

TWO NEW FROGS (*ELEUTHERODACTYLUS*) FROM THE SERRANÍA DE PERIJÁ, COLOMBIA

por

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Resumen

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Se describen dos especies nuevas de *Eleutherodactylus* de la parte norte de la Serranía del Perijá. Una especie es parecida a una conocida en la Cordillera de Mérida y la otra se parece a una hallada en la Cordillera Oriental, en Norte de Santander y Santander.

Palabras clave: Colombia, *Eleutherodactylus*, especies nuevas, taxonomía.

Abstract

Two new species of the genus *Eleutherodactylus* are described from the northern part of the Serranía del Perijá. One species is similar to a species known from the Cordillera de Mérida and the other resembles a species known from the Cordillera Oriental in Norte de Santander and Santander.

Key words: Colombia, *Eleutherodactylus*, new species, taxonomy.

Introduction

The least-known upland region of Colombia for frogs of the genus *Eleutherodactylus* is the Serranía del Perijá. Its eastern face in Venezuela is likewise poorly-known. In 2001, Daniel Cuentas, then of Barranquilla, made two attempts to collect frogs on the western face in the municipality of Manaure, César, and, before being ordered out of the area by guerrilleros, Cuentas succeeded in collecting two species of *Eleutherodactylus*, each undescribed, from a small area at 2800m.

Materials and methods

Terminology follows **Lynch & Duellman** (1997). The following abbreviations are used in the text: E-N, eye to nostril distance, HW, greatest head width, IOD, interorbital distance, SVL, snout-vent length. ICN is the acronym for the Instituto de Ciencias Naturales.

Eleutherodactylus cuentasi sp. nov.

Holotype: ICN 46187, an adult male obtained by Daniel Cuentas Montalvo, May 12, 2001 (field number DC 475).

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Paratypes: ICN 46188-89, adult males taken with the holotype.

Type-locality: COLOMBIA; Departamento de César, municipio de Manaure, Casa de Cristal, Serranía del Perijá, 2800 msnm.

Referred specimen: ICN DC172, adult female topotype.

Diagnosis: (1) skin of dorsum shagreen with flat warts, that of venter areolate; short dorsolateral folds present; (2) tympanum round, its length 45-54 % that of eye; (3) snout short, subacuminate in dorsal view, rounded in profile; canthus rostralis sharp; (4) upper eyelid narrower than interorbital distance, no cranial crests; (5) vomerine odontophores oval; (6) vocal sac and nuptial pad present in males; (7) first finger shorter than second; fingers lack disks but with ventral pads; (8) fingers bear lateral keels; (9) ulnar tubercles present, fusing to form ridge; (10) round tubercle on heel; outer tarsal fold present; short inner tarsal fold; (11) inner metatarsal tubercle oval, 1.5 times size of outer; numerous supernumerary plantar tubercles; (12) toes with lateral fringes, no webbing and no disks; Toe V slightly longer than Toe III; (13) gray-brown above with brown spots; venter cream with brown reticulation; posterior surfaces of thighs brown with darker spots; (14) adults small, three males 22.0-24.9 mm SVL, one adult female 30.6 mm SVL.

The only other species of the Cordillera Oriental lacking disks is *E. nicefori*. However, in *E. nicefori*, the fifth toe reaches to the distal subarticular tubercle of Toe V whereas in *E. cuentasi* the fifth toe is only slightly longer than the third. The skin of the dorsum of *E. nicefori* is smooth and there are no dorsolateral folds nor does *E. nicefori* have ulnar and outer tarsal folds. *Eleutherodactylus nicefori* is smaller than *E. cuentasi* (Lynch, 1994). Among species reported for Venezuela, *E. cuentasi* is most similar to *E. boconoensis* but *E. cuentasi* has ulnar tubercles (no fold) and tubercles along the outer edge of the tarsus (no fold).

Description: Head as long as wide, narrower than body; HW 32.5-37.2 % SVL; snout subacuminate in dorsal view, rounded in profile; nostrils not protuberant, directed laterally; E-N 62.1-88.0 % eye length; canthus rostralis slightly concave, sharp; loreal region weakly concave, sloping abruptly to lips; lips not flared; interorbital space flat, no cranial crests, broader than upper eyelid; upper eyelid width 59.3-71.4 % IOD; supratympanic fold little evident, obscuring upper edge of tympanum; tympanum round, visible, separated from eye by less than half its

diameter, tympanum length 44.8-54.3 % eye length; a single postrictal tubercle; choanae small, round, not concealed by palatal shelf of maxillary arch; vomerine odontophores median and posterior to choanae, oval, bearing slightly elevated row of 2-5 teeth, separated medially by space nearly equal width of an odontophore; tongue longer than wide, posterior 1/5 not adherent to floor of mouth, posterior edge not notched; vocal slits long, well lateral on floor of mouth; vocal sac subgular.

