

Two types of defensive behaviour recorded in *Bufotes pewzowi* (Bufonidae)

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As a common prey for a variety of predators (Duellman & Trueb, 1994; Toledo et al., 2007), amphibians employ several defence strategies (Toledo et al., 2011 and literature therein). These mechanisms, which evolved through increased survival rate, may be displayed together with other related antipredator strategies, such as cryptic coloration or skin toxins. The Xinjiang toad, *Bufotes pewzowi* (Bedriaga, 1898), is distributed in Central Asia from Uzbekistan, possibly Afghanistan and Tajikistan, eastwards to eastern Kazakhstan, western Mongolia and western Xinjiang and Xizang provinces in China (Stöck et al., 2001; Litvinchuk et al., 2011). This species is a member of the Western Palearctic green toads of the *Bufo viridis* subgroup and is relatively common and ecologically plastic, with the ability to survive in very disturbed habitats (Stöck et al., 2015). However, little is known about its ecology and behavioural patterns. Here I describe two new types of defensive behaviour for *B. pewzowi* observed in Fergana valley, Kyrgyzstan.

During fieldwork on 5th May 2015 between 1200-1300h, two adult females of *B. pewzowi* were located under stones in warm, grassy habitat to the east of Jalal-Abad town, Kyrgyzstan (40.9405°N, 73.0363°E, WGS84, 967 m elev., Fig. 1). The first individual initially tried to escape but, when surrounded from all sides, it quickly inflated and vertically raised its body on its hind legs. The head (snout) remained on the ground (Fig. 1A). When the disturbance (a camera) was removed the individual resumed a normal posture, although it resumed the defensive posture when it was again disturbed. This behaviour (named body-raising with

legs vertically stretched) is very well known in amphibians, mostly in toxic species (e.g. *Bufo bufo*, *Rhinella marina*; Toledo et al., 2011). According to Toledo et al. (2011), this body-raising type is displayed in two forms where this case represents partial body-raising in which the individual stretches the legs vertically and keeps its snout close to, or touching, the ground (Fig. 1A).

The second animal immediately took up the defensive posture after direct touch. The individual flattened and slightly arched the body, closed its eyes, and lifted its front limbs to position them alongside the head (Fig. 1B). The specimen remained in such a posture for a couple of minutes, and then returned to a normal position. This behaviour is described as eye-protection (Toledo et al., 2011). During which individuals cover their head, eyes and tympanum with the forearms. In this case the eyes were open but some species close them during the defence.

Eye-protection (most common among species that display body-raising of the first type) may co-occur with body-raising. Some authors discussed this behaviour as a response on hypothermia of individuals during disturbing (Haberl & Wilkinson, 1997) but this not to be an initiating factor in general (Jablonski & Balej, 2014 and literature therein). Both defence strategies are known in the family Bufonidae (Brusquetti et al., 2007; Sharma et al., 2011; Toledo et al., 2011) but, according to the available literature, eye-protection is very rare in this family. To my best knowledge these defense behaviours have never been recorded in *B. pewzowi*.

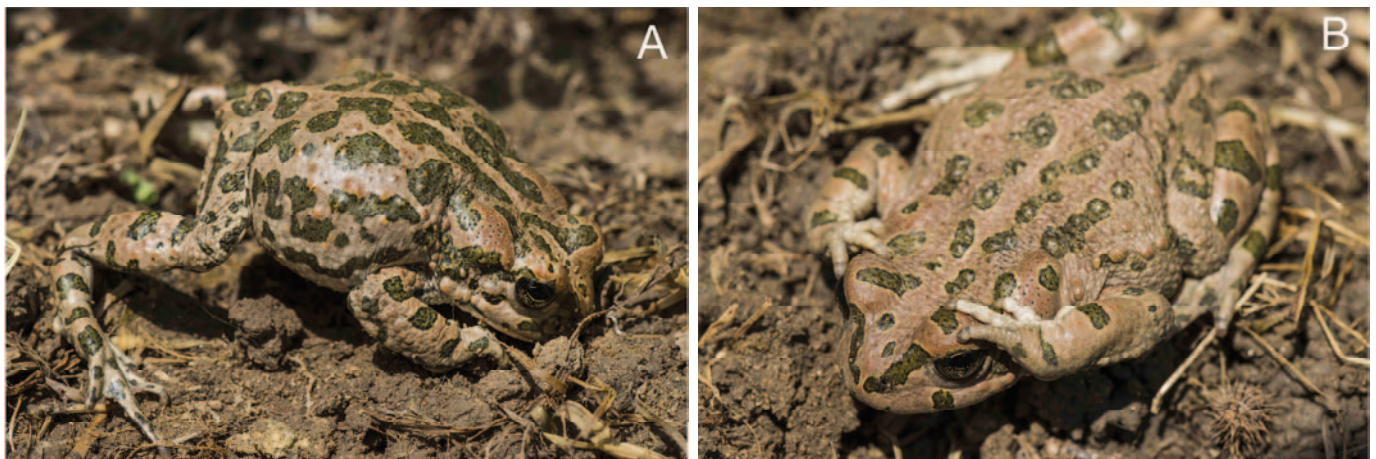


Figure 1. Two individuals of *B. pewzowi* displaying defensive behaviour: body-raising with legs vertically stretched (**A**) and eye-protection (**B**)

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