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On the resolution of a long standing issue surrounding the holotype of *Cnemaspis podihuna* Deraniyagala, 1944 (Reptilia: Gekkonidae)

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The number of species in the genus *Cnemaspis* Strauch, 1887 has grown rapidly, and it currently comprises more than 100 species (Grismer *et al.* 2014; Amarasinghe *et al.* 2015). The Sri Lankan endemic and vulnerable day-gecko *Cnemaspis podihuna* Deraniyagala, 1944 (Ministry of the Environment 2012) was first described by Deraniyagala from the Lahugala-Maha Oya, Eastern Province on the basis of one holotype and four paratypes [incorrectly reported as three paratypes by Karunarathna *et al.* 2010]. There had been no further collections or sightings made of this species until Wickramasinghe (2000) rediscovered the species from Koslanda in the Badulla District (National Museums of Sri Lanka, Colombo, NMSL RG 21a–e). Wickramasinghe and Munindradasa (2007) collected a further four specimens (NMSL 20061001–4) around the type locality. Recently, Sri Lankan members of the day-gecko genus *Cnemaspis* were reviewed and redescribed morphologically by two groups of researchers: Wickramasinghe and Munindradasa (2007) and Manamendra-Arachchi *et al.* (2007). The former group considered the holotype lost. Therefore, they designated a neotype plus syntypes for *C. podihuna*. This action was invalidated by Pethiyagoda (2007) following the International Code of Zoological Nomenclature (ICZN 1999).

Manamendra-Arachchi *et al.* (2007) found the presumed holotype of *C. podihuna* (once considered lost) and re-described it. However, Amarasinghe and Bauer (2009) questioned the identity of the presumed holotype due to a number of discrepancies between it and the original description of Deraniyagala (1944); *e.g.*, presence of a complete tail in the presumed holotype (*versus* broken tail in the original description). Deraniyagala (1944) in the original description stated "Type - An adult male (fig. I) with the distal half of the tail broken off. Length…; tail (incomplete) 18 mm". Amarasinghe and Bauer (2009) further stated that the presumed holotype is actually just a voucher specimen of *C. podihuna* collected from Hunwala in 1960. Amarasinghe and Bauer (2009), and Amarasinghe *et al.* (2009) found a specimen (BMNH 1946.8.1.20) deposited in the Natural History Museum, London, associated with the locality "Lahugala, Eastern Province, Ceylon" marked as 'type' (in pencil) in the register for *C. podihuna*. The register entry indicated that it was presented by the Colombo Museum and the registration number shows that it arrived in the museum either on or before 1 August, 1946. The jar, however, was not labelled as 'type' and was housed in the non-type collection for *Cnemaspis*. However, Kandamby (1997) mentioned that the type of *C. podihuna* was similarly present as an uncatalogued specimen at the National Museum of Colombo, Sri Lanka. Wickramasinghe and Munindradasa (2007) rejected Kandamby's argument however and considered the uncatalogued specimen a voucher of *C. molligodai*, a new species which they described in their paper.

Amarasinghe and Bauer's (2009) examination led to the conclusion that most of the characters of the *C. podihuna* type, BMNH 1946.8.1.20, and the original description matched, the only exceptions being, firstly, the tail length which measured 2.5 mm (versus 18 mm in Deraniyagala, 1944). They argued that subsequent damage or loss of the tail may have accounted for the discrepancy in length. Secondly, the snout tip to tympanum measurement of 6.5 mm (*vs*. 8 mm) and the six precloacal pores count (vs. four) were not good matches for the holotype (*fide* Amarasinghe & Bauer 2009). Therefore, here we critically re-examine the specimen BMNH 1946.8.1.20 to evaluate its identity as the holotype of that species.

We used a Wild Heerbrugg M8™ dissecting microscope to examine the external morphology of the specimen. The following morphometric characters were taken with a Helios manual caliper to the nearest 0.1 mm, on the left side of the body for symmetrical characters: orbit diameter, horizontal diameter of orbit; snout length, distance between anteriormost point of orbit and tip of snout; tympanum-–eye length, distance between anterior most margin of tympanum

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and posterior most margin of orbit; head length, distance between posterior edge of mandible and tip of snout; head width, maximum width of head; axilla–groin length, distance between axilla and groin; snout–vent length (SVL), measured from tip of snout to anterior margin of vent; femur length, distance between groin and knee; tibia length, distance between knee and heel, with both tibia and tarsus flexed.

