

NEW SISTER-SPECIES OF *ELEUTHERODACTYLUS* FROM THE CORDILLERA OCCIDENTAL OF SOUTHWESTERN COLOMBIA (AMPHIBIA: SALIENTIA: LEPTODACTYLIDAE)

by

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Resumen

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Se describen seis especies nuevas de ranas de la Cordillera Occidental. Las especies nuevas tienen parentescos con especies conocidas. Una especie nueva de Mistrató, Risaralda, es la especie hermana de *E. bellona*; las dos son las únicas especies con co-osificación craneal. La especie hermana de *E. appendiculatus*, una especie de rostro largo, del sur de Colombia y Ecuador, se encuentra en la Serranía de los Paraguas. Se describen dos especies nuevas, relacionadas con *E. diaphonus*, provenientes de los Departamentos de Cauca y Chocó. Dos especies más del grupo *sulculus* se encuentran en la Serranía de los Paraguas y los Farallones de Cali. En cada caso, las especies más relacionadas tienen una distribución alopatrica usualmente en transectos adyacentes. La mayoría de las combinaciones de especies hermanas ocurren en el mismo piso altitudinal con excepciones del grupo *Eleutherodactylus anomalus* (*E. cheiroplethus*) y del grupo *Eleutherodactylus loustes* (*E. hybotragus*) que tienen desplazamiento vertical.

Abstract

Six new species of frogs are named from the Cordillera Occidental and are associated with previous-known species. A new species from Mistrató, Risaralda, is the nearest relative of *E. bellona*; these are the only *Eleutherodactylus* exhibiting cranial co-ossification. A new species from the Serranía de los Paraguas is the nearest relative of *E. appendiculatus*, a long-snouted species from southern Colombia and Ecuador. Two new species related to *E. diaphonus* are named from transects in Cauca and Chocó. Two species of the *E. sulculus* group are named from the Serranía de los Paraguas and the Farallones de Cali. In each case, nearest relatives are distributed allopatrically, often along adjacent transects. Most of the sister species combinations occur in the same altitudinal level except that vertical displacement occurs in the *E. anomalus* group and in the *E. loustes* group.

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Although frogs of the genus *Eleutherodactylus* are acknowledged to be very diverse in the Neotropics, the diversity is non-randomly distributed. One of the areas of highest diversity is that found in western Colombia, specifically west of the crest of the Cordillera Occidental. Over the past 14 years, we have been surveying the cloudforest habitats of that region in order to gather materials that might allow us to understand what is the pattern of diversity and its cause. The surveys have revealed the presence of no fewer than 100 species of *Eleutherodactylus* of which about 30 are undescribed. The purpose of the present paper is to describe six species for which the nearest allies appear to be known.

To date, few explicit claims of sister group relationships have been made for the *Eleutherodactylus* found in western Colombia. Lynch (1990) claimed that relationship for *E. anomalus* and *E. cheiroplethus*, a pair of species that replace one another altitudinally in eastern Departamento del Chocó where *E. cheiroplethus* is the upland taxon and Lynch (1992a) claimed that relationship

E. hybotragus, *E. jamei*, and *E. loustes*. Those three species replace one another latitudinally but *E. hybotragus* also occurs in the lowlands in contrast to the upland distributions of the other two species. The new species described below all come from the central parts of the Cordillera Occidental but are associated with species ranging from western Antioquia to Ecuador. Part of the eleutherodactyline fauna of the western Cordillera was described recently by Lynch (1996) who included a map showing some of the localities mentioned in the following accounts.

Materials and Methods

Measurements and terminology follow Lynch and Duellman (1980). Means are reported as \pm one standard error of the mean. In the following accounts, four abbreviations are used for dimensions: E-N (distance between eye and nostril), HW (greatest head width), IOD (interorbital distance), and SVL (snout-vent length). Three abbreviations are used to identify collections: ICNMHN (colección de anfibios, Museo de Historia Natural, Instituto de Ciencias, Universidad Nacional de Colombia, Santafé de Bogotá), IND-AN (amphibian collection of INDERENA, Unidad de Investigación Federico Medem, Bogotá), and UVC (Museo de Historia Natural, Universidad del Valle, Cali). Information reported in the diagnoses is not repeated in the descriptions unless there is some qualification.

A sister species of *Eleutherodactylus bellona*

Lynch (1992b) described a distinctive cloud forest species of *Eleutherodactylus* as *E. bellona* to reflect the fact that only females possessed co-ossified skin over the frontoparietals. *Eleutherodactylus bellona* is known from western Antioquia on the Cordillera Occidental at elevations between 1100 and 2000 m. On 30 March 1992, Ruiz collected two frogs at "La Empalada" [a site 13 km by road from Misstrató (to San Antonio de los Chamés), Municipio de Misstrató], western Depto. Risaralda, that are obviously related to *E. bellona*. For these frogs, we propose the name.

Eleutherodactylus mars sp. nov.

Holotype. ICNMHN 30335, an adult male obtained at "La Empalada", Quebrada La Empalada, Km 13 carretera Misstrató a San Antonio del Chamf, Municipio de Misstrató, Departamento de Risaralda, Colombia, 1760-1790 m, on 30 March 1992 by Pedro M. Ruiz (field number PR 14552).

Paratype. ICNMHN 30336, topotypic male taken with holotype.

Diagnosis. (1) skin of dorsum tuberculate, no dorsolateral folds, that of venter coarsely areolate; (2) tympanum small, round, prominent; (3) snout subacuminate in dorsal view, rounded in lateral profile; canthus rostralis sinuous; (4) no cranial crests nor enlarged eyelid tubercles; skin over frontoparietals co-ossified; (5) vomerine odontophores prominent, oval in outline; (6) males lack vocal slits, nuptial pads white, glandular; (7) first finger slightly shorter than second; fingers with broad disks (except thumb); (8) fingers with prominent lateral fringes; (9) low ulnar tubercles present; (10) small tubercles on heel and tarsus; (11) two metatarsal tubercles, inner nearly round, outer indistinct; (12) toes with lateral fringes but no webbing; toe disks as large as those of outer fingers; (13) dorsum gray with black marbling; two pale spots between eyes; concealed surfaces of thighs rose with prominent black bands; throat with black triangle and lines; venter cream spotted with black; (14) adults moderate sized, two males 33.0-34.9 mm SVL.

Eleutherodactylus mars is most like *E. bellona* but differs because males have co-ossification of the skin over the frontoparietals. The absence of cranial crests in male *E. mars* does not mean that females lack such crests. The other differences between *E. bellona* and *E. mars* are