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Antipredator behaviours of the glass frog *Hyalinobatrachium iaspidiense* from eastern Amazonia, Brazil

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Anurans have developed diverse defensive postures and behaviours to avoid predation (Wells, 2007; Toledo et al., 2007, 2010 & 2011; Ferreira et al., 2019). For some species of glass frog (Anura: Centrolenidae) the patterns of parental care (Delia et al., 2017; Ospina-L et al., 2019; Valencia-Aguilar et al., 2021) and defensive postures (Rueda-Almonacid, 1994; Toledo et al., 2010; Escobar-Lasso & Rojas-Morales, 2012) have already been described. To provide more information and understanding of glass frogs, we describe here the antipredator behaviours displayed by *Hyalinobatrachium iaspidiense* (Ayarzaguena, 1992) from eastern Amazonia.

In the state of Amapá, *H. iaspidiense* was first recorded in the Cancão Municipal Natural Park, located in the municipality of Serra do Navio, Brazil (Silva e Silva & Costa-Campos, 2016). It is known to occur in sympatry with *Hyalinobatrachium mondolfii* Señaris & Ayarzagüena, 2001 (Figueiredo et al., 2020) but may be distinguished from it by the presence of a pale yellowish green dorsum with large and disruptive green marks, and small black spots, and the absence of humeral spines in males (Guayasamin & North, 2009; Castroviejo-Fisher et al., 2011).

On 14th February 2019, at 23.19 h, an adult male *H. iaspidiense* was recorded in the Cancão Municipal Natural Park (0.9138 °N, 52.9997 °W). When observed on the underside of a leaf blade, it displayed a defensive posture consisting of dorsoventral flattening of the body, it also retracted its limbs for a few minutes (Fig. 1A). After being disturbed, it remained in a higher than habitual sitting posture, which involved raising the rear of the body while extending the limbs (front and rear) (Fig. 1B). Moreover, when an egg clutch was brought close to where it was sitting, the male promptly displayed parental care (Fig. 1C). However, we do not know whether or not this clutch was related to this male, since in some glass frog species, adults may care for egg clutches that are not their own (alloparental care - Valencia-Aguilar et al., 2021). Furthermore, other males of the same species, other potential fathers, were observed calling at the same location.

According to Toledo et al. (2011) and Ferreira et al. (2019), the defensive postures we observed in *H. iaspidiense* are termed - crouching down, body elevation, and parental care. Crouching down is characterised by a lower than habitual sitting posture (Toledo et al., 2011). Body elevation is characterised by extension of anterior or all limbs, lifting the anuran body from the substrate (Ferreira et al., 2019);

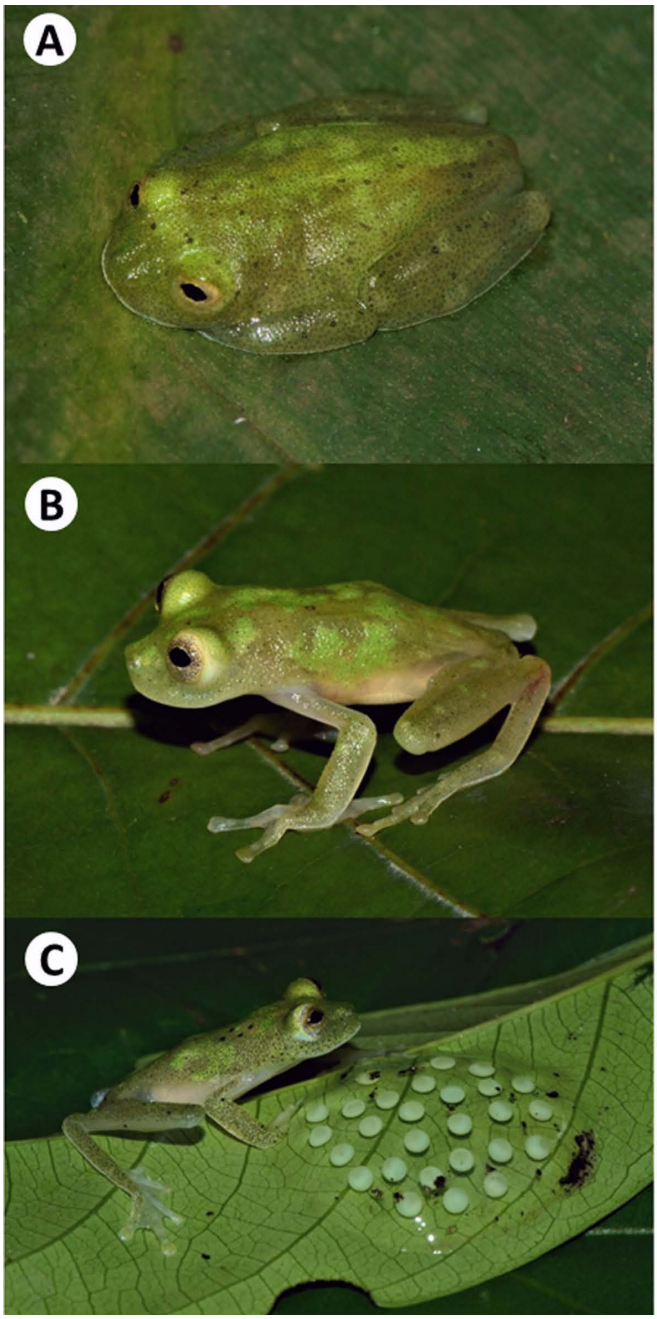

Figure 1. Defensive postures of *Hyalinobatrachium iaspidiense* from eastern Amazonia- **A.** Crouching down **B.** Body elevation **C**. Parental care

this defensive posture may increase the anuran's apparent size and threat to the potential predator (Williams et al., 2000). Finally, parental care of the egg clutch can help prevent predation and may also reduce dehydration of the eggs (Wells, 2007).

We hope that our observations may encourage researchers to seek robust data on defensive postures and parental care in this species. It may also offer a particular opportunity to investigate alloparental care.

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