Meristic characters were recorded as follows: supralabials and infralabials, counted from first labial scale towards gape up to last distinctly larger scale than the granular scales at gape; scales from eye to tympanum, count from posterior-most point of orbit to anterior most point of tympanum; mid-ventral scale rows, there is no sharp transition from scales on the lower flanks to the ventrals, nonetheless we estimate the number of longitudinal rows of ventrals at midbody; ventrals, counted from first scale posterior to mental, to last scale anterior to vent; subdigital lamellae on toe IV, from first proximal enlarged lamellae wider than twice the width of the largest palm scale, to distalmost lamella at tip of digit. Sex was determined by the presence (male) of precloacal and femoral pores. Caudal scale characters are not given for the specimen as the tail was broken.

After comparing the original description of the specimen BMNH 1946.8.1.20 (Table 1) we can confidently conclude that the BMNH specimen is indeed the holotype of *C. podihuna*. BMNH 1946.8.1.20 is an almost exact match, even taking into account coloration as given in the original description, the only exception being the difference in length of the snout tip to tympanum (6.3 mm *vs*. 8 mm), which could be due to the presence of artefacts often seen when examining small specimens having been preserved for many years. When we re-examined the number of preanal pores we noticed that there are actually only four visible pores on six enlarged preanal scales. Regarding the reduced tail length of 2.5 mm, we follow the explanation given in Amarasinghe and Bauer (2009) reflecting the subsequent mechanical damage or loss having occurred since 1944. Therefore, here we redescribe *C. podihuna* BMNH 1946.8.1.20 based on the specimen tagged as 'type' housed at BMNH. The presumed holotype rediscovered at NMSL (Manamendra-Arachchi *et al.* 2007) does not have type status and the designation of a neotype by Wickramasinghe and Munindradasa (2007) is invalidated.

TABLE 1. Some morphometric, meristic, and morphological, character comparison of the holotype of *C. podihuna* and its original description; "—" = not given.

Character	Holotype BMNH 1946.8.1.20	Original description Deraniyagala (1944)
SVL	25.0	26
Head length	6.6	-
Head width	4.6	-
Snout length	3.1	-
Orbit diameter	1.2	-
Eye–tympanum length	2.0	-
Snout–tympanum length	6.3	8
Axilla–groin length	12	12
Thigh length	4.9	-
Shank length	3.9	-
Tail length	2.5	18
Precloacal pores	4	4
Femoral pores	5	5
Transverse markings on the body	4	4

Cnemaspis podihuna Deraniyagala, 1944

(Figs. 1, 2; Table 1)

Holotype. An adult male, BMNH 1946.8.1.20, SVL 25 mm, collected from Luhugala, Eastern Province, Ceylon (=Sri Lanka), by P.E.P. Deraniyagala on 7 April 1944. Presented to the BMNH and registered on 1 August 1946.

Redescription of the holotype. head moderately large, elongate, narrow, distinct from neck; snout elongate, slightly concave in lateral profile; snout-eye length greater than eye diameter; eye diameter smaller than tympanum-eye length; canthus rostralis weak; interorbital distance broad; eye large, pupil rounded; ear-opening deep, oval; granules on snout

keeled, larger than those of occipital region; scales on interorbital, supercilium and gular region granular; rostral concave, partially divided by a medial groove and a small internasal, postero-ventrally in contact with first supralabial; nasals separated by two enlarged supranasals and a single internasal scale, not in contact with supralabial; nostrils round in shape, dorsally orientated; nasal in contact with four postnasals, the lower one in full contact with first supralabial. Mental subtriangular, truncate posteriorly, as wide as long, extending posteriorly to half level of 2nd infralabial, postero-laterally in contact with two enlarged postmentals, posteriorly with two medial scales; postmentals bordered posteriorly by 3–4 smooth scales including medial scale; gular scales rather rounded; one scale row separates orbit from supralabials; nine supralabials (1st and 5th largest, 8th at mid-orbital position); eight infralabials decreasing in size towards angle of jaw; 22–24 scales between anterior margin of ear opening and posterior margin of eye.

FIGURE 1. Holotype of *C. podihuna* (BMNH 1946.8.1.20, SVL 25 mm), (A) dorsal view, (B) ventral view of the body (scale=2 mm).

