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A NEW SPECIES OF *Lankascincus* GREER, 1991 (REPTILIA: SCINCIDAE) WITH AN OVERVIEW OF THE *L. gansi* GROUP

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Abstract

Lankascincus gansi has been considered as a widespread single species, distributed in the wet bioclimatic zone of Sri Lanka (alt. below 1, 100 m a.s.l.). After a thorough comparison of morphology and morphometry, we recognised two distinct populations from (i) high-elevations (1,000 m a.s.l.) of the Rakwana Hills and (ii) the south-western lowland wet zone [mid-elevations (200–500 m a.s.l.) of the western slopes of the central highlands and the southwestern lowland (0–300 m a.s.l.)]. These are sufficiently different from one another that we restrict the name *L. gansi* to the lowland rainforest population, and assign a new name to the Rakwana Hills population. We provide a comprehensive re-description for *L. gansi* based on three topotypes collected from Udugama, Sri Lanka. Considering the lack of morphological distinctiveness and biogeographical isolation we here synonymise *L. greeri* with *L. deignani*. A key to the species of the genus *Lankascincus* is provided.

Keywords: Central highlands, mid-elevation, rainforest, South Asia, systematics, taxonomy

Introduction

The Sri Lankan endemic genus *Lankascincus* Greer, 1991 was erected to encompass most Sri Lankan species of small skinks of the genus *Sphenomorphus* Fitzinger, 1843. Currently 10 species are known (Batuwita 2019, Wickramasinghe *et al.* 2020) from the island.

Lankascincus gansi was first described by Greer (1991) based on specimens collected from the lower Rakwana Hills at an elevation range of

0–300 m a.s.l. This species has long been considered to be a widely distributed species in the wet zone (alt. 0–1,100 m a.s.l.), and was recently identified as a species complex, the *L. gansi* group. The members of this group can be easily distinguished by other *Lankascincus* by being smaller bodied (SVL 30.0–37.0 mm), and further differ by having a combination of characters such as prefrontals in contact, two primary temporals, paired frontoparietals, last

supralabial longitudinally split, and second supraocular wider in transverse axis (*vide* Batuwita 2019).

Batuwita (2019) considered *Lankascincus gansi* as a widespread single species, distributed throughout the wet zone. After a thorough comparison of morphology and morphometry, we are confident enough to recognise two distinct populations, one in high-elevations (1,000 m a.s.l.) of the Rakwana Hills and one in the low elevations of the wet zone including mid elevations of the Central highlands (200–500 m a.s.l.), and the lowland wet zone (0–300 m a.s.l.). We restrict the name *L. gansi* – which was described from Udugama (alt. 165 m a.s.l.) – to the south-western lowland population, and recognize the remaining population as a distinct species, to which we assign a new name. Among the lowland populations of true *L. gansi*, the sub population occurring in the mid-elevations of the Central highlands (200–500 m a.s.l.) shows slightly discrete morphological characters and probably represents another distinct species. We treat this here as *Lankascincus* cf. *gansi* until this issue is resolved by integrated taxonomic approaches.

Material and methods

Data collection. Specimens were examined in the collections of the Natural History Museum, London, UK (BMNH); National Museum of Sri Lanka, Colombo, Sri Lanka (NMSL); and Wildlife Heritage Trust, Sri Lanka (WHT), currently deposited at NMSL. Museum acronyms follow Uetz *et al.* (2019). Morphometric and meristic data for species comparisons were obtained from examined specimens (see Appendix I). Natural history data were taken from our own field observations; notes made during the last ten years, as well as published literature.

Morphometric and meristic data.

Observations were made using a Leica M50 ($\times 10$ –40) microscope, on the left side of the specimens. The following measurements were taken to the nearest 0.1 mm with a Mitutoyo digital calliper (each measurement was taken three times and the 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 (HD, dorso-ventral distance between occiput and

throat), snout length (ES, from anterior border of orbit to tip of snout), orbit diameter (ED, the greatest horizontal diameter of the orbit), tympanum–eye length (TYE, from posterior border of orbit to anterior border of tympanum), interorbital width (IO, shortest distance between dorso-medial margins of orbits), brachium length (UAL, on the dorsal surface from the axilla to the inflection of the flexed elbow), antebrachium length (LAL, on the dorsal surface from the posterior surface of the elbow while flexed 90 degree to the base of the heel), palm length [from wrist (carpus) to distal tip of longest finger], thigh length (FEL, 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 (FOL, from heel to tip of longest toe), body width (BW, greatest width at midbody), body depth (BD, greatest depth at midbody), axilla–groin length (AG, distance between axilla and groin), tail base width (TBW, greatest width at tail base), tail length (TL, from tip of tail to posterior margin of vent), and total length (TOL=SVL+TL, from tip of snout to tip of tail).

Supralabial (SUP) and infralabial (INF) scales were counted from the gape to the rostral and mental scales, respectively. Ventrals included all scales from the scale posterior to the postmental to the last scale bordering the vent, counted along the ventral midline; and subcaudals from the first scale bordering the vent up to the tail tip, counted along the subcaudal midline. Paravertebral scales were counted from the postparietal /nuchal to the level of the posterior margin of the thigh 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 (AG/2, at half-length of axilla–groin length). Sex was determined by the throat colouration, and the presence or absence of hemipenes by illuminating the base of the tail using hand torches.

Morphometric analyses. We conducted a principal component analysis (PCA) to examine patterns of morphometric variation of the *Lankascincus gansi* group. A series of components, exceeding 80% of eigenvalues as a whole, were taken into account when inspecting

the ordination. The principal axis method was used to extract the components followed by an orthogonal rotation. Only adult male specimens were included in this analysis, using the following five measurements normalized to the ratios: TL/SVL, HL/TOL, FOL/SVL, FOL/TBL, and BD/AG. Prior to the ordination, those measurements were standardized by scaling them to a standard deviation of 1.0, and mean of 0.0. In the PCA, the majority of variation was captured by the first component (Table 1). All analyses were performed in the statistical software environment R, v2.15.0 (R Development Core Team, 2012).

Table 1. Factor loadings for the first four principal components (PC) of morphometric characters in *L. gansi*, *L. cf. gansi*, and the new species. See text for definitions of character abbreviations.

Character	PC1	PC2	PC3	PC4
TL/SVL	0.9773	0.1968	0.0708	0.0026
HL/TOL	-0.0420	-0.0065	0.1476	-0.0612
FOL/SVL	-0.0449	0.1340	0.1979	0.9695
FOL/TBL	-0.1822	0.9630	-0.1656	-0.1083
BD/AG	-0.0885	0.1260	0.9522	-0.2110
Eigenvalue	0.0291	0.0047	0.0006	0.0000
Proportion of variance	84.461	13.524	1.8268	0.1379

Results

Morphometric analyses. We retained the first three components for the inspection of PCA results (Fig. 1), since they include the first two principal components covering more than 97% of the variance. The eigenvalues were allocated 84.5%, 13.5%, and 1.8% on component 1, 2, and 3, respectively (Table 1).

