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Journal of Threatened Taxa

10.11609/jott.2022.14.10.21903-22038
www.threatenedtaxa.org

26 October 2022 (Online & Print)
14(10): 21903–22038
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

Open Access

ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

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Cover: Himalayan Gray Langur *Semnopithecus ajax* (adult female) © Rupali Thakur.

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 October 2022 | 14(10): 21946–21960
ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)
https://doi.org/10.11609/jott.8004.14.10.21946-21960
#8004 | Received 02 May 2022 | Final received 08 August 2022 | Finally accepted 14 September 2022
COMMUNICATION

An updated checklist of reptiles from Dampa Tiger Reserve, Mizoram, India, with sixteen new distribution records

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Abstract: We present an updated inventory of the reptilian fauna of Dampa Tiger Reserve based on two separate field surveys during March and September 2021. We recorded 33 species of reptiles which is about 27% of the total reptilian diversity recorded from the state. This includes new distribution records for 16 snake species with observations on rare species: *Smithophis atemporalis, Smithophis bicolor*, and *Boiga quincunciata*.

Keywords: Indo-Burma biodiversity hotspot, herpetofauna, Mizoram, natural history, northeastern India, snakes.

Abbreviations: DTR—Dampa Tiger Reserve | TR—Tiger Reserve | WS—Wildlife Sanctuary | SVL—Snout Vent Length | TL—Tail Length | IB—Inspection Bungalow.

Mizo abstract: Kum 2021 March leh September thla a Dampa Tiger Reserve-a survey neih atangin reptilian fauna (bawkvak chi – rul, laiking lam chi, satel) awm te chhinchhiah belhna tarlan a ni. He zirchianna ah hian reptile chi hrang hrang 33 hmuh a ni a, hei hi Mizoram atanga reptilian diversity record zawng zawng atanga 27% vel a ni. He survey atang hian rul chi hrang 16 te a vawikhat nan Dampa Tiger Reserve atanga chhinchhiah thar a ni a, hmun dang a hmuh tur tam lem lo: *Smithophis atemporalis, Smithophis bicolor,* leh *Boiga quincunciata* te an tel a ni.

Editor: S.R. Ganesh, Chennai Snake Park, Chennai, India.

Date of publication: 26 October 2022 (online & print)

Citation: Malsawmdawngliana, B. Boruah, N.G. Patel, S. Lalronunga, I. Zosangliana, K. Lalhmangaiha & A. Das (2022). An updated checklist of reptiles from Dampa Tiger Reserve, Mizoram, India, with sixteen new distribution records. *Journal of Threatened Taxa* 14(10): 21946–21960. https://doi.org/10.11609/jott.8004.14.10.21946-21960

Funding: The present study is a part of ongoing project funded by SERB-DST, Government of India vide grant no. CRG/2018/000790.

Competing interests: The authors declare no competing interests.

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Isaac Zosangliana is a naturalist who developed his interest in the field of herpetology. K. Lalhmangaiha is a naturalist who developed his interest in the field of herpetology. Abhijit Das is a faculty in the department of Endangered Species Management at Wildlife Institute of India, Dehradun (WII).

Author contributions: All the authors contributed in the field study; AD conceived and designed the study; Malsawmdawngliana and BB studied the specimens; M wrote the manuscript draft; AD, BB and SL studied, reviewed and edited the manuscript drafts; all authors approved the final draft.

Acknowledgements: We thank: the Department of Environment, Forest and Climate Change, Govt. of Mizoram for issuing research permit (B.19060/5/2020-CWLW); Mr. Debanjan Sarkar and Mr. Navaneeth for helping us in making the map and photo plates; the wildlife guards of Dampa TR who helps and guided us throughout the survey.

INTRODUCTION

Mizoram is the southernmost state in northeastern India and is a part of the Indo-Burma biodiversity hotspot (Pawar & Birand 2001; Mittermeier et al. 2004). The geographic location lies between 23.3875–23.7055 °N & 92.2736–92.4319 °E and the tropic of cancer passes through the state. Low to mid-elevation hill slopes with extensive forested tracts are contributing factors to its native biodiversity. The reptilian diversity of the state so far comprises more than 60 species of snakes (Talukdar & Sanyal 1978; Pawar & Birand 2001; Mathew 2007; Lalremsanga et al. 2011; Lalremsanga & Lalronunga 2017; Vogel et al. 2017, 2020; Ashaharraza et al. 2019; Giri et al. 2019a; Lalbiakzuala & Lalremsanga 2019a,b, 2020; Das et al. 2021; Lalronunga et al. 2021a,b) and 41 species of lizards (Pawar & Birand 2001; Harit & Ramanujan 2002; Matthew 2007; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015; Giri et al. 2019b; Muansanga et al. 2020; Purkayastha et al. 2021, 2022; Lalremsanga et al. 2022). However, systematic herpetofauna reports from the protected areas of the state are only partially available: Nengpui Wildlife Sanctuary (Pawar & Birand 2001) and Dampa Tiger Reserve (Pawar & Birand 2001; Lalrinchhana et al. 2015; Decemson et al. 2020). We herein address the hitherto unknown reptilian species richness of Dampa Tiger Reserve and present an updated checklist on the reptile fauna.

METHODS

Study area

Dampa Tiger Reserve (hereafter DTR) is located in Mamit District of Mizoram along the Bangladesh border (Figure 1). It is situated at the western limit of the state, and falls within 23.54–23.69 °N & 92.22–92.45 °E. The natural vegetation of the area is tropical evergreen to semi-evergreen, corresponding to the Cachar tropical evergreen 1B/C3 and semi-evergreen 2B/C2 forest (Champion & Seth 1968). The elevation ranges 250–1,100 m with an average precipitation of 2,150 mm, mainly from the south-west monsoon from May to December (Raman et al. 1998). The area has one of the last remaining natural low- to mid-elevation forests in western Mizoram (FSI 1999). DTR is drained by two drainage systems: Karnaphuli and Barak. The Karnaphuli drainage consists of Aivapui, Keisalam, Seling, and Mar rivers and the Barak drainage consists of Teirei and Tut rivers (Lalramliana et al. 2020).

