

## Morphological abnormality in *Leptodactylus podicipinus* (Cope, 1862) (Anura: Leptodactylidae) in an urban area of north Brazil, Eastern Amazon

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**RESUMEN:** Reportamos una anomalía morfológica en *Leptodactylus podicipinus* en el área urbana del municipio de Macapá, estado de Amapá. Durante una evaluación rápida de anfibios y reptiles en campo, recolectamos una hembra adulta de *L. podicipinus* con braquidactilia; este individuo presenta dedos cortos (huesos metatarsianos normales y falanges reducidos). Este es el segundo registro de malformación en *L. podicipinus* en el estado de Amapá y sugerimos que, como resultado de las actividades humanas, se hacen necesarios futuros estudios ecotoxicológicos y epidemiológicos de las poblaciones para establecer las causas reales de las anomalías en esta especie.

The occurrence of malformations in anurans may be caused by global climate change, genetic mutations, UV radiation, environmental pollutants, disease fungal, parasites, habitat loss and degradation, injuries from predation, and introduced invasive species (Alford & Richards, 1999; Cohen, 2001; Lunde & Johnson, 2012; Agostini *et al.*, 2013). Therefore, the anurans acquire in the adult or embryonic stage some malformations, for example: brachydactyly, presence of short toe, however, there is normality in the number of metatarsal bones, but the number phalanges are reduced; ectrodactyly, with a digit completely disappeared, with the metatarsal bone and phalanges (Meteyer, 2000; Lannoo, 2009).

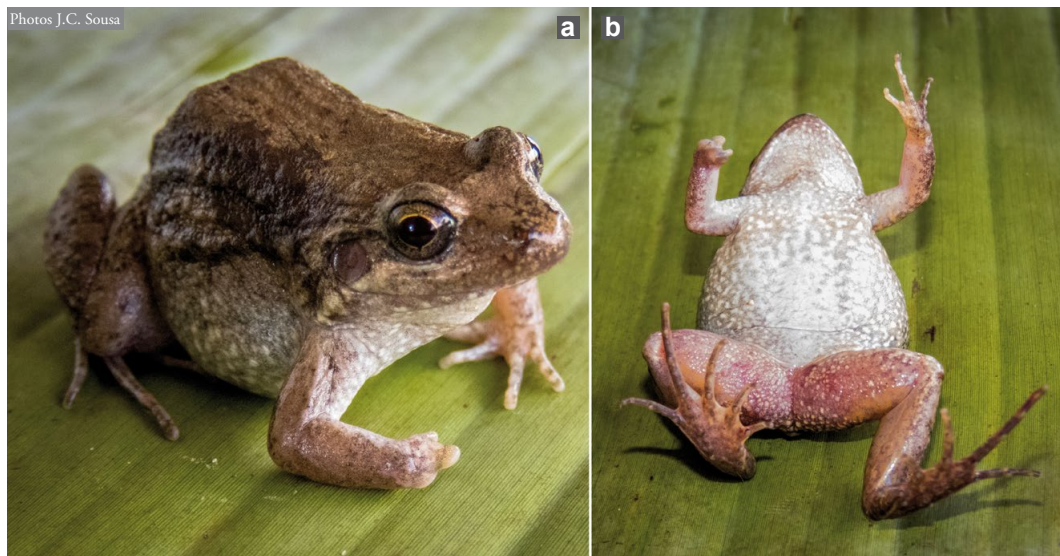
A small number of mutational malformations, developmental errors or trauma can occur naturally in anurans, although they usually occur in only 5% of the total population (Read, 1997), but when a population exceeds this mark it is considered abnormally high (Piha *et al.*, 2006; Peltzer *et al.*, 2011; Bionda *et al.*,

2012). It is correct then to say that the malformations in frogs can lead to the population decline due to abnormalities that prevent the survival of animals and their reproduction (Kats & Ferrer, 2003).

*Leptodactylus podicipinus* (Cope, 1862) is a small-moderate sized species (SVL = 24–54 mm), belonging to the *Leptodactylus melanonotus* group, occurring in Paraguay, Argentina, Bolivia, northwestern Uruguay, and central Brazil (De Sá *et al.*, 2014). This anuran can be found in forests and on the margins of permanent and temporary ponds (Prado *et al.*, 2000) and abundantly in urban and disturbed areas; this is a versatile species which can dwell in almost any habitat (Costa-Campos, pers. comm.).

At 20:30 hours on May 16, 2017, in an urban area in the municipality of Macapá (0°0'30"S, 51°5'43"W; 7 masl), Amapá State, an adult female *L. podicipinus* were collected (SVL= 46.1 mm; 7.0 g). We recorded one type of morphological abnormality in this species: brachydactyly (Figure 1). This individual presented short toe

Photos J.C. Sousa



**Figure 1:** *Leptodactylus podicipinus* with morphological abnormality (brachydactyly) in an urban area of north Brazil, Eastern Amazon. a) Dorsal and b) ventral views.

**Figura 1:** *Leptodactylus podicipinus* con una anomalía morfológica (braquidactilia) en una zona urbana del Norte de Brasil, Amazonas Oriental. Vistas a) dorsal y b) ventral.

(normal metatarsal bones and phalanges reduced). The specimen were fixed in 10% formalin and later preserved in 70% ethanol (Heyer *et al.*, 1994) and is deposited in the Herpetological Collection of the Universidade Federal do Amapá (CECCAMPOS 01251).

Another interesting record of malformations in *L. podicipinus* was made in a wetland in the municipality of Santana, Amapá State, Brazil. The researchers observed in two adult male three types of malformations: ectrodactyly, with only two digits present; brachydactyly, short digits; and ectromelia, with the lower portion of the leg missing (Sousa & Costa-Campos, 2016).

Habitat loss has been the main cause of frog declines (Collins & Storfer, 2003; Bradford, 2005; Gallant *et al.*, 2007), and the monitoring and conservation of these habitats is important to reduce the direct impact of human activities. We suggest that, future ecotoxicological and epidemiological studies of populations are necessary to establish the real causes of abnormalities in this species.

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