

DOI: 10.30906/1026-2296-2022-29-6-355-363

## TAXONOMY, DISTRIBUTION, AND CONSERVATION OF *Lankascincus dorsicatenatus* (DERANIYAGALA, 1953) (REPTILIA: SCINCIDAE) WITH DESIGNATION OF A NEOTYPE

D. A. Danushka,<sup>1,7\*</sup> S. A. Kanishka,<sup>1,7</sup> J. Hallermann,<sup>2</sup> P. D. Campbell,<sup>3</sup>  
I. Ineich,<sup>4</sup> O. S. G. Pauwels,<sup>5</sup> and A. A. T. Amarasinghe<sup>6,7\*</sup>

Submitted September 21, 2021.

*Lankascincus dorsicatenatus* is an endemic species of litter-skink distributed throughout the wet zone of Sri Lanka (elevations from 15 to 800 m a.s.l.). The recent resurrection of *Lygosoma megalops* by the recent description of its neotype designated by Batuwita (2019), presently lost, destabilized the taxonomic status of *Lankascincus dorsicatenatus*. Amarasinghe et al. (2022) synonymized *Lygosoma megalops* with *Lankascincus fallax*, and accepted *Lankascincus dorsicatenatus* as a valid taxon. Deraniyagala (1953) described *Sphenomorphus dorsicatenatus* based on a holotype and three paratypes. All the types are lost except one paratype at the National Museum of Sri Lanka, Colombo, Sri Lanka (NMSL), but it is in bad condition. Therefore, with a comparative discussion on the status of '*Lankascincus megalops*', here we designate a neotype for *Lankascincus dorsicatenatus* for clarification of the taxonomic status and stabilize the nomen. A discussion on the distribution and conservation of *Lankascincus dorsicatenatus* is also provided.

**Keywords:** biogeography; dry zone; endemic; rainforest; Sri Lanka; wet zone.

### INTRODUCTION

When describing the endemic Sri Lankan genus *Lankascincus* (hereafter *La.*), Greer (1991) failed to consider the remaining skink species of the country included in the

genera *Sphenomorphus* Fitzinger, 1843 and *Lygosoma* Hardwicke et Gray, 1828 (hereafter *Ly.*): *S. dorsicatenatus* Deraniyagala, 1953; *Ly. dussumieri* Duméril et Bibron, 1839; and *Ly. megalops* Annandale, 1906. Subsequently, based on morphological affinities, Batuwita and Pethiyagoda (2007) and Batuwita (2019) transferred *S. dorsicatenatus* and *Ly. megalops* to the genus *Lankascincus*. However, Amarasinghe et al. (2022) synonymized *Lygosoma megalops* with *Lankascincus fallax*. Somaweera and Somaweera (2009) restricted *S. dussumieri* to Southern India, removing it from the Sri Lankan checklist. Currently nine species of *Lankascincus* are known from Sri Lanka (Batuwita, 2019; Wickramasinghe et al., 2020; Kanishka et al., 2020; Amarasinghe et al., 2022).

Deraniyagala (1953) described *S. dorsicatenatus* based on a holotype and three paratypes. All the types were believed to be lost until Batuwita and Pethiyagoda (2007) rediscovered one of them, which turned out to be one of the misplaced paratypes, at the National Museum of Sri Lanka, Colombo, Sri Lanka (NMSL). In this publication they assigned *S. dorsicatenatus* to the genus *Lankascincus*, but did not provide a description of the redis-

<sup>1</sup> Taprobanica Nature Conservation Society, No. 146, Kendalanda, Homagama 10200, Sri Lanka.

<sup>2</sup> Leibniz Institute for the Analysis of Biodiversity Change (LIB), Zoologisches Museum Hamburg, Martin-Luther-King-Platz 3, 20146 Hamburg, Germany.

<sup>3</sup> Department of Life Sciences, Darwin Centre, Natural History Museum, Cromwell Road, South Kensington, London SW7 5BD, UK.

<sup>4</sup> Institut de Systématique, Évolution et Biodiversité (ISYEB), Muséum National d'Histoire Naturelle, Sorbonne Université, École Pratique des Hautes Études, Université des Antilles, CNRS, CP 30, 57 rue Cuvier, F-75005 Paris, France.

<sup>5</sup> Royal Belgian Institute of Natural Sciences, Rue Vautier 29, B-1000 Brussels, Belgium.

<sup>6</sup> Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Indonesia, Kampus UI, Depok, 16424, Indonesia.

<sup>7</sup> Association of Asian Herpetology (Asosiasi Herpetologi Asia), Jl. BSD Bintaro No. 88, Pondok Aren 15228, Tangerang Selatan, Indonesia.

\* Corresponding authors: adinethdanushka@gmail.com, thasun.amarasinghe@ui.ac.id

covered paratype. Later, Batuwita (2019) provided details on the rediscovered paratype, and he assumed that it was probably the paratype collected from Rammalkada (= Rammalekanda near Pasgoda) as mentioned in the original description of Deraniyagala (1953). *Lankascincus dorsicatenatus* occurs in the lowland rainforests of Sri Lanka.

The neotype of *Ly. megalops* was designated by Batuwita (2019) from Pitawala (near Kitulgala), also from lowland rainforest. Along with the designated neotype, Batuwita (2019) referred 13 specimens to *La. megalops*, however only four of them are traceable. The remaining nine specimens (including the neotype) were never deposited at the Wildlife Heritage Trust (WHT) or National Museum of Sri Lanka (NMSL), and their registration numbers provided in Batuwita (2019) are not listed in the relevant collection registers (see Amarasinghe et al., 2022). Kanishka et al. (2020) highlighted the confusion between '*La. megalops*' sensu Batuwita and *La. dorsicatenatus*. The species redescribed by Batuwita (2019) as '*La. megalops*' is obscure and the diagnostic characters provided are somewhat a mixture of *La. gansi* Greer, 1991 and *La. fallax* (Peters, 1860), whereas the re-description is a mixture of *La. gansi* and *La. dorsicatenatus* (Amarasinghe et al., 2022). Therefore, to provide more clarity on these taxa, and in order to stabilize the nomen with a recognized name bearing type specimen, we here revisit the taxonomic status of *La. dorsicatenatus*. We also map its distribution in Sri Lanka based on published records, observed specimens, and museum collections.