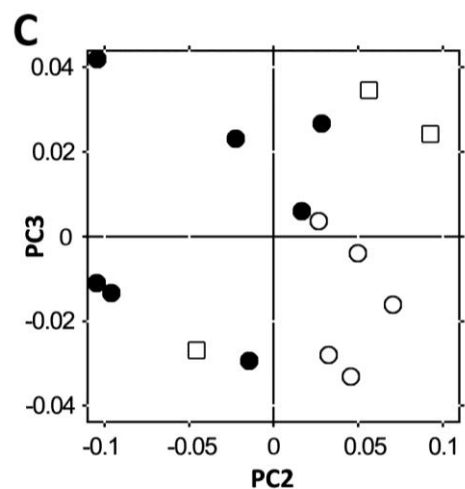
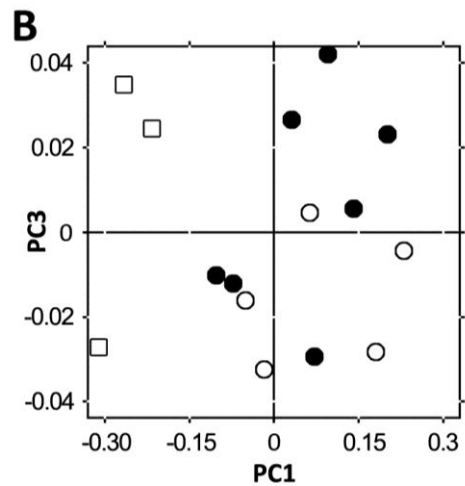
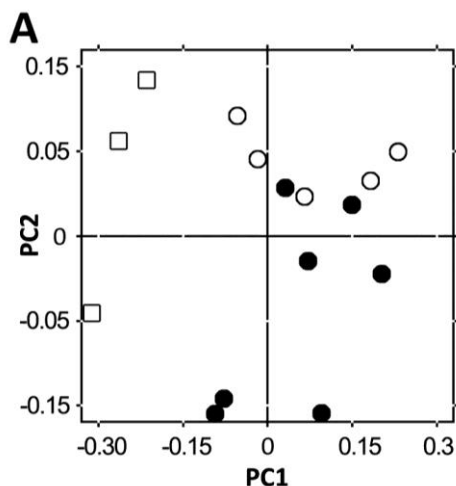


Figure 1. Morphometric analysis of *L. gansi* (filled circles), the new species from Rakwana Hills (open circles) and *L. cf. gansi* from lower Central highlands (open squares): (A) PC1 vs. PC2; (B) PC1 vs. PC3; (C) PC2 vs. PC3.

The first axis was highly correlated with TL/SVL (loading value: 0.98) among the five measurements. The second axis was characterized mostly by FOL/TBL (0.96). The third axis was dominated by BD/AG (0.95) exclusively. All specimens of the new species are distinctively distributed along the first, second and third axes from ten *Lankascincus gansi* specimens (seven from the lowland wet zone and three from the lower central highlands) and five specimens from the new species from Rakwana Hills. The fourth axis did not reveal any particular pattern among groups. According to PCA spatial distribution, the *Lankascincus cf. gansi* from lower Central highlands is characterized by relatively shorter tail, longer foot, robust and shortened body compared to *L. gansi* and the new species from Rakwana Hills. Moreover, the new species tends to have a

longer tail and slim elongate bodies relative to *L. cf. gansi* from the lower Central highlands, and longer foot relative to *L. gansi*.

Taxonomy

Based on the morphology we have identified distinct species-groups within the genus *Lankascincus*: ***L. gansi* group**: *L. gansi* sensu lato; ***L. taylori* group**: *L. taylori* Greer, 1991 and *L. sripadensis* Wickramasinghe, Rodrigo, Dayawansa *et al.*, 2007; ***L. dorsicatenatus* group**: *L. dorsicatenatus* (Deraniyagala, 1953), *L. megalops* (Annandale, 1906); ***L. deignani* group**: *L. deignani* (Taylor, 1950) and *L. greeri* Batuwita & Pethiyagoda, 2007; and *L. fallax* (Peters, 1860), *L. taprobanensis* (Kelaart, 1854), and *L. merrill* Wickramasinghe, Vidanapathirana & Wickramasinghe, 2020 as individual species.

Among these species-groups and individual species, the *L. gansi* group is clearly distinguished by having prefrontals in contact (*vs* separated in *L. taprobanensis*); two primary temporals (*vs* single in *L. taylori* group, *L. deignani* group, and *L. taprobanensis*); paired frontoparietals (*vs* fused in *L. fallax*); last supralabial longitudinally split (*vs* single in *L. taylori* group, *L. deignani* group, *L. fallax* and *L. taprobanensis*); second supraocular wider in transverse axis (*vs* subequal in *L. dorsicatenatus* group, *L. deignani* group, and *L. fallax* and *L. taprobanensis*). The recently described *L. merrill* shares characters of both the *gansi* group and *L. fallax* group. Based on the above characters, the new species we describe herein is clearly placed within the *L. gansi* group, thus we compared it thoroughly with its congener, *L. gansi*. It is also compared with *L. merrill*, as it shares characters of *L. gansi* group.

Lankascincus gansi Greer, 1991

(Figs. 1–3, 8, Tables 1–6)

Lankascincus gansi Greer, 1991 [*Partim*]

Lankascincus gansi — Batuwita 2019 [*Partim*]

Holotype. Adult male, CM 67932, SVL 34.0, collected from Udugama (06°13' N, 80°20' E, alt. 165 m a.s.l.), near Deniyaya, Galle District, Southern Province, Ceylon (=Sri Lanka), by L. Jayawickrama, on 24 March 1977 [not examined].

Other specimens (n=11). Adult males, NMSL 0397-SB, SVL 30.0 mm, collected from Udugama (6°13' N, 80°20' E, alt. 100 m a.s.l.), Galle, Southern Province, by S. Batuwita; WHT

6664, SVL 34.3 mm, collected from Dediyaigala Forest Reserve near Udugama (6°14' N, 80°20' E), alt. 100 m a.s.l.), Southern Province, by K. Wewelwala & M.M Bopage; Adult female, WHT 6670, SVL 32.9 mm, collected from Kanneliya Forest Reserve near Udugama (6°14' N, 80°20' E, alt 100 m a.s.l.), Southern Province By B.A.S. Greshana & A.I. Alagiyawadu, on 03 July 1999; see other non-topotypic specimens listed in Appendix I.

Diagnosis. *Lankascincus gansi* is distinguished from its congeners by possessing the following combination of characters: maximum SVL 30.0 mm and 34.3 mm; prefrontals in contact, two primary temporals, upper primary temporal juxtaposed with secondary temporals, paired frontoparietals, second supraocular wider in transverse axis, frontal shorter than the length of frontoparietals and interparietal combined, throat scales cycloid and imbricate, seven supralabials with last one split, five infralabials, 24 midbody scale rows, 46–48 paravertebrals, 46–48 ventrals, 8 and 12–15 lamellae on fourth finger and toe respectively, pinkish yellow venter, dark grayish brown throat with white flecks on labials, lower temporal region, throat, and neck spread until shoulders, brown (darker than venter) neck; the differences are summarized in Tables 2–5.

Description of topotype. Characters of one of the topotypes is followed, when appropriate, by those of the other two topotypes in parenthesis. Male, NMSL 0397-SB (male WHT 6664, female WHT 6670), SVL 30.0 mm (34.3 mm, 33.7mm). Head moderately large, HL 21.6% of SVL (21.3, 21.3), narrow, HW 66.1% of HL (54.8, 61.4), HW 14.3% of SVL (11.7, 13.1), indistinct from neck; snout short, ES 35.4% of HL, shorter than orbit diameter, ES 88.5.0% of ED, slightly convex in lateral profile.

Rostral shield large, posterior margin convex; nasal non-fused, nostril large, no supranasal or postnasal scale; frontonasal larger than prefrontals, in contact with anterior loreal laterally; prefrontals broadly (narrowly) in contact each other, in contact with anterior and posterior loreals laterally, 1st supraciliary, 1st supraocular and frontal posteriorly; frontal longer than frontonasal and prefrontal combined, shorter than frontoparietal and interparietal length combined; supraoculars four, 2nd widest in transverse axis, 1st longest in longitudinal axis, first two supraoculars in contact with

frontal, 3rd in contact with frontoparietal, 4th in contact with frontoparietal, parietal, upper pretemporal and last supraciliaries; frontoparietals paired, larger than interparietal, in contact with 2nd–4th supraoculars; parietals large, touching each other behind interparietal, in contact with 4th supraocular and upper pretemporal anteriorly, upper secondary temporal and body scales laterally; loreals two, anterior loreal touching prefrontal, frontonasal, nasal, 2nd supralabial, and posterior loreal; posterior loreal larger than anterior loreal, touching prefrontal, anterior loreal, 2nd and 3rd supralabials, two preoculars, and 1st supraciliary; preoculars two, lower preocular larger, touching upper preocular, posterior loreal, 3rd supralabial and palpebral scales; eye large, ED 40.0% of HL, orbit diameter same as tympanum-eye length, ED 100.0% of TYE, pupil rounded; interorbital distance broad, IO 6.9% of HW; supraciliaries ten (nine, ten), placed between supraocular and upper palpebrals; upper palpebrals 14, placed between eye and supraciliary row; lower palpebrals 15, placed between eye and subocular row; suboculars nine, smaller than supralabials, touching 3rd–6th supralabials ventrally, lower postoculars, primary temporals, and lower pretemporal scale posteriorly; last subocular touching lower and upper primary temporal, lower pretemporal, lower anterior and posterior postoculars; anterior postoculars two, upper one larger than lower; posterior postoculars two, subequal to anterior postoculars in size, touching pretemporals; pretemporals two, lower pretemporal larger than upper, touching parietals, upper primary temporal and upper secondary temporals; primary temporals two, upper one larger and juxtaposed with secondary temporals; lower primary temporal touching 7th–9th suboculars, 6th and 7th 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, upper one larger, touching lower secondary temporal and upper posterior supralabial.

