REPTILES & AMPHIBIANS

First Field Survey of the Mongo Hairy Bush Viper, *Atheris mongoensis* (Viperidae), Reveals Novel Associations of Viperine Snakes with Aquatic Habitat

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The current era of ecological and evolutionary research has seen rapid increases in the use of molecular sequence data (e.g., genomic sequencing) and an interest in non-model organismal systems. These advances in data acquisition and computational power have led to incredible inferences in the field of evolutionary biology (Burbrink et al. 2020; Singhal et al. 2022). However, the use of observation-based natural history information remains a crucial component of evolutionary studies, and acts as a foundation for many downstream analyses and scientific interpretations. True vipers (Viperinae) comprise 100 species of solenoglyphous snakes distributed throughout Africa, Europe, the Middle East, and Asia, including some widespread generalist species such as the Common Adder (*Vipera berus*) but also species with extremely restricted ranges (e.g., *Bitis inornata*, *Atheris desaixi*; Uetz et al. 2025). True vipers are ambush predators, and they exhibit a wide range of natural history and morphological traits (Phelps 2010). Habitat preferences of true vipers include terrestrial species inhabiting temperate zones (e.g., *Vipera*) and arboreal groups, such as *Atheris* in Africa (Phelps 2010). However, semiaquatic lifestyles and use of riparian habitats have only been observed in pit vipers (Crotalinae) in the genus *Agkistrodon* in North America and *Trimeresurus malabaricus* in India (Pauwels et al. 2008; Bhaisare and Elliot 2015).

Bush vipers of the genus *Atheris* are restricted to either lowland or mid- to high-elevation rainforests in Africa, and it is the only true-viper genus that comprises arboreal species (Spawls and Branch 2020). Although several species of bush vipers have been described in the last few years based on collected specimens now deposited in natural history collections (Menegon et al. 2011; Ceríaco et al. 2020; Collet and Trape 2020), natural history observations of some of these species are lacking. We herein report the use of riparian habitat by the Mongo Hairy Bush Viper (*Atheris mongoensis*). This species is known only from the type locality, the vicinity of Mbandaka in the Democratic Republic of the Congo (Collet and Trape 2020), and our observations indicate that *A. mongoensis* has strong associations with riparian and aquatic habitats. The use of aquatic environments in vipers has, to the best of our knowledge, only been observed in crotalines. Whereas other species of *Atheris* have terrestrial or arboreal lifestyles (Spawls and Branch 2020), these observations of *A. mongoensis* in riparian zones, even if only for feeding, could represent the first records of a viperine having a semiaquatic lifestyle, or at least relying on aquatic environments.

During an expedition to the flooded swamp forests of Mbandaka (Équateur Province), Democratic Republic of the Congo, in November 2022, RG prospected along the Ruki River and its tributaries by boat with the help of local fishermen. Opportunistic searching involved looking in all habitats for snakes (secondary forests, agricultural fields, flooded forests, and adjacent river banks). On 10 November 2022, 15 *Atheris mongoensis* were encountered in flooded forests and bordering river banks (Fig. 1A). All individuals were in riparian habitats, close to the water or partially submerged. One individual performed caudal luring with its tail submerged (Fig. 1B). Other individuals were photographed (Fig. 1C), one of which escaped by diving to a depth of about 50 cm (Fig. 1D).

We found that the Mongo Hairy Bush Viper was highly associated with streamside habitat and might have a semiaquatic lifestyle. In the original description (Collet and Trape 2020), specimens of this newly described species were