The study was carried out in the two forest ranges, Phuldungsei and Teirei. In the Phuldungsei range, surveys were done along the Saithah to Phuldungsei road (~5 km) and in the Teirei range, surveys were carried out along the Teirei to Damparengpui village road (~3 km). Both the road segments form the boundary between the core and buffer of DTR. We employed stratified random sampling along possible habitats such as torrent streams, dry streambeds, roadside vegetation, ponds, agriculture fields, and oil palm plantations for species inventory (Image 5).

Data collection

The data for this paper was collected from 23 to 27 March and 12 to 16 September 2021. Visual encounter surveys (Crump & Scott 1994) and opportunistic searches were deployed to assess the reptilian diversity during the survey period. Data on road-killed specimens found during the survey period were also recorded. Collected specimens were fixed in 10% formaldehyde solution and then transferred to 70% ethanol solution for longer preservation. All collected specimens were deposited at the Reptile and Amphibians Repository, Wildlife Institute of India, Dehradun, Uttarakhand, India.

RESULTS

In the present study, 10 species of lizards from four families and eight genera; 23 species of snakes from seven families and 16 genera were documented. Among the 33 species of reptiles, one species is Near Threatened, one species is Data Deficient and the rest are Least Concern or Not Evaluated as per the IUCN Red List.

Species Accounts

Class: Reptilia

Order: Squamata

Family: Agamidae

1. Emma Gray's Forest Lizard *Calotes emma* Gray, 1845

Materials examined: WII-ADR 1112, Female, SVL 93.3 mm; TL 255 mm. Image 1A.

Supraocular spine on each side, over the ears; neck with an oblique (blackish) fold on each side in front of the shoulders. This description agrees well with Gray (1845). We encountered an individual roosting at approximately 1.5 m above the ground among the roadside vegetation on 12 September at around 1845 h. Another individual was observed at 1130 h foraging on a roadside bamboo groove ~2 m above ground.

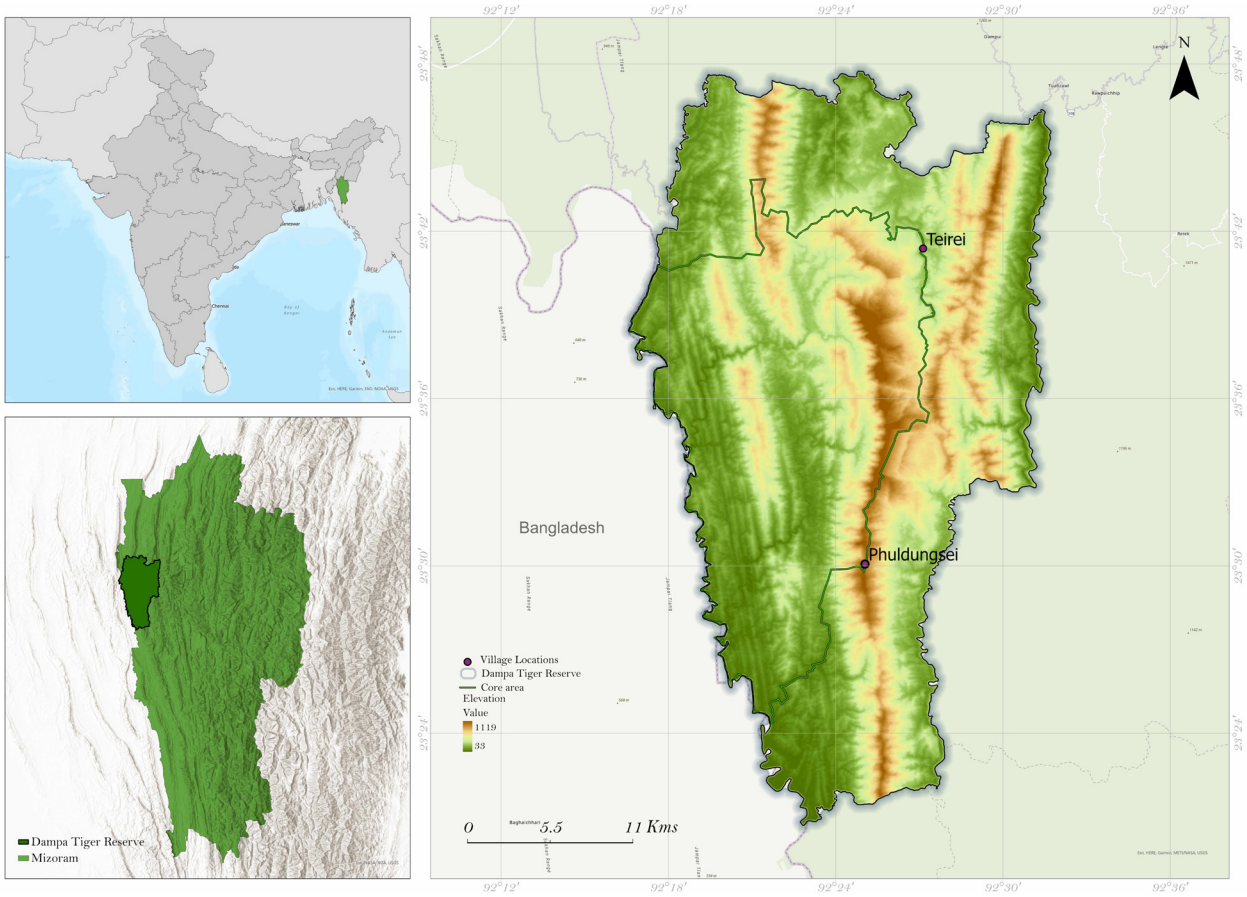

Figure 1. Map of Dampa Tiger Reserve highlighting the two range headquarter village viz., Teirei Village and Phuldungsei village.

