



A new (singleton) rainfrog of the *Pristimantis myersi* Group (Amphibia: Craugastoridae) from the northern Andes of Ecuador

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Abstract

Reserva Las Galarías is one of the best-studied localities of the Ecuadorian Andes in terms of its batrachofauna. However, as expected in any community, some species are rare and, therefore, their discovery and description are problematic. Herein, based on a single specimen, we describe *Pristimantis gralarias* **sp nov.** Even though we are aware of the problems associated to singleton species (i.e., unknown intraspecific variation, limited ecological information), our efforts to finding additional specimens have been unsuccessful. Thus, given the importance of species descriptions in threatened areas (e.g. Andes), and that the new taxon is supported by both morphological and genetic data, we consider that the description is justified. *Pristimantis gralarias* sp nov is easily distinguished from all other members of the *P. myersi* group by its long and slender fingers and toes, with discs that are not expanded laterally (or are only slightly expanded). Furthermore, the new species is characterized by having a black venter with minute white spots and a red groin. A molecular phylogeny corroborates the placement of the new species in the *P. myersi* group and its distinctiveness in relation to other species. Finally, we discuss on the limitations and advantages associated to species descriptions based on one or few specimens.

Key words: Amphibia, cloud forest, Taxonomy, Terrarana

Resumen

En los Andes del Ecuador, La Reserva Las Galarías es una de las localidades mejor estudiada en cuanto a su batrachofauna. Sin embargo, como se espera en cualquier comunidad, algunas especies son raras y, por lo tanto, su descripción e identificación resulta problemática. En este estudio, basados en un único espécimen, describimos a *Pristimantis gralarias* sp nov. Aunque sabemos de las limitaciones asociadas a la descripción de especies “singleton” (i.e., variación intraespecífica desconocida, información ecológica limitada), nuestros esfuerzos por encontrar especímenes adicionales han sido infructuosos. Dada la importancia de documentar la diversidad en áreas amenazadas (e.g. Andes), y resaltando que los datos morfológicos y genéticos sustentan la validez del nuevo taxón, consideramos que la descripción está justificada. *Pristimantis gralarias* sp nov se diferencia de otras especies del grupo *P. myersi* por tener los dedos manuales y pediales largos y delgados, con discos que no se expanden lateralmente (o con una expansión lateral muy leve). Adicionalmente, la nueva especie tiene un vientre negro con puntos blancos muy pequeños y una ingle roja. Estudios filogenéticos confirman la ubicación de la nueva especie en el grupo *P. myersi* y su diferenciación de otras especies. Finalmente, se discuten las limitaciones y beneficios asociados a las descripciones de especies nuevas basadas en uno o pocos especímenes.

Palabras claves: Amphibia, bosque nublado, Taxonomy, Terrarana

Introduction

Rainfrogs (genus *Pristimantis*) represent the largest radiation of terrestrial vertebrates, with 526 described species (Frost 2018). In Andean cloud forests, species richness for amphibians is higher relative to other regions (Hutter *et al.* 2017), and Andean amphibian communities are usually dominated, in richness and abundance, by *Pristimantis* species (Duellman & Burrowes 1989; Lynch & Duellman 1997; Guayasamin & Funk 2009; Arteaga *et al.* 2013). Recently, most of the taxonomic descriptions in Andean anurans have been concentrated in this genus (e.g., Sánchez *et al.* 2018; Guayasamin *et al.* 2017; Valencia *et al.* 2017).

TABLE 1. Amphibian species documented at Reserva Las Gralarias, Pichincha province, Ecuador.

Species	Source
Centrolenidae	
<i>Centrolene ballux</i>	Hutter & Guayasamin (2012)
<i>Centrolene heloderma</i>	Hutter & Guayasamin (2012)
<i>Centrolene lynchi</i>	Hutter & Guayasamin (2012)
<i>Centrolene peristictum</i>	Hutter & Guayasamin (2012)
<i>Nymphargus grandisonae</i>	Hutter & Guayasamin (2012)
<i>Nymphargus griffithsi</i>	Hutter & Guayasamin (2012)
<i>Nymphargus lasgralarias</i>	Hutter & Guayasamin (2012)
Craugastoridae	
<i>Pristimantis achatinus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis appendiculatus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis calcarulatus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis crenunguis</i>	Arteaga <i>et al.</i> (2013)
<i>Pristimantis eremitus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis eugeniae</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis gralarias</i> sp. nov.	This study
<i>Pristimantis hectus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis illotus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis laticlavus</i>	Arteaga <i>et al.</i> (2013)
<i>Pristimantis mutabilis</i>	Guayasamin <i>et al.</i> (2015)
<i>Pristimantis pahuja</i>	Hutter & Guayasamin (2015)
<i>Pristimantis parvillus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis pteridophilus</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis sobetes</i>	Guayasamin <i>et al.</i> (2014)
<i>Pristimantis w-nigrum</i>	Guayasamin <i>et al.</i> (2014)
Hylidae	
<i>Dendropsophus carnifex</i>	Guayasamin <i>et al.</i> (2014)
<i>Hyloscirtus alytolylax</i>	Guayasamin <i>et al.</i> (2014)
<i>Hyloscirtus criptico</i>	Coloma <i>et al.</i> (2012)
Rhinatrematidae	
<i>Epicrionops bicolor</i>	Arteaga <i>et al.</i> (2013)

