0.062	0.061	0.061	0.060	0.064	0.058	0.058	0.062	0.062	0.062	0.062	0.074
42	0.139	0.061	0.060	0.053	0.053	0.053	0.053	0.057	0.060	0.058	0.053	0.061	0.060	0.047	0.049	0.049	0.053	0.049	0.054	0.047	0.048	0.047	0.048	0.049	0.042	0.042	0.059	0.059	0.059	0.059	0.062
43	0.135	0.062	0.058	0.053	0.053	0.053	0.053	0.057	0.060	0.056	0.051	0.060	0.060	0.051	0.050	0.048	0.051	0.050	0.055	0.046	0.046	0.046	0.046	0.050	0.043	0.043	0.059	0.059	0.059	0.059	0.062
44	0.127	0.060	0.055	0.050	0.050	0.050	0.050	0.053	0.058	0.051	0.046	0.051	0.051	0.048	0.048	0.041	0.043	0.043	0.046	0.044	0.045	0.044	0.045	0.044	0.041	0.041	0.056	0.056	0.056	0.056	0.060
45	0.128	0.060	0.055	0.050	0.050	0.050	0.050	0.054	0.058	0.051	0.046	0.051	0.051	0.048	0.048	0.041	0.043	0.043	0.046	0.044	0.045	0.045	0.045	0.044	0.041	0.041	0.056	0.056	0.056	0.056	0.060
46	0.132	0.062	0.057	0.051	0.051	0.051	0.051	0.055	0.058	0.055	0.050	0.055	0.055	0.050	0.050	0.043	0.046	0.046	0.050	0.044	0.046	0.046	0.046	0.046	0.043	0.043	0.056	0.056	0.056	0.056	0.060
47	0.143	0.068	0.061	0.052	0.052	0.052	0.052	0.056	0.059	0.052	0.048	0.052	0.048	0.048	0.044	0.039	0.039	0.039	0.042	0.042	0.042	0.042	0.042	0.042	0.037	0.037	0.055	0.055	0.055	0.055	0.057
48	0.146	0.080	0.080	0.076	0.076	0.076	0.072	0.079	0.062	0.063	0.057	0.070	0.063	0.072	0.067	0.063	0.059	0.061	0.062	0.063	0.065	0.065	0.063	0.063	0.059	0.059	0.060	0.060	0.060	0.060	0.056
49	0.144	0.078	0.078	0.074	0.074	0.074	0.070	0.077	0.060	0.061	0.055	0.068	0.061	0.070	0.065	0.061	0.057	0.059	0.061	0.061	0.063	0.063	0.061	0.061	0.057	0.057	0.058	0.058	0.058	0.058	0.054
50	0.144	0.078	0.078	0.074	0.074	0.074	0.070	0.077	0.060	0.061	0.055	0.068	0.061	0.070	0.065	0.061	0.057	0.059	0.061	0.061	0.063	0.063	0.061	0.061	0.057	0.057	0.058	0.058	0.058	0.058	0.054
51	0.146	0.079	0.078	0.074	0.074	0.074	0.070	0.078	0.061	0.060	0.054	0.066	0.058	0.068	0.063	0.058	0.054	0.056	0.058	0.057	0.059	0.059	0.057	0.058	0.055	0.055	0.055	0.055	0.055	0.055	0.051
52	0.144	0.078	0.078	0.074	0.074	0.074	0.070	0.077	0.060	0.061	0.055	0.068	0.061	0.070	0.065	0.061	0.057	0.059	0.061	0.061	0.063	0.063	0.061	0.061	0.057	0.057	0.058	0.058	0.058	0.058	0.054
53	0.137	0.077	0.073	0.071	0.071	0.071	0.067	0.075	0.068	0.060	0.056	0.067	0.064	0.065	0.064	0.060	0.058	0.058	0.062	0.062	0.060	0.060	0.060	0.060	0.056	0.056	0.061	0.061	0.061	0.061	0.064
54	0.145	0.084	0.084	0.082	0.082	0.082	0.078	0.086	0.068	0.065	0.060	0.074	0.069	0.074	0.068	0.069	0.065	0.063	0.067	0.064	0.066	0.066	0.064	0.067	0.060	0.060	0.065	0.065	0.065	0.065	0.068
55	0.139	0.074	0.070	0.070	0.070	0.070	0.066	0.075	0.062	0.057	0.054	0.072	0.068	0.070	0.068	0.065	0.063	0.063	0.065	0.067	0.065	0.065	0.065	0.065	0.061	0.061	0.059	0.059	0.059	0.059	0.062