## MATERIAL AND METHODS

Specimens were examined in the collections of the National Museum of Sri Lanka, Colombo, Sri Lanka (NMSL) and Wildlife Heritage Trust, Sri Lanka (WHT, specimens currently deposited at NMSL but retaining their former WHT acronym). Museum abbreviations follow Uetz et al. (2019). Morphometric and meristic data for species comparisons were obtained from specimens listed in the Materials Examined (Appendix I) section. Natural history data were taken from our own field observations, as well as from published literature.

Preserved specimens were observed using a Leica M50, AmScope SM-1BZ-RL ( $\times 10 - 90$ ) or DRC 475003-9902 (Carl Zeiss AG) dissecting microscope, on the left side of the specimens unless damaged. The following measurements were taken to the nearest 0.1 mm with a Mitutoyo digital calliper, or by an ocular micrometer (each measurement was taken three times and the calculated mean recorded): snout-vent length (SVL, from tip of snout to anterior margin of vent), head length (HL, from posterior

edge of the retro-articular process of the mandible to tip of snout), head width (HW, width of head at the temporo-mandibular articulation/angle of the jaws), head depth (dorso-ventral distance between occiput and throat), snout length (from anterior border of orbit to tip of snout), orbit diameter (the greatest antero-posterior diameter of the orbit), tympanum-eye length (from posterior border of orbit to anterior border of tympanum), interorbital width (shortest distance between dorso-medial margins of orbits), brachium length (on the dorsal surface from the axilla to the inflection of the flexed elbow), antibrachium length (LAL, on the dorsal surface from the posterior surface of the elbow while flexed  $90^\circ$  to the base of the heel), palm length (from wrist (carpus) to distal tip of longest finger including claw), thigh length (from the anterior margin of the hind limb at its insertion point on the body to the knee while flexed), shank length (TBL, from the posterior surface of the knee while flexed to the base of the heel), foot length (from heel to tip of longest toe including claw), body width (greatest transversal width at midbody), body depth (greatest dorso-ventral depth at midbody), axilla-groin length (distance between axilla and groin), tail base width (greatest transversal width at tail base just posterior to cloaca), tail length (TL, from tip of tail to posterior margin of vent for complete original tails only), and total length (= SVL + TL, from tip of snout to tip of tail).

Supralabial and infralabial scales were counted from the gape to the rostral and mental plates, respectively. Ventrals included all scales from the scale posterior to the postmental to the last scale bordering the vent, counted along the ventral midline. Paravertebral scales were counted dorsally from the postparietal/nuchal (excluded) to the dorsal level of the cloaca in a straight line immediately left of the vertebral column. Subdigital lamellae were counted from the first proximal enlarged lamella wider than the largest palm scale to the distal-most lamella at the base of the claw. Total number of longitudinal scale rows was counted around the midbody (at half axilla-groin length position). Sex was only determined for adult breeding males by the throat coloration.

In this study we compared the neotype (designate herein), the historical paratype, and other specimens of *La. dorsicatenatus* available to us including the five voucher specimens which Batuwita (2019) also accepted as *La. dorsicatenatus* with the available four voucher specimens that he assigned to '*La. megalops*'.

## RESULTS

The holotype and two of the three paratypes of *La. dorsicatenatus* must have been stored at NMSL, but

unfortunately they are now lost. Our attempt to trace the holotype and the other two paratypes in NMSL and other possible depositories (ZSI, NHMUK) was unsuccessful. Therefore, here we confirm the existence of the rediscovered paratype only, NMSL 307 (fide Batuwita and Pethiyagoda, 2007) from the original type series. When we examined this paratype, we discovered that our measurements did not match those of the paratype from Rammalkada (fide Deraniyagala, 1953) as stated by Batuwita (2019), but instead were a close match for the paratype collected from Angamana near Nivithigala, the same locality as the holotype (fide Deraniyagala, 1953), see Table 1. According to the original description, the existing paratype of *La. dorsicatenatus* resembles the holotype collected from the type locality, Angamana (near Nivithigala).

The condition of this paratype is poor, missing most of the specific diagnostic head scale characters. We thus, consider that a name-bearing type is needed to define this nominal taxon objectively (i) due to no name-bearing type specimen being extant for the nomen, (iii) the available paratype is also in bad state, and (ii) to clarify the taxonomic status of the nomen sensu Article 75.3.1 of the Code (ICZN 1999). The recent resurrection of '*La. megalops*' by Batuwita (2019), a sympatric species only known by the original description of its syntypes, now lost, and a recent description of a neotype, also presently lost, destabilized the taxonomic status of the nomen *La. dorsicatenatus*, see discussion. The existence of a paratype of *La. dorsicatenatus* does not preclude the designation of a neotype sensu Article 75.1 (ICZN 1999), in order to stabilize the nomen with a recognized name bearing type specimen, we here designate a neotype for this taxon. This neotype designation qualifies with all the

conditions of Article 75.3 of the Code (ICZN 1999). The herein designated neotype is consistent with what is known of the former name-bearing type according to the original description sensu Article 75.3.5 (ICZN 1999) and is distinguishable from all the other known *Lankascincus* species (Article 75.3.2, ICZN 1999), see under diagnosis and comparisons. In agreement with Article 75.3.6 (ICZN 1999), the designated neotype was collected from a locality 20 airline km from the original holotype's locality. The neotype, WHT 6619, is currently deposited at NMSL following the Article 75.3.7 (ICZN 1999), retaining its former WHT registration identity from the collection of NMSL, and here we provide a description based on external characters and in order to satisfy the requirements of Article 75.3.3 (ICZN 1999).

