

Figure 1. Hornbeam stump used as grass snake egg-laying site.

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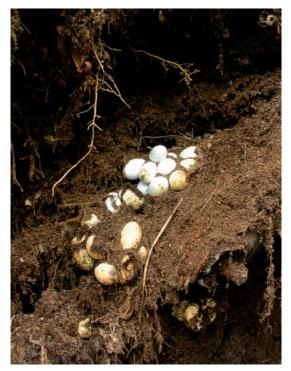


Figure 2. Grass snake eggs in decomposing timber.

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ITAPOTIHYLA LANGSDORFFII (casqueheaded treefrog): MALE COMBAT. Itapotihyla langsdorffii, of monotypic genus, has a wide distribution in the Atlantic Forest from the south of Sergipe State to Rio Grande do Sul State, Brazil, northeastern Argentina and central-south Paraguay (Arzabe & Loebmann, 2006; Lignau et al., 2006). It is a large treefrog (up to 100 mm SVL) that occurs in forested areas. Some of its populations are considered in decline, especially due to habitat loss (Aquino et al., 2004). Publications on the biology and ecology of this species are scarce (Vrcibradic et al., 2009). Itapotihyla langsdorffii belongs to the tribe Lophiohylini, a monophyletic group from south America which includes "casqueheaded" treefrogs and currently contains 10 genera



Figure 1. Itapotihyla langsdorffii males after combat, Cerrado habitat, southeastern Brazil.

(Faivovich et al., 2005). Male-male combat among amphibians is common especially due to disputes over territories or mates and includes aggressive and violent fights (Wells, 2007). The most violent combat among anurans is reported for gladiator frogs, *Hypsiboas boans* group (Kluge, 1979). Most of these species have well developed prepollical spines that are used in combat, causing injury (Duellman & Trueb, 1994).

Here we report a combat between two *Itapotihyla langsdorffii* males in a Cerrado area, southeastern Brazil. The event was observed in the early evening (19:28; 20°C) on 1 October 2009 in a gallery forest located in Rio Pardo II Farm, municipality of Avaré, State of São Paulo (22° 50'12" S, 48° 58'54" W; 650 m a.s.l.). Approximately 25 individuals were found calling in a flooded area formed by rainwater, near Palmital River. Two males were perched on a bush, one metre above the water, in the forest edge. Below them was a larger individual that was not calling, most likely a female. One of the males (intruder) began to emit aggressive calls, approaching the other male (resident). Then, the intruder jumped onto the same perch as the resident

male. One minute later, the resident male started the physical combat, physically shoving and beating the opponent's head with its forelimbs, in an apparent attempt to dislodge its rival from the perch. The resident male lost its equilibrium but did not leave the perch. Occasionally, the intruder male emitted aggressive calls. During one of the attacks by the intruder male, both individuals fell onto another perch below and combat ceased. The two individuals stood with their backs to each other (Fig. 1). After several minutes, the intruder male desisted and jumped onto another bush. The duration between the first agonistic interaction and the end of the combat was less than ten minutes. According to Vrcibradic et al. (2009), there is considerable sexual size dimorphism in I. langsdorffii with females (mean SVL 103 mm) being significantly larger than males (mean SVL 81 mm). Therefore, our record disagrees with that of Shine (1979), who stated that in species presenting male combat, males are often larger than females. Halliday & Verrell (1986) consider separation of amphibians into "combat" and "non-combat" species, and state that their phylogeny must be taken into account. In many cases, male-male combat occurs in species presenting prepollical spines (Faivovich et al., 2005), but this is not the case of *I. langsdorffii* and other species of the tribe Lophiohylini. Combat in species of such a tribe is not common; however, Silva (2006) reported disputes between *Trachycephalus mesophaeus* males over the possession of females during amplexus. These disputes include shoves and kicks in order to dislodge rivals and may involve up to 12 males per female. Our study represents the first record of combat between *Itapotihyla langsdorffii* males and enhances the knowledge about the natural history of species of the tribe Lophiohylini.

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CLELIA PLUMBEA (mussurana): PREY. The genus Clelia currently comprises eight species of medium to large size Pseudoboini snakes found in almost all Neotropical regions, from Mexico to Argentina: Clelia clelia (Daudin, 1803), Clelia equatoriana (Amaral, 1924), Clelia errabunda (Underwood, 1993), Clelia hussami Morato, Franco & Sanches, 2003, Clelia langeri Reichle & Embert, 2005, Clelia plumbea (Wied, 1820), Clelia rustica (Cope, 1878) and Clelia scytalina (Cope, 1867) (Zaher, 1996; Reichle & Embert, 2005; Zaher et al., 2009). Seldom seen, these snakes are probably suffering population decreases making natural history information important (Pizzatto, 2005).

Clelia plumbea occurs from south of the Amazon river in the Brazilian Amazon basin, through the Cerrados of central Brazil and the Atlantic Rainforest in Brazil, Argentina and