56	0.137	0.072	0.068	0.070	0.070	0.070	0.066	0.075	0.062	0.056	0.052	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.059	0.059	0.059	0.059	0.062
57	0.137	0.072	0.068	0.070	0.070	0.070	0.066	0.075	0.062	0.056	0.052	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.059	0.059	0.059	0.059	0.062
58	0.139	0.076	0.072	0.070	0.070	0.070	0.066	0.075	0.066	0.059	0.055	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.063	0.063	0.063	0.063	0.066
59	0.139	0.076	0.072	0.070	0.070	0.070	0.066	0.075	0.066	0.059	0.055	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.063	0.063	0.063	0.063	0.066
60	0.139	0.076	0.072	0.070	0.070	0.070	0.066	0.075	0.066	0.059	0.055	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.063	0.063	0.063	0.063	0.066
61	0.139	0.076	0.072	0.070	0.070	0.070	0.066	0.075	0.066	0.059	0.055	0.070	0.066	0.068	0.066	0.063	0.061	0.061	0.063	0.065	0.063	0.063	0.063	0.063	0.059	0.059	0.063	0.063	0.063	0.063	0.066
62	0.139	0.074	0.070	0.068	0.068	0.068	0.064	0.072	0.064	0.057	0.054	0.068	0.065	0.066	0.065	0.061	0.059	0.059	0.061	0.063	0.061	0.061	0.061	0.061	0.057	0.057	0.061	0.061	0.061	0.061	0.064
63	0.139	0.074	0.070	0.068	0.068	0.068	0.064	0.072	0.064	0.057	0.054	0.068	0.065	0.066	0.065	0.061	0.059	0.059	0.061	0.063	0.061	0.061	0.061	0.061	0.057	0.057	0.061	0.061	0.061	0.061	0.064
64	0.139	0.074	0.070	0.068	0.068	0.068	0.064	0.072	0.064	0.057	0.054	0.068	0.065	0.066	0.065	0.061	0.059	0.059	0.061	0.063	0.061	0.061	0.061	0.061	0.057	0.057	0.061	0.061	0.061	0.061	0.064
65	0.139	0.074	0.070	0.068	0.068	0.068	0.064	0.072	0.064	0.057	0.054	0.068	0.065	0.066	0.065	0.061	0.059	0.059	0.061	0.063	0.061	0.061	0.061	0.061	0.057	0.057	0.061	0.061	0.061	0.061	0.064
66	0.141	0.068	0.068	0.060	0.060	0.060	0.057	0.060	0.058	0.061	0.055	0.062	0.055	0.055	0.053	0.049	0.051	0.049	0.055	0.053	0.051	0.051	0.052	0.057	0.046	0.046	0.061	0.061	0.061	0.061	0.058
67	0.139	0.074	0.066	0.062	0.062	0.062	0.062	0.066	0.050	0.053	0.048	0.057	0.053	0.051	0.046	0.046	0.044	0.043	0.048	0.046	0.044	0.044	0.044	0.050	0.039	0.039	0.050	0.050	0.050	0.050	0.056
68	0.136	0.066	0.061	0.060	0.060	0.060	0.057	0.060	0.046	0.053	0.048	0.063	0.056	0.054	0.056	0.051	0.051	0.053	0.058	0.053	0.053	0.053	0.053	0.059	0.049	0.049	0.062	0.062	0.062	0.062	0.065
69	0.138	0.068	0.063	0.062	0.062	0.062	0.058	0.062	0.046	0.054	0.049	0.065	0.058	0.056	0.058	0.053	0.053	0.054	0.059	0.053	0.055	0.055	0.055	0.061	0.051	0.051	0.062	0.062	0.062	0.062	0.065
70	0.138	0.068	0.063	0.062	0.062	0.062	0.058	0.062	0.046	0.054	0.049	0.065	0.058	0.056	0.058	0.053	0.053	0.054	0.059	0.053	0.055	0.055	0.055	0.061	0.051	0.051	0.062	0.062	0.062	0.062	0.065