### *Lankascincus dorsicatenatus* (Deraniyagala, 1953)

(Figs. 1 – 4, Tables 1 – 2)

*Sphenomorphus dorsicatenatus* Deraniyagala, 1953

*Sphenomorphus dorsicatenatus* — Greer, 1991

*Lankascincus dorsicatenatus* — Batuwita and Pethiyagoda, 2007; Somaweera and Somaweera, 2009; Karunarathna and Amarasinghe, 2012; Kanishka et al., 2020; Wickramasinghe et al., 2020

*Lankascincus megalops* — Batuwita, 2019 (partim)

Neotype (designated here). WHT 6619, adult female, SVL 42.0 mm, collected from Batadombalena near Kuruwita (6°46'35" N 80°23'45" E; WGS84, alt. 390 m a.s.l.; 20 airline km from the holotype's locality), Ratnapura District, Sabaragamuwa Province, Sri Lanka, by K. Manmendra-Arachchi and M. M. Bahir on 05 January 1998.

**Holotype** (lost). NMSL uncatalogued, subadult, SVL 32.5 mm, collected from Angamana (= Angammana)

**TABLE 1.** Details of the type materials (four specimens) of *Sphenomorphus dorsicatenatus* (fide Deraniyagala, 1953)

Current catalogue No.	Holotype		Paratypes	
	NMSL Uncat	NMSL 307	NMSL uncat.	NMSL uncat.
Sex	Unknown	Unknown	unknown	unknown
Life stage	Subadult	Adult	adult	adult
SVL	32.5	43.2	42.0	46.5
Tail length	54.0	43.0	66.0	75.0
Axilla-groin length	14.5	22.0	22.0	23.8
Arm length	9.4	11.0	9.5	12.0
Leg length	13.0	16.0	16.5	16.8
Snout length	2.5	3.0	3.0	3.5
Tympanum-eye length	3.0	3.5	4.0	4.0
Location	Angamana (near Nivithigala)	Angamana (near Nivithigala)	Rammalkada	Rammalkada
Remarks	Lost	Paratype rediscovered by Batuwita and Pethiyagoda (2007)	Lost: Batuwita (2019) erroneously assumed this paratype is at NHMUK	Lost: Batuwita (2019) erroneously assumed as rediscovered paratype.



Fig. 1. *Lankascincus dorsicatenatus*, a non-breeding male (not collected) from Koskulana, Panapola (near type locality).

TABLE 2. Selected Morphometric (in mm) and Meristic Characters of the Paratype (NMSL 307), Neotype (designated herein, WHT 6619), and Other Specimens of *Lankascincus dorsicatenatus* (Deraniyagala, 1953)

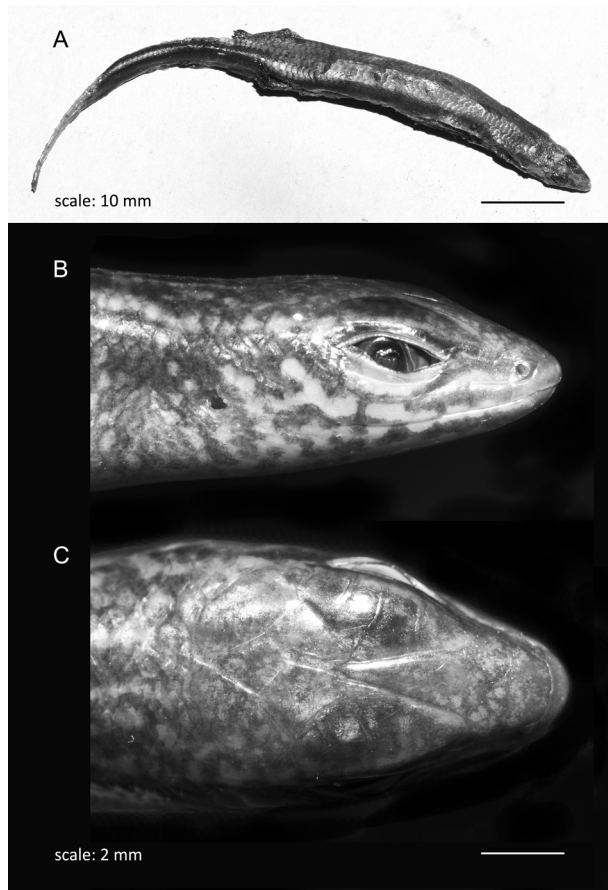
Character	<i>Lankascincus megalops</i>					
	<i>La. dorsicatenatus</i> (Deraniyagala, 1953) (our examination)				“ <i>La. megalops</i> ” (fide Batuwita, 2019)	
	NMSL 307 paratype	WHT 6619 neotype	males ( <i>n</i> = 5)	females ( <i>n</i> = 6)	males and females ( <i>n</i> = 13)	males and females ( <i>n</i> = 4) our examination
Snout-vent length	43.2	42.0	30.3 – 44.5	35.5 – 43.0	34.0 – 48.0	38.0 – 44.5
Head length	9.1	8.6	7.3 – 10.5	7.8 – 9.3	8.0 – 10.8	8.5 – 10.1
Head width	5.2	6.0	4.9 – 6.2	4.9 – 6.3	—	5.3 – 6.3
Head depth	4.8	4.3	4.0 – 4.6	3.2 – 4.8	—	4.3 – 4.6
Brachium length	4.0	3.3	2.4 – 4.7	2.9 – 3.7	—	3.5 – 4.7
Antebrachium length	4.2	4.0	3.0 – 4.5	2.6 – 4.0	—	3.2 – 4.2
Palm length	—	2.0	2.0 – 3.5	2.0 – 3.4	—	2.2 – 3.3
Thigh length	5.3	5.6	4.2 – 6.3	4.5 – 5.6	—	4.9 – 6.3
Shank length	7.4	7.8	4.7 – 8.3	6.0 – 7.8	—	6.0 – 8.3
Foot length	—	6.4	5.3 – 8.0	5.3 – 6.9	—	6.4 – 8.0
Body width	7.3	8.3	5.5 – 8.0	4.9 – 8.3	—	6.1 – 8.0
Body depth	6.5	7.5	4.3 – 7.5	4.3 – 7.5	—	5.2 – 6.3
Axilla-groin length	22.0	20.0	16.0 – 23.9	14.9 – 21.4	19.5 – 28.5	20.1 – 23.9
Tail base width	4.1	4.1	3.9 – 4.5	3.2 – 4.5	—	3.7 – 4.5
Tail length	34.6 <sup>+</sup>	73.0	53.2 – 74.0	46.0 – 73.0	71.7	56.0 – 74.0
Supralabials	7	7	7	7	—	7
Infralabials	5	5	5	5	—	5
Supraciliaries	—	10	10	10	9 – 11 (9?, 11?)	10
Suboculars	—	9	9, 10	9, 10	—	9, 10
Paravertebrals	48	45	43 – 47	45 – 47	47 – 50 (49?, 50?)	45 – 47
Midbody scale rows	26	26	26	26	25 – 29 (28?, 29?)	26
Ventrals	48	48	47, 48	46 – 48	48 – 57 (50 – 57?)	47, 48
Lamellae finger IV	—	11	10 – 12	9 – 12	10 – 12	10 – 12
Lamellae toe IV	18	18	18	16 – 18	15 – 18 (15?)	17, 18

