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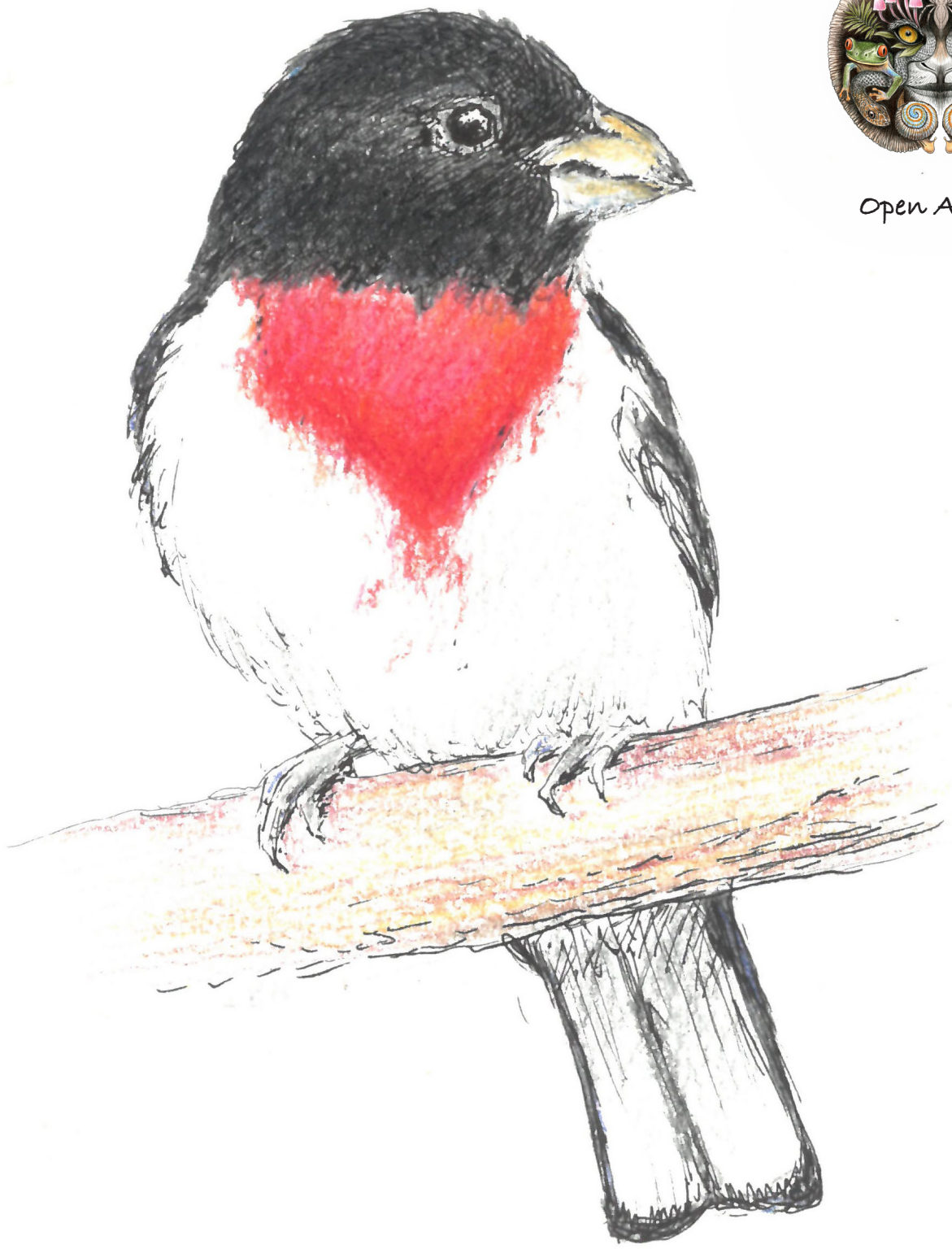

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NOTE

New country record of *Trimeresurus uetzi* Vogel, Nguyen & David, 2023 (Reptilia: Squamata: Viperidae) from India