Manthey (2008) depicted diverse morphotype of the *Calotes emma* (sensu lato) from China, Laos, Thailand, and Vietnam. The Mizoram population agrees well in live colouration with the population from Assam reported by Das et al. (2009).

In Mizoram, this species was recorded from Ngengpui WS, DTR, and Aizawl (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

2. Irawadi Forest Lizard *Calotes* cf. *irawadi* Zug, Brown, Schulte & Vindum, 2006

Materials examined: WII-ADR 1103 and WII-ADR 1111, both Female, SVL 62.5 mm & 97.8 mm; TL 180 mm & 270 mm. Image 1B.

Scales on neck and supra-axillary region oriented obliquely; supratympanic spines are half or less than the diameter of tympanum (Zug et al. 2006). Das et al. (2009) provisionally reported the species from adjoining Barail WS. Lalrinchhana. Solanki (2015) also provisionally reported the species from Dampa TR. The individuals were frequently encountered roosting on shrub along forest trail about 1.5 m above the ground during our survey on 12 September 2021 at around 2138 h.

Previously *C. versicolor* was reported from Ngengpui WS, DTR, Aizawl, Hmuifang (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015). *Calotes* cf. *irawadi* from DTR (Lalrinchhana & Solanki 2015). However, after Gowande et al. (2021), the validity of these records needs to be investigated.

3. Smooth-scaled Mountain Lizard *Cristidorsa planidorsata* (Jerdon, 1870)

Materials examined: WII-ADR 1071 and WII-ADR 1072, both Females, SVL 38.4 mm & 52 mm; TL 65 mm & 80 mm. Image 1C.

Flat dorsum; no nuchal or dorsal crest; a double series of slightly enlarged keeled scales; series of angularly bent larger scales. The description agrees with Jerdon (1980). The individuals were encountered roosting on shrub along a forest trail at around 0.5 m above the ground on 12 Sept 2021 at around 1900 h.

In Mizoram, this species was previously reported from DTR, Hmuifang (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

4. Green Fan-Throated Lizard *Ptyctolaemus gularis* (Peters, 1864)

Materials examined: WII-ADR 1152, Female, SVL 69.5 mm; TL 160 mm. Image 1D.

Body slender; with a pointed head; bluish gular pouch folded in U shape. The description agrees with Das & Das (2017). The individual was spotted on a tall isolated tree at about 2 m in a bamboo patch. When approached, the individual showed circulating movement in the tree going upwards on 16 September 2021 at around 1300 h. Liu et al. (2021) recently described *Ptyctolaemus chindwinensis* from Htamanthi Wildlife Sanctuary, Sagaing Division, Myanmar. Our specimen differs from *P. chindwinensis* in having three long bluish-black stripes which occupy most portions of the gular pouch.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

Family: Gekkonidae

5. Jampui Bent-toed Gecko *Cyrtodactylus montanus* Agarwal, Mahony, Giri, Chaitanya, and Bauer 2018

Materials examined: WII-ADR 1077, Male, SVL 57.6 mm; TL 58 mm. Image 1E.

Dorsal coloration consisting of thick dark reticulations enclosing lighter blotches; the tail had alternating dark and lighter bands. This description agrees with Agarwal et al. (2018). We encountered the individual roosting on a shrub from a forest trail at around 0.5 m above ground on 15 September 2021 at around 1900 h. Another individual was also encountered on a wall of a small concrete roadside drain at around 2230 h.

In Mizoram, this species was previously reported from DTR (Lalmuansanga et al. 2020).

6. Tokay Gecko *Gekko gecko* (Linnaeus, 1758)

Materials examined: WII-ADR 1114, Juvenile, SVL 59.1 mm; TL 55 mm. Image 1F.

Reddish spots on a greyish dorsum; tubercles present on ventrolateral folds. This description agrees with Das

Image 1. Some saurian fauna of Dampa Tiger Reserve: A—*Calotes emma* | B—*Calotes irawadi* | C—*Cristidorsa planidorsata* | D—*Ptyctolaemus gularis* | E—*Cyrtodactylus montanus* | F—*Geeko gecko* | G—*Hemidactylus platyurus* | H—*Hemidactylus frenatus* | I—*Varanus salvator* with *Zhangixalus smaragdinus*. © Abhijit Das (A-H), Malsawmdawngliana (I).

& Das (2017). The calls of *G. gecko* were frequently heard from the buildings in the Forest IB Complex and nearby forests. Many juveniles and one adult were observed from the Forest IB Complex during the survey every night.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

7. Flat-tailed House Gecko *Hemidactylus platyurus* (Schneider, 1792)

Materials examined: WII-ADR 1069 (Male). SVL 52.8 mm; TL 55 mm. Image 1G.

Body colour variable; brown to grey; with smooth dorsal scales; tail dorso-ventrally flattened with serrated edges. This description agrees with Das & Das (2017). We encountered one individual on a wall of Phuldungsei Forest IB Complex on 12 September 2021 at around 1900 h.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015)

8. Common House Gecko *Hemidactylus frenatus* Duméril & Bibron, 1836

Materials examined: Not collected, unsexed, not measured. Image 1H.

Smooth dorsal scales; round tail bearing rings of enlarged tubercles. This agrees with the description in Das & Das (2017). We encountered the species on the wall of the guest house at the Phuldungsei Forest IB Complex on 12 September 2021 at around 1830 h.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl and Hmuifang (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

Family: Scincidae

9. Spotted Forest Skink *Sphenomorphus maculatus* (Blyth, 1853)

Materials examined: WII-ADR 1109, Male, SVL 31.3 mm; TL 45 mm.

