

The unusual occurrence of a population of *Dendropsophus elegans* (Anura: Hylidae) in an inselberg of southeastern Brazil

Marcio Mageski^{1*}, Rodrigo Barbosa Ferreira^{2,3,4}, Cássio Zocca⁴, Rogério Luiz Teixeira³ and Dennis Rödder⁵

Dendropsophus elegans (Wied-Neuwied, 1824) breeds at permanent or semi-permanent ponds from Bahia state to Santa Catarina state. It is a common species in sandy coastal plains (i.e. restinga) and mountainous regions (Rödder et al., 2006; Teixeira et al., 2007; Lacerda et al., 2009; Ferreira and Mendes, 2010).

Inselbergs are mostly dome-shaped rock outcrops with shallow soils and rapid water runoff (Parmentier, 2003). Such environments presumably harbor low species diversity (Teixeira et al., 2006) due to its sparse vegetation, high temperature, and low humidity during the day. Bromeliads are usually the only water source in inselbergs (Richardson, 1999), sheltering many species of invertebrates and small vertebrates (Teixeira et al., 1997; Lopez and Rodrigues, 1999; Schineider and Teixeira, 2001; Ferreira et al. 2012).

A population of *D. elegans* was surveyed from November 2002 to March 2003 at Pedra da Onça (19° 31'S, 39° 18'W, 1039 m), Itarana, Espírito Santo state, southeastern Brazil (Fig. 1).

Water sources in Pedra da Onça include an artificial rock pool and tank bromeliads. This rock pool was artificially dug in 1942 during the search for gemstones. It is 5 m² in area and surrounded by marginal vegetation (Fig. 2).

We surveyed the study site using active searching at potential frog microhabitats such as marginal vegetation, rock pool and bromeliads. Thirty bromeliads were randomly surveyed every month. We recorded the snout-vent length (SVL mm) of specimens and sex (based on presence of vocal sac and developed ovaries), and then released them in the same place. A toe of captured individuals was clipped.

We found 36 individuals of *D. elegans* (30 were males and six females). This strong sex ratio toward males is often found in prolonged breeders (Dyson et al., 1992; Pombal et al., 1994). Males varied in SVL from 24.1



Figure 1. Bromeliads on the inselberg habitat of Pedra da Onça, southeastern Brazil.

¹⁾ Universidade Vila Velha, Laboratório de Herpetologia, Rua Comissário José Dantas de Melo, 21, Vila Velha, Espírito Santo, Brazil, 29.102-770.

²⁾ Department of Wildland Resources and Ecology Center, Utah State University, 84322-5230, Logan, Utah, USA.

³⁾ Museu de Biologia Mello Leitão, Av. José Ruschi 4, 29650-000, Santa Teresa, ES, Brasil.

⁴⁾ Sociedade dos Amigos do Museu de Biologia Mello Leitão, Av. José Ruschi, nº: 4, 29650-000, Santa Teresa, ES, Brasil.

⁵⁾ Zoologisches Forschungsmuseum Alexander Koenig, Adenauerallee 160, D-53113, Bonn, Germany.

* Corresponding author: marcioherpetologia@gmail.com



Figure 2. The artificial pond on the peak of Pedra da Onça, southeastern Brazil.

to 25.3 mm whereas females varied from 27.2 to 28.3 mm SVL. We used R 2.8.1 (R Development Core Team, 2004) software and verified that the average CRC was significantly different between sexes ($t = 127.5$; $DF=1$;

$P < 0.01$) with females much larger than males. Thirty-five individuals were perching on marginal vegetation around the artificial pool and one was inside a bromeliad (*Alcantharea* sp.). The number of individuals increased toward the rainy months, and appeared to decrease at the end of the rainy period (Fig. 3).

Other anuran species co-occurred with *D. elegans*, such as *Scinax arduous*, *Thoropa miliaris*, and *Haddadus binotatus* (see Teixeira *et al.*, 2006). Tadpoles and egg masses of *D. elegans* were observed in the artificial pool.

We report for the first time in the literature the occurrence of an established population of *Dendropsophus elegans* in an inselberg. This species is habitat generalist and able to occupy disturbed environments (Ferreira and Mendes, 2010; Zocca *et al.*, *in press*). However, this species was absent from several rocky outcrops surveyed near our study site (Teixeira *et al.*, 2006; Teixeira and Rödder 2007). We suggest the severe microclimate of inselbergs might be preventing this species from occupying these other surveyed inselbergs.

