

First record of the Mizo rain snake *Smithophis atemporalis* from Bangladesh

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Bangladesh is known for its diverse ecosystems with 22 bio-ecological zones, including mangroves, wetlands, forests and rivers, which support a wide range of plant and animal species (IUCN, 2002). Among the bio-ecological zones of Bangladesh, the south-eastern hilly area is rich in wildlife resources, especially snakes (IUCN Bangladesh, 2015). Snakes play a significant role in ecological, environmental, economic and cultural sectors in Bangladesh (Jaman et al., 2020; 2021). However, the actual number of snake species is still unknown to us, and new species, including new distribution records, are being added (e.g. Hakim et al., 2020; Shome et al., 2020; Kajol et al., 2020; Mahamud et al., 2022; Barkat & Rabbe, 2022).

Smithophis is a natricine genus with four species that range from north-eastern India across north-eastern Myanmar to south-western China (Giri et al., 2019). Among the four species, *Smithophis atemporalis* Giri et al. 2019 has until now only been reported from Mizoram state (India) and has been assessed as a data deficient species (Fig. 1, Table 1)(Giri & Das, 2021). The only species previously reported from Bangladesh of this genus is *Smithophis bicolor* (previously known as *Rabdops bicolor*) from Alikadam, Bandarban, Bangladesh (Khan, 2015; 2018).

We present here a new country record of *S. atemporalis* from south-eastern Bangladesh close to the border with both India and Myanmar. On 20 October 2020 a single individual of this species (Fig. 2) was observed in a residence at one kilometre from Darjeeling Para towards Boga Lake (21° 57'51.4" N, 92° 30'13.5" E), Keokradong, Ruma Upazila, Bandarban, Bangladesh (Fig. 1). The snake crossed the road while we observed it closely and took photographs.

Smithophis atemporalis is bicolored with black trapezoids extending ventrally and white markings extending dorsally (Fig. 2). The scales are known to be iridescent and unlike other known *Smithophis* spp., the head lacks temporal shields. During the monsoon this snake can be seen around waterfalls and waterbodies. The diet includes earthworms and juvenile skinks.

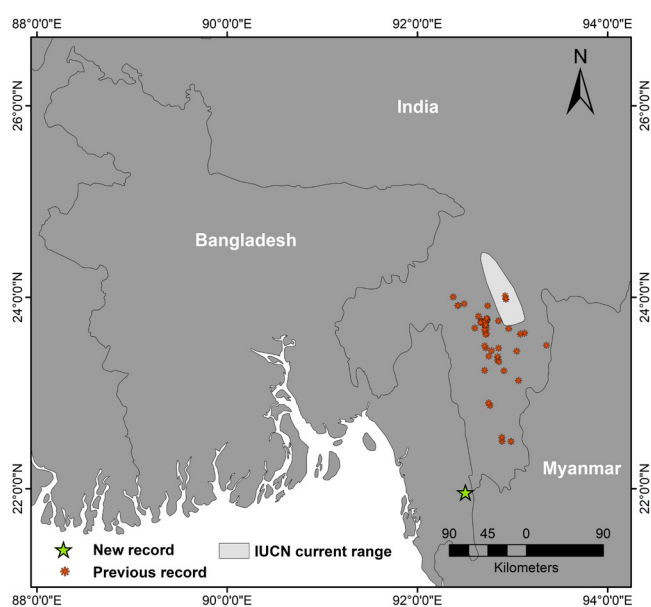


Figure 1. Past and present records of *Smithophis atemporalis* from Mizoram, India and Bangladesh

Since our record is based on relatively distant photographic evidence that precluded any detailed observation of the head scale pattern, identification was based on colour and patterning. We compared the current observation with the colour patterning of other *Smithophis* species in Asia (Table 1), and conclude that it is the first confirmed record of *S. atemporalis* for Bangladesh.

Previously, *S. atemporalis* was recorded from 60 different localities ranging from 71–1,235 m a.s.l. in four districts of Mizoram (Lalronunga et al. 2021; Ruatpui et al., 2022) that are 76–226 km from the present location. The nearest location from the new record is Saiha, Mizoram, India (Fig. 1). *Smithophis atemporalis* is an interesting addition to the faunal list of Bangladesh. Little is known of this species in neighbouring India and further studies to investigate its occurrence, distribution and ecology in Bangladesh are needed.