Bronze dorsum and dark flanks lightly speckled with white; having two series of black spots on the side of the body. The morphological description agrees with Das & Das (2017). During night sampling a few individuals were sighted along a forest trail and one individual was encountered in a dry drain filled with leaf litter on 12 September 2021 between 2130 and 2200 h.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl, Hmuifang (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015)

Family: Varanidae

10. Water Monitor Lizard *Varanus salvator* (Laurenti, 1768)

Materials examined: None, Image 1I

Triangular head; snout elongated and flat. One individual was photographed hiding in a rock crevice along with a Large Green Frog *Zhangixalus smaragdinus* in Teirei stream near Lallen village on 24 March 2021 at around 1930 h. The species was identified as *V. salvator* from the photograph based on characters such as nostril closer to the snout and distinctly enlarged supraocular scales (Koch et al. 2013).

In Mizoram, this species was previously reported from Ngengpui WS, DTR (Pawar & Birand 2001; Lalrinchhana et al. 2011; Lalrinchhana & Solanki 2015).

Suborder: Serpentes

Family: Natricidae

1. Wall's Keelback *Herpetoreas xenura* (Wall, 1907)

Materials examined: WII-ADR 1158, Male, SVL 480 mm; TL 185 mm. Image 2A.

Subcaudals single; nostrils lateral; internasals truncated; supralabials largely light. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal rows 19:19:17, ventrals 162 and 99 (single) subcaudals. We encountered an individual on the streambed along the road on 16 September 2021 at around 2145 h.

In Mizoram, this species was previously reported from DTR, Sihhmui, Tamdil, Aizawl district, Reiek Community Reserved Forest (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011, 2014; Hmar et al. 2020)

2. Khasi Hills Keelback *Hebius khasiensis* (Boulenger, 1890)

Materials examined: WII-ADR 1104, Female, SVL 350 mm; TL 50 mm. Image 2B.

19 dorsal scales round the mid body (19:19:17) with first dorsal scale row keeled; nine supralabials which are cream coloured with dark edges. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 19:19:17; ventral 154; subcaudals 34 (paired). We encountered the individual on a streambed upon turning a rock in a small stream that flows along the road on 15 September 2021 at around 2030 h.

In Mizoram, this species was previously only reported from Reiek Community Reserved Forest (Hmar et al. 2020).

3. Red-necked Keelback *Rhabdophis helleri* (Schmidt, 1925)

Materials examined: WII-ADR 1151, female and WII-ADR 1155, male; SVL 490 mm & 365 mm ; TL 160 mm & 105 mm, respectively. Image 2C.

Olive green dorsum; reddish neck. Some individuals having a tear drop mark below the eye. The individual agrees with the description of *R. helleri* in having 19:19:17 dorsals scale rows; ventrals 164, 166, 84, & 91 paired subcaudals (David & Vogel 2021). One individual was encountered roosting on a shrub at about 2 m from the ground along a forest trail near Teirei Forest IB complex on 16 September 2021 at around 1930 h. Another individual was encountered on the same night under a rock from a stream flowing along the road at around 2130 h.

The species was previously identified as *R. subminiatus* with two subspecies. After David & Vogel (2021), the northeastern Indian populations of the species conferred to *R. helleri*.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, all districts of Mizoram, Reiek Community Reserved Forest (Pawar & Birand 2001; Lalremsanga et al. 2011; Hmar et al. 2020).

4. Orange-collared Keelback *Rhabdophis himalayunus* (Gunther, 1864)

Materials examined: WII-ADR 1116, Female, SVL 550 mm; TL 185 mm. Image 2D.

Olive-brown dorsum; anterior part of dorsum with whitish checkering; posteriorly dorsolateral series of small yellowish or cream spots present. Neck with a cream or pinkish collar which is broad in the middle, many dorsal scales edged with white and sky blue colour. Small black bars from the eye to the labials and one large bar from behind the eye to the angle of mouth, ventral with light mottling that increases posteriorly. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having a dorsal scale rows 17:19:17; ventrals 158; subcaudals 86 (paired). We encountered the individual roosting on roadside vegetation at about 0.5m from ground on 13 September 2021 at around 2130 h. A *Xenophrys* sp. frog was recovered from the gut of this individual.

In Mizoram, this species was previously reported from Champhai and Mamit districts (Lalremsanga et al. 2011).

5. Brown Rain Snake *Smithophis bicolor* (Blyth, 1854)

Materials examined: WII-ADR 1107, Female, SVL 590 mm; TL 150 mm. Image 2E.

The individual agrees with description in Das (2010), Lalremsanga & Lalronunga (2017), and Giri et al. (2019) in having dorsal 17:17:17; ventral 194; subcaudals 64 (paired). We encountered the individual in a dry stream

Image 2. Some ophidian fauna of Dampa Tiger Reserve: A—*Herpetoreas xenura* | B—*Hebius khasiensis* | C—*Rhabdophis helleri* | D—*Rhabdophis himalayunus* | E—*Smithophis bicolor* | F—*Smithophis atemporalis*. © Abhijit Das (A-E), Malsawmdawngliana (F).

bed under rocks on 14 September 2021 at around 2035 h. Another individual was encountered on the same night in a streambed, but it disappeared tunneling through the pebbles in the stream.

In Mizoram, this species was previously reported from Mizoram university campus, Lunglei, Saiha, Aizawl district, Reiek Community Reserved Forests (Das 2010; Lalremsanga et al. 2011; Hmar et al. 2020).

6. Mizo Rain Snake *Smithophis atemporalis* Giri, Gower, Das, Lalremsanga, Lalronunga, Captain & Deepak, 2019

Materials examined: WII-ADR 1068, Male, SVL 315 mm; TL 175 mm. Image 2F.

