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NATURAL HISTORY NOTE

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Puff adder *Bitis arietans* mouth gaping behaviour in South Africa

NATALIA S. CAMPOS[1*], ANDERSON LOZORIO[1,2], VINICIUS MENDES[1] & THIAGO SILVA-SOARES[1]

[1]Últimos Refúgios Institute, Herpeto Capixaba, R. Amarílio Lunz, 16 - Bairro República, Vitória, 29070-030, Espírito Santo, Brazil
[2]Federal University of Amazonas, Graduate Program in Zoology, Av. General Rodrigo Octávio Jordão Ramos, 1200, Coroado I, Manaus, 69067-005, Amazonas, Brazil

[*]Corresponding author e-mail: natalia.soares.campos564@gmail.com

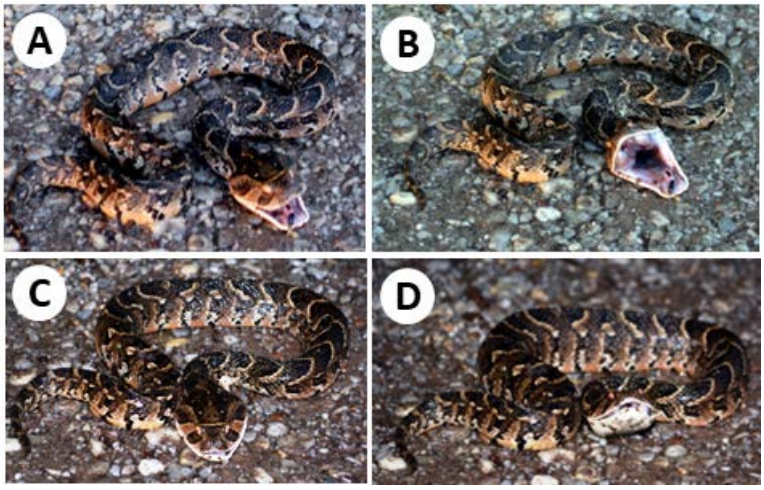

Figure 1. A behavioural sequence during mouth gaping by *Bitis arietans* - **A.** Snake displays gentle body movements, opening and closing its mouth and protruding its tongue, **B.** Snake with mouth open widely, **C.** Assuming a defensive posture with head level to the ground, and **D.** Head raised facing the observer in a defensive position, with mouth slightly open

Vipers have developed a wide range of defensive behaviours, which have evolved to mitigate predation risks across various environments (Campbell & Lamar, 2004). The puff adder *Bitis arietans*, a highly venomous species widely distributed across sub-Saharan Africa, south-western Arabia and Morocco (Mehrtens, 1987), is responsible for a significant number of snakebite-related fatalities in Africa (Barlow et al., 2013). This species employs several antipredator strategies, including camouflage, body inflation accompanied by hissing and whistling, and rapid strikes from a characteristic S-shaped defensive posture (Mallow et al., 2003). Here, we report an observation of mouth-gaping behaviour in *B. arietans*, a defensive display that has been rarely documented in this species.

At 15:08 h on 8 February 2017, an adult *B. arietans* was encountered by Thiago Silva-Soares on an unpaved road near a thicket of small bushes in Stormsrivier, Tsitsikamma National Park, South Africa (33° 58'36" S, 23° 53'38" E, WGS 84; 231 m a.s.l.). On approaching the snake, it exhibited behaviour suggestive of death feigning (Fig. 1A). Over approximately two minutes, the snake exhibited slow body movements, intermittent mouth opening and closing and repeated tongue protrusion. At one point, it opened its mouth widely (mouth-gaping) (Fig. 1B) and remained in this position for about 30 seconds. Subsequently, the snake maintained its mouth slightly open, retracted its tongue and assumed a defensive posture. Initially, its head was level with the ground (Fig. 1C); however, as the observer approached closer, the snake ceased its initial display, raised its head and faced the observer while retreating into a defensive position, consistently keeping its mouth slightly open (Fig. 1D).

To the best of our knowledge, this observation represents the first documented instance of potential death feigning in *B. arietans*, characterised by pronounced mouth-gaping and repeated tongue protrusion. While the mouth-gaping behaviour is clearly evident and aligns with known defensive displays in other snake species, the interpretation of death feigning remains provisional and warrants further investigation.

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