Supralabials 7, the last supralabial split, 5th at mid-orbit point; post-supralabials two; mental wider than postmental in transverse axis, shorter in longitudinal axis, touching 1st infralabial only; infralabials five, single post-infralabial; chinshields three pairs, first pair meeting in midline, first chinshield touching 1st and 2nd

infralabials, second pair touching 2nd and 3rd infralabials; gular scales cycloid, imbricate.

Body moderately elongate, dorsal scales smooth, cycloid; paravertebrals 46 (46, 48); 24 transverse scale rows at mid-body; ventrals 46 (48, 46), smooth, imbricate; median precloacals enlarged; Forelimbs short, hind limbs relatively long, LAL 47.0% of TBL (58.3, 50.3); thigh short and 76.5% of shank length; fourth finger with nine smooth lamellae; fourth toe with 14 smooth lamellae; lamellae formulae for fingers and toes 4>3>5>2>1 and 4>3>5>2>1, scales of palm and sole elevated.

Tail original, complete, longer than body (TL 121.0% of SVL), round in cross section.

Variation. See Tables 1 and 2.

Colouration. In preservative, dorsal surface of the head, body, limbs, and tail uniform chestnut brown, anterior dorsal head darker; lower parts of the lateral head, temporal region, and throat grayish brown; neck dark brown; lateral body yellowish brown; white flecks present on labials, lower temporal region, throat, and neck; venter cream.

In life (based on live breeding males), dorsum iridescent bronze brown, laterally iridescent reddish brown; hind limbs bronze brown with whitish markings; dorsal head dark brown, anteriorly blackish; lower parts of the lateral head, temporal region, and throat dark grayish brown; neck brown, lighter than throat and darker than venter; white flecks present on labials, lower temporal region, throat, and neck spread until shoulders; venter pinkish yellow, ventral side of the limbs gray.

Comparison. See Tables 4 and 5.

Natural history. A diurnal skink active mostly at 25–32 °C. This is a lowland rainforest dependent species associated with thick leaf litter on the forest floor. Most of the individuals were observed in habitats where the leaf-litter thickness is 15–30 mm with ground temperatures of 25–30 °C. Animals were also found under rocks and fallen logs. This species prefers shady habitats with high canopy cover of 85–95%. This species is sympatric with *Lankascincus greeri* (fide Batuwita 2019), *L. dorsicatenatus*, and *L. cf. taylori* in most of the localities.

Distribution. This species is restricted to the lowland (alt. 0–300 m a.s.l.) tropical rainforests in the wet zone of southwestern Sri Lanka. See the map (Fig. 8) for confirmed locality data based on museum specimens and personal observations.

***Lankascincus sameerai* sp. nov.**

(Figs. 1, 4, 5, 8, Tables 1–6)

Lankascincus gansi Greer, 1991 [*Partim*]

Lankascincus gansi — Batuwita 2019 [*Partim*]

Holotype. Adult male, WHT 6720, SVL 36.0 mm, collected from Morningside (6°24' N, 80°36' E, alt. 1000 m a.s.l.), Matara District, Southern Province, Sri Lanka, by M.M. Bahir & S. Nanayakkara, on 14 January 1999.

Paratypes (n=5). Adult males, WHT 1608, SVL 36.8 mm, collected from Morningside (6°24' N, 80°36' E, alt. 1000 m a.s.l.), Matara District, Southern Province, Sri Lanka, by D.E. Gabadage & M.M. Bahir, on 21 February 1996; WHT 6741, SVL 35.5 mm; WHT 6749a, SVL 35.0 mm; WHT 6749b, SVL 35.0 mm; adult female, WHT 6593, SVL 35.7 mm; collected from Silverkanda, Deniyaya (6°24' N, 80°37' E, alt. 760 m a.s.l.), Matara District, Southern Province, Sri Lanka.

Diagnosis. *Lankascincus sameerai* sp. nov. is distinguished from its congeners by possessing the following combination of characters: maximum SVL 35.0–36.8 mm; prefrontals narrowly in contact, two primary temporals, upper primary temporal juxtaposed with secondary temporals, paired frontoparietals, second supraocular wider in transverse axis, frontal length more or less equal with the length of frontoparietals and interparietal combined, throat scales cycloid and imbricate, seven supralabials with last one split, four infralabials, 26 midbody scale rows, 48 paravertebrals, 46–48 ventrals, 7–8 and 12–13 lamellae on fourth finger and toe respectively, brownish pink venter, dark gray throat with yellow flecks on labials, lower temporal region until shoulders (no flecks on throat and neck), dark brown (lighter than throat) neck; the differences are summarized in Tables 2–5.

Description of holotype. Male, SVL 36.0 mm. Head moderately large (HL 20.0% of SVL), narrow (HW 58.3% of HL, HW 11.6% of SVL), indistinct from neck; snout short (ES 27.8% of HL, ES 47.6% of HW), shorter than orbit diameter (ES 83.3% of ED), slightly convex in lateral profile.

Rostral shield large, posterior margin convex; nasal non-fused, nostril large, no supranasal or postnasal scale; frontonasal longer than prefrontals, in contact with anterior loreal laterally; prefrontals narrowly in contact each

other, in contact with anterior and posterior loreals laterally, 1st supraciliary, 1st supraocular and frontal posteriorly; frontal longer than frontonasal and prefrontal combined, equal in length with frontoparietal and interparietal combined; supraoculars four, 2nd widest in transverse axis, 1st longest in longitudinal axis, first two supraoculars in contact with frontal, 3rd in contact with frontoparietal, 4th in contact with frontoparietal, parietal, upper pretemporal and last supraciliaries; frontoparietals paired, similar in size with interparietal, in contact with 2nd–4th supraoculars; parietals large, touching each other behind interparietal, in contact with 4th supraocular and upper pretemporal anteriorly, upper secondary temporal and body scales laterally; loreals two, anterior loreal touching prefrontal, frontonasal, nasal, 2nd supralabial, and posterior loreal; posterior loreal larger than anterior loreal, touching prefrontal, anterior loreal, 2nd supralabial, two preoculars, and 1st supraciliary; preoculars two, lower preocular larger, touching upper preocular, posterior loreal, 2nd and 3rd supralabials, and palpebral scales; eye large (ED 33.3% of HL), orbit diameter greater than the tympanum-eye length (ED 109.1% of TYE), pupil rounded; interorbital distance broad (IO 7.1% of HW); supraciliaries nine, placed between supraocular and upper palpebrals; upper palpebrals 15, placed between eye and supraciliary row; lower palpebrals 16, placed between eye and subocular row; suboculars nine, smaller than supralabials, touching 3rd–6th 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, lower one larger and juxtaposed with secondary temporals; lower primary temporal touching 7th–9th suboculars, 6th and 7th 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, middle one larger, touching lower secondary temporal and upper posterior supralabial.

Supralabials 7, the last supralabial split, 5th at mid-orbit point; post-supralabials two; mental wider than postmental in transverse axis, shorter in longitudinal axis, touching 1st infralabial only; infralabials four, single post-infralabial; chinshields three pairs, first pair meeting in midline, first chinshield touching 1st and 2nd infralabials, second pair touching 2nd and 3rd infralabials; gular scales cycloid, imbricate.

