



Three little known reptile species from the Araku Valley, Eastern Ghats with notes on their distribution

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The Eastern Ghats represent broken and isolated hills of the Deccan Plateau, unlike the continuous mountain range of Western Ghats of the southwestern India. These hills (11°03'-22°03'N & 77°02'-87°02'E) extend over 1750km from south of the Chota-Nagpur Plateau, Orissa to the southwestern Peninsula in Tamil Nadu (Mani 1974). They are included under 6C Eastern Highlands of the Deccan Plateau, one of the biologically richest Biogeographic Zones of India (Rodgers et al. 2008). Unlike the Western Ghats, studies on the distribution of reptiles in the Eastern Ghats are scanty (Daniels & Ishwar 1994; Daniels & Kumar 1998; Bauer & Das 1999). In the present paper, we provide distribution data for three little known species of reptiles, namely *Hemiphyllodactylus aurantiacus*, *Calodactylodes aureus* and *Uropeltis ellioti* based on two rapid surveys in the Araku Valley, Andhra

Pradesh and data collected from the literature.

Materials and Methods: The present study was conducted in the Araku Valley (18°21'N & 82°56'E, Fig. 1), Visakhapatnam District, Andhra Pradesh. Vegetation around the Araku Valley is largely tropical moist deciduous forests, with hilltops dominated by *Phoenix* sp. scrubs and foothills by (coffee) plantations. Khondalite and charkonite group of rocks along with exposed laterite and bauxite are characteristic features of hilltops. The altitude of these hills ranges from 900 to 1400 m. Monthly mean maximum temperature of the area varies from 10°C (December) to 37.8°C (May) and annual rainfall ranges between 1000-2000 mm (Rao & Kumari 2002).

The present report is based on two surveys during 3-10 December 2006 and 16-19 February 2007. During this period, two personnel surveyed the area from 0800 to 1600 hr examining microhabitats such as boulders, crevices, fallen logs, buttress and roots. Reptiles observed during this study were photographed, identified to species level following Smith (1935, 1943), Rajendran (1985), and Whitaker & Captain (2004) and the specimens were released at their original collection sites. The nomenclature followed herein is that of Das (2003). Snout vent length (SVL) and tail length (TL) of selected species were measured using twine and a metal ruler.

Results and Discussion: In all, 16 taxa of reptiles (10 lizard and 6 snake species) were observed in 12 days of survey during 3-10 December 2006 and 16-19 February 2007. Four lizard families, namely Gekkonidae (with five taxa: *Hemidactylus brookii*, *Hemidactylus* sp., *Geckoella* sp., *Calodactylodes aureus*, *Hemiphyllodactylus aurantiacus*), Scincidae (*Eutropis* sp., *Lygosoma* sp.), Agamidae (*Calotes versicolor*, *Psammophilus* sp.) and Varanidae (*Varanus bengalensis*) were observed during this investigation. Four families of snakes, namely Typhlopidae (*Ramphotyphlops braminus*), Uropeltidae (*Uropeltis ellioti*), Colubridae (*Liopeltis calamaria*, *Lycodon travancoricus*, *Ptyas mucous*) and Elapidae (*Naja naja*) were also observed. Distribution data for three little known species, *Hemiphyllodactylus aurantiacus*, *Calodactylodes aureus* and *Uropeltis ellioti* are given below (Table 1).

Hemiphyllodactylus aurantiacus (Beddome, 1870)

Three specimens of *Hemiphyllodactylus* were observed on hilltops (1400m). Based on the reduced number (2) of paired lamellae beneath the 4th toe, bolder dorsal patterns, brighter orange-red tail ventrally and males possessing nine preanal pores, these specimens were identified as *Hemiphyllodactylus aurantiacus* (Images 1-2). All individuals were observed under boulders on the plateau dominated by *Phoenix* sp. Based on SVL (25.98-28.47 mm) and TL (23.58-25.45 mm), these individuals were considered as juveniles, as specimens with SVL (32.38-

