Catalogue of American Amphibians and Reptiles.

Lynch, J.D. 1996. *Eleutherodactylus erythropleura*.

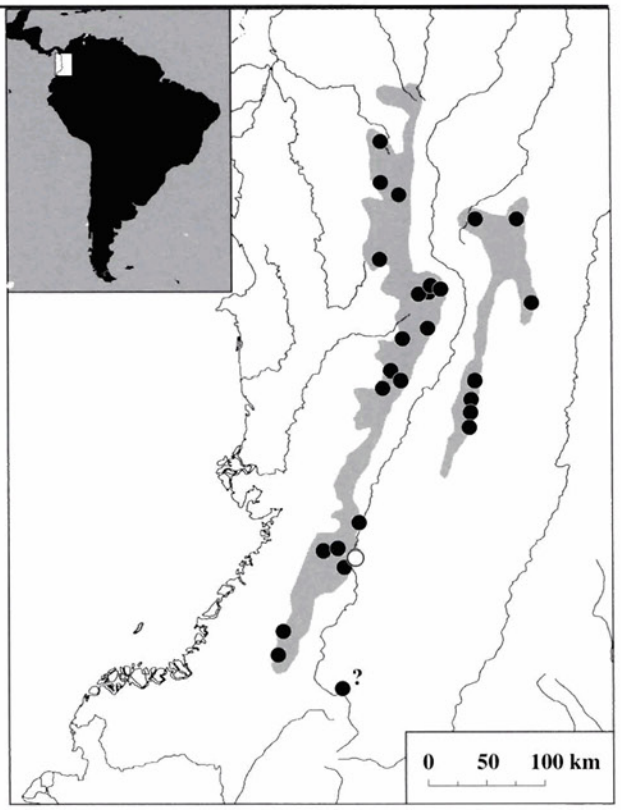
Eleutherodactylus erythropleura (Boulenger)

Hylodes erythropleura Boulenger 1896:20. Type-locality, "Cali [Colombia], on the west slope of the Cordillera, at an altitude of 3200 feet" (probably = above the city of Cali on western face of the Farallones de Cali). Holotype, BM(NH) 1947.2.16.95, an adult female collected by Mr. W.F.H. Rosenberg (examined by author).
Eleutherodactylus erythropleurus: Gorham, 1963:17.
Eleutherodactylus erythropleura: Gorham, 1966:71.

• **Content.** No subspecies are recognized.

• **Definition and Diagnosis.** *Eleutherodactylus erythropleura* is a small species (males 17.0-25.4 mm SVL, females 20.8-34.8 mm, geographically variable) in what is currently considered the subgenus *Eleutherodactylus*, with a smooth dorsum (sometimes with low tubercles, especially in western Departamento Antioquia, Colombia) and low paravertebral and dorsolateral folds in some pattern morphs. The tympanic annulus is concealed beneath the skin of the side of the head, but is sometimes partially visible in females. The snout is subacuminate in dorsal view and rounded in lateral profile. The upper eyelid bears a small conical tubercle and is narrower than the interorbital space, which lacks cranial crests. Vomerine odontophores are prominent, oval in outline, and positioned median and posterior to the choanae. Males lack vocal slits, but have white, glandular nuptial pads on the thumbs. Males from western Departamento Antioquia, Colombia, have black mesorchia (white elsewhere). The first finger is shorter than the second. Digital disks are large. Fingers bear narrow lateral fringes. Ulnar tubercles are minute, but a subconical heel tubercle is evident. The inner edge of the tarsus bears a short fold, but no tubercles occur on the outer edge of the tarsus. The toes bear lateral fringes. The fifth toe is slightly longer than the third when each is adpressed against the fourth. The dorsal pattern is polymorphic (spots or stripes). The venter in males is normally white or cream with gray to black vermiculation; that of females is usually dark gray without vermiculation. The groin and concealed surfaces of the limbs of males are yellow with a black reticulum; in females these are carmine red with reduced black markings.

The nearest relative(s) of *Eleutherodactylus erythropleura* remains unknown. The sexual dimorphism in groin and concealed limb coloration is comparatively unusual, and when coupled with size of adults and the eyelid and heel tubercles allows the species to be recognized as distinct from all other species of the genus.



Map. Distribution of *Eleutherodactylus erythropleura*. The circle marks the type-locality and dots mark other known records.

• **Descriptions.** Boulenger's (1896) original description was brief but adequate for the era. Nieden's (1923) description is simply a translation of Boulenger's. Cochran and Goin's (1970) description is much more detailed, but those authors mistakenly thought that the red coloration in the groin was a characteristic of the species and that their described individual was a male (it is an adult female).