Continuation.

32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
0.000																																					
0.005	0.005																																				
0.043	0.043	0.039																																			
0.038	0.038	0.036	0.034																																		
0.038	0.038	0.036	0.034	0.000																																	
0.038	0.038	0.036	0.034	0.000	0.000																																
0.036	0.036	0.034	0.032	0.002	0.002	0.002																															
0.074	0.074	0.061	0.066	0.066	0.066	0.066	0.064																														
0.074	0.074	0.061	0.066	0.066	0.066	0.066	0.064	0.000																													
0.062	0.062	0.061	0.059	0.057	0.057	0.057	0.055	0.056	0.056																												
0.062	0.062	0.060	0.057	0.057	0.057	0.057	0.055	0.056	0.056	0.003																											
0.060	0.060	0.051	0.055	0.055	0.055	0.055	0.054	0.048	0.048	0.002	0.002																										
0.060	0.060	0.051	0.055	0.055	0.055	0.055	0.054	0.048	0.048	0.002	0.002	0.000																									
0.060	0.060	0.055	0.055	0.055	0.055	0.055	0.054	0.051	0.051	0.003	0.003	0.002	0.002																								
0.057	0.057	0.052	0.061	0.059	0.059	0.059	0.057	0.057	0.057	0.002	0.002	0.000	0.000	0.000																							
0.056	0.056	0.055	0.066	0.068	0.068	0.068	0.066	0.051	0.051	0.057	0.057	0.048	0.048	0.052	0.045																						
0.054	0.054	0.053	0.064	0.066	0.066	0.066	0.064	0.049	0.049	0.059	0.059	0.050	0.050	0.054	0.048	0.002																					
0.054	0.054	0.053	0.064	0.066	0.066	0.066	0.064	0.049	0.049	0.059	0.059	0.050	0.050	0.054	0.048	0.002	0.000																				
0.051	0.051	0.050	0.062	0.064	0.064	0.064	0.062	0.048	0.048	0.056	0.057	0.047	0.047	0.051	0.044	0.002	0.000	0.000																			
0.054	0.054	0.053	0.064	0.066	0.066	0.066	0.064	0.049	0.049	0.059	0.059	0.050	0.050	0.054	0.048	0.002	0.000	0.000	0.000																		
0.064	0.064	0.056	0.064	0.061	0.061	0.061	0.059	0.056	0.056	0.051	0.051	0.049	0.049	0.049	0.055	0.017	0.015	0.015	0.014	0.015																	
0.068	0.068	0.065	0.071	0.065	0.065	0.065	0.063	0.060	0.060	0.064	0.062	0.053	0.053	0.057	0.055	0.019	0.017	0.017	0.016	0.017	0.007																
0.062	0.062	0.055	0.068	0.061	0.061	0.061	0.059	0.057	0.057	0.050	0.052	0.050	0.050	0.050	0.053	0.015	0.013	0.013	0.012	0.013	0.007	0.005															
0.062	0.062	0.054	0.067	0.059	0.059	0.059	0.057	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.005	0.002														
0.062	0.062	0.054	0.067	0.059	0.059	0.059	0.057	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.005	0.002	0.000													
0.066	0.066	0.057	0.067	0.063	0.063	0.063	0.061	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.002	0.005	0.003	0.003												
0.066	0.066	0.057	0.067	0.063	0.063	0.063	0.061	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.002	0.005	0.003	0.003	0.000											
0.066	0.066	0.057	0.067	0.063	0.063	0.063	0.061	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.002	0.005	0.003	0.003	0.000	0.000										
0.066	0.066	0.057	0.067	0.063	0.063	0.063	0.061	0.055	0.055	0.050	0.050	0.048	0.048	0.048	0.053	0.015	0.013	0.013	0.012	0.013	0.005	0.002	0.005	0.003	0.003	0.000	0.000	0.000									
0.064	0.064	0.055	0.065	0.061	0.061	0.061	0.059	0.054	0.054	0.048	0.048	0.047	0.047	0.047	0.050	0.013	0.011	0.011	0.010	0.011	0.003	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002								
0.064	0.064	0.055	0.065	0.061	0.061	0.061	0.059	0.054	0.054	0.048	0.048	0.047	0.047	0.047	0.050	0.013	0.011	0.011	0.010	0.011	0.003	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.000							
0.064	0.064	0.055	0.065	0.061	0.061	0.061	0.059	0.054	0.054	0.048	0.048	0.047	0.047	0.047	0.050	0.013	0.011	0.011	0.010	0.011	0.003	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000						
0.064	0.064	0.055	0.065	0.061	0.061	0.061	0.059	0.054	0.054	0.048	0.048	0.047	0.047	0.047	0.050	0.013	0.011	0.011	0.010	0.011	0.003	0.004	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.000	0.000	0.000					
0.058	0.058	0.059	0.066	0.064	0.064	0.064	0.062	0.038	0.038	0.048	0.048	0.044	0.044	0.046	0.043	0.049	0.048	0.048	0.048	0.048	0.049	0.057	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.046	0.046	0.046	0.046				
0.056	0.056	0.055	0.058	0.056	0.056	0.056	0.054	0.041	0.041	0.041	0.041	0.037	0.037	0.039	0.039	0.046	0.044	0.044	0.045	0.044	0.040	0.048	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.037	0.037	0.037	0.037	0.031			
0.065	0.065	0.061	0.060	0.061	0.061	0.061	0.059	0.041	0.041	0.044	0.043	0.039	0.039	0.041	0.048	0.048	0.046	0.046	0.046	0.046	0.039	0.049	0.039	0.038	0.038	0.038	0.038	0.038	0.038	0.036	0.036	0.036	0.036	0.026	0.015		
0.065	0.065	0.063	0.062	0.062	0.062	0.062	0.061	0.043	0.043	0.046	0.045	0.041	0.041	0.043	0.048	0.050	0.048	0.048	0.048	0.048	0.040	0.051	0.041	0.039	0.039	0.039	0.039	0.039	0.039	0.038	0.038	0.038	0.038	0.028	0.017	0.002	
0.065	0.065	0.063	0.062	0.062	0.062	0.062	0.061	0.043	0.043	0.046	0.045	0.041	0.041	0.043	0.048	0.050	0.048	0.048	0.048	0.048	0.040	0.051	0.041	0.039	0.039	0.039	0.039	0.039	0.039	0.038	0.038	0.038	0.038	0.028	0.017	0.002	0.000