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The systematics of the White-lipped Pit Viper *Trimeresurus albolabris* Gray, 1842 group has been reviewed by several workers, and a subspecies level taxonomy was historically proposed (Kramer 1977; Regenass & Kramer 1981). However, the original members of this group—*T. insularis* Kramer, 1977 and *T. septentrionalis* Kramer, 1977—were eventually elevated to species status by Giannasi et al. (2001). Later, genetic studies also showed the paraphyly of *T. albolabris* group (Malhotra & Thorpe 1997, 2000; Zhu et al. 2016), and the distribution range of *T. albolabris* sensu stricto was subsequently restricted to southeastern China and northeastern Vietnam (Chen et al. 2021). Several new species were described from the *T. albolabris* group during recent years, such as, *T. caudornatus* Chen, Yu, Vogel, Shi, Song, Tang, Yang, Ding & Chen, 2020; *T. davidi* Chandramouli, Campbell & Vogel, 2020; *T. guoi* Chen, Shi, Gao, Vogel, Song, Ding & Dai, 2021; *T. salazar* Mirza, Bhosale, Phansalkar, Sawant, Gowande & Patel, 2020; and most recently, *T. uetzi* Vogel, Nguyen & David, 2023 (see also Vogel et al. 2023).

In this study, we examined specimens of *Trimeresurus* species housed in the collection of Departmental Museum of Zoology, Mizoram University (MZMU). Head measurements were taken using Mitutoyo dial vernier caliper (Model 505–730) to the nearest 0.01 mm, while the snout-vent length (SVL) and tail length (TaL) were taken using measuring tape. Ventrals (Ve) and mid dorsal scales row (MSR) were counted following Dowling (1951), and the terminal scute is excluded while counting subcaudals (Sc). Dorsal scales were counted at one head length just behind the head, at mid body, and one head

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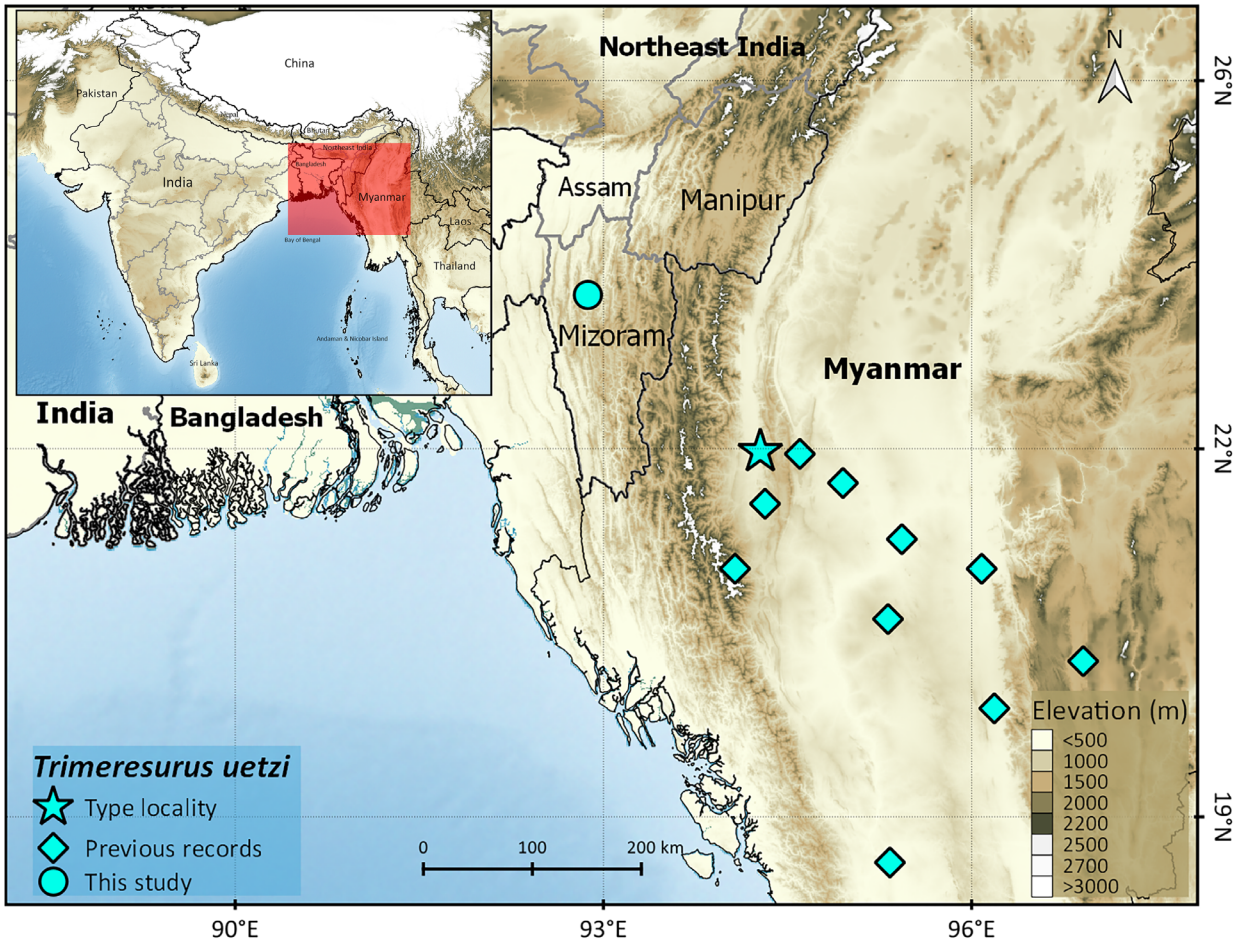

