

AMPHIBIA: ANURA: LEPTODACTYLIDAE

LEPTODACTYLUS MYSTACINUS

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***Leptodactylus mystacinus* (Burmeister)**
Mustached Frog

Cystignathus mystacinus Burmeister 1861:532. Type locality, "Bei Rozario" [Argentina, Santa Fe, Rosario, 32°57' 60"40'W, see **Nomenclatural History**]. Holotype, Martin-Luther-Universität, Halle (Saale), no number, adult male, collector and date unknown (examined by WRH).

Cystignathus labialis Cope 1877:90.

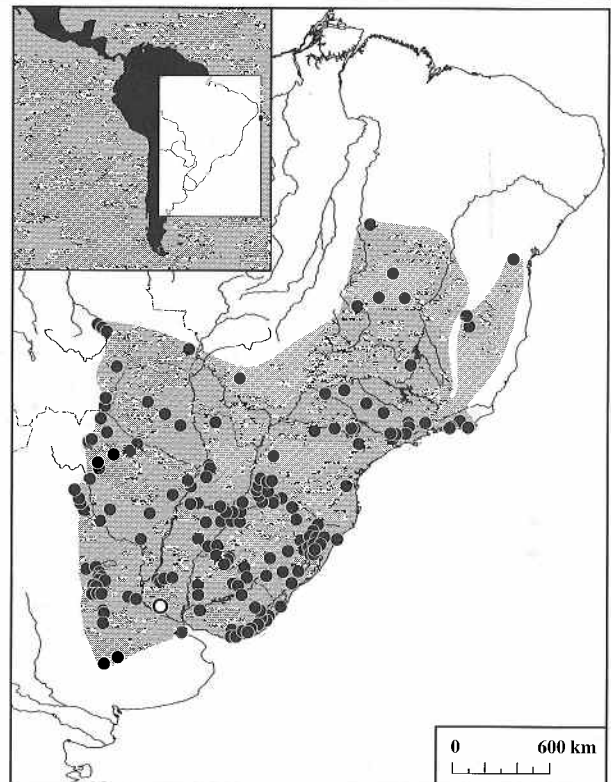
Leptodactylus mystacinus: Boulenger 1882:244. First use of currently recognized name.

• **CONTENT.** The species is monotypic (see **Nomenclatural History**).

• **DEFINITION.** Adult *Leptodactylus mystacinus* are of moderate size, the head is as wide as long, and the hind limbs are moderately short (see **Table**; Heyer and Thompson 2000 provided definitions of adult size and leg length categories for *Leptodactylus*). Male vocal sacs are not visible externally or at best are weakly expanded laterally and slightly darker than female throats. Male snouts are more spatulate than those of females. Male forearms are not hypertrophied. Males lack asperities on the thumbs and chest. One or two pairs of dorsolateral folds (indicated by dark/light outlining in indifferently preserved specimens) are present: one distinct more dorsal pair extends from behind the eye (often with a gap with the fold beginning at a level above the tympanum) to the upper groin; a second pair, either complete or interrupted, extends from above the forearm insertion at the same level as the dorsal portion of the supratympanic fold and extends to the groin along the flanks. The toe tips are narrow. The toes lack fringes or fleshy ridges. The upper shank has many or scattered distinct white tubercles. The outer tarsus almost always (94%) has many or scattered distinct white tubercles. The sole of the foot usually (75%) has distinct scattered to many white tubercles, sometimes (25%) the white tubercles are absent.

The upper lip usually (86%) has a distinct light stripe, sometimes (14%) the stripe is indistinct. A dark interorbital bar is absent. The dorsum is uniform, striped, or with small dark spots. The upper pair of dorsolateral folds have a distinct dark brown stripe or band ventrally and usually have a light pinstripe highlighting the fold dorsally; the light stripe is often broader and more distinct posteriorly. The fold along the flanks may have dark or cream highlights or both. The species lacks light mid-dorsal stripes. The belly ranges from being immaculate to mottled, with the mottling more intense on the lateral portions of the belly behind the arm insertions. The posterior thigh surfaces usually (94%) lack light horizontal stripes on their lower aspects; a few specimens (6%) have indistinct light stripes. The upper shanks have narrow dark crossbands, often interrupted medially.