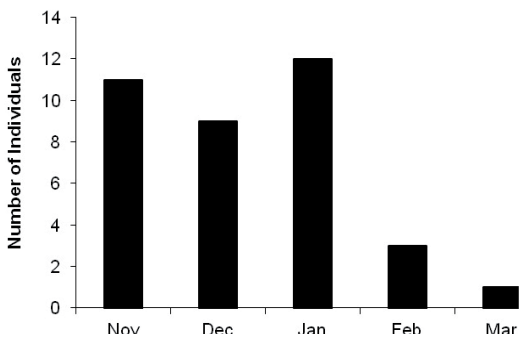


Figure 3. Number of individuals of *D. elegans* found per month.

References

- Dyson, M.L., Passmore, N.I., Bishop, P.J., Henzi, S.P. (1992): Male behavior and correlates of mating success in a natural population of African painted reed frogs (*Hyperolius marmoratus*). *Herpetologica* **48**: 236-246.
- Ferreira, R.B., Mendes, S.L. (2010): Herpetofauna no campus da Universidade Federal do Espírito Santo, área urbana de Vitória, Espírito Santo, Brasil. *Sitientibus, Série Ciências Biológicas* **10**: 279-285.
- Ferreira, R.B., Schneider, J.A.P., Teixeira, R.L. (2012): Diet, Fecundity, and Use of Bromeliads by *Phyllodytes luteolus* (Anura: Hylidae) in Southeastern Brazil. *Journal of Herpetology* **46**: 19-24.
- Lacerda, J.V.G., Assis, B., Santana, D.J., Feio, R.N. (2009): Anurans in bromeliads, Parque Estadual da Serra do Brigadeiro, state of Minas Gerais, southeastern Brazil. *Check List* **5**: 800-806.
- Lopez, L.C.S., Rodrigues, P.J.F. (1999): Frogs and snakes as phoretic agents of bromeliad ostracods (Limnocytheridae: *Elpidium*) and annelids (Naididae: *Dero*). *Biotropica* **31**: 705-708.
- Parmentier, I. (2003): Study of the vegetation composition in three inselbergs from Continental Equatorial Guinea (Western Central África): effects of site, soil factors and position relative to forest fringe. *Belgian Journal of Botany* **136**: 63-72.
- Pombal Jr., J.P., Sazima, I., Haddad, C.F.B. (1994): Breeding behavior of the pumpkin toadlet, *Brachycephalus ephippium* (Brachycephalidae). *Journal of Herpetology* **28**: 516-519.
- R Development Core Team (2004): R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria. Available at: <http://www.R-project.org>. Last accessed on 9 January 2004.
- Richardson, B.A. (1999): The bromeliad microcosm and the assessment of faunal diversity in a neotropical forest. *Biotropica* **31**: 321-336.
- Rödger, D., Narcizo, R.B., Teixeira, R.L., Pertel, W. (2006): Bemerkungen zur Anurendiversität und -ökologie in einem Reservat in Atlantischen Regenwald in Südöst Brasilien. *Sauria* **28**: 27-38.
- Schneider, J.A.P., Teixeira, R.L. (2001): Relacionamento entre anfíbios anuros e bromélias da restinga de regência, Linhares, Espírito Santo, Brasil. *Iheringia, Série Zoologia, Porto Alegre* **91**: 41-48.
- Teixeira, R.L., Zamprogno, C., Almeida, G.I., Schneider, J.A. (1997): Tópicos ecológicos de *Phyllodytes luteolus* (Amphibia, Hylidae) da restinga de Guriri, São Mateus-ES. *Revista Brasileira de Biologia* **57**: 647-654.
- Teixeira, R.L., Mili, P.S.M., Rödger, D. (2006): Ecology of anurans inhabiting bromeliads in a saxicolous habitat of southeastern Brazil. *Salamandra* **42**(2/3): 155-163.
- Teixeira, R.L., Rödger, D. (2007): Diet, foraging strategy and reproduction of *Scinax argyreornatus* (Anura: Hylidae) from a mountainous region at the Atlantic Rainforest of southeastern Brazil. *Herpetozoa* **19**: 161-173.
- Zocca, C.Z.; Tonini, J.J.R. & Ferreira, R.B. In press. Uso do espaço por anuros em ambiente urbano de Santa Teresa, Espírito Santo. *Boletim do Museu de Biologia Mello Leitão* **35**: 105-117.