

ANARTIA, 23 (2011): 17 - 26  
Depósito legal pp. 88-0384  
ISSN: 1315-642X

## A new *Pristimantis* Jiménez de la Espada, 1870 (Anura: Strabomantidae) from the cloud forest in the Venezuelan Andes

*César L. Barrio-Amorós*

*Instituto de Biodiversidad Tropical, Apartado Postal 328-1260 Escazú,  
Costa Rica. E-mail: cesarlba@yahoo.com*

### Abstract

A new species of *Pristimantis* from the cloud forest near the city of Merida in the Venezuelan Andes is described from two specimens in the collection of the Universidad de Los Andes. The new species is distinguished from close relatives by having a subacuminate snout in dorsal view, dorsolateral folds, low tubercles on hands and feet, vestigial webbing between toes II-III-IV-V, and uniform gray dorsum, white venter with small black spots; and by lacking vocal slits, nuptial pads; ulnar and tarsal tubercles, calcars; and fringes on the fingers and toes.

**Key words:** Andes, cloud forest, Colombia, *Pristimantis*, Venezuela.

## Un nuevo *Pristimantis* Jiménez de la Espada, 1870 (Anura: Strabomantidae) de bosque nublado en los Andes de Venezuela

### Resumen

Se describe una nueva especie de *Pristimantis* de las selvas nubladas vecinas a la ciudad de Mérida en los Andes venezolanos, de dos

ejemplares depositados en la colección de la Universidad de Los Andes. La nueva especie se diferencia de sus presumibles parientes cercanos por tener un perfil dorsal subacuminado, presentar pliegues dorsolaterales, tubérculos bajos en pies y manos, membrana manual vestigial entre dedos II-III -IV-V, dorso gris sin patrón, y vientre blanco con manchas negras; y por faltarle aberturas vocales, almohadillas nupciales, tubérculos ulnares, tarsales y calcares, y rebordes laterales en los dedos de pies y manos.

**Palabras clave:** Andes, Colombia, *Pristimantis*, selva nublada, Venezuela.

## INTRODUCTION

The genus *Pristimantis* is a clade of New World direct-developing frogs with over 439 described species, 55 of which occur within Venezuela (Frost, 2011), and 23 of these are recorded from the Venezuelan Andes. A few years ago I examined two specimens of an undescribed species of *Pristimantis* deposited in the collection of vertebrates of the Universidad de Los Andes, Mérida that was collected recently from close the city of Merida. This fact is surprising because the surroundings of the city of Mérida have been well collected for many years. Because no additional specimens have been obtained, and because high Andean amphibians are threatened by different factors with several species having special conservation status (Lampo *et al.*, 2008). I decided to proceed with the description of this species, hoping that in a near future the species can be further found and more details on its taxonomy, natural history and ecology can be obtained. With the description of the new species there are now 24 species of *Pristimantis* known from the Andes of Venezuela (Barrio-Amorós, 2009).

## MATERIALS AND METHODS

All measurements were taken with a digital calliper to the nearest 0.1 mm. Morphological terms follow Lynch and Duellman (1997). Comparisons were made with information published by La Marca (1984, 2007), Rivero (1982) and with observation on preserved material from CVULA (Colección de Vertebrados, Facultad

de Ciencias, Universidad de Los Andes, Mérida, Venezuela). Measurements of adult frogs follow Barrio-Amorós *et al.* (2010) and are: SVL: straight length from tip of snout to vent; ShL: shank length from outer edge of flexed knee to heel; HeL: head length from tip of snout to the posterior border of skull (posterior edge of prootic, noted through the skin); HW: head width between angle of jaws; InD: internarial distance between centers of nares; EN: distance of anterior edge of eye to nostril; ED: horizontal eye diameter; TD: horizontal tympanum diameter; ETS: distance between the anterior edge of the eye to the tip of snout; F3D: disc width of Finger III; T4D: disc width of Toe IV; 1FiL: length of Finger I from inner edge of thenar tubercle to tip of disc; 2FiL: length of Finger II from the junction of Finger I and III to the tip of finger disc. Some traditional measurements like IOD (interorbital distance) and UEW (upper eyelid width) are not being used, as we consider them highly variable due to preservation artifacts. Sex was determined by dissection.

