



<http://dx.doi.org/10.11646/zootaxa.3784.1.5>

<http://zoobank.org/urn:lsid:zoobank.org:pub:BE4BEA5D-A20C-4EBA-81AF-4A107025DA7E>

The advertisement call and geographic distribution of *Odontophrynus lavillai* Cei, 1985 (Anura: Odontophrynidae)

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Currently, the genus *Odontophrynus* Reinhardt & Lütken comprises 11 species distributed in southern and eastern South America. Among them, *O. americanus* (Duméril & Bibron), *O. lavillai* Cei, *O. cordobae* Martino & Sinsch, and *O. maisuma* Rosset constitute a group of sibling diploid and tetraploid species, the *O. americanus* group (Rosset *et al.* 2006 and literature cited therein).

Interestingly, as in other anuran lineages (see Guignard *et al.* 2012), polyploidization might affect phenotypic features such as temporal and spectral characteristics of the advertisement call. In the genus *Odontophrynus* the pulse rate is lower in tetraploid than in diploid males (Bogart & Wasserman 1972; Martino & Sinsch 2002). In this regard, acoustic studies are useful for distinguishing these sibling species.

The advertisement calls of tetraploid *O. americanus* (Barrio & Pistol de Rubel 1972; Márquez *et al.* 1995; Salas & di Tada 1996; Martino & Sinsch 2002), *O. cordobae* (diploid species, Barrio 1964; Barrio & Pistol de Rubel 1972; Straneck *et al.* 1993, as *O. americanus*; Martino & Sinsch 2002; Grenat *et al.* 2013) and *O. maisuma* (diploid species, Borteiro *et al.* 2010) have been described, while the call of *O. lavillai* (diploid species) remains unknown. Barrio and Pistol de Rubel (1972) studied calls of diploid males of two Argentinean localities (Km 969, Catamarca; and Frías, Santiago del Estero), now assigned to *O. lavillai*, but they only published a spectrogram without data of the acoustic variables. Köhler (2000) described an advertisement call attributed to *O. lavillai*, but as we will discuss later, we believe that the voucher specimen was misidentified.

Here we present a description of the advertisement call of *O. lavillai*. This species was originally described from Sierra de Guasayán, Santiago del Estero (Ceï 1985). Later, it was recorded from several localities of Argentina, Bolivia, Paraguay, and Brazil based on chromosome count, erythrocyte size, and morphological characters (see also new records in Figure 1B). *Odontophrynus lavillai* is associated to the Dry and Humid Chaco Ecoregions, and marginally to the Yungas Ecoregion (Rosset *et al.* 2006; 2009 and literature cited therein).

The specimens studied here come from three localities of Argentina and they are undoubtedly assigned to *O. lavillai* by the diploid number of chromosomes, the skin on dorsum heavily granular and glandular, and three transversal dark brown blotches on dorsum, lacking a light middorsal stripe (Figure 1A; Barrio & Pistol de Rubel 1972; Ceï 1985; Rosset *et al.* 2009). Males were found calling within the water (semisubmerged) in temporary ponds after heavy rains. On 20 February 2002, calls of two males (FML 11159, plus an unvouchered male) were recorded at 1.5 km north of Gaona, Salta (25°15'33"S, 64°01'45"W). On 4 February 2004, calls of one male (MLP DB 2706) were recorded at 5 km south of Añatuya, Santiago del Estero (28°46'S, 64°47'W). Finally, on 11 March 2009, calls of two males (LGE 8599–8600) were recorded at El Sauzal, Chaco (24°34'59.5"S, 61°32'38.8"W). Calls were recorded with a Sony WM-D6C recorder and Sennheiser LR 66 microphone. Water and air temperatures ($\pm 1^\circ\text{C}$) were measured near each recorded male with a digital thermometer. The snout-vent length (SVL) of each vouchered specimen was measured using a Vernier calliper (to the nearest 0.1 mm). Calls were digitized and analyzed with software Sound Forge 5.0 (Sony Creative Software Inc. 2007) and Syrinx 2.3s (Burt 2006), employing a sampling rate of 44.1 kHz and 16-bit precision. Dominant frequency was obtained with a FFT of 1024 points and a Hamming's sampling window. Series of 5–18 advertisement calls of better quality belonging to five specimens were analyzed. The following acoustic variables were measured: note (= call) duration (ND), internote duration (IND), notes/m (N/m), pulses/note (P/N), pulse duration (PD), interpulse duration (IPD), pulses/s (= pulse rate), and dominant frequency (DF), as defined by Heyer *et al.* (1990), and Littlejohn (2001).

(2002), does not belong to *O. lavillai*. We hypothesize that it might correspond to the advertisement call of a species of the genus *Ceratophrys*, mainly due to the fast pulse rate and high dominant frequency (see Lescano 2011 and literature cited therein for calls of Ceratophryidae). Examination of the voucher specimen is pending.

