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Cover: Freshly emerged Footman Moth *Nepita conferta* from the cocoon on a brightly painted wall in the Nilgiris. Digital art on Procreate. © Aakanksha Komanduri.



Addition of *Wallophis brachyura* (Günther, 1866) (Colubridae) and *Calliophis melanurus* (Shaw, 1802) (Elapidae) to the reptile fauna of Rajasthan, India

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Abstract: Two uncommon snakes, *Wallophis brachyura* (Günther, 1866) and *Calliophis melanurus* (Shaw, 1802), are reported from the dry deciduous forests of Pratapgarh, southern Rajasthan, based on findings of live individuals of both species. In the same work, the presence of these snakes in adjacent Madhya Pradesh is discussed, and other important unpublished localities are provided to confirm their wider presence in the central-western Indian region.

Keywords: Central India, distribution, dry deciduous forests, endemic, farmlands, Madhya Pradesh, Pratapgarh, Indian Smooth Snake, Slender Coral Snake.

सार: दक्षिणी राजस्थान के प्रतापगढ़ के शुष्क पर्णपाती वनों से कम देखे जाने वाले दो सर्प *वालोफिस ब्राकियुरा* (गुंथर, 1866) एवं *कैलियोफिस मेलानुरस* (शॉ, 1802) जीवित नमूनों की प्राप्ति के आधार पर दर्ज किये गए हैं। इसी शोध में भौगोलिक रूप से संलग्न मध्य प्रदेश में इन सर्पों की उपस्थिति पर विचार किया गया है एवं पश्चिम-मध्य भारत में इनकी विस्तृत भौगोलिक उपस्थिति को दर्शाने के लिए अन्य अप्रकाशित स्थानों का उल्लेख किया गया है।

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Author contributions: VS: designed and wrote manuscript. BLM: captured individuals of both species from Pratapgarh city outskirts and provided initial photographs. LKJ: provided data of two juvenile *Calliophis melanurus* from Dalot Village, Pratapgarh District and provided photographs of species. DK: took taxonomic data of both species, contributed in designing and writing manuscript.

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INTRODUCTION

Rajasthan is geographically the largest state of India. It is largely known for its arid and desert biodiversity because around 3/5th of the central-western part of the state is covered by the Thar desert. On the eastern edge of Thar, Aravalli Hill range runs diagonally from the north-east to south-west of the state and leaves around 2/5th part as eastern plains and restricts deserts on its west. Eastern side of the Aravalli Hills is richer in both dry deciduous and scrub forests because it receives better rainfall than Thar Desert (Khandal et al. 2016). Biodiversity found in this zone can be generalized as species belonging to dry deciduous forest type. Several reptile and amphibian species which are widely available in adjacent central India are also available in eastern plains of Rajasthan. They demand more extensive observations to enrich their knowledge in the state.

Wallophis brachyura (Günther, 1866) is a small colubrid that is considered a rarity in Indian snake fauna (Whitaker & Captain 2004). In fact, for a long time until Mistry 2005, it was shown from not more than five localities of western India's Maharashtra State and one from Madhya Pradesh State. In the past few years, it has been reported from new states with significant range extensions. So far, it is reported from dry lowlands of most of the Maharashtra, central-southern Gujarat, central-western Madhya Pradesh, central-western Chhattisgarh, northwestern Telangana and recently from northeastern Karnataka (Patel et al. 2015; Patel & Vyas 2019; Visvanathan et al. 2022; Deepak et al. 2023).

Similarly, *Calliophis melanurus* (Shaw, 1802) is another lesser seen but relatively more widely distributed small-sized elapid of the Indian subcontinent (Whitaker & Captain 2004). Apart from its type locality in Bengal (= West Bengal?), it is found in most of the lower peninsular India, including the Western Ghats, dry deciduous plains and most of the peninsular Indian hills, which are known for receiving relatively lower rainfall. So far, it is reported from most states of Peninsular India in patchy form, from West Bengal to Saurashtra of Gujarat and southwards (Vyas & Vyas 1981; Whitaker & Captain 2004; Deshmukh et al. 2018; Patel & Vyas 2019; Ganesh & Gupta 2021; see Image 1, Table 1). In this work, we add one more significant locality for *W. brachyura* and two localities for *C. melanurus*, which occur in adjacent Madhya Pradesh and Gujarat, but yet unreported from Rajasthan State.

