Nepalese Journal of Zoology

ISSN: 2705-4403 (Print); 2705-4411 (Online)
www.cdztu.edu.np/njz

Volume 9 | Issue 2 | December 2025

https://doi.org/10.3126/njz.v9i2.86007

Short communication

# First record of the Sikkim wolf snake *Lycodon gammiei* (Blanford, 1878) (Reptilia: Squamata: Colubridae) from Nepal

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**Suggested citation:** Subba A., Kunwar N., Angdembe N., Limbu S. and Khanal L. 2025. First record of the Sikkim wolf snake *Lycodon gammiei* (Blanford, 1878) (Reptilia: Squamata: Colubridae) from Nepal. Nepalese Journal of Zoology, 9(2):80–84.
https://doi.org/10.3126/njz.v9i2.86007

**Article history:**
**Received**: 03 November 2025
**Revised**: 30 November 2025
**Accepted**: 07 December 2025

**Publisher's note:** The statements, opinions and data contained in the publication are solely those of the individual author(s) and do not necessarily reflect those of the editorial board and the publisher of the NJZ.



## Abstract

The genus *Lycodon* (Reptilia, Squamata, Colubridae) comprises nocturnal and non-venomous to mild-venomous snakes represented by 82 described species globally. In Nepal, three species of *Lycodon*- *Lycodon aulicus*, *L. jara* and *L. striatus* have been documented to date. This study reports the first confirmed occurrence of the Sikkim wolf snake (*L. gammiei*) in Nepal, based on a road-killed specimen recorded at Miklajung Rural Municipality, Panchthar District in eastern Nepal. Morphological examination (scale counts, coloration, pattern) confirmed identity and distinguished it from sympatric congeners. *L. gammiei*, so far known to be endemic to the Eastern Himalayas, has previously been documented only in Sikkim, India, and adjacent regions. The discovery extends the species' known range westward by approximately 150–200 km, highlighting the eastern Himalayan foothills as a potential dispersal corridor. This finding underscores the region's cryptic herpetofaunal diversity. It further emphasizes the importance of targeted surveys and conservation measures to mitigate potential threats arising from the habitat modification and human activities.

**Keywords:** Eastern Himalaya; Endemic fauna; Miklajung Rural Municipality; New species record; Wolf snake

## 1 | Introduction

The family Colubridae represents one of the most diverse and phylogenetically complex snakes with over 2100 species globally (Siler et al. 2013; Uetz et al. 2025; Wang et al. 2021; Whitaker & Captain 2004; Zhu et al. 2025). Within this family, the genus *Lycodon* Boie, 1826, commonly known as wolf snakes, represents nocturnal, non-venomous but taxonomically challenging group with 82 recognized species (Siler et al. 2013; Uetz et al. 2025; Zhu et al. 2025). The genus displays a complex distribution pattern in tropical and subtropical Asia including the Indian subcontinent, Southern China and the Indonesian Archipelago (Siler et al. 2013; Wang et al. 2021; Whitaker & Captain 2004; Zhu et al. 2025). Among them, the Sikkim wolf snake, *L. gammiei* (Blanford, 1878), is a poorly known species endemic to the Eastern Himalayas (Shu et al. 2024). Its known distribution is limited to the Indian states of Sikkim (its type locality) and West Bengal, along with adjacent regions in Bhutan (Blanford 1878; Mistry et al. 2007). They inhabit subtropical broadleaf forests and have also been recorded near tea plantations and human settlements in modified habitats (Blanford 1878; Das et al. 2021; Shu et al. 2024; Wangyal 2013).

*Lycodon gammei* is characterized by a black body with irregular pale-yellow markings on the head scales; the supralabials bear thick black sutures, a pale-yellow patch occurs behind the jaw, and the body is encircled by alternating black and pale-yellow rings with irregular margins (Amarasinghe et al. 2023; Blanford 1878; Shu et al. 2024). The first few black rings are incomplete ventrally, where the ventral is yellow and the black rings are speckled with bright yellow rings often having black sutures (Mistry et al. 2007; Shu et al. 2024). It is a rarely observed species, often confused with its more common congener, *L. aulicus*, and the mildly venomous krait genus *Bungarus* due to its banded pattern (Amarasinghe et al. 2023; Shu et al. 2024).