Without temporal scales. The individual agrees with the description in Giri et al. (2019) in having dorsal scale rows 17:17:17; ventral 195; subcaudals 82 (paired). We encountered the individual on a side drain at about ~2 km from West phaileng village near watershed on 12 September 2021 at around 1530 h.

In Mizoram, this species was previously reported from Mizoram Univesity Campus, Aizawl (Type locality) by Giri et al. (2019).

Family: Colubridae

7. Tawny Cat Snake *Boiga ochracea* (Theobald, 1868)

Materials examined: WII-ADR 1156 (Male) and WII-ADR 1157 (Female), SVL 620 mm & 700 mm; TL 170 mm & 180 mm. Image 3A.

Dorsum without pattern or with faint dark transverse dorsolateral bands on yellowish-brown or reddish-brown ground. The individuals agrees with description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal 19:19:15; ventral 222-241; subcaudals 96-107(paired). We encountered the individual active along a roadside vegetated slope 2 m from ground 16 September 2021 at around 2100 h. Another individual was encountered on the same night at 2200 h on vegetation, 2 m above ground along a roadside stream.

In Mizoram, this species was previously reported from Tamdil, Pachhunga University campus, Reiek Community Reserved Forests (Das 2010; Lalremsanga et al. 2011, 2014; Hmar et al. 2020).

8. Assamese Cat Snake *Boiga quincunciata* (Wall, 1908)

Materials examined: WII-ADR 1115, Male, SVL 1080 mm; TL 335 mm. Image 3B.

Dorsal pattern consists of fine dark brown spots and a vertebral series of dark brown; white edged blotches on yellowish or greyish-brown ground. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 19:19:15; ventral 254; subcaudals 128 (paired). We encountered the individual along a thick forested slope by roadside during our survey at about 0.5 m from ground on 13 September 2021 at around 2200 h.

In Mizoram, this species was previously reported from Aizawl districts (Lalremsanga et al. 2011).

9. Gunther's Kukri Snake *Oligodon* cf. *cinereus* (Gunther, 1864)

Materials examined: WII-ADR 1106, Female, SVL 445 mm; TL 70 mm. Image 3C.

Head shields finely spotted with black; no typical head marking. Anteriorly ventral scales with squarish black spots on outer edge. Posteriorly ventral almost dark; subcaudals also heavily spotted with black; 46 narrow irregular black crossbars on dorsum that develops from the dorsal scales edged with black; three bands on top of tail. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 17:17:15; Ventral 173; Subcaudals 42 (paired). We encountered the individual from a loose rocky crevice along streamside during the survey on 14 September 2021 at around 2230 h.

In Mizoram, this species was previously reported from Ngengpui WS, Tamdil, Siaha, Reiek Community Reserved Forests (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011; Hmar et al. 2020).

10. Gray's Kukri Snake *Oligodon dorsalis* (Gray, 1834)

Materials examined: Road-killed Specimen, unsexed, not measured.

Completely red subcaudals. The individual agrees with description in Das (2010) and Lalremsanga & Lalronunga (2017). We encountered a road killed individual on the road between Saithah and Phuldungsei village on 13 September 2021 at around 1100 h.

In Mizoram, this species was previously reported from Aizawl district and Reiek Community Reserved Forests (Lalremsanga et al. 2011; Hmar et al. 2020).

11. Zaw's Wolfsnake *Lycodon zawi* Slowinski, Pawar, Win, Thin, Gyi, Oo & Tun, 2001

Materials examined: Not collected, Unsexed, Not measured. Image 3D.

Brownish-black dorsal with narrow white cross bars best marked anteriorly; neck without any band, first band appear two head length behind. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017). We encountered the individual active on the bank of the Tuichar stream and left after photographing it on 27 March 2021 at around 2030 h.

In Mizoram, this species was previously reported from

Image 3. Some ophidian fauna of Dampa Tiger Reserve: A—*Boiga ochracea* | B—*Boiga quincunciata* | C—*Oligodon* cf. *cinereus* | D—*Lycodon zawi* | E—*Dendrelaphis proarchos* | F—*Dendrelaphis cyanochloris* | G—*Ahaetulla flavescens* | H—*Psammodynastes pulverulentus.* © Abhijit Das (A-H).

Ngengpui WS, Keifang, DTR, Aizawl and Saiha districts, Pachhunga University Campus, Reiek Community Reserved Forests (Pawar & Birand 2001; Slowinski et al. 2001; Lalremsanga et al. 2011; Dutta et al. 2013; Hmar et al. 2020).

12. White-banded Wolfsnake *Lycodon septentrionalis* (Günther, 1875)

Materials examined: Roadkill specimen, unsexed, not measured.

Purplish-black dorsum with narrow transverse white bands and a white venter. The individual agrees with description in Biakzuala et al. (2020). We came across a road killed individual on the road near Teirei Forest IB Complex on 15 September 2021 at around 1930 h.

In Mizoram, this species was previously reported from Bhumtilong (= Bungtlang), Sawleng, Aizawl, Mamit, Khawbung, Thenzawl, Pangzawl, Khawrihnim, Dampui (Taklukdar & Sanyal 1978; Lalbiakzuala et al. 2020).

13. Painted Bronzeback Treesnake *Dendelaphis proarchos* Wall, 1909

Materials examined: WII-ADR 1102, Female, SVL 275 mm; TL 115 mm. Image 3E.

Bronze coloured dorsal, distinct cream dorso-lateral lines cover half of the outermost row and the half of the scale row above it. The individual agrees with the description in Lalremsanga & Lalronunga (2017) and Lalbiakzuala et al. (2022) in having dorsal scale rows 15:15:11; ventral 193; subcaudals 150 (paired). We encountered the individual roosting on grass at about 0.2 m from ground on 14 September 2021 at around 2145 h.