## RESULTS

### *Pristimantis ameliae* sp. nov.

Holotype: CVULA 7118, an adult female from San Javier del Valle, 08°56'43''N, 70°25'54''W, 2500 m, Estado Mérida, Venezuela, taken on 18th of July, 2008 by Amelia Díaz de Pascual.

Paratype: An adult male of 23.4 mm SVL with enlarged testes, CVULA 7117, with the same data as the holotype.

Diagnosis: *Pristimantis ameliae* is a small species (only adult male 23.4 mm, only female 26.3 mm). It is diagnosed by (1) dorsal skin smooth without middorsal raphe; occipital ridges absent; dorso-lateral folds present; ventral skin smooth anteriorly, areolate posteriorly; (2) tympanum distinct, with ill-defined tympanic annulus, 32.3%–33.3% of ED; (3) snout subacuminate in dorsal view, nearly truncated, sloping in profile; canthus rostralis curved, well-defined, loreal region concave; (4) upper eyelid smooth in preservative, without apparent tubercles; (5) choanae small, round; dentigerous processes of the vomers inconspicuous, covered by palatal shelf; tongue large, rounded, posterior half free; (6) male without vocal slits nor vocal sac; no apparent nuptial pads; (7) Finger I shorter than II; (8) fingers without lateral keels; (9) ulnar tubercles absent; (10) tarsal tuber-

cles and calcars absent; (11) inner metatarsal tubercle oval, small, ill-defined; outer indistinct; (12) toes with or without low, thick lateral keels; webbing vestigial between toes II-III-IV-V; Toes III, IV and V with expanded discs, slightly smaller than those on Fingers III and IV; (13) color unknown in life; in preserved individuals pale gray with flanks becoming white inferiorly with moderately large black spots; canthal and supratympanic stripes dark gray; venter dirty white with small black spots on belly.

Species comparisons: this species is compared (characters of *P. ameliae* in parentheses) with other *Pristimantis* from the Cordillera de Mérida in Venezuela. The species has no apparent pale marks in the groin and on the hidden surfaces of the hind limbs, so it is easily distinguished from those species having them (*P. lentiginosus*, *P. melanoproctus*, *P. mondolfi*); neither does *P. ameliae* have a pointed tubercle on the tip of snout and for this reason it differs from the former “*tubernasus*” group of Rivero (*P. prolixodiscus*, *P. tubernasus*) dismantled by Lynch (2003). *Pristimantis vanadisae* has ulnar and tarsal tubercles, pointed calcars, and tubercles on eyelids (lacking all these tubercles). *Pristimantis ameliae* can be distinguished from páramo species (*P. anolirex*, *P. boconoensis*, *P. briceni*, *P. colostichos*, *P. culatensis*, *P. flabellidiscus*, *P. ginesi*, *P. jabonensis*, *P. lancinii*, *P. paramerus*, *P. telefericus*, *P. rhigophilus*, *P. thyellus*), all of which are more robust, and have finger and toe discs no more than weakly expanded (moderately expanded), and all species have well-developed dorso-lateral folds (almost indistinct), middorsal raphe (absent) and/or large tubercles on the dorsum (dorsal skin smooth). *Pristimantis yustizi* is a larger frog, with females up to 50.8 mm (up to 26.3 mm); males have vocal slits (absent) and large, prominent dentigerous processes (indistinct). *Pristimantis ameliae* is unique among other *Pristimantis* from Andean Venezuela in the following combination of characters: snout subacuminate in dorsal view; vocal slits and nuptial pads absent in males; subgular vocal sac absent; ulnar, tarsal tubercles and calcar absent; dorsolateral folds present; all tubercles on hands and feet low; fringes absent on fingers and toes (if present low and thick); vestigial webbing between toes II-III-IV-V; dorsum uniform gray, venter white with small black spots.

Description of the holotype: head longer than wide, head length 38.7% of SVL, head width 36.5% of SVL. Snout subacumi-

nate in dorsal and ventral views (Fig. 1A); nearly truncated in profile (Fig. 1B); EN shorter than ED; nostrils barely protuberant, directed laterally; canthus rostralis curved, angular, well-defined, loreal region concave. Upper eyelid smooth, without tubercles; Cranial crests and tubercles on head absent. Tympanum distinct, 32.3% of ED, its posterodorsal part obscured by low supratympanic fold; tympanic annulus indistinct on right side, more evident on left; two enlarged postrictal tubercles. Choanae small, rounded, not concealed by palatal shelf of maxillary arch; vomerine dentigerous processes inconspicuous, mostly hidden by palatal shelf, posterior and medial to choanae. Tongue round, posterior half free.