During recent years, we have conducted several studies aimed to document the diversity of amphibians in the northern Andes of Ecuador (e.g., Arteaga *et al.* 2013; Guayasamin *et al.* 2014; Hutter & Guayasamin 2012, 2015). Among the most sampled locality is Reserva Las Gralarias (see Hutter & Guayasamin 2012; Arteaga *et al.* 2013; Guayasamin *et al.* 2014), a private reserve located in northwestern Ecuador, with 27 amphibian species

documented (16 species of *Pristimantis*; Table 1). Currently, most of the *Pristimantis* species found at Reserva Las Gralarias have been identified; however, as expected, there are few individuals with uncertain taxonomic status. Herein, we describe one of these individuals, found in February 2012, as a new species. We take the formal action of describing the species even though we are aware of the problems associated to singleton descriptions (Castroviejo-Fisher *et al.* 2011; Lim *et al.* 2012; see Discussion). The new species, *Pristimantis gralarias* sp nov, which is placed in the *Pristimantis myersi* Group, is supported by morphological and genetic data.

Methods

Ethics statement. This study was carried out in strict accordance with the guidelines for use of live amphibians and reptiles in field research compiled by the American Society of Ichthyologists and Herpetologists (ASIH), The Herpetologists' League (HL) and the Society for the Study of Amphibians and Reptiles (SSAR). Research permit was issued by the Ministerio de Ambiente del Ecuador (MAE-DNB-CM-2015-0017).

Nomenclature and Species Concept. For the family-level classification, we follow the taxonomy proposed by Padial *et al.* (2014). We use the genus *Pristimantis* Jiménez de la Espada, 1870, as defined by Heinicke *et al.* (2007). For a complete current list of the species in the genus *Pristimantis*, see Frost (2018) and AmphibiaWeb (2018). For *Pristimantis* species distributed in Ecuador, see Centro Jambatu (2011–2017). Following de Queiroz (2007) a species is understood as a segment of a metapopulation lineage that evolves separately from other lineages. Properties exclusive to a species are interpreted as providing evidence for its reality as a lineage.

Morphology. We examined alcohol-preserved specimens from the herpetology collections listed in Appendix I. To facilitate comparison, the description and diagnosis of the new species follows the format of Lynch & Duellman (1997). Fingers numbered from I–IV. Morphological measurements were taken with Mitutoyo® digital caliper to the nearest 0.1 mm, as described by Guayasamin (2004): (1) snout–vent length (SVL); (2) tibia length; (3) foot length; (4) head length; (5) head width; (6) eye-to-nostril distance; (7) tympanum diameter; (8) radioulna length; and (9) hand length. Female sexual maturity was determined by the presence of convoluted oviducts. Color patterns were compared using preserved specimens and photographic records.

Phylogenetics. We use the most recent and densely sampled phylogeny of the genus *Pristimantis* (Guayasamin *et al.* 2017), which includes mitochondrial sequences (GenBank codes) of the new species described below. Phylogenetic inference methods (Maximum Likelihood and Bayesian analyses) are detailed in Guayasamin *et al.* (2017).

Results

Systematics

Pristimantis gralarias sp. nov. Guayasamin, Arteaga & Hutter

Holotype: MZUTI 1466 (Figs. 1–3), adult female from TKA trail (0.0275° S, 78.70477° W; 2192 m), Reserva Las Gralarias, Pichincha province, Ecuador, collected on February 29th, 2012, by Italo Tapia and Henry Imba. Genbank accession numbers: MH306193, MH306194.

Diagnosis: *Pristimantis gralarias* is characterized by the following combination of characters: (1) skin on dorsum and flanks shagreen with numerous, scattered, low tubercles; venter areolate; discoidal fold absent; (2) tympanic membrane and tympanic annulus evident; (3) snout short, rounded in dorsal and lateral profiles; (4) upper eyelid with several low tubercles; (5) dentigerous process of the vomer present, bearing teeth; (6) male sexual traits (e.g., vocal slits, nuptial pads) unknown; (7) first finger shorter than second; (8) fingers with narrow lateral fringes; (9) low ulnar tubercles present; (10) heel and tarsus with small, non-conical tubercles; (11) inner metatarsal tubercle conspicuous, oval, 4–5x round outer metatarsal tubercle; (12) toes bearing narrow lateral fringes, webbing absent, discs not expanded laterally, fifth toe about same length as third; (13) in life, dorsum grayish brown, with black marks, flanks pale brown with an olive blotch and black marks, venter black with minute white spots, iris black with minute golden and silver spots; and (14) SVL in adult female 21.0 mm ($n = 1$), males unknown.

