

On the identification of shieldtail snakes of the genus *Platyplectrurus* Günther, 1868 (Squamata: Uropeltidae), with complementary diagnoses

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ABSTRACT

We provide further notes on taxa assigned to little-known uropeltid snake genus *Platyplectrurus*. Based on our field surveys and in situ wild encounters of live specimens we illustrate *P. trilineatus* in life for the very first time and provide what is perhaps the first report of albinism in this group. We also provide live colouration data for both adult and juvenile *P. madurensis*. Additionally, based on our perusal of original description papers, subsequent taxonomic treatises and photos of name-bearing types (featured herein), we add complimentary clauses to better diagnose and distinguish these taxa. We herein indicate that the status of the nominate taxon *P. bilineatus*, currently considered a subjective junior synonym (young one) of *P. trilineatus* must be reconsidered in light of these findings. Our results bolster the continued use (after Beddome) of both ventral and dorsal colouration in addition to head-scale configurations to better diagnose congeners in this group.

Key words: adult, albinism, dorsal colouration, juvenile, ventral colouration, Western Ghats

INTRODUCTION

Shieldtail snakes of the family Uropeltidae are poorly-known, small, fossorial snakes endemic to Indian peninsula and Sri Lanka (Wallach *et al.*, 2014; Pyron *et al.*, 2016). With seven genera and nearly 60 species, this group is typically distributed in the wet hill forests of south western India and Sri Lanka (Pyron *et al.*, 2016). The genus *Platyplectrurus* Günther, 1868 is perhaps one of the most range-restricted genera of all in this family, occurring only in 2-3 hill ranges (Ganesh, 2015; Pyron *et al.*, 2016). When the first congener *P. trilineatus* was described by Beddome (1867), even the genus *Platyplectrurus* was not erected, as it happened a year later (Günther, 1868). A decade later, second congener was described, i.e. *P. madurensis* by Beddome (1877). About another decade later, the last congener was described by Beddome (1886), as *P. bilineatus*. Beddome (1886) provided a key based only on the dorsal patterning, after describing the last congener *P. bilineatus* that he mentioned to be founded based on young specimens.

A few years later, Boulenger (1890) postulated a different concept of *Platyplectrurus* to include an unrelated taxon *Teretrurus sanguineus* (Beddome, 1867) too. Boulenger (1890) also synonymized *P. bilineatus* under *P. trilineatus*. He was also the first to distinguish congeners based on supraocular vs. prefrontal size comparisons. In the next century Ferguson (1902), Wall (1923) and Roux (1928) collected and published on one congener *P. madurensis* from Cardamom hills and Palni hills. Subsequently, Smith (1943) rightly removed *T. sanguineus* from *Platyplectrurus*, but otherwise followed the same key for distinguishing *P. trilineatus* and *P. madurensis*. Since then, only Rajendran (1985) discussed this species based on fresh collections. Further books on the topic never shed light on this genus

(Das, 2002; Daniel, 2002; Whitaker & Captain, 2004). Museum catalogues such as those by Sclater (1891), Constable (1949) and Ganesh & Asokan (2010) list *P. madurensis* as one of the species in their holdings.

Ganesh (2011) described a series of preserved juvenile specimens (< 100 mm SVL) that had a mix of characters: striped dorsum as in *P. trilineatus* and larger prefrontal as in *P. madurensis* and allocated them to *P. trilineatus*, remarking that juveniles have larger eye, hence larger supraoculars. It was also remarked that, *P. bilineatus* (synonym of *P. trilineatus*) is not only from the same “Madura hills” but also has supraocular “as in *P. madurensis*” (after Beddome, 1886), thereby resembling *P. madurensis*, more than *P. trilineatus* per se. A lot of these complexities had been dealt with by Ganesh (2011), who opined that fresh collections and field observations are necessary to resolve these issues. Subsequent to the work of Ganesh (2011), we have had new sightings and observations of both these congeners. Here, we take the opportunity to comment more on this little-known genus of snakes by elaborating our new findings and comparing with earlier literature (Figs.1-2).

TAXONOMY

Platyplectrurus trilineatus (Beddome, 1867)

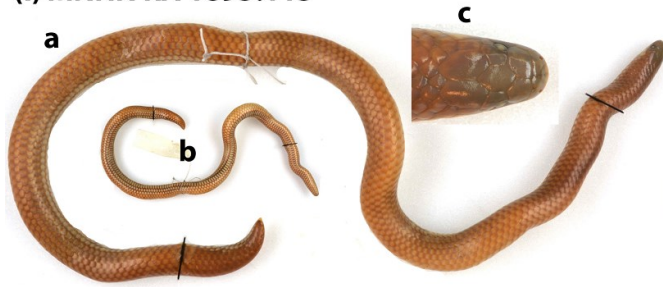
Plectrurus trilineatus Beddome, 1867

Platyplectrurus trilineatus – Günther, 1868; Beddome, 1886; Boulenger, 1890; Smith, 1943 *Platyplectrurus bilineatus* Beddome, 1886 (after Boulenger, 1890)