Vogel & van Rooijen (2011) revalidated the occurrence of *D. proarchos* in northeast India and Biakzuala et al. (2022) reassessed the systematics of *Dendrelaphis* from Mizoram, northeastern India and removed all the records of *D. pictus* and replaced it with *D. proarchos*.

In Mizoram, this species was previously reported from Ngengpui WS, Aizawl, Aizawl district, Sialsuk, Tanhril, Mizoram University Campus, Sateek, Leng, Khawzawl, Maubuang, Kepran, Tlangnuam,, Buangpui, Durtlang, Khawlailung, Reiek, Phura, DTR, Thenhlum, and Sailam (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011; Lalbiakzuala et al. 2022).

14. Wall's Bronzeback Treesnake *Dendrelaphis cyanochloris* (Wall, 1921)

Materials examined: WII-ADR 1117 (Female), SVL 760 mm; TL 330 mm. Image 3F.

Brozed coloured dorsal; a black temporal stripe starts behind the eye; covers the whole temporal region and extends onto the neck; ventrals and subcaudals greenish. The individual agrees with the description in Slowinski et al. (2001), Das (2010), and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 15:15:11; ventral 206; subcaudals 142 (paired). We encountered the individual roosting on overhanging vegetation above road about 2 m from the ground on 14 September 2021 at around 2230 h.

In Mizoram, this species was previously reported from Tamdil, Aizawl and Kolasib districts, Reiek Community Reserved Forest (Lalremsanga et al. 2011, 2014; Hmar et al. 2020).

15. Short-nosed Vinesnake *Ahaetulla flavescens* (Wall, 1910)

Materials examined: not collected (unsexed). Image 3G.

Snout lacking pointed dermal appendage. The individual agrees with the description in Das (2010), Lalremsanga & Lalronunga (2017) and Srikanthan et al. (2022). We encountered an individual roosting on a *Mesua ferra* tree about 10 m from the ground inside Teirei Forest IB complex on 12 September 2021 at around 2030 h.

In Mizoram, this species was previously reported from Aizawl, Ngengpui WS, Tamdil, Aizawl and Mamit districts (Pawar & Birand 2001; Lalremsanga et al. 2011, 2014).

Earlier this speciese was reported as *Ahaetulla prasina* from northeast India. Srikanthan et al. (2022) recently revaluated the taxonomic identity of the northeast Indian populations of the species as *A. flavescens*.

16. Mock Viper *Psammodynastes pulverulentus* (Boie, 1827)

Materials examined: WII-ADR 1105 (Female), SVL 360 mm; TL 90 mm. Image 3H.

Brownish dorsal, scales edged with black, head with 3–4 indistinct bars, dorso-laterally three closely arranged lined and with yellowish spots. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 17:17:15; ventral 160; subcaudals 67 (paired). We encountered the individual roosting on roadside vegetation between Saithah and Phuldungsei on 13 September 2021 at around 1945 h.

In Mizoram, this species was previously reported from Ngengpui WS, DTR, Aizawl & Champhai districts, Reiek Community Reserved Forest (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011; Hmar et al. 2020).

17. Large-eyed False Cobra *Pseudoxenodon macrops* (Blyth, 1855)

Materials examined: WII-ADR 1101, Female, SVL 245 mm; TL 60 mm. Image 4A.

Reddish-brown or olive brown dorsal in colour; indistinct, small transverse bars on dorsum, Labials edged with faint black bars; labial and chin region whitish. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 19:17:15; ventral 153; subcaudals 69 (paired). We encountered the individual active of slope along the side of a stream on 13 September 2021 at around 1300 h and it tried to hide when encountered.

In Mizoram, this species was previously reported from Tamdil, Aizawl district, Reiek Community Reserved Forests (Das 2010; Lalremsanga et al. 2011; Hmar et al. 2020).

18. Assam Snail Eater *Pareas monticola* (Cantor, 1839)

Materials examined: WII-ADR 1076, Female, SVL 360 mm; TL 115 mm. Image 4B.

Yellowish dorsum with series of irregular edged black bars on the two side of mid dorsal line, top of head heavily spotted with black but the mottling is defined within an arrow-head shaped space. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having dorsal scale rows 15:15:15; ventral 192; subcaudals 81 (paired). We encountered the individual on a tree branch above stream at about 5 m from the ground on 14 September 2021 at around 2030 h. Another individual was encountered on the same night on a branch on a roadside vegetation slope at about 1 m from the ground.

In Mizoram, this species was reported from Aizawl, Tamdil, Kolasib district, Reiek Community Reserved Forests (Das 2010; Lalremsanga et al. 2011, 2014; Hmar et al. 2020).

Family: Elapidae

19. Monocled Cobra *Naja kaouthia* Lesson, 1831

Materials examined: Not collected (Unsexed). Image 4C.

Hood markings usually distinct, usually a pale, oval or circular marking, with a dark center and occasionally a narrow dark outer border. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017). We encountered an adult individual during a day trek towards Dampatlang on 5 March 2021 at around 1300 h. The individual was photographed on the spot and left in the area.

In Mizoram, this species was previously reported from Ngengpui WS, Mizoram University Campus, Tamdil, All districts of Mizoram, Reiek Community Reserved Forest (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011, 2014, Hmar et al. 2020).

20. Banded Krait *Bungarus fasciatus* (Schneider, 1801)

Materials examined: Not collected (Unsexed). Image 4D.

Black and yellow banded snake with blunt tail. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017). We encountered the individual active on a thick vegetated slope along a road near Teirei Forest IB Complex on 15 September

Image 4. Some Ophidian of Dampa Tiger Reserve: A—*Pseudoxenodon macrops* | B—*Pareas monticola* | C—*Naja kaouthia* | D—*Bungarus fasciatus* | E—*Trimeresurus erythrurus* | F—*Trimeresurus popeiorum*. © Samuel Lalronunga (A), Abhijit Das (B, D-F), C. Mazuala (C).

