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ELEUTHERODACTYLUS EREMITUS, A NEW TRANS-ANDEAN SPECIES OF THE *LACRIMOSUS* ASSEMBLY FROM ECUADOR (AMPHIBIA: LEPTODACTYLIDAE)

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Abstract: *Eleutherodactylus eremitus* is named from cloud forests along the Rios Mindo, Pilatón, and Saloya, in Provincia Pichincha, Ecuador, between 1540 and 2100 m. The new frog is most closely related to *E. bromeliaceus* from the Amazonian versant of the Andes in southern Ecuador.

Lynch and Duellman (1980) included the following four species (all cis-Andean) in the *lacrimosus* assembly of the *unistrigatus* group of *Eleutherodactylus*—*E. bromeliaceus* Lynch, *E. lacrimosus* (Jiménez de la Espada), *E. mendax* Duellman, and *E. petersi* Lynch and Duellman. *Eleutherodactylus lacrimosus* is distributed below 1000m from eastern Ecuador east to the mouth of the Amazon river (Lynch and Schwartz, 1972; Lynch, 1979), whereas the other three species occur on the eastern slopes of the Andes—*E. petersi*, from the headwaters of the Río Magdalena (Colombia) south to the valley of the Río Pastaza (Ecuador); *E. bromeliaceus*, south of the Pastaza Trench to the Cordillera de Zamora in southern Ecuador; and *E. mendax*, from central Perú (Huánuco) south into adjacent Bolivia.

In 1970 while collecting on the Pacific slopes in Andean Ecuador, I found a small, green frog in a bromeliad. Subsequent study of the collections of the late James A. Peters provided two additional examples from nearby localities. Additional specimens were obtained by William E. Duellman, Kenneth Miyata, and myself in the course of field work between 1975 and 1978. Sufficient material is now available to provide a description of the first trans-Andean representative of the *lacrimosus* assembly.

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Eleutherodactylus eremitus sp. nov.

Holotype: MCZ 92103, a gravid female, taken on the La Palma-Chiriboga road (hwy 28), 25.7 km above (NE) La Palma, Prov. Pichincha, Ecuador, 1820 m, on 12 July 1976 by Kenneth Miyata.

Paratypes (all from Prov. Pichincha, Ecuador). Topotype, MCZ 92104; 2 km W Campamento Silante (La Palma-Aloag road), 2100m, KU 140878; 5 km ESE Chiriboga, Quebrada Zapadores, 2010m, KU 179085-86, 180248; km 58, \pm 8 km W Chiriboga, USNM 211209; 3.5 km NE Mindo, 1540m, KU 165884; 6.2 km E Tandapi, 1750m, MCZ 92105; Tandayapa, USNM 211208.

Diagnosis. 1) skin of dorsum finely areolate, that of venter coarsely areolate; no dorsolateral folds; no anal sheath; 2) tympanum partially visible, round, its length $2/5-1/2$ eye length; 3) snout subacuminate in dorsal view, rounded or weakly protruding in lateral profile (papilla at tip); canthus rostralis moderately distinct; 4) upper eyelid bearing a conical tubercle, narrower than IOD; no cranial crests; 5) vomerine odontophores oval in outline, elevated; 6) males with vocal slits, vocal sac, and non-spinous nuptial pads; 7) first finger shorter than second; all fingers with broad discs, pads on II-IV expanded; numerous supernumerary palmar tubercles; 8) fingers bear lateral fringes; 9) 2-3 small, subconical ulnar tubercles; 10) small tubercles on knee, heel, outer edges of tarsus; 11) two metatarsal tubercles, inner oval, 4 times size pungent outer; numerous supernumerary plantar tubercles; 12) toes bear lateral fringes, broad discs, dilated pads; pads smaller than those of fingers; 13) cream with faint brown stippling; vague canthal-supratympanic and flank stripe; colorless areas in groin and on posterior surfaces of thighs; 14) adults small, males 17.2-20.0 (\bar{x} =18.9, N=6) mm, one adult female 27.6 mm SVL.

Eleutherodactylus eremitus most closely resembles *E. mendax* but differs in having areolate skin on the dorsum and more prominent vomerine odontophores (odontophores absent or indistinct in *E. mendax*). Both have larger tympana than do *E. bromeliaceus*, *E. lacrimosus*, and *E. petersi*.