**Note.** +, data for ‘*La. megalops*’ (*n* = 13) given by Batuwita (2019) and the data for 4 of the 13 specimens he referred to ‘*La. megalops*’; —, not given; ?, doubtful.

near Nivithigala (06°40' N 80°25' E, WGS84 alt. 30 m a.s.l.), Ratnapura District, Sabaragamuwa Province, Sri Lanka, by P. E. P. Deraniyaga on 05 August 1952.

**Paratypes** (*n* = 3, only one present). NMSL 307, adult male, SVL 43.2 mm, other details the same as holotype (a newly added label in the jar says it is from a

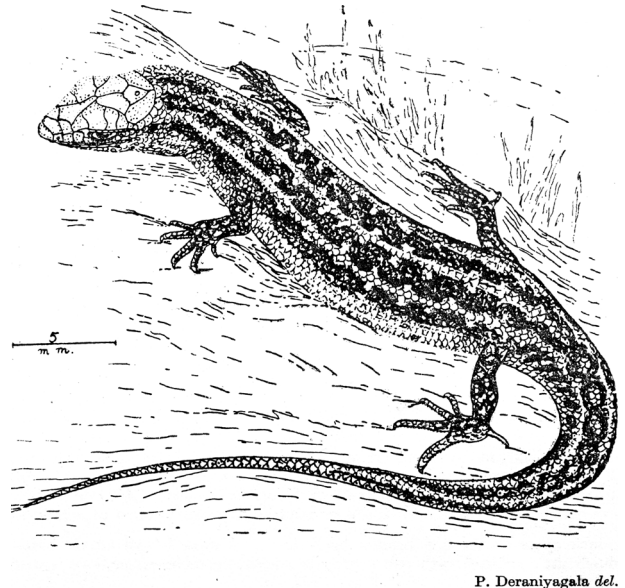




**Fig. 2.** *Lankascincus dorsicatenatus*, (A) the paratype NMSL 307, in bad condition; neotype (WHT 6619): head in (B) lateral view, and (C) dorsal view.

stream bank in Rammalkanda (sic), but the measurements do not match with the paratype from Rammalkanda; NMSL uncatalogued (lost), two unsexed adults, SVL 42.0 and 46.5 mm, collected from Rammalkada, Ratnapura District, Sabaragamuwa Province, Sri Lanka, by P. E. P. Deraniyagala.

**Other examined material** ( $n = 9$ ). WHT 6774, adult female, SVL 39.2 mm and WHT 6779, adult male, SVL 30.3 mm from Sri Lanka: Southern Province, Galle District, Navinna; WHT 6737, SVL 35.5 mm and WHT 6745, SVL 40.5 mm, adult females from Sri Lanka: Sabaragamuwa Province, Ratnapura District, Panapola, Koskulana; WHT 6736, adult male, SVL 44.5 mm from Sri Lanka: Central Province, Matale District, Owilikanda; WHT 6719, adult female, SVL 43.0 mm, WHT 6728, adult male, SVL 44.5 mm, WHT 6729, adult female, SVL 38.0 mm from Sri Lanka: Sabaragamuwa Province, Kegalle District, Wathura, Nainakanda; NMSL 0391-SB,

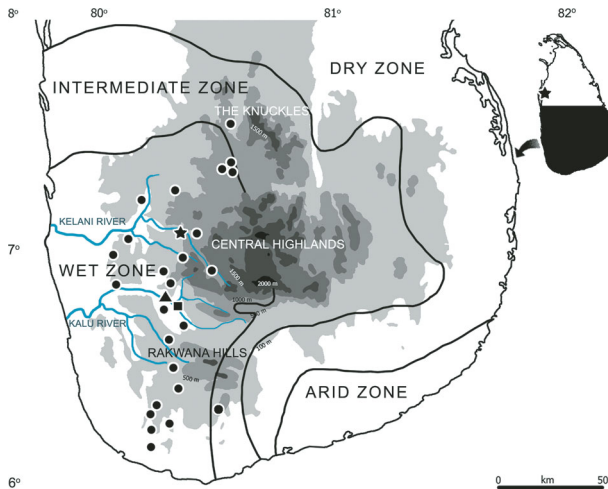


**Fig. 38.** *Sphenomorphus dorsicatenatus* sp. nov.

**Fig. 3.** The original figure of *Sphenomorphus dorsicatenatus* illustrated by P. E. P. Deraniyagala; reprinted from Deraniyagala, 1953 (*A Coloured Atlas of Some Vertebrates from Ceylon. Vol. 2. Tetrapod Reptilia*, p. 72, Fig. 38).

adult female, SVL 38.0 mm from Sri Lanka: Central Province, Kandy District, Hanthana.