Body moderately elongate, dorsal scales smooth, cycloid; paravertebrals 48; 26 transverse scale rows at mid-body; ventrals 48, smooth, imbricate; median preloacals enlarged; Forelimbs short, hind limbs relatively long, LAL 54.4% of TBL; thigh short and 73.7% of shank length; fourth finger with eight smooth lamellae; fourth toe with 13 smooth lamellae; lamellae formulae for fingers and toes 4>3>5>2>1 and 4>3>5>2>1, scales of palm and sole elevated.

Tail original, complete, longer than body (TL 119.4% of SVL), round in cross section.

Variation. See Tables 1–2.

Colouration. In preservative, dorsal surface of the head, body, limbs, and tail uniform brownish yellow, dorsal head lighter; lower parts of the lateral head and temporal region brownish gray, and throat uniform grayish brown; neck uniform pale brown; lateral body pale brownish yellow; white flecks present on labials, lower temporal region (no white flecks on throat and neck); venter creamy white.

In life (based on live breeding males), dorsum dark blackish brown, laterally dark chestnut brown; limbs uniform blackish brown with pale brown markings on hind limb; dorsal head dark blackish brown; lower parts of the lateral head and temporal region dark blackish brown; throat dark gray; neck dark brown, lighter than throat and darker than venter; yellow flecks present on supralabials and lower temporal region spread until shoulders; flecks on infralabials white (no white flecks on throat and neck); venter brownish pink, ventral side of the forelimbs orange, hind limbs gray.

Etymology: The specific epithet is an eponym Latinized in the genitive singular, honouring Sri Lankan herpetologist Mr. Sameera Karunarathna (as D.M.S. Suranjan Karunarathna in publications) to express our sincere appreciation for his remarkable contributions to herpetology, especially the agamid and gekkonid fauna of Sri Lanka. The first two authors of this publication further express their gratitude for his generous teaching and guidance in taxonomic studies. Sameera's

remarkable contributions to biodiversity conservation in Sri Lanka, especially the enormous effort in popularizing reptile conservation among the general public, is highly commendable. The senior author of this publication celebrates his research partnership and friendship with Sameera since 2003. Suggested vernacular names are සමීරගේ ලක්-හිකනලා (Sameeragé lak-hikanala) and Sameera's Lanka-skink, in Sinhala and English, respectively.

Comparison. *Lankascincus sameerai* sp. nov. is most similar to *L. gansi* and *L. merrill*. However, the new species differs from them by characters listed in Table 3.

In addition, among the other similar species, the new species is distinguished from *Lankascincus dorsicatenatus* and *L. megalops* by having four infralabials (vs five), 7 or 8 lamellae on fourth finger (vs 9–12), 12 or 13 lamellae on fourth toe (vs 16–18), 2nd supraocular widest in transverse (vs longitudinal), a dark dorso-lateral longitudinal stripe absent (vs present); from *L. deignani* and *L. greeri* by having four infralabials (vs five), 7 or 8 lamellae on fourth finger (vs 11–14), 12 or 13 lamellae on fourth toe (vs 19 or 20), two primary temporals (vs single), 2nd supraocular widest in transverse (vs longitudinal), last supralabials longitudinally split (vs entire), primary temporal juxtaposed with lower secondary temporal (vs imbricate); from *L. fallax* by having four infralabials (vs five), ventrals 46–48 (vs 49–58), 2nd supraocular widest in transverse (vs longitudinal), last supralabials longitudinally split (vs entire); from *L. taprobanensis* by having seven infralabials (vs six), four infralabials (vs six), paravertebrals 48 (vs 53–63), ventrals 46–48 (vs 59–64), two primary temporals (vs single), prefrontals in contact (vs separated), 2nd supraocular widest in transverse (vs longitudinal), last supralabials longitudinally split (vs entire), a dark dorso-lateral longitudinal stripe absent (vs present); from *L. sripadensis* by having four infralabials (vs five), paravertebrals 48 (vs 56–58), ventrals 46–48 (vs 52–58), two primary temporals (vs single), last supralabials longitudinally split (vs entire); and from *L. taylori* by having four infralabials (vs five), paravertebrals 48 (vs 54), ventrals 46–48 (vs 54–56), two primary temporals (vs single), last supralabials longitudinally split (vs entire). See Tables 4, 5.

Natural history. A diurnal skink active mostly at 22–27 °C. This is a submontane forest-

dependent species associated with leaf litter on the forest floor. Most of the individuals were observed in habitats where the leaf-litter thickness is 15–35 mm with ground temperatures of 21–25 °C. This species prefers shady habitats with high canopy cover of 90–95%. It is sympatric with *Lankascincus merrill* and *L. cf. taprobanensis* in some localities.

Distribution. This species is restricted to the higher elevations (1,000 m a.s.l.) of the submontane forests in the Rakwana Hills (Morningside) in southwestern Sri Lanka. See the map (Fig. 8) for confirmed locality data based on museum specimens and personal observations.

***Lankascincus cf. gansi* Greer, 1991**

(Figs. 1, 6–8, Tables 1, 3–6)

Lankascincus gansi — Batuwita 2019 [Partim]

Specimens examined (n=3). Adult males, WHT 6780, SVL 36.3 mm, collected from Gannoruwa (07°17' N, 80°35' E, alt. 500 m a.s.l.), Kandy District, Central Province, Sri Lanka, NMSL 0186b, SVL 32.0 mm and WHT 6613, SVL 34.0 mm; collected from Kithulgala (06°59' N, 80°24'

E, alt. 220 m a.s.l.), Kegalle District, Sabaragamuwa Province, Sri Lanka.

Among the lowland populations of true *L. gansi*, the sub population occurs in the lower-central highlands (200–500 m a.s.l.) show slightly discrete morphological characters, probably another distinct species, treated here as *Lankascincus cf. gansi* until resolved by integrated taxonomic approaches.

Lankascincus cf. gansi is distinguished from *L. gansi* and *L. sameerai* sp. nov. by having a shorter tail than SVL (*vs* longer), upper primary temporal imbricate with secondary temporals (*vs* juxtaposed), throat scales rhomboid and juxtaposed (*vs* cycloid and imbricate), and a unique colouration of golden yellow venter, bluish black throat with white flecks on labials, lower temporal region until shoulders, but no flecks on throat and neck, scarlet orange neck in breeding males, otherwise golden yellow. However we are not confident enough that these morphological characters are distinct enough to assign a new name, hence it will remain as *L. cf. gansi*, until it can be clarified whether these are sub population variations or distinctive species characters using genetic data.

Table 2. Selected Morphometric (in mm) and meristic characters of the holotype and paratypes of *Lankascincus sameerai* sp. nov. and three topotypes of *L. gansi*.

Character	<i>L. sameerai</i> sp. nov. (n=6)						<i>L. gansi</i> (n=3)		
	holotype		paratypes				topotypes		
	male WHT 6720	male WHT 1608	male WHT 6741	male WHT 6749a	male WHT 6749b	female WHT 6593	male NMSL 0397-SB	male WHT 6664	female WHT 6670
snout–vent length	36.0	36.8	35.5	35.0	35.0	35.7	30.0	34.3	32.9
head length	7.2	7.5	6.8	7.9	6.4	7.2	6.5	7.3	7.0
head width	4.2	4.6	4.8	4.5	4.3	4.3	4.3	4.0	4.3
head depth	3.2	3.5	3.2	3.2	3.1	2.8	3.1	3.3	3.3
brachium length	2.9	3.1	3.2	3.0	2.9	3.3	2.7	2.0	2.9
antebrachium length	3.1	3.1	3.4	2.7	2.4	2.5	2.4	2.8	2.5
palm length	1.7	1.7	1.7	1.9	1.8	2.9	1.6	1.5	1.5
thigh length	4.2	4.5	4.3	3.9	3.8	4.0	3.9	4.3	4.2
shank length	5.7	5.7	5.2	4.6	4.6	5.1	5.1	4.8	5.0
foot length	4.1	4.5	3.7	3.3	3.5	3.5	2.9	3.3	3.2
body width	5.3	5.1	5.0	5.0	5.3	6.3	5.1	5.1	5.3
body depth	4.9	4.9	4.0	5.1	5.0	5.6	4.5	4.0	3.9
axilla–groin length	17.9	18.2	17.2	20.0	20.0	21.0	15.6	17.0	17.3
tail base width	3.6	4.0	3.3	3.7	3.5	4.2	3.5	3.3	4.1
tail length	43.0	40.0	46.5	47.7	39.4	53.3	36.0	40.9	23.2
supralabials	7	7	7	7	7	7	7	7	7
infralabials	4	4	4	4	4	4	5	5	5
paravertebrals	48	48	48	48	48	48	46	46	48
midbody scale rows	26	26	26	26	26	26	24	24	24
ventrals	48	48	48	48	46	48	46	48	46
lamellae finger IV	8	7	8	8	8	8	9	9	9
lamellae toe IV	13	12	12	12	13	12	14	13	13

Table 3. Selected diagnostic morphometric (in mm), meristic, and morphological characters of the species of the *Lankascincus gansi* complex and *L. merrill* including data of onomatophores; “—” = not measured.