• **Illustrations.** Cochran and Goin (1970) published black and

Figure 1. *Eleutherodactylus erythropleura* (left, ICNMHN 29113, male, 21.1 mm SVL; right, ICNMHN 29102, female, 26.8 mm SVL).

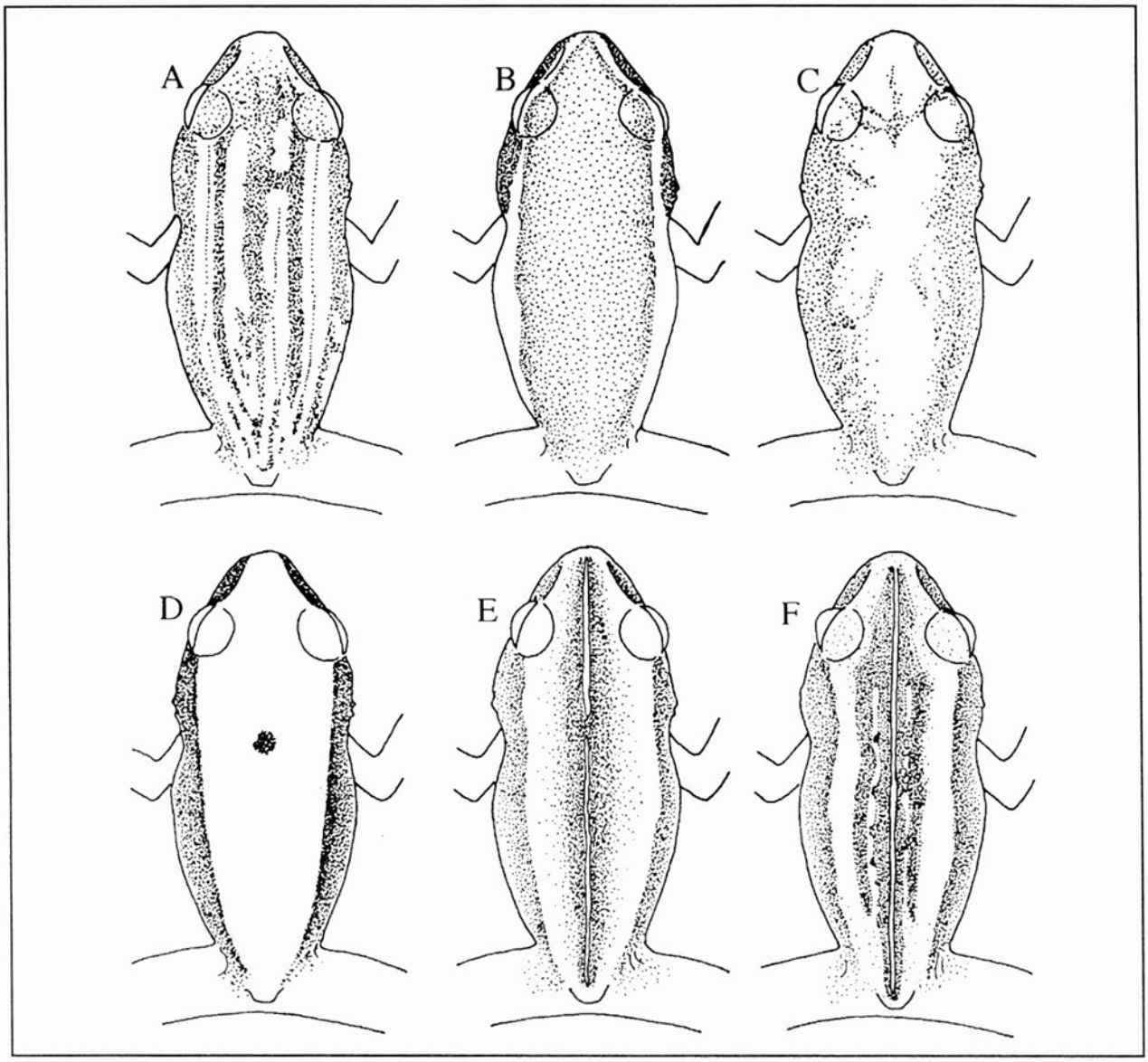


Figure 2. Pattern variation in *Eleutherodactylus erythropleura*: (A) striped pattern, UMMZ 189524; (B) dorsolateral bands, AMNH 104183; (C) chevrons/mottled, UMMZ 189530; (D) dorsoconcolor pattern, ICNMHN (uncatalogued); (E) middorsal stripe, ICNMHN 16499; (F) middorsal stripe, ICNMHN 16498.

white photographs of a preserved female specimen. Lynch (1992) published black and white photographs of six individuals to illustrate different pattern polymorphs.