Dorsal skin smooth; occipital ridges and middorsal raphe absent, dorsolateral folds barely evident; throat, chest, and anterior part of belly smooth, ventral surfaces of thighs areolate; ulnar and tarsal tubercles absent.

Hand large, its length 32.3% of SVL. Relative length of adpressed fingers IIIIVIII; first finger reaching posterior part of disc on Finger II. Finger discs broader than long, discs on Fingers III and IV 1.5 times wider than adjacent phalanx; horizontally oval; disc on Finger II round; disc on Finger I not expanded. Lateral fringes absent on fingers. Palmar tubercle distinct, bifid; thenar tubercle distinct, ovoid. Subarticular tubercles large, low, round. Supernumerary tubercles low, three under each fingers II, III, IV (Fig. 1C).

Hind limbs short; shank 42.9% of SVL; heel reaching posterior edge of eye when adpressed to the body. Relative lengths of adpressed toes IVVIIIIII. Disc of Toe V reaching posterior edge of the distal subarticular tubercle of Toe IV; disc of Toe III reaching middle of penultimate subarticular tubercle of Toe IV. Disc on Toe IV slightly smaller than disc on Finger III. Toes on left foot having no appreciable fringes; toes on right foot having low and thick fringes; basal webbing between toes II-III-IV-V. Discs barely expanded, round to oval. Inner metatarsal tubercle small, low, oval; outer metatarsal tubercle indistinct; subarticular tubercles slightly protuberant, round; supernumerary tubercles barely distinct, in rows under each toe (Fig 1D).

Color preserved: dorsum color is uniform pale gray (Fig 2 A,B); canthal and supratympanic stripes dark gray; a few small black spots on

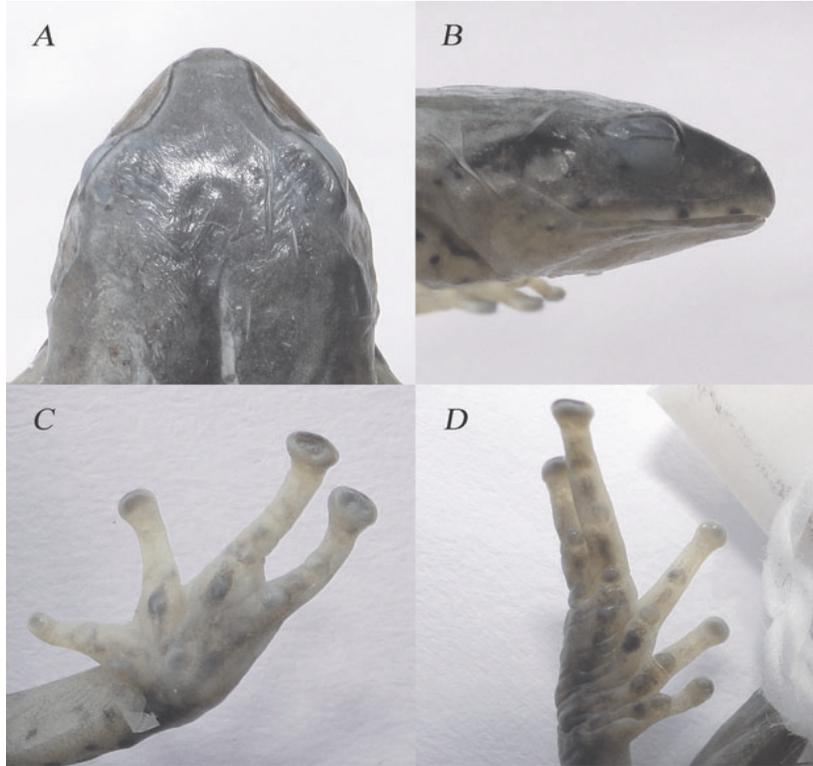


Figure 1. Holotype of *Pristimantis ameliae*, CVULA 7118. A, dorsolateral view of the head; B, lateral view of the head; C, palmar view of the left hand; D, plantar view of the right foot.

