



# A new state record of the Mandarin Rat Snake *Euprepiophis mandarinus* (Cantor, 1842) (Squamata: Colubridae: Coronellini) from Mizoram, India

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**Abstract.**—The Mandarin Rat Snake *Euprepiophis mandarinus* (Cantor, 1842) is a widely distributed species in the Indo-Chinese region with western-most limits in North East India. However, it is known from very few localities in the extreme north-eastern states in India. Herein, we report *E. mandarinus* based upon a roadkill specimen collected from the Champhai in Mizoram. The record of Champhai extends the known distribution of the species by about 292 km SW from the localities previously recorded. Morphological variation of the Indian population is discussed.

**Keywords.** Champhai, montane forests, morphological variation, Palearctic, range extension, roadkill

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## Introduction

The Mandarin Rat Snake *Euprepiophis mandarinus* (Cantor, 1842) is a relatively rarely encountered species of Old World ratsnake found in Eastern Asia (Ji et al. 2012; Wallach et al. 2014). The type specimen was collected from Chusan (=Zhoushan) Island, China, by T. Cantor (Boulenger 1894). Günther (1864) provided excellent head illustrations of *Euprepiophis mandarinus*. The species is distributed in Myanmar (Prater 1919), Vietnam (Nguyen et al. 2009), China (SFAC 2009), and possibly Laos (Das 2012). It occurs in forest habitats, both tropical and temperate forests, but can also be found in grasslands and shrublands (Schulz 1996). In Vietnam, the species is known from Na Hang, Tam Dao, and found in karst areas in the northern mountain ranges at around 1,400–1,500 m asl (Orlov et al. 2000; Quyet and Ziegler 2004; Nguyen et al. 2009). Among the known distribution localities of this species, the nearest to India lies within the Chin Hills, Myanmar (Prater 1919).

*Euprepiophis mandarinus* is a secretive species, active in the morning and early evening (Whitaker and Captain 2004). Based on phylogenetic studies, the pres-

ent taxonomic status of this species is placed under the subfamily Colubrinae (Utiger et al. 2005). More recent broad-scale phylogenetic studies of snakes also support this relationship (Figueroa et al. 2016). A molecular study of *Euprepiophis mandarinus* suggests that these ratsnakes originated in tropical Asia in the late Eocene, and subsequently dispersed to the Western and Eastern Palearctic during early Oligocene (Burbrink and Lawson 2007). The genus *Euprepiophis* is subtended by the basal node, separating them from the remainder of the ratsnakes lineages (Chen et al. 2017). The populations of *Euprepiophis mandarinus* are declining, and Wang and Xie (2009) indicated that this species has declined by 30% over the previous decade in China.

In India, *Euprepiophis mandarinus* has been recorded from only three localities and reports are separated by long time intervals. The first specimen was collected by Annandale (1912) from Upper Rotung Valley (=East Siang District), Arunachal Pradesh, and was described as *Ablabes pavo*, which is presently regarded as a junior synonym of *Euprepiophis mandarinus* (Das et al. 1998; Wallach et al. 2014). After a gap of seventy-five years, the species was recorded again from Namdapha

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**Fig. 1.** Dorsal and ventral view of roadkill *Euprepiophis mandarinus* (MZMU-1135) collected from Champhai, Mizoram. Photo by V. Rangasamy.

NP-Gandhigram road, Changlang District of Arunachal Pradesh, and this species was regarded as rare at the site (Sanyal and Gayen 2006). More recently it has been reported from the Zunheboto District of Nagaland (Mathew 2005; Sen and Mathew 2008; Lele et al. 2018). However, the species was never reported from Mizoram by earlier researchers (Mathew 2007; Lalremsanga et al. 2011; Lal-tanpuia et al. 2008).

## Methods and Materials

A dead specimen, possibly killed with a sharp blade, was collected from the roadside (Fig. 1), 14 km north of Champhai town (23°36'27.1"N, 93°21'13.2"E), a district capital of Champhai in Mizoram. The specimen was fixed in 4% formalin, preserved in 70% ethanol, and deposited in the departmental museum of Zoology, Mizoram University, Aizawl (MZMU-1135). The specimen was photographed with a digital Canon Powershot SX50 HS camera. Measurements were taken with a Mitutoyo™ digital caliper to the nearest 0.01 mm, except SVL and TL, which were measured to the nearest mm with a measuring tape. Ventral scales were counted after Dowling (1951), and standard external morphological characters are given in Table 1. Additional data on distribution was obtained from the collections of BNHS, Mumbai, and ZSI, Kolkata. Geographic co-ordinates were mapped with Garmin GPSMAP® 62s.

