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## ***Cnemaspis rammalensis* sp. nov., Sri Lanka's largest day-gecko (Sauria: Gekkonidae: *Cnemaspis*) from Rammalakanda Man and Biosphere Reserve in southern Sri Lanka**

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### **Abstract**

A new species of rock dwelling gecko belonging to the genus *Cnemaspis* is described from Sri Lanka based on a suite of morphological features. The species is the largest of its genus described from Sri Lanka so far (snout-vent length 52–54 mm) and is the second largest of the Western Ghats-Sri Lanka Biodiversity Hotspot. It may be diagnosed in details of both scalation (ventrals 186–207; mid-subcaudals large; absence of precloacal pores; 15 femoral pores on each side; 22–23 and 23–25 subdigital lamellae on finger IV and on toe IV, respectively; smooth scales on tail dorsum) and colouration (five prominent trilobate shaped cream markings pointing towards head and extending from neck to vent). The species is found in a unique habitat in the Rammalakanda Forest, where it is threatened by deforestation.

**Key words:** *Cnemaspis*, gecko, new species, Rammalakanda, Sri Lanka

### **Introduction**

The Old World gecko genus *Cnemaspis* Strauch, 1887, comprises more than 100 species in Tropical Africa, South Asia and South-east Asia (Uetz & Hallermann 2013). These disjunct populations, although grouped into one genus, each constitute a separate clade according to molecular phylogenetic data (Bauer *et al.* 2007; Gamble *et al.* 2012). Geckos in the genus *Cnemaspis* are characterized by a diminutive, slender body, large forward and upwardly directed eyes with round pupils, and elongate slender digits bent at an angle with entire subdigital lamellae (Das 2005; Bauer *et al.* 2006, 2007; Giri *et al.* 2009). These cryptically coloured geckos are microhabitat specialists mainly showing diurnal behavior (Giri *et al.* 2009; Grismer *et al.* 2009).

Morphological conservatism among *Cnemaspis* species has obscured estimates of diversity in the past, but the use of new characters and re-analysis of older types has helped to stabilize the taxonomy of the group (Bauer *et al.* 2007). The genus has grown in numbers rapidly during the past decade, especially the South and South-east Asian clades, emphasizing the species richness of the genus as well as the richness of the herpetofauna of the tropical habitats where it occurs (Das & Bauer 2000; Das & Senguptha 2000; Bauer 2002; Das & Grismer 2003; Das 2005; Grismer & Das 2006; Grismer & Ngo 2007; Bauer *et al.* 2007; Manamendra-Arachchi *et al.* 2007; Wickramasinghe & Munindrasa 2007; Grismer & Chan 2008, 2010; Grismer *et al.* 2008a, 2008b, 2009, 2010a, 2010b; Chan & Grismer 2008; Giri *et al.* 2009).

The herpetofauna of Sri Lanka includes 43 species in the family Gekkonidae, with 34 endemics belonging to eight genera; *Calodactylodes* Strand, *Cnemaspis* Strauch, *Cyrtodactylus* Gray, *Geckoella* Gray, *Gehyra* Gray, *Hemidactylus* Oken, *Hemiphyllodactylus* Bleeker, and *Lepidodactylus* Fitzinger. Of these, 21 species (49%) belong to genus *Cnemaspis*, all of which are endemic to the island (Wickramasinghe, 2012).

The genus *Cnemaspis* was represented by only four nominal species in Sri Lanka a decade ago, namely *C. kandiana* (Kelaart, 1852), *C. tropidogaster* (Boulenger, 1885), *C. scalpensis* (Ferguson, 1877), *C. podihuna*

situated 8 km northwest and Panilkanda Forest Reserve, 9.5 km northward (Anonymous 1988). The occurrence of such a large species in a small forest patch at the edge of the wet zone is unexpected. Other *Cnemaspis* occurring closest to the study area are *C. molligodai* Wickramasinghe & Munindradasa 2007 from Deniyaya, *C. silvius* Manamendra-Arachchi, Batuwita & Pethiyagoda 2007 from south eastern part of Sinharaja and *C. pulchra* Manamendra-Arachchi, Batuwita & Pethiyagoda 2007 from Panilkanda forest (Figure 1), all of much smaller size. Considering both its morphology and biogeography we suggest that *C. rammalensis* has a relatively isolated taxonomic position among Sri Lankan *Cnemaspis*.

Illegal tree felling to cultivate tea has become a major threat in the area. Tea plantations and human settlements in the surrounding areas are slowly expanding, and are encroaching towards the forest, slowly destroying the habitat of this species.

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#### APPENDIX 1. Comparative material examined.

