

# Taxonomic and natural history notes on Beddome's Cat Snake *Boiga beddomei* (Wall, 1909) Colubridae: Serpentes from Anaikatty Hills, Western Ghats, India

<sup>1</sup> P. SHARMA, <sup>2</sup> D. MUKHERJEE, <sup>3</sup> M. VIJAY

<sup>1</sup>Centre for Environmental Management of Degraded Ecosystems, University of Delhi, Delhi – 110 007, India.

<sup>2</sup>Centre for Environmental Management of Degraded Ecosystems, University of Delhi, Delhi – 110 007, India.

<sup>3</sup>Regional Museum of Natural History, Mysore – 570 011, Karnataka, India.

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**Abstract:** Beddome's Cat Snake, *Boiga beddomei* (Wall, 1909) are widely distributed in the Western Ghats of India and also reported from Anaikatty Hills, has been redescribed with respect to morphological taxonomy. This species is distinguished from other sympatric and closely related congeners by the presence of Pholidosis; 19: 19: 13 rows of dorsal scales; 7-8 supralabials; 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> supralabials contacting orbit; anal undivided; ventral 241-246 and 95-107 paired subcaudals.

**Keywords:** Taxonomy, Redescription, Colubrids, Deciduous forest, Western Ghats, India.

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## 1. INTRODUCTION

The members of the Genus *Boiga* Fitzinger, 1826 are commonly known as cat snakes perhaps because of their large bulging eyes, which may be associated with their nocturnal activity patterns. It is one of the speciose genus of Colubrids with around 37 known species distributed largely in Asia and Australia (Welch 1988, Das 1997, Leviton *et al.* 2003, Das 2003, Whitaker and Captain 2004, Mukherjee 2012, Vogel and Ganesh 2013), 17 species have been reported till date from the Indian region including eight from the Western Ghats, South Western India (Reptile database 2023). An enlarged semi-triangular head, significantly large eyes with vertically elliptical pupil, slender, laterally compressed body with smooth scales and the vertebral series (pholidosis) is more or less enlarged. They are mild to moderately venomous, back fanged or opisthoglyphous snakes with one or two enlarged posterior maxillary fangs connected to duvernoy's glands.

The evolution of snake venom may be largely associated with interspecific resource competition perhaps with respect to food preference and species adaptation in different niches through natural selection. Back fanged venomous snakes may have been evolved from their common Colubrid ancestor and many became semi arboreal to reduce terrestrial competition.

In the current study area there are around four species of cat snakes have been reported being sympatric such as *Boiga trigonata*, *B. nuchalis*, *B. beddomei* and *B. foratani*.

**Study area:** Anaikatty Hills (11° 05'30. 9" N 76° 47'36. 2" E), Elevation above 650 msl. Coimbatore Forest Division is a part of the Nilgiri Biosphere Reserve, Tamil Nadu. The major forest type of the area is tropical southern mixed dry deciduous (Champion and Seth 1968). Trees such as *Acacia leucophloea*, *Zizyphus mauritiana*, *Albizia amara*, *Albizia ebbeck*, *Cassia fistula*, *Santalum album* and *Commiphora caudata* dominate the forest. Bamboo (*Bambusa bamboos* and *Dendrocalamus strictus*) is common in riverine habitats of the area.

## 2. MATERIALS AND METHODS

Beddome's cat Snakes were photographed and specimens were preserved in 6% formaldehyde. Prior to fixing, following measurements were taken: SVL (snout-vent length): tip of the snout to vent; TL (tail length): vent to the tip of tail; HL (head length): angle of jaws to tip of the snout, HW (head width): at angle of jaws; ED (eye diameter): greatest horizontal diameter of right eye; E-N (eye to nostril distance) anterior corner of the right eye to posterior edge of nostril; E-S (eye to snout distance) anterior corner of right eye to tip of snout; IO (inter orbital distance) between anterior corner of orbit. SVL and TL were measured using a flexible tape and all other linear measurements were taken using Mitutoyo® Dial vernier calipers (accuracy-0.02 mm). Ventral scale count and description of hemipenial morphology was done following Dowling (1951) and Dowling and Savage (1960) respectively.

