

## *Pristimantis minutulus* DUELLMAN & HEDGES, 2007 (Anura: Strabomantidae): geographic range extension and colour polymorphism

DENNIS RÖDDER & ANDREAS SCHLÜTER

**Abstract.** *Pristimantis minutulus* is reported for the first time from Panguana, lower Río Llullapichis drainage, upper Amazon basin, Departamento Huánunco, Peru, extending its known geographic range for circa 115 km NNE from its only known locality. Morphometric measurements of Panguana specimens, information on intraspecific variation of life colouration including the presence of individuals with light middorsal stripe and/or blotches on the snout is provided.

Key words. Amphibia, distribution, Panguana, Peru.

*Pristimantis minutulus* DUELLMAN & HEDGES (2007) has been described from the vicinity of Carazú (10° 38' S; 75° 07' W), Cordillera Yanachaga, Departamento Pasco, Peru (Fig. 1). This locality has been suggested to unit species from different ecosystems since it is situated in the transition zone of the Amazonian lowland rainforest and the humid montane forest of the Cordillera Central (Dwyer 1995). The Cordillera Yanachaga is type locality to several strabomantid and microhylid anuran species described in recent years (e.g. DUELLMAN & HEDGES 2005, 2007, LEHR & TRUEB 2007, HEDGES et al. 2008). Most of these (e.g. *Pristimantis aniptopalmatum*, *P. stictoaster*, *Phrynopus* spp.) are locally restricted, while a few range from elevations higher than 1000 m above sea level into the lowlands (e.g. *Pristimantis bipunctatus*). We here provide a range extension into the Amazon lowlands for *P. minutulus*.

Reviewing material housed in the SMNS (Staatliches Museum für Naturkunde, Stuttgart), we identified six specimens allocable *P. minutulus* from Panguana, lower Río Llullapichis drainage, upper Amazon basin, Departamento Huánunco, Peru (9° 37' S, 74° 56' W, 250 m above sea level; Figs. 1, 2). Specimens were collected by the second author in July 1998 during day-time under small stones

in a dried stream bed. This record represents a range extension for *P. minutulus* of circa 115 km NNE from the type locality. DUELLMAN & HEDGES (2007) noted an elevational range of 900-1200 m above sea level, which is remarkably extended here. As a consequence, the species is known to not only inhabit humid montane forest, but also lowland rainforest.

Museum numbers and measurements of Panguana specimens, the latter taken with a digital calliper to the nearest 0.1 mm, are presented in Table 1. The morphological parameters (sensu LYNCH & DUELLMAN 1997) of the six specimens are almost identical with the data provided in its description (DUELLMAN & HEDGES 2007). In the description it was stated that *P. minutulus* lacks lateral fringes on fingers and toes, which are weakly visible in our material (also visible in life photographs, Fig. 3). We suggest this represents a preservation artefact rather than intraspecific variation. The description of the life colouration by DUELLMAN & HEDGES (2007) was based on a slightly decomposed unpreserved specimen. Colour patterns in our specimens (Fig. 3) largely resemble the original description. Photos taken of living frogs show that the dorsal ground colouration may vary from light brown to dark brown-greyish

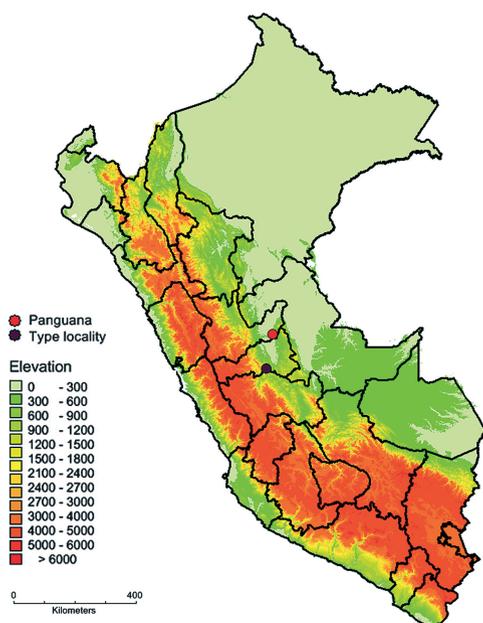


Fig. 1. Map of Peru indicating the type locality of *Pristimantis minutulus* and the record at Panguana.