Figure 1. Map showing distribution records of *Trimeresurus uetzi*: type locality in Mauk Village, Gangaw Township, Pakhokku District, Magway Region, Myanmar (red star); other previous records in Myanmar (blue diamonds), and new collection site (red circle) from Aizawl, Mizoram, India. The published records are adopted from Vogel et al. (2023).

length just before the vent.

Morphologically, one adult male of the examined museum specimens collected from Mizoram University campus (23.7384°N; 92.6642°E; 822 m; Figure 1) did not match with the taxonomic features of other *Trimeresurus* species, which were already confirmed from Mizoram State and adjacent regions. MZMU 3333 differs from regional congeners in having Ven 165 versus 159–164 in male *T. caudornatus* Chen, Ding, Vogel and Shi, 2020, MSR 21 vs 23 (24, 25) in male *T. erythrurus* (Cantor 1839); ventrolateral stripes and a postocular stripe present vs absent, iris copper vs firebrick-red or deep red in males *T. guoi* Chen, Shi, Vogel & Shi, 2021; ventrolateral stripe white vs stripe bicolor (red and white), Ven 165 vs 157–162, and Sc 69 vs 54–67 in males *T. mayaae* Rathee, Purkayastha, Lalremsanga, Dalal, Biakzuala, Muansanga & Mirza, 2022, and 10 cephalic scales feebly keeled between the supraoculars vs 11–13, iris copper coloured vs red to deep red, and ventrolateral stripes and a postocular stripe present vs absent in males of *T. popeiorum* Smith, 1937 (see also Mathew 2007; Lalremsanga et al. 2011; Mirza et al. 2023; Vogel et al. 2023; Idiiatullina et al. 2024). Instead, it is in agreement with the diagnostic features of the recently described *T. uetzi* as provided in the original description (Vogel et al. 2023): presence of white postocular stripe in males; first supralabial not fused with nasal scale; 10 cephalic scales feebly keeled (range 9–10); Ven 165 (range 154–171) in males; Sc 69 (range 50–71 in males); dorsal scale rows 21:21:15 (Images 1 & 2). Other morphological data of MZMU 3333 are provided in Table 1. The live snake depicted in Image 2, is not the Aizawl voucher specimen, but an uncollected male, sighted in Reiek Community Reserve Forest, some 5 km aerial distance west of Mizoram University campus – the collection site of MZMU 3333. We also attribute this individual to *T. uetzi*, as it possesses 21 dorsal mid body scale rows, green gold colored iris; a grass green

