



Cannibalism in the Smith Frog, *Hypsiboas faber* (Wied-Neuwied, 1821), in Southern Brazil

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Amphibians have a generalized diet, but adults are always predators. Most are insectivorous, but several species feed on small vertebrates. Some of the latter feed sporadically on frogs (batracophagy; Toledo et al. 2006, Figueiredo-de-Andrade et al. 2012). Cannibalism in anurans is well known in tadpoles (e.g., McDiarmid and Altig 1999). Among adult anurans, however, it is rare; when it does happen, it usually involves preying on young (Wells 2007, Wiseman and Bettaso 2007, Hobel 2011, Struijk et al. 2014) and tends to occur most frequently in non-arboreal species (Toledo et al. 2006, Wells 2007). This behavior is considered an opportunistic form of predation (Duellman and Trueb 1994).

The Smith Frog (*Hypsiboas faber*) is large (SVL to 90 mm) and very common along forest edges and in open areas of Atlantic Forest from northern Argentina and southeastern Paraguay to northeastern Brazil (Haddad et al. 2013, Frost 2014). Vocalization resembles the hammering of a blacksmith. Males have a prepolex with a spine similar to a thumb, which is used in combat with other males (Maffei and Ubaid 2014). Reproduction involves mud nests built by the male at the edge of bodies of water (Martins 1993). The species' natural history is well documented, and includes numerous records of prey and predators (e.g., Martins et al. 1993, Pombal Jr. 2007, Toledo et al. 2007, Forti and Bertolucci 2012).

On 30 December 2013 at 2355 h, we observed a male *Hypsiboas faber* preying on a newly metamorphosed individual of the same species (Fig. 1). The male was perched on grass (*Panicum maximum*) about 1 m above the ground at Rio Claro Farm in Lençóis Paulista Municipality, São Paulo State, in southern Brazil (22°46'35.47"S 48°53'52.54"W, a.s.l. 650 m). Habitat was riparian forest at the edge of a semi-permanent body of water in a transition area between the Cerrado and Atlantic Forest. The individuals were collected and

deposited in the Amphibian Collection of the Department of Zoology at São Paulo State University, São José do Rio Preto Municipality, São Paulo State, Brazil (voucher numbers: 14517 and 14519).

Cannibalism of adults has been documented in some treefrogs (Hylidae), including *Hyla cinerea* (Höbel 2011) and *Acris crepitans* (McCallum et al. 2001). This behavior may be associated with situations of high population density or low food resources, and could provide possible advantages such as obtaining energy while decreasing intraspecific competition. In fact, greater availability of food per individual has been shown to increase survival rates (e.g., Crump 1983, Doubledee et al. 2003). However, cannibalism by adults in large cohorts can reduce or completely eliminate subsequent recruitment for years (Whiteman and Wissinger 2005). Female Smith Frogs are known to deposit clutches of 1,000–2,700 eggs (Martins and Haddad 1988). This reproductive mode (mode 4, *sensu* Haddad and Prado 2005) creates situations of high population densities, because larvae quickly metamorphose to avoid the risk of pools drying up (Martins 1993).

Recorded instances of batracophagy by Smith Frogs involve prey species that include *Aplastodiscus perviridis* and *Scinax granulatus* (Solé et al. 2004), *Haddadus binotatus* (Leite et al. 2008), *Scinax* aff. *perereca* (Moura and Feio 2010), and *Dendropsophus meridianus* (Figueiredo-de-Andrade et al. 2012). Of these, only *H. binotatus* is terrestrial. Predation by *H. faber* is more common on other hylids due to the numerous potential predator-prey encounters facilitated by a common arboreal lifestyle (Moura and Feio 2010, Loebmann 2013). However, cannibalism by Smith Frogs was previously documented only on tadpoles (Bernarde and Machado 1999). Metamorphosing froglets of *H. faber* are known prey of adults of other species of frogs (*Leptodactylus* cf. *latrans*; Haddad and