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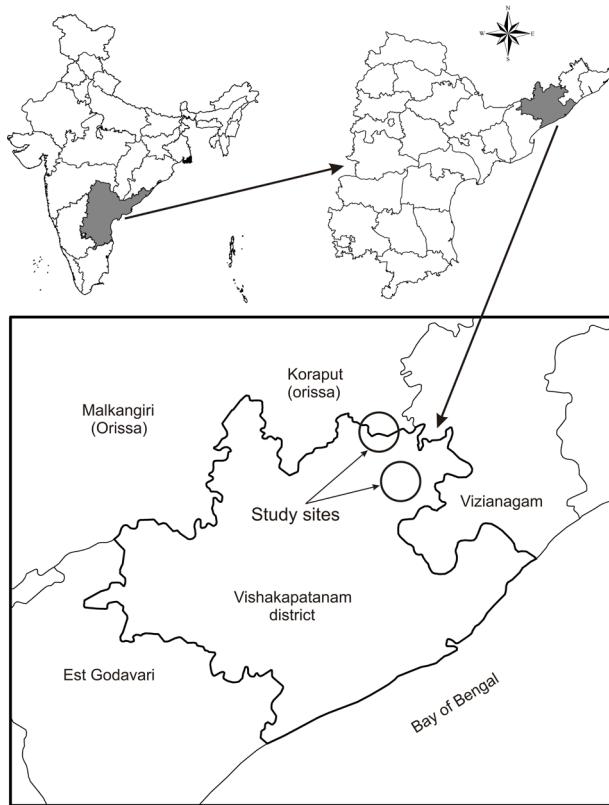


Figure 1. Map showing general location of the Araku Valley and intensive survey areas

35.2 mm) were reported as adults by Bauer & Das (1999).

Smith (1935) retained the Indian form as a subspecies; *Hemiphyllodactylus typus aurantiacus*. Bauer & Das (1999) elevated this to species (*Hemiphyllodactylus aurantiacus*) and considered it endemic to the Eastern and southern Western Ghats. Including the present record, this species is known from at least ten locations (Fig. 2): Nilgiris, Anaikatti and Anaimalai Hills in Western Ghats, Shevaroy, Kolli (Smith, 1935; Daniels & Kumar 1998; Bauer & Das 1999; Mukherjee 2007) and Araku Valley in the Eastern Ghats (present study) and Bangalore (Daniels 1994). It has also been found in the High Wavy Mountains of Theni Forest Division, Tamil Nadu (N. Sathish Kumar, pers. comms.). Recently, this species has been reported from Araku Town, Visakhapatnam District, Maredumilly, West Godavari District and Gundla Brahmeswaram Metta Wildlife Sanctuary, Prakasham District all in the state of Andhra Pradesh (Javed et al. 2010). The report from the Araku Valley is an extension of about 700km northeast of Bengaluru (Daniels 1994; Bauer & Das 1999). We presume that this species is distributed in the intervening areas as well (Fig. 2). Though Sanyal et al. (1993) reported it from the Araku Valley, Bauer & Das (1999) only speculated its distribution in Andhra Pradesh. Currently, the known altitudinal distribution of this species is 600 to 1400 m. The present report confirms the occurrence

of this species in the Araku Valley, and suggests further surveys to know the extent of its distribution both in the Eastern and Western Ghats.

Calodactylodes aureus (Beddome, 1870)

Two specimens of *Calodactylodes aureus* were recorded from the rock crevices found near Shova village (18°15'N & 83°00'E) in Araku Valley. The area (970m) had riverine forest, which was dominated by tree species such as *Pongamia glabra*, *Mangifera indica* and *Tamarindus indica*. The presence of large trapezoid scales organized in a ladder like fashion, one at the base and the other at the free extremity of the terminal phalanx (Smith 1935; Bauer & Das 2000) identify these specimens as *Calodactylodes aureus* (Images 3-4). Beddome (1870), Smith (1935) and Javed et al. (2007) reported that both preanal and femoral pores were absent in males. However, Bauer &

Table 1. Distributional records for *Hemiphyllodactylus aurantiacus*, *Calodactylodes aureus* and *Uropeltis ellioti*.