### Morphometry and Taxonomic Description:

Snout-vent and tail length of four specimens ranged 386-640 mm and 86-180 mm respectively. Head distinct from neck; HL and HW varied from 12.20-16.40 mm and 7.86-8.96 mm respectively; eyes with vertical pupil, ED 2.86-3.46 mm; IO 4.50-6.40 mm, wider than ES (4.18-6.08 mm) and EN (2.60-3.60 mm); rostral wider than high, barely visible from above; a pair of internasals, prefrontals, supraoculars and parietals; frontal single; nuchal scales not well defined; maxillary teeth 9-10, with posterior one or two enlarged, Palatine teeth 3-4, posterior one or two teeth enlarged, Pterygoid teeth 3-4, dentary teeth 12-14.

7-8 Supralabials, sixth the largest; first and second supralabials in contact with nasal, third, fourth and fifth supralabials contacting orbit; single elongated preocular touching second and third supralabials, loreal and prefrontal shields; postoculars paired; temporals 2+3 or 2+3+3 or 3+2+2; 10-11 infralabials, first to third or first to fifth infralabials touching anterior genials, fourth and fifth or fifth and sixth touching posterior genials; scales between posterior genials and the first ventral variable and undifferentiated; mental small compared to rostral, mental groove present; genials in pairs, posterior ones larger than the anterior; dorsal scales smooth in 19: 19: 13 rows, apical pits 1-2 or absent, vertebral scales enlarged compared to the nearby scales; dorsal scale reduction occurred on both sides, first (19-17) at 151 ventral, second (17-15) at 153 and the third (15-13) reduction at 183 ventral, scale reduction figure 19: 17: 15: 13; 241-246 ventrals, angulate laterally, anal scute single; 95-107 subcaudals in pair.

Hemipenis: Subcylindrical, weakly bilobate, distal half round had enlarged calyces; the proximal part was smooth and lacking spines.

Colour: Body colour changes from green to reddish brown or in inverse; two sets of contrasting pigmented chromatophores, brown and green expand alternatively day and night to demonstrate brown to green or reverse. In dry or moist deciduous forests a brown body colour may be favorably to camouflage in the tree branches to avoid predation while a greenish colour in the night may be advantageous to successfully capture prey.

### Comparison

It seems that *B. beddomei* may not be closely related to *B. faviviridis* as in the current study no single individual of *B. faviviridis* was being found, whereas its type locality is from Orissa, Eastern Ghats. However a higher ventral scale count in *B. faviviridis* 248-259 vs 241-246 *B. beddomei* indicates a wide distribution perhaps responsible for phenotypic variation of previous species. The metachrosis in *B. beddomei* further admits its habitat specialization and species survival.

*B. nuchalis* may be differentiated in dorsal 21:21:15 (vs 19:19:13 in *B. beddomei*), ventral counts 238-240 (vs 241-246 in *B. beddomei*), subcaudals 97-110 (vs 95-107 in *B. beddomei*), dorsum purplish brown to pale greyish brown with a transverse bar on nape in *B. nuchalis* (vs changing colour in *B. beddomei*).