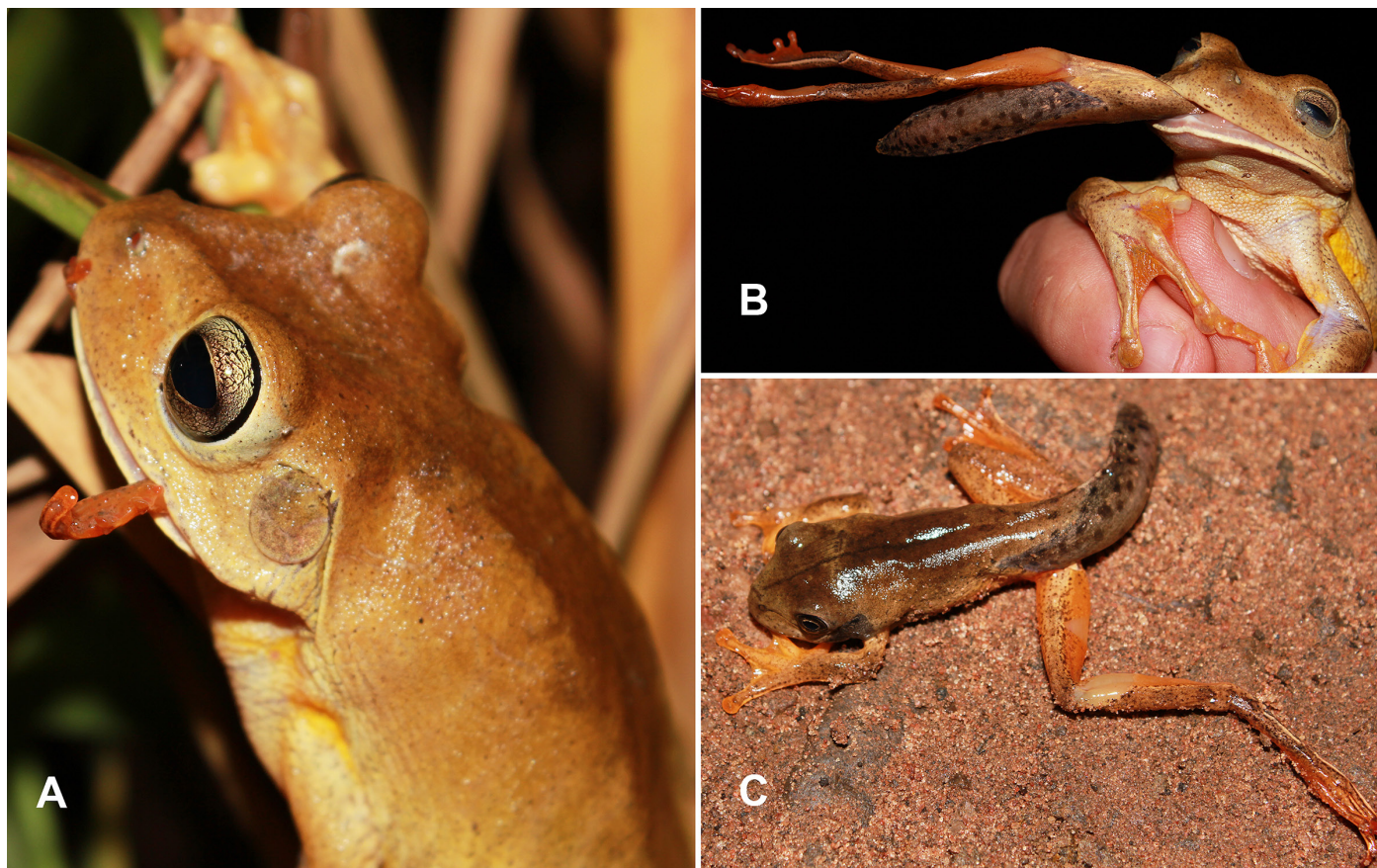


Fig. 1. Male Smith Frog (*Hypsiboas faber*) preying on a newly metamorphosed conspecific. (A) When first observed; (B) removal of the metamorph from the mouth of the adult; (C) the newly metamorphosed prey. Photograph by the senior author.

Sazima 1992, Pombal Jr. 1997), but this is the first record of cannibalism by *H. faber* preying on conspecific metamorphs.

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