MATERIAL AND METHODS

Live individuals of both species were obtained from outskirts localities of Pratapgarh City (24.028° N, 74.782° E) by the second author and from Dalot Village (23.668° N, 74.844° E) by the third author. Both localities come under of Pratapgarh District of Rajasthan. After realizing the scientific value of the finding, one of us (Dharmendra Khandal) visited these localities to document the individuals of both species in live condition. Scalation data was recorded manually and digitally with the help of a macro lens and macro mode in smart phones. Individuals of *C. melanurus* were very small, hence they were placed over thin transparent glass to photograph their ventral and subcaudal scales for counting on a large screen. Recorded data were compared with the most recent morphological accounts of species (Patel et al. 2015; Parmar 2019 for *Wallophis brachyura*). Ventral scales were counted by following Dowling 1951. Individuals were released unharmed near the capture site within legal terms.

RESULTS

Wallophis brachyura (Günther, 1866)

On 30 March 2024 at 1515 h second author captured a live adult *W. brachyura* (Image 2) from an outskirts house of Pratapgarh City (24.044° N, 74.781° E; 516 m). It was hiding in the gaps of the door frame, from where it was successfully removed for safe relocation.

A total 457 mm long individual had following characters (jointly written for both sides of head as recorded data was same): nine supralabials, 5–6 in contact with eyes, lowest posterior temporal almost half wedged between 7–8 supralabials; one loreal; one preocular; two postoculars; 2+3 temporals; dorsal scales smooth, in 23 mid body rows; 232 ventrals, followed by undivided anal; 45 pairs of subcaudals with additional single terminal scute. Head elongated, not depressed, slightly broader than the neck; eyes moderate, with a rounded pupil. Head's ground colour was glossy metallic grey-brown, slightly darker than the rest of the upper body. The top of the head was patternless, but the scales had greyish shades. A fine, obscure but visible blackish preocular streak was running above the upper edges of anterior supralabials from nasals to eyes. Upper lips were lighter than the dorsal part of the head. Dorsal body appeared superficially patternless, glossy grey-brown but, on careful examination, flanks (up to 6 dorsal rows in mid body) had darker shades, which were most