In Nepal, three species of *Lycodon* have been documented to date: *L. aulicus* (Linnaeus, 1758), *L. jara* (Shaw, 1802), and *L. striatus* (Shaw, 1802) (Kästle et al. 2013; Schleich & Kästle 2002; Shah & Tiwari 2004). Accurate identification of *Lycodon* species requires careful assessment of morphometric and meristic traits, along with coloration and pattern characteristics (Amarasinghe et al. 2023).

*L. gammiei* can be readily distinguished from *L. jara* by its distinct pale cross-bands on the dorsum, a feature absent in *L. jara*; from *L. aulicus* by having more numerous and broader cross-bands, whereas *L. aulicus,* typically exhibits fewer creamy-white cross-bands anterior and often bears a distinct collar band; and from *L. striatus* by possessing fewer, broader, and more irregularly

margined pale bands, in contrast to the narrower, more numerous, and regularly spaced bands of *L. striatus*. Supralabial counts further assist in differentiation: *L. aulicus* generally has nine supralabials, whereas *L. striatus* and *L. gammiei* typically have eight (Amarasinghe et al. 2023). Ventral scale counts further separate these taxa, with *L. gammiei* (205–220) possessing higher values compared to *L. jara* (167–188) and *L. striatus* (161–184). The number of body bands also differs markedly, with *L. gammiei* exhibiting 30–43 bands, exceeding the counts in *L. striatus* (18–28) and *L. aulicus* (21–30) (Kästle et al. 2013; Schleich & Kästle 2002). In terms of coloration, *L. gammiei* shows a dark-brown dorsal surface with alternating black and yellow bands; *L. striatus* displays a black-brown body with narrow white striated cross-bands; *L. jara* possesses a glossy greenish-purple body with scattered yellow spots; and *L. aulicus* is typically blackish-brown with creamy-white cross-bands (Amarasinghe et al. 2023; Shu et al. 2024). This study documents *L. gammiei* for the first time in Nepal and discusses its significance for underexplored herpetofaunal diversity of the country.

## 2 | Materials and methods

### 2.1 | Study area

This study was conducted in Panchthar District of far eastern Nepal (Fig. 1). The district extends from subtropical mid-hills to alpine tundra, with elevations ranging from 422 to 4497 m above sea level (asl) (Government of Nepal 2025). Based on 2020 land-use data, the study area covers approximately 1260.7 km$^2$, comprising forest (900.7 km$^2$), agricultural land (0.94 km$^2$), and settlement areas (20.91 km$^2$) (ICIMOD 2022).

The landscape encompasses diverse ecological zones, from subtropical forests to alpine tundra, along with grasslands and wetlands that support rich biodiversity and local livelihoods (Gopal et al. 2008; Limbu et al. 2025; Sharma et al. 2021; Subba et al. 2025). However, agricultural expansion, habitat degradation, and overexploitation of natural resources pose significant threats to the local biodiversity and other threatened species (Kandel et al. 2018; Subba & Khanal 2024).

### 2.2 | Specimen examination

During a field survey in eastern Nepal, local residents of Hile Dada, Miklajung Rural Municipality, Panchthar District, reported a road-killed *Lycodon* specimen to us. The specimen could not be confidently assigned in the field to any *Lycodon* species previously recorded from Nepal. After careful morphological and meristic examination, the specimen was disposed of with the assistance of local residents (no specimen and biological sample was collected). The morphological and meristic characters confirmed the identity of the species as *L. gammiei*.

## 3 | Results

In June 2024, at approximately 21:00 h, a single adult snake (Fig. 2)was found dead on a road near Saptami Bazar, Miklajung Rural Municipality, Panchthar District, Koshi Province, Nepal (26.9957° N, 87.684° E; elevation 1650 m asl) (Fig. 1). The specimen was found near degraded forest area adjacent to agricultural land (tea gardens). We conducted morphological measurements, noted meristic characters and took some photographs of the specimen (Table 1).

