

Scientific note

A remarkable defence behaviour of the Peruvian monkey frog *Phyllomedusa chaparroi* triggered by ant attacks

(Amphibia, Hylidae, Phyllomedusinae)

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Neotropical hyliid frogs of the subfamily Phyllomedusinae are known to secrete skin toxins (e.g., Nogueira et al. 2022) and display defence behaviours, of which contracting or shrinking of the body is most frequently reported for this group of frogs (e.g., Toledo et al. 2010, Borteiro et al. 2014).

On 20 October 2010, the first author photographed a male *Phyllomedusa chaparroi* Castroviejo-Fisher, Köhler, de la Riva & Padial, 2017, later collected and deposited in the Zoologische Staatssammlung München (ZSM 783/2010), at the rainforest in the Area de Conservación Privada Panguana (9°37'S, 74°56'W, 260 m a.s.l.), a private protected area of low-elevation rainforest in the Departamento Huánuco in Amazonian Peru. In contrast to other individuals of this species, which were rather relaxed when handled and photographed, one individual showed a very different behaviour and excreted white liquid from the neck region. Upon closer examination it became evident that it had been attacked by unidentified, small black ants which were biting the frog in its limbs. The frog was then brought to the nearby research station for further observations where it repeatedly lifted up its body from the ground thereby showing a posture that has been defined as 'full body-raising with legs vertically stretched' (Toledo et al. 2011) or 'full body elevation' (Ferreira et al. 2019). At the same time the frog continued to release its white secretion from its anterior back which ran down on the head side and killed one of the attacking ants (Fig. 1).

Remarkably, the traditional healing ritual "kambô" used by indigenous people includes pricking and poking the frog *Phyllomedusa bicolor* (Boddaert, 1772) in its legs and feet to obtain a reasonable amount of the frog's skin secretion (Nogueira et al. 2022) which is used as a medicinal drug. This manual pricking might be comparable to ant bites and stings, suggesting that the skin secretions by *Phyllomedusa* frogs might constitute a particularly efficient defence to resist ant attacks.

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Fig. 1. Defense posture and secretion of skin toxin in *Phyllomedusa chaparroi* (ZSM 783/2010) triggered by an ant attack.

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