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Arboreality in Brongersma's worm snake *Amerotyphlops brongersmianus* from south-eastern Brazil

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Arboreality has emerged as a prominent trait in snake evolution, occurring in both ancient lineages (e.g. Boidae, Pythonidae) and more recent radiations (e.g. Viperidae, Elapidae and Colubridae). Although arboreality is widespread, it is unevenly distributed across snake lineages of the world (Pizzatto et al., 2007; Harrington et al., 2018). While scolecophidian snakes are predominantly fossorial or ground-dwelling, they occasionally exhibit arboreal or climbing behaviour (Gaulke, 1995; Das & Wallach, 1998).

Brongersma's worm snake *Amerotyphlops brongersmianus* (Vanzolini, 1976) is a scolecophidian species widely distributed across South America (Graboski et al., 2018; 2023) and in Brazil it occurs in several biomes, including the south and north Atlantic Forest, Cerrado, Amazonian savanna enclaves, and Caatinga, mainly at low elevations (Nogueira et al., 2019). On 12 December 2019, at 22:07 h, an adult *A. brongersmianus* was observed perched on a shrub about 1.73 m above the ground (Fig. 1) in the district of São João do Jabuti, municipality of Guarapari, Espírito Santo, south-eastern Brazil (20° 37'45.76" S, 40° 34'25.45" W; WGS 84; 150 m a.s.l.). The observation followed a period of heavy rainfall the previous day. The snake was briefly captured for photographic documentation and was not collected.

To our knowledge, this is the first observation of *A. brongersmianus* displaying arboreal behaviour. Although at least 23 scolecophidians of different species across various genera have been observed in trees/shrubs (Das & Wallach, 1998). Recorded heights above ground range from 0.5 m to 5 m and include *Anilios nigrescens* at 5 m in a she-oak tree in Australia (Shine & Webb, 1990) and *Ramphotyphlops angusticeps* at 4 m in a palm tree (Das & Wallach, 1998). Scolecophidians have also been observed in man-made structures highlighting their remarkable adaptability to anthropogenic environments. Examples include *Trilepida macrolepis* found 0.6 m up a vertical concrete wall, *Myriopholis macrorhyncha* in the thatched roof of a house, and *Epictia tesselata* within the wall of an old adobe house (Das & Wallach, 1998)

In our observation, the snake's ascent of a shrub may be linked to environmental conditions, particularly the heavy rainfall that occurred the previous day, which may

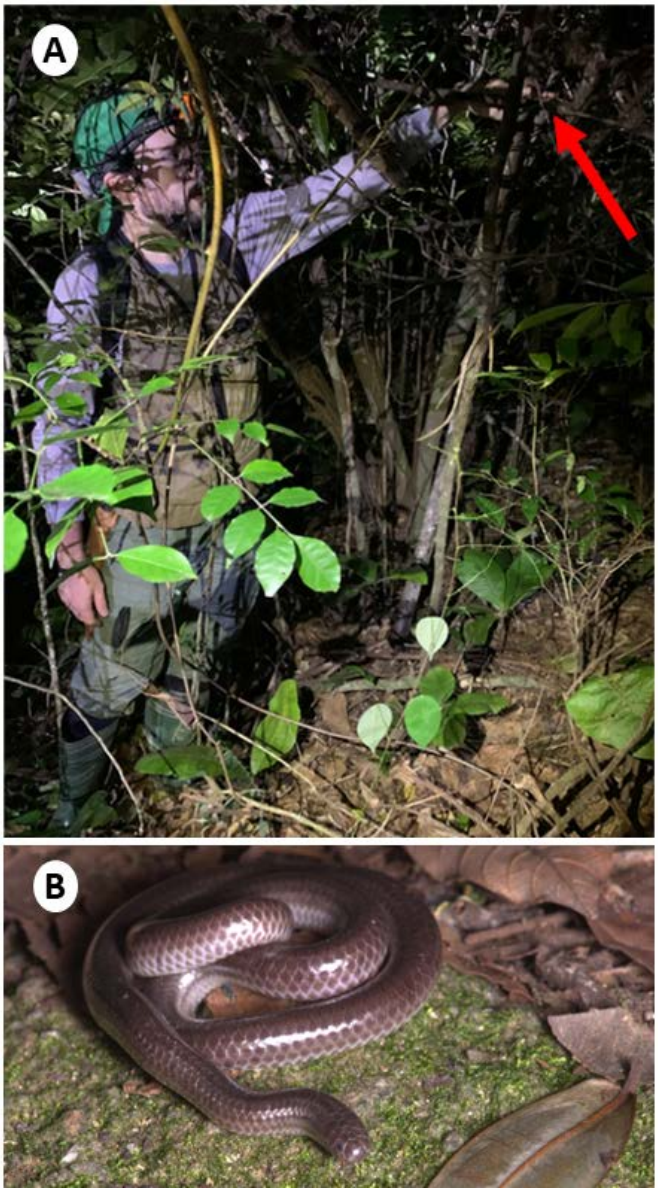

Figure 1. Observation of *Amerotyphlops brongersmianus* in a tall shrub - **A.** Researcher (approximately 1.80 m tall) indicating the location where the snake was found (red arrow), **B.** Photograph of the snake

have prompted the snake to seek refuge above ground. Some authors have suggested that arboreal or climbing behaviour in scolecophidian snakes may occur when they follow chemical cues left by their prey, typically ants and termites (Gehlbach et al., 1971; Webb & Shine, 1992; Torres et al., 2000). However, in this instance, no visible prey trails or ants/termites were observed on the tree or surrounding vegetation, leaving the exact motivation for the snake's behaviour uncertain.

The available evidence suggests that for scolecophidians, arboreality is at least an occasional behaviour. However, it is likely that climbing activity is more widespread than previously acknowledged, with some species potentially relying on arboreal habitats as a significant aspect of their ecological niche - possibly rivalling or even surpassing their presence in subterranean environments. Furthermore, the timing of the observation, at night, aligns with the predominantly nocturnal activity patterns of fossorial snakes, which tend to emerge during the cooler, darker hours to forage or engage in reproductive activities (Parpinelli & Marques, 2008; Khouri et al., 2022). This observation raises important questions about the scolecophidian snake species' ability to adapt to environmental stressors such as heavy rainfalls, as well as its occasional use of arboreal habitats.

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