Description. Head broader than body (except in gravid female), wider than long; HW 35.1-38.4 (\bar{x} =36.4, N=8) per cent SVL; snout subacuminate in dorsal view with conical papilla at tip, in profile rounded or truncate but with papilla, sometimes protruding; snout moderately long, E-N in males 81.5-88.5 (\bar{x} =85.4, N=4) per cent

eye length, in females 86.4–100.0 (\bar{x} =95.6, N=4) per cent; nostrils weakly protuberant, directed dorsolaterally; canthus rostralis moderately distinct, straight; loreal region weakly concave, sloping gradually to lips, lips not flared; upper eyelid width 70.4–93.4 (\bar{x} =81.5, N=8) per cent IOD, bearing one conical tubercle in center (Fig. 1a–b) and several low warts (areolations) posterolaterally; no cranial crests; tympanum moderately distinct, annulus visible through thin skin, directed dorsolaterally, round, its length 42.3–50.0 (\bar{x} =47.2, N=8) per cent eye length, separated from eye by distance equal to tympanum length; supratympanic fold indistinct amidst areolations; large, subconical, postictal tubercles posterolateral to tympanum.

Choanae round, large, not concealed by palatal shelf of maxillary arch; vomerine odontophores elevated, median and posterior to choanae, oval in outline, separated on midline by distance equal to 1–1/2 odontophore widths, each bearing transverse row of 4–5 teeth; tongue longer than wide, bearing a shallow notch along posterior border or not, posterior 2/5 not adherent to floor of mouth; males with vocal slits posterolateral to tongue; vocal sac median, subgular, external.

Skin of dorsum finely areolate (most obvious paravertebrally and on upper flanks), venter coarsely areolate; throat areolate in females, no dorsolateral folds or anal sheath; larger warts posterior and posterolateral to vent; discoidal fold well anterior to groin.

Three to four small, subconical ulnar tubercles; palmar tubercle bifid, much larger than oval thenar tubercle; palm areolate, but 1–2 more pungent supernumerary tubercles evident at base of each finger; subarticular tubercles pungent, round (or slightly broader than long); KU 179086 has a bifid basal subarticular tubercle on finger III; fingers bear prominent lateral fringes; similar fringe on outer edge of IV continuing along most of palm (Fig. 1); fingers bear broad discs, pads (except on thumb) moderately large, apically rounded; first finger shorter than second; thumbs of males swollen, bearing white, non-spinous nuptial pads.

Small (but prominent), subconical tubercles on knee, heel, outer edge of tarsus; less distinct tubercle on inner edge of tarsus; inner metatarsal tubercle twice as long as wide, relatively flat; outer subconical, 1/4 size of inner; numerous supernumerary plantar tubercles (some more prominent than others, in rows); subarticular tubercles round to slightly longer than wide; toes bear prominent