Comparison with similar species: *Pristimantis gralarias* **sp. nov.** is most similar to species placed in the phenetic *Pristimantis myersi* Group, which was initially defined by Lynch (1981) as the *Eleutherodactylus myersi* assembly. The new species shares the following diagnostic traits of the *myersi* Group (as defined by Hedges *et al.* 2008): small body size (females less than 28 mm), short snout, robust body, Finger I shorter than II, Toe V slightly longer than Toe III and does not extend to the proximal edge of the distal subarticular tubercle of Toe IV, digital discs narrow and rounded, tympanic membrane differentiated, cranial crests absent. Below we provide a comparison with species that form part of the *P. myersi* Group and that are found on the Pacific versant of the Andes; these species are: *P. floridus* (Lynch & Duellman 1997), *P. hectus* Lynch & Burrowes 1990, *P. leoni* Lynch 1976, *P. lucidosignatus* Rödder & Schimtz 2009, *P. munozi* Rojas-Runjaic, Delgado, Guayasamin 2014, *P. mutabilis* Guayasamin 2015, *P. onorei* Rödder & Schimtz 2009, *P. pyrrhomerus* Lynch 1976, and *P. sirnigeli* Yáñez-Muñoz, Meza-Ramos, Cisneros-Heredia & Reyes 2011. The most conspicuous trait that distinguishes *Pristimantis gralarias* **sp. nov.** from other species in the *P. myersi* Group is that the new species has fingers and toes that are slender and lack a distal lateral expansion; all the other species mentioned above (except *P. sirnigeli*) have some degree of distal lateral expansion (Figs. 2, 3). *Pristimantis gralarias* **sp. nov.** is further differentiated from *P. hectus*, *P. leoni*, *P. lucidosignatus*, *P. munozi*, *P. mutabilis*, *P. onorei*, *P. pyrrhomerus*, and *P. sirnigeli* by lacking a conical tubercle on the upper eyelid (Fig. 4). Furthermore, the closest uncorrected pair-wise genetic distance to *P. gralarias* is 6.5–6.7% from *P. myersi* and *P. ocreatus*. An unpublished thesis focusing on the *Pristimantis myersi* Group (Rojas-Runjaic 2012), which includes several other species of the *myersi* group (i.e., *P. gralarias* sp nov, *P. hectus*, *P. leoni*, *P. sirnigeli*) also supports the lineage differentiation between *P. gralarias* sp nov and all other sampled *Pristimantis*.

Description of holotype (Figs. 1–3): Adult female, with relatively robust body (Fig. 1). Skin of dorsum and flanks shagreen, with numerous scattered low tubercles; skin on venter areolate. Head slightly longer than wide (Head Length = 37% of SVL; Head Width = 35% of SVL). Snout rounded in dorsal and lateral views, with very small papilla at tip; *canthus rostralis* distinct, slightly concave; lips rounded, not flared. Black canthal stripe present. Nostrils slightly protuberant, directed laterally. Internarial region and top of head flat. Eye of moderate size, its diameter 13% of SVL. Tympanic membrane differentiated, but pigmented as surrounding skin; tympanum conspicuous, oval, diameter 5.7% of SVL. Supratympanic fold low, obscuring upper margin of tympanum; black supratympanic stripe present. Dentigerous processes of vomers conspicuous, having triangular shape, well-separated from each other; each process bears 3 (right) and 4 (left) teeth. Choanae of moderate size, elliptical, not concealed by palatal shelf of maxillary arch. Tongue large, cordiform, with its anterior third attached to the floor of mouth. Forearm with three low ulnar tubercles. Fingers slender; discs not expanded laterally, and with clearly defined circumferential groove; disc on Finger III narrower than tympanum diameter. Relative lengths of fingers I < II < IV < III. Fingers with narrow dermal fringes; webbing absent. Subarticular tubercles round, simple, moderate-sized. Supernumerary tubercles present, numerous, fleshy and small. Palmar tubercle well-differentiated, bifid distally. Inner metacarpal tubercle large, elliptical.

Hind limbs moderately robust; tibia length 49% SVL; foot length 47% SVL. Heel with small, non-conical tubercle; four low, non-conical tarsal tubercles present. Inner metatarsal tubercle ovoid, 4–5 times size of round outer metatarsal tubercle; planar surface with numerous small supernumerary tubercles; subarticular tubercles single, round, moderate-sized. Toes with narrow lateral fringes; toe discs not expanded laterally; pads with clearly defined circumferential groove. Relative length of toes I < II < III $\approx$ V < IV; toe webbing absent.

Color in life: Dorsum grayish brown, with black marks; flanks pale brown with an olive blotch and black marks; dark red groin. Lip with black stripes; black canthal and supratympanic stripes. Venter black with minute white spots; iris black with minute golden and silver spots and orange circumpupillary ring (Fig. 1).

Color in preservative: Dorsum and flanks grayish brown, with black marks; cream groin. Black canthal and supratympanic stripes. Venter dark brown, with minute cream spots.

Measurements of the holotype (in mm): MZUTI 1466, adult female. SVL 21.0; Femur length 9.6; Tibia length 10.3; Foot length 9.8; Head length 7.7; Head width 7.4; Snout-to-eye distance 1.7; Tympanum 1.2; Radioulna length 5.1; Hand length 5.4; Eye diameter 2.7; Interorbital distance 2.0; Finger I length 3.5; Finger II length 3.9; Finger III Disc Diameter 0.4; Toe IV length 9.9; Toe V length 6.4; Toe IV Disc Diameter 0.4.

Distribution: *Pristimantis gralarias* is only known from its type locality, Reserva Las Gralarias (0.0275° S, 78.70477° W; 2192 m; Fig. 5), Pichincha Province, Ecuador.

Natural History: During the night, the holotype was found on a leaf 90 cm above ground in a primary forest.