2021 at around 2000 h. The snake displayed head hiding behavior while being photographed in day light.

In Mizoram, this species was previously reported from Ngengpui WS, Aizawl district, Champhai district, Kolasib district, Mamit district, Reiek Community Reserved Forests (Pawar & Birand 2001; Das 2010; Lalremsanga et al. 2011; Hmar et al. 2020).

Family: Viperidae

21. Spot-tailed Pit Viper *Trimeresurus erythrurus* (Cantor, 1839)

Materials examined: WII-ADR 1119, Male, SVL 510 mm; TL 115 mm. Image 4E.

Dorsal greenish in colouration, eyes yellow; tongue dark brown; ventral yellowish-white; top of tail uninterrupted reddish in colour. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having Dorsal scale rows 25:25:19; ventral 167; subcaudals 65 (paired). We encountered five individuals of this species during the survey on saplings and tree branches along forest trails, and vegetation slopes on roadsides and on roads.

In Mizoram, this species was previously reported from Bhumtilang (= Bungtlang), All districts of Mizoram, Reiek Community Reserved Forest (Talukdar & Sanyal 1978; Lalremsanga et al. 2011; Hmar et al. 2020).

22. Pope's Pit Viper *Trimeresurus popeiorum* Smith, 1937

Materials examined: WII-ADR 1120, Male, SVL 560 mm; TL 140 mm. Image 4F.

Eyes red, background colour is uniformly green, red ventrolateral stripe below and white stripe above in males, well defined white stripe in females; the ventrolateral stripe become broken down into blotches alongside of the tail. The individual agrees with the description in Lalremsanga & Lalronunga (2017) in having dorsal 23:21:19; ventral 166; subcaudals 70 (paired). This species was quite common in the study area, we encountered >10 individuals along roadside vegetation, saplings on forest trails and a female individual in an ambush position in a small guava tree near the guest house in Phuldungsei IB complex.

In Mizoram, this species was previously reported from Aizawl and Mamit district (Lalremsanga et al. 2011). Pawar & Birand (2001) reported *Trimeresurus* cf. *stejnegeri* from DTR which supposedly would be a misidentification of *T. popeiorum*.

Family: Typhlopidae

23. Diard's Blindsnake *Argyrophis diardii* (Schlegel, 1839)

Materials examined: WII-ADR 1067, Female, SVL 32.5 mm; TL 4 mm.

Image 5. Some habitats of reptiles in Dampa Tiger Reserve: A—Dry Streambed | B—Mature Forest | C—Road and roadside vegetation | D—Bamboo grove. © Abhijit Das A-D)

Shiny blackish brown dorsum, on the neck and anterior part of body nine to ten dorsal scale rows are dark brown and shiny, little paler below, the two colours are not sharply contrasted. The individual agrees with the description in Das (2010) and Lalremsanga & Lalronunga (2017) in having a mid-row dorsal scale of 28. We encountered a fresh dead individual on the road in West Phaileng village on 12 September 2021 at around 1500 h.

In Mizoram, this species was previously reported from Tamdil, Sihhmui, Aizawl & Saiha district, Reiek Community Reserved Forest (Das 2010; Lalremsanga et al. 2011, 2014; Hmar et al. 2020).

DISCUSSIONS

The first attempt to document the herpetofauna of DTR was made about two decades ago (Pawar & Birand 2001). That study recorded 22 species of amphibians, 16 species of lizards, seven species of snakes, and four species of cheloneans from DTR.

Table 1. Annotated checklists of reptiles of Dampa Tiger Reserve. * represents the first record of the species from DTR.

Family	Species	Pawar & Birand (2001)	Lalrinchhana & Solanki (2015)	Lalmuansanga et al. (2020)	Vanlalchhuana et al. (2016)	Biakzuala et al. (2020)	Present study
AGAMIDAE							
	Calotes emma	√	√				√
	Calotes versicolor	√	√				√
	Calotes cf. *irawadi*		√				
	Draco maculatus	√	√				
	Draco sp. (cf. blandfordii-norvilli)	√					
	Cristidorsa planidorsata	√	√				√
	Ptyctolaemus gularis	√	√				√
GEKKONIDAE							
	Hemidactylus platyrus	√	√				√
	Hemidactylus brookii		√				
	Hemidactylus frenatus	√	√				√
	Hemidactylus garnotii		√				
	Hemidactylus sp.		√				
	Cyrtodactylus sp.		√				
	Cyrtodactylus montanus			√			√
	Geeko gecko	√	√				√
SCINCIDAE							
	Eutropis macularia	√	√				
	Eutropis multifasciata	√	√				
	Eutropis sp.	√					
	Tropidophorus assamensis	√	√				
	Sphenomorphus maculatus	√	√				√
	Sphenomorphus indicus		√				
LACERTIDAE							
	Takydromus sexlineatus	√	√				
VARANIDAE							
	Varunus benghalensis	√	√				
	Varunus salvator		√				√
NATRICIDAE							
	Herpetoreas xenura	√					√
	Hebius khasiensis						√*
	Rhabdophis helleri	√					√
	Rhabdophis cf. *himalayanus*						√*
	Smithophis bicolor						√*
	Smithophis atemporalis						√*
	Fowlea piscator	√					
COLUBRIDAE							
	Boiga ochracea						√*
	Boiga quinqunciata						√*
	Ahaetulla flavescens						√*
	Oligodon cf. *cinereus*						√*
	Oligodon dorsalis						√*