**Diagnosis and comparisons.** The following combination of characters distinguishes *La. dorsicatenatus* from all other congeners: adults reaching SVL 46.5 mm, seven supralabials, ventrals 46–52, mid-body scale rows 26, prefrontals narrowly or broadly in contact, two primary temporals, last supralabial longitudinally split, second supraocular widest in longitudinal axis, frontal length subequal to interparietal and frontoparietal combined, throat scales cycloid, lamellae on fourth toe 16–18. *La. dorsicatenatus* is distinguished by having prefrontals always in contact (vs separated in *La. taprobanensis*; sometimes separated in *La. fallax*, Kanishka et al. (in prep.); two primary temporals (vs. single in *La. deignani*, *La. sripadensis*, *La. taprobanensis*, *La. taylori*); paired frontoparietals (vs. sometimes fused in *La. fallax*); last supralabial longitudinally split (vs. single in *La. deignani*, *La. fallax*, *La. sripadensis*, *La. taprobanensis*, *La. taylori*); and length and width of the second supraocular subequal (vs. wider in transverse axis in *La. gansi*, *La. merrill*, *La. sameerai*, *La. sripadensis*, *La. taylori*), also see Tables 4 and 5 in Kanishka et al. (2020) under *La. dorsicatenatus*. Although haven't found any live or preserved specimens of '*La. megalops*', fide Batuwita (2019) *La. dorsicatenatus* is distinguishable from that



**Fig. 4.** Current distribution map of *Lankascincus dorsicatenatus* (circles); holotype and paratype localities are marked with a square and a triangle respectively; one of the syntype localities (Kitulgala) of *Ly. megalops* (now junior synonym of *La. fallax*) is marked with a star symbol (other syntype locality, Puttalam is out of the main map area and shown outside by another black star).

species by having 40–46 paravertebrals (vs. 47–50); supraoculars not subequal (vs. subequal), 2<sup>nd</sup> wide (vs. narrow), 4<sup>th</sup> partially in contact with frontoparietal (vs. almost entirely), adpressed limbs not overlapping (vs. overlapping), catenated mid-dorsal colour pattern in females (vs. two longitudinal lines on the dorsum), and dorsolateral line with half-scale width (vs one-and-a-half to two scales width).

**Description of neotype.** WHT 6619, adult female, SVL 42.0 mm. Head moderately large (HL 20.5% of SVL), narrow (HW 69.8% of HL, HW 14.3% of SVL), indistinct from neck; snout short, shorter than orbit diameter, slightly convex in lateral profile.

Rostral shield large, posterior margin convex; nostril large, no supranasal or postnasal scale; frontonasal longer than prefrontals, in contact with anterior loreal laterally; prefrontals broadly in contact with each other, in contact with anterior and posterior loreals laterally, 1<sup>st</sup> supraciliary, 1<sup>st</sup> supraocular and frontal posteriorly; frontal longer than frontonasal and prefrontal combined, longer than the length of frontoparietal and interparietal combined; supraoculars four, 2<sup>nd</sup> widest in longitudinal axis, 1<sup>st</sup> longest in longitudinal axis, first two supraoculars in contact with frontal, 3<sup>rd</sup> in contact with frontoparietal, 4<sup>th</sup> in contact with frontoparietal, parietal, upper pretemporal and last supraciliaries; frontoparietals paired, similar in size with interparietal, in contact with 2<sup>nd</sup>–4<sup>th</sup> supraoculars; parietals large, touching each other behind interparietal, in contact with 4<sup>th</sup> supraocular and upper pretemporal anteriorly, upper secondary temporal and

body scales laterally; loreals two, anterior loreal touching prefrontal, frontonasal, nasal, 2<sup>nd</sup> supralabial, and posterior loreal; posterior loreal larger than anterior loreal, touching prefrontal, anterior loreal, 2<sup>nd</sup> supralabial, two preoculars, and 1<sup>st</sup> supraciliary; preoculars two, lower preocular larger, touching upper preocular, posterior loreal, 3<sup>rd</sup> supralabial, and palpebral scales; eye large, orbit diameter equal with tympanum-eye distance, pupil rounded; interorbital distance broad; supraciliaries nine, placed between supraocular and upper palpebrals; upper palpebrals 16, placed between eye and supraciliary row; lower palpebrals 18, placed between eye and subocular row; suboculars nine, smaller than supralabials, touching 3<sup>rd</sup>–6<sup>th</sup> supralabials ventrally, lower postocular, primary temporals, and lower pretemporal scale posteriorly; last subocular touching lower and upper primary temporals, lower pretemporal, lower anterior and posterior postoculars; anterior postoculars two, upper one smaller than lower; posterior postoculars two, larger than anterior postoculars, touching pretemporals; pretemporals two, subequal, touching parietals, upper primary temporal and upper secondary temporals; primary temporals two, subequal in size and juxtaposed with secondary temporals; lower primary temporal touching 8<sup>th</sup>–9<sup>th</sup> suboculars, 6<sup>th</sup> and 7<sup>th</sup> supralabials; upper primary temporal touching last upper-supralabial, and upper and lower secondary temporals; secondary temporals two, upper one larger than the lower, upper one touching parietal and upper tertiary temporal; tertiary temporals three, touching lower secondary temporal and upper posterior supralabial.

Supralabials 7, the last supralabial split dorso-ventrally, 5<sup>th</sup> at mid-orbit point; post-supralabials not distinct; mental wider than postmental in transverse axis, shorter in longitudinal axis, touching 1<sup>st</sup> infralabial only; infralabials five, single post-infralabial; chinshields three pairs, first pair meeting broadly in midline, first chinshield touching 1<sup>st</sup> and 2<sup>nd</sup> infralabials, second pair touching 2<sup>nd</sup> and 3<sup>rd</sup> infralabials; gular scales cycloid and imbricate. Body moderately elongate, dorsal scales smooth, cycloid; paravertebrals 45; 26 transverse scale rows at mid-body; ventrals 48, smooth, imbricate; median precloacals enlarged; forelimbs short, hind limbs relatively long, LAL 51.3% of TBL; thigh short and 71.8% of shank length; fourth toe with 18 smooth lamellae; relative lengths for fingers and toes 4 > 3 > 5 > 2 > 1 and 4 > 3 > 5 > 2 > 1, respectively. Tail original, 73.0 mm, round in cross section all along.