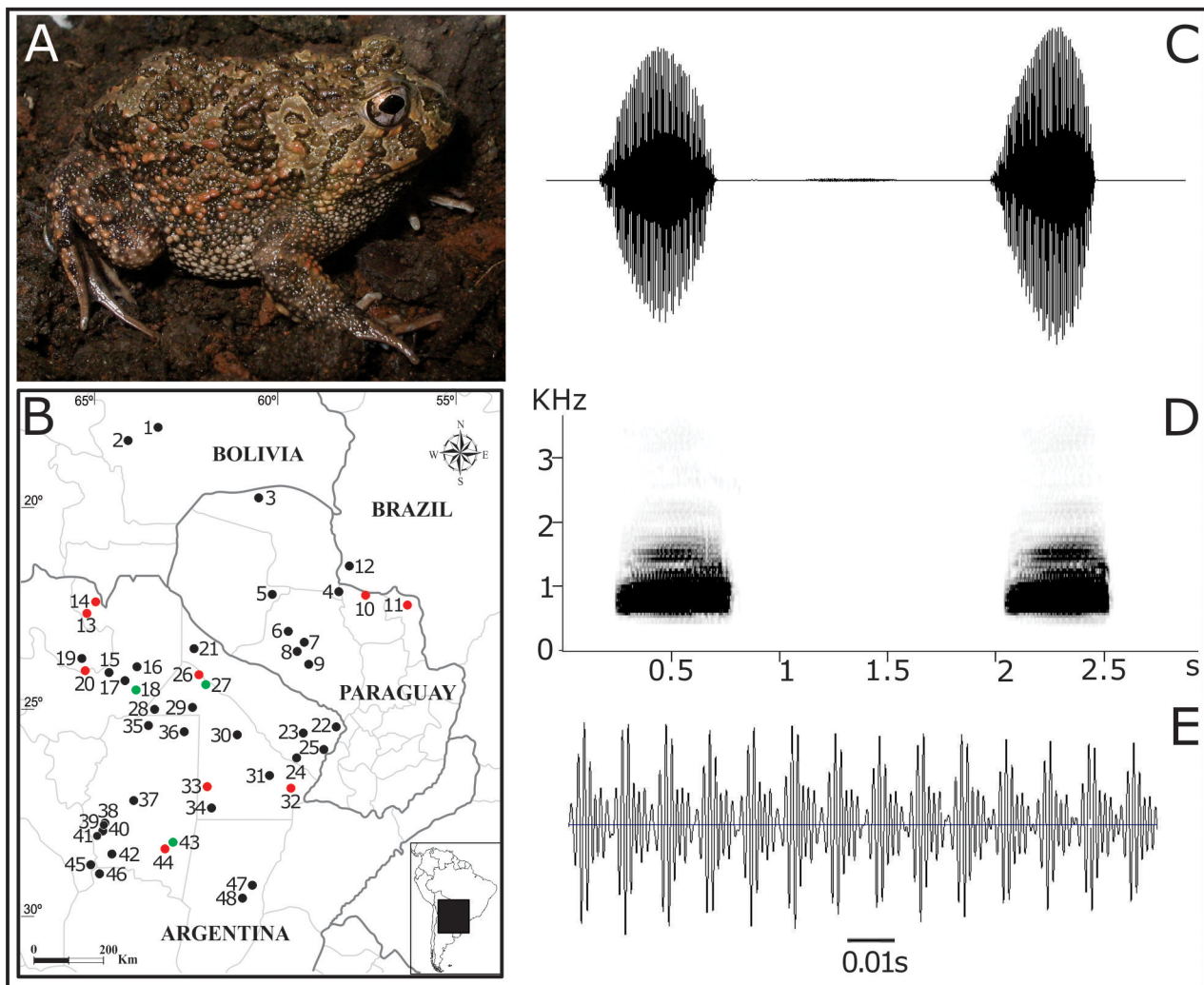


FIGURE 1. (A) Male of *Odontophrynus lavillai* from Añatuya, Santiago del Estero, Argentina (MLP DB 2706); (B) geographic distribution of this species (black dots after Rosset *et al.* 2009; red dots are new records; green dots are localities of recorded specimens; see Appendix 1); (C) oscillogram and (D) sonogram showing two calls (= notes); and (E) oscillogram showing 14 pulses of the call of a male (LGE 8599) from El Sauzal, Chaco, Argentina.

Acknowledgments

We are grateful to D. Casagrande, A. Novillo, M.L. Ponssa, F. Kolenc, C. Borteiro, and D. Marti for their help in fieldwork. To M.F Vera Candiotti, F. Kolenc, C. Borteiro, and M. Vences for suggestions on the manuscript. To J. Köhler and Fonoteca Zoológica, Departamento de Biodiversidad y Biología Evolutiva, Museo Nacional de Ciencias Naturales (CSIC) de Madrid for permission to use the call number 5573. PICTs 1524/2011, 1895/2011, 2687/2012, and PIP 112201101/00875 provided financial support.

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