upper lip (otherwise white; Fig 1B), and large black spot on shoulder anterior to each arm; two (left side) and one (right side) minute white spots encircled by black on each side of sacral area, above the groin. Dorsal surfaces of fingers and toes white; discs gray; dorsal surfaces of flanks paler gray than body, becoming white inferiorly, with several small black spots, larger than those on belly. Anterior side of both arms white with three black spots on each. Venter dirty white (white with a profusion of melanophores) (Fig 2A'); throat devoided of marks, chest white with few spots, belly with many round black spots, largest laterally, some suffused. Ventral surfaces of hind limbs dirty white without spots. Palms and soles white, with black supernumerary tubercles (Fig 1 C, D). Color in life unknown.

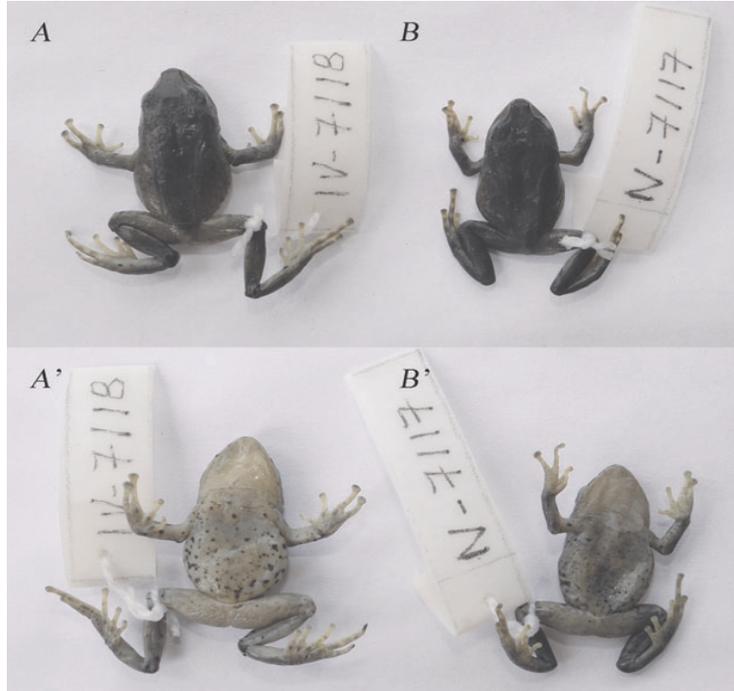


Figure 2. Dorsal view (A) of the holotype, CVULA 7118, and paratype (B), CVULA 7117 of *Pristimantis ameliae*. Ventral view of the same specimens (A' holotype; B' paratype).

Measurements in mm of holotype and paratype (in parenthesis): SVL: 26.3 (23.4); ShL 11.3 (10.0); FL: 12.9 (11.5); HeL: 10.2 (9.7); HW: 9.6 (9.1); EN: 2.3 (2.2); ED: 3.4 (3.0); TD: 1.1 (1.0); F3D: 1.5 (1.2); T4D: 1.3 (1.2); 1FiL: 3.5 (3.3); 2FiL: 4.6 (3.5).

Variation: the other individual (CVULA 7117) is an adult male with large testes, but it is like the holotype, except being slightly darker (Fig. 2B). It has smaller spots on belly (Fig. 2 B') and a large black spot at the dorsal conjunction of Fingers I and II Fringes on fingers and toes are absent. The dorsolateral folds are somewhat better defined, and curved anteriorly toward the paravertebral area, where they become straight. Vocal slits, vocal sac, and nuptial pads are absent.

Natural history and habitat: both specimens of the type series were collected in the leaf litter during the day. The habitat is cloud forest at 2500 m on the eastern versant of the Sierra de la Culata, facing the Río Mucujún valley.