**Coloration of neotype.** After 23 years in preservative, the dorsal surface of head, body, and tail is crimson brown; two pale yellow dorsolateral stripes along the body starting from posterior eye towards tail; flanks and ventral surface of body pale yellow.

**Re-description of the historical paratype (NMSL 307).** Adult male. SVL 43.2 mm. Head moderately large (HL 21.1% of SVL), narrow (HW 57.1% of HL, HW 12.0% of SVL), indistinct from neck; snout short, shorter than orbit diameter, slightly convex in lateral profile. Head damaged. Supralabials 7, the last supralabial split dorso-ventrally, 5<sup>th</sup> at mid-orbit point; post-supralabials not distinct; mental wider than postmental in transverse axis, shorter in longitudinal axis, touching 1<sup>st</sup> infralabial only; infralabials five, single post-infralabial; chinshields three pairs, first pair meeting broadly in midline, first chinshield touching 1<sup>st</sup> and 2<sup>nd</sup> infralabials, second pair touching 2<sup>nd</sup> and 3<sup>rd</sup> infralabials; gular scales cycloid and imbricate. Body moderately elongate, dorsal scales smooth, cycloid; paravertebrals 48; 26 transverse scale rows at mid-body; ventrals 48, smooth, imbricate; median precloacals enlarged; forelimbs short, hind limbs relatively long, LAL 56.8% of TBL; thigh short and 71.6% of shank length; fourth toe with 18 smooth lamellae; relative length for fingers and toes  $4 > 3 > 5 > 2 > 1$  and  $4 > 3 > 5 > 2 > 1$ , scales of palm and sole elevated. Tail original, broken (broken part lost), round in cross section all along. After nearly 70 years in preservative, the dorsal surface of head, body, and tail is dark brown; flanks and ventral surface pale brown.

**Coloration in life.** In live male specimens (not collected, based on Fig. 1), dorsal surface of the head, body, limbs, and tail uniform dark brown; lower parts of the lateral head dark brown in non-breeding males; white or cream flecks present on lower temporal region spread until shoulders, usually with a series of white spots on the lateral neck (Fig. 1B), but not always, sometimes lacking white spots (Fig. 1A); the lower parts of the head, throat, and pectoral regions become bright red in breeding males while brown in non-breeding males; flanks can show a golden yellow colour in non-breeding males (Fig. 1A), but in breeding males usually pale yellow or light yellowish brown (Fig. 1B); limbs uniform dark brown with pale brown markings on hind limbs; venter brownish pink. Females with a thick light brown dorsolateral stripe from gape of the mouth until mid-tail; in between these dorsolateral stripes a pale catenated pattern can be visible (Fig. 3). This pattern can be observed even in non-reproductive female specimens.

**Natural history.** A diurnal skink associated with thick leaf litter on the forest floor of lowland rainforests. Most individuals were observed in habitats where the leaf litter thickness is greater than 3 cm, and can be found even as deep as 30 cm. Animals were also found on humid ground under fallen logs and rocks. This species is a specialist of primary rainforests and undisturbed ecotones, never found outside forests; it mostly prefers mod-

erately shady habitats with low canopy cover of 40–70%. We found this species near streams with rock boulders in the Rammalekanda forest (Matara District). They escape very fast along short distances (2–5 m) when disturbed. This species is sympatric with *La. gansi*, *La. deignani*, and *La. taylori* at most localities.

**Distribution.** *Lankascincus dorsicatenatus* is restricted to the lowland and mid elevations (alt. 15–800 m a.s.l.) of tropical rainforests in the south-western lowland (Karunarathna and Amarasinghe, 2012), lower and mid central highlands in the wet zone, and lower Knuckles regions in the intermediate zone of Sri Lanka. See the map (Fig. 4) for confirmed locality data based on museum specimens and personal observations.

**Conservation status.** The application of the IUCN Red List criteria (IUCN Standards and Petitions Subcommittee, 2019) with the updated distribution data shows that *La. dorsicatenatus* is restricted to an area of occupancy (AOO) of 675 km<sup>2</sup>, and recorded from 22 localities (27 sightings) (Fig. 4) within a 5430 km<sup>2</sup> extent of occurrence (EOO). Within the known distribution range of *La. dorsicatenatus*, there are very limited and highly fragmented protected rainforest areas such as the Sinharaja, Kanneliya, Kottawa, Beraliya, Yagirala, Kalugala, Runakanda, Rammalekanda, Bambarabotuwa, Kiribatgala, Induruwa, Samanala, Bodinagala, Makandawa, Salgala, and Walkalla-Katagilla forest reserves. Given that the remaining unprotected rainforests are highly vulnerable in Sri Lanka (see Samarasinghe et al., 2020) and as a forest specialist highly adapted to primary rain forests, *La. dorsicatenatus* can be considered a “Vulnerable” (VU) species.

## DISCUSSION

Although Batuwita (2019) distinguished *La. dorsicatenatus* from ‘*La. megalops*’ by having 40–46 paravertebrals (vs. 47–50), interestingly we observed several live specimens of *La. dorsicatenatus* at Ratnapura, Nivithigala, and Kuruwita (around the type locality) having 47 and 48 paravertebrals, which fall within the range of ‘*La. megalops*’. When we re-examined and re-counted the scales of three specimens (WHT 6719, 6728, 6729) examined by Batuwita (2019) and which he assigned to ‘*La. megalops*’, we noticed that these three specimens had 45 paravertebrals which is within the range of *La. dorsicatenatus*.

Batuwita (2019) stated that *La. dorsicatenatus* had supraoculars not subequal (vs. subequal in ‘*La. megalops*’) and 2<sup>nd</sup> supraocular wide (vs. narrow). Based on Kanishka et al. (2020), the “width of the second supraocular in transverse axis” compared to other supraoculars



is a unique character distinguishing *Lankascincus* species and, very distinctly, supraoculars are subequal in *La. dorsicatenatus* (contra Batuwita, 2019). The second supraocular is clearly wider in transverse axis in *La. gansi*, *La. sameerai*, *La. sripadensis*, and *La. taylori* (see Kanishka et al., 2020). In addition, Batuwita stated that the 4<sup>th</sup> supraocular of '*La. megalops*' is partially in contact with the frontoparietal (vs. almost entirely), but based on our observations the portion (partially vs. almost entirely) of contact varies within the same population, and thus such characters are not suitable for distinguishing species.