(Fig. 3). All our specimens have a W-shaped, dark brown or blackish mark in the scapular region and large blotches in the sacral region extending to vent. Among our specimens, we also discovered previously unknown life colouration variation. They may have a thin to broad whitish to cream middorsal stripe



Fig. 2. Habitat of *Pristimantis minutulus* at Panguana, Peru. Photo: A. SCHLÜTER.

reaching from the tip of the snout to the vent (Fig. 3 A, B, F). In addition, we noted a weak to prominent, tan to yellowish orange mid-dorsal blotch on the snout in some individuals (Fig. 3 C-F). DUELLMAN & HEDGES (2007) suggested that the colour of the life iris was dark grey. In our specimens it was light grey to copper (Fig. 3).

Identification of many *Pristimantis* species is difficult. Therefore, we here provide a short comparison between *P. minutulus* and other sympatric *Pristimantis*. According to DUELLMAN & HEDGES (2007), *P. minutulus* can be distinguished from other *Pristimantis* in the *unistrigatus* group sensu LYNCH & DUELLMAN (1997) occurring in the same general area by the following combination of charac-

Tab. 1. Measurements (mm) of six *Pristimantis minutulus* collected at Panguana.

	SMNS 13017 male	SMNS 13021 female	SMNS 13018 male	SMNS 13019 male	SMNS 13020 male	SMNS 13022 juvenile	mean ± standard deviation	range
snout-vent length	17.5	20.1	16.8	17.6	17.5	12.2	17.0 ± 2.6	7.3 - 20.1
tibia length	10.2	11.3	10.0	10.7	10.5	7.3	10.0 ± 1.4	5.5 - 11.3
foot length	6.8	9.4	7.5	7.4	6.8	5.5	7.2 ± 1.3	4.3 - 9.4
head length	5.9	6.8	6.4	6.6	6.1	4.3	6.0 ± 0.9	4.3 - 6.8
head width	6.0	7.8	6.7	6.8	6.6	4.5	6.4 ± 1.1	1.6 - 7.8
interorbital distance	2.1	3.4	2.1	2.4	2.1	1.6	2.3 ± 0.6	1.6 - 3.4
width of upper eyelid	2.1	2.4	2.2	2.0	2.2	1.7	2.1 ± 0.2	1.3 - 2.4
internarial distance	1.6	2.4	1.7	1.8	1.7	1.3	1.8 ± 0.4	1.0 - 2.4
eye-nostril distance	2.0	2.4	2.3	2.5	2.3	1.0	2.1 ± 0.6	1.0 - 2.5
diameter of eye	2.7	3.2	2.7	3.1	2.8	2.1	2.8 ± 0.4	2.1 - 3.2