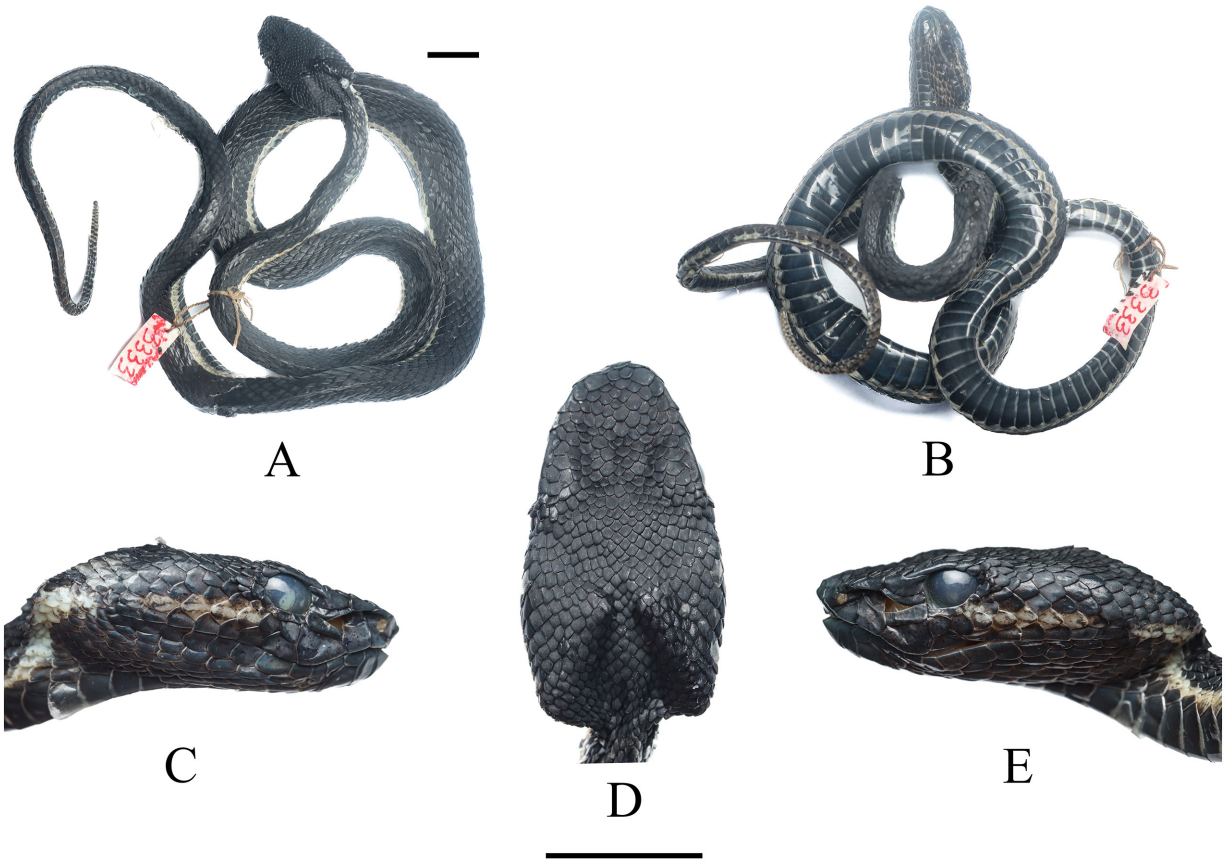

Image 1. Male specimen of *Trimeresurus uetzi* (MZMU 3333) from Mizoram University Campus, Aizawl, Mizoram, India. Scale bar = 10 mm. © Lal Muansanga.

Image 2. Uncollected live male individual of *Trimeresurus uetzi* from Reiek Community Reserve Forest, Mizoram, India. © Lal Muansanga.