Based on the examined museum specimens of *La. dorsicatenatus*, we noticed that adpressed limbs are not overlapping, and so far, this is also true for its sympatric congeners, *La. gansi* and *La. deignani*, except for *La. fallax*. Batuwita (2019) stated that adpressed limbs are overlapping in '*La. megalops*', which actually seems to be a unique and specific character for *La. fallax* (Kanishka et al., in prep.)

Batuwita (2019) further stated that the catenated mid-dorsal color pattern in females and the dorsolateral lines of half scale widths are diagnostic for *La. dorsicatenatus*. In contrast, '*La. megalops*' has dorsolateral lines with a one-and-a-half to two scale width and two longitudinal lines on the dorsum in females (fide Batuwita, 2019). However, except for the scale width of dorsolateral lines, we cannot find any differences in the "catenated" pattern (= connected in a chain or series) vs. "longitudinal lines" on the dorsum. We have observed several live specimens of *La. dorsicatenatus* at Ratnapura, Nivithigala, and Kuruwita (around the type locality) having different scale width extensions of dorsolateral lines, and it varies with life stage as well as from one population to another.

Furthermore, we were unable to find any live populations of '*La. megalops*' which has the combination of characters Batuwita (2019) stated. Instead, we found *La. fallax*, *La. gansi*, and *La. dorsicatenatus* distributed parapatrically around the type locality of '*La. megalops*'. In actual fact, except for the coloration, the remaining combination of characters given for '*La. megalops*' is also applicable to its sympatric congener, *La. gansi*. On the other hand, the only available four voucher specimens that he assigned to '*La. megalops*' were identified as individuals of *La. dorsicatenatus* by us.

Therefore, it is obvious that Batuwita (2019) erroneously described a specimen which shares characters common to *La. dorsicatenatus*, *La. gansi*, and *La. fallax* as the neotype of '*La. megalops*' and clearly failed to distinguish it from *La. dorsicatenatus*, *La. gansi*, and *La. fallax*. As the designated neotype is not available for examination, we could not compare it with the description.

However, Amarasinghe et al. (2022) invalidated the neotype designation of '*La. megalops*' by Batuwita (2019). Along with his neotype, Batuwita (2019) listed 13 specimens that he recognized as '*La. megalops*', however, only four of them are traceable, and the remaining nine specimens were never found at NMSL (Amarasinghe et al., 2022). See Table 2 for morphometric and meristic characters between *La. dorsicatenatus* and '*La. megalops*' as defined by Batuwita (2019).

In addition to the dubious identification of '*La. megalops*', Batuwita (2019) erroneously mentioned that another paratype of *La. dorsicatenatus* is located at the Natural History Museum, London "BMNH 1895.7.23.28B." However, that specimen, collected from PundaluOya by E. E. Green in 1895, is a paratype of *La. deraniyagalae* Greer, 1991, which was later reidentified as *La. fallax* (see Kanishka et al., 2020), and is not one of the paratypes of *La. dorsicatenatus* used by Deraniyagala (1953) from Angamana or Rammalkada (Table 1). *Lankascincus deraniyagalae* is currently recognized as a synonym of *La. fallax* Peters, 1860 (fide Batuwita, 2019), see Kanishka et al. (in prep.) for further discussion on *La. fallax*.

Our work clearly shows that availability of type specimens and their precious care are crucial to the enabling of the proper identification of relevant species in a given genus and that the name applied to them has a direct impact on their conservation status.

**Acknowledgments.** We thank Mark O. Rödel and Frank Tillack at ZMB, Germany for loan of specimens under their care. Alan Resetar at FMNH, USA is acknowledged for kindly providing specimen data. Nanda Wickramasinghe (former director), Sanuja Kasthuriarachchi (director), Lankani Somarathna (asst. director), Chamalka Kothalawala, Chandrika Munasinghe, Rasika Dasanayake, Ravindra Wickramanayake, Pannilage Gunasiri, and all the staff (who have been working since 2005) at the NMSL are acknowledged for facilitating the in-house study of specimens under their care. We also thank Rohan Pethiyagoda (Australian Museum, Sydney), Aaron Bauer (Villanova University, Pennsylvania) and Phil Bowles (IUCN) for their valuable and critical comments on an earlier draft.

## REFERENCES

- Annandale A. (1906), "New and interesting lizards in Colombo museum," *Spolia Zeylanica*, **3**(1), 189 – 192.
- Batuwita S. (2019), "A review of the endemic genus *Lankascincus* (Reptilia: Scincidae: Lygosominae) from Sri Lanka," *Bull. Mus. Compar. Zool.*, **162**(3), 211 – 262.
- Batuwita S. and Pethiyagoda R. (2007), "Description of a new species of Sri Lankan litter skink (Squamata: Scincidae: *Lankascincus*)," *Ceylon J. Sci. Bio Sci.*, **36**(2), 80 – 87.