Character	<i>L. cf. gansi</i>	<i>L. sameerai</i> sp. nov.		<i>L. gansi</i>		<i>L. merrill</i>	
	males (n=3)	males (n=5)	female (n=1)	males (n=7)	females (n=4)	males (n=3)	females (n=2)
snout–vent length	32.0–36.3	35.0–36.8	35.7	30.0–34.3	30.5–32.9	32.8–34.9	33.7–34.0
relative (TL/SVL)	0.80–0.94	1.09–1.36	1.49	1.01–1.32	1.01–1.18	1.28–1.56	1.35–1.48
head length (HL)	7.1–7.3	6.4–7.9	7.2	6.4–7.3	6.3–7.0	6.4–8.3	7.2–7.4
head width (HW)	4.6–4.8	4.2–4.8	4.3	3.9–4.4	4.1–4.3	4.0–4.9	4.5–4.7
brachium length (UAL)	2.7–3.4	2.9–3.2	3.3	2.0–3.1	2.7–2.9	—	—
antebrachium length (LAL)	2.6–3.1	2.4–3.4	2.5	2.3–2.8	2.2–2.7	—	—
thigh length	4.1–4.4	3.8–4.5	4.0	3.5–4.3	3.5–4.2	—	—
shank length	5.2–5.9	4.6–5.7	5.1	4.7–5.1	4.5–5.0	—	—
foot length (FOL)	4.2–4.5	3.3–4.5	3.5	2.9–3.7	2.9–3.4	—	—
axilla–groin length	13.9–16.8	17.2–20.0	21.0	14.5–17.9	16.8–17.3	17.2–19.3	18.4–18.8
tail length	28.9–30.0	39.4–47.7	53.3	32.5–42.7	31.5–36.0	43.0–51.2	45.9–49.9
suboculars	9	9	9	9	9	10	10
infralabials	5	4	4	5	5	5	5
paravertebrals	48–50	48	48	46	46–48	47–48	48
midbody scale rows	23–24	26	26	24	24	24–26	24
ventrals	46–48	46–48	48	46–48	46–48	49–52	50–51
lamellae on finger IV	9	7–8	8	8	8	9	8–10
lamellae on toe IV	13	12–13	12	13–15	12–13	14–16	13–14
upper primary temporal imbricate (1), juxtaposed (0) with secondary temporal	1	0		0		0	
upper secondary temporal imbricate (1), juxtaposed (0) with lower secondary temporal	1	0		0		0	
frontal shorter (1), equal (0) in frontoparietal + interparietal length combined	0	0		1		1	
throat scales cycloid (0), rhomboid (1)	1	0		0		1	
throat scales juxtaposed (0), imbricate (1)	0	1		1		1	
throat colour	bluish black	dark gray / black		dark grayish brown		pale brown	
neck colour	scarlet orange	dark brown		brown		pale brown	
flecks on throat and neck absent (0), present (1)	0	0		1		1	
flecks on lateral head yellow (1), white (0) colour	0	1		0		0	
dorso-lateral longitudinal stripe absent (0), present (1)	0	0		0		1	

Table 4. Selected morphometric and meristic characters of the *Lankascincus* species; “—” = not evaluated.

Character	<i>dorsicatenatus</i> group			<i>gansi</i> group					<i>taylori</i> group		
	<i>L. dorsicatenatus</i> (n=4)	<i>L. megalops</i> (n=4)	<i>L. deignani</i> (n=3)	<i>L. fallax</i> (n=14)	<i>L. cf. gansi</i> (n=3)	<i>L. sameerai</i> sp. nov. (n=6)	<i>L. gansi</i> (n=11)	<i>L. merrill</i> (n=5)	<i>L. taprobanensis</i> (n=7)	<i>L. sripadensis</i> (n=7)	<i>L. taylori</i> (n=4)
snout–vent length	30.3–40.5	38.0–44.5	52.6–60.2	33.2–44.5	32.0–36.3	35.0–36.8	30.0–34.3	32.8–34.9	40.0–45.8	41.1–58.2	37.5–41.4
head length	7.3–8.9	8.5–10.1	12.0–13.4	6.7–8.8	7.1–7.3	6.4–7.9	6.3–7.3	6.4–8.3	7.1–9.7	7.6–11.9	7.2–8.9
head width	4.9–6.0	5.3–6.2	6.3–7.1	4.1–6.4	4.6–4.8	4.2–4.8	3.9–4.4	4.0–4.9	3.6–5.2	5.1–7.9	4.3–5.3
head depth	3.2–4.8	4.3–4.6	8.1–9.0	2.9–5.4	3.1–3.2	2.8–3.5	2.0–3.3	3.0–3.6	4.9–6.7	4.2–6.1	5.2–6.8
brachium length	2.4–3.7	3.3–4.7	5.8–5.9	2.4–3.6	2.7–3.4	2.9–3.3	2.3–3.1	—	2.8–3.2	3.2–5.2	2.9–3.7
antebrachium length	3.0–3.7	3.6–4.2	5.1–5.6	1.8–3.8	2.6–3.1	2.4–3.4	2.2–2.8	2.5–2.7	2.8–3.6	2.7–4.5	2.9–3.2
palm length	2.5–3.2	2.0–3.3	4.0–4.5	1.3–2.4	1.7–2.0	1.7–2.9	1.4–1.9	—	1.9–2.3	2.0–3.9	1.5–2.3
thigh length	4.2–5.0	4.9–6.3	7.5–7.8	3.8–6.4	4.1–4.4	3.8–4.5	3.5–4.3	—	3.8–4.9	4.5–6.9	3.4–4.4
shank length	6.0–7.3	7.5–8.3	11.5–11.9	4.7–9.7	5.2–5.9	4.6–5.7	4.5–5.1	3.7–3.8	4.4–6.3	5.6–9.2	3.0–5.4
foot length	5.3–6.6	6.4–8.0	8.5–9.8	3.8–4.9	4.2–4.5	3.3–4.5	2.9–3.7	—	3.8–8.5	4.4–8.6	3.9–5.8
body width	4.9–7.5	6.1–8.3	6.4–7.3	4.3–8.3	5.2–5.9	5.0–6.3	4.1–5.3	—	3.4–6.9	6.0–8.9	5.9–6.7
body depth	4.3–5.8	5.2–7.5	9.0–11.8	3.5–6.9	4.5–4.7	4.0–5.6	3.9–4.6	—	5.3–7.2	5.7–7.6	6.0–6.5
axilla–groin length	14.9–20.2	20.0–23.9	24.1–29.0	17.5–24.1	13.9–16.8	17.2–21	14.5–17.9	17.2–19.3	20.7–25.6	22.7–30.7	15.9–24.2
tail base width	3.2–4.5	3.7–4.5	6.2–6.6	3.5–5.3	3.5–4.0	3.3–4.2	2.5–3.7	3.3–4.1	3.1–5.4	3.0–5.6	4.1–5.6
tail length	46.0–57.4	56.0–74.0	54.5–80.0	32.5–72.5	28.9–30.0	39.4–53.3	29.8–42.7	45.9–51.2	39.5–62.2	55.6–86.0	25.7–56.7
supralabials	7	7	7	7	7	7	7	7	6	7	7
supralabial at mid orbit	5	5	5	5	5	5	5	5	4	5	5
suboculars	9	9	9	8 or 9	9	9	9	10	7	8	7
supraciliaries	10	10	10	8	9	9	9	9	8	8	8
infralabials	5	5	5	5	5	4	5	5	6	5	5
paravertebrals	46–48	47 or 48	46–48	48–53	48–50	48	46–48	47 or 48	58–63	56–58	54
midbody scale rows	26	26	28	24–28	23 or 24	26	24	24–26	26–28	26	26 or 27
ventrals	48–50	48–50	48–57	49–58	46–48	46–48	46–48	49–52	59–64	52–58	54–56
lamellae on finger IV	9–12	10 or 11	11–14	8–11	9	7 or 8	8	8–10	8–10	10–13	8 or 9
lamellae on toe IV	16–18	17 or 18	19–20	12–17	13	12 or 13	12–15	13–16	10–15	14–19	12–15

Table 5. Selected diagnostic characters of the *Lankascincus* species; “—” = not evaluated.