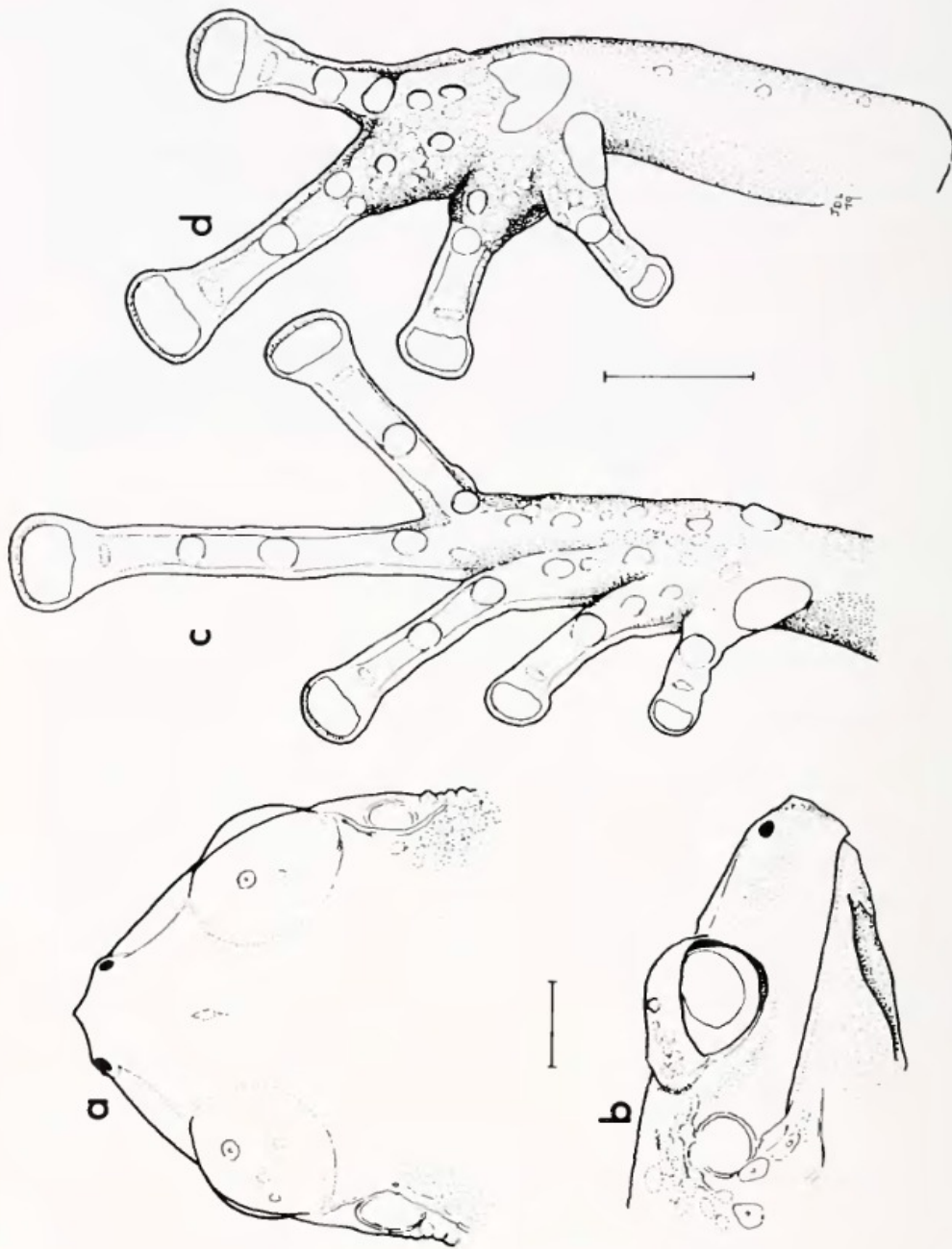


Figure 1. *Eleutherodactylus eremitus* (A-B) head, MCZ 92103; (C-D) hand and foot, KU 179086. Lines equal 2 mm.

lateral fringes, no webbing; toe pads smaller than those of fingers, apically rounded, bearing broad discs; heels of flexed hind limbs overlap; shank 47.1–55.0 (\bar{x} =51.9, N =8) per cent SVL.

Most individuals are cream with diffuse brown stippling above and less below; pigmentless areas in groin and on posterior surfaces of thighs (bordered by more dense brown stippling); no labial or limb bars; indefinite canthal-supratympanic stripes, continuing as a diffuse band onto anterior flanks. KU 140878 and 179086 have dark brown dorsolateral stripes continuous with canthal-supratympanic stripe (Fig. 2). KU 179085 is golden brown above with a brown blotch in the center of the back and prominent canthal-supratympanic stripes.

In life, *E. eremitus* is green above with a brown to reddish brown head and white below (throat stippled with brown). The groin and posterior surfaces of the thighs are pale yellow. The iris is bright copper with brown flecks.

Measurements of holotype in mm. SVL 27.6; shank 13.0; HW 9.7; head length 8.5; upper eyelid width 2.8; IOD 3.0; tympanum length 1.5; eye length 3.1; E–N 3.1.

Etymology. Latin, meaning lonely or solitary, in allusion to its relatives which are all cis-Andean.