Larvae have a typical pond morphology and are members of the lentic, benthic guild (Altig and Johnston 1986, guild 12). The oral disk is anteroventrally positioned, entire (not emarginate), with an anterior gap lacking marginal papillae. A single row of marginal papillae is on either side of the anterior gap; two rows of marginal papillae occur laterally; one or two rows occur ventrally, the second row usually not complete. No submarginal papillae are present. The tooth row formula is 2(1)/



MAP. Distribution of *Leptodactylus mystacinus*. The type locality is indicated by a circle. Dots mark other localities. A dot may represent more than one site. Published locality data used to generate the map should be considered as secondary sources of information, as we did not confirm all specimen identities.



FIGURE 1. *Leptodactylus mystacinus*, Uruguay (photograph courtesy of A. Olmos).

3(1). The spiracle is sinistral and the vent tube is median. The dorsal fin ends at the body and does not extend onto it. At Gosner stages 35–36, larval total lengths range from 46–48 mm and

TABLE. Summary measurement data for *Leptodactylus mystacinus* (means are in parentheses).

Measurement	Males	Females
SVL (mm)	44–65 (54.1)	53.5–67.1 (57.3)
Head length/SVL (%)	33–39 (37)	32–38 (36)
Head width/SVL (%)	32–38 (35)	33–38 (35)
Thigh length/SVL (%)	33–45 (39)	33–42 (38)
Shank length/SVL (%)	37–45 (42)	36–64 (42)
Foot length/SVL (%)	36–47 (42)	37–46 (42)

body lengths from 17–18 mm; eye diameters are 9–11% of body lengths; and the widths of the oral disks are 21–23% of body lengths. The dorsum and sides of the body are brown; brown melanophores encroach on the venter anterior to the gut, otherwise the venter lacks pigment. The tail musculature is mottled brown and cream. The tail fins range from having distinct dark to little mottling.

The advertisement call consists of a single note per call, given at a rate of 250–400/min. Call duration ranges from 0.04–0.06 s (Barrio's 1965b value of 0.10 s seems to be due to over-recording and/or microphone ringing). The call lacks or has negligible amplitude modulation. The call lacks or has negligible frequency modulation; when modulation is present, the average rise is 50 Hz from beginning to end of call. The call attains near maximum intensity almost immediately; the final third of the call falls off evenly. The dominant frequency is the fundamental frequency. The dominant frequency ranges from 2050–2500 Hz. Harmonics are either absent (calls analyzed from Paraguay for this account) or present (Barrio 1965b from Argentina).

• **DIAGNOSIS.** The species having a combination of no toe fringing, no light stripe on the posterior surface of the thigh, and distinct white tubercles on the posterior surface of the tarsus are *Leptodactylus bufonius*, *L. labrosus*, *L. mystacinus*, *L. troglodytes*, and *L. ventrimaculatis*. *Leptodactylus mystacinus* has distinct dorsolateral folds (at least indicated by color pattern); dorsolateral folds are indistinct or lacking in *L. bufonius* and *L. troglodytes*. *Leptodactylus mystacinus* is difficult to diagnose consistently from *L. labrosus* and *L. ventrimaculatus* based on external morphological features. Most *L. mystacinus* have a very distinct light upper lip stripe; no *L. labrosus* or *L. ventrimaculatus* have distinct upper lip stripes. The advertisement call of *L. mystacinus* differs markedly from those of *L. labrosus* and *L. ventrimaculatus*; the latter two species have calls with pronounced rising frequency modulation (WRH, unpubl. data).

• **DESCRIPTIONS.** Burmeister (1861) (Spanish translation, 1944) described the type specimen in detail and L. Müller (1941) provided a morphological description of the holotype. Detailed

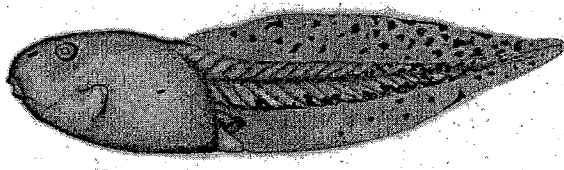


FIGURE 2. Tadpole of *Leptodactylus mystacinus* (USNM 556038) from Quinta de Santos, Montevideo, Uruguay; Gosner stage 37. Bar = 5 mm.