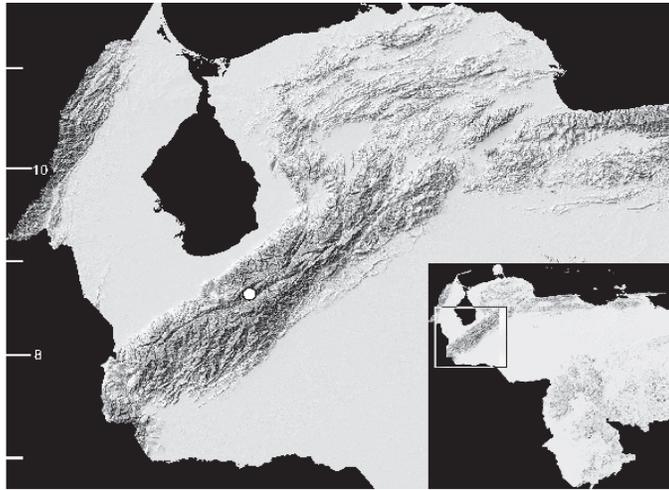


Figure 3. Geographic distribution of *Pristimantis ameliae* in the Venezuelan Andes.

Distribution: only known from the type locality, a cloud forest on the Sierra de la Culata side of El Valle (Fig. 3); possibly it has a more extensive distribution through similar habitats in the central Cordillera de Mérida. However, it may be a rare species, inasmuch as the extensive collections of the CVULA contain only these two specimens.

Remarks: San Javier del Valle is located in a small valley between the Sierra de la Culata and Páramo El Escorial, with lush and protected cloud forest from 1700 to 2800 m. The area has been investigated by herpetologists for a long time, and is the type locality of some species—*Bolitoglossa orestes*, *Pristimantis briceni*, *Aromobates durante*, *Hyloscirtus jahni*. Other species (*Centrolene altitudinale*, *Hyalinobatrachium durante*, *Hyloscirtus platydactylus*, *Pristimantis vanadisae*) are known to occur there. It is quite surprising to discover a new species collected in 2008 precisely from the same general area. A sympatric specimen of *Pristimantis vanadisae* (CVULA 7119) was collected along with the two specimens of *P. ameliae*.

Etymology: I am pleased to dedicate this new species to Amelia Díaz de Pascual, curator at the CVULA, colleague and collaborator for many years in Mérida, Venezuela. The name is used in feminine genitive.

Conservation: as it is an apparently rare species, and the general area has been well collected for more than 40 years, I believe this species is extremely rare, or its major habitat has not been discovered; possibly it lives in high bromeliads, but the two known specimens were found on the forest floor. I recommend that local investigators continue searching for the species. Even though the general habitat is protected within the Parque Nacional Sierra de la Culata, it may have disappeared as have many other high-Andean species (e.g., *Atelopus oxyrhynchus*, *Aromobates duranti*). Therefore, *Pristimantis ameliae* should be considered under the UICN categories as VU D2.

## ACKNOWLEDGEMENTS

I thank Amelia Diaz de Pascual for her support at all times during my research in the Venezuelan Andes. Gilson Rivas invited me to publish in *Anartia*.

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### **Appendix (specimens examined)**

All from Venezuela.

*Pristimantis boconoensis*: CVULA 8371-72, Páramo de Boconó, Estado Trujillo. *Pristimantis briceni*: CVULA 2752-56, Páramo La Culata, CVULA 8364-65, trail from Monterrey to Cabaña del Cura, 2600 m, Sierra de la Culata, Cordillera de Mérida, Estado Mérida. *Pristimantis ginesi*: CVULA 1567, Páramo de Mucubají; 5950-59, Laguna Santo Cristo, Sierra Nevada, Estado Mérida. *Pristimantis lancinii*. CVULA 5578-79, La Corcovada; 2622, 5822, Páramo de Mucubají. *Pristimantis paramerus*: CVULA 766-67, 990-93, 1003-05, 1859-60, 1994, 5828-34, 5836, 5838-48, 5850-54. *Pristimantis rhigophilus*: CVULA 6854, Páramo de Guaramacal, Estado Trujillo. *Pristimantis vanadisae*: CVULA 3107: Vía El Morro, Estado Mérida. CVULA 0186, 0285, 1116–24, 1163–67, 1234–35, 1642–55, 1681–90, 2014, 2317, 2016–23, 2156–57, 2208–09, 2354–62, 2605: Monte Zerpa, NW of the city of Mérida Estado Mérida. CVULA 0745–47, 3108–21, 3123–27: La Mucuy Alta, Tabay, Estado Mérida.