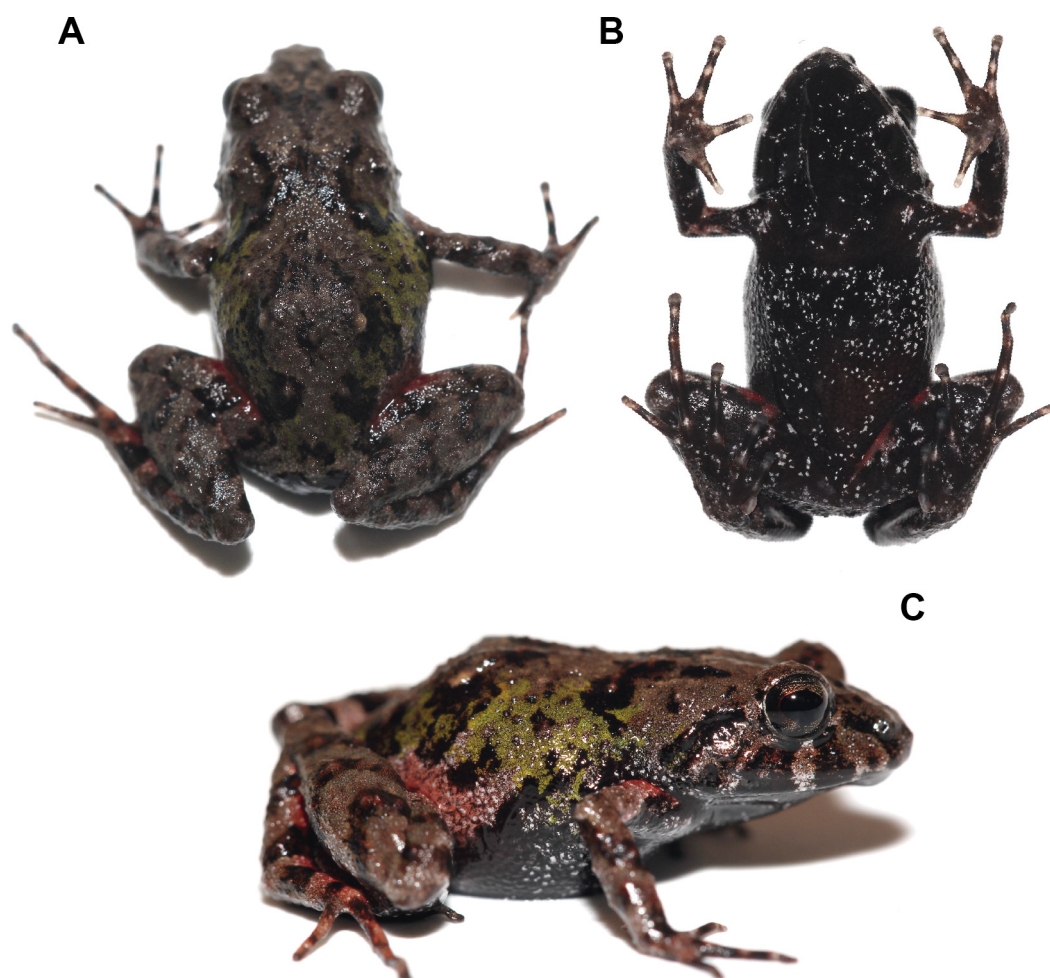


FIGURE 1. *Pristimantis gralarias* sp. nov. in life, holotype, MZUTI 1466.

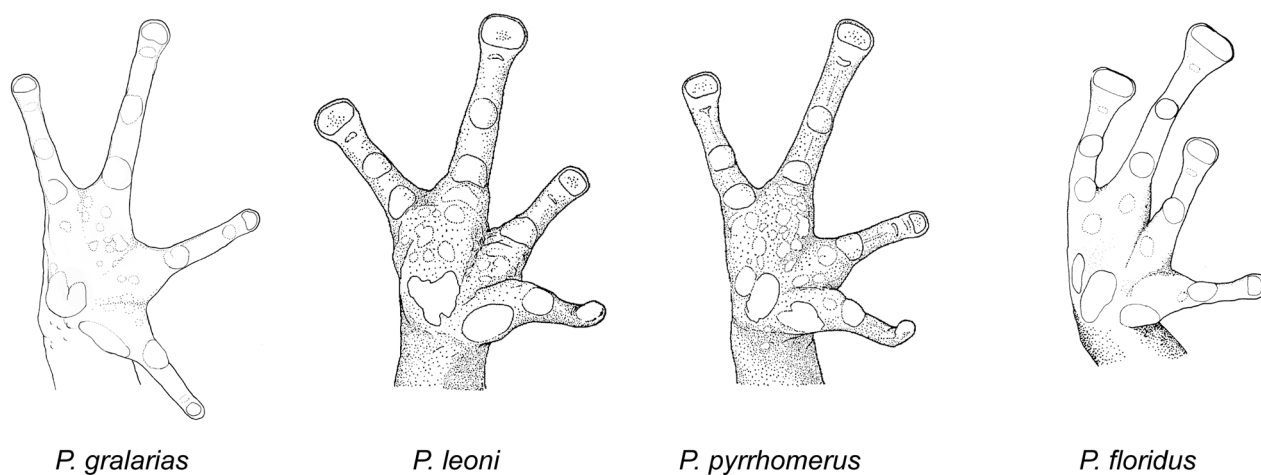


FIGURE 2. Hands of species in the *Pristimantis myersi* Group, showing differences in distal lateral expansion of fingers (absent in *P. gralarias*). Illustrated specimens: *P. gralarias* sp. nov. (MZUTI 1466), *P. leoni* (KU 130870, from Lynch 1976), *P. pyrrhomerus* (KU 131610, from Lynch 1976), *P. floridus* (USNM 239674, from Lynch & Duellman 1997). Not drawn to scale.