## 3. CONCLUSION

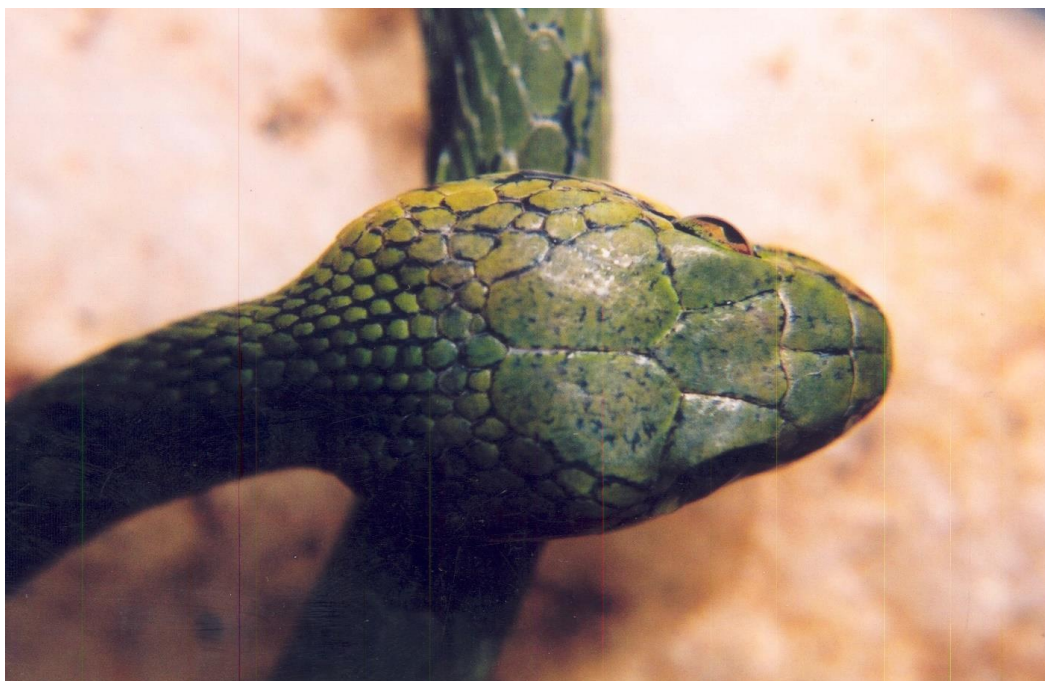
The recent taxonomic confusions among *Boiga beddomei*, *B. cylonensis* and *B. flaviviridis* perhaps due to misidentifications of poorly fixed and preserved type specimens by untrained curators in Museums or may be due to unskilled morphological taxonomists, who failed to understand ecology and evolution through field observations and lack a wider view to interpret.

*B. beddomei* has been largely misidentified as *B. cylonensis*, while the later species is largely restricted to Sri Lanka indicates allopatric speciation.

The recent research article may highlight or provide a detailed analysis of taxonomy, ecology and natural history of Beddom's cat snake.



**Figure 1.** Beddome's Cat Snake like most of the *Boiga* species a nocturnal, largely arboreal & mildly venomous opisthoglyphous snake.



**Figure 2.** *B. beddomei* are capable of changing their body colour.

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#### REFERENCES

- [1] Champion, H.G. and S.K. Seth 1968. A revised survey of the forest types of India. Government of India press, Nasik. Pp 404.
- [2] Das, I. 1997. A new species *Boiga*(Serpentes: Colubridae) from the Nicobar Archipelago. *J. south Asian nat. Hist.* 3(1): 59-67
- [3] Das, I. 2003. Growth of knowledge on the reptiles of India, with an Introduction to Systematics, Taxonomy and Nomenclature. *J. Bombay Nat. Hist. Soc.* 100 (2&3): 446-501.
- [4] Dowling, H.G. 1951. A proposed standard system of counting ventrals in snakes. *British J. Herpetol.* 11:97-99.
- [5] Dowling, H.G. and J.M. Savage. 1960. A guide to the snake hemipenes: a survey of basic structure and systematic characteristics. *Zoologica*, 45(1): 17-28
- [6] Leviton, A.E., G.O. Wogan, M.S., Koo, G.R., Zug, R.S., Lucas and J.V. Vindum. 2003. The Dangerously Venomous Snakes of Myanmar Illustrated Checklist with keys. *Proc. California. Acad. Sc.* 54. (22-27). Pp 407.
- [7] Mukherjee, D. 2012. Community Ecology of Reptiles in Anaikatty Hills, Western Ghats, India. LAP Lambert Academic Publishing AG & Co. KG Dudweiler Landstr. Saarbrücken, Germany.
- [8] Vogel, G. and S.R. Ganesh. 2013. A new species of cat snake (Reptilia: Serpentes: Colubridae: *Boiga*) from dry forests of eastern peninsular India. *Zootaxa* 3637 (2): 158-168
- [9] Welch, K.R.G. 1988. Snakes of the Orient: a checklist. Robert E. Krieger, Malabar. 83p.
- [10] Whitaker R. and Captain A. 2004. Snakes of India – The field guide, DRACO Books, Chennai, India.