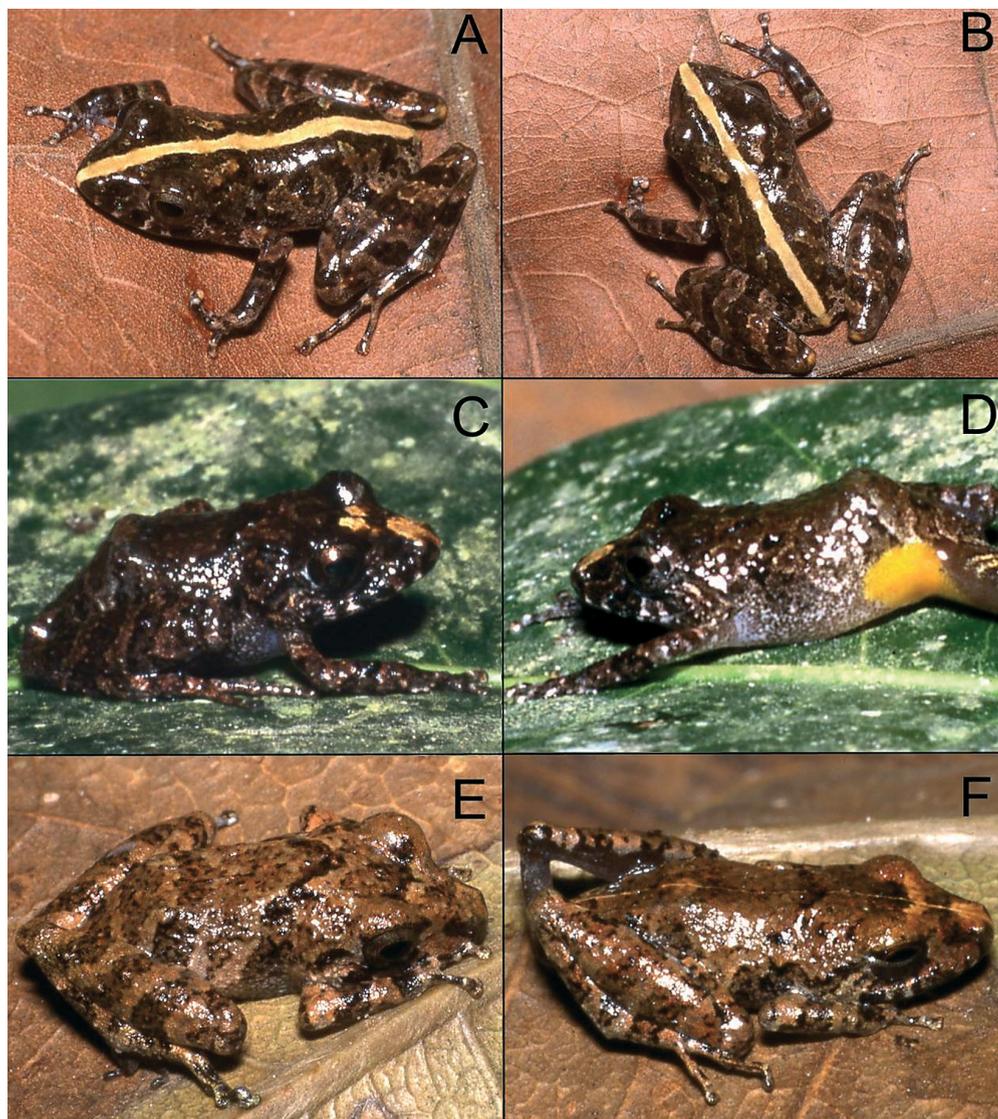


Fig. 3. Life colouration variation in *Pristimantis minutulus* from Panguana: specimens with middorsal stripes (3 A, B, F) and without (3 C-E), with light spot on snout (3 C-F) and pale yellow spot in the groin (3 D) (A, B: SMNS 13017, C, D: SMNS 13018, E: SMNS 13019, F: SMNS 13020). Photos: A. SCHLÜTER.

ters: absence of tympanic membrane and annulus, absence of tubercles on upper eye lids and heels, a pale yellow spot in the groin (Fig. 3 D) and greyish ventral colouration. The only other *Pristimantis* in the Cordillera Oriental of Peru that lack a differentiated tympanic membrane and annulus are *P. cruciocularis*

(LEHR, LUNDBERG, AGUILAR & VON MAY, 2006), *P. flavobracatus* (LEHR, LUNDBERG, AGUILAR & VON MAY, 2006), *P. lirellus* (Dwyer, 1995), *P. martiae* (LYNCH, 1974), *P. rhabdocnemus* (DUELLMAN & HEDGES, 2005), *P. ventrimarmoratus* (BOULENGER, 1912) and *P. vilcabambae* LEHR, 2007.

At Panguana, 21 species of *Pristimantis* are known (SCHLÜTER 1984, 2005, SCHLÜTER et al. 2004). Of these, *P. altamazonicus* (BARBOUR & DUNN, 1921), *P. carvalhoi* (LUTZ in LUTZ & KLOSS, 1952), *P. imitatrix* (DUELLMAN, 1978) and *P. toftae* (DUELLMAN, 1978) resemble *P. minutulus* in having relatively small adult size, but only *P. carvalhoi* and *P. imitatrix* lack a tympanum. *Pristimantis carvalhoi* differs from *P. minutulus* by its finely tuberculate dorsal skin. Furthermore, its first finger is longer than the second (shorter in *P. minutulus*). *Pristimantis imitatrix* has numerous tubercles in the loreal and tympanic region and several small spots on the anterior surface of the thigh (absent in *P. minutulus*).

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Authors' addresses: DENNIS RÖDDER, Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, D-53113 Bonn, Germany; Biogeography Department, University of Trier, D-54286 Trier, Germany, E-Mail: d.roedder.zfmk@uni-bonn.de; ANDREAS SCHLÜTER, Staatliches Museum für Naturkunde, Rosenstein 1, D-70191 Stuttgart, Germany, E-Mail: schlueter.smns@naturkundemuseum-bw.de.