Natural history. KU 140878 was found during the day in a large terrestrial bromeliad beside hwy 30, before the habitat was severely altered by road construction. Specimens from the Quebrada Zapadores were collected at night as they sat on broad leaves in the forest beside the streams. *Eleutherodactylus eremitus* is either quite uncommon or several collectors have failed to discover its preferred micro-

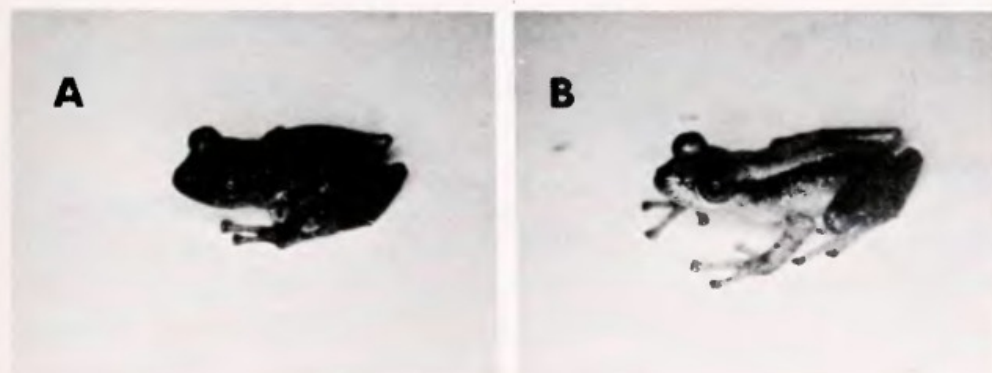


Figure 2. *Eleutherodactylus eremitus*. (A) KU 179085, male, 19.8 SVL; (B) KU 179086, juvenile female, 23.0 mm SVL.

habitat in the cloud forests (on only one occasion has more than one specimen been found [Miyata secured two on a single night in the type-locality]).

Remarks. Frogs of the *lacrimosus* assembly have been discovered slowly. *Eleutherodactylus lacrimosus* was named in 1875 but not reported again until 1952 (Lutz and Kloss, 1952). Duellman (1978), Lynch (1979), and Lynch and Duellman (1980) each named species found on the Amazonian slopes of the Andes from Colombia to Bolivia, but the first specimens of these were not obtained until the late 1950's or early 1960's. In eastern Ecuador, these small frogs are especially common in arboreal bromeliads. In July 1977 at Mera (Prov. Pastaza), at least a dozen examples of *E. lacrimosus* and *E. petersi* were found in one bromeliad in remaining patches of forest along the Río Pastaza. The bromeliad microhabitat is occupied by a variety of frogs on the Pacific versant. At the base of the Andes, *E. subsigillatus* (Boulenger) normally is found only in arboreal bromeliads. In high cloud forests, *E. celator* Lynch, *E. phoxocephalus* Lynch, and *E. thymelopsoides* Lynch are found almost exclusively in bromeliads. I suspect *E. eremitus* is actually more abundant on the Pacific versant between 1500 and 2100 m than is suggested by the ten specimens now available. Too infrequently I have failed to exploit the bromeliad microhabitat between 800 and 2400 m, in part because frogs were abundant at night and I collected infrequently by day. Inspection of only three bromeliads in July 1977 at Tandapi (Prov. Pichincha) yielded one example each of *E. crucifer* (Boulenger) and *E. parvillus* Lynch.

Eleutherodactylus bromeliaceus seems to be the closest known relative of *E. eremitus*, with *E. mendax* being less closely related. *Eleutherodactylus lacrimosus* and *E. petersi* are considered more closely allied to one another than either is to the other three species.

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LITERATURE CITED

- DUELLMAN, W. E. 1978. Three new species of *Eleutherodactylus* from Amazonian Peru (Amphibia: Anura: Leptodactylidae). *Herpetologica* 34: 264-270.
- LUTZ, B. & KLOSS, G. R. 1952. Anfíbios anuros do alto Solimões e Rio Negro/ apontamentos sobre algumas formas e suas vicariantes. *Mem. Inst. Oswaldo Cruz* 50: 626-78.
- LYNCH, J. D. 1979. Leptodactylid frogs of the genus *Eleutherodactylus* from the Andes of southern Ecuador. *Misc. Publ. Mus. Nat. Hist. Univ. Kansas* (66): 1-62.
- LYNCH, J. D. & DUELLMAN, W. E. 1980. The *Eleutherodactylus* of the Amazonian slopes of the Ecuadorian Andes (Anura: Leptodactylidae). *Misc. Publ. Mus. Nat. Hist. Univ. Kansas*, *in press*.
- LYNCH, J. D. & SCHWARTZ, A. 1972. Taxonomic disposition of some 19th century leptodactylid frog names. *J. Herpetol.* 5: 103-114.