Table. Estimates of Evolutionary Divergence between Sequences

The number of base substitutions per site from between sequences are shown. Analyses were conducted using the Maximum Composite Likelihood model [1]. This analysis involved 70 nucleotide sequences. Codon positions included were 1st+2nd+3rd+Noncoding. All ambiguous positions were removed for each sequence pair (pairwise deletion option). There were a total of 658 positions in the final dataset. Evolutionary analyses were conducted in MEGA X [2]

1. Tamura K., Nei M., and Kumar S. (2004). Prospects for inferring very large phylogenies by using the neighbor-joining method. Proceedings of the National Academy of Sciences (USA) 101:11030-11035.

2. Kumar S., Stecher G., Li M., Knyaz C., and Tamura K. (2018). MEGA X: Molecular Evolutionary Genetics Analysis across computing platforms. Molecular Biology and Evolution 35:1547-1549.

Specie	Codigo
SIMONSTUARTI11_MCP13875	1
simonstuarti8_APL13097	2
simonstuarti6_MHNC10058	3
Adenomera_sp2_MHUAA13949	4
Adenomera_sp2_MHUAA13951	5
Adenomera_sp2_MHUAA13957	6
Adenomera_sp2_MHUAA13950	7
Adenomera_sp3_MHUAA13972	8
simonstuarti3_INPAH40967	9
simonstuarti3_MNCN23203	10
simonstuarti3_ZSM748	11
simonstuarti1_LSU13787	12
SIMONSTUARTI1_QCAZA74932	13
simonstuarti1_AJC2777	14
SIMONSTUARTI1_TRC333	15
simonstuarti1_MHNC10092	16
simonstuarti1_PEP515	17
SIMONSTUARTI1_QCAZA51254	18
SIMONSTUARTI1_QCAZA55844	19
SIMONSTUARTI1_TRC280	20
SIMONSTUARTI1_TRC302	21
SIMONSTUARTI1_TRC303	22
SIMONSTUARTI1_TRC335	23
simonstuarti1_QU2965	24
SIMONSTUARTI1_TRC341	25
SIMONSTUARTI1_TRC342	26
albarena_INPAH44867	27
albarena_INPAH44868	28
albarena_INPAH44871	29
albarena_INPAH44872	30
simonstuarti2_INPAH39792	31
simonstuarti2_INPAH39796	32
simonstuarti2_INPAH39814	33
simonstuarti2_QU5337	34
SIMONSTUARTI10_MTR36860	35
SIMONSTUARTI10_MCP13878	36
SIMONSTUARTI10_MCP13901	37
SIMONSTUARTI10_MCP13902	38
SIMONSTUARTI10_MCP13895	39
simonstuarti4_LSU12840	40
simonstuarti4_MHNC6302	41
simonstuarti7_EJRA1002	42
simonstuarti7_EJRA1003	43
SIMONSTUARTI7_GGU7515	44
SIMONSTUARTI7_GGU7044	45
SIMONSTUARTI7_GGU7555	46
simonstuarti7_MNCN27344	47
Adenomera_sp1_MHUAA13963	48
Adenomera_sp1_MHUAA13954	49
Adenomera_sp1_MHUAA13955	50
Adenomera_sp1_MHUAA13956	51
Adenomera_sp1_MHUAA13962	52
SIMONSTUARTI11_CZPBAA1527	53
SIMONSTUARTI11_MCP13766	54
SIMONSTUARTI11_MCP13898	55
SIMONSTUARTI11_MCP13879	56
SIMONSTUARTI11_MCP13892	57
SIMONSTUARTI11_MCP13767	58
SIMONSTUARTI11_MCP13896	59
SIMONSTUARTI11_MCP13903	60
SIMONSTUARTI11_MCP13905	61
SIMONSTUARTI11_MCP13899	62
SIMONSTUARTI11_MCP13904	63
SIMONSTUARTI11_MCP13906	64
SIMONSTUARTI11_MCP13909	65
Adenomera_sp5_AMS396	66
simonstuarti5_CB5696	67
SIMONSTUARTI5_AJC4091	68
SIMONSTUARTI5_AJC4093	69
SIMONSTUARTI5_AJC4094	70