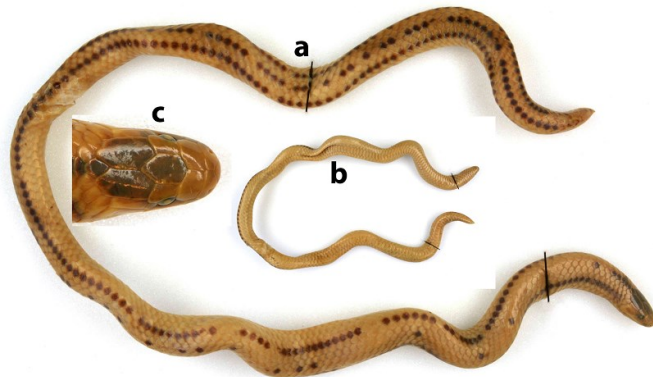
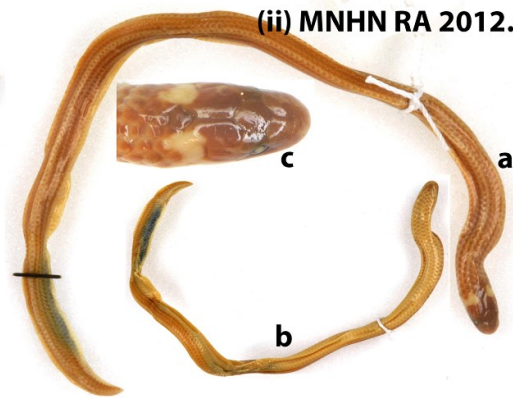
Taxonomic history: Beddome (1867) described *Plectrurus trilineatus* based on 3 syntypes BMNH 1866.12.15.10 (=1946.1.15.72) & MNHN-RA-1895.112-113 collected from “Anamallay forests, above Ponachi, Madras Presidency” (now Pollachi, Coimbatore dt., Tamil Nadu, India). The very next year,

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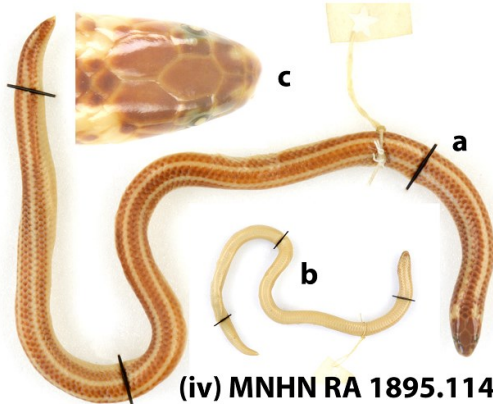
(i) MNHN RA 1895.115



(ii) MNHN RA 2012.423



(iii) MNHN RA 1895.113



(iv) MNHN RA 1895.114

Figure 1. Representative syntypes from MNHN, Paris, of *Platyplectrurus* spp. (i) *P. madurensis* adult, (ii) *P. madurensis* juvenile, (iii) *P. trilineatus*, (iv) *P. bilineatus*. Source open-access weblink: <https://science.mnhn.fr/institution/mnhn/list?genus=Platyplectrurus&collectionCode=ra> accessed on 19th Sept. 2019



Figure 2. Live uncollected images showing dorsal patterning in (a) *Platyplectrurus madurensis* adult, (b) juvenile, (c) albino (Photos: S.R. Ganesh); (d) *Platyplectrurus trilineatus* (Photo: P. Bharath Simha) and (e) a specimen matching description of nominate taxon *Platyplectrurus bilineatus* (Photo: S.U.Saravanakumar)

Günther (1868) erected *Platyplectrurus* as new genus to accommodate this distinct taxon. Thus *Plectrurus trilineatus* becomes the type species of the genus *Platyplectrurus*. Beddome (1886) described the taxon *Platyplectrurus bilineatus* based on 3 syntypes: BMNH 1883.1.12.60-61 (=1946.1.23.54-55), MNHN-RA-1895.114 from the “Madura hills”. However, four years later, Boulenger (1890) synonymized this nomen under *P. trilineatus*.

Observation (n=1): On 27th March 2019, at 11:45 h, one of us (PBS) sighted an adult *P. trilineatus* in the field, in the Kannan Devan tea estates, Munnar hills (Kerala), Southern Western Ghats. Surprisingly, the snake was seen crossing a road during forenoon in pre-monsoon season by broad daylight.