- Cnemaspis ahwisi*. Holotype NMSL 2004.9.1 (male); Paratype NMSL 2004.9.2 (female), Dolukanda, Kurunegala, Sri Lanka.
- Cnemaspis amith*. Holotype BMNH 63.3.19.1066A (female); Paratypes BMNH 63.3.19.1066B (male), BMNH 63.3.19.1066C (female), Ceylon (Sri Lanka).
- Cnemaspis australis*. Holotype BMNH 82.5.22.67 (male), Tinnevely (Tirunelveli District), Tamil Nadu State, India.
- Cnemaspis beddomei*. Lectotype BMNH 1946.9.4.83 (male); Paralectotypes BMNH 1946.9.4.82 (female), BMNH 1946.9.4.84 (male), BMNH 1946.9.4.85 (male), South Tinnevely (Tirunelveli, southern Tamil Nadu State, India) and Travankor Hills (Travancore, Kerala State, India).
- Cnemaspis boiei*. Lectotype BMNH 1962.181A (male), India; Paralectotypes BMNH 1962.181B (female), BMNH 1962.181C (female), India.
- Cnemaspis clivicola*. Holotype WHT 7204 (male); Paratypes WHT 7178 (male), WHT 7179 (male), WHT 7180 (male), WHT 7205 (male), WHT 7215 (female), NanuOya, Nuwara Eliya District, Central Province of Sri Lanka.
- Cnemaspis gemunu*. Holotype AMB 7495 (male), Hakgala Botanical Gardens, Nuwara Eliya District, Central Province, Sri Lanka; Paratypes AMB 7507 (female), 2<sup>nd</sup> milepost from Borangamuwa, Balangoda, Ratnapura District, Sabaragamuwa Province, Sri Lanka, NMSL 2006.11.01 (male), NMSL 20061102 (male), NMSL 20061103 (male), NMSL 20061104 (male), Agarapatana, Hatton, Central Province, Sri Lanka.
- Cnemaspis gracilis*. Lectotype BMNH 74.4.29.393 (male), Palghat Hills (Kerala, India); Paralectotypes BMNH 74.4.29.394 (female), BMNH 74.4.29.397 (male), Palghat hills (Kerala, India).
- Cnemaspis indica*. Lectotype BMNH 46.11.22.22b (male), Madras, India; Paralectotype BMNH 46.11.22.22a (male), Madras, India.
- Cnemaspis kallima*. Holotype WHT 7245 (male); Paratypes WHT 7222 (female), WHT 7228 (male), WHT 7227 (female), WHT 7229 (female), WHT 7230 (female), WHT 7239 (female), WHT 7249 (male), WHT 7251 (male), WHT 7252 (female), WHT 7253 (female), WHT 7254 (male), WHT 7255 (female), Gammaduwa Estate, Gammaduwa near Rattota, Matale District, Sri Lanka.
- Cnemaspis kandiana*. Lectotype BMNH 53.4.1.1 (female), Ceylon (Sri Lanka); Paralectotypes BMNH 80.2.2.119 (male), Ceylon (Sri Lanka).
- Cnemaspis kumarasinghei*. Holotype NMSL 20061301 (male), Paratype NMSL 20061302 (male), Maragala, Monaragala, Sri Lanka.
- Cnemaspis latha*. Holotype WHT 7214 (male), Bandarawela, Badulla District, Central Province, Sri Lanka.
- Cnemaspis menikay*. Holotype WHT 7219 (male); Paratypes WHT 7218 (male), WHT 7349 (male), Ihala Kalugala, Allauwa, Kegalle District, Sabaragamuwa Province of Sri Lanka.
- Cnemaspis molligodai*. Holotype NMSL 20061401 (male); Paratypes NMSL 20061402 (male), NMSL 20061403 (male), NMSL 20061404 (male), NMSL 20061405 (female), Waratalgoda, Rathnapura, Sri Lanka; NMSL uncatalogued male (No bottle and specimen number), Hunuwela, Rathnapura, Sri Lanka (This specimen was erroneously identified as the Holotype of *Cnemaspis podihuna* by Manamendra-Arachchi *et al.* 2007)
- Cnemaspis monticola*. Holotype BMNH 74.4.29.372 (female), Wynaad (Kerala State, India; Paratypes BMNH 74.4.29.373 (female), BMNH 74.4.29.374 (female), Wynaad (Kerala State, India).
- Cnemaspis nilagirica*. BMNH 74.4.29.729 (female), Nilgiris (Nilgiri), Tamil Nadu State, India.
- Cnemaspis ornata*. Lectotype BMNH 74.4.29.400 (male), South Tinnevely Hills, Tamil Nadu, India; Paralectotypes BMNH 74.4.29.401 (male), BMNH 74.4.29.402 (male), BMNH 74.4.29.405 (female), South Tinnevely Hills (Tirunelveli), Tamil Nadu State, India.
- Cnemaspis pava*. Holotype WHT 7286 (male); Paratypes WHT 7282 (female), WHT 7285 (female), WHT 7289 (male), WHT 7290 (male), WHT 7291 (male), WHT 7292 (male), WHT 7293 (female), WHT 7296 (male), WHT 7297 (male), WHT