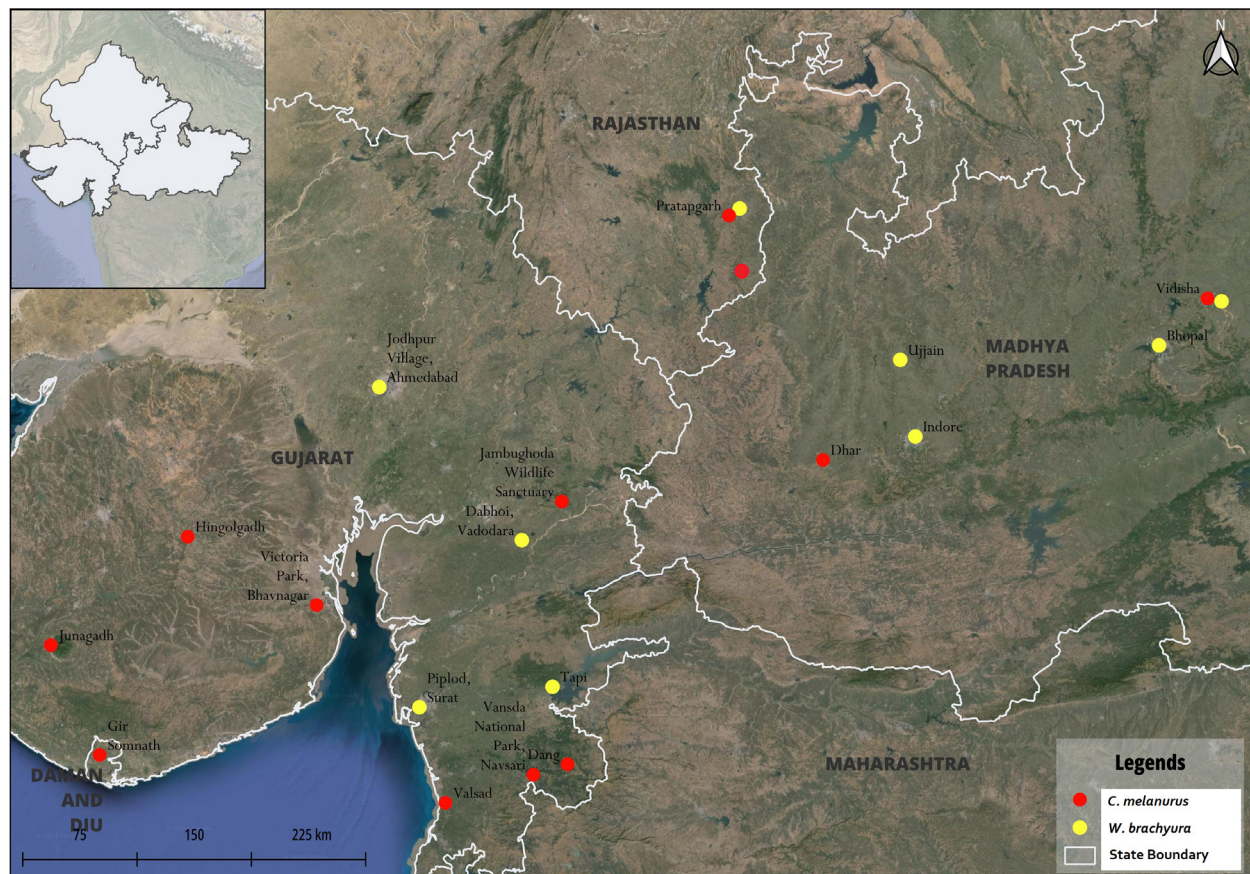


Image 1. Map of central-western India showing published and unpublished district-wise distribution records of *Wallophis brachyura* and *Calliophis melanurus* from Gujarat, Madhya Pradesh, and Rajasthan. Localities are denoted by red and yellow circles for *C. melanurus* and *W. brachyura*, respectively. District headquarters is represented as locality the precise location the village/town is unavailable in cited works. If multiple localities are reported in a district, record the closest the district headquarters is chosen except for Pratapgarh District, where records of *C. melanurus* were done in two different localities. Also see Table 1 to check locality data along with citations.

prominent from start of the mid body till the start of the tail. The underside was off-white, with greyish edges on the outer sides of the ventrals.

Calliophis melanurus (Shaw, 1802)

While the above finding of *W. brachyura* was being discussed with the second author, he showed his past finding of an unidentified snake, not far from the locality of *W. brachyura* (24.051° N, 74.763° E; 516 m. This observation was done on 15 February 2021 at 1030 h. The individual was discovered while digging a pile of soil meant for making bricks.

Later, the third author was able to contribute his findings of two juvenile individuals of *C. melanurus* (Image 3) from nearby Dalot Village (23.674° N, 74.849° E; 561 m and 23.684° N, 74.849° E; 551 m) on 16 July and 31 July of 2025, respectively. First individual was found on the classroom floor of the school, while the second was found in a shop's floor at daytime. Both sites were

surrounded by farmlands on the outskirts of town. DK visited the village to document live individuals and took morphological data which is as follows (First individual's data written first, followed by data of second individual. Also, data of head scales was recorded only from left side of head): 140 mm and approximately 150 mm total length, six supralabials, 3–4 in contact with eyes; loreal absent hence single preocular in contact with posterior nasal; two postoculars; one large anterior temporal; dorsal scales smooth, in 13 mid body rows; 256 and 269 ventrals, followed by divided anal; 32 and 26 pairs of subcaudals with rounded tail tip. Head rounded, not depressed, not broader than the neck; eyes moderate, with entirely black cornea, hence pupil invisible. Head's ground color up to nape was glossy black, with characteristic rounded white spots on internasal, upper posterior temporals and one off-white colored oval spot on the top of nape. Upper lip had white colouration on the anterior and posterior sides by leaving the area



Image 2. Live individual of *Wallophis brachyura* from Pratapgarh Town, Pratapgarh District, Rajasthan. © Dharmendra Khandal.

under the eyes black. An additional incomplete collar was present, which was barely reaching the top. Dorsal body appeared superficially patternless, glossy brown, but on closer look, scales could be seen with darker longitudinal lines, which overall made the dorsal surface plain brown. The anterior one-third body's underside was plain white, but it gradually started turning yellow-orange, and these colours were most vibrant before the anal. Upperside of tail had two large black spots, one at the starting and one just before the end of the tail tip. The underside of the tail was largely bluish-white with black blotches. Both individuals had subcaudal scales

starting with black blotches, while others were seen before the end of the tail.

DISCUSSION

Record of *W. brachyura* is 143 km from the nearest published locality in Ujjain, Madhya Pradesh (Ingle & Sarsavan 2011). In neighboring state of Madhya Pradesh, one specimen of *W. brachyura* was collected from Bhopal in 1945 (Mistry 2005). Whitaker & Captain (2004) did not include this locality. Later, Ingle & Sarsavan (2011)

Table 1. Published and unpublished district-wise distribution records of *Wallophis brachyura* and *Calliophis melanurus* from Gujarat, Madhya Pradesh, and Rajasthan.