Colouration: Adult (ca. 30 cm long) dorsally deep reddish brown with three thick (one-scale wide) black stripes. One vertebral stripe on 7th scale row and two paravertebral stripes on 4th and 10th scale rows. No collar mark visible. Labials and sides of head and neck, the same colour as of the dorsum.

Complementary Diagnosis (also see Beddome, 1886): A *Platyplectrurus* with a uniform pale creamy white or with a brown-dotted ventral colouration; a dorsal pattern consisting of three broad black stripes or a series of scale-wide spots (at least in adults).

***Platyplectrurus madurensis* Beddome, 1877**

Wallia inexpectata Werner, 1925

Plectrurus ruhunae Deraniyagala, 1954

Platyplectrurus madurensis ruhunae Gans, 1966

Platyplectrurus trilineatus (non Beddome, 1867) – Ganesh, 2011

Taxonomic history: Beddome (1877) described this species based on 8 syntypes: BMNH 1883.1.12.56–58, BMNH 1946.1.15.78–80 (Natural History Museum, London, UK), MNHN 1895.115a–b (Muséum National d’Histoire Naturelle, Paris, France), all collected from “about Kodiukarnal on the Pulney Mountains (Madura district), Southern India, 6000 feet”, now Kodaikanal, Tamil Nadu, India (Pyron *et al.*, 2016). Two more subjective synonyms *Wallia inexpectata* Werner, 1925 described based on NMW 18511 (Naturhistorisches Museum Vienna) from Palni hills and *Plectrurus ruhunae* Deraniyagala, 1954 described based on NMSL 51 (National Museum of Sri Lanka) from Ceylon, exist (Pyron *et al.*, 2016).

Observations (n=5): During 2014–15, one of us (SRG) sighted *P. madurensis* in the Palni hills (Tamil Nadu), Southern Western Ghats. On 16th July, 2014, at 13:10 h, an adult was sighted under rock within a montane shola forest patch near Asankodai peak in the Palni hills. On 4th January 2015, at 15:00 h, a subadult was sighted under rock in montane grasslands in Mannavanur, Kodaikanal; the same day, an adult was sighted under a fallen log in Bombay Shola, Kodaikanal at 18:10 h. On 7th January 2015, at 13:20 h, two juveniles were sighted under a rock near Berijam lake, Kodaikanal.

Colouration: Adults (> 35 cm long) were dorsally uniform muddy brown, with some patches of yellow pigmentation on head, near neck and a few faint streaks on parts of the back. Supralabials, infralabials and parts of lower temporals yellow; ventral and ventrolateral scales yellow with a distinct thick dark brown scale outlines edged all along. Subadult (20 cm long) was dorsally

brownish with a very feeble trace of thick (one-scale wide) paravertebral yellow stripes from neck till tail often occupying 4th–5th and 8th–9th scale rows. Faint yellow collar mark present across occipital region beyond parietals scales. Supralabials, infralabials and parts of lower temporals yellow; ventrals as in the adults. Young ones (10–15 cm long) were dorsally brown, with the extremities of each scale of every dorsal scale row covered with a yellow stripe, giving a densely striped appearance. Venter as in the adults.

Complementary Diagnosis (also see Beddome, 1886): A *Platyplectrurus* with a distinctly stippled ventral colouration, each scale having a thick dark brown outline and a whitish centre giving a mottled appearance; uniform unpatterned brownish dorsal colouration (in adults); with narrow multiple yellow stripes on a brown dorsum; a distinct yellow collar mark (in young ones).

DISCUSSION

Going by the above data, it is credible that use of dorsal pattern to distinguish the congeners in *Platyplectrurus* is once again essential (see Beddome, 1886). This is mainly because of ontogenic colour changes in these taxa as some features such as presence of collar mark and dorsal stripes, either bold or diffuse could possibly be paedomorphic traits of this genus. Both these features disappear as the snake grows and are not found in adult snakes, either in life or in preservatives. Additionally, the usage of ventral colouration as a taxonomically-informative character has not been exploited by previous workers (see keys in Beddome, 1886; Boulenger, 1890, 1893; Smith, 1943). We here postulate that ventral colouration is diagnostic of species, and can be used in conjunction with head-scale configuration (after Boulenger, 1890) and dorsal pattern (Beddome, 1886) for species determination. An important finding of this work is to reconsider the taxonomic status of the nominal taxon *Platyplectrurus bilineatus* Beddome, 1886 that is now considered (after Boulenger 1890), a subjective junior synonym of *P. trilineatus* (Beddome, 1877). From the original description it is clear that juveniles were not known for *P. trilineatus*.