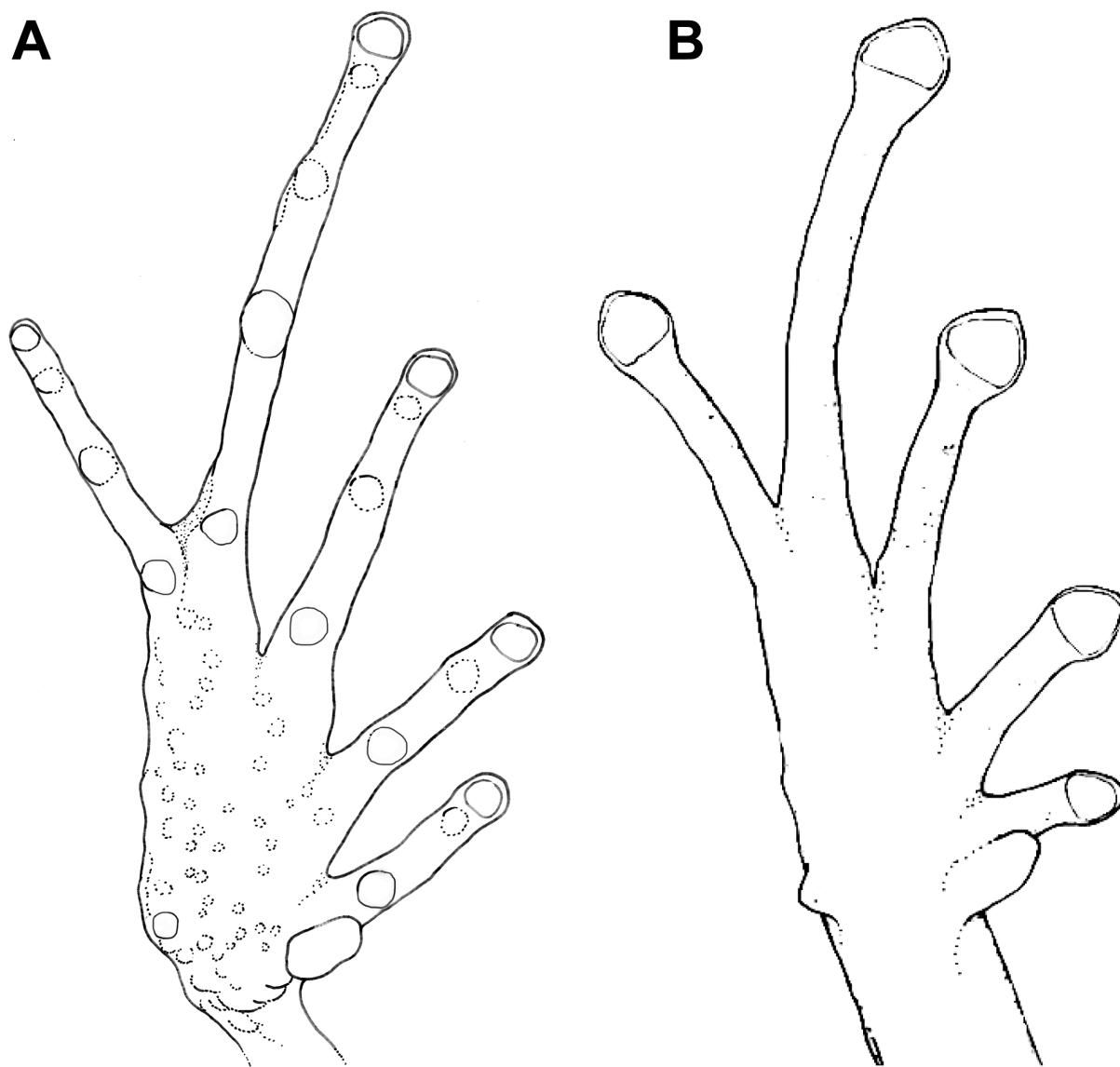


FIGURE 3. Plantar view of feet showing differences in distal lateral expansion of toes. **(A)** *Pristimantis gralarias* **sp. nov.** (MZUTI 1466), and **(B)** *P. hectus* (IND-AN 1941, from Lynch & Burrowes 1990). Not drawn to scale.

Conservation: *Pristimantis gralarias* is only known from its type locality, Reserva Las Gralarias (Fig. 1), Pichincha Province, Ecuador. Given that the cloud forests of northwestern Ecuador are relatively well-known in terms of *Pristimantis* diversity (see Lynch & Duellman, 1997; Arteaga *et al.* 2013) and that the new species is extremely rare at its type locality—despite intensive fieldwork (Guayasamin *et al.* 2014, 2015; Hutter & Guayasamin 2015)—we consider *Pristimantis gralarias* as Critically Endangered, following IUCN (2001) criteria B2a (known to exist from a single locality) and B2biii (continuing decline, observed, inferred or projected, in area, extent and/or quality of habitat; see Palacios-González *et al.* 2015).

Etymology: The specific epithet *gralarias* is a noun in apposition and refers to the type locality of the new species, Reserva Las Gralarias (<http://www.reservalasgralarias.com>). We take pleasure in dedicating this species to the reserve and the team of people, led by Dr. Jane Lyons, for efforts on the conservation and research of Ecuadorian cloud forests. As the English common name for this species, we suggest Gralarias Rainfrog. As the common name in Spanish, we suggest Cutín de Las Gralarias.