Family	Species	Pawar & Birand (2001)	Lalrinchhana & Solanki (2015)	Lalmuansanga et al. (2020)	Vanlalchhuana et al. (2016)	Biakzuala et al. (2020)	Present study
	Lycodon zawi	√					√
	Lycodon septentrionalis					√	√
	Dendrelaphis cyanochloris						√*
	Dendrelaphis proarchos						√
	Psammodynastes pulverulentus	√					√
	Ptyas korros	√					
PSEUDOXENODONTIDAE							
	Pseudoxenodon macrops						√*
PAREIDAE							
	Pareas monticola						√*
ELAPIDAE							
	Naja kaouthia						√*
	Bungarus fasciatus						√*
	Ophiophagus hannah				√		
VIPERIDAE							
	Trimeresurus popeiorum						
	Trimeresurus erythrurus						√*
TYPHLOPIDAE							
	Argyrophis diardii						√*
EMYDIDAE							
	Cuora mouhotii	√					
	Cyclemys gemelli	√					
	Melanochelys trijuga	√					
TESTUDINIDAE							
	Indotestudo elongata	√					

With the subsequent observations by Lalrinchhana & Solanki (2015), Lalremsanga et al. (2016), Muansanga et al. (2020), Biakzuala et al. (2020), Decemson et al. (2021), currently the reptilian fauna of DTR stands to 40 species (saurians: 26, serpentes: 9; cheloneans: 4). The present study recorded 33 species of reptiles from DTR of which 16 species of snakes, viz., *Hebius khasiensis*, *Rhabdophis himalayunus, Smithophis bicolor, Smithophis atemporalis, Boiga ochracea, Boiga quincunciata, Oligodon* cf. *cinereus, Oligodon dorsalis, Dendrelaphis cyanochloris, Ahaetulla flavescens, Pseudoxenodon macrops, Pareas monticola, Naja kaouthia, Bungarus fasciatus, Trimeresurus erythrurus*, and *Agyrophis diardii* were reported for the first time from DTR.

Pawar & Birand (2001) made a pioneer work to document the herpetofauna of DTR. They recorded 27 species of reptiles from DTR out of which one species (*Draco* sp.) cannot be determined to a species level. However, they indicated that the species in question had an affinity with *D. blanfordi* or *D. norvilli* and another two species that were conferred as *Dendrelaphis* cf. *pictus* and *Trimeresurus* cf. *stejnegeri* needs verification.

Lalrinchhana et al. (2011) recorded 22 species of lizard from DTR. Subsequently, Lalrinchhana & Solanki (2015) recorded 22 species of lizards from DTR. It is interesting to note that, even though the number of species recorded in these studies remained the same, the recorded species were not the same. Eighteen species, viz., *Calotes versicolor*, *Calotes emma*, *Draco maculatus*, *Cristidorsa planidorsata*, *Ptyctolaemus gularis*, *Gekko gecko*, *Hemidactylus platyurus*, *Hemidactylus frenatus*, *Hemidactylus brookii*, *Hemidactylus garnotii*, *Cyrtodactylus* sp., *Takydromus sexlineatus*, *Sphenomorphus maculatus*, *Eutrophis multifasciata*, *Eutrophis macularia*, *Tropidophorus assamensis*, *Varanus bengalensis*, and *Varanus salvator* were recorded in both studies. Lalrinchhana & Solanki (2015) reported four species viz., *Calotes* cf. *irawadi*,

Draco maculatus divergens, *Draco* cf. *blanfordi*, and *Sphenomorphus indicus* which were not reported by Lalrinchhana et al. (2011). A recent study in DTR (Lalmuansanga et al. 2020) as well as the present study recorded *Cyrtodactylus montanus* from DTR. Therefore, the species previously reported as *Cyrtodactylus* sp. from DTR is likely represented by this species.

The reports of *Calotes versicolor* by Pawar & Birand (2001), Lalrinchhana et al. (2011), and Lalrinchhana & Solanki (2015) remain unclear as Gowande et al. (2021) removed *C. versicolor* from northeastern India and placed all the northeastern Indian species in *C. irawadi* clade, therefore, the revaluation of *Calotes versicolor* group in northeast India is requires further studies. Gowande et al. (2021) stated that males of *C. versicolor* attain yellowish overall coloration, the trunk and the orbital region turns bright orange, forelimbs and hind limbs turn dark to black, however in present study we documented a displaying male from Teirei river, DTR with a reddish colour around the tympanum that extends till the midbody, which resembles the revived species, *Calotes vultuosus* (Type locality Kolkata, West Bengal) and the occurrence of this species needs to be checked/ confirmed in Mizoram. Pawar & Birand (2001) also reported four chelonians during their study in DTR which were not encountered in the present study. Among other additions, Vanlalchhuana et al. (2016) reported the nesting and hatchlings of *Ophiophagus hannah* from DTR.

The maximum number of encounters during our study inhabit roadside vegetation, forest trails and streams flowing along the roadside while there were very few encounters in the oil palm plantation. The roads connecting the villages within DTR are a borderline between the core and buffer zones. The expansion of road networks is one of the major threats for wildlife as a result of habitat destruction and population fragmentation (Mader 1984; Jaarsma et al. 2006). Moreover, the impact of roads is manifested in the direct mortality of wildlife through wildlife-vehicle collisions (Bennett 2017). Vehicle collisions are a major cause of mortality for a wide variety of herpetofauna (Dutta et al. 2016). During our survey at DTR, we observed a road-killed gravid female *Trimeresurus erythrurus*. As much as road connectivity is essential for the communities living in the fringe villages of DTR, detailed studies on the impact of roads on the wildlife of DTR in general and herpetofauna, in particular, will help in formulating mitigation measures.

Biodiversity incentivization provides essential baseline data on life forms in space and time (McDiarmid et al. 2012), the local herpetofauna diversity inventory presented in this study will ultimately contribute to our understanding of biodiversity and it will be valuable information for policy makers.

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NAAS rating (India) 5.64

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Journal of Threatened Taxa

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

October 2022 | Vol. 14 | No. 10 | Pages: 21903–22038
Date of Publication: 26 October 2022 (Online & Print)
DOI: 10.11609/jott.2022.14.10.21903-22038

Publisher & Host

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