Platyplectrurus trilineatus has a series of three, thick black stripes on brown dorsum. This is in strong contrast to the presence of whitish stripes on brown dorsum in both juvenile *P. madurensis* (this work) and the nominal taxon *P. bilineatus*. The juvenile colouration of *P. trilineatus* and the adult colouration of *P. bilineatus* are unknown till date, leading to convenient synonymisation of these two nominate taxa (see Boulenger, 1890) based on head scale configuration. Indeed, the life depictions of congeners published here are, to the best of our knowledge, the very first illustrations of living *P. trilineatus* (three black stripes on brown dorsum) and a population in conformity with the nominal taxon *P. bilineatus* (two yellow stripes on brownish dorsum). The congener *P. madurensis* has been illustrated in Das (2002) based on adult. We illustrate its juvenile colouration herewith (also see Ganesh, 2011). Based on the data that we have newly amassed, we provisionally refer the juvenile specimens and similar-looking multi-striped populations from Palnis to *P. madurensis* and not *P. trilineatus*, as had previously been supposed. Though described nearly one and a quarter of a century ago, very little is known about members of the genus *Platyplectrurus*. It is hoped that this note will prompt further research works into this

genus of snakes, based on both field observations and specimen collection-based approaches.

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REFERENCES

- Beddome, R.H. 1867. Descriptions and figures of five new snakes from the Madras Presidency. *Madras Quart. J. Med. Sci.*, 11: 14-16.
- Beddome, R.H. 1877. Descriptions of three new snakes of the family Uropeltidae from Southern India. *Proc. Zool. Soc. London* 1877: 167-168.
- Beddome, R.H. 1886. An account of the earth snakes of the Peninsula of India and Ceylon. *Ann. Mag. Nat. Hist.* (5) 17: 3-33.
- Boulenger, G. A. 1890. The fauna of British India, including Ceylon and Burma: reptilia and Batrachia. Taylor & Francis.
- Boulenger, G.A. 1893. Catalogue of the snakes in the British Museum (Nat. Hist.) I. Fleet Street, Taylor & Francis, London.
- Daniel, J. C. 2002. The book of Indian reptiles and amphibians. Bombay Natural History Society, Mumbai, India.
- Das, I. 2002. A photographic guide to snakes and other reptiles of India. New Holland, UK.
- Deraniyagala, P.E.P. 1954. Two new snakes from Ceylon. *Proc. 10th Congr. Ceylon Assoc. Advancem. Sci.*, 1: 24.
- Ferguson, H. S. 1902. Travancore snakes. *Journal of the Bombay Natural History Society*, 14(2), 386-387.
- Ganesh S. R. 2015. Shieldtail snakes (Reptilia: Uropeltidae) – the Darwin's finches of south Indian snake fauna?, in Kannan, P. (Ed.) *Manual on Identification and Preparation of Keys of Snakes with Special Reference to their Venomous Nature in India*. Proceedings by Government Arts College, Udthagamandalam, Tamilnadu, India, 13-24.
- Ganesh, S. R. 2011. On a rare, South Indian burrowing snake *Platyplectrurus trilineatus* (Beddome, 1867). *Taprobanica* 3 (1): 11-14.
- Gans C. 1966. Liste der rezenten Reptilien und Amphibien. Uropeltidae. *Das Tierreich* 84: 1-29.
- Günther, A.C.L.G. (1868). Sixth account of new species of snakes in the collection of the British Museum. *Journal of Natural History*, 1(6), 413-429.
- Pyron, R. A., Ganesh, S. R., Sayyed, A., Sharma, V., Wallach, V., & Somaweera, R. (2016). A catalogue and systematic overview of the shield-tailed snakes (Serpentes: Uropeltidae). *Zoosystema*, 38 (4), 453-507.
- Rajendran M. 1985. Studies in uropeltid snakes. Madurai Kamaraj University, Madurai, 132 pp.
- Roux, J. 1928. Reptiles et amphibiens de l'Inde meridionale. *Revue Suisse de Zoologie*, 35 (21): 439-471 [in French].
- Sclater, W. L. 1891. List of snakes in the Indian Museum. Printed by order of the Trustees of the Indian Museum.
- Smith, M.A. 1943. The Fauna of British India, Ceylon and Burma, Including the Whole of the Indo-Chinese Sub-Region. Reptilia and Amphibia. 3 (Serpentes). Taylor and Francis, London. 583 pp.
- Wall, F. 1923. Notes on a collection of snakes from Shembaganur, Palnai Hills. *Journal of the Bombay Natural History Society*, 29: 388-398.
- Wallach, V., Williams, K. L., & Boundy, J. (2014). *Snakes of the world: a catalogue of living and extinct species*. CRC press.
- Werner. F. 1925. Neue oder wenig bekannte Schlangen aus dem Naturhistorischen Staatsmuseum in Wien. II. Teil. *Sitzungsb. Akad. Wiss., Wien, Abt. I*, 134: 45 – 66.
- Whitaker R. & Captain A. 2004. *Snakes of India: the Field Guide*. Draco Books, Chennai, 481 p.

