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Necrophiliac behavior in the "cururu" toad, *Rhinella jimi* Steuvax, 2002, (Anura, Bufonidae) from Northeastern Brazil

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Abstract. Necrophiliac behavior has been documented in all groups of terrestrial tetrapods. Among anurans, necrophilia has been observed in Bombinatoridae, Bufonidae and Ranidae. The lack of proper recognition by males during reproductive season has been attributed as a cause for this type of behavior. We report on an attempt of copulation with a dead conspecific by *Rhinella jimi* in a dry forest area in northeastern Brazil. Such behavior is expected to be selected against as such individuals reduce their chances of leaving offspring.

Keywords: Bufonidae, davian behavior, mate recognition, necrophilia, reproductive behavior.

The attempt of copulation with dead conspecifics (necrophilia) has been reported in different vertebrates, such as mammals (Dickerman 1960), birds (Moeliker 2001), reptiles (Costa et al. 2010), and anurans (Meshaka-Jr. 1996, Mollov et al. 2010). Among anurans, it has been reported in the families Bombinatoridae (Sinovas 2009), Bufonidae (Marco & Lizana 2002), and Ranidae (Pearl et al. 2005). We report on a case of necrophilia in the "cururu" toad, *Rhinella jimi* Stevaux, 2002, a species in the *R. marina* species group with a distribution throughout Brazil's northeastern region from the State of Maranhão to the State of Bahia (Vallinoto et al. 2010).

Observations took place in a small creek within a dry forest area in the locality of Fazenda Gameleira, municipality of Milagres, state of Ceará, northeast Brazil (07º25'36" ºS, 38º59'58"1 ºW). Mean annual rainfall is 920 mm (Funceme 2010), with a wet season from January to April and a dry season from May to December.

At proximally 19:30 on December 12th 2009 we found a male *R. jimi* in an axillary amplex with a dead conspecific female (Fig. 1). The contractions and rhythmic movements of the male indicated that it was indeed trying to copulate. When approached by one of us (LB), the male released the corpse and jumped into the creek. The female apparently had been dead for a couple of days, as it had a strong rotten smell and signs of bacterial and fungal development. The lack of calls, absence of tadpoles or froglets, and the small amount of individuals (N=3) observed during the seven days of field survey are evidence that they were not in reproductive activity.

Figure 1. Male *Rhinella jimi* attempting to amplex with dead conspecific in the municipality of Milagres, Ceará, Northeastern Brazil.

The lack of proper recognition by males during mate search has been considered as the underlying cause behind necrophilic behaviors (Pearl et al. 2005, Costa et al. 2010). Such lack of recognition has been observed in the field and experimentally demonstrated in different bufonid species (Marco & Lizana 2002, Machado & Bernarde 2011). However, while the species in the above reports were in the peak of their respective reproductive seasons, our observations were unusual in the sense that it did not seem to be triggered by a "reproductive frenzy".

According to Meshaka-Jr. (1996) there is a

negative selection against such mistakes when they result from wrong clues due to human interference, such as elevated body heat in road-kills (Dickerman 1960, Costa et al. 2010), given that mistaken males will have an increased chance of becoming road-kill themselves. However, in natural environments selective pressures on such behavior remain unclear. Only with detailed data on species' ecology and controlled experiments it will be possible to better understand the mechanisms behind this awkward behavior.

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References

Costa, H.C., Silva, E.T., Campos, P.S., Oliveira, M.P.C., Nunes, A.V., Santos, P.S. (2010): The Corpse Bride: a case of davian behavior in the green ameiva (*Ameiva ameiva*) in southeastern Brazil. Herpetology Notes 3: Art.#19, pp. 79-83.

Dickerman, R.W. (1960): "Davian Behavior Complex" in ground squirrels. Journal of Mammalogy 41: 403.

Funceme (2010): Fundação Cearense de Metereologia. Série histórica da pluviometria no município de Guaramiranga, Ceará, <http://funceme/br/index.php/areas/tempo/download-de-series-historicas, accessed at 2010.08.17.>

Machado, R.A., Bernarde, P.S. (2011): Multiple and heterospecific amplexi between the toads *Rhaebo guttatus* and *Rhinella marina* (Anura: Bufonidae). Herpetology Notes 4: Art.#41, pp.167-169.

Marco, A., Lizana, M. (2002): The absence of species and sex recognition during mate search by male common toads, *Bufo bufo*. Ethology Ecology & Evolution 14: 1-8.

Meshaka-Jr., W.E. (1996): Anuran davian behavior: A Darwinian dilemma. Florida Scientist 59: 74-75.

Moeliker, C.W. (2001): The first case of homosexual necrophilia in the mallard *Anas platyrhynchos* (Aves: Anatidae). Deinsea 8: 243-248.

Mollov, I.A., Popgeorgiev, G.S., Naumov, B.Y., Tzankov, N.D., Stoyanov, A.Y. (2010): Cases of abnormal amplexus in anurans (Amphibia: Anura) from Bulgaria and Greece. Biharean Biologist 4: 121-125.

Pearl, C.A., Hayes, M.P., Haycock, R. (2005): Observations of interspecific amplexus between western North American ranid frogs and the introduced American bullfrog (*Rana catesbeiana*) and an hypothesis concerning breeding interference. American Midland Naturalist 154: 126-134.

Sinovas, P. (2009): *Bombina variegate* – mating behavior. Herpetological Review 40: 199.

Vallinoto, M., Sequeira, F., Sodré, D., Bernardi, J.A.R., Sampaio, I., Schneider, H. (2010): Phylogeny and biogeography of the *Rhinella marina* species complex (Amphibia, Bufonidae) revisited: implications for Neotropical diversification hypotheses. Zoologica Scripta 39: 128-140.