Table 1. Morphometric (in mm) and meristic data of *Trimeresurus uetzi* from Mizoram, northeastern India. The general data for the species were adopted from Vogel et al. (2023).

Sources	This study	General data from Vogel et al. (2023)	
Museum voucher	**MZMU 3333**		
Sex	male	males	females
Snout-vent length (mm)	485	251–472	242–689
Tail length (mm)	127	48–119	53–122
Tail length/Total length	20.8%	16%–22%	14%–16%
Head length (mm)	25.84	-	-
Head width (mm)	14.71	-	-
Horizontal eye diameter (mm)	3.79	-	-
Eye to nostril distance (mm)	5.79	-	-
Snout tip to anterior eye distance (mm)	7.98	-	-
Snout width (mm)	5.70	-	-
Interorbital distance (mm)	11.34	-	-
Internarial distance (mm)	5.04	-	-
Ventrals (mm)	165	154–172	157–171
Preventral	2	-	-
Subcaudals	69	60–71	50–55
Dorsal scale rows	21:21:15	21:21:15	21:21:15
Supralabials	10/11	10–12/10–12	9–12/9–11
Infralabials	12/13	10–14/11–13	11–14/11–14
Anal scale	undivided	-	-
Cephalic scales	10	9–10	9–10

dorsum and yellowish-green venter; a white postocular streak from the anterior margin of the nasal scale that connects posteriorly to the white dorsolateral stripe at the corner of the mouth, plus lack of red stripes on facial and ventrolateral regions. *Trimeresurus uetzi* is a species so far known from central and southern Myanmar but unrecorded from India (Vogel et al. 2023). The present specimen MZMU 3333 from Aizawl, thus represents the longest male recorded so far, 612 mm in total length against the existing maximum total length 591 mm (Holotype; CAS 243024) (see Vogel et al. 2023) and forms the first record of this species from within Indian boundary.

Unfortunately, we were unable to generate DNA data from the MZMU 3333 due to preservation of the specimen in formalin. We recommend obtaining more specimens and genetic data from a fresh sample to corroborate the present report and to further investigate putative cryptic diversity especially among green pit-vipers in northeastern India. However, this work represents a new country record of the species from India and a range extension of the species by ca. 215 km aerial distance northwestward from the type locality at Mauk Village, Gangaw Township, Pakhokku District, Magway Region, Myanmar which is also the nearest known locality from our record (see Vogel et al. 2023). Considering the refinement of the range of the previously confused species, *T. septentrionalis* sensu stricto (now restricted to the western and central Himalayan regions of Nepal and northern India), there is high probability that the population of *T. septentrionalis* in Bangladesh as also doubted by Vogel et al. (2022) might actually be *T. uetzi* or *T. salazar*, considering that records of the later species are closer to Bangladesh which will require further reassessment. Apart from the criteria of geographical range, we discriminated our male specimen of *T. uetzi* by its lower total number of ventral and subcaudal scales, i.e., 234 vs. 241.67±7.76 in male *T. septentrionalis*; white postocular stripe wide and conspicuous covering 1–2 scales vs. usually absent or thin and pale, covering 1 scale in *T. septentrionalis* (fide Vogel et al. 2023).

We also opine that the Indian population may not be unheard of, but just that the recent description of *T. uetzi* by Vogel et al. (2023) enabled us to recognize it as a species. Although several workers have recently described new *Trimeresurus* species particularly from the Indo-Burma region (e.g., Mirza et al. 2020; Rathee et al. 2022; Chan et al. 2023; Vogel et al. 2023), the systematics of many *Trimeresurus* species from this region need further reassessment through integrated taxonomic approaches (Vogel et al. 2023). Limited sampling bolstered by intricated phenotypic variations and phylogenetic uncertainty are seemingly attributable to the systematics challenges for this group in the Indo-Burma region (see Malhotra & Thorpe 2000; Chandramouli et al. 2020; Chen et al. 2020; Mallik et al. 2021; Vogel et al. 2022, 2023).

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