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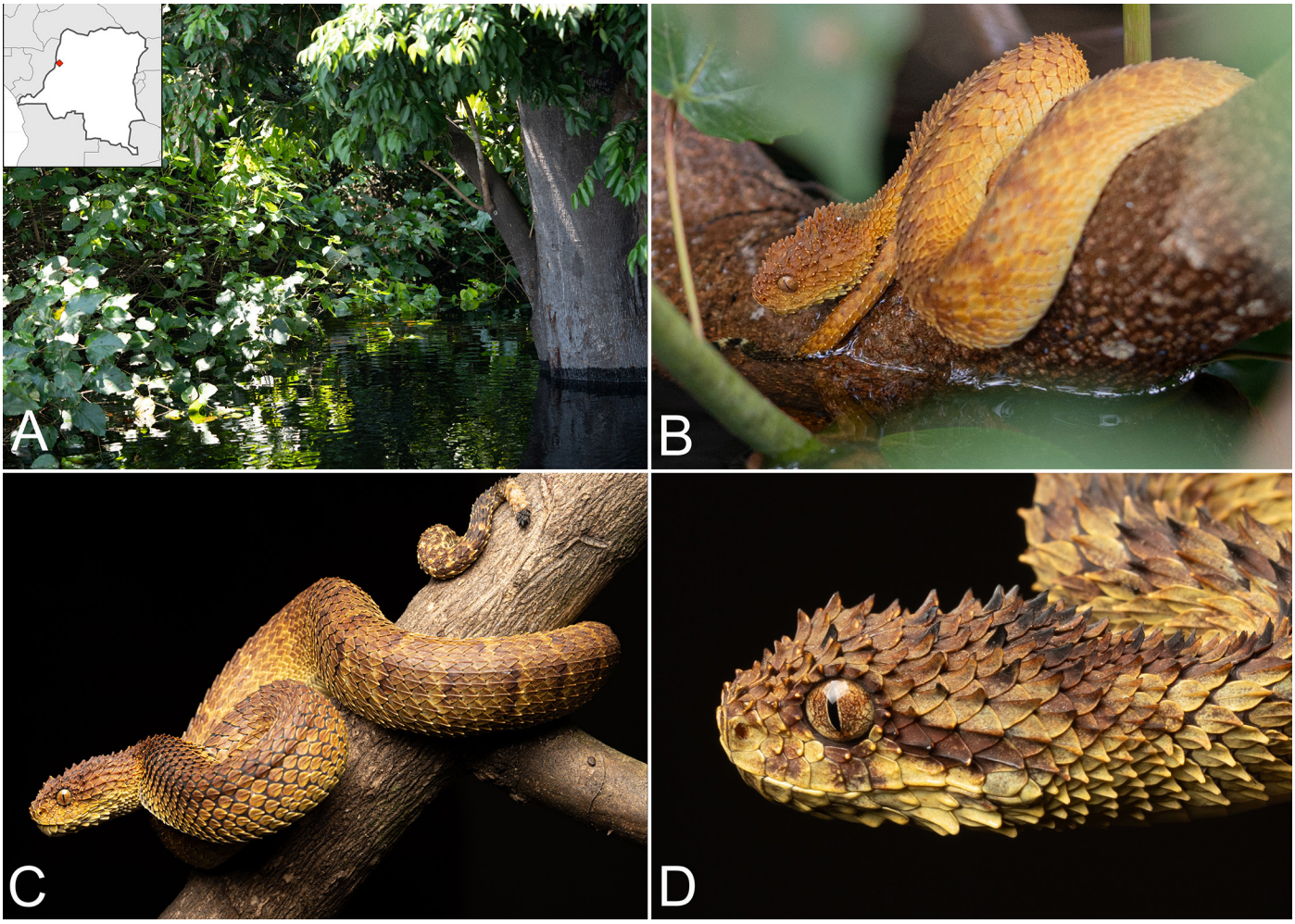

Figure 1. Mongo Hairy Bush Vipers (*Atheris mongoensis*): Aquatic habitat where 15 individuals were found (A); *A. mongoensis* performing caudal luring in an ambush posture (B); and phenotypes of *A. mongoensis* (C–D). Photographs by Robin Gloor.

obtained from local villagers, and information on habitat use was based solely on their accounts. *Atheris mongoensis* has only been reported in ground-level or arboreal microhabitats, and although it has been found near water, no interactions between this snake and aquatic systems have been documented (Collet and Trape 2020). The observation of caudal luring with the tail submerged, in addition to the elongated tail with split ventral scales (Collet and Trape 2020), strongly suggest that *A. mongoensis* engages in predatory behavior in riparian habitats to acquire prey.

Natural history data play an important role in ecology and evolutionary studies, and are a critical component of conservation strategies (Briggs-Gonzalez et al. 2017), describing new species (Grismer et al. 2020), and identifying how life history traits evolve (Harrington et al. 2018). To the best of our knowledge, this is the first observation of semiaquatic or amphibious behavior in a viperine snake, showing the importance of documenting natural history and providing a foundation for similar studies moving forward.

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