| Location | Species | | |
|--|-----------------------|------------------|-------------------|
| | <i>H. aurantiacus</i> | <i>C. aureus</i> | <i>U. ellioti</i> |
| Tamil Nadu | | | |
| Vellur | - | + | - |
| South Arcot | - | - | + |
| Jolarpet | - | - | + |
| Shevaroy | + | - | + |
| Kolli Hills | + | - | + |
| Anaikatti Hills | + | - | + |
| Nilgiris | + | - | + |
| Anamalai Hills | + | - | - |
| Manjolai | - | - | + |
| Courtallum | - | - | + |
| High Wavy Mountains | + | - | + |
| Karnataka | | | |
| Bangalore | + | - | - |
| Castle Rock | - | ?? | - |
| Goa | | | |
| | - | - | + |
| Andhra Pradesh | | | |
| Tirupati Hills | - | + | - |
| Papikonda Hills | - | + | - |
| Maredumilly | + | - | - |
| Gundla Brahmeswaram Metta Wildlife Sanctuary | + | - | - |
| Araku Valley | + | + | + |
| Orissa | | | |
| Rayagada | - | + | - |
| Kalahandi | - | + | - |

+ = Present; - = Absent; ?? = Doubtful; see text for authority of records.



Image 1. *Hemiphyllodactylus aurantiacus* - dorsal and dorsolateral view



Image 2. *Hemiphyllodactylus aurantiacus* - ventral view



Image 3. *Calodactylodes aureus* - dorsal view



Image 4. *Calodactylodes aureus* - ventral view of a portion of hind leg and tail