	<i>Wallophis brachyura</i>		<i>Calliophis melanurus</i>	
1	Ahmedabad, Gujarat	Vyas & Patel 2007	Dang, Gujarat	Vyas 1998
2	Piplod, Surat, Gujarat	Vyas & Patel 2007; Patel et al. 2015	Junagadh, Gujarat	Vyas 1998
3	Vadodara, Gujarat	Patel & Vyas 2019	Rajkot, Gujarat	Vyas 1998
4	Tapi, Gujarat	Parmar 2019	Valsad, Gujarat	Vyas 1998
5	Ujjain, Madhya Pradesh	Ingle & Sarsavan 2011	Gir Somnath, Gujarat	Bhatt et al. 1999
6	Bhopal, Madhya Pradesh	Ingle & Sarsavan 2011	Navsari, Gujarat	Vyas 2004
7	Indore, Madhya Pradesh	Deepak et al. 2023; this work	Panchmahal, Gujarat	Vyas 2006
8	Vidisha, Madhya Pradesh	This work	Bhavnagar, Gujarat	Vyas 2008
9	Pratapgarh, Rajasthan	This work	Dhar, Madhya Pradesh	Vyas & Vyas 1981
10			Vidisha, Madhya Pradesh	This work
11			Pratapgarh, Rajasthan	This work

**Image 3.** Live individual of *Calliophis melanurus* from Dalot Village, Pratapgarh District, Rajasthan. © Dharmendra Khandal.

recorded *W. brachyura* from Ujjain and confirmed its presence in the state. In recent years, with the help of local wildlife allies, first author personally verified two specimens from Indore (22.733° N, 75.883° E) and one

from Vidisha (23.515° N, 77.803° E), which lie within 50 km air distance from the nearest published localities, Ujjain and Bhopal, respectively. A total of four localities in Madhya Pradesh and one locality in Rajasthan indicate

a wider presence of *W. brachyura* in central-western India and encouraging future herpetologists to seek them further northwards.

Dalot Village, where *Calliophis melanurus* was observed, is closer to the Madhya Pradesh border, and it is 128 km from the nearest published locality in Dhar, Madhya Pradesh (Vyas & Vyas 1981), which remained the only known locality of the species for this state for about four decades. In 2021, the first author managed to document two adult specimens from Vidisha (23.521° N, 77.821° E) and confirmed its presence in Madhya Pradesh. Both snakes in Pratapgarh City were recorded at short distances from the same locality. Similarly, the distance between capturing sites of two juveniles of *C. melanurus* from Dalot town was 1.1 km. These places are largely surrounded by lowland degraded deciduous forests and irrigated farmlands. Such a matrix of dry deciduous forests and farmlands is found in most of the eastern plains of Rajasthan. These new records represent the northernmost localities of both species, but we believe most of the eastern plains of Rajasthan are suitable to accommodate these further north along the Aravalli.

Pratapgarh District, situated in the south-eastern part of Rajasthan, holds a unique ecological significance owing to its geographical positioning at the intersection of the Aravalli Hill range, Vindhyan Hill range, and the Malwa Plateau (Central Ground Water Board 2022). The relatively gentle terrain, coupled with three perennial rivers- Jakhm, Sitamata, and Karmoi — fosters a habitat conducive to tropical moist deciduous plant species. The Pratapgarh District hosts forests classified under II-Dry tropical forests, further categorized into group 5-Tropical dry deciduous forest, with subdivisions 5A-Southern tropical dry deciduous forest and 5B-Northern tropical dry deciduous forest (Central Ground Water Board, 2013). The climatic conditions, characterized by distinct winter, summer, and monsoon seasons, play a pivotal role in shaping the ecosystem dynamics. Winters, commencing from November and extending to December-January, witness minimum temperatures plummeting to 6°C, while summers, intensifying from mid-March to April, record scorching temperatures reaching up to 45°C. The monsoon season, spanning from mid-June to mid-September, contributes to an average rainfall of 756 mm, with occasional winter showers occurring in January–February (Central Ground Water Board 2013).

This intricate ecosystem supports a diverse array of micro and macro habitats, harbouring several conservation-significant floral and faunal species. Furthermore, Pratapgarh stands as a crucial distribution

limit for a plethora of species originating from the Himalaya, Indo-Malayan region, African regions, and even the Western Ghats (Sharma et al 2016). In conclusion, Pratapgarh District emerges as a crucial ecological hotspot, offering a unique blend of biodiversity owing to its geographical positioning, climatic diversity, and rich riparian ecosystems. Understanding and conserving this intricate web of life is imperative for maintaining ecological balance and preserving the natural heritage of the region (FES 2010).

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