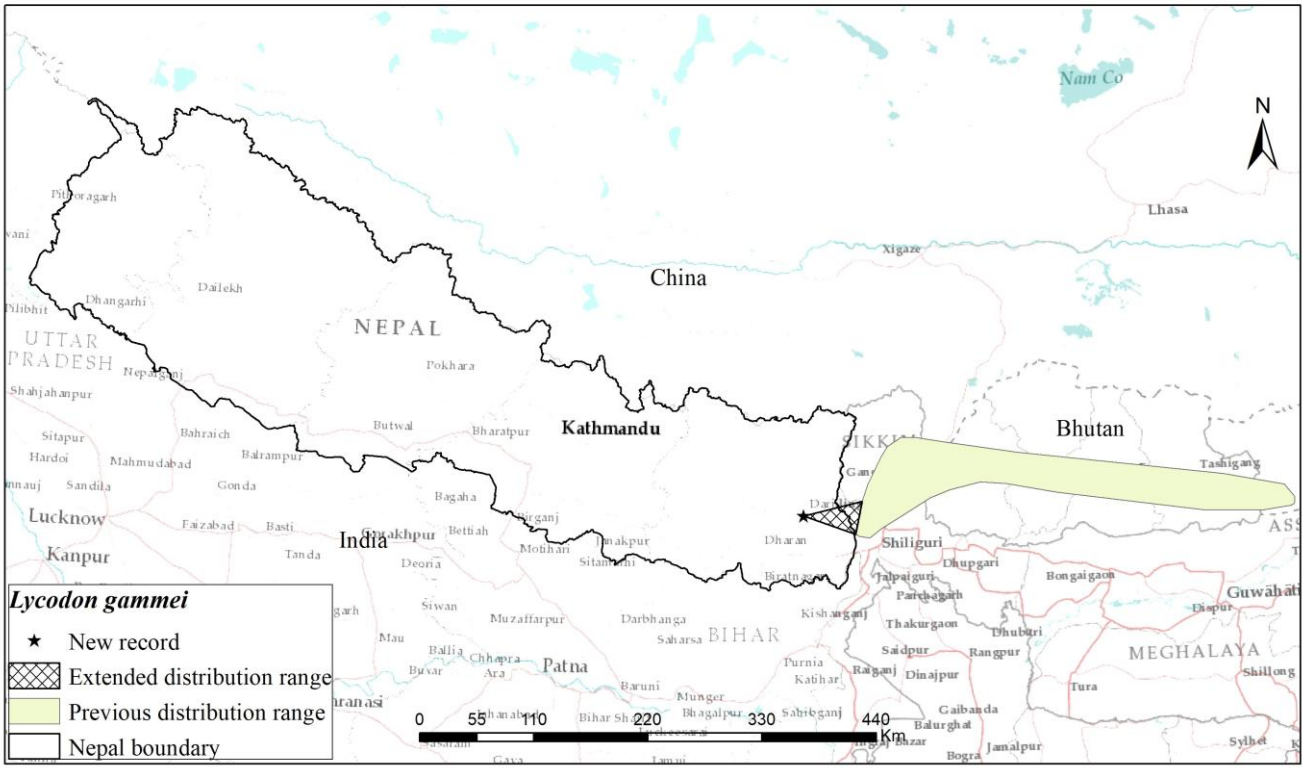


**Figure 1**. Map showing the known distribution of *Lycodon gammiei* (datum: WGS 1984). The brown shading indicates the species' previously documented range based on the IUCN Red List spatial data (Version 6.3, December 2022). The black star marks the newly confirmed locality at Hile Dada, Miklajung Rural Municipality, Panchthar District, eastern Nepal and the cross-hatched triangle represent extended distribution range based on minimum convex polygon (MCP). Coordinates are presented in decimal degrees. Map prepared in QGIS v3.34.