Image 5. *Uropeltis ellioti* - full view



Image 6. *Uropeltis ellioti* - ventral view of the posterior portion

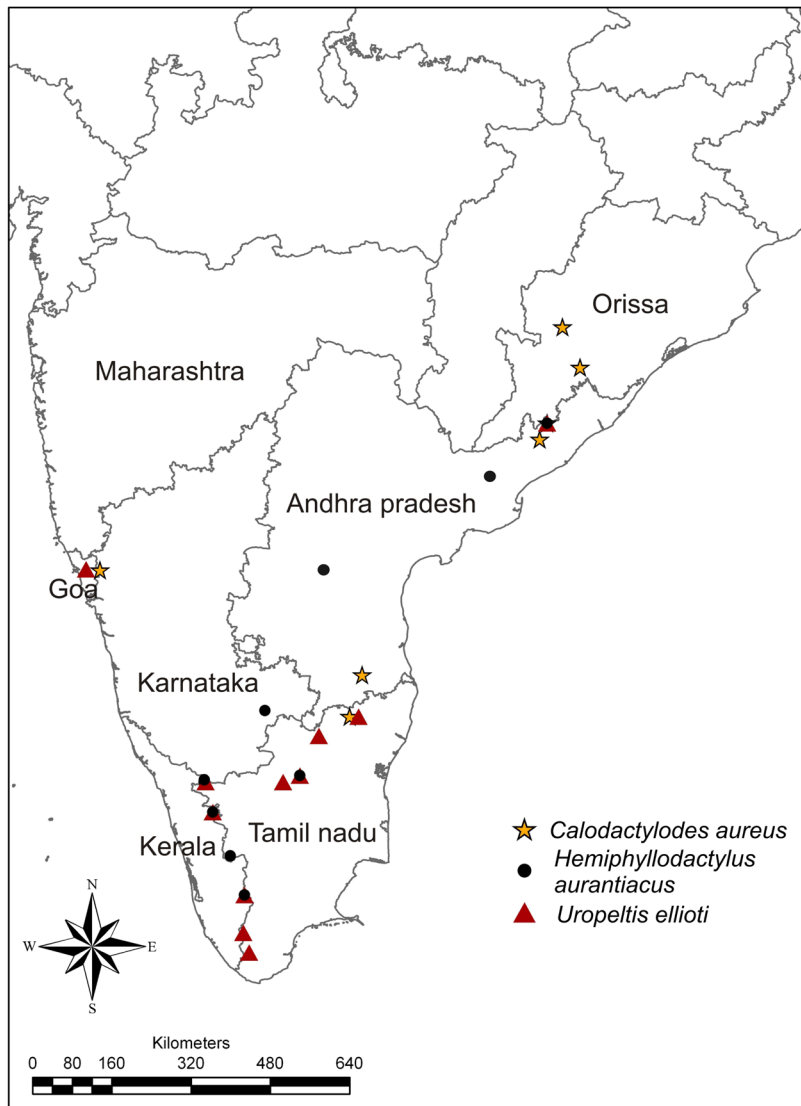


Figure 2. Map showing distribution records for *Hemiphyllodactylus aurantiacus*, *Calodactylodes aureus* and *Uropeltis ellioti*

Das (2000) reported the presence of preanal and femoral pores in males collected from Vellore, Tamil Nadu. Our specimens fit with the descriptions of Smith (1935) and Javed et al. (2007).

Calodactylodes aureus has been reported from Seshachalam and Velikonda ranges of the southern Andhra Pradesh (Daniel et al. 1986); Tirupattur in North Arcot District, Tamil Nadu (Beddome 1870); Niyamgiri Hills, Rayagada and Kalahandi districts of Orissa (Dutta et al. 2005) and Papikonda Hills, northern Andhra Pradesh (Javed et al. 2007). All previous records of *Calodactylodes aureus* were from much lower elevation: <50m at Balamadi Hill about 5km from Vellore Town, Tamil Nadu (Bauer & Das 2000) and 53m at Papikonda Hills, Andhra Pradesh, (Javed et al. 2007). Present records in Araku Valley at 970m, Andhra Pradesh bordering Orissa, further confirm its northward geographical distribution, and extend the altitudinal distribution of the species up to 1000m (Fig. 2). The phylogeny of *Calodactylodes* may be interesting

as it represents one among a few lizard genera strictly endemic to peninsular India and Sri Lanka, indicating a possible Gondwanan origin (Bauer & Das 2000). Further surveys and molecular studies are required to understand the distribution and phylogeny of this species.

***Uropeltis ellioti* (Gray, 1845)**

During the present study, an intact specimen of *Uropeltis* (SVL 252mm and TL 10mm) was obtained from Public Works Department personnel (Images 5-6) near Araku Town. It was identified as *Uropeltis ellioti* based on the following characters; body scales in 17 rows throughout its length, 148 ventral scales, dark brown body powdered with minute yellow spots on the dorsum and larger blotches on the venter, distinct yellow line on the side of the neck, yellow stripe on each side of the tail connected by a transverse bar over the anal region and obliquely truncate tail forming a feebly convex disc with bi-, tri- and multi-carinate scales.

Uropeltis ellioti is reportedly widespread in the hills of Peninsular India from south of Goa gap to Tirunelveli in the Western Ghats and along the Andhra-Orissa border to south of Eastern Ghats (Smith 1943; Rajendran 1985; Whitaker & Captain 2004) (Fig. 2). Specific locality records include, Shevaroy and Kolli hills, South Arcot, Jalarpet (= Jolarpet) of Tamil Nadu, Visakhapatnam District of Andhra Pradesh and Ganjam in Orissa in the Eastern Ghats (Smith 1943). In the Western Ghats, it has been reported from Manjulai (Tirunelveli), Courtallam and Anaikatty Hills in Tamil Nadu and Sevenmalai Hills, Kerala (Rajendran 1985; Kannan & Bhupathy 1997). Whitaker & Captain (2004) noted that *Uropeltis ellioti* is a complex of species endemic to India and urged a closer look at its taxonomy. The present report reaffirms the occurrence of this species in Visakhapatnam area of the Eastern Ghats.

Records of *Hemiphyllodactylus aurantiacus*, *Calodactylodes aureus* and *Uropeltis ellioti* in Araku Valley show our poor understanding on the distribution of fauna, and we recommend further studies in the Eastern Ghats at the earliest opportunity.

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