Character	<i>L. dorsicatenatus</i> (n=4)	<i>L. megalops</i> (n=4)	<i>L. deignani</i> (n=3)	<i>L. fallax</i> (n=14)	<i>L. cf. gansi</i> (n=3)	<i>L. sameerai</i> (n=6)	<i>L. gansi</i> (n=11)	<i>L. merrill</i> (n=5)	<i>L. taprobanensis</i> (n=7)	<i>L. sripadensis</i> (n=7)	<i>L. taylori</i> (n=4)
maximum SVL	40.5	44.5	60.2	44.5	36.3	36.8	34.3	34.9	49.5	58.2	41.4
tail (TL) shorter (0), longer (1) than SVL	1	1	1	1	0	1	1	1	1	1	1
supralabials	7	7	7	7	7	7	7	7	6	7	7
supralabial at mid orbit	5	5	5	5	5	5	5	5	4	5	5
suboculars	9	9	9	8, 9	9	9	9	10	7	8	7
infralabials	5	5	5	5	5	4	5	5	6	5	5
loreal	2	2	2	2	2	2	2	2	1, 2	2	2
paravertebrals	46–48	47, 48	46–48	48–53	48–50	48	46–48	47, 48	53–63	56–58	54
midbody scale rows	26	26	28	24–28	23, 24	26	24	24–26	26–28	26	26, 27
ventrals	48–50	48–50	48–57	49–58	46–48	46–48	46–48	49–52	59–64	52–58	54–56
lamellae on finger IV	9–12	10, 11	11–14	8–11	9	7, 8	8	8–10	8–10	10–13	8, 9
lamellae on toe IV	16–18	17, 18	19–20	12–17	13	12, 13	12–15	13–16	10–15	14–19	12–15
number of primary temporals	2	2	1	2	2	2	2	2	1	1	1
prefrontals separated (0)/ in contact narrow/broad (1)	1	1	1	1	1	1	1	1	0	1	1
frontoparietals fused (0)/ paired (1)	1	1	1	0, 1	1	1	1	1	1	1	1
frontal shorter (1)/ equal (0) in frontoparietal + interparietal length combined	0	0	0	1	0	0	1	1	0	0	1
2 nd supraocular widest in transverse (0)/ longitudinal (1)	1	1	1	1	0	0	0	1	1	0	0
last supralabial longitudinally split (1)/ not split (0)	1	1	0	0	1	1	1	1	0	0	0
primary temporal juxtaposed (0)/ imbricate (1) with lower secondary temporal	0	0	1	0	1	0	0	0	0	0	0
throat scales cycloid (0)/ rhomboid (1)	0	0	0	0	1	0	0	1	0	0	0
throat scales imbricate (1)/ juxtaposed (0)	1	1	1	1	0	1	1	1	1	1	1
white blotch beneath eye absent (0), present (1)	0	0	1	0	0	0	0	0	0	0	0
dark dorso-lateral longitudinal stripe absent (0), present (1)	1	1	0	0	0	0	0	1	1	0	0
Throat colour of breeding males: pale [brown/pink/yellow/cream] (0)/ bright [red/scarlet/golden] (1)/ dark [black/gray/blue] (2)	0, 1, 2	0, 1, 2	0	1, 2	2	2	0	0	2	0	2
neck colour of breeding males: pale (0), bright (1), dark (2)	1	1	0	1	1	0	2	0	1	0	2
flecks or blotches on throat and neck absent (0), present (1)	0	0	1	1	0	0	1	1	0	1	1

Discussion

When the genus *Lankascincus* was erected, Greer (1991) described three new species and provided re-descriptions of three new combinations for the genus. However, all of these six descriptions are very brief and lack most of the diagnostic morphological, morphometric, and meristic characters. Subsequent authors have not made any attempt to provide comprehensive re-descriptions until Batuwita (2019) compiled a review of the genus.

Although it is claimed as a review of *Lankascincus*, Batuwita (2019) did not provide any individual morphometric or meristic data for either onomatophore nor topotypes, and all the re-descriptions are based on vouchers deposited at local museums, collected from many biogeographic regions within Sri Lanka (which share many unnamed species). Further, morphometric characters are provided as ranges, thus it is not clear whether the name-bearing type specimens are included within those ranges or not, because in most of the cases, the number of specimens in the examined material and tables are not in accordance. For example, Batuwita (2019) examined 20 specimens of *L. gansi* including the holotype (CM 67932), but in table 3, provided morphometric and meristic characters for only 19 specimens as a range. In that case it seems that, although Batuwita (2019) claimed that he examined the holotype, he was unable to provide data of that specimen, and the same is likely the case for other species in this review.

Furthermore, table 2 of Batuwita (2019) presented *L. megalops* (a new combination) in comparison with *dorsicatenatus* which are truly close species. However, we were unable to identify any diagnosable characters between this new combination and *L. dorsicatenatus*, except for 47–50 paravertebrals (vs. 40–46). Based on the topotype specimens (both live and preserved) we never observed such a distinct paravertebral count range. A re-evaluation on the new combination of *L. megalops* is essential to stabilise the nomenclatural issues of the genus.

In the re-description of *Lankascincus gansi*, there is no specific specimen used for the particular species description, which as defined by Batuwita (2019) contains all two distinct morphospecies (*L. gansi* and *L. sameerai* sp. nov.) and a distinct subpopulation, *L. cf. gansi* identified here. Batuwita (2019) considered *L. gansi* (*sensu lato*) distributed in the south-

western wet zone and the Central highlands from sea level to 1,100 m a.s.l., although some isolated populations are clearly visible in his figure 4. Although Batuwita (2019) noted the peculiarity of finding *Lankascincus gansi* from high altitudes in the Rakwana Hills (Morningside), he had not hitherto compared them with the lowland rainforest population from which *L. gansi* was originally described. Our results support distinguishing that population as a distinct species based on morphological and morphometric characters, hence the assigned a new name. Our current understanding of patterns of biogeographic isolation in this area of Sri Lanka further supports recognizing this form as a distinct species. Currently we are re-assessing the morphology of the genus *Lankascincus* (work in progress), parallel to the study on population genetics and phylogeography carried out by K. Ukuwela and party (work in progress).

Based on previous studies it has been clearly understood that lowland rainforests and upper Rakwana Hills (alt. 1,000 m a.s.l.) are different biogeographic regions. However the lower central highlands (alt. 200–500 m a.s.l.) has not yet been recognised as a distinct biogeographic zone, although this has been suggested by previous studies on the genera *Pseudophilautus* (shrub frogs), *Rhinophis* (tail-shield snakes), and *Cnemaspis* (day geckos). In these groups most of the wet zone species complexes are divided into distinct species in the lowland rainforests (alt. 0–300 m a.s.l.), lower-central highlands, and upper Rakwana Hills. Among the genus *Pseudophilautus*, *P. mittermeieri* is restricted to the south-western lowland wet zone, and its congener, *P. decoris* is restricted to the upper Rakwana Hills (Manamendra-Arachchi & Pethiyagoda 2005, Meegaskumbura & Manamendra-Arachchi 2005). Similarly in the genus *Cnemaspis*, *C. silvula* is restricted to the south-western lowland wet zone, and its congeners, *C. pava* and *C. pulchra* are restricted to the lower-central highlands and upper Rakwana Hills respectively. In the genus *Rhinophis*, *R. blythii* is restricted to the mid-central highlands and its congener, *R. erangaviraji* is restricted to upper Rakwana Hills (Wickramasinghe *et al.* 2009, Pyron *et al.* 2016, de Silva & Ukuwela 2017). Similarly in this study, *Lankascincus gansi* is restricted to the lowland wet zone, and its congeners, *L. cf. gansi* and *L. sameerai* sp. nov. are restricted to the lower-central highlands and upper Rakwana

Hills respectively.