Table 1. Comparisons of colouration, body pattern and geographical distribution of the four species of *Smithophis*. Adapted from Giri et al. (2019); Das et al. (2020); Vogel et al. (2020); Ruatpuui et al. (2022). Asterisk (*) indicates new record.

| Species | Colouration and body pattern | Distribution |
|--------------------------|--|-----------------------------------|
| <i>S. atemporalis</i> | Bicoloured, blackish above, whitish below. Dorso-laterally, markings asymmetric with longer dark and shorter whitish markings with boundary between body markings wavy in the first quarter of the body and zigzag in the rest of the body. | India (Mizoram) Bangladesh* |
| <i>S. bicolor</i> | Bicoloured, dark brown or black upper parts, yellowish white below. The two colours strongly contrasting in short gaps and forming a jigsaw pattern (when viewed laterally). Some specimens are uniform blackish, while others show regular light vertical lines. | India, Myanmar, China, Bangladesh |
| <i>S. linearis</i> | The upper dorsal surface is dark greyish brown with bronze tints, pale ochre below. Upper and lower edges of each upper dorsal scale dark brown, forming ten narrow dark lines extending from back of head. | China, Myanmar |
| <i>S. arunachalensis</i> | Bicoloured, dark black-brown above, bright yellow below. Dorso-laterally, markings asymmetric with longer dark and shorter yellow markings, usually V-shaped when viewed laterally and trapezoidal when viewed from above. In first quarter of body the boundary between body markings wavy, rapidly becoming increasingly sharply zigzag towards the posterior. | India (Arunachal Pradesh) |

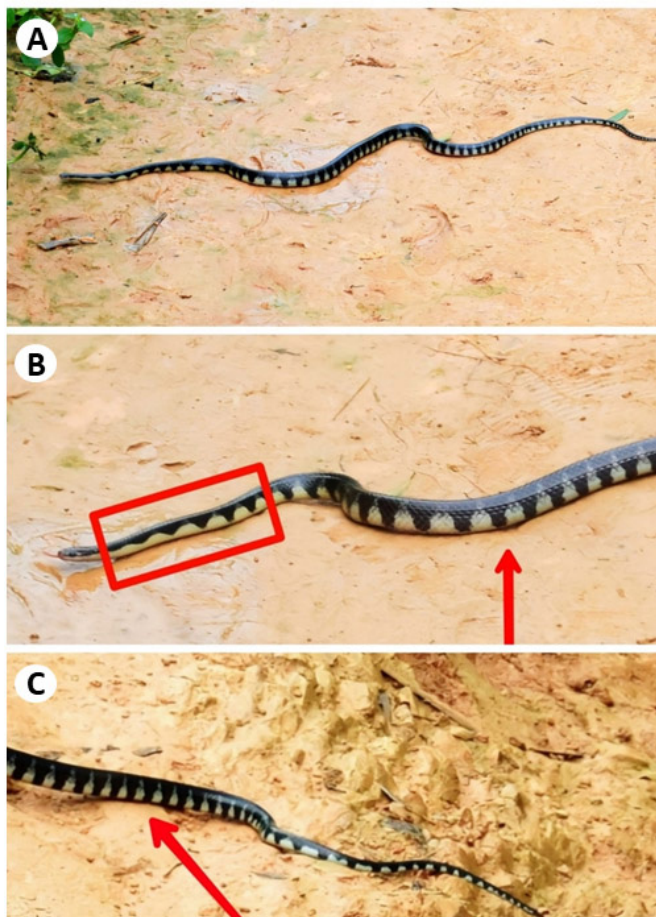


Figure 2. **A.** *Smithophis atemporalis* from Darjeeling Para towards Boga lake, Keokradong, Ruma Upazila, Bandarban, Bangladesh, **B.** The black markings do not extend to the lateral margins in the first tenth of the body so that there is a wavy effect between black and white (indicated in the box) while for the rest of the body the black markings reach the lateral margin creating a zigzag pattern, indicated by arrows in **B.** & **C.**

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