Evolutionary relationships: Phylogenetic inference shows that *Pristimantis gralarias* **sp. nov.** is part of a clade composed, mostly, by species from the *P. myersi* Group (Fig. 6). Specific relationships vary depending on the

inference method; the Maximum Likelihood tree shows *P. gralarias* as sister to a clade formed by *P. festae*, *P. leoni*, *P. ocreatus*, *P. myersi* (Fig. 6). In contrast, the Bayesian tree infers a sister relationship between *P. gralarias* and a clade composed by *P. ocreatus* and *P. myersi*. These topological discrepancies are expected giving that clade support at this level is low (Fig. 6). The sample herein labelled as *P. myersi* (WED 53004/KU 202419) has been misidentified in previous studies as *P. thymelensis* (see Zhang *et al.* 2013; Padial *et al.* 2014; González-Durán *et al.* 2017; Rivera-Correa *et al.* 2017).



FIGURE 4. Species in the *Pristimantis myersi* Group. (A) *P. gralarias* **sp nov.**, Reserva Las Gralarias, 2192 m, Pichincha province, MZUTI 1466. (B) *P. hectus*, Reserva Integral Otonga, 2110 m, Cotopaxi province, MZUTI 2062. (C) *P. floridus*, Pichincha province, photo by Luis A. Coloma. (D) *P. sirnigeli*, 2825 m, Reserva Siempre Verde, Imbabura Province, MZUTI 3159. (E) *P. pyrrhomerus*, Pilaló, 2720 m, Cotopaxi province. Photographs not at scale.

Discussion

The *Pristimantis myersi* Group: Species groups are useful in hyperdiverse genera because they assemble species that have morphological similarity, enabling comparisons that, otherwise, would be gargantuan. Although several species groups are not monophyletic (see Hedges *et al.* 2008; Padial *et al.* 2014), molecular phylogenetic studies show that all sampled species of the *Pristimantis myersi* Group are closely related (Padial *et al.* 2014; González-

Durán *et al.* 2017; Guayasamin *et al.* 2017; Fig. 6). Therefore, taking into account congruence between morphological similarity and molecular topologies, the *P. myersi* Group contains the following species (updated and modified from Lynch & Duellman 1997; Padial *et al.* 2014): *P. bicantus*, *P. festae*, *P. floridus*, *P. gladiator*, *P. gralarias*, *P. hectus*, *P. leoni*, *P. lucidosignatus*, *P. munozi*, *P. mutabilis*, *P. myersi*, *P. ocreatus*, *P. onorei*, *P. pyrrhomerus*, *P. repens*, *P. scopaeus*, *P. sirnigeli*, *P. verecundus*, and *P. xeniolum*. The species composition of the group, as established above, should be taken with caution since only a fraction of the taxa have been included in phylogenetic analyses (see Fig. 6). As noticed by Hedges *et al.* (2008), the generic name *Trachyphrynus* Goin & Cochran (1963) is available for the *Pristimantis myersi* Clade (i.e., all species in the *Pristimantis myersi* Group as define above, but including the morphologically dissimilar *P. jubatus*). Note that *P. thymelensis* is not part of the *myersi* group since its sequence actually corresponds to *P. myersi* (see Evolutionary Relationships).

