

Battle of giants: Predation on giant tadpole of *Pseudis platensis* (Anura: Hylidae) by a giant water bug (Hemiptera: Belostomatidae)

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Amphibians contribute largely to aquatic and terrestrial food webs as prey for a wide range of invertebrates (e.g., Toledo, 2003; Pyke et al., 2013; Gambale et al., 2014; Maffei et al., 2014), vertebrates (e.g. Borteiro et al., 2009; Krawczyk et al., 2013; Weiperth et al., 2014; Bianchi et al., 2014; Bontemps et al., 2016), and even carnivorous plants (Haddad and Abe, 2000; Toledo, 2003; Toledo et al., 2007; Gambale et al., 2014). Among invertebrates, amphibians are preyed upon at all stages by generalist predators, mainly by arthropods such as water bugs and spiders (Wells, 2010). Because amphibians have a close dependence on aquatic environments, they are more vulnerable to aquatic predators (Toledo, 2003). Belostomatid bugs prey upon a large number of anuran species, and this pressure may affect the success of anuran populations (Toledo, 2003; Figueiredo-de-Andrade et al., 2010; Maffei et al., 2014). Kwet (2011) found an annual mortality from 5 to 10% in a *Dendropsophus minutus* (Peters, 1872) population caused by water bugs in Rio Grande do Sul state, Brazil.

Frogs of the Genus *Pseudis* are aquatic, widespread in South American lowlands (Garda et al., 2010), and best known by its giant tadpoles (Fabrezi et al., 2009), which can reach 27 cm of total length (Bokermann, 1967).

Pseudis platensis Gallardo, 1961 has giant tadpoles and occurs in semi-permanent and permanent ponds in Southeastern Bolivia, Paraguay, the south-central region of Brazil, and northeastern Argentina (Garda et al., 2010). Although the adults of this species have been reportedly preyed by birds (Landgraf-Filho et al., 2011; Prado, 2003) and reptiles (Santos et al., 1996), no reports are available of predation on its tadpoles.

We observed a giant water bug preying upon a tadpole of *P. platensis* in a permanent pond during a field expedition to a Pantanal area at Fazenda Nhumirim (-8.986388° lat, -56.621944° long; 100 m altitude), Corumbá, Mato Grosso do Sul state of Brazil, in April 11th, 2016. The tadpole was at Gosner stage 32 (Gosner, 1960), had a body length of 9.5 mm and total length of 83.39 mm. The water bug, measuring 68 mm in total length, was identified as *Belostoma* sp. (Belostomatidae) (Rafael et al., 2012). Both specimens were collected and are housed in the Zoological Collection of the Mato Grosso do Sul Federal University (vouchers ZUFMS-HEM00235 and ZUFMS-AMP05541), in Campo Grande, Mato Grosso do Sul, Brazil (Fig. 1).

Although *P. platensis* tadpoles are known as prey for several species (e.g. Thomas, 1984; Santos et al., 1996; Gonzáles, 1997; Campos, 2003), this is the first record of their predation by a water bug, increasing the knowledge of food chains involving vertebrates and invertebrates in the Pantanal floodplain. Giant water bugs are well known as adult and anuran tadpole predators (Toledo, 2013; Gambale et al., 2014), and such interactions have been reported in different ecosystems across South America. We suggest that such interaction may be more common, as both species are very abundant in the Pantanal wetlands (Alho, 2005; Junk et al., 2006; Batzer and Boix, 2016).

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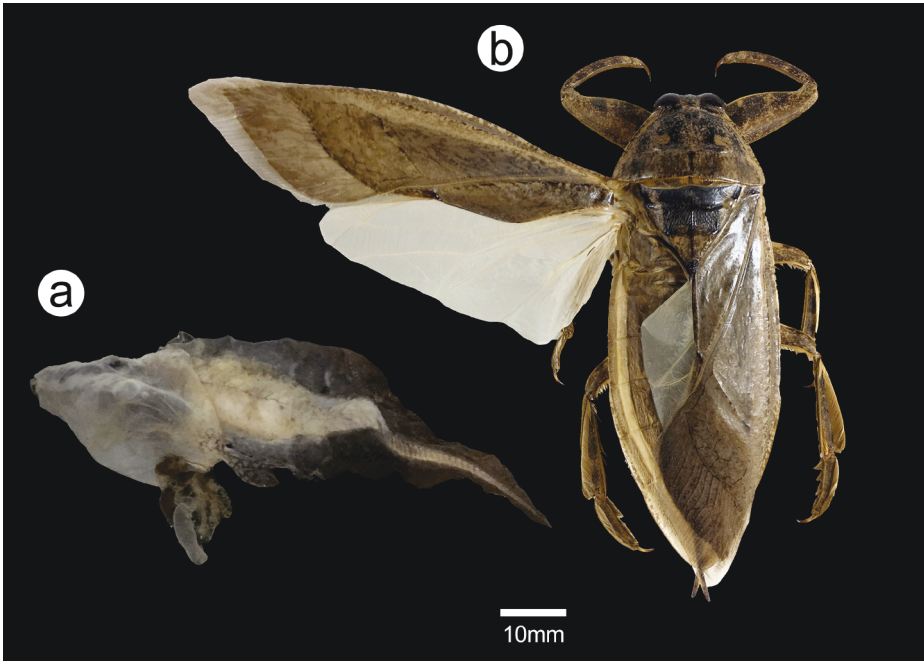


Figure 1. (a) Preyed giant tadpole of *Pseudis platensis* (ZUFMS-AMP05541, TL 83.39), and its predator (b) the giant water bug *Belostoma* sp. (Belastomatidae) (ZUFMS-HEM00235). Both collected at Fazenda Nhumirim, municipality of Corumbá, state of Mato Grosso do Sul.

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