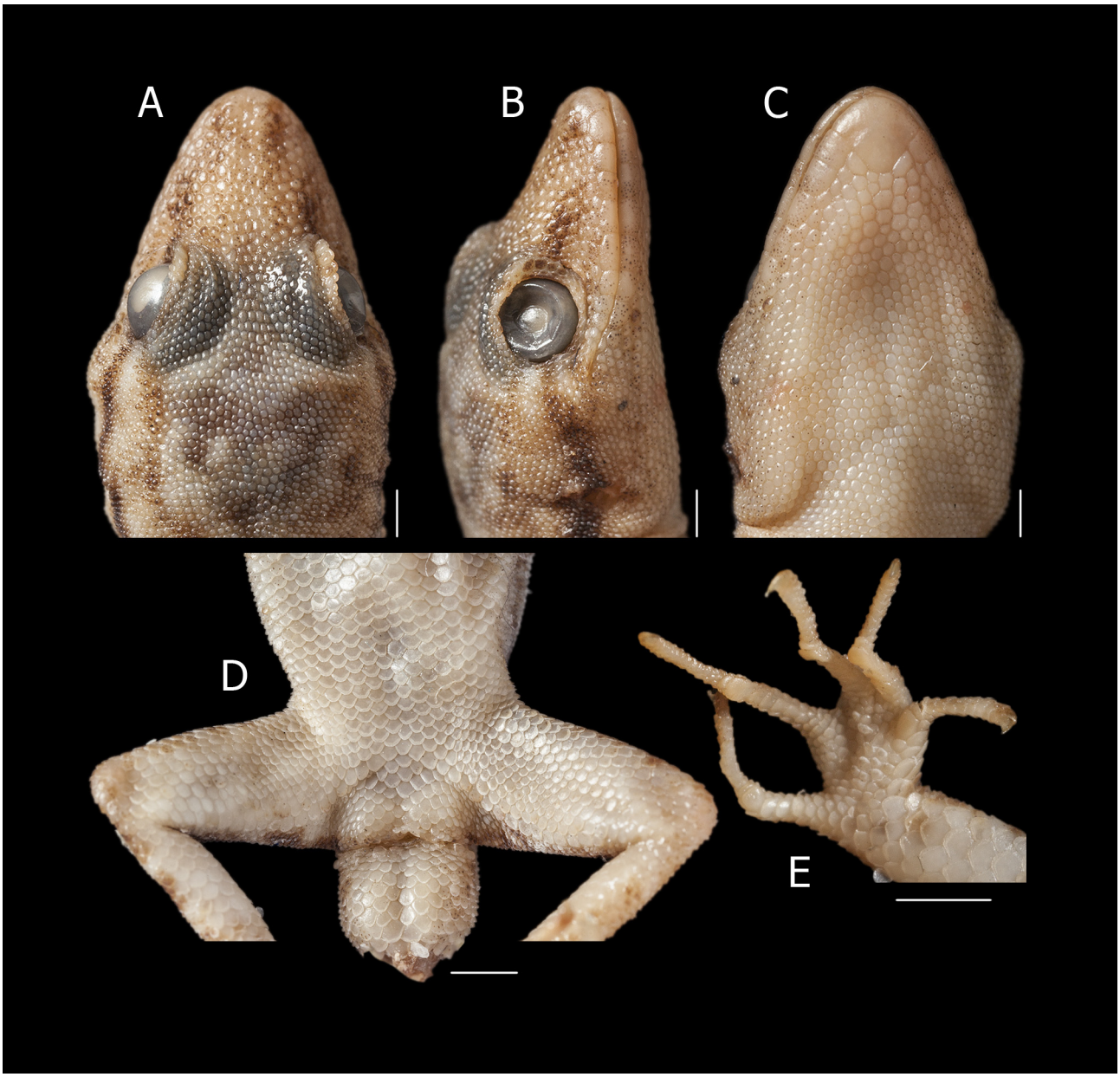

FIGURE 1. Holotype of *C. podihuna* (BMNH 1946.8.1.20, SVL 25 mm), (A) dorsal view, (B) lateral view, (C) ventral view of the head; (D) ventral view of the thigh and cloacal area, (E) ventral view of the foot (scale=1 mm).

Body slender, elongate; granule mid-dorsal scales generally homogeneous; scales on dorsum at midbody smaller than those on ventral body surface at the same level; five spine-like tubercles on each flank, three of which distinctly visible; pectoral and abdominal scales not enlarged, smooth, rounded, subimbricate; approximately 15–17 ventral scales across midbody; ventro-lateral scales bluntly pointed and granular; six enlarged precloacal scales, but only four pores visible; five femoral pores (each side); scales around vent imbricate and smooth; ventrals 113.

Forelimbs moderately long; hind limbs relatively long; tibia longer than femur. Dorsal scales on both fore and hind limbs granular; ventral scales on upper arm and lower arm granular; scales on ventral surface of thigh and shank smooth. Digits elongate, slender, all bearing slightly re-curved claws; subdigital lamellae entire, un-notched; subdigital lamellae on toe IV, 19; inter digital webbing absent; relative length of fingers: IV > III > II > V > I and of toes: IV > III > V > II > I. Tail base distinctly swollen and scales on ventral tail base smooth; post-cloacal spur absent.

Colour in preservative. Dorsal surfaces of body, limbs and tail beige; dark lateral band from nostril to shoulder; followed by a space then a dark occipital blotch on either shoulder and four "W" shaped dark transverse markings from shoulders to hips, and one on nuchal; ventral surfaces of head, body and limbs beige.

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