- Deraniyagala P. E. P.** (1953), *A Coloured Atlas of Some Vertebrates from Ceylon. Vol. 2. Tetrapod Reptilia*, The Ceylon Government Press, Colombo.
- Duméril A. M. C. and Bibron G.** (1839), *Erpétologie Générale ou Histoire Naturelle Complète des Reptiles*, Roret/Fain et Thunot, Paris.
- Greer A.** (1991), “*Lankascincus*, a new genus of skink lizards from Sri Lanka, with description of three new species,” *J. Herpetol.*, **25**(1), 59 – 64.
- Hardwicke T. and Gray J. E.** (1828), “A Synopsis of the species of saurian reptiles, collected in India by Major-General Hardwicke,” *Zool. J.*, **3**(10), 213 – 229.
- ICZN** (1999), *International Code of Zoological Nomenclature. 4<sup>th</sup> Edition*, International Trust for Zoological Nomenclature, London.
- Kanishka A. S., Danushka A. D., and Amarasinghe A. A. T.** (2020), “A new species of *Lankascincus* Greer, 1991 (Reptilia: Scincidae) with an overview of the *L. gansi* group,” *Taprobanica*, **9**(1), 102 – 119.
- Karunaratna D. M. S. S. and Amarasinghe A. A. T.** (2012), “Reptile diversity in Beraliya Mukalana proposed forest reserve, Galle District, Sri Lanka,” *Taprobanica*, **4**(1), 20 – 26.
- Peters W. C. H.** (1860), *Über einige interessante Amphibien, welche von dem durch seine zoologischen Schriften rühmlichst bekannten österreichischen Naturforscher Professor Schmarida während seiner auf mehrere Welttheile ausgehenden, besonders auf wirbellose Thiere gerichtet*, Monatsberichte der Königlichen Akademie der Wissenschaften, Berlin.
- Samarasinghe D. J. S., Wikramanayake E. D., Jayakody S., Fernando S., Gunawardana J., and Brackowski A.** (2020), “A biodiversity hotspot in turmoil: Doing away with circular 5/2001 could have catastrophic consequences for Sri Lanka’s forests,” *Conserv. Sci. Pract.*, **2020**, e466.
- Somaweera R. and Somaweera N.** (2009), *Lizards of Sri Lanka. A Color Guide with Field Keys*, Chimaira, Frankfurt.
- Taylor E. H.** (1950), “Ceylon lizards of the family Scincidae,” *Univ. Kansas Sci. Bull.*, **33**(2), 481 – 518.
- Uetz P., Cherikh S., Shea G., Ineich I., Campbell P. D., Doronin I. V., Rosado J., Wynn A., Tighe K. A., McDiarmid R., Lee J. L., Köhler G., Ellis R., Doughty P., Raxworthy C. J., Scheinberg L., Resetar A., Sabaj M., Schneider G., Franzen M., Glaw F., Böhme W., Schweiger S., Gemel R., Couper P., Amey A., Dondorp E., Ofer G., Meiri S., and Wallach V.** (2019), “A global catalog of primary reptile type specimens,” *Zootaxa*, **4695**(5), 438 – 450.
- Wickramasinghe L. J. M., Vidanapathirana D. R., and Wickramasinghe N.** (2020), “A new species of *Lankascincus* Greer, 1991 (Reptilia: Scincidae) from the Rakwana hills of Sri Lanka,” *Taprobanica*, **9**(1), 23 – 30.

## APPENDIX I

Comparative Material Examined  
(all from Sri Lanka)

*Lankascincus gansi*: (NMSL 0397-SB), Udugama; (WHT 6670), Kanneliya; (WHT 6664), Dediya; (WHT 0151), Haycock-Hiniduma; (WHT 6661, 6676), Kombala-Kottawa Forest Reserve (Hiyare); (WHT 6672), Kottawa; (WHT 6776), Navinna; (WHT 6576, NMSL 0154), Rumassala; (WHT 6752), Yagirala; (WHT 6780), Kandy, Gannoruwa; (NMSL 0186b, WHT 6613), Kithulgala.

*Lankascincus taylori*: (BMNH 1872.3. 23.4A holotype, BMNH 1872.3.23.4b-c paratypes, WHT 6707), Pundaluoya.

*Lankascincus sripadensis*: (NMSL 2007.05.01 holotype, NMSL 2007.05.02 paratype), Sripada Sanctuary (Adam’s peak); (WHT 2238, 6566, 6636, NMSL uncat. 125, 126), Agra Arboretum.

*Lankascincus deignani*: (WHT 6524 holotype of *La. greeri*, 6525 paratype of *La. greeri*, NMSL uncat.), Kombala-Kottawa Forest Reserve (Hiyare).

*Lankascincus fallax*: (ZMB 3762 syntype, FMNH 120229 holotype of *Sphenomorphus rufogulus*), Trincomalee; (ZMB 64361 syntype), Ratnapura; (BMNH 1895.723.28c holotype of *La. deraniyagalae*, 1895.723.28b paratype of *La. deraniyagalae*), Pundaluoya; (WHT 1579), Passara, Kandahena Estate; (WHT 2055, NMSL uncat. 9, 11 – 13), Puwakpitiya; (NMSL uncat. 30 – 31), Mahamewna Uyana; (WHT 6735), Polonnaruwa; (NMSL uncat. 1), Mathale; (NMSL uncat. 34), Yala block I; (NMSL uncat. 66), Galle, Kitulampitiya; (NMSL uncat. 197), Balangoda, Mahawalattenna; (ZMH R08082 – 87, 08100 – 01, 08116 – 17), Yakkala, Yongamulla; (ZMH R08115), Chilaw Mundal Lake; (ZMH R08118), Malsiripura, Andapolakanda; (ZMH R08118), Monaragala; (ZMH R08119), Badulla; (ZMH R12151), Peradeniya; (ZMH R12151), Colombo.

*La. dorsicatenatus* (15 ex.): Sri Lanka: (WHT 6619 neotype here designated, Kuruwita Batadombalena; (NMSL RSK 307 historical paratype), Angammana, Nivithigala; (WHT 6774, 6779), Nawinna; (WHT 6737, 6745), Koskulana, Panapola; (WHT 6736), Owilkanda, Mathale; (WHT 6719, 6728, 6729, NMSL uncat. 120), Nainakanda, Wathura; (NMSL SB, 0391), Hanthana; (NMSL uncat.), Batadombalena, Kithulgala.

*Lankascincus taprobanensis*: (BMNH 1946.8.26.11 syntype), Nuwara Eliya (?); (NMSL 2007.22.01 – 02, WHT 2014, 2097, 2097a-b), Horton plains.

*Lankascincus merrill*: (NMSL 2011.01.01 holotype, 2011.01.02, DWC 2011.05.01, 2011.05.02), Sinharaja, Enasalwatte Estate; (WHT 6747), Mahawalattenna.

*Lankascincus sameerai*: (WHT 6720 holotype, 1608 paratype), Morningside; (WHT 6741, 6749a-b, 6593), Deniyaya, Silverkanda.