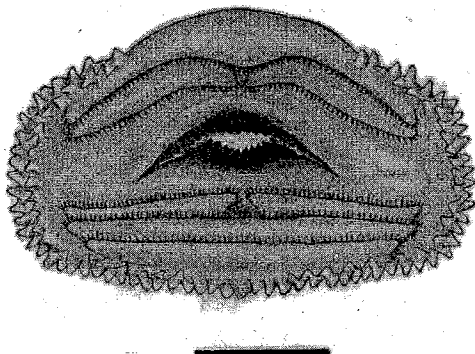


FIGURE 3. Oral disk of *Leptodactylus mystacinus* larva (USNM 556038) from Quinta de Santos, Montevideo, Uruguay; Gosner stage 37. Bar = 1 mm.

character descriptions of adults, including color patterns, are in Gallardo (1964c) and Hensel (1867, as *L. mystaceus*). Cei (1980), Cochran (1955), Heyer (1978), A. Lutz (1926), Méhelý (1904), F. Müller (1880, as sp. questionably *mystacinus*) and Sazima (1975) furnished morphological and color descriptions. Miranda-Ribeiro's (1926) description of *L. pygmaeus* is not of *L. mystacinus*. Descriptions of juvenile *L. mystacinus* were provided by Cope (1877, as *Cystignathus labialis*), Gallardo (1964c), and Sazima (1975). Larval characteristics and color are described in Sazima (1975) and Wogel et al. (2000). Wassersug and Heyer (1988) detailed larval oral features. Advertisement call descriptions are in Abrunhosa et al. (2001), Barrio (1964b, 1965b), Kwet (2001), and Sazima (1975). Kwet (2001) and Straneck et al. (1993) produced a compact disk and cassette tape, respectively, that include *L. mystacinus* advertisement calls. A description of the karyotype is in Bogart (1974).

• **ILLUSTRATIONS.** Color photographs were provided by Couturier (1985), De la Riva et al. (2000), Kwet (2001), and Lavilla et al. (1995, as *L. cf. mystacinus*). Photos of adult specimens are in Bogart (1974), Cei (1956), Freiberg (1972), Gallardo (1964c, 1974), Klappenbach (1969), Martínez Achenbach (1963), and Sazima (1975). Gallardo (1964c, 1987b) furnished drawings of adult specimens. Illustrations by Cei (1980), A. Lutz (1926), and Méhelý (1904) are in color. Depictions of adult anatomical features are in Cei (1980), Gallardo (1987b), Langone (1995), Limeses (1969), Limeses et al. (1972), and Sazima (1975). Sazima (1975) presented an illustration of the head profile of a juvenile specimen. A larval photo is in Wogel et al. (2000) and a SEM micrograph of the larval oral cavity is in Wassersug and Heyer (1988). Drawings of larvae and larval anatomical features were included in Cei (1980), Larson and de Sá (1998), Sazima (1975), and Wogel et al. (2000). Abrunhosa et al. (2001), Barrio (1964b, 1965b), Kwet (2001), Salas et al. (1998), Sazima (1975), Straneck et al. (1993), and Wogel et al. (2002) provided audiospectrograms of the advertisement call. Abrunhosa et al. (2001) included an oscillogram of the advertisement call and audiospectrograms and oscillograms of calls of an unknown function. Photographs and illustrations of nests and nest construction are in Sazima (1975). Bogart (1974) provided a photograph of the karyotype.

• **DISTRIBUTION.** *Leptodactylus mystacinus* is found in subtropical arid and mesic habitats of the eastern slopes of the Andes in Bolivia and the Yungas of northwestern Argentina, extending eastward through Mato Grosso and Goiás to Bahia, Brazil. It ranges southward to central Argentina and Uruguay. *Leptodactylus mystacinus* occurs throughout the Chaco and much of the Cerrado Morphoclimatic Domain, but is not found in the Caatinga Morphoclimatic Domain (Ab'Sáber, 1977). Where *L. mystacinus* occurs in mesic regions, as in the central and southern Atlantic Forests of Brazil, it inhabits clearings such as pastures rather than closed canopied forests.

Harding (1983) listed its distribution by countries in the New World. Duellman (1999) tabled its distribution as Atlantic Forest, Caatinga-Cerrado-Chaco, and Pampean-Monte Domains. Citations for its general distribution are found in Cei (1980), Gallardo (1964c, 1987b), Klappenbach and Langone (1992), Langone (1995), and Lavilla et al. (2000b). Boettger (1892) recorded a *Leptodactylus mystacinus* collected from "Caracas, Venezuela" and Berg (1896), Cei (1956), Freiberg (1942), A. Lutz (1927, 1928), Marelli (1924), and Nieden (1923) included the mistaken locality in their distribution statements. Gallardo (1964c) indicated that the Venezuelan locality error was based on species misidentification. Beebe (1925, 1946), Crawford (1931), and Crawford and Jones (1933) placed *L. mystacinus* in British Guiana and Venezuela based on mistaken identifications.

