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**Correspondence**

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# Notes on the acoustic repertoire of *Melanophryniscus klappenbachi* Prigioni & Langone, 2000

MEIKE KURTH[1], DAVID HÖRNES[1], SASCHA ESSER[1] & DENNIS RÖDDER[1,2]

[1]*Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, 53113 Bonn.*
*E-mail: s6mekurt@uni-bonn.de, davidhoernes@gmx.de, s.esser@zfmk.de, d.roedder.zfmk@uni-bonn.de*
[2]*Corresponding author. E-mail: d.roedder.zfmk@uni-bonn.de*

The genus *Melanophryniscus* Gallardo, 1961 currently comprises 25 recognized species (Frost 2012) arranged in three (Cruz & Caramaschi 2003) to four species groups (Cespedez & Motte 2001, quoted by Maneyro et al. 2008) on the basis of morphological characters. The *Melanophryniscus stelzneri* species group currently contains nine species, i.e. *M. atroluteus* (Miranda-Ribeiro, 1920), *M. cupreuscapularis* Céspedez & Alvarez, 2000, *M. dorsalis* (Mertens, 1933), *M. fulvoguttatus* (Mertens, 1937), *M. klappenbachi* Prigioni & Langone, 2000, *M. krauczuki* Baldo & Basso, 2004, *M. montevidensis* (Philippi, 1902), *M. rubriventris* (Vellard, 1947), and *M. stelzneri* (Weyenbergh, 1875). So far, advertisement calls of only four of these species have been described, i.e. those of *M. atroluteus*, *M. dorsalis*, *M. krauczuki*, and *M. montevidensis* (Kwet *et al*. 2005, Baldo & Basso 2004). Herein, we describe the courtship call and distress call of *M. klappenbachi* and compare it with the calls of other members of the group (for definitions of the respective call types see below).

In 2011, we obtained a group of 12 specimens from the pet trade, which were imported from Paraguay. The species can be recognized by having a blackish dorsum with many small and / or few large yellow spots; at least one pair of yellow spots on the suprascapular region; presence of a distinctive, yellow interocular bar or stripe, which may also consist of a series of smaller blotches (Kwet *et al*. 2005). However, in some species of the genus such as *M. rubriventris* coloration might be variable across its range (Bonanesea & Vaira 2012), comparative data for *M. klappenbachi* are unfortunately lacking. In spring 2012, the specimens were transferred into a terrarium of the size 80 x 40 x 40 cm (LxBxH) equipped with a water tank (30 x 30 x 10 cm) and wild grass and herbs in the garden of the Zoologisches Forschungsmuseum Alexander Koenig (ZFMK). In October 2012, the specimens were artificially hibernated at ca. 8 °C in a fridge and subsequently transferred to an indoor enclosure (40 x 50 x 40 cm; ¼ water of ca. 5 cm depth, ¾ land), which was equipped with leaf litter, mosses and bark placed on filter foam. Calling activity started during daytime with a peak of activity in the morning hours after increasing the humidity using an automatic misting system and simulating heavy rainfalls for several hours.

Calls were recorded using a Song Meter SM2 automated recorder (Wildlife Acoustics, Inc. Concord, Massachusetts) at a sampling rate of 44,100 points per seconds and saved as .wav with, a 32 bit dept. The air temperature during recordings ranged from 22 to 24 °C. Recordings were subsequently cut with Audacity software (V. 1.2.6, available through http://audacity.sourceforge.net) and acoustic measurements were obtained using the program *seewave* (Sueur et al. 2008) for Cran R 2.15.2 (R Core Team 2012). Temporal properties, such as call length, note length, and note repetition rate were obtained from oscillograms determined extracting those frequencies roughly enclosing the dominant frequency (i.e., 1.5–2.5 kHz) by first applying a bypass filter and subsequently computing new oscillograms. As cut off to eliminate background noise, we manually adjusted a threshold of 15% of the maximum sound pressure of the respective call, wherein a sliding window smoother of 40 pt. was applied. Spectral properties were assessed via spectrograms, wherein a Hanning window with a length of 512 points was used for the Fast Fourier Transform. The dominant frequency per entire call group was also measured using the relevant function in *seewave*. To facilitate further analyses, the R script was made available via the Dryad online repository (DOI: doi:10.5061/dryad.gg3f1; available through http://datadryad.org/). Terminology of spectral and temporal call properties follows Duellman & Trueb (1994), wherein the ethological interpretation follows Wells (2007). A voucher specimen was euthanized and deposited in the herpetological collection in Bonn (ZFMK 94213).

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