In addition to such factors as the climate, elevation, vegetation, soil type etc., the river basin network may act as a potential barrier to the dispersal for some tiny litter-dwelling species like *L. gansi*. We assume for the dispersal between the lower-central highland population, *L. cf. gansi* and the lowland rainforest population, *L. gansi*, the Kelani and Kalu Rivers act as a potential barrier (Fig. 8). Following the biogeographic regions suggested by Amarasinghe & Karunarathna (2020), we

modify the current biogeographic zonation for the genus *Lankascincus* (Table 6), based on morphological relationships. Further research on phylogenetic relationships may slightly modify the representation of current distribution patterns, and may further clarify their distributions.

Therefore, as suggested by Batuwita (2019), the relationships of these populations need to be resolved by integrated taxonomic approaches (currently work in progress by us and K. Ukuwela and party).

Table 6. Current distribution patterns of the *Lankascincus* species in each biogeographic region; modified after Amarasinghe & Karunarathna 2020; “—” not recorded yet. [*L. fallax* occur in every region below 300 m a.s.l.]

Biogeographic region (alt. range a.s.l.)	<i>Lankascincus</i> groups		
	<i>gansi</i> group	<i>taylori</i> group	Other
(1). Wet Zone			
Lowland (0–300 m)	<i>L. gansi</i>	—	<i>L. dorsicatenatus</i> <i>L. deignani</i>
Rakwana Hills (above 400 m)	—	<i>L. taylori</i>	—
Central highland rainforests (200–700 m)	<i>L. cf. gansi</i>	<i>L. taylori</i>	<i>L. megalops</i> <i>L. deignani</i>
Central highland submontane (500–900 m)	—	<i>L. taylori</i>	—
Central highlands montane (900 – 1,500 m)	—	<i>L. sripadensis</i>	<i>L. taprobanensis</i> (<i>L. munindradasii</i>)
Central highlands montane (above 1,500 m)	—	—	<i>L. taprobanensis</i>
(2). Intermediate Zone			
Lowland isolated hills (400–600 m)	—	<i>L. taylori</i>	—
Rakwana Hills (above 900 m)	<i>L. sameerai</i>	—	<i>L. merrill</i>
Knuckles submontane (300–700 m)	—	—	—
Knuckles montane (above 700 m)	—	<i>L. taylori</i>	—
(3). Dry Zone			
Lowland (0–300 m)	—	—	—

In the original description of *Lankascincus greeri*, Batuwita & Pethiyagoda (2007: 84) stated that “*L. greeri* is distinguished from *L. deignani* in having 42–45 paravertebrals (vs 51–55)...”, further in their comparative materials, they listed 14 specimens of *L. deignani* collected from different localities, although these specimens were identified erroneously (see Table 7). Also they had not examined the holotype of *L. deignani* (USNM 120326) collected from Gannoruwa, Kandy (alt. 500 m a.s.l.). It is clear, therefore, that they described *L. greeri* without comparison with *L. deignani*, the closest congener for their new species. After 12 years, Batuwita (2019), without providing any clarification, re-identified 12 specimens (out of 14 listed as *L. deignani* in Batuwita & Pethiyagoda 2007; two specimens not listed therein) as *L. sripadensis*. Furthermore, they

examined two specimens of *L. deignani* [the holotype (USNM 120326) and WHT 6757 from type locality]. We compared the data of the above two specimens in Batuwita (2019), with the data provided in the original description of *L. greeri* (see Table 8). Based on the comparison (*fide* Batuwita 2019) it is obvious that there are no morphological diagnostic characters to distinguish these two species, except for “adpressed limbs slightly imbricate” and no suborbital pale spot in *L. deignani* [vs. opposite in *L. greeri* (*fide* Batuwita 2019)]. We have observed such characters are individual variations, even within one population. The hypothesis of biogeographic isolation by river basins mentioned above is not always applicable for widespread species distributed continuously without any interruption between river basins. In this case, it may not be supported for larger

bodied skinks, with mean SVL above 50.0 mm for adults (compared to smaller bodied members in the *L. gansi* group, mean SVL below 35.0 mm). The species corresponding to *L. greeri* + *L. deignani* occurs continuously from the lowland wet zone until mid-elevations of the Central highlands (vs *L. gansi* + *L. cf. gansi* distribution is interrupted, with no records in between the Kelani and Kalu River basins). Such a continuously widespread single species, in this case *L. deignani*, can be easily distinguished by the wide range of ventrals, usually 10 scales.

However, interrupted/isolated widespread multiple species groups have a very narrow range of ventrals, usually 3–4 scales, in this case *L. gansi*.

Considering the lack of distinctiveness based on morphology as well as biogeography we here synonymise *Lankascincus greeri* Batuwita & Pethiyagoda, 2007 with *L. deignani* (Taylor, 1950). Therefore, in the comparison with the two new species describe here (Tables 4–5), we consider *L. deignani* as an individual species, not a species group or complex.

Table 7. *Lankascincus* specimens examined by Batuwita & Pethiyagoda (2007) and Batuwita (2019)

Catalogue No.	Collected location	Identification by	
		Batuwita & Pethiyagoda (2007)	Batuwita (2019)
USNM 120326	Mount Ganoruwa (=Gannoruwa, Kandy)	not examined	<i>L. deignani</i>
WHT 5416		<i>L. deignani</i>	not examined
WHT 5417		<i>L. deignani</i>	not examined
WHT 6566	Agra Arboretum, Agarapatana	<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 6568		<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 6569	Garden near Nanu Oya Railway Station	<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 6567	Dimbula-Patana	<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 2013a–f	Moray Estate, Rajamallay	<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 6739	Bogawantalawa-Balangoda Road near Udugma	<i>L. deignani</i>	<i>L. sripadensis</i>
WHT 6757	Gannoruwa Forest Reserve, Peradeniya	not examined	<i>L. deignani</i>

Table 8. Meristic characters of *Lankascincus greeri* (fide Batuwita & Pethiyagoda 2007) and *L. deignani* (fide Batuwita 2019).

Character	<i>L. greeri</i> (fide Batuwita & Pethiyagoda 2007, Batuwita 2019)	<i>L. deignani</i> (fide Batuwita 2019)
midbody scale rows	26–28	28
ventrals	55–59	55, 57
paravertebrals	42–45	43, 48
supraciliaries	10–11	9, 10
digit IV lamellae: manus	14–15	9 [?], 12
digit IV lamellae: pes	19–21	19, 20
specimens examined	holotype: WHT 6524 paratypes (n=4): NMSL uncat, WHT 6525–7	holotype: USNM 120326 topotype: WHT6757

[?] doubtful: based on our observations of live specimens at the type locality of *L. deignani* (n=10), recorded only 12–14 lamellae on fourth finger].

An identification key for the *Lankascincus* species is given below.