## Abbreviations

BNHS: Bombay Natural History Society, Mumbai, India; MZMU: Museum of Zoology department, Mizoram University, Aizawl, India; SVL: snout to vent length; TL: tail-length; HL: head-length; EYED: horizontal diameter of the eye; EYEN: distance from center of the eye to posterior border of the nostril; WSNT: width of the snout; VENT: number of ventrals; SUBC: number of subcaudals and terminal scute excluded; DOR1: number of dorsal scale rows at one head-length behind the head; DOR2: number of dorsal scale rows at the position of the middle ventral;

DOR3: number of dorsal scale rows at one head-length before the tail; TEMP: number of temporals (L+R); SL1: number of supralabials (L+R); SL2: number of supralabials touching the eyes (L+R); INFR: number of infralabials (L+R); LOR: number of loreals (L+R); POC: number of post-oculars (L+R); NP: National Park, CHK Rd: Champhai-Hnahlan-Khuangphah Road; FSI: Forest Survey of

**Table 1.** Detailed meristic and pholidosis data of *Euprepiophis mandarinus* (measurements in mm).

Collection Voucher Number	MZMU-1135
Collection Locality	CHK Rd, Champhai, Mizoram, India
Elevation	1678 m asl
Sex	Female
Date of Collection	10/04/2018
Collector	Rangasamy and Ashaharraza
SVL	297.50
TL	66.20
HL	15.1
HW	10.4
EYED	3.2
EYEN	3.0
WSNT	4.3
VENT	212
SUBC	77
DOR1	23
DOR2	23
DOR3	23
TEMP	2+3
SL1	8
SL2	4 <sup>th</sup> and 5 <sup>th</sup>
INFR	8
LOR	Absent
POC	2
PRE	2

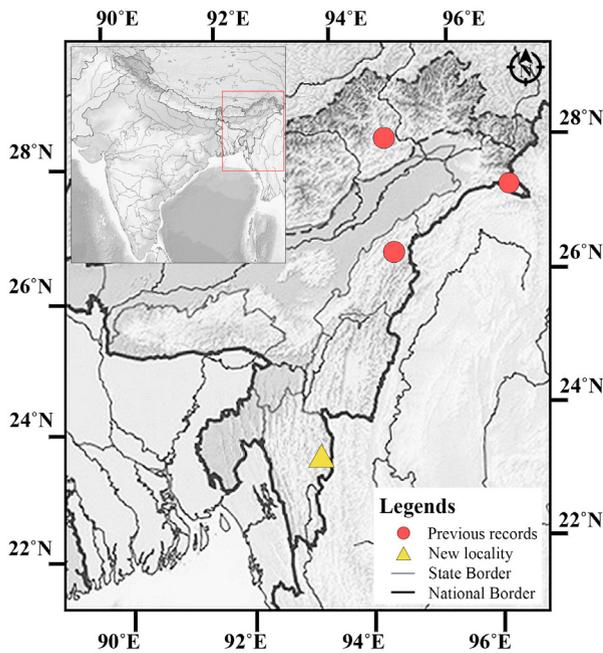


Fig. 2. Map depicting Champhai (triangle) Mizoram, a new locality for *E. mandarinus* in India with previously known localities (filled circles). Inset map shows relative position of all localities within Republic of India.

India; DST-SERB: Department of Science and Technology, Science and Engineering Research Board, Government of India; EMR: Extramural Research funding.

## Results and Discussion

The snake has large, elliptical yellow spots, edged with broad black circles on dorsum and tail, lateral scales are dull grey, mixed with yellow dorsals; the forehead has a

black V-shaped pattern with a yellow spot between parietals; the belly is yellowish-green with wide black transverse blotches, which turn into entire bands on the sub-caudal scales. The body is robust; the head is short and slightly distinct from neck; the snout is obtuse; the tail is short and stout; the eyes are small with a rounded pupil; the dorsal scales are smooth; the anal is divided. This description matches with Smith (1943) and Das (2012).

The collection of the Mandarin Rat Snake *Euprepiophis mandarinus* from Champhai is the first record for Mizoram State and the fourth record of this species from India (Fig. 2). Champhai is located at 292 km radial distance south-east of the Zunheboto District of Nagaland, the closest previously known locality.

The collected specimen is distinct from the individuals we examined from Republic of China (Fig. 3) by the absence of loreal scales and by the absence of olive-grey and red lateral blotches on the dorsum. Although vehicular traffic is a known threat to this species, our study has added manual killing as another evident threat that is potentially responsible for population decline of *Euprepiophis mandarinus*.

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Fig. 3. A distinct form of *Euprepiophis mandarinus* with red-brown dorsals from Republic of China. Photo by Tom Charlton.

Anil Khaire (Chairman, Indian Herpetological Society) for his guidance. Additional thanks are due to Suchetana Sen, Mufaddal Shakir, Vishal Varma, Prasad Gond, Ravi Pawar, Madhao Vaidya, and Abhijeet Dani for assisting in the Indo-Burmese reptile survey. We are thankful to Gernot Vogel, Deepak V., and an anonymous reviewer for comments on an earlier version of this paper. At North Orissa University, KA is thankful to Cuckoo Mahapatra, Rabindra Kumar Mishra, and Shrustidhar Rout for their input during manuscript construction. VR acknowledges Dr. C. Vidhyasagar (DFO, Lunglei, Mizoram, India) and Mahalaxmi (Annamalaiputhur, Tamil Nadu, India) for continuous support and help. The collection of the present specimen from Champhai was possible under permission No. A.33011/2/99-CWLW/225 issued by Chief Wildlife Warden, Environment, Forest and Climate Change Department, Government of Mizoram, India. HTL and LBZ extend their gratitude to DST-SERB, New Delhi for providing laboratory facilities under EMR number EMR/2016/002391. At FSI, our humble thanks to Ajaya Kumar Nayak and Ashok Kumar Biswal for support and encouragement.

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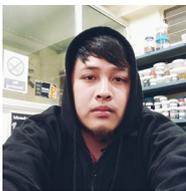
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