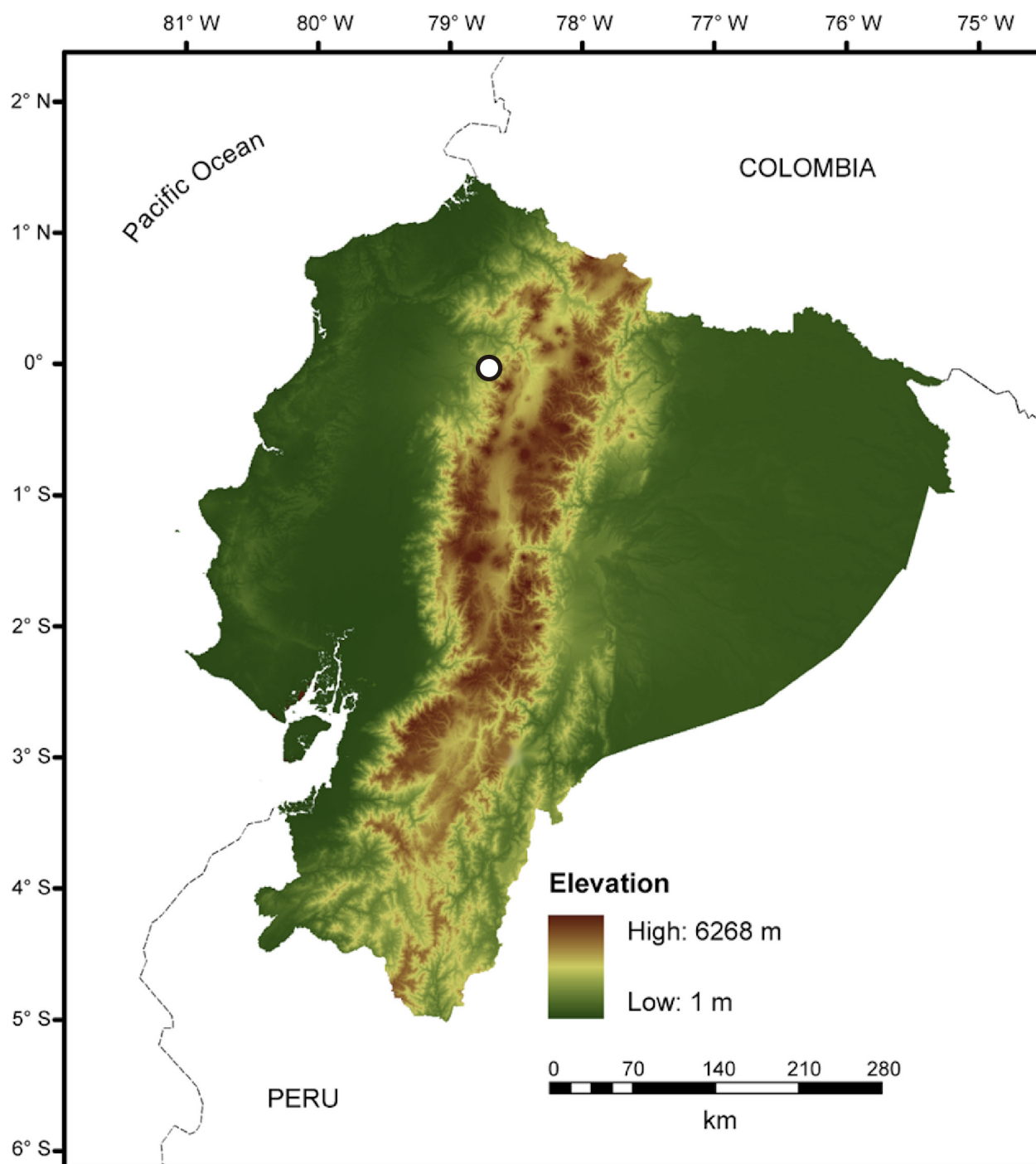
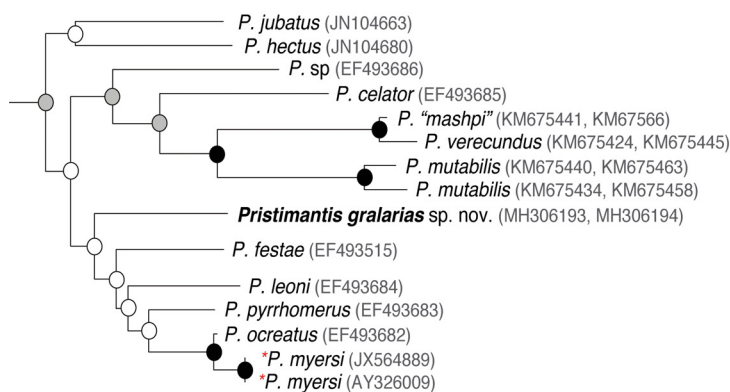


FIGURE 5. Known distribution of *Pristimantis gralarias* sp. nov.

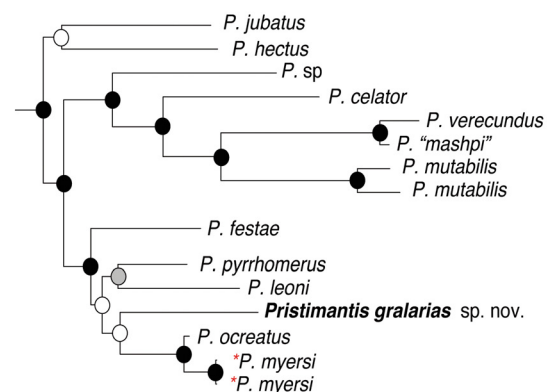
Descriptions based on few or one specimen: The description of a species based on few or a single specimen—singletons in the terminology of Lim *et al.* (2012)—is problematic mainly because there is no information on the intraspecific variation, including ontogenic changes and sexual dimorphism. Although taxonomists, by a general rule, should avoid singleton descriptions, we argue that there are scenarios where exceptions are justified.

Rare species are common in nature (Magurran & Henderson 2003). Thus, as a logical consequence, it is expected that collections will house a large proportion of specimens representing such rare taxa. Taxonomists have the responsibility to describe them, but minimizing the possibility of generating invalid species. We concur with Köhler & Padial (2016) in that the advantages of recognizing well-supported singleton species as targets for further research and conservation greatly surpass the inconveniences of naming them. Thus, to avoid taxonomic errors, we suggest the following guidelines for descriptions based on a single or very few specimens: (1) morphological diagnosis should be based on traits that present low intraspecific variation in the group of study (e.g., body proportions, tubercles, skin texture, finger and toe shape; Köhler & Padial 2016; but see Guayasamin *et al.* 2015); (2) congruence among different sets of data (e.g., morphological, acoustic, molecular, ecological); (3) use of specimens that do not show any evidence of poor preservation (e.g., dry, twisted, rotten specimens); and (4) precise locality data of the type material.

Maximum Likelihood (ML)



Bayesian Analysis (BA)



Support Value (ML; BA)

- Strong (95–100; 0.95–1.0)
- Moderate (75–94; 0.75–0.94)
- Weak (0–74; 0–.74)

FIGURE 6. Phylogeny of *Pristimantis* trimmed to show only the most closely related species to *P. gralarias* sp. nov. The full phylogeny is available from Guayasamin *et al.* (2007). Support values are presented as bootstraps and posterior probabilities. GenBank accession numbers are in parentheses. *Sample (WED 53004/KU 202419) previously identified as *P. thymelensis*, but that actually corresponds to *P. myersi*.