**Table 1**. Morphometric and meristic characters of the recorded *Lycodon gammiei* specimen from Miklajung, Panchthar District, eastern Nepal.

| Character | Recorded value | Literature range | Remarks / Comparison |
|---|---|---|---|
| Snout–vent length (SVL) | 704 mm | 698–1110 mm | Within range reported by Shu et al. (2024) and Nguyen et al. (2025) |
| Tail length | 227 mm | 223– 227 | Within range reported by Shu et al. (2024) and Nguyen et al. (2025) |
| Supralabial | 9 | 7–9 | Within range reported by Shu et al. (2024) and Amarasinghe et al. (2025) |
| Infralabial | 10 | 10 | Within range reported by Shu et al. (2024) |
| Dorsal scales | 17-17-15 rows | 17-17-15 rows | Within range reported by Shu et al. (2024) |
| Ventral scales | 213 | 205–220 | Within range reported by Shu et al. (2024) and Amarasinghe et al. (2025) |
| Subcaudal | 104 | 101–112 | Within range reported by Shu et al. (2024) and Amarasinghe et al. (2025) |

The specimen was identified as *L. gammiei* based on diagnostic characters described in Shu et al. (2024), Blanford (1878), Amarasinghe et al. (2023), and Nguyen et al. (2025). It exhibited an elongated body, a triangular flattened head with a blunt snout, and the typical arrangement of 17-17-15 dorsal scale rows, nine supralabials (7$^{th}$ largest), and ten infralabials. Ventral and subcaudal counts, along with SVL and tail length, fell within the known range for the species (Table 1). Coloration matched published descriptions, with a black head bearing yellow spots, bright yellow but ventrally incomplete neck rings, and 59 irregular yellow-and-black body bands that narrowed posteriorly.

## 4 | Discussion

This is the first confirmed occurrence record of *L. gammiei* in Nepal. This location is approximately 150–200 km west of its nearest known type localities in Sikkim, India. This record bridges a key biogeographical gap and underscores the eastern Himalayan foothills of Nepal as a likely dispersal corridor for Sino-Himalayan and Indo-Malayan lineages.