• **Distribution.** *Eleutherodactylus erythropleura* is distributed in the western cordilleras of Colombia at localities between 1150 and 2450 m (mostly from 1500-2100 m). The range appears to be fragmented into two disjunct systems of populations, one on the Cordillera Occidental (Departamento Cauca north to Departamento Antioquia) and the second on the Cordillera Central (departamentos Antioquia, Caldas, and Quindió) (Fig. 2). This discontinuity for a cloud forest species might seem unusual, but is part of a general pattern also seen in *Centrolene grandisonae, Eleutherodactylus babax, E. gracilis, E. mantipus, E. ruizi*, and *E. thectopternus*. The two disjuncts are separated by the xeric lowlands of the valley of the Río Cauca. The record from Quintana, Depto. Cauca, on the western slopes of the Cordillera Central requires verification.

• **Fossil Record.** None.

• **Pertinent Literature.** The older literature consists solely of Boulenger's (1896) and Nieden's (1923) descriptions. Cochran and Goin (1970) provided a redescription, but confused a variety of species with *E. erythropleura*. Lynch (1992) detailed the distribution of the species, pointed out its sexual dimorphism in coloration, and discussed its geographic variation. Other than these references, the name has appeared only in various lists (e.g., Gorham, 1963, 1966; Duellman, 1979; Ruiz et al., 1996).

• **Etymology.** The name is from the Greek *erythros* (= red) and *pleura* (= side), in reference to the red coloration evident in the groin of living and recently preserved females. The usage, *Eleutherodactylus erythropleurus,* represents an unjustified emendation.

• **Comment.** Although Cali, Colombia, was given by Boulenger

(1896) as the type-locality, this must be an error. *Eleutherodactylus erythropleura* is abundant at the crest of the Cordillera Occidental on the road to Buenaventura (a site now known as Km. 18, 2000 m) as well as at the nearby Cerro San Antonio (a site visited by early collectors and probably known to Mr. Rosenberg) and is very common at Peñas Blancas, a site on the eastern face of the Farallones de Cali, just to the SW of the city of Cali — but is not found in the immediate environs of Cali. The vegetation of Cali may have changed in the past century, but no records of *E. erythropleura* are as low as the elevation of Cali and the modern-day vegetation suggests that the Cali environment is too seasonally dry for this species.

Eleutherodactylus erythropleura exhibits substantial individual and geographic variation, and is notable for three reasons: (1) although it is exceptionally variable (even for a species of *Eleutherodactylus*), no additional names have been proposed for the species, (2) its distribution is disjunct, although the frog is a cloud forest species, as is the case for several other species of centrolenids and *Eleutherodactylus* (Ruíz et al., 1996), and (3) the differences in characters between adjacent populations are often dramatic (Lynch, 1992). Aside from the normal size difference between males and females (males are about 67% the size of females), the sexes differ obviously in coloration of the groin and concealed surfaces of the hindlimbs. If the groin is yellow or bears yellow spots, the individual is a male; if the groin is carmen, the individual is a female. Rarely, juvenile females are found with yellow spots on the posterior surfaces of the thighs (Lynch, 1992). In several populations, white (or pale yellow) spots are found on the venter and flanks as individual variants. The dominant aspect to variation in this species concerns the pattern polymorphism (Fig. 2). Four variants (striped, dorsolateral stripes, dorsal chevrons, and uniform dorsal band) are common in most populations, but the proportions of each morph differ among populations, leading Lynch (1992) to argue that gene flow is low among populations of *E. erythropleura*. The populations from the Cordillera Occidental in western Departamento Antioquia contain some unique color patterns (middorsal stripe, Figs. 2E-F), have black mesorchia in males, and have smaller adult sizes (Lynch, 1992). These traits each vary concordantly, suggesting that those populations are on a distinct evolutionary trajectory from that of other populations of *E. erythropleura*.

Eleutherodactylus erythropleura is extremely abundant in disturbed microhabitats (pastures, along roads) within the cloud forest zone. Pedro Ruíz and I have found it as an uncommon animal within undisturbed forests, but along road cuts and pastures upwards of a hundred animals can be collected in less than an hour. Between 1970 and 1995, we have collected thousands of individuals across the geographic distribution of the species. In all of the time spent within its distribution, we never saw evidence of reproductive activity aside from amplectant pairs (axillary amplexus) and were convinced that this species, lacking vocal slits, did not call. However, recently, Taran Grant, a colleague from Cali, Colombia, has evidence that *E. erythropleura* does call, and that the call is a very soft series of "tinks." An audiospectrograph is not available at this time.

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John D. Lynch, School of Biological Sciences, The University of Nebraska, Lincoln, NE 68588, USA.

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