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Author contributions

JMG conceived the study, obtained and analyzed the data, and wrote the article, with significant contributions from AA and CRH.

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APPENDIX I. Additional specimens examined. IAvH: Instituto de Investigación de Recurso Biológicos Alexander von Humboldt (specimens of this collection are listed under original acronym of Inderena: IND-AN); MECN: Museo Ecuatoriano de Ciencias Naturales; MZUTI: Museo de Zoología at the Universidad Tecnológica Indoamérica; ICN: Instituto de Ciencias Naturales, Universidad Nacional de Colombia; KU: Kansas University; QCAZ: Museo de Zoología at the Pontificia Universidad Católica del Ecuador.

- Pristimantis bicantus*. Ecuador: *Provincia Napo*: Oyacachi–El Chaco trail (02.25728°S, 77.9466°W; 2340 m), MZUTI 729–734, 751–760.
- Pristimantis festae*. Ecuador: *Provincia Napo*: Papallacta, Páramo de la Virgen (00.32316°S, 78.2007°W; 4221 m), MZUTI 2620–2623.
- Pristimantis floridus*. Ecuador: Pichincha: Quebrada Zapadores (QCAZ 16279, 16281–87, 16291, 16294, 16296).
- Pristimantis gladiator*. Ecuador: *Provincia Napo*: near Guango river (0.37639°S, 78.07471°W; 2708 m), MZUTI 1124–1133.
- Pristimantis hectus*. *Pristimantis hectus*.—Ecuador: *Provincia Pichincha*: Reserva Las Galarías (0.02557°S, 78.70391°W; 2136 m), MZUTI 2025–2033.
- Pristimantis leoni*. Ecuador: *Provincia Pichincha*: near Laguna de Mojanda (0.1675°S, 78.2939°W; 3358 m), MZUTI 1803–1815.
- Pristimantis lucidosignatus*. Ecuador: *Provincia Cotopaxi*: Reserva Otonga (0.41549°S, 79.0048°W; 2115 m), MZUTI 2092–2095.
- Pristimantis myersi*. Ecuador: *Provincia Carchi*: 12 km W Tufiño, 3520 m, KU 202419.
- Pristimantis munozi*. Ecuador: *Provincia Pichincha*: Reserva Verdecocha (0°5'46.9"S, 78°36'15.3"W; elevation 2851 m), MZUTI 1782 (holotype), MZUTI 1777–81 (paratypes).
- Pristimantis mutabilis*. Ecuador: Pichincha: Reserva Las Galarías 00.00843° S, 78.7305° W; 2063 m.a.s.l. (MZUTI 2190 [holotype], 2191 [paratype]).
- Pristimantis myersi*. Colombia: Nariño: Páramo El Támano (ICN 2503); municipality of Cumbal, km 16–17 Chile-San Felipe, northern slope volcano Chiles (ICN 24337–24340). Cauca: PNN Nevado del Huila, cabaña Inderena (ICN 6484, 6500); Puracé, km 55 road Popayán-La Plata, PNN Puracé (ICN 25908–25910); laguna San Rafael, cabaña San Rafael del Inderena (ICN 33200–33204). Ecuador: Imbabura: Laguna Puruhanta (QCAZ 11677); Nueva América (QCAZ 14554–14560). Sucumbios: El Playón (QCAZ 14561–14562).?
- Pristimantis ocreatus*. Ecuador: Carchi: in the way to Tulcán Maldonado, 15 minuts to west of Tufiño (QCAZ 43162). Imbabura: Lagunas de Mojanda (QCAZ 42111).
- Pristimantis onorei*. Ecuador: Cotopaxi: Naranjito, Bosque Integral Otonga (QCAZ 11700, 11862, 12296, 12297–12299, 12303, 12969–12971, 12974–12978, 31813, 31815, 31817–31823, 31826); Naranjito, farm of Don Tomás Granja (QCAZ 32924–32925).
- Pristimantis pyrrhomerus*. Ecuador: *Provincia Cotopaxi*: Sigchos, Unache–Santa Rosa road (00.6836°S, 78.900°W; 2803 m), MZUTI 1925–1930.
- Pristimantis repens*. Colombia: Nariño: Pasto, km 11 Pasto-volcano Galeras (ICN 12323 [holotype], 12324–12329 [paratypes]); Pasto, km 12–14 Pasto-volcano Galeras (ICN 12333, 12335–12339, 12341–12342, 12345, 12351 [paratypes]); Pasto km 23 (ICN 12354 [paratype]); Pasto, location El Campinero (ICN 12356–12359 [paratype]); Pasto, carretera Panamericana, km 11 road to Río Bobo dam (ICN 12363 [paratype]).
- Pristimantis scopaeus*. Colombia: Tolima, Cajamarca, Amaime, Páramo de los Valles (ICN 22792 [holotype], 22789–22790, 22792, 22834 [paratypes]).
- Pristimantis sirnigeli*. Ecuador: *Provincia Imbabura*: Reserva Siempre Verde (00.370°N, 78.416°W; 2808–2025 m), MZUTI 3153, 3159.
- Pristimantis xeniolum*. Colombia: Cauca: Río Frio, Cerro Calima, Páramo del Duende (ICN 43891 [holotype], 43877 [paratype]).