Skin of dorsum shagreen and bearing relatively large, flat warts, especially posteriorly and laterally; short dorsolateral fold on anterior 1/3—1/2 of body which then breaks up into scattered tubercles; skin of venter areolate; discoidal folds not apparent; 2-4 ulnar tubercles, partially fused to form low fold along forearm; underside of forearm areolate; palmar tubercle bifid (or divided); thenar tubercle oval, smaller than palmar tubercle(s); supernumerary palmar tubercles numerous, nonconical; digits short with lateral fringes (Figure 1); subarticular tubercles nonconical, simple; finger tips not expanded into discs, Fingers III-IV bearing ventral pads with obvious distal circumferential grooves but proximal edge poorly defined; thumb of male swollen and nuptial pad diffuse; finger I slightly shorter than finger II.

Round tubercle on heel; fleshy fold along outer edge of tarsus (sometimes a series of low, isolated tubercles); short thickened fold on distal 1/3—1/2 of inner edge of tarsus; inner metatarsal tubercle twice as long as wide, elevated, 1 1/5 times size of flat outer; plantar surface dense with low supernumerary tubercles; subarticular tubercles round, simple; toes bearing lateral fringes; toe V to just beyond (1/4) penultimate subarticular tubercle of toe IV, toe III to barely beyond distal edge of penultimate subarticular tubercle of toe IV (Figure 1); toes lack disks but bearing ventral pads with distal terminal grooves (except on Toe I); when flexed hindlimbs held perpendicular to sagittal plane, heels not touching; hindlegs short, shank 32.7-38.9 % SVL.

Coloration in alcohol: Dorsum gray-brown with brown spots; pale vertebral raphe in holotype and ICN ; brown canthal stripe continuing as brown postocular stripe halfway down flanks; lips not barred; ventral surfaces cream with brown reticulum or brown with cream spots; posterior surfaces of thighs pale brown with darker brown spots.

Coloration in life: Dorsum maroon with yellow vertebral raphe; flanks maroon; brown stripe from snout to groin; venter white with brown reticulation; throat yellow; tips of digits yellow.

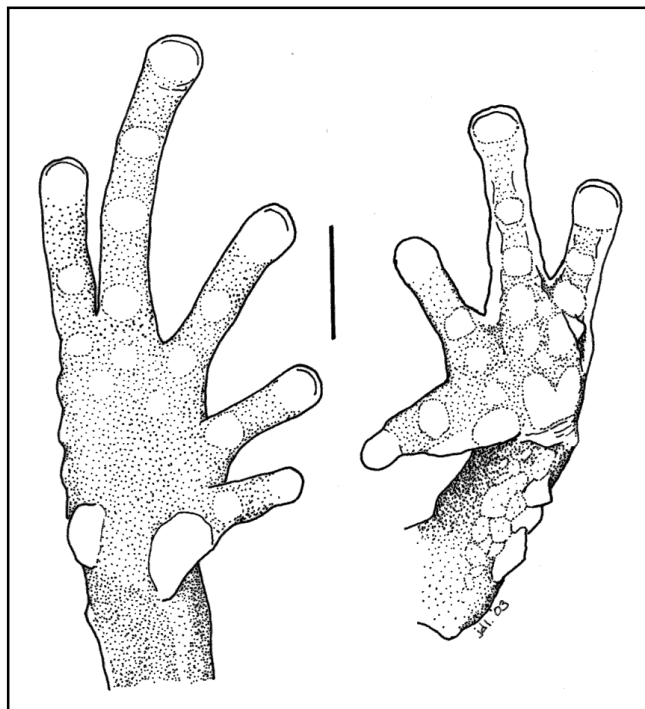


Figure 1. Ventral views of foot (ICN 46187) and hand (ICN 46188) of *Eleutherodactylus cuentasi*. Scale equals 2 mm.

Measurements of holotype in mm.: SVL 24.9, shank 8.4, HW 8.1, head length 7.5, chord of head length 8.1, upper eyelid width 1.6, IOD 2.7, tympanum length 1.3, eye length 2.9, E-N 1.8.

Etymology: Named for my friend Daniel Cuentas.