1. (a) Seven supralabials, ventrals 58 or less, prefrontals narrowly or broadly in contact 2
 (b) Six supralabials, ventrals 59 or more, prefrontals completely separated
 *L. taprobanensis*
2. (a) Single primary temporal 3
 (b) Two primary temporals 5
3. (a) Paravertebrals 54–58, 2nd supraocular widest in transverse axis, primary temporal juxtaposed

- with lower secondary temporal, white blotch beneath eye absent 4
 (b) Paravertebrals 46–48, 2nd supraocular widest in longitudinal axis, primary temporal imbricate with lower secondary temporal, white blotch beneath eye present *L. deignani*
4. (a) Maximum SVL 41.4 mm, paravertebrals 54, lamellae on fourth finger 8 or 9, frontal shorter than interparietal and frontoparietal combined *L. taylori*
 (b) Maximum SVL 58.2 mm, paravertebrals 56–58, lamellae on fourth finger 10–13, frontal length subequal with interparietal and frontoparietal combined *L. sripadensis*

- | | |
|--|---|
| <p>5. (a) Last supralabial longitudinally split 6
 (b) Last supralabial not split <i>L. fallax</i></p> <p>6. (a) 2nd supraocular widest in longitudinal axis, ventrals 48–52 7
 (b) 2nd supraocular widest in transverse axis, ventrals 46–48 9</p> <p>7. (a) Frontal length subequal with interparietal and frontoparietal combined, throat scales cycloid, lamellae on fourth toe 16–18 8
 (b) Frontal shorter than interparietal and frontoparietal combined, throat scales rhomboid, lamellae on fourth toe 13–16 <i>L. merrill</i></p> <p>8. (a) SVL 40.4 mm <i>L. dorsicatenatus</i>
 (b) SVL 44.5 mm <i>L. megalops</i>
 (Note: no distinct characters to be distinguished)</p> | <p>9. (a) Tail longer than SVL, primary temporal juxtaposed with lower secondary temporal, throat scales cycloid and imbricate 10
 (b) Tail shorter than SVL, primary temporal imbricate with lower secondary temporal, throat scales rhomboid and juxtaposed <i>L. cf. gansi</i></p> <p>10. (a) Five infralabials, frontal shorter than interparietal and frontoparietal combined, midbody scale rows 24, dark neck colour in breeding males, white flecks on lateral head, throat and neck <i>L. gansi</i>
 (b) Four infralabials, frontal length subequal with interparietal and frontoparietal combined, midbody scale rows 26, pale neck colour in breeding males, yellow flecks on lateral head, no flecks on throat and neck <i>L. sameerai</i> sp. nov.</p> |
|--|---|

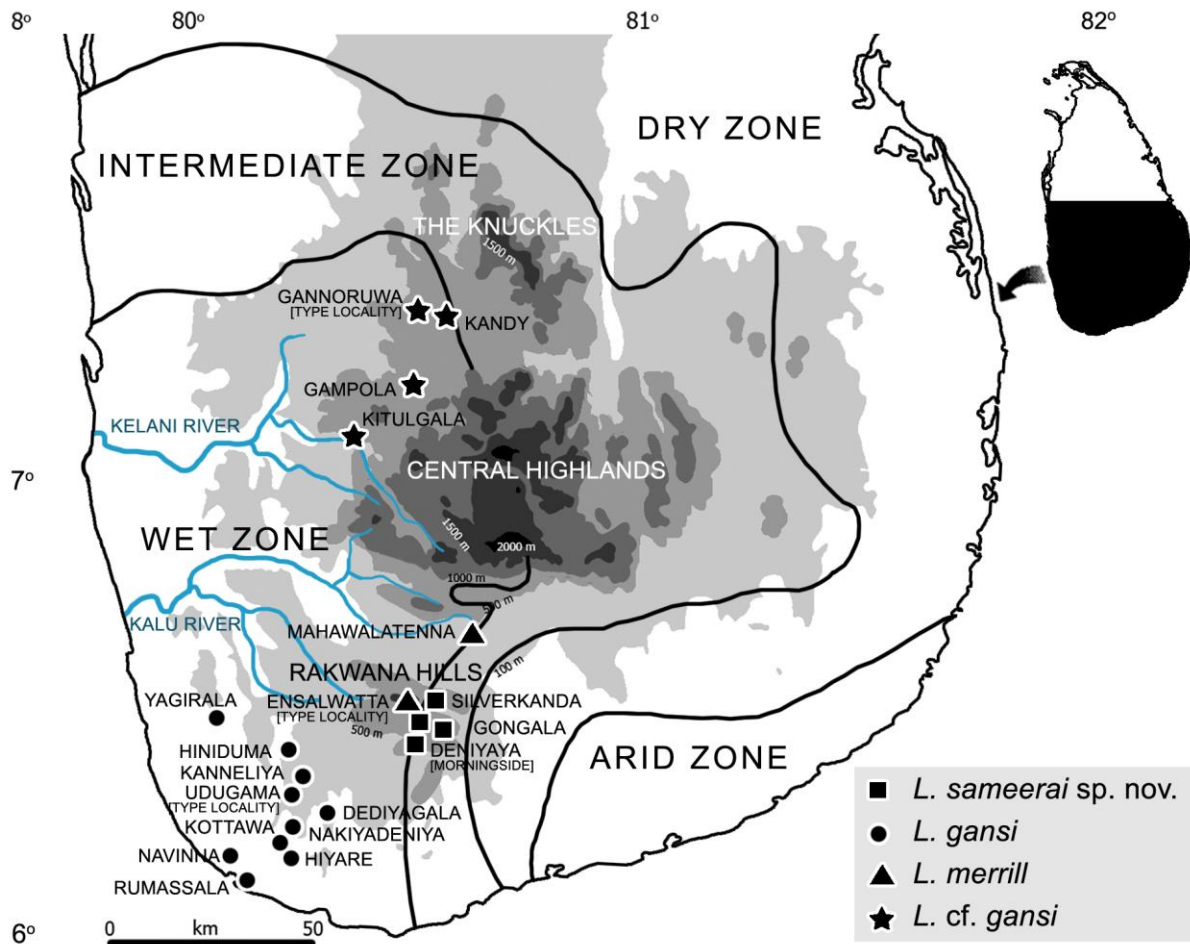


Figure 8. Current distribution map of *L. gansi* (circles), *L. sameerai* sp. nov. (squares), *L. cf. gansi* (stars), and *L. merrill* (triangles) in Sri Lanka.

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Appendix I. Other specimens examined

- Lankascincus gansi* (11 ex.): Sri Lanka:** Udugama (type locality): NMSL 0397-SB; Kanneliya near Udugama: WHT 6670; Dediyaigala near Udugama: WHT 6664; Haycock-Hiniduma: WHT 0151; Kombala-Kottawa Forest Reserve (Hiyare): WHT 6661, 6676; Kottawa: WHT 6672; Nawinna: WHT 6776; Rumassala: WHT 6576, NMSL 0154; Yagirala: WHT 6752.
- L. taylori* (4 ex.): Sri Lanka:** Pundaluoya: BMNH 1872.3.23.4A (holotype), 1872.3.23.4b-c (paratypes), WHT 6707.
- L. sripadensis* (7 ex.): Sri Lanka:** Sripada Sanctuary (Adam's peak): NMSL 2007.05.01 (holotype), 2007.05.02 (paratype); Agra Arboretum: WHT 6566, 6636, 2238, NMSL uncat. 125–126.
- L. dorsicatenatus* (4 ex.): Sri Lanka:** Nawinna: WHT 6774, 6779; Koskulana, Panapola: WHT 6737, 6745.
- L. megalops* (4 ex.): Sri Lanka:** Mathale Owilikanda: WHT 6736; Nainakkanda, Wathura: WHT 6729, NMSL uncat. 120; Batadombalena, Kithulgala: NMSL uncat.
- L. deignani* (3 ex.): Sri Lanka:** Kombala-Kottawa Forest Reserve (Hiyare): WHT 6524 (holotype of *L. greeri*), 6525 (paratype of *L. greeri*); NMSL uncat. (1 ex.).
- L. fallax* (14 ex.): Sri Lanka:** Pundaluoya: BMNH 1895.723.28c (holotype of *L. deraniyagalae*); Kandahena Estate: WHT 1579; Puwakpitiya: WHT 2055, NMSL uncat. 9, 11–13 (4 ex.); Mahamewna Uyana: NMSL uncat. 30–31; Polonnaruwa: WHT 6735; Mathale: NMSL uncat. 01; Yala block 01: NMSL uncat. 34; Kitulampitiya, Galle: NMSL uncat. 66; Mahawalathenna, Balangoda: NMSL uncat. 197.
- L. taprobanensis* (7 ex.): Sri Lanka:** Nuwara Eliya (?): BMNH 1946.8.26.11 (syntype); Horton plains: NMSL 2007.22.01–02, WHT 2014, 2097, 2097a–b.
- L. merrill* (5 ex.): Sri Lanka:** Enasalwatte Estate, Sinharaja: NMSL 2011.01.01 (holotype), 2011.01.02, DWC 2011.05.01, 2011.05.02; Mahawalathenna: WHT 6747.

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