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# Breeding habitat and natural history notes of the toad *Melanophryniscus pachyrhynchus* (Miranda-Ribeiro, 1920) (Anura, Bufonidae) in southern Brazil

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THE genus *Melanophryniscus* Gallardo, 1961 comprises 25 Bufonidae species with geographic distribution in central and northern Argentina, southern Bolivia, southern and southeastern Brazil, Paraguay, and Uruguay (Frost, 2010). These toads are arranged in three phenetic species groups according to morphological features; *M. moreirae*, *M. stelzneri* and *M. tumifrons* groups (Cruz & Caramaschi, 2003). At least eight species are currently in the *M. tumifrons* group, which is restricted to southern parts of south America between 26° to 32°S and 49° to 57°W in southern Brazil, Argentina and Uruguay (Caramaschi & Cruz, 2002). The species are *M. cambaraensis* Braun & Braun, 1979, *M. devincenzii* Klappenbach, 1968, *M. macrogranulosus* Braun, 1973, *M. orejasmirandai* Prigioni & Langone, 1986, *M. pachyrhynchus* (Miranda-Ribeiro, 1920), *M. simplex* Caramaschi & Cruz, 2002, *M. spectabilis* Caramaschi & Cruz, 2002 and *M. tumifrons* (Boulenger, 1905). This group is defined by species possessing highly developed warts with an apical corneous spine on dorsal surfaces and flanks, a dorsal colour pattern without contrasting dots, and a conspicuous, rounded protuberance on the snout between the eyes (Cruz & Caramaschi, 2003). Among the species in the *M. tumifrons* group, *Melanophryniscus pachyrhynchus* is considered large and is distinguished by presence of small tubercles on the dorsum and venter, protuberance on the

snout from between the eyes to near the upper eyelids, and in life a ventral colour of reticulated orange. It also has vestigial black reticulated spots and a large trapezoidal red spot on femoral region (Vaz-Silva et al., 2008). *M. pachyrhynchus* was known only by two specimens collected at the type locality (São Lourenço do Sul), in the state of Rio Grande do Sul, Brazil, one hundred years ago (Vaz-Silva et al., 2008). Therefore, this toad species has been listed as 'data deficient' at the global level due the absence of data on distribution, abundance and ecology (Garcia & Segalla, 2004). A recent study rediscovered this species in Brazil and extended its geographic distribution to five localities in the Brazilian state of Rio Grande do Sul (municipalities of Caçapava do Sul, Dom Feliciano, Porto Alegre, São Jerônimo and São Lourenço do Sul) (Vaz-Silva et al., 2008), and one locality in Uruguay (Cuchilla de Mangrullo, Departamento de Cerro Largo) (Borteiro et al., 2005). The range of *M. pachyrhynchus* seems to be associated with upland environments in the Pampa biome (Planalto Sul-Rio-Grandense). This habitat is characterised by rocky outcrops, natural grassland mosaics (Campos) and seasonal forests (IBGE, 2004). However, much of the ecology of *M. pachyrhynchus* remains unknown (Kwet et al., 2005; Maneyro & Kwet, 2008; Vaz-Silva et al., 2008). Herein we report on the first known breeding habitats of *M. pachyrhynchus* and describe a calling site for this species. On 19



**Figure 1.** Landscape and breeding habitat of *Melanophryniscus pachyrhynus* at municipality of São Sepé, state of Rio Grande do Sul, Brazil: A) Bottom of temporary stream, B) natural grasslands, C) seasonal forest and D) cultivated land.

November 2009 five male *M. pachyrhynus* were observed calling along a temporary stream (50 cm wide) flowing in natural grassland and cultivated land (wheat) (Fig. 1), in the municipality of São Sepé (30°14'58.26"S, 53°35'20.90"W, 163 m ASL), Rio Grande do Sul State, Brazil. Three specimens were collected and deposited in the Herpetological Collection of the Universidade Federal de Santa Maria (ZUFMS 4405-07). Males of *M. pachyrhynus* called from among herbaceous vegetation, on the ground, in shallow water (1 cm deep), with the head directed against the flow of water (Fig. 2A). The toads called from sunset (18:30 hrs) until 20:30. The calling behaviour of *M. pachyrhynus* was similar to that observed for males of *M. devincenzii* in Rivera and of male *M. orejasmirandai* in Maldonado, Uruguay (Maneyro, pers. obs.). Reproduction of *Melanophryniscus* sp. mostly occurs after heavy rain and takes place in lentic and lotic environments such as in small streams, shallow pools and flooded areas (Kwet & Di-Bernardo, 1999; Vaira, 2005; Achaval & Olmos, 2007; Cairo et al., 2008; Maneyro & Kwet, 2008). Only two recently described species (*M. alipioi* and *M. vilavelhensis*) differ from this, they breed inside phytotelms (Langone et al., 2008; Steinbach-Padilha, 2008). According to the current literature most species of the *M. tumifrons* group breed in temporary streams (Table 1) in the same manner we recorded for *M. pachyrhynus*. This indicates the species group likely prefers specific breeding habitat. We also observed individuals of *M. pachyrhynus* using a breeding habitat impacted by

agricultural activities, suggesting this species may have some tolerance to disturbed areas. However, longer studies over time that evaluated the affect of landscape usage on the species persistence would be necessary to assess population trends and conservation status of *Melanophryniscus* spp. Until recently, all *Melanophryniscus* spp. were considered diurnal breeders (Garcia & Vinciprova, 2003), but nocturnal breeding activity has now been reported for *M. simplex* and *M. vilavelhensis* (Colombo et al., 2007; Steinbach-Padilha, 2008). In our study area, *M. pachyrhynus* presented diurnal and nocturnal calling activity, suggesting that nocturnal breeding activity among this species may be more common than currently acknowledged. This hypothesis is reinforced by records of several calling males and amplexant pairs of *Melanophryniscus* aff. *devincenzii* found during the night during December 2009 in a temporary stream at Itaara municipality, Rio Grande do Sul State (Maneyro, pers. obs.). When handled, adults of *Melanophryniscus pachyrhynus* displayed the unken reflex (Fig. 2B and C).

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**Figure 2.** Adult male *Melanophryniscus pachyrhynus*: A) at the calling site, B) and C) after manipulated, exhibiting the typical defensive behaviour 'Unken reflex'.

Species	Breeding habitat	Breeding season	Source
<i>M. devincenzii</i>	Ephemeral streams	Winter and spring, after heavy rainfall	Maneyro & Kwet (2008)
<i>M. cambaraensis</i>	Flooded areas near small streams or ditches	Summer, after heavy rainfall	Garcia et al. (2004a)
<i>M. macrogranulosus</i>	Unknown	Unknown	Garcia & Vinciprova (2003), Silvano & Garcia (2004)
<i>M. orejasmirandai</i>	Permanent small streams	Spring (Sept./Oct.), after heavy rainfall	Prigioni & Langone (1990), Lavilla & Langone (2004)
<i>M. pachyrhynus</i>	Ephemeral streams	Summer (November),	This study
<i>M. simplex</i>	Temporary streams	Winter (August)	Colombo et al. (2007)
<i>M. spectabilis</i>	Temporary streams	Unknown	Garcia et al. (2004b)
<i>M. tumifrons</i>	Temporary pools	Unknown	Garcia et al. (2004c)

**Table 1.** Breeding habitat and breeding season of the *Melanophryniscus tumifrons* group.

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