Natural history: Only very limited data are available owing to problems of orden público. All four individuals were found beneath rocks and are adults.

Remarks: Phenetically, *E. cuentasi* resembles *E. nicefori*, distributed about 300 kms to the south. *Eleutherodactylus cuentasi* is probably more widely distributed but the only frog collections available from the Serranía del Perijá are from sites below 2000 m (Municipio Jagua de Iberico).

Eleutherodactylus cuentasi is probably not closely related to *E. nicefori* based on the differences in the lengths of Toe V (Lynch & Duellman, 1997). Lynch (1994) noted that *E. colostichos* of the Mérida Andes and *E. nicefori* shared the same state of pedal morphology (condition C of Lynch & Duellman, 1997), in contrast to other species from the higher parts of the Mérida Andes (condition B except for *E. ginesi* with condition A). *Eleutherodactylus boconoensis* is the described species

most similar to *E. cuentasi* but has a longer Toe V and lacks folds along the forearm and outer tarsus.

***Eleutherodactylus reclusus* sp. nov.**

Holotype: ICN 46181, adult male, one of a series collected by Daniel Cuentas 12 May 2001.

Paratypes: ICN 46179-80, 46182-84, males collected syntopically.

Referred specimens: ICN 46185-86, juvenile females collected with holotype.

Type-locality: COLOMBIA; Departamento de César, municipio de Manaure, Casa de Cristal, Serranía del Perijá, 2800 msnm.

Diagnosis: (1) Skin of anterior dorsum smooth, low warts evident on lower back; skin of venter areolate; no dorsolateral folds; (2) tympanum slightly higher than long, its length 27-42 % eye length; (3) snout subacuminate in dorsal view, rounded in profile; canthus rostralis slightly concave, distinct; (4) upper eyelid without tubercles, about as wide as IOD; no cranial crests; (5) vomerine odontophores prominent, subtriangular in outline, well separated; (6) males with subgular vocal sac and nuptial pads; (7) first finger shorter than second; fingers expanded into disks only slightly wider than digit; (8) fingers bearing lateral keels; (9) a row of low ulnar tubercles present; (10) no tubercle on heel; tubercle on inner edge of tarsus, row of low tubercles along outer edge of tarsus; (11) two metatarsal tubercles, inner oval, 3 times size of faint outer; (12) toes bearing indistinct lateral fringes; Toe V longer than Toe III, reaching base of distal subarticular tubercle of Toe IV; (13) Dorsum and flanks gray brown with little evidence of pattern; venter cream suffused with brown; posterior surfaces of thighs brown with some cream spots; (14) Adults moderate-sized, six adult males 25.2-32.4 mm SVL.

Most similar to *E. anolirex* and *E. bacchus* from the Cordillera Oriental of Colombia. *Eleutherodactylus anolirex* has short dorsolateral folds, lacks vocal slits and a pale stripe on the upper lip. *Eleutherodactylus bacchus* is easily distinguished in lacking nuptial pads, having larger digital disks, and in lacking tubercles along the outer edges of the forearm and tarsus.

Description: Head not as wide as body, wider than long; HW 37.1-40.4 % SVL; snout subacuminate in dorsal view, rounded in lateral profile; nostrils not protuberant, directed dorsolaterally; E-N 76.2-88.9 % eye length; canthus rostralis weakly concave; loreal region concave, sloping abruptly to lips; lips not flared; upper eyelid

lacking tubercles; no cranial crests; upper eyelid width 89.7-103.0 % IOD; supratympanic fold thick, not prominent, obscuring upper edge of tympanum; tympanum slightly higher than long, its length 27.0-41.7 % eye length; one or two nonconical postrictal tubercles posteroventral to tympanic annulus; choanae round, not concealed by palatal shelf of maxillary arch; vomerine odontophores median and posterior to choanae, separated medially by distance 1 ½ times width of an odontophore, each about size of a choanae, each bearing 1-3 teeth (mode 3) arranged in transverse row; odontophores slanted in smaller specimens, subtriangular in adults; tongue longer than wide, not notched posteriorly, posterior ¼ not adherent to floor of mouth; vocal slits posterolateral to tongue, long; vocal sac subgular, median.

Skin of head and back mostly smooth but very low flattened warts visible on lower back, that of flanks bearing more pungent warts, of venter areolate; discoidal folds well anterior to groin; no anal sheath; two to four low ulnar tubercles along outer edge of forearm; palmar tubercle bifid, much larger than oval thenar; low supernumerary palmar tubercles present; subarticular tubercles round, nonconical; some evidence of lateral fringes, best seen on lateral edge of IV and halfway down palm (in most specimens, fingers seem to lack lateral fringes or to present mere keels); fingers II-IV with disks about 1 ½ times width of digit; finger I with disk scarcely wider than digit; disks rounded distally, bearing ventral pads broader than long, defined by circumferential grooves; first finger shorter than second; nuptial pads in males.