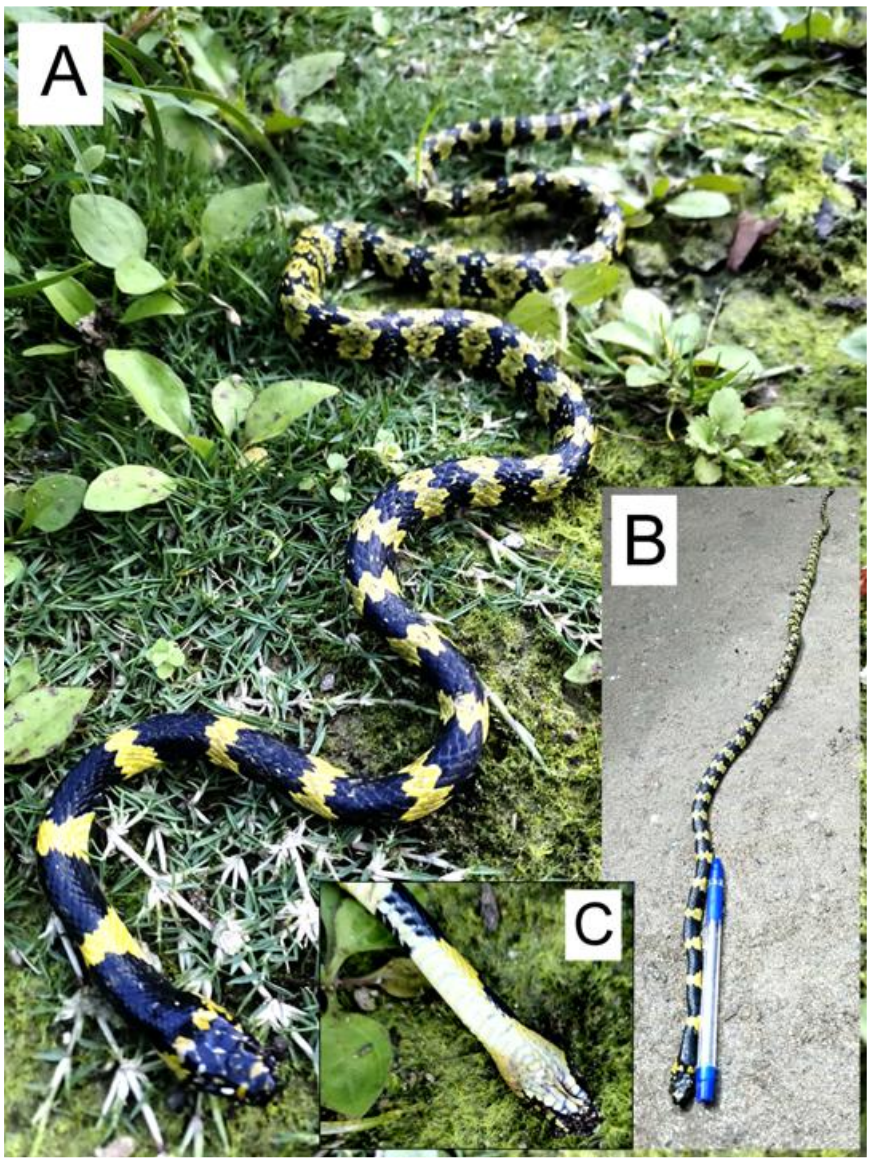


**Figure 2**. Photographs of *Lycodon gammiei* specimen observed at Hile Dada, Miklajung Rural Municipality, Panchthar District, eastern Nepal. A- Dorsal view; B- Dorsal view with the use of pen (14 cm) as a scale bar; and C- Ventral view of head. Photos by Asmit Subba and Den Kumar Angdembe.

*Lycodon gammiei* is considered one of the rarer congeners, with only ten individual records across its range (Blanford 1878; Mistry et al. 2007; Shu et al. 2024; Wangyal 2013). The species is listed as Near Threatened (NT) on the IUCN Red List, largely due to habitat modification associated with tea and cardamom plantations, expanding urbanization, and tourism development (Das et al. 2021). This record is based on a road-killed individual, suggesting that direct killing may pose a significant threat. During informal conversations, local residents (n = 6) reported encountering this species, particularly in agricultural landscapes, but noted that individuals are often killed upon sight due to fear or misidentifications.

The discovery in Panchthar District highlights the significant yet understudied herpetofaunal diversity of eastern Nepal. Given the cryptic nature and apparent rarity of this species, targeted field surveys are urgently needed to clarify its distribution, habitat associations, and conservation needs within the country. Such efforts will also contribute to broader biodiversity assessments in this ecologically sensitive region, underscoring the need for systematic herpetofaunal monitoring in eastern Nepal.

## 5 | Conclusions

This study confirms the presence of *Lycodon gammiei* in Nepal, establishing its occurrence within the eastern Himalayan landscape and highlighting the biogeographic importance of eastern Nepal as a corridor for Himalayan herpetofauna. The road-killed nature of the specimen, combined with local reports of intentional killing, highlights the potential impact of human perception on snake conservation. We recommend systematic field surveys, public awareness programs, and habitat-focused conservation initiatives to better understand the population status, ecological requirements, and threats to *L. gammiei* in Nepal. Documenting such cryptic species is essential for strengthening biodiversity assessments and guiding conservation planning in this ecologically sensitive zone.

## Acknowledgements

The authors are thankful to the locals of Hile Dada, Miklajung Rural Municipality, Panchthar; especially Mr. Den Kumar Angdembe for the reporting of the road-killed specimen and support during work. AS is grateful to Dr. Kai Wang of the Kunming Institute of Zoology, Chinese Academy of Sciences, for his guidance in identifying the specimen.

## Authors' contributions

Subba A. and Khanal L. conceived the study. Subba A., Kunwar N., Angdembe N. and Limbu S. performed the field work and specimen observation. Subba A. wrote the manuscript. All authors revised and approved the manuscript for publication.

## Conflicts of interest

The authors declare no conflict of interest.

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