Heel lacking tubercles (or, if present, very small in smallest individuals—juveniles); outer edge of tarsus with 4 low tubercles distributed along length of tarsus; inner edge of tarsus with elongate tubercle on distal 1/3; inner metatarsal tubercle slightly more than twice as long as wide, 3-4 times size of very low and indistinct outer metatarsal tubercle; supernumerary plantar tubercles numerous, all very low; subarticular tubercles round, simple, nonconical; toes bearing lateral keels, tip of Toe III to midpoint of penultimate subarticular tubercle of Toe IV, tip of Toe V to base of distal subarticular tubercle of Toe IV; all toes with disks, largest on toes III-V, but narrower than those of outer fingers; ventral pads defined by circumferential grooves, broader than long; when flexed hindlegs held perpendicular to sagittal plane, heels overlapping; shank 45.9-49.6 % SVL.

Coloration in alcohol: Upper surfaces slate with little indication of pattern (scattered darker markings on lower back, traces of a pale interorbital bar, fragments of limb bars); side of head darker without facial markings except

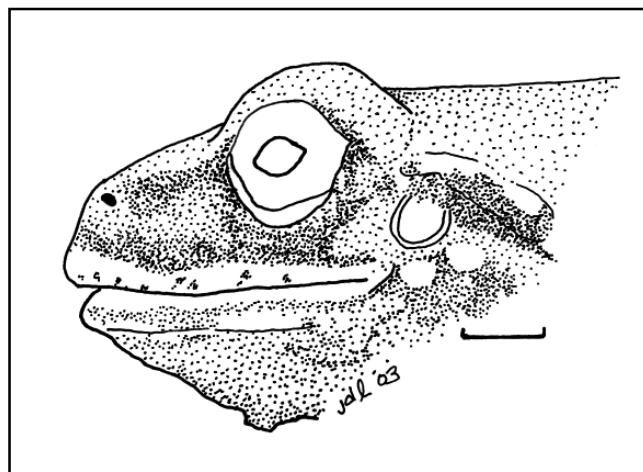


Figure 2. Lateral view of head of *Eleutherodactylus reclusus* (ICN 46181).

for cream line along upper lip (Figure 2); brown supratympanic stripe; brown blotch on posterior flank, extending into groin and along of thigh; comparable blotch over most of posterior surface of thigh, bearing cream flecks or not; venter cream, heavily mottled with brown; throat somewhat darker than venter; underside of shank brown with cream flecks or not.

Coloration in life: Dorsum gray with tiny white spots; side of head brown; posterior surfaces of thighs maroon; venter white with small brown spots; throat brown with white flecks.

Measurements of holotype in mm.: SVL 30.9, shank 14.9, HW 12.5, head length 10.8, chord of head length 11.5, upper eyelid width 3.1, IOD 3.2, tympanum length 1.5, eye length 3.6, E-N 3.2.

Etymology: Latin, meaning separated or removed, in allusion to its geographic isolation from similar frogs.

Natural history: Nothing is known of the species except that all adults found were adult males and juvenile females (19.3-25.1 mm SVL) were found beneath the same rocks. The smaller juvenile female (ICN 46186) has an obvious canthal stripe and supratympanic fold, slanting brown bars on the flanks, and her throat and venter are cream—suggesting ontogenetic changes in color pattern for the species.

Remarks: *Eleutherodactylus reclusus* may be a near relative of *E. anolirex* but until a cladistic analysis is carried out, the linking of these two species is merely phenetic.

Discussion

Prior to these descriptions, only two species of *Eleutherodactylus* had been reported for the Serranía de Perijá (Lynch, 2003, Lynch & Rueda, 1997), both from somewhat lower elevations (ca 1800 m) and each known as well from Santander and Norte de Santander (and in one case from the Cordillera de Mérida). Further attention to the Perijá fauna is best deferred until additional species are described from Jagua de Iberico (Lynch & Rueda, in prep.).

Acknowledgments

Daniel Cuentas kindly made his small collection from the Serranía de Perijá available for study and donated the specimens to ICN. Enrique LaMarca hosted me during two visits